Delivery of Tren Urbano Stations as Strategic Urban Nodes

by

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This thesis project will make recommendations for the delivery of urban mass rapid transit stations such that the inherent advantages of this form of transit may be exploited and that its long-term competitive advantage may not only be established but sustained. The focus of this research project is on identifying methods and techniques for the public sector, where and when appropriate, to work with the private sector to deliver rapid transit stations as *strategic urban nodes*.

This research has been conducted within the context of: a) decreasing availability of public funds for infrastructure procurement; b) inefficiencies of public-sector infrastructure procurement in the U.S. in recent decades; and c) an increasing desire, particularly in the U.S., to create more integrated transit/city form.

As a framework for examining the potential of public-private delivery of rapid transit stations four key questions will be addressed:

I. How can/should government policy be structured so as to facilitate private investment in infrastructure?

II. What motivates the private sector to invest in "public" infrastructure?

III. What is/are appropriate delivery methods?

IV. How should the interests of key players involved be aligned?

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Chapter 1

Introduction

1.1 Background

Urban mass rapid transit stations have a distinct capacity to act as urban economic generators by enhancing urban accessibility and mobility between strategic nodes. That is, the rapid transit station has the potential to deliver myriad direct and indirect benefits both directly and indirectly to the general public, to institutions, to local and regional governments and public agencies, and to the private sector. Despite this capacity, urban mass rapid transit presently suffers severe disadvantages at the hands of the private automobile. "Automobility," particularly in recent decades in the United States, has had clear advantages over mass transit which are culturally, institutionally, and economically based. In the United States auto dependency has grown consistently and significantly since development of the national network of interstate highways began at the end of the 1950's.

This thesis project will make recommendations for the delivery of urban mass rapid transit stations such that the inherent advantages of this form of transit may be exploited and that its long-term competitive advantage may not only firmly be established but sustained. The focus of this research project is on identifying methods and techniques for the public sector, where and when appropriate, to work with the private sector to deliver rapid transit stations as strategic urban nodes. The concept of a *strategic urban node* is explained in more detail later in this chapter. This research has been conducted within the context of: a) decreasing availability of public funds for infrastructure procurement; b) inefficiencies of public-sector infrastructure procurement in the U.S. in recent decades; and c) an increasing desire, particularly in the U.S., to create more integrated transit/city form. Case studies in North America, Europe, and the Far East indicate that public-private

delivery of rapid transit stations has the potential to allow for the reduction and/or reallocation of public expenditure and to precipitate a wide variety of direct and indirect benefits to all of the key players involved through the creation of robust economic communities.

Transit agencies have at their disposal a variety of techniques and possibilities for enhancing transit running the gamut from changes in service offered, to the use of new technologies, to innovative financing techniques, to land use and zoning actions, to the establishment and refinement of appropriate and effective procurement strategies. A primary motivation for an examination of these issues is that the public and private sectors each possess unique and specific skills and capabilities that, if "married" in a suitable fashion, can create a base from which to provide a prominent and economically viable product. The desire is to bring these two players to the table in such a way as to deliver urban mass transit stations that make economic sense and that meet the goals and objectives of the parties involved.

1.2 Essential Questions

As a framework for examining the potential of public-private delivery of rapid transit stations four key questions will be addressed:

I. How can/should government policy be structured so as to facilitate private investment in infrastructure in order to: a) allow for reduction and/or reallocation of public infrastructure expenditures; b) create a richer pool of schemes from which to choose through competition; c) allocate risk appropriately; d) "test" the merits of a particular project in the marketplace; and d) allow for up front comprehensive strategic planning?

II. What motivates the private sector to invest in "public" infrastructure?

III. What is/are appropriate delivery methods?

IV. How to align the interests of the key players involved?

- general public
- governments and public agencies
- institutions
- private sector

1.3 The Private Sector in Transit Provision - An Historical Look

The notion of the private sector taking a central and key role in the delivery of transit facilities and systems in the U.S. is not a new one. So-called "streetcar suburbs" developed by private companies during the first half of the twentieth century were clear examples of private sector entrepreneurship taking the lead role in urban development.

Privately held transit companies, aware of the urban-form/transit connection, became landowners and developers and created highly integrated and dense mixed-use "transit villages" with stop/station locations as the designated focal points in the development of the urban fabric. Through comprehensive strategic planning within a relatively unregulated environment, these companies were successful operations run like any other commercial undertaking. That is, urban transit was seen as a profitable business which could and should cover its costs, pay interest on its debt, and reap profits from fare revenues and related commercial activities.

The evolution of street railways was most common in the United States although the phenomenon did exist elsewhere. They were almost all privately owned companies with integrated real estate operations that purchased stretches of land rights of way and frontage while simultaneously building trams and marketing their frontage. This combination of activities was an ideal marriage of the capitalist profit motive with the pursuit of public objectives.

The success of these mixed-use transit-based clusters would be hampered by a series of significant events. In an effort to breakdown transit monopolies, control fares, and enforce safety standards public authorities began to take direct control of transit compa-

nies. Post war "migration" to the new suburbs was facilitated by an increasingly comprehensive network of interstate and intercity highways. This phenomenon led, in large part, to a dramatic increase in automobile ownership and automobile dependency. The new metropolitan suburbs, much less dense than the traditional urban fabric, did not have the same concentration of demand for transit and could not support the required investment in transit infrastructure. Urban transit, once an effective and profitable business, became financially unfeasible. Governments were forced to create and subsidise public agencies to take over transit operations in order to keep this valuable means of mobility and urban access available, though in substantially different and often reduced forms.

In addition to a policy environment which created a physical environment vastly favouring the automobile as the primary means of transportation, reliance on outside government funding helped to create disincentives for transit agencies to be competitive and control rising costs.

In the meantime public transit agencies, in some cases, have become proficient at delivering a highly specific product with highly specific skills. However, the process has often lacked thorough examination of the interrelationships between the rapid transit station and its physical and economic surroundings.

1.4 City/Transit Relationship

Urban mass rapid transit stations are unique in the world of civic infrastructure in that they have the potential to provide many significant indirect benefits. If properly planned, implemented, and operated, they can help to alleviate congestion while providing increased mobility. Increased mobility within the urban core in turn allows for access to a broader employee and consumer base. Urban mass rapid transit stations also create unique opportunities to enhance as well as induce the concentration of services at strategic nodes

(i.e. university, hospital, and tourist nodes) which helps to create urban structure that consumes energy in an efficient manner. Land proximate to urban mass rapid transit stations has been shown to increase in value through increased accessibility, setting the stage for potential economic development and potential profits. Increased station area development means increased density which has been shown to have a significant positive correlation with increased ridership (TRR no. 908 pg. 7.) (see "The Flow of Benefits" on page 11.)

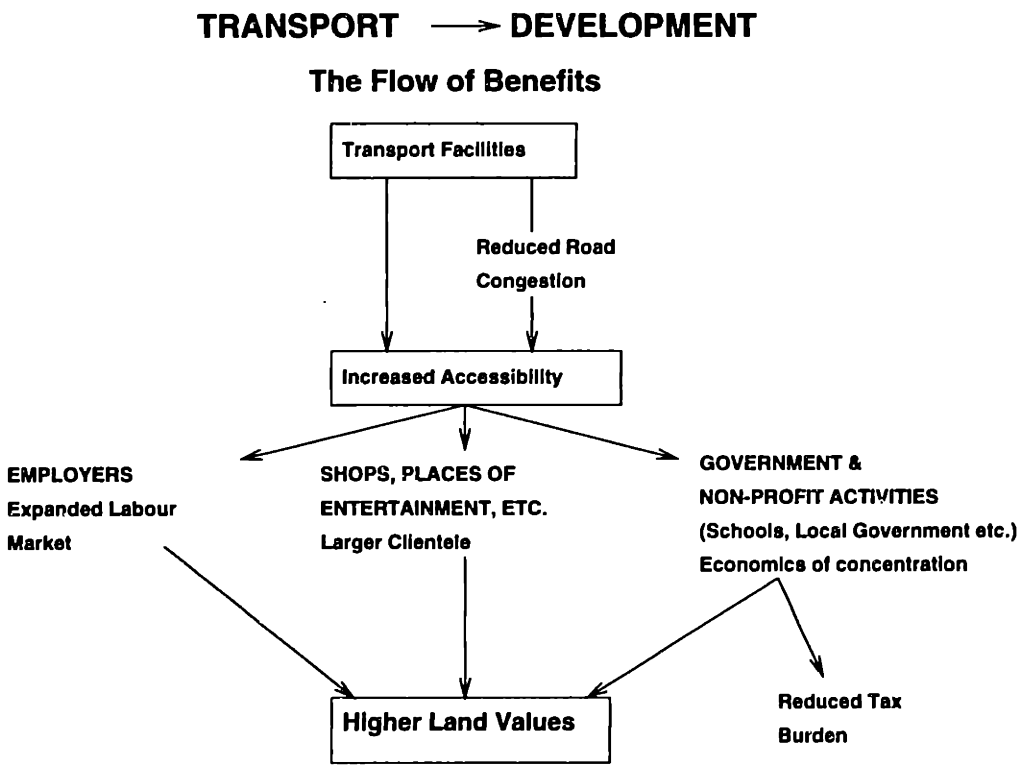

Figure 1.1: The Flow of Benefits

Due to its capacity to control and direct growth, thereby consolidating and strengthening urban centres, politicians, urban designers, and urban planners, among others, have sought to focus on mass transit as an urban generator and potential urban revitaliser since the late 1960's.

A fundamental premise of this thesis is that an appropriate blend of transit planning and public and private investment in the stations and their vicinities has the potential to help create a sustainable and vital urban economic base. By consolidating growth along transit corridors and creating this economic base, cities create opportunities to exploit four key advantages of the dense urban core as outlined by Michael Porter[1]: a) strategic location; b) local market demand; c) integration with regional clusters; and d) access to human resources.

As early as 1930, Spengler (1930) noted that access to Brooklyn subway stations was central to local economic development. It was observed that, with the introduction of the urban metro, real estate proximate to stations rose in value by roughly 500%. This is illustrative of the fact that, through alignment selection, station location, and station development, urban mass rapid transit stations have the capacity to significantly influence urban development patterns. Other cities with urban rail systems, the foremost of which in North America is Toronto, have demonstrated dense clustered development patterns surrounding rapid transit stations which work together as a series of strategic urban nodes linked by transit lines. Other cities, however, have not realised this potential. The reasons for this are outlined in later chapters.

There are many qualitative and quantitative differences between cities which attempt to leverage the inherent potential of urban mass rapid transit stations and those which remain car oriented in their focus. In the case of the former, the pedestrian is regarded as the fundamental unit of measure while in the latter it is the car around which planning, design, and ultimately, city form and life revolve. This fact is especially important in the case of Puerto Rico, which has become one of the most car-oriented cities in the U.S. over

1. "Porter, M. E., The Competitive Advantage of the Inner City, Harvard Business Review, vol. 73, no. 3, 1995, pp. 55" on page 232

the past quarter century. Although continuing on this course would be the path of least resistance, it would be ill advised. The implementation of the Tren Urbano rapid transit system is clearly a step in the right direction. However, the stations must be regarded and delivered with strong and consistent emphasis on what they truly are: *sophisticated urban machines.* Given that the automobile has become a key component of established planning and design practice in most cities in the U.S., particularly in San Juan, maintaining a viable urban mass transit alternative requires a clear vision, a strong sense of direction, and strong political will.

This research will not attempt to make an argument for or against urban mass transit. It will make recommendations for successful interaction between the public and private sectors to deliver station facilities. It does assume, however, that the car should not be replaced outright by mass transit. Rather, these two forms of transportation can and should complement one another. This requires a broad approach based in a long-term consistent sense of purpose which permeates the entire community. The "community" in question includes private sector players with expertise in the planning, design, construction, development, and operations of urban facilities. These are potential public sector strategic allies who possess unique market driven skills in cost control and management and, if properly integrated into the infrastructure delivery process, can help to ensure that rapid transit stations are integrated into their surroundings both physically and economically.

1.5 Station Description

At a very basic level, the resources required to deliver the rapid transit station are viewed, from the perspective of the transit agency, as an expense which, in turn, generates the transit system's most valuable asset: ridership.

For the purposes of this research it is important to define what is meant by the word "station." In general, a transit station can be viewed and dealt with on three levels. These are, in order of increasing complexity, the station as: a Minimal Threshold; a Transit/ Retail Cluster; and as a Strategic Urban Node.

1.5.1 Station as Minimal Threshold

At its most basic level, a transit station can be characterized as nothing more than a minimal physical threshold between the interior of the transit vehicle and the sidewalk at the passenger's destination. Functionally, this prototype serves no purpose other than to convey transit patrons between the transit system and its immediate environs. The functional simplicity of this type of station often implies a simple program with respect to design. Thus the minimal threshold station tends to be viewed as a technical engineering problem rather than as an integral component of the urban fabric. As will be shown, this can be a shortsighted view of the station and generally fails to take advantage of the enormous potential of transit stations as centres of social and economic activity.

1.5.2 Station as Transit/Retail Cluster

The next level of complexity is the Transit/Retail Cluster. This type of station acts as a buffer between vehicle interior and station exterior in a more substantial way than the minimal threshold. Functionally, in addition to conveying passengers, the station is seen and treated as a place to be occupied in which users take part in economic activity which may not necessarily be directly related to their transit journey. While this type of station creates some level of economic activity within its confines, it still often has little physical or economic connection to its surroundings.

1.5.3 Station as Strategic Urban Node

At its highest level of complexity, the characteristics of the transit station change significantly. First, the threshold, or interface, between vehicle interior and station exterior becomes much more fluid and the transition less perceptible. That is, the station is treated as an integral part of a larger urban area which, itself, is a destination in which a variety of activities both residential and commercial, exist and interact. This destination, or catchment area, is typically characterized as an urban area within 5 minutes walking distance or within a radius of approximately 400 metre radius around the rapid transit station facility.

Much to their detriment, rapid transit stations are often viewed and dealt with at one or the other of the first two levels of complexity. That is, they are seen by the agencies charged with their delivery as pure technical problems to be solved. Within this framework, competent engineers will, more often than not, develop adequate solutions to the technical problems put to them. However, a window of opportunity is all but lost when stations are dealt with in this "technical problem solving vacuum." In delivering rapid transit stations as strategic urban nodes, it is not a question of solving the "problems" any differently. Rather, the real test is to ask the question differently. That is, it is necessary to define the problem not as one of simply allowing users to get on and off the transit vehicle more efficiently. The problem should be defined in terms of engineering, urban form, financing, and economics. The rapid transit station thus becomes a more important event in the urban structure whose advantage as a catalyst can be seen as an opportunity, albeit a complex one.

The rapid transit station is the system's "storefront" and, much the same as any other "store," should interact with and be integrated with its surroundings such that it maximizes its commercial activity. Furthermore each station has its own unique surroundings and context which should be reflected in its design and delivery.

1.6 Public-Private Partnership

1.6.1 Quadrant Analysis

In a highly competitive environment, private sector players develop the skills required to create and maintain economically viable businesses built on true competitive advantage. Without relinquishing all control to the private sector, the public sector can gain immense benefits by creating and steering a process by which the private sector may invest favourably in the delivery of needed infrastructure; rapid transit stations, in this case.

The "quadrant analysis framework" for infrastructure procurement developed by Professor John B. Miller of MIT (see "Quadrant Framework" on page 18) is a useful tool for selecting a strategy that responds to the context, needs, and goals of the particular project at hand.

The quadrants are defined by two axes, the horizontal of which presents the range of delivery methods possible, and the vertical of which presents the potential of range of funding options. The axes describe the various strategies that may adopted in the procurement of infrastructure. As graphically depicted, infrastructure is procured using public sector dollars through "direct" financing or private sector dollars through "indirect" financing. Procurement of infrastructure may be "segmented" such that each task (planning, design, construction, operations, etc.) is conducted and competed separately, often by firms selected on the basis of the lowest bid. Conversely, a project can be packaged as part of a "system" where the party that undertakes the project wins a single contract giving him or her control over the complete process. Each of these techniques is a clear policy choice with potential positive negative and ramifications.

The evolution of quadrants III and IV, in particular quadrant IV, has been part of the public sector's desire to appear to be accountable in spending taxpayers' money. That is, by dividing procurement up into to discrete tasks, each of which is given to the lowest bid-

der or the "most qualified designer," there can be no way of suggesting that a particular public purchase has been made for anything but the best price or the best service. However, whatever this segmented strategy gains in accountability, it loses significantly in efficiency. By packaging a project such that a single party is responsible for more than one task, incentives are created for the interrelationships between tasks to be "value-engineered" such that efficiencies, which can ultimately lead to reductions in cost, may be found. With respect to the funding behind the procurement of a project, if economically feasible, it may be in the public sector's best interest to procure indirectly (i.e. privately funded) such that funds may be reallocated to other needed but less feasible projects. At the end of the day, these strategies can be mixed and matched such that with a portfolio of infrastructure projects on the table, efficiencies can be gained in net costs and, through competition, the best quality and broadest scope for the public sector's money may be procured.

Each of seven case studies will be examined utilising this quadrant analysis framework as a guideline in order to understand the mechanisms by which rapid transit stations have been delivered.

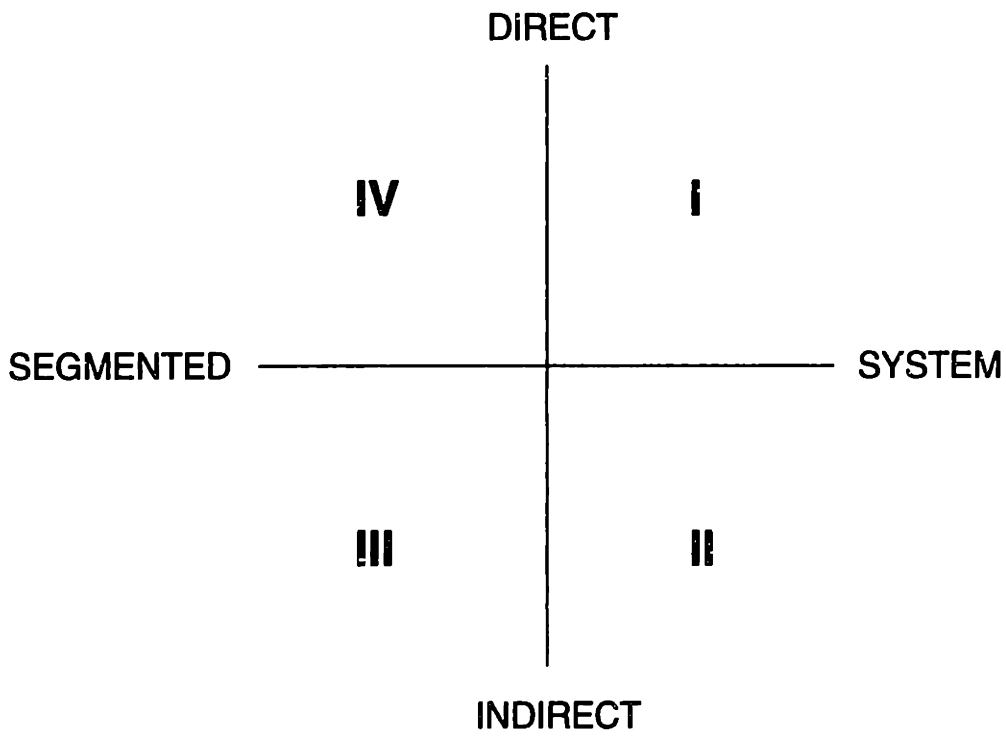

Figure 1.1: Quadrant Framework

1.6.2 Quadrant Selection

If it is to engender the confidence and cooperation of the private sector in the delivery of successful rapid transit station projects, the public sector must take a proactive role in which it facilitates the preparation and development of clear station area plans which are supported by neighbourhood and community groups alike. Being proactive may mean, among other things, being prepared to assemble developable parcels of land surrounding the station area and being prepared to write down the cost of the land in return for project revenues. It may also be in the public sector's best interest to facilitate the delivery of a

rapid transit station as a strategic node by providing complementary infrastructure through direct investment, tax-increment financing, or negotiations with private sector players for these items as part of a larger "package." Government may also choose to subsidise the first phase of a housing, commercial, or retail development to generate private sector interest in the rapid transit station project.

The key is that these choices must be made within the bounds of a clear, concise, and consistent strategy for procurement which is clearly communicated to the community, including potential private sector developments. The JR East Railway Company in Japan is among the few agencies worldwide which have clearly superior practices of establishing an overall vision of future settlement around transit nodes which is based on long-term development objectives as opposed to short-term financial gain. In particular, as will be shown in a case study, JR East has a history of selective and judicious station area planning.

If the private sector is to be involved in the delivery of rapid transit stations a simple rule of thumb is that the expected benefits must exceed the projected costs. While seemingly obvious, this is often an elusive concept. Public sector players should be prepared to negotiate in a flexible manner with their private sector counterparts to this end.

1.6.3 Federal Policy

U.S. federal policy has created a "push" for transit agencies to create more integrated city/transit environments. Two pieces of legislation, in particular, encourage transit agencies to seek greater integration of the rapid transit station into the urban fabric both physically and economically. The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 calls for governments and transit agencies to increase transit ridership through city/transit integration in major urban areas. The American Disabilities Act (ADA) promotes a

different, albeit important, type of physical integration as a means of increasing access to all transit patrons.

Furthermore, the Urban Mass Transportation Administration's (UMTA) policy on rail transit requires that cities proposing to build fixed guideway transit facilities with federal assistance commit themselves to land use policies and development incentives which stimulate complementary real estate development around transit stations. The Urban Mass Transportation Assistance Act authorizes the Secretary of Transportation to assist state and local public bodies and agencies in financing:

> ....projects which enhance the effectiveness of any mass transportation project and are physically or functionally related to such mass transportation project or which create new or enhanced coordination between public transportation and/or other forms of transportation, either of which enhance urban economic development or incorporate private investment including commercial and residential development.

On the political front, the complexities of dealing across five levels of government[1] added to short-term planning due to re-election pressures has a created a procurement process that could benefit significantly from the adoption of alternative methods of delivery. Through analysis of a series of case studies it appears that it is possible to serve the public welfare while providing competitive opportunities for the private sector to profitably participate. It should be clearly understood, though, that the public sector would be ill-advised to simply hand over entire processes to the private sector. Instead, effort should be made to streamline the procurement process while maintaining the capacity to steer it such that the public sector's predetermined goals are met effectively.

1.6.4 Serving the "Public Interest" - Market vs. Government

Due to the fact that the goals of rapid transit stations and rapid transit in general have tra-

1. federal, state, regional, county, municipal

ditionally been defined as "public" in nature, they are often are often viewed as "public goods" which should be controlled 100% by public sector entities, from conceptual design to operations. As necessary "public goods" it is also a common expectation that these services and facilities receive significant public sector financial support in the form of heavy subsidisation. As such, decisions surrounding the delivery of these facilities is often entrenched in politics, and not in economics.

The debate surrounding "public goods" and serving the "public interest" is often centred on whether "public" planning and programs should be left to market forces or whether they should be undertaken and heavily controlled by government.

Analysis of two authors, Rogene Bucholz[1] and Jonas Rabinovitch[2], suggests that: a) there is such a thing as "public interest;" b) there is more to society and governance than "the market;" and c) there is a need for active government "involvement" or "participation" (as opposed to government "intervention.") In addition, both authors suggest and proscribe a clear and active role for private sector entities in the procurement process. The authors suggest that in a true democratic society neither complete market nor complete government planning is appropriate. Rather, a hybrid or integrated approach to public policy should be adopted which recognises and responds to the inherent skills of the public and private sectors and which emphasizes appropriate interaction between the two sectors with long term strategic planning as a central theme.

For this model to function effectively, it is essential for there to be mutual understanding of, appreciation for, and response to the different motivations, needs, and pressures of the two sectors. The two sectors function necessarily within two different contexts. While

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1. "Buchholz, Rogene A., 1992, Business Environment and Public Policy: Implications for Management and Strategy, (Prentice-Hall, Inc., New Jersey, 1992), pp. 591-605." on page 230
2. "Rabinovitch, Jonas, 1996, Innovative Land Use and Public Transport Policy: The Case of Curitiba Brazil, Land Use Policy, Vol. 13, No. 1, pp. 51-67, (Elsevier Science Ltd., Great Britain)" on page 233

the private sector partner is concerned with the economic bottom line, the public sector has the political bottom line as its predominant concern. Despite the apparent difference in goals between the public and private sectors, it is necessary to seek ways for these goals to coincide if the public sector is to encourage and realise voluntary private sector participation in all or some aspects of the delivery of rapid transit stations. Early consideration and treatment of this issue has the potential to lead to the true integration of the rapid transit station into the urban fabric with creativity and innovation.

In their respective works, both authors imply that there is, in fact, a "public interest" and that there is a clear distinction between governance by the private sector and governance by the public sector. In her discussion of the nature of public policy, Buchholz contrasts the conceptual elements of the market system and the public policy process. She indicates that, fundamental to the market system, is the exchange process in which values are assigned to particular goods and services and in which the decisions that result with respect to the allocation of resources for the production and distribution of these goods and services are made.

According to Buchholz, these goods and services cannot be divided into individual units to be purchased and, as such, values about these goods and services can neither be determined nor assigned through the exchange process. She postulates that

> ...only through the political process can compromises be reached that will resolve the value conflicts that are inevitable in relation to public goods and services.

Buchholz indicates, however, that this incongruity between the exchange mechanism and the value of public goods and services does not preclude an active role for the private sector in public policy. She outlines a integrated model which seeks to align the different interests and motivations of the public and private sectors.

Buchholz identifies five reasons why such social and financial success would be highly difficult, if not impossible, to achieve in a purely market governed society. First, she cites Milton Friedman, who a claims that a business is not in a position to use its own money for "public interest" for, in doing so, it would be making arbitrary decisions devoid of any political process, criteria, or social accountability. Perhaps more important is the fact that, according to Buchholz, businesses are strictly economic institutions with the sole responsibility of creating economic wealth. Thus new business opportunities, viewed from within this framework, will invariably be approached from a perspective based almost purely on profit which precludes taking "social responsibility" into account. Buchholz sees social responsibility as a moral concept and states that, while individuals have the capacity for moral responsibility, organisations simply have practical responsibilities.

Buchholz goes on to describe businesses as being "trapped" in a market system in which they must maintain competitive advantage in order to flourish. This means that motivations other than profit (i.e. "social") which have the potential to increase costs and decrease sales will be undesirable unless incentives or "inducements" on the part of the public sector are used to make private sector participation more attractive. Such techniques have been used in Curitiba, Brazil in order to direct growth in compliance with the strategic objectives outlined in the city's masterplan[1].

In conclusion, public goods and services, as defined by Buchholz, cannot be exchanged within a market system. These goods and services should be delivered using a hybrid approach which integrates the interests and needs of both the public and private sectors such that the government does not "intervene;" rather it "participates" actively by steering the process. In order for this to work effectively in the context of the U.S. a com-

1. "Rabinovitch, Jonas, 1996, Innovative Land Use and Public Transport Policy: The Case of Curitiba Brazil, Land Use Policy, Vol. 13, No. 1, pp. 51-67, (Elsevier Science Ltd., Great Britain)" on page 233

fort level must be attained with trusting that the community level, not the individual level, is often an appropriate place to conceive and implement policy. That is, rather than viewing "public interest" as the aggregation of individual interests, it can be useful to view individual interests as part of the collective "public interest" and policy making as a collective activity. Furthermore, the fact that private sector players, who by the nature of their environment are often more entrepreneurial, are more inclined to seek new customers and carve new niche markets is a fact that should be leveraged by the public sector by encouraging innovation and creativity in delivering fixed rapid transit station facilities.

Government and public transit agencies are uniquely positioned to facilitate this process through committment to streamlining the procurement process and removing unnecessary institutional obstacles and barriers to the success of a given project.

1.7 Public-Private Partnership - the English Example

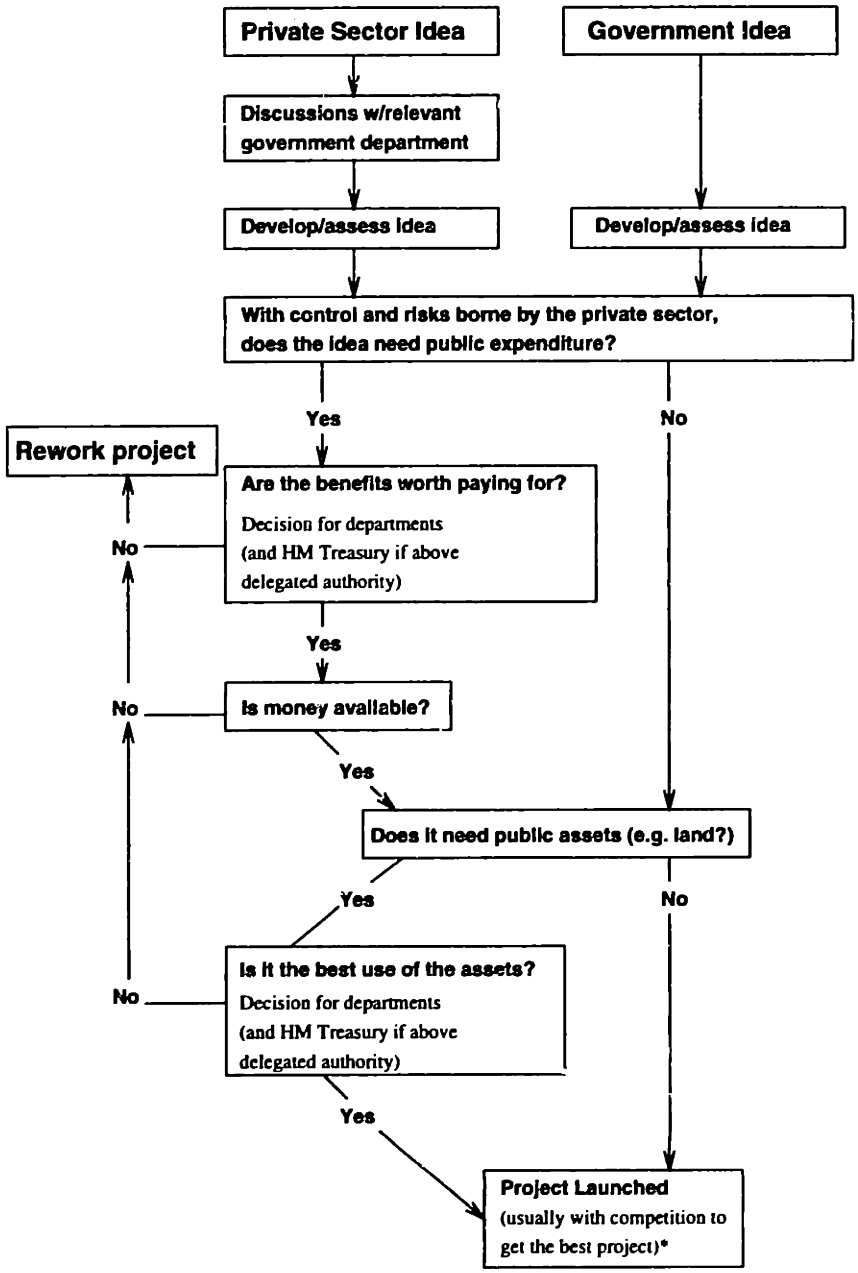
A discussion of the utilisation of the private sector as a strategic partner would not be complete without an examination of the events that have taken place in England since the early 1980's.

Since 1979, England has seen a significant transformation in the way in which traditionally "public" services are provided. The initial intent of this effort was to inject private sector discipline and enterprise into parts of the English economy traditionally served by the public sector. Privatisation as has occurred in England should not to be seen a panacea that should be replicated and transferred throughout the globe. However, it does provide some valuable lessons on how government can bring private sector players on board as strategic and valuable partners in the provision and delivery of infrastructure and services.

In the 1980's the English government sought substantial increases in private investment in large parts of the British economy in an effort to stimulate improvements in effi-

ciency and service. By contracting to the private sector, the government was able to test the feasibility of new projects in the market measured by the level of response of private sector entities to proposals. By its own description, the public sector moved from being a "provider" of services to being an "enabler" of effective and efficient service provision.(see "Private Finance: Decision Flow Chart" on page 26)[1]

1. Adapted from "Breaking New Ground: The Private Finance Initiative, Central Office of Information, HM Treasury, London, November 1993." on page 230



*In certain circumstances competition must be EC-wide

Figure 1.1: Private Finance: Decision Flow Chart

English government agencies were widely seen as being traditionally poor in design and construction, a condition which led invariably to time and cost overruns and ineffec-

tive management of project risks. Private sector players, on the other hand, were seen as potentially effective partners since, in order to survive in a competitive marketplace, they had to maintain a reasonable balance between project cost, return on investment, and project risk.

In general, public sector entities have few incentives to take on commercial risks and, in fact are often prohibited from doing so by law. As the public sector is, ultimately, publicly accountable, political reputations are often at stake if commercial risks materialize. To reduce such risk, governments have often used the quadrant IV (segmented, direct) infrastructure procurement strategy in which project components are awarded in relatively small pieces, and through seemingly objective processes like lowest price. In this approach "problems" are often defined in a purely technical fashion leading to the production of engineered solutions which are prepared without adequate regard to a project's long-term sustainability and viability. That is, such projects, by virtue of the delivery approach, are often not "value-engineered."

Value-engineering is one of the most important and useful techniques that the private sector brings to the table. It is an important management technique used in complex problem solving in which alternative approaches, all of which satisfy the requirements of a given project are investigated in an effort to lower costs, improve quality, and/or ensure the technical competence of a project over its life cycle. This is especially important for rapid transit station delivery as it stresses the necessary continuous interaction between disciplines from the outset of the project.

Although the private sector, in response to attractive investment opportunities, has the ability to raise risk capital and to handle risk in a more disciplined and focused fashion, it is not generally advisable, nor is it suggested here, to transfer all risks to the private sector.

There is a clear and definite role for government in long-term planning and management of the procurement process.

To this end, public sector committment to the process is essential to its success. British agencies have sought to clearly "signal" their desire to encourage private investment in infrastructure delivery in a variety of ways. First, the public sector has often engaged private sector players by asking them to identify perceived barriers to entering the market for infrastructure delivery. Second, the public sector has undertaken a programme of active self promotion in the form of publicly available documents that continually outline public sector goals, objectives, and processes with respect to public-private initiatives (see "British Government Promotional Public-Private Documents" on page 222.)

Such signalling is fundamental to the success of public-private initiatives as it lends credibility to stated objectives and gives potential private sector partners a sense of committment on the part of the public sector. Private sector players who have entered into contracts with the British government have identified a number of factors that they weigh heavily when making the decision whether or not to work with the public sector to deliver infrastructure and services. AHS Eunster, a United Kingdom energy management contractor, has cited public sector flexibility coupled with consistent decision making as key elements of success. Moreover, AHS stresses that the public sector must be willing to manage problems that may arise as a result of its own policy making[1].

Nat West Markets, a firm that raises financing for public works projects, stipulates that private sector firms must be able to realise a reasonable rate of return if they are to be attracted to enter into this type of project. They see government's role, in part, as that of

1. "Breaking New Ground: The Private Finance Initiative, Central Office of Information, HM Treasury, London, November 1993." on page 230

resolving risks due to legislation and providing help in mounting the costs of bid preparation.

The Scottish Office, an agency which manages the delivery of a variety of government services in Scotland including transport, regularly distributes circulars to potential private sector partners including developers, financiers, and suppliers of goods and services. These circulars provide listings of opportunities for the private sector to take an active role in the delivery of infrastructure.

1.7.1 Methods to Finance Project

In the English model, there are broadly three means of financing a project (see "Summary of Guidelines for Private Finance" on page 223.) In the first case, the Free Standing project, the public sector undertakes the initial planning and goal setting for the project through statutory and non-statutory procedures. The project is competitively contracted out to a private sector party who recovers costs through service charges to the final user.

The second method is through the establishment of Joint Ventures. In this case both the public and private sectors contribute resources to the project. The competitively selected private sector partner will retain overall control of the project. The government occupies itself primarily with facilitating the process. This includes tasks such as providing concessionary loans, contributing equity, transferring existing assets, and, essential to successful procurement, initial strategic planning.

This second method provides the public sector with the opportunity to purchase services which might not otherwise be possible within a given timeframe. Using this method requires that government's contribution, if any, be clearly defined and limited and that risk allocation be clearly defined in advance as private sector returns should be genuinely tied to their own risk.

In the third case, services are sold to the public sector, usually in the form of lease arrangements. In this type of arrangement, risk is managed solely by the private sector partner.

Chapter 2

Public-Private Delivery of Rapid Transit Stations --- Theory and Techniques

2.1 Goals

Transit agencies and governments have begun to look to the private sector as a strategic partner with the ability to increase investment in mass transit as a viable means of transportation. Private sector partners are also seen as capable of improving efficiency, and performance and safety standards, of increasing demand in a competitive environment, and of bringing superior management skills to the table. Although short-term goals of incorporating the private sector into the delivery of rapid transit stations are often financially driven (i.e. reduction in subsidies for operations and capital renewal,) the long-term goal, particularly for New Starts[1], is the development of an efficient, modern, and high quality transit system. There is evidence that the private sector has the experience, skills, and financial wherewithal to significantly enhance a transit agency's ability to deliver such a system.

In interacting with the private sector, the public sector must have a clear sense of what it is trying to accomplish with a particular project. The reasons for this are twofold. First, with a clear delineation of public sector objectives, the level of freedom for innovation becomes clearly understood by private sector proposers. Second, the public sector can be sure that its desired project will be delivered in a desired fashion.

By steering a process of open competition among private sector project proposers, the public sector has the opportunity to realise significant benefits beyond savings in cost and time. Competition which is designed to remain open while ensuring that public sector goals and objectives are met should encourage innovation and creativity such that a pro-

1. "Intermodal Surface Transportation Efficiency Act of 1991 New Start Program" on page 224

posal selection committee has the option to choose, from among a variety of different proposals, the one providing the best value in terms of quality, price, and time of delivery. Through competition, private sector proposers will have the incentive to investigate and employ the most current technologies and practices. A variety of proposals provides more than just a variety of solutions. By submitting a proposal for a particular project, a private sector player is, in essence, verifying the feasibility of the project. Thus, multiple proposals provide multiple verifications of project feasibility.

The public sector must describe the conditions of the project in terms of desired outcomes while leaving the "innovation-space" open enough that private sector skills and investment can be leveraged in an optimal fashion. It is essential, when opportunities arise for the private sector to play such a role, that the knowledge and the framework are in place to ensure the delivery of a high-quality, effective project.

One of the classic mistakes made by the government and transit agencies is, early on in the process, aligning and locating transit nodes so as to minimize the physical impacts. According to Ken Greenberg of Berridge Lewinberg Greenberg Urban Design Group in Toronto, Canada:

> The problem with this approach is that, with urban infrastructure, you want to maximize, not minimize these impacts.

He states that impact analyses often look at costs in an inefficient manner. That is, the strategy frequently becomes one of delivering the least expensive system that allows one to travel from one location to another. This strategy can be shortsighted as it does not take into account what occurs between locations and, most importantly what happens at a particular destination. The most important task, fundamental to the success of a given project, is to set clear, achievable, and flexible goals in order to have an up front understanding of the criteria for success.

2.2 Strategies for Public-Private Partnering

There is no single delivery strategy that will meet the needs of every rapid transit station project. Options, depending on the circumstances, include outright sale of a facility, leasing of a facility, various concession arrangements, or complete control and ownership of the facility. The same is true for commercial and/or residential facilities that are adjacent, above, or below the rapid transit station facility. The bottom line is that in addition to meeting the needs of the public sector, the rapid transit station, if it is to be financed all or in part by the private sector, must also meet the needs of the private sector player(s.) That is, there needs to be the possibility for revenue producing activity to take place in or around the station facility.

The delivery mechanism that is selected should be consistent with and reflect a regional urban mass transit infrastructure strategy. As outlined in the introduction, it is important to ask the proper questions and ask them in such a way that useful answers can be developed in response. Bringing the public and private sectors together to deliver rapid transit stations can only be effective and successful if the resultant benefits are shared by both sectors. There are various ways to describe these benefits both qualitatively and quantitatively. The choice of strategy to share benefits between the two sectors hinges on how the benefits are characterised. For instance, if the benefits are perceived to be an increase in real property values in the vicinity of the stations, then government might select a taxation mechanism to derive their "portion" of the benefits from private property owners in the vicinity of the station.

2.3 Benefit-Sharing

Basic to engaging with the private sector to deliver a rapid transit station as a strategic urban node is the notion of foresight and consistent concern for future potential. That is, the agency must recognise that, at some level, there *will* be interaction between the rapid

transit station and private sector players. The enduring unknown, which evolves in the ebb and flow of the system's life, is how and to what degree. The key is to lay the groundwork for optimal use and leverage of that interaction throughout the stations's and the system's life.

Rapid transit stations provide benefits to a wide array of "third parties" through increased access to and from a given urban location. These players include employers, retailers, motorists, property owners, and developers. The term "benefit-sharing" describes a wide variety of techniques intended to help finance government support and spending on infrastructure. A transit agency can improve its rapid transit station facilities and generate additional income by taking advantage of the increased value created on its own land surrounding the station through retail and advertising opportunities at stations and by leasing or selling surplus land and airspace. The latter can take the form of either joint development with adjacent landowners or specialist developers or improvements in access to the station which are funded by private sector partners.

A less desirable and often more difficult approach is to seek compensation after the new facilities are provided, usually in the form of increased taxes. This poses potential problems and difficulties with regard to equity and accurate assessment of the benefits created. However, this can also take place "silently" through reassessment (i.e. higher property at the same tax rate.) Ultimately, in order for benefit sharing agreements to be effective, the costs of construction, rehabilitation, and operation must be distributed equitably.

2.3.1 Three Common Techniques

The public sector has three primary ways of sharing benefits with the private sector in the delivery of rapid transit stations. First, agreements are possible in which the two sec-

tors share the costs of delivering a given rapid transit station project. Second, the agency may choose to enter into an agreement to share the revenues generated by a given rapid transit station project. Third, governments often look to leverage the increase in real estate surrounding the rapid transit station. This technique, commonly known as value capture, is one in which the public sector takes advantage of the increase in real value over time with respect to the cost of the rapid transit station project. To capture this value, the transit agency must acquire and assemble development parcels in and around the station areas before the rapid transit station project has begun.

2.3.2 Revenue Sharing

After assembling and consolidating land parcels in and around the rapid transit station area, the owner has many options to exploit the commercial and urban design potential of the property. One of these is the lease or sale of air rights above the rapid station facility. In order for this to be attractive to private sector investors there must be surrounding high density development. This serves two primary functions. First, it is a physical demonstration of the dynamism of the surrounding real estate market. Second, it provides a established market base with which a proposer's project can interact commercially. An air rights lease is generally a long-term lease and therefore requires the agency to maintain personnel with concentrated and consolidated authority to deal and negotiate with the private sector lessee. This negotiation function is highly important and must be flexible and dynamic as opportunities to interact and interface with the private sector arise.

2.3.3 Cost Sharing

For cost-sharing agreements, the transit agency may need to negotiate to determine the exact cost allocation for a particular project. Negotiation may be of the regulatory variety in which zoning changes are sought or required in order to enhance the feasibility of a

project. However, the agency, more often that not, must be prepared to negotiate with a private sector partner for a wide array of cooperative agreements including land contributions by either party, sharing of the transit agency right-of-way, system interface and access integration of the rapid transit station facility, as well as cost sharing for other features of the station.

2.3.4 Land Banking

During the planning and acquisition stages of a project, land banking is a technique commonly used in order to later capture the value of the probable increase in land value in the vicinity of the rapid transit station[1]. This allows the transit agency or a private partner to assemble parcels of land suitable for development of residential and/or commercial projects. By consolidating the ownership in and around the rapid transit station area, there is a greatly increased opportunity to control the timing, pace, and character of development of a rapid transit station site. This process can take place either through negotiation or, if necessary, eminent domain. Land banking is a technique that requires long-term thinking and, as such, it must be done within the bounds of a clear, well understood, and accepted long term strategic plan.

Both the acquisition and disposition of lands surrounding the rapid transit station must be done in accordance with the needs and desires of both the public and private sectors. The public sector can mitigate its risk by purchasing parcels in fee, or using "options," on all desirable parcels, which can then be later purchased in full if feasible. When planning to capture the anticipated increases in real estate in the vicinity of the rapid transit station, it is important to take into account the fact that "significant" value (i.e. return on investment) will typically not be realised until three to five years from the time of initial expen-

1. "R. Cervero. Transit-Supportive Development in the United States: Experiences and Prospects, University of California at Berkeley, Institute of Urban and Regional Development, Berkeley, 1994." on page 230

ditures on the rapid transit station project. This is true for proceeds from the lease or sale of agency owned property as well as ridership revenues from the farebox[1]. Therefore, government and/or the transit agency may need to create a financial environment which is viable for potential private sector partners.

By purchasing station area lands and allowing the private to sector enter into long-term lease agreements, the agency can make the station project more attractive from a private sector perspective as the private party will be able to avoid large front-end investment related to the purchase of the land. Furthermore, making provisions for the lease of adjacent public space (not land) may help to minimise private sector development risk.

2.4 Public-Private Techniques In Use

2.4.1 Joint Development

Joint development is defined by R. Cervero as:

> .....any formally, legally binding arrangement between a public entity and a private individual or organisation that involves either private-sector payments to the public entity or private-sector sharing of capital or operating costs in mutual recognition of the enhanced real estate development potential of higher land values created by the siting of a public transit facility[2].

In a 1984 study for the Department of Transportation (DOT,) Louis Keefer defined a joint development project as one:

> .....that involves the disposition, by lease or by sale, of transit authority-owned or controlled real property interests, including air rights, which are incremental to direct transit operational needs, at or near a station area which, because of proximity to station facilities, have significant potential

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1. "L. Keefer. Profit Implications of Joint Development: Three Institutional Approaches, U.S. Dept. of Transportation, Washington, D.C., 1984." on page 231
2. "R. Cervero. Land Market Impacts of Urban Rail Transit and Joint Development: An Empirical Study of Rail Transit in Washington, D.C. and Atlanta, University of California Transportation Center, University of California, Berkeley, 1992." on page 230

> for commercial, residential, or related development, alone or in combination with adjoining real property interests to further an authority's development related goals and objectives[1].

Keefer found that joint development projects usually include some form of system interface between the station facility and abutting properties and/or the packaging of a "bundle of rights" to the developer, usually in the form of air rights.

System interface connections may involve direct physical tie-in of pedestrian, vehicular or visual access to the rapid transit station from adjacent public or private property. So-called tie-in facilities include station mezzanines or entrances, kiss and ride, parking, or bus areas.

Joint development techniques have the potential to provide the most benefit when the transit agency has ownership of lands in and around the station area. This allows the agency to more easily include the rapid transit station as part of a larger package, offering the private sector the opportunity to develop a more integrated proposal. Due to its higher volume of one-time pedestrian traffic, heavy rail has a significantly higher potential for joint development activities to occur with success. Cervero has found that while 58% of the joint development projects in the U.S. are along heavy rail lines, only 5% occur at light rail facilities[2].

Cervero has also found that almost half of the joint development projects in the United States to date have been cost-sharing arrangements between private sector players and the transit agency. One fifth of the total has been in the form of lease or sale of station area air space and air rights, and the rest have been for concession leases, connection-fee arrange-

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1. "L. Keefer. Profit Implications of Joint Development: Three Institutional Approaches, U.S. Dept. of Transportation, Washington, D.C., 1984." on page 231
2. "R. Cervero. Transit Joint Development in the United States, University of California at Berkeley, Institute of Urban and Regional Development, Berkeley, 1992." on page 230

ments, benefit-assessment financing, and joint use of complementary facilities. Heavy rail is the form of urban mass transit that has seen, by far, the most joint development activity.

2.4.1.1 Joint Development Techniques

The two most common forms of jointly developing rapid transit stations are through cost sharing and revenue sharing programmes. Cost sharing agreements are those in which the transit agency shares with the private sector one or more of the costs of construction, excavation, labour and heavy equipment, and parking lots. Costs can also be shared by sharing needed facilities such as staging sites or HVAC (Heating, Ventilation, and Air Conditioning) systems.

Revenue sharing agreements are those in which the agency and private sector partner(s) enter into agreements to share in direct and indirect profits resulting from the transit system. For example, revenues may accrue to the transit agency through leases for the use of agency owned properties, fees for connections linking commercial or even residential facilities to the station, and air rights leases.

Based on studies by R. Cervero[1], the relative success of these types of agreements is contingent upon three primary factors. First, real estate development will only occur in areas with a healthy regional economy. Second, conducive zoning and land-use regulations are often necessary to facilitate innovation and creativity on the part of the private sector. These tools are also useful in controlling the development process such that a given rapid transit station project meets the needs of the public sector. Third, initiatives to create urban form that is complementary to the uses and needs of the rapid transit station play a significant role in its success.

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1. "R. Cervero. Land Market Impacts of Urban Rail Transit and Joint Development: An Empirical Study of Rail Transit in Washington, D.C. and Atlanta, University of California Transportation Center, University of California, Berkeley, 1992." on page 230

Joint development is a technique that is commonly used both in the U.S. and abroad to realise capital improvements to station facilities. Through direct developer contribution, it can also be used as a means of offsetting operating expenditures. Joint development schemes generally require developers to pay for the right to develop properties above and/ or adjacent to the station site. The agreement can be in the form of a long-term lease, a fee for connection to the station, benefit assessment, or a combination of all of these. The primary motivation for the private sector to take in interest in such a project is the significantly increased accessibility that being at or near a station brings.

As a means of direct financial infusion into the transit agencies coffers, joint development provides minimal benefits with respect to overall system expenditures[1]. However, the investigation of joint development opportunities should be a central feature of strategic planning with respect to the delivery of rapid transit stations as, in addition to offsetting its financial burden the public sector can enhance the station facility by allowing the private sector to integrate and incorporate other uses with the primary transit-related functions of the station. Enhancement of the station and station area as a destination with multiple uses can, in turn, lead to increased ridership which will result in higher farebox revenues.

Much as is the case in San Juan, Puerto Rico, transit agencies are generally faced with a diverse set of stations each presenting a unique context with respect to local real estate markets, ridership potential, fragmentation of land ownership, and other factors. Each station on a given alignment will thus have unique development potential. However, private sector partners will invariably desire consistency in dealing with the public sector. This means that the public sector must develop an effective means of dealing with the private sector that instills confidence in both developers and their primary lenders with respect to

1. "M. Bernick. Transit-Based Development in the United States: A Review of Recent Experiences, University of California at Berkeley, Institute of Urban and Regional Development, Berkeley, 1994." on page 230

the delivery process. This confidence can be instilled through the development of a standard joint development product (i.e. process) with respect to administration, cost, and timing.

If the many, diverse firms that make up the private sector are to be attracted as a long-term, stable source of strategic partners, government must constantly look for ways to facilitate private sector involvement in rapid transit projects. This may mean the development of risk sharing relationships in which developers may enter a low cost lease in return for government equity and revenue participation in the project.

In order to partner effectively with the private sector the government should not see the benefits as passing off all tasks to private sector parties. Rather it should forge a more robust role for itself by developing a process in which each sector, public and private, performs the tasks and takes on the risks which are most appropriate its capacity, skills, goals, and objectives. If joint development is deemed to be an effective delivery mechanism to meet the agency's goals then there must be the means to assess potential opportunities along the alignment at each station location. Ideally, this would be part of the alignment and station location decision-making process.

Fundamentally, joint development is a method by which transit agency land, property and resources are used to generate additional revenue.

2.4.1.2 Joint Development Strategies[1]

An agency can elect to adopt varying degrees of control over the joint development process.

1. This research was supplemented, in part, with "Byron Gilchrist. MDA Associates" on page 231

2.4.1.2.1 "laissez faire"

In the first case, the "laissez-faire" approach, joint development opportunities are left to the market. That is, the transit agency occupies itself with delivering only transit related infrastructure: the design and construction of the rapid transit station. It is then up to the private sector to identify joint development opportunities and bring them to fruition. This will not occur, however, unless the public sector makes the effort to create an institutional, legislative, and physical environment which is conducive to the generation of proposals in the private sector.

Due to the lack of definition by the public sector of the specifics of a given project in this approach, it is necessary for proposals to be assessed and awarded on a project by project basis. In order to perform in this manner effectively and efficiently it is necessary for the agency to have the in-house capacity to properly evaluate proposals. This means developing and maintaining expertise in real estate, planning, design and engineering. There is also the need for the ability and authority to enter into negotiations with the capability to deal with legal, financial, and management issues and activities.

While private sector partners receive a great deal of autonomy in this approach, the public sector may retain control over the outcome by maintaining ownership of its assets through lease arrangements, by actively participating in the project in some capacity, or by directly financing portions of the project.

2.4.1.2.2 public-sector driven

The transit agency may also take an active role in the joint development process by identifying and prioritising joint development opportunities itself. This requires the agency to be pro-active in ensuring that the necessary steps and functions occur throughout the life-cycle of the project including planning, setting appropriate zoning, and securing the financial resources to make a project happen.

The agency must take responsibility for all costs of joint development itself and, as such, thus receive all revenues. In order for this to be an fruitful process, the agency must have, in-house, expertise to deal with real estate, finance, and legal matters. Success in this case is dependent on the agency's ability to market joint development opportunities so as make them attractive to potential proposers. Of necessity is the development of detailed developers kits which clearly outline approved uses, design guidelines and requirements, financing mechanisms and incentives, a schedule for project implementation, and, of primary importance, clear, consistent, and robust evaluation criteria.

The developer kit is an excellent vehicle with which to review and prioritise proposals, enter into negotiations with select teams, and establish formal agreements with the selected teams. In the U.S., the Washington Metropolitan Area Transit Authority (WMATA) is regarded as having developed state-of-the-art developer kits. The developer kit forces the agency to address issues related to urban design and construction management at the conceptual stages of a project. This serves to create a basic framework within which a proposer may begin to develop schemes for the rapid transit station project. Addressing these issues at an early stage in the process lays the groundwork for synergistic combinations of activities to be imagined and then translated into physical form. Not only does this allow for a maximization of potential opportunities, but it also allows for the avoidance of potentially costly future changes through the incorporation cost-saving features early on in the project. This is especially relevant when infrastructure facilities will be shared by two or more parties. Various combinations of station area activities may be investigated such that both ridership and development revenue potential are optimised

One of the most important benefits of this method is the ability of the agency to maintain control of the process to ensure that direct and indirect benefits will accrue to the public sector.

2.4.1.2.3 private sector agent

The public sector has a leading role in this case with respect to the identification and prioritisation of joint development opportunities. However, a private sector partner possessing the experience and skills to manage the joint development process is selected by the public sector. This provides the public with options to negotiate for a fee or concede part of its equity position in the project to the public sector. It is important that government maintain a presence in the process. This will ensure that, while allowing innovation in design and management on the part of the private sector partner, there is still the capacity to steer the project to meet public sector objectives.

In some cases, the transit agency may not have enough joint development opportunities to warrant recruiting, training, and maintaining full-time joint development staff. In other cases, the complexity involved in the implementation of one or more joint development projects may be excessive given the in-house capabilities of the agency. Some agencies simply have the desire to concentrate their efforts on maintaining a viable transit system and thus would be in a better position to do so without the added complexity of maintaining staff devoted to joint development activities.

2.4.2 Concession Agreement

In this model the private sector partner competes for the right to design, build, operate, and finance the station and related facilities for a fixed period. The private sector concessionaire has the responsibility for raising financing for the project, collecting revenues related to operations. In order for this type of arrangement to be attractive to proposers, there must be a viable revenue stream such that the private sector partner can realise a reasonable return on their equity investment. At the end of the concession period, the contract can either be renewed or the property and operations can be turned over to the owner.

Concessionaires bid for the rights to design, finance, construct, manage, and possibly own facilities within or around the rapid transit station. This technique is currently being addressed as a viable solution by many agencies in the U.S. but it is more prominent in Europe, Asia, and Latin America. In this case, the concessionaire both finances the project and collects the resultant revenues.

Concessionary agreements allow the public sector to decrease financial involvement in a station project by forcing private sector partners to address the viability of the project over its life-cycle. Difficulties with this strategy are generally related to determination of legal terms, conditions, and the risks associated with time to completion, commercial strength, and politics. The goals and objectives of the project must be clear enough for proposers to gain the confidence of lending institutions in order to obtain outside funding.

One of the fundamental choices that an agency is faced with in developing a concession strategy is whether or not to compete for the right to serve a given market or for the right to serve within a given market. For example, a concessionaire may win the right to serve a given commercial function at all of the stations on the rapid transit system. Conversely, concessionaires may be required to compete for the right to serve the same function on a station by station basis.

The rights to develop in this model are those of the private sector. Once the concession has been awarded, the private sector party controls the process and, as such, assumes the risks and rewards of the development project. Within these bounds, the public sector must still work to make private sector participation attractive and rewarding through the process of facilitating zoning and environmental approvals.

The primary benefit of this model that it permits the agency to concentrate on its primary task of providing efficient and effective transit services. Concessions for packaged facilities also provide the incentive to the concessionaire to investigate robust and inte-

grated solutions as the success of their commercial operations is highly dependent on the success of the station and vice versa.

2.4.3 Strategy Selection

Each one of these models has its benefits and disbenefits. There is not always a single solution to rapid transit station delivery that will be the obvious choice. Thus, opportunities and options must be evaluated within a framework that ensures appropriate delivery method selection and proposals should be assessed regarding their level of organisational complexity. This will determine the ease with the public sector can interface and interact with the private sector party as well as the in-house staffing that may or may not be required to perform tasks related to the choice of delivery mechanism. The complexity of a public-private relationship is directly related to the number and type of interfaces and on the relative need for additional staff and expertise. This impacts the joint development of rapid transit stations in that additional expertise may be necessary in order to properly evaluate potential private sector partners, to manage contracts, and to steer a clear and streamlined process.

It is important to address and understand the implications of the level of owner control and the resultant risk that is expected to be born by both the public and the private sectors. Joint development risk is related to construction and operations as well to the ultimate commercial success of the project. Each strategy has implications with respect to scheduling, cost, and financing. Over the life cycle of a joint development project arise issues surrounding how to combine effectively public and private financing which includes addressing the fact that private sector partners will expect a reasonable rate of return on their investment within a reasonable time-frame.

2.4.4 Urban Design

As demonstrated in the case studies, creating an environment suitable for successful sharing of the benefit potential of the rapid transit station necessarily requires the development of a station area masterplan despite the long lead time and uncertainties that may surround a station area project. Formulating the requirements and desires of the station project provides focus for the cooperation between the public and private sectors. It forces the agency to address the complexities of the urban fabric and to assemble and set up private development parcels as part of the rapid transit station area site.

Urban design plan formulation is an initial station area planning process in which the physical allocation of space and building massing are determined. The basic character of seperations and connections with surrounding parcels as well as pedestrian and traffic flows are addressed. This is also a prime opportunity for the agency to establish station area design guidelines which are a highly important tool in flushing out the legal and financial structure of the project. Zoning incentives and special design features must be established and included within the bounds of an urban design plan. By evaluating and comparing various zoning incentives and disincentives with strong community participation, a project will be much less likely to run into future opposition which may stall or even derail the process.

2.4.5 Land Use

Land use regulation is an important strategic forum within which the agency can engender important support from the private sector as well as gain control over the process of project delivery such that public sector goals are assured of being met. Land use techniques include incentive zoning whereby density bonuses and contingent committments are included as part of the project package. This type of arrangement provides a key tool for the public sector to negotiate for the provision of complementary infrastructure.

Performance zoning, another technique, requires the developer to meet standards with respect to noise, air quality, water quality, and parking, among others.

These techniques must be matched with an organisation capable of managing the process of public-private interaction in the delivery of the rapid transit station project. If warranted, an agency may want to establish an in-house or arm's length development corporation or authority. Conversely, it may be more desirable to consolidate development related functions within the transit authority itself.

If the transit agency takes benefit-sharing opportunities into account early in the planning phases of rapid transit station projects, the range of alternatives can widen significantly beyond simple lease cost agreements. This requires that careful attention be paid in advance to undertaking analysis to determine project viability from a regional perspective, analysis of the availability of land for development and of zoning provisions for development, all of which enable the agency to determine the best land assemblage strategies.

2.4.6 Advertising Rights

The sale of advertising rights inside the station is another means of increasing and enhancing operating revenues to the owner and operator of the station facility. On average, an advertising program can be expected to generate approximately 1.5c per passenger in annual revenues[1]. Selling or leasing concession space within the station will add operating revenues to the rapid transit station owner/operator. Furthermore, it has the potential to increase security and convenience for the passenger. When entering this type of arrangement, the agency and the concessionaire must address and develop mechanisms to deal with issues such as maintenance, vandalism, and fire and safety requirements.

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1. "R. Cervero. Alternatives for Producing and Financing Transportation Services and Improvements in California, Institute of Urban and Regional Development, University of California, Berkeley, 1987." on page 230

2.5 Benefit-Sharing as Policy

Value capture was used widely in Canada as transit systems, particularly in Toronto, were developing in the 1960's. It was not, however, popular in the U.S. where excess land acquisition was thought to be inappropriate for transit agencies who were expected to limit their activities solely to providing transit service. However, seeing the potential catalytic role that the rapid transit station can play, some U.S. transit agencies eventually established station area development authorities over the course of the 1970's. These authorities did not generally focus their efforts on acquiring new lands for value capture. Rather, the focus was on identifying opportunities for exploiting already owned lands. This shift broadened the scope significantly for many transit agencies who began to undertake varying levels of land use planning and development activities.

The expanded transit agency role achieved differing degrees of success with U.S. agencies. Two agencies which have had particular success are the Washington Metropolitan Area Transportation Authority (WMATA) in and the Metropolitan Atlanta Rapid Transit Authority (MARTA) have demonstrated that, in order to work effectively with the private sector to deliver station area projects, the agency must adopt an "entrepreneurial spirit" by developing experitise in real estate and finance. Furthermore, flexibility is essential in the public-private negotiation process.

The public sector has as its primary objective for rapid transit stations to provide efficient and cost effective access to urban mass transit for its constituents. However, if successful partnerships are to be forged with the private sector, they must be dealt with in a business-like fashion. The primary concerns for private sector partners to rapid transit station projects are cost, risk, and return on investment.

With expertise in design, phasing, masterplanning, and construction coordination, private sector teams have the potential to play an important and positive role in the process of

selecting alignments and station locations if involved early on. Motivated by a achieving a reasonable return on investment, these teams can be given incentives to develop rapid transit station projects which integrate the station and its surrounding uses helping to foster a positive image both of the station and of the system as a whole.

2.6 Structuring the Competition

There are many ways for the public sector to interface with and engage private sector partners. The choice of specific methodologies and mechanisms depend on the physical and institutional context of a particular station project.

2.6.1 Quadrant Selection

The inherent skills of the private sector are especially well suited to the system or package approach found in quadrants I and II of Miller's quadrant analysis. This approach allows for the numerous competing firms from the private to fully exploit the interrelationships throughout the life-cycle of a project. In issuing an RFP for such a project it is incumbent on government to present proposers with a level of conceptual design, typically five to ten percent, that makes clear the concept of the project but which allows for some flexibility. Typically projects of this nature, including Design/Build/Operate and Build/Operate/Transfer should be no more than 30% designed at the time they are awarded to the selected proposer.

2.6.2 Key Players

Proposers should be prequalified on the basis of their financial capacity and technical capabilities. Clear and well understood evaluation criteria are necessary in order to ensure that proposals will meet government's expectations and to ensure the selection of the proposal which delivers the "best value."

The premise of public-private partnering is to bring together the three primary players in the delivery process, the legislature, the administration, and the private sector, in such a way that: a) the inherent skills of each player is leveraged; b) the end result provides benefits to all; and c) financial resources and risk are allocated in a fashion that is mutually understood.

Legislative bodies are best equipped to develop reliable long-term infrastructure strategies which utilise appropriate delivery techniques and methodologies through the establishment of a conducive legal environment. Administrative bodies should focus their energies on establishing the skills and knowledge to effectively implement projects within specific delivery model frameworks. As stated above, private sector parties are in a position to verify the viability of a project through the very act of submitting a proposal.

Competition for a particular project should provide government with a variety of privately financeable projects which meet pre-determined public sector objectives. It will also illicit feasible private sector proposals which are innovative, yet comprise different combinations of cost, quality, and time to delivery. The private sector is in a unique position to give infrastructure renewal the financial and creative kick-start it needs which is reinforced by the consistent market driven internal pressure to innovate and update a given project throughout its life-cycle.

Within the context of Miller's quadrant analysis, it can be in the government's best interest to pass off certain tasks to the private sector in quadrants I and II. However, in order to retain enough control to ensure that a project will fit within the public sector's long-term objectives, it is often desirable to retain the rights of ownership of the project.

In order to understand the potential of a particular station, the public sector should have the capacity to evaluate real estate and development potential of a particular station front end.

2.6.3 Selection

In soliciting private sector participation in the creation of rapid transit station strategic nodes, proposers are sometimes selected on the basis of which pre-qualified proposer requests the least subsidy from the public sector. This method can certainly reduce public sector expenditure. However, it is unadvisable to assume that subsidies should be given. Unless a project is clearly unfinanceable in no way, shape, or form with private financing, the private sector should be given the incentive to develop innovative privately financeable solutions to the problem at hand.

2.6.4 Delivery

The way in which government chooses to leverage private sector financing and technical know-how depends on short- and long-term local and regional goals of the public sector with respect to the rapid transit station project. The rapid transit station can be included as part of a "package" in which a private developer finances, builds, and, perhaps, operates the rapid transit station. There is also the possibility of building a station which meets the initial minimum technical requirements to be marketed so as to induce privately financed enhancements over time. This technique requires that government have an understanding of the station's relationship to the urban fabric so that the enhancement process can be steered and directed to meet its long-term needs. A third option is to develop a hierarchy with the stations essential to the initial success of the system at the top of the list. Using this methodology, stations can be staged such that the most necessary stations will be built first and stations with private sector potential which may not be immediately feasible can be delivered when most appropriate.

2.7 Key Player Roles

2.7.1 Key Players Identified

Before examining the roles of the key players, it is necessary to identify the key players in the delivery of a rapid transit station. The delivery process will affect and has the potential to be influenced first and foremost by the public sector, in particular by the transit agency. In addition there are others with a definite stake in the delivery of the station including the general public, the private sector, and institutional players.

The public sector as a designated player is made up of public agencies, the local government, the community impacted by the transit system, metropolitan and regional governments, and the state and federal governments. The general public consists of those parties charged with the economic development of the affected region, environmental organisations, special needs groups, and the riders themselves. The private sector, in addition developers, includes adjacent landowners, building managers, tenants, and retailers. Institutional players consist of universities, hospitals, and cultural organisations.

2.7.2 Key Player Expectations

These parties are key players in that they are and should be both contributors to and beneficiaries of, either directly or indirectly, the rapid transit station project. Of primary concern to developers is assurance of a viable revenue stream with which to amortise their capital investment over time and some means of covering their capital expenses. In short, developers will most definitely seek a fair and competitive return on their investment. This is, in part, out of a desire to conduct good business, and remain viable, but it is also in an effort to satisfy their permanent lender who will expect return on capital which is reflective of prevailing market conditions as well as the relative risk of the particular project. The public sector, led by the transit agency, seeks, first and foremost, to maximise the ridership of the rapid transit system. To this end, any station area development should be

compatible with this system goal. In addition to ridership, agencies typically will seek to recover capital costs and to boost the economy and vitality of the area in the vicinity of the station as well as the city at large.

2.7.3 Key Player Committments

The creation of an "environment" conducive to effective public-private partnering is elusive yet highly important conceptually. The public sector must coordinate zoning and land use planning in line with regional growth objectives and management plans. This must be balanced with site specific zoning policies of which timing is a critical issue in sending clear signals to potential private sector partners.

Location of and access to rapid transit stations is crucial to their success in general and particularly to their relative attractiveness to the private sector as feasible investment options. The agency should be, when possible, flexible and attentive in selecting station entrance points as this will affect construction conditions, pedestrian flows, and potential for retail development. In addition, the location and design of a station entrance will orient it so as to make certain development parcels more attractive than others. In addition to having a significant impact on the development potential of a station, access must take into account and enhance walk-on traffic from station-area residents, workers, and shoppers as well as complementary forms of transit which are, in the case of Puerto Rico, primarily buses, publicos, and automobiles.

While the public sector should have the capacity to enter into facilitating agreements, and provide private sector incentives, whether they be through zoning, tax, density, or the provision of complementary public facilities, the private sector should be expected to provide expertise in pre-construction planning, feasibility studies, financing, construction, and project management.

2.7.4 Key Player Capabilities

In the U.S. there is usually no single entity, either within or independent from the transit agency, that is charged with coordinating the development process, packaging and implementing joint development projects, and that has the authority and expertise to provide financial incentives and secure agreements. However, in order to effectively deliver rapid transit stations as strategic urban nodes, there is a need for the public sector to have in-house experience with real estate and development, a centralised authority to enter into agreements and contracts, and the authority to assess and affect zoning changes. In addition to these needs, there must be the ability to create incentives for private sector parties to become involved in rapid transit station projects. Incentives include attractive tax arrangements, the provision of complementary public facilities, density bonuses, and land cost write down. More than just having the authority to enter into public-private agreements, the public sector must have the authority to enforce these agreements.

The fundamental capabilities that are required of the public sector are comprehensive planning and redevelopment coordination for rapid transit station areas, the authority to design and locate rapid transit stations. The agency must have the resources and authority to package real estate arrangements with private sector partners. These capabilities are highly important in that the value of the deal struck between the public and private sectors will ultimately be a reflection of the value of the lease or contract.

It is thus required of the public sector to establish and utilise a clear set of deal making objectives. These objectives should include the creation of an environment suitable for private sector involvement in the delivery of the rapid transit station and helping private sector partners to overcome obstacles that may be encountered during the planning process. This help may be by making provisions for extra station entrances or by deciding to

include extra load bearing in the station design, leaving open the possibility for future structures over and around the station facility.

2.8 Financing the Project

2.8.1 Benefit Assessments

This is a technique, used in the U.S., to capture increases in land value which result from increased accessibility due to the rapid transit station. The concept is to exact a one-time fee or levy from private property owners within a designated "benefit assessment district" to offset the capital cost of delivering the station. Having the capacity to use this technique is, in some sense, a means of securing future debt.

The transit agency, with local governments, can establish and promote financial arrangements with the private sector in an effort to enhance the potential of the station to act a strategic urban node. These include creating special assessment districts in which private parties are expected to fund, in part, through assessments, the delivery and/or improvement of station facilities. This technique provides less revenue than other means and requires the active involvement and support of private sector both to avoid unwanted litigation and to instill confidence in private sector parties that they are seen and dealt with as true partners.

2.8.2 Exactions

Elizabeth Deakin, in a paper entitled The Politics of Exactions[1], discusses the motivations and uses of exactions as a means of extracting financing from the private sector for infra-structure delivery and improvement. Exactions are a cost-sharing mechanism usually occurring between local governments and private sector parties in order to ensure the timely delivery of needed facilities. Although they are a useful tool for the public sector to

1. "E. Deakin. The Politics of Exactions, Institute of Urban and Regional Development, University of California at Berkeley, Working paper no. 472." on page 231

achieve its goals with private sector financing, exactions are not a voluntary mechanism and therefore should be used with care.

There are two primary motivations for exacting funds from the private sector. First, there is the plain and simple fact that public sources of funding have not kept up with the costs associated with the delivery and improvement of infrastructure. Second, exactions are an important and useful tool to manage and direct the growth in and around a strategic rapid transit station node. In concert with zoning ordinances and land use plans, exactions can be used to stimulate growth, to fend it off, or to focus it as need be. Fees in exchange for deviation from land use plans or points for increased densities are two common tools with opposite effects, all other things being equal.

Exactions should be used in a rational, predictable, and acceptable manner so that private sector partners have reasonable expectations when preparing project proposals. Utilising exactions to fund the delivery rapid transit stations does not come without its prices, however. There is the concern that the public sector, in levying exactions, may scare away potential development as developers may feel that such exactions will raise their costs and reduce potential profits. From a logistical point of view, exactions create additional administrative work for public sector officials and may necessitate difficult negotiations in the determination of their magnitude. The solution is to match these financial requirements to their intended fiscal impacts and to establish a consistent means of dealing similar projects.

2.8.3 Risk Allocation/Transfer

The allocation of risk is central to determining the eventual outcome of the project. It is a means of providing incentives or disincentives to project participants. Complete privatisation of a project will naturally transfer 100% of the risk to the private sector. Private sector

financing schemes in which the public sector bears project risk amounts to the private sector acting as a lending institution with the added benefit of providing expertise. The lesson to be learned is that, if the public and private sectors are to come together to deliver transit stations, the risks must balance the potential rewards for both public and private participants.

One of the commonly discussed issues in dealing with the private sector is that of risk allocation. Risk should be allocated so as to optimise the potential of a given project. That is, it should be allocated so as to provide the incentives to perform effectively within the bounds and constraints of the project. For instance, by allocating the risk of operations and maintenance to the private sector, the public sector has the opportunity to ensure predictable future maintenance and operation expenditures.

A clear understanding of the division of risks and rewards must be established as early on in the process as possible so that proposers are able to plan accordingly. One means of controlling government's involvement in the process is the establishment of a capped fee subsidy. Thus clear and definite financial boundaries are set within which the private sector must operate. The delivery of rapid transit stations is a complex process in which many disciplines must come together in an integrated fashion. Each of the public sector and the private sector has the capacity and capability to perform effectively within some of these disciplines. However, neither the public nor the private sector has the capacity to perform all the tasks at an effective enough level to effectively deliver rapid transit stations as strategic urban nodes. They must depend on each other and work together to create true strategic urban nodes. This means that neither sector is fully equipped to assume 100% of the project risk and derive a reward which warrants this risk.

2.8.4 Motivations

It is important to note that motivations for entering a public-private partnership vary greatly depending on whether the party is a public or a private entity. That is, the rewards sought vary significantly. As risk is implicitly related to reward, the level of risk that one or the other parties assumes will have a significant effect on their incentives and resultant actions within the constraints of the partnership. With respect to achieving public sector objectives, private sector risk sharing is a double edged sword. On the upside, risk can be used as a market force to induce innovation and creativity through competition. On the downside, private sector parties may be unwilling to cooperate on the public sector's terms for fear that competitive advantage may be lost as a result.

The difference in motivation between the public and private sectors in the delivery of rapid transit stations stems from the different contingent committments of each sector. The primary concern of the public sector in rapid transit station projects is the timely provision of efficient and effective transit service. As such, the date of project completion, the provision of infrastructure improvements which are complementary to the success of the rapid transit station, and contributions to and impacts on the station area environment are all of primary concern to the public sector. Issues that the public sector and private sector both deem equally important, albeit for different reasons, are the quality to connections to surrounding facilities and the provision of parking which will fit into to the overall station concept.

The developer, driven primarily by a profit incentive, is concerned with the amount and type of development and by the expectations and possibilities with respect to the phasing and scheduling of the rapid transit project. Potential private sector partners may be given incentives or discouraged by their expected contributions to complementary infrastructure and public amenities. Both the public and private sectors must develop a joint

means of addressing management, maintenance, and security especially when a rapid transit station project has facilities which are jointly shared by the two sectors.

The question of motivation is important when the management of the public perception and expectation is taken into account. First, unlike the public sector, the private sector is interested primarily with satisfying its profit requirements. Dependant on the nature of the contractual relationship, the private sector may also be interested in satisfying the agency if it will ensure winning subsequent contracts. These desires may be at odds with the public sector's goal of maximising ridership at a rapid transit station. Furthermore, private sector partners, by not being directly accountable to the public, are insulated to some degree from public displeasure. Despite private sector involvement, the agency is ultimately seen as the participant in authority in the delivery process.

Fundamental to the development of a public-private partnership is the up-front determination of appropriate financing amounts by each of the public and private sectors. Included and intimately related to this determination is the assignment of terms, mechanisms, and sharing of decision making powers. In order the achieve this in an efficient and effective fashion, the public sector must adopt more businesslike procedures than has been its tradition. This implies developing some level of trust and understanding of the profit incentive of the private sector. Above all else, there must be the establishment of a staff with the skills and experience to package real estate deals that has the authority to negotiate directly with the private sector. This real estate function must also be an "active" one, not "reactive." That is, the agency should have staff with the professional background, and ability to interface with the private sector.

The rapid transit station is an ideal size for creating "packaged" projects that are manageable with respect to risk but which still provide ample opportunity to innovate for creative solutions.

2.9 Private Sector Risk Aversion

Contrary to common perceptions, private sector parties entering into public-private agreements will generally be more risk averse than their public sector counterparts. In this way, private sector partners will be concerned with maximising ridership of the system, with ensuring quality construction, and with ensuring unimpeded, efficient, and high quality operations. In addition, private sector players will be wary of risk due to legislative changes that may affect the profitability of their operations. These are risk issues that must be taken into account and dealt with through risk capping and/or risk sharing arrangements.

Chapter 3

Case Studies

3.1 Introduction

The Tren Urbano system is moving toward implementation at a rapid pace. Perhaps more quickly than had been expected. Therefore, it is absolutely necessary to develop a clear understanding of what has worked (and not worked) elsewhere and why. Seven transit systems, each with its own strategy for implementation, have been examined:

City	Transit Authority
Atlanta	Metropolitan Atlanta Rapid Transit Authority (MARTA)
Boston	Massachusetts Bay Transportation Authority (MBTA)
Caracas	Metro de Caracas
Tokyo	East Japan Railway Company (JR East)
Miami	Miami Metrorail
Toronto	Toronto Transit Commission (TTC)
Washington D.C.	Washington Metropolitan Area Transit Authority

Table 3.1: Case Studies

The case studies were selected because each one has received recognition of having delivered at least some strategic urban node stations. Through analysis it is hoped to gain insight into the forces at play and determine what measures should be taken in order to ensure the successful creation of strategic urban nodal stations on the Tren Urbano alignment. Furthermore, each agency has its own particular strategy for interacting with and leveraging the skills of private sector players interested in transit oriented development. As will be San Juan, each case study city is a major urban centre with a heavy rail rapid transit system that was conceived and delivered in an effort to combat congestion, increase

urban accessibility and mobility, and direct and/or control urban growth. As illustrated in the case studies, these objectives have been met with varying degrees of success.

Each case study has been examined with respect to the transit agency's fundamental approach to rapid transit station delivery using Miller's quadrant analysis as a guideline[1]. Specific techniques to deliver stations as strategic urban nodes with the private sector as a key player have been identified and evaluated.

1. see Chapter 1 for explanation of Quadrant Analysis

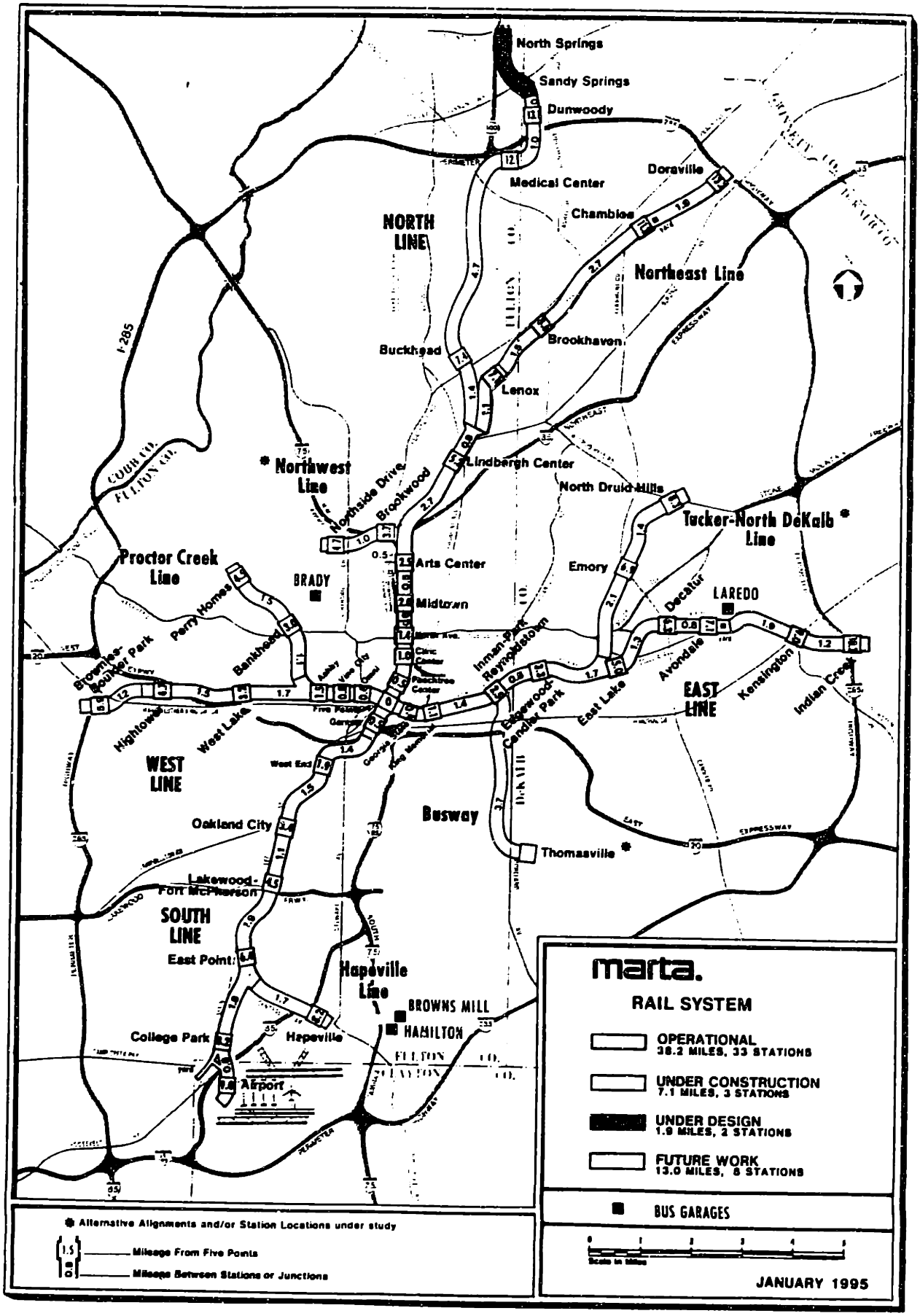

Figure 3.1: Metropolitan Atlanta Rapid Transit Authority Rail System

3.2 Atlanta - Metropolitan Atlanta Rapid Transit Authority (MARTA)

3.2.1 Background

The city of Atlanta has had intimate and crucial links to transportation both physically and economically throughout its history. The city was formed at the junction of three railroads in 1836. Urban growth occurred from this junction outwards along the three rail corridors. The introduction of streetcars over forty years later in the 1880's served to consolidate further commercial and economic activity along these primary corridors which are still among Atlanta's most concentrated commercial and residential zones.

The Metropolitan Atlanta Rapid Transit Authority (MARTA) was created by the Georgia State Legislature in 1965 and was charged with the mandate of building and operating a comprehensive bus and rapid transit service to meet the urban transportation needs of Atlanta's metropolitan area. Four years earlier when the Atlanta Regional Comprehensive Plan had been developed, it had already been anticipated that MARTA would play a central role in the growth of the urban form within the bounds of the city's Perimeter Highway. MARTA has been providing bus and rail service to patrons in Fulton and DeKalb counties and the City of Atlanta since 1972.

The rapid transit system alignments, which form a north-south/east-west cross, were intentionally chosen to serve existing concentrations of residential, community, and industrial development. In some cases, MARTA stations were located at designated strategic nodes with as yet untapped potential growth. In these cases, the station was meant to encourage and foster the intensification of future uses in their vicinity.

3.2.2 Context

Metropolitan Atlanta has a population of approximately 1.8 million people with the city of Atlanta comprising close to 0.5 million or one quarter of the metropolitan population.

MARTA train lines run north-south and east-west. The north-south line extends northward from Hartsfield International Airport through Downtown and Buckhead to Doraville. 240 heavy rail cars currently cover 33 stations and 39 miles, and the first leg of the new North Line is scheduled to open on June 8, 1996, a few weeks before the commencement of the Olympic Games.

MARTA operates a fully integrated bus and rail system that was a central part of the 1961 Atlanta Regional Comprehensive Plan. The MARTA rail and bus system employs 3,500 full-time and 500 part time workers and has annual operating and maintenance costs of $80 million. $17 million of these expenditures are slated for non-vehicle maintenance which includes station repairs and improvements. 38% to 40% of MARTA's operating costs are covered by farebox revenues. The remainder is funded by a 1% sales tax in Fulton and DeKalb counties and by federal subsidies amounting to approximately $5 million per year. The system has cost close to $3 billion to build.

3.2.3 Strategy

Among U.S. transit agencies, MARTA is recognized as a pioneer in delivering transit stations which are successful strategic urban nodes. From its outset, in addition to responding to the problems of congestion and urban mobility, the MARTA organisation and its rapid transit system were seen and treated as key tools in consolidating and directing commercial and residential growth and development in Atlanta. These goals were put into action through a series of comprehensive development plans generated for specific portions of the alignment by MARTA in conjunction with the local government.

The creation of strategic node stations in Atlanta has not occurred by accident. Rather, it has been due to a clear recognition, front-end, of the necessary link between successful rapid transit stations and land-use development. Furthermore, as the system has grown,

MARTA has strategically used a combination of supportive zoning and special development incentives at particular station locations to stimulate interest on the part of the private sector in involving itself in station area development.

MARTA's history has been one of the facilitation and encouragement of high-density mixed-use development in the vicinity of some of its rapid transit stations within strong real estate markets. In this case, in addition to establishing a means for achieving public sector goals with market driven skills and capital, MARTA has sought to bring private sector partners into the initial planning stages as a means of garnering developer interest in future projects. However, far from stepping aside and letting the private sector take over and manage the process, MARTA has taken an aggressive and active, albeit flexible, role in the management of the joint development process. To some degree, the joint development potential has played a role in the process of route alignment and station location decision-making. Although MARTA has sought to exploit some of the joint development potential of its rapid transit stations, it has placed most of its effort on capturing the increase in value of its station area land holdings. This is, in part, due to legislation that prevents MARTA from acquiring and developing land for purposes other than the provision of transit service. These constraints are outlined in MARTA's Surplus Property and Air Rights Development Policy. However, the policy does allow for private sector investment over stations, along line segments, in parking areas, and in other facilities. MARTA usually establishes these arrangements through direct negotiation.

By taking development concerns into the route selection and station location decisions, MARTA has managed to spark significant developer interest, particularly on the North Line nodes. This portion of the alignment has been, by far, the most successful. The success of these stations has stemmed from the willingness on the part of MARTA to involve developers in the initial planning so as to promote excitement and interest in the

system as a viable and desirable investment for private sector entities. Of primary concern to private sector developers has been the possibility of direct access to rapid transit stations which translates into direct access to residential and commercial markets.

Unlike other North American agencies, MARTA has never undertaken a clear policy of large scale land acquisition in order to directly impact and steer the growth of strategic urban nodes. However, the agency does own station area property which is managed via comprehensive inventory and disposal plan for major parcels on line segments with significant development implications and characteristics.

3.2.4 Techniques/Tools

The evolution of MARTA stations on the alignment's North Line has been the result of a combined and extensive planning effort on the part of three key players: the Regional Planning Agency; local governments; and the private sector. The Regional Planning Agency has been responsible for the development of a Regional Development Plan which includes the Atlanta Urban Framework Plan for the city of Atlanta itself. Central to the Atlanta plan is the classification of transit stations by their "nodal type" and by their "community type" and the creation of Special Public Interest Districts (SPID's) and Planned Development Districts along the alignment. These Classifications provide a basis from which to identify and pursue opportunities to work with private sector partners to deliver rapid transit stations.

After the 1961 Comprehensive Plan, the next time that acknowledgment was given to MARTA's rapid transit stations as sophisticated and powerful urban generators was in the early 1970's when the Regional Planning Agency contracted with local governments and consultants to develop a series of Transit Station Area Development Studies (TSADS.) Once complete, these studies were adopted into the Comprehensive Development Plan.

Zoning regulations were then established to implement these plans through an Area Plan Review process.

All public agencies were involved in the implementation of the TSADS's, a process which formally ended in 1975 when MARTA began the process of control and management of development.

The TSADS's were created with the cooperation of: public agencies (MARTA and the Regional Planning Agency;) city, county, and state governments; the state Department of Transportation; private sector entities including the Atlanta Business Association and individual developers; and community groups including civic associations, Neighbourhood Planning Units (NPU's,) and individual citizens.

These studies were broken down into three components: a Policy Plan; a Concept Plan; and a Design Plan. Each of these plans was meant to deal with and ensure citizen involvement, neighbourhood preservation, proper circulation in and around stations, appropriate land use, the provision of community facilities, and the provision of capital improvements.

The TSADS's have served as blue print guides for station area development as the system has grown and matured. These studies were originally intended to help maximise the development opportunities of the rapid transit system and to protect established communities by designing mechanism to minimise disruption which could occur as a result of system construction.

Delivery of rapid transit stations in Atlanta is affected through five planning levels and mechanisms starting with, at the broadest level, regional and local planning as described above. These two levels of planning work within bounds set by the Comprehensive Development Plan which proscribes land uses for station areas, zoning regulations which are

specific to each Special Transit District, and the Atlanta Transportation Improvement Plan.

It was recognized early on within the ranks of MARTA that such intensive mixed-use development as has occurred around the stations along the North Line corridor was not inevitable. Therefore in a 1973 charter it was mandated that each new mayor must make one, five, and fifteen year Community Development Plans (CDP's) which specifically encouraged model land-use patterns around MARTA stations. The 1973 Urban Framework Plan outlined the city's official position with respect to these Community Development Plans. The Transit Station Area Development Studies outlined potential development opportunities that could then be packaged and competed out to the private sector while the Special Public Interest Districts and the Planned Development Districts were intended to integrate development into the station area and to promote mixed-use development.

It should be noted that the MARTA system evolved system over the course of the 1970's, a period when major U.S. cities saw a 30% increase in downtown office construction. This rapid growth necessitated the provision of supporting infrastructure improvements. Due to strong local markets[1] and transit supportive federal policy, there was no shortage of funds to construct the first phases of the system. Furthermore, the system has traditionally had higher than average farebox recovery. However, since completion, within the constraints of finite resources, MARTA has sought means by which the burden of subsequent extensions and rapid transit stations could be shifted from the public sector to the private sector. To further this goal, MARTA established a comprehensive joint development program.

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1. This was just the beginning. In the 1980's office space inventory increased by 125% in the Atlanta Metropolitan area.

As MARTA has never been a significant landholder in Atlanta, joint development has had to occur with the help of financial mechanisms such as tax increment financing, the creation of special benefits assessment districts, and dedicated property taxes on station areas. These financial instruments have been used in conjunction with a progressive program of facilitative zoning and land-use regulations. In September 1982, policy was established for the disposition of MARTA's surplus station area property including subsurface, surface, and air rights. This translated into new opportunities for partnership with the private sector.

In line with this policy MARTA began to utilize "knockout panels" on advisement from private sector developers. Using knockout panels is a construction technique whereby, in design and construction, provisions are included for future development through re-enforced foundations and access routes that are covered with easily disassemblable wall panels. Thus when if and when future development occurs, providing direct access to the station is done a much lower cost than otherwise as there is no need to retrofit the station facility which can prove to be costly, time-consuming, and disruptive.

As outlined in the previous chapter, private sector players tend to respond to signals from the public sector which are followed by clear and consistent actions. MARTA sent such a signal with the creation and establishment of a Joint Development Office. This set in motion the framework by which the agency could forge mutually beneficial relationships with private sector partners. For this reason the creation of this office was an important strategic move on the part of MARTA. Moreover, it established a single access point which has the authority to make deals and assist developers in putting together rapid transit station area joint development packages.

MARTA has used the Transit Station Area Development Studies as a framework for the development, redevelopment, and/or conservation of the areas around the stations.

These studies ordered potential station areas into five classifications each consisting of a series of concentric zones. A Station Area Advisory Committee was then established for each station which, in addition to undertaking the conceptual planning for the station, would lead local resident consultation. MARTA station areas were classified by the Committees as one of the following: high intensity urban node; regional mixed-use node; commuter transit node; neighbourhood mixed-use node; neighbourhood residential node. Station area concentric zones consisted of the inner impact zone, the transition zone, and the outer impact zone.

In the implementation stage of station area projects, the Advisory Committee has a central role in promoting zoning changes, parking revisions, and establishing air rights provisions and provisions for pedestrian access facilities. Through the establishment of Special Public Interest Districts, the Committees have a clear mandate to implement station area projects with consideration for and integration of public and private pre-specified objectives.

MARTA's prime motivation in promoting private sector involvement in the creation of strategic urban nodes has been the infusion of private sector funds into the delivery process. According to MARTA officials, it is not automatically the case that private sector partners will view rapid transit stations and rapid transit station areas as viable and rewarding investments. Therefore MARTA has sought, once an agreement is established, to guarantee that new stations on which private sector projects are contingent are built on schedule as advertised. This is an informal policy that is intended to demonstrate the agency's consistency in following through with its committments. Furthermore, the agency had developed a reputation of being flexible, fair, and equitable in dealing with unanticipated problems and negotiations.

In addition to these assurances, private sector partners have been attracted by the public sector's access to low interest financing and especially by the fact that MARTA has established a one-step process with a single point of entry in the Department of Community Development.

Before the establishment of the Department of Community Development, potential private sector partners had to deal with up to seven different departments, requiring approximately six months of negotiations. The negotiation process now takes less than one month with a single round of negotiations. In order to ease these negotiations, a 1982 zoning ordinance was established which allowed for the use of flexible techniques to address changing unknown needs. When utilised and enforced, all of this planning effort has been highly successful.

3.2.5 The Success of the North Line: North Avenue Station

The North Line has been the site of the most substantial public-private development activity on the MARTA system. The North Avenue Station, which opened in 1981, is the site of the most significant project to date. The Southern Bell Telephone Company building, a the 1.3 million square foot complex, is built on the North Avenue Station air rights. This station, with daily ridership of close to 7,000 passengers, was part of the Midtown Development Project which delineated public-private development strategy along the corridor from North Avenue Station to the Arts Center Station centred on Midtown.

This Southern Bell complex at North Avenue Station is a $100 million project which occurred as part of a land swap with MARTA and was heavily influenced by the agency's joint use policy in planning and in the initial phases of the system. Bell South, was previously part of Southern Bell which had been split up. Southern Bell was in the market for a new 50 storey building with efficient and effective access to urban mass rapid transit.

MARTA, in making its station delivery plans, saw this as a strategic opportunity to utilise the private sector as a partner in the creation of a true strategic urban node. North Avenue Station is situated on the same block as the historic Fox Theatre which was due to be demolished by the landowner. The agency and the Regional Planning Department jointly concluded that, in order for the node to function effectively, the mix of activities which defined the character of the location, including the theatre, were essential. Therefore, it was decided within the MARTA agency to leverage the increased accessibility that BELL hoped for in order to achieve its own objectives.

In exchange for the right to construct and operate this tower on the air rights of the North Avenue Station, Bell was required to refurbish the Fox Theatre and provide security for the facility. As part of the air rights agreement, Bell South also was required to undertake renovations of apartments (Ponce de Leon apartments) and a major hotel (Hotel Georgian Terrace which became the Regent Terrace Hotel.)

The Southern Bell project is a 47 storey complex of shops, restaurants, and office space which was part of Bell South's strategy to consolidate 3000 employees from twelve locations. Throughout this process, MARTA worked with Bell South in an unprecedented entrepreneurial fashion. The project was originally slated to house 25,000 square feet of retail. This was almost doubled to 40,000 square feet in response to higher than expected demand at the station. In spite of the scale of the complex, MARTA also negotiated actively with Bell to scale down the parking lot that was originally planned.

The agreement for the development was contingent on the opening of the North Avenue station which was intended to be used by residents, employees, and others. However, as construction progressed, it became apparent that delays were inevitable at the Peachtree station, one stop south of the North Avenue Station. The scheduled opening of the North Avenue Station thus became threatened. However MARTA quickly and smoothly autho-

rized the opening of the line before the Peachtree station was operational in a clear demonstration of flexibility and accommodation by providing a one-track shuttle through the Peachtree station, staying true to its committment. Not only did this facilitate the process with BELL but it also sent a strong signal to other potential private sector partners that the agency was committed to delivering "as advertised."

While it is true that the Bell South Tower project is unique, there are important lessons that can be learned from this public-private coventure. First, in return for a permanent easement through the property held by Bell South, MARTA provided development air rights at North Avenue Station. Second, MARTA had a solid negotiating position, took advantage of it, and was able to negotiate with Bell South to scale back the planned parking. Third, MARTA followed through on its promise that the station's opening would coincide with the completion of the Southern Bell office building which was completed in 1981.

In contrast to the success of North Line stations, stations on the East-West line have not experienced nearly the same level of success with respect to the creation of true strategic urban nodes. Along this alignment overall route selection took precedence and specific station location decisions were made in the absence of the comprehensive station development planning that took place on the North Line. The current and expected development potential of station areas, whether it be commercial or residential, was not a factor in the planning process. Station location decisions were made primarily for two reasons: the availability of land and political expediency. The stations were thus located city-owned right-of-way that ran parallel to the Southern Railroads line. Unfortunately, as has been shown in countless urban mass transit systems, there usually exists an inherent conflict between: a) selecting the location of a station simply because land happens to be available;

and b) trying to create a robust, integrated system composed of a series of interconnected destinations or strategic urban nodes.

The fact that many of the stations along the East-West line have not attracted developer interest does not mean, however, that this alignment should not have happened. Transit service was necessary along this corridor in the estimation of MARTA officials and the local government. However, the question to be asked is whether or not the stations could have been delivered so as to provide this necessary service but in such a way that might emulate the success of the North Line. As one member of Atlanta's development community explained[1]:

> ...had some stations been located a few hundred feet away, their development potential would have been greatly enhanced.

This sentiment, which is shared by other private sector players in Atlanta, simply suggests that the private sector may have been sufficiently equipped to put together station area proposals that would have enhanced the long term success of the stations along the East-West corridor, as has happened on the North Line.

In stark contrast to the North Line, the Buckhead Line has also not seen nearly the level of success as the North Line. This, according to Joe McCannon, Senior Environmental Planner with MARTA, is due to the lack of clear zoning and land use policy[2] and a lack of the extensive comprehensive station specific planning that has taken place along the North Line.

3.2.6 Lessons/Results

Despite the success of some stations, particularly on the North Line, the impetus or "window-of-opportunity" that has generally led transit agencies to focus their efforts on

1. "E. Davis. Transit-linked Development: A Case Study of Atlanta's MARTA system, U.S. Dept. of Transportation, Washington, D.C., 1985." on page 231
2. There exist 25 different zoning districts around the stations on this line

the pursuit of public-private opportunities has not historically existed in Atlanta until recently. With a relatively high farebox return and relatively low operating costs, the need to search for other and more effective revenue sources has not been as pressing in Atlanta as it has elsewhere. Furthermore, as the MARTA system is relatively new, renovation has not yet become a primary concern.

Unlike other North American agencies, MARTA did not undertake extensive land acquisition prior to system delivery. However in order to raise cash for extensions, MARTA has aggressively sold air rights over its stations[1]. These agreements have involved the sale, lease, and/or exchange of development rights as well as joint development projects which utilise station interface agreements and connection fees.

Despite the wide recognition that the MARTA system has received with respect to its success in encouraging and facilitating investment in and around the stations on the North Line, Joe McCannon, feels that the full potential was not exploited. Apart from what he feels are a few exceptional cases, he states that MARTA has not been particularly successful with joint development. Mr. McCannon cites as unique successes, the case of Georgia University station, at which the state government needed office space which the university was willing to fund, and the case of North Avenue Station at which currently stands the Bell South Center. Mr. McCannon notes that, apart from the particular success of the North Line, MARTA has had a generally poor history of interagency cooperation which is vitally necessary to the success of joint development and other public-private means of delivering transit stations.

While the creation of strategic urban nodes on the MARTA system, by most standards, has occurred with some degree of success, it has certainly not lived up to its systemwide

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1. Southern Bell Tower (1981,) the Georgia State Office Building (1982,) the IBM Tower (1987,) the Resurgens Plaza (1989,) the Atlanta Plaza (1986,) and Rich's Department Store (1979)

potential. Aside from a concerted effort to "up-zone" station areas in the 1970's in anticipation of the coming system, planned densification outside of the central business district stations has been met with strong community opposition.

In addition to the facts that MARTA owned very little land when it was formed and that it was legally limited to providing nothing other than transit-related services, MARTA has never pursued a formal *systemwide* strategy or policy of joint development. While informally pursuing this type of development, a comprehensive set of *systemwide* development incentives as have been used on other systems has never developed and implemented in Atlanta.

The key to success in Atlanta was on the North Line was the result of a consolidated and integrated effort on the part of MARTA to deliver a high quality and efficient product. The TSADS's were developed at a time when the potential development around these stations was quite strong in the downtown core. This core was zoned specifically to accommodate transit related development and has evolved into an elongated corridor with a bubble, the Central Business District, at the end.

A particular challenge in Atlanta has been in dealing with the fact that both the public and the private sectors have lacked sufficient experience and knowledge, a priori, of how to successfully establish and implement a working joint development program from the perspectives of policy making and deal making.

In this respect, the MARTA system is similar to the Tren Urban system to be delivered in San Juan, Puerto Rico. Furthermore, as will the Tren Urbano in San Juan, it serves similar concentrations of activities along its alignment such as hospitals, universities, stadia, and a central financial/banking district.

There are several key factors in the success of public-private partnering on the North Line of the MARTA system. First and foremost is that of comprehensive planning which

has incorporated supportive zoning, tax mechanisms, and financial incentives designed to stimulate private sector interest in investing in MARTA station areas.

The MARTA system, above all along the North Line, has evolved into successful, integrated network of strategic urban nodes which have investment on the part of the private sector that has led to over $4.5 million in lease rent over a five year period. With a framework determined by a comprehensive planning process, the MARTA system has helped to channel growth along this corridor. The Transit Station Area Development Studies which were completed in 1975 established a process and philosophy of rapid transit station delivery in Atlanta was been responsive to the unique needs of each station.

With a clear and consistent process, developers and other private sector players have come to know what is expected of them and, through precedents, have assurances that development can occur in accordance with the adopted plan.

In a study of transit joint development in the United States, Robert Cervero compared economic activity at North Line stations with the Northwest Freeway Corridor. At Arts Center Station, for example, he found that, over a 12 year period, this strategic node experienced three times the addition of office space at a premium of $2 per square foot. The largest rise in this premium took place after the opening of the station.

MARTA also currently receives approximately $1.5 million per year in revenue from the leasing of its right-of-way for electrical conduits utilised by private sector companies for communications.

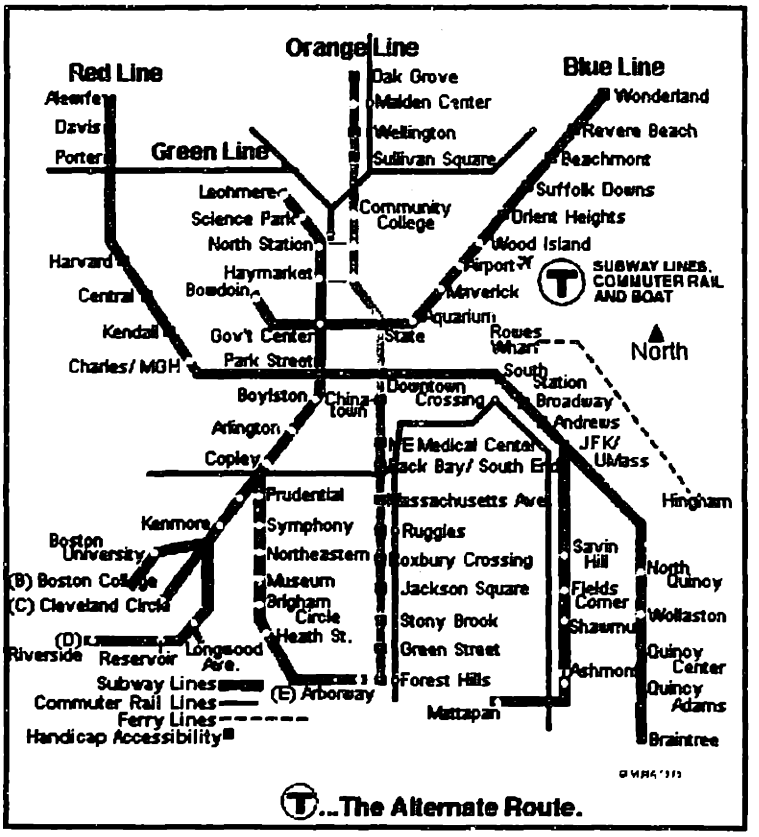

Figure 3.1: MBTA System Map

3.3 Boston - Massachusetts Bay Transportation Authority (MBTA)

3.3.1 Background

The Massachusetts Bay Transportation Authority (MBTA) was established in 1964 with the aim of providing urban mass rapid transit service to the metropolitan Boston area. The MBTA was one of the first combined regional transportation planning and operating agencies to be established in the United States.

Before the 1970's, the MBTA planning process was focused almost entirely on technical engineering and operations. The concept of using the station as a sophisticated urban machine was not in the works and joint development was considered rarely, if at all. The principal player when and if the MBTA did happen to lead property development was the Construction and Operations Directorate which was charged with negotiating with property owners, local governments, and developers if need be.

Urban mass transit in Boston over the past fifty to seventy five years has been characterised by a series of strategic government-led investments in station and system infrastructure. In some cases, these investments have wielded significant influence both in the downtown core and at suburban locations. These successes have invariably led to substantial increases in employment at central business district locations and in densification of residential units in the vicinity of suburban stations.

3.3.2 Context

The Massachusetts Bay Transportation Authority (MBTA) is the sixth largest transportation authority in the U.S. and acts as a body politic under the auspices of the Commonwealth of Massachusetts. The MBTA currently covers 25% of its operating and annual debt service costs through fares and other revenues of $150 million per year[1].

1. "Joy Niedzwiecki. MBTA Public Affairs Office, telephone interview, 20 May, 1996." on page 232

While a small portion of annual costs are covered through federal grants, the majority comes from local assessments and state appropriations.

The MBTA is an entity with tax exempt status and zoning exempt status for its land holdings. However, with respect to the delivery of rapid transit stations as strategic urban nodes, this presents a conflict as that agency was granted this status specifically as a *transit provider* and not a *developer.*

3.3.3 Strategy

Since the 1970's, the MBTA has sought to maximize and capitalize on private investment for expansion and development in and around station areas.

Early in the 1970's, the Boston Transportation Planning Review stipulated that transit could and should be used as an urban generator through the appropriate location and design of stations. In part, due to this review, the MBTA moved to consolidate in-house development activities in order to manage three patterns of public-private interaction that began to emerge. In the first case, the impetus for joint redevelopment activity would come from outside the agency, either from local redevelopment authorities or from private sector developers. As this was purely market driven, projects took place where they were financially feasible. At this time, that meant that they occurred primarily in the Central Business District.

The second case was that of the extensive and high-profile South Corridor Project. This was a project to convert the abandoned Southwest Expressway Project into a transit corridor linking downtown Boston to Forest Hills. The MBTA was the key player and led this process taking a pro-active role in the delivery of public-private projects. This involved the creation and dissemination of materials outlining the agencies' intentions and the perceived possibilities for private sector involvement.

The third case involved the agency conducting an inventory of land already in its possession and searching for ways in which to boost its revenue and return on its assets. It was in this inventory process that problems were discovered associated with lack of complete information, roughly 2,000 outdated leases, and a series of small, disconnected, and therefore difficult to utilise, properties. As result of these inventories and subsequent attempts to gain control of the real estate process, the Department of Real Estate Management was established in 1980 in order to produce a comprehensive database of up to date MBTA real estate information.

As with any public agency, the MBTA had to determine what were appropriate activities in serving the public interest. For instance, would development of its land holdings with the return on investment as one of the criteria of success be outside of the realm of "public duties?" Or would it be appropriate for the agency to select a private sector partner to develop its properties based on criteria which were not strictly financial (economic, market, and design?) The Transportation Committee of the State House of Representatives determined that it would, in fact, be appropriate for the MBTA to select bidding private sector developers other than highest bidder provided that "sound reasons in the public interest for choosing other than the highest bidder were established."

In order to deal with these and other issues that might arise during the delivery process, a program was established which outlined formal procedures for joint development of MBTA property. From this point through the mid 1980's, the program's success was measured against an agenda which included:

- identification of new sites with sufficient market interest and where the MBTA has something to gain;
- identification of development possibilities for core area stations where the station improvements would be a catalyst for area development;
- increased revenue from leases and concessions in stations and station areas focusing on new stations.

Despite these efforts, the MBTA has not been heralded as one of the great success stories as private sector involvement in the delivery of stations historically has occurred as a afterthought. The Construction and Operations Directorates, in fact, tended to be more concerned with *precluding* the interference of private sector developers during the delivery process. Moreover, instead of regarding each new station as a unique opportunity, station area designs were initially the responsibility of a single individual.

Save a few cases, the agency has provided neither a clear and concise nor an entrepreneurial process within which private sector players have felt comfortable taking part.

3.3.4 Techniques/Tools

In its most recent bid to create a strategically competitive framework, the MBTA made public a decision in March 1996 to turn its property management duties over to a private sector company. This company was awarded the right to oversee MBTA's 700 leases and 2,000 properties over a period of five years.

It was determined the by MBTA General Manager that 84% percent of the leases were underperforming and that, with this contract, the MBTA would realise savings of $4.2 million and increase revenue by $3.5 million[1]. The contract awardee, Transit Realty Services, an umbrella corporation, claims that the properties could be managed for $6.1 over the five years. This is the first time in the history of the MBTA that such an arranged has been established by the agency which would spend approximately $10.3 million in maintenance and rent collection over five year period.

3.3.5 The Success of Wellington Station

As early as 1969, the joint development potential surrounding the proposed Wellington Station site was evident to MBTA. A ninety acre site, it was located under four miles from

1. "Outsourcing Boston's MBTA, Public Works Financing, pp. 13, January 1996." on page 232

the Boston Central Business District. Good access to Interstate 93 and potential urban mass transit links allowing for arrival to Boston's CBD provided a sound basis from which to deliver a successful strategic node station. In addition, the site had a number of natural benefits including the mystic river basin and ample park space. There existed substantial reserve capacity with respect to in-place utilities and the site was already sixty percent owned by the public sector.

In an effort to consolidate and focus the eventual delivery of the station project, a comprehensive regional improvement program was undertaken which included 1969 legislation allowing for the lease of air space at the eventual station site. A comprehensive multi-use plan with provisions for housing, regional shopping, office space, hotel/conference facilities, a nursing home, and a transit garage called for an innovative scheme based on sharing facilities for parking, energy supply, and access.

The project was justified by those involved in its delivery as a means of increasing property value thereby increasing the local tax revenues and as a means of increasing both temporary and permanent employment. Within the context of the commonwealth, this project was hoped to be a model for the development of mixed-use communities and reduction on auto dependency. In doing so, it was believed that this would in turn stimulate increased ridership and provide a basis and impetus for increased investment from the private sector.

In order to push the project forward it was necessary for clear and concise signals to be sent by the Executive Office of Transportation and Construction (EOTC,) the Commonwealth of Massachusetts, and by the City of Medford that the private sector was a welcome partner at the table. As such financial and legal consultation was undertaken with developers and potential private sector players.

More than just a strong market and positive physical attributes, it was crucial for this project to have widespread community acceptance early on in the process. Above all, this would serve as a signal to private sector players that there would be few to no risks to project delivery associated with community opposition. Second, the comprehensive planning process took into account the prospects of long range demand for various land uses and made clear documentation of development constraints such as site access and soils and foundations problems. In addition, it was necessary to determine what premiums would be appropriate for the development of station air rights.

It became quickly clear that engendering support and interest in the private sector and controlling the process would require anticipation of the project with clear and understood policy decisions designed either to encourage or constrain future development, depending on the case. A series of informal meetings took place with potential private sector partners. Although not held by all, the following statement is representative of some of the views that potential private sector partners expressed initially with regard to dealing with the public sector:

> ...it's a great project, but I'm not interested in urban renewal, it takes too long and the state doesn't keep its commitments.

As a means of dispelling attitudes like this one and of creating necessary credibility within the private sector, the city opted to take lead responsibility in assembling land and initiating improvements to make the project more feasible and thus more attractive to the private sector. Preliminary responses by potential developers were then qualified and ranked by the public sector. As part of the effort to present a committed and consistent front to the private sector, the City made a committment to the passage of the necessary air rights legislation, the MBTA promised to build the parking garage, and the EOTC pushed the City of Medford to conduct a joint development feasibility study. In addition, to create

increased consolidation, an interagency cooperation agreement a was established. The Department of Public Works and the Federal Highway Administration jointly funded a Joint Development Reconnaissance Study. Finally, the MBTA made a firm committment to construct the Orange Line with a station at Wellington which would be accompanied by reconstruction of the Wellington Bridge, improvements to the MDC Park System, a new General Lawrence Bridge, and new routes at I-93 and Mystic Valley Parkway.

In order to determine the market potential of the site, a series of socio-economic indicators were examined including levels of employment, population and household characteristics, income levels, and a series of private sector market supports. These included the level of mixed-use development, retail development serving both the region and the local area, residential development, office development, and hotel development. With this information in hand, consultants were able to construct and study a series of potential scenarios of public-private station delivery. For the components to be delivered by the private sector, market analyses were conducted as this was essentially unknown territory.

Eventual proposals were evaluated using a set of evaluation criteria which were predominantly qualitative in nature. Receiving the greatest degree of emphasis amongst these was the strength that the project would add to the local economy and the local tax base and the level to which urban liveability was enhanced. Upon completion, private expenditure surpassed that of the public sector by a factor of over three to one ($89.1 million to $27.1 million.) During this process, several comprehensive plans were completed which included provision for the development of air rights over Wellington station.

In this case, the city of Medford demonstrated the positive results that can be achieved with aggressive pursuit of private sector involvement in the delivery of a station complex.

3.3.6 Lessons/Results

On the MBTA system, Wellington station is the best and most successful example of public-private delivery of a rapid transit station and creating a strategic urban node through a carefully planned and anticipatory process. This was a project which was originally embarked upon with the objectives of minimizing public sector investment in the form of subsidies while providing an environment in which maximum return on investment could be realised by the public and the private sector entities involved in the project. The most difficult aspect of the process to reconcile was dealing with the fact that the public and private sectors approached the same project with highly divergent perspectives and objectives. That is, while the public sector was focused on capitalising its investment, the private sector was more focused on operationalizing their investment.

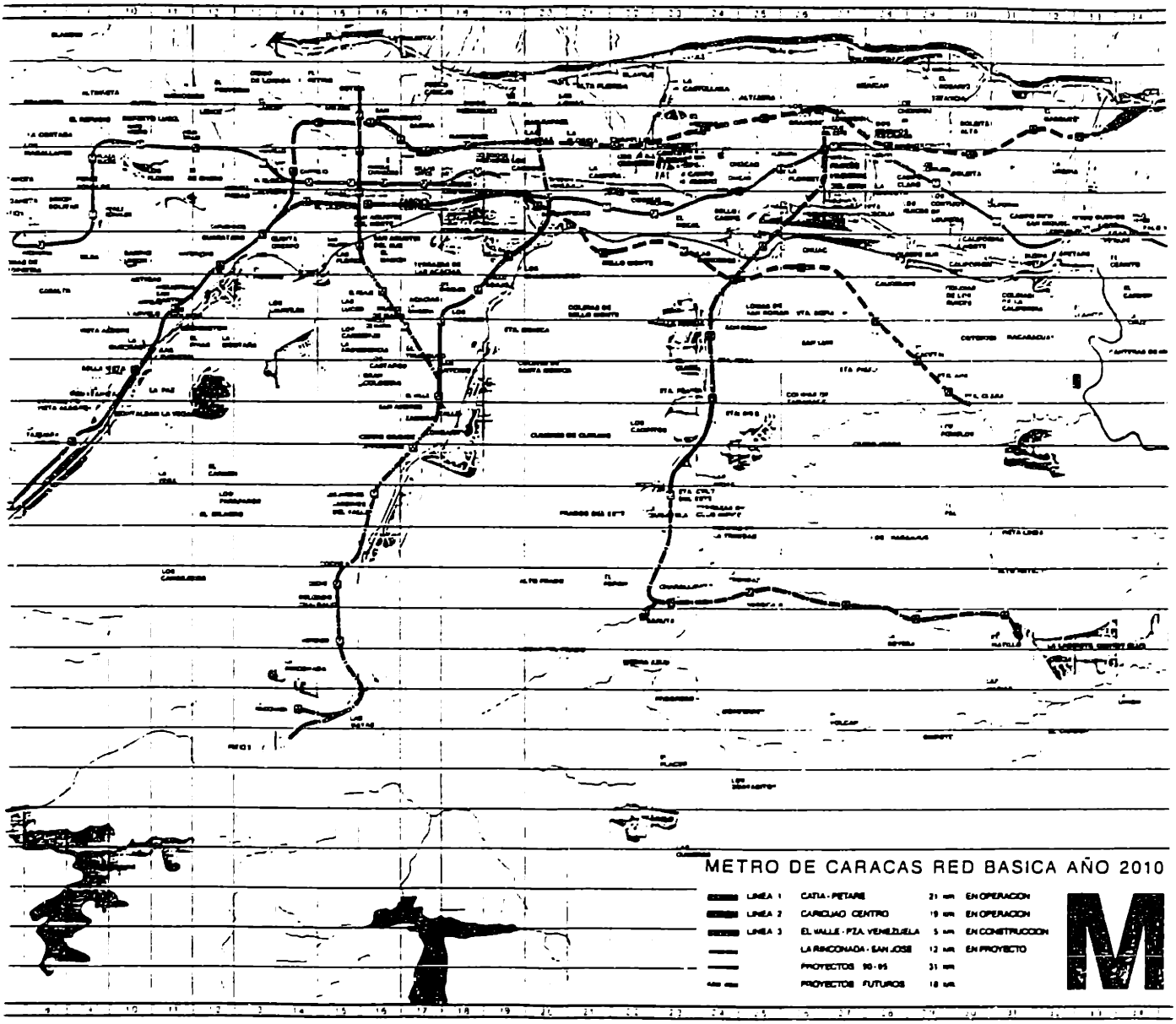

Figure 3.1: Metro de Caracas Rail System

3.4 Caracas - Metro de Caracas[1]

3.4.1 Background

The Caracas Metro is a 40 km rail system which opened for service in 1983. In 1994A 13 km extension was added. Before the advent of the Caracas Metro the high density linear valley in which Caracas is situated was already experiencing a gradual shift from the private automobile. The alternative at the time, however, was a chaotic and inefficient bus and "colectivo"[2] system.

3.4.2 Context

The Caracas Metro came into service in 1983 and currently has three lines in the greater metropolitan area with more than 30 stations and more than 30 miles of service. Together with a fleet of buses, the rapid transit system helps to transport approximately one third of Caracas' three and a half million inhabitants every day.

The city of Caracas sits in a narrow valley and has a high population density at approximately 200 people per hectare. The Metro alignment follows the valley contours and was designed to reinforce the linear settlement pattern of the city.

Although Caracas has a similar culture to San Juan, the city's have very different urban characteristics. Before the implementation of the Caracas Metro, the city of Caracas suffered severe congestion in the downtown core, which was exaggerated by the restricted linear growth pattern of the city which has been heavily conditioned by two primary geographical constraints: The Caribbean Sea to the North and the mountains to the south which, together form a small, constricted, and linear valley. These constraints contrast with San Juan's relatively freewheeling and unimpeded pattern of development that has expanded south and outward from the traditional centres of Old San Juan and Santurce.

1. Developed from interviews with "David Gouverneur. Senior Urban Designer, Metro de Caracas, personal interviews, 18-20 January 1996." on page 231
2. System of private privately run "jitneys," or vans

This constricted growth and the scarcity of land for new road construction and city expansion were the primary factors that led to the Metro as the best option to improve transportation and induce urban change with respect to city performance and environmental quality.

3.4.3 Strategy

Although state-controlled, the Caracas Metro Authority company is run in a highly entrepreneurial fashion. From the outset the Metro was meant to guide the already occurring decentralization taking place and to serve the highly congested central corridors. The history of Metro delivery has been one of extensive up-front station specific strategic planing, tight, highly centralised, government control and strong political will to push a process of locating stations at the densest and most active strategic nodes forward irrespective of cost, political, financial, or otherwise.

3.4.4 Techniques/Tools

The delivery process of the Caracas Metro stations has not incorporated the active exploitation of the potential for joint development as a key feature. However, the transit network has been characterised by a concerted planning effort to "up-zone" the station areas in anticipation of potential future private sector development and densification in the station vicinities.

From the conceptualization of the Metro to its eventual delivery and operations Metro planners did not address any specific policies for effectively engendering private sector participation in and around the station sites. Moreover, it was not deemed necessary to stimulate private investment and urban development in areas influenced by the alignment and station locations as it was assumed that this would evolve once the system was in place and operating.

In effect, the government of Caracas and the Metro de Caracas jointly adopted a "laissez-faire" approach to the private sector. It was expected that the private sector would respond in a "natural way" to the impact of the mass transit system and that there was therefore no need to envision or establish specific partnering tools or proposals.

The Caracas Metro was conceived, designed, and implemented during a period when the Venezuelan economy was extremely healthy and the public sector was not financially restricted in any way. This fact coupled with the physical nature of rapid city growth within tight bounds created the potential for the construction of a high quality underground metro which would almost be guaranteed user demand. Once the decision had been made to construct the Metro, the government committed itself to pushing the project forward with long-term sustainability of the system as the primary objective.

All efforts were made to align the system and select rapid transit station locations over the principal city corridors and nodes, regardless of the front-end capital costs or technical and managerial effort that this would entail. It was unanimously believed that the all around benefits of a successful transit system would more than justify these costs especially when the paralysis due to traffic congestion was taken into account.

When the Metro was in its planning stages, key decisions were made by the Caracas Planning Agency who, in conjunction with the Venezuelan Institute of Civil Engineers, developed a scheme entitled "Metrocorridor" which called for increased density over the already burgeoning nodal centres and city spines to reinforce the existing trends. Conventional wisdom was that, with accessibility to the Metro by the majority of the population, urban development would most definitely be triggered which would in turn serve to promote ever increasing ridership. The agency saw as its key role, in ensuring that this be the case, the careful selection of the densest nodes with mixed-use activity that would from a logical progression of interconnected strategic destinations.

3.4.5 Lessons/Results

Between 1983 and 1989, more than 70% of all non-residential buildings constructed in Caracas were within a five minute walk of Metro stations. Despite little active involvement with private sector players, The Metro has highly successful and active stations and station areas in both a physical and economic sense.

The affected municipal agencies have only recently begun to work together to develop an integrated metropolitan plan with which to make appropriate land use and zoning decisions vis a vis the rapid transit stations.

Despite a "laissez-faire" approach with respect to the private sector, Caracas in general and the Caracas Metro in particular have achieved several key positive results in the realm of urban development with private sector players at the fore.

First, significant development activity has taken place over stations and in vicinity of stations due to their immense value achieved through accessibility. In some cases, new sub central strategic urban nodes have been created. It is instructive to note that not one station location has escaped this trend.

Second, in the case of every station, real estate values have risen significantly. However, due to inflationary tendencies in Venezuelan economy over the past 10 years and devaluation of the Venezuelan Bolivar it is difficult to attribute specific percentages directly to the construction of the system.

Third, no taxation or valorization policy was implemented to capture the increase in private property values created by the public investment as there existed abundant federal funds at the time of system construction.

Fourth, no policy was established that was intentionally foreseen to stimulate private sector investment in and around the system. Urban changes were intentionally left to market forces and has occurred as expected. There are several examples of this throughout the

system. Significant levels of office space have been developed in the traditional centre of the city at the nodes of the Metro Capitolio[1] and Metro la Hoyada[2] stations. At the Metro Sabana Grande[3], residential activity has seen substantial growth in what was once a predominantly commercial and recreational area. Middle income housing has emerged at the Metro Palo Verde[4], a traditionally lower income area. In what were once exclusively mid- and high-income residential nodes at the Metro Altimara[5] and Metro Parque del Este[6], the introduction of urban mass rapid transit stations has spawned growth in hotel, office, and commercial development. Commercial activity has also flourished in former low income settlements including the construction of a mall near the Metro Pro-patria[7].

Fifth, no specific policy was implemented by the Caracas Metro agency or other government institution to acquire land before the system was in operation as a means of negotiating with the private sector with respect to urban development opportunities.

Sixth, while municipal planning departments introduced zoning changes allowing for higher density in the rapid transit station areas, none of these departments proposed particular urban design packages or development schemes which examined the potential trade-offs and/or benefits of negotiating with the private sector.

Seventh, to date, neither government nor the Caracas Metro Agency has entered into joint ventures with private sector partners, even on specific sites close to Metro stations which are publicly owned.

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1. Capitolio daily ridership ~ 50,000 passengers
2. La Hoyada daily ridership ~ 30,000 passenger
3. Sabana Grande daily ridership ~ 24,000 passengers
4. Palo Verde daily ridership ~ 17,000 passengers
5. Altamira daily ridership ~ 25,000 passengers
6. Parque del Este daily ridership ~ 13,000 passengers
7. Pro-patria daily ridership ~ 24,000 passengers

Eighth, the private sector had absolutely no financial or other role in the delivery of Caracas Metro infrastructure, whether related to the construction of lines or stations or as might be required for the development of private lots.

Nine, private sector players have not been involved in the development of parking facilities in the form of kiss-n-ride lots or in the downtown core to facilitate the shift from private vehicles to the Metro. Rather, Metro users generally use parking facilities at existing or newly constructed commercial, hotel, and theaters with significant parking facilities which are situated at the fringes of congested areas.

In summary, the Caracas Metro system has induced vigorous and wide spread urban development by the private sector just by locating its lines and stations in areas in which the market trends were bound to encourage such a response. The only active role that the public sector undertook to engender this response were changes in zoning (though not part of a comprehensive planning strategy,) and ancillary urban improvement projects such as the relocation, replacement, and construction of new infrastructure which was required to build the system.

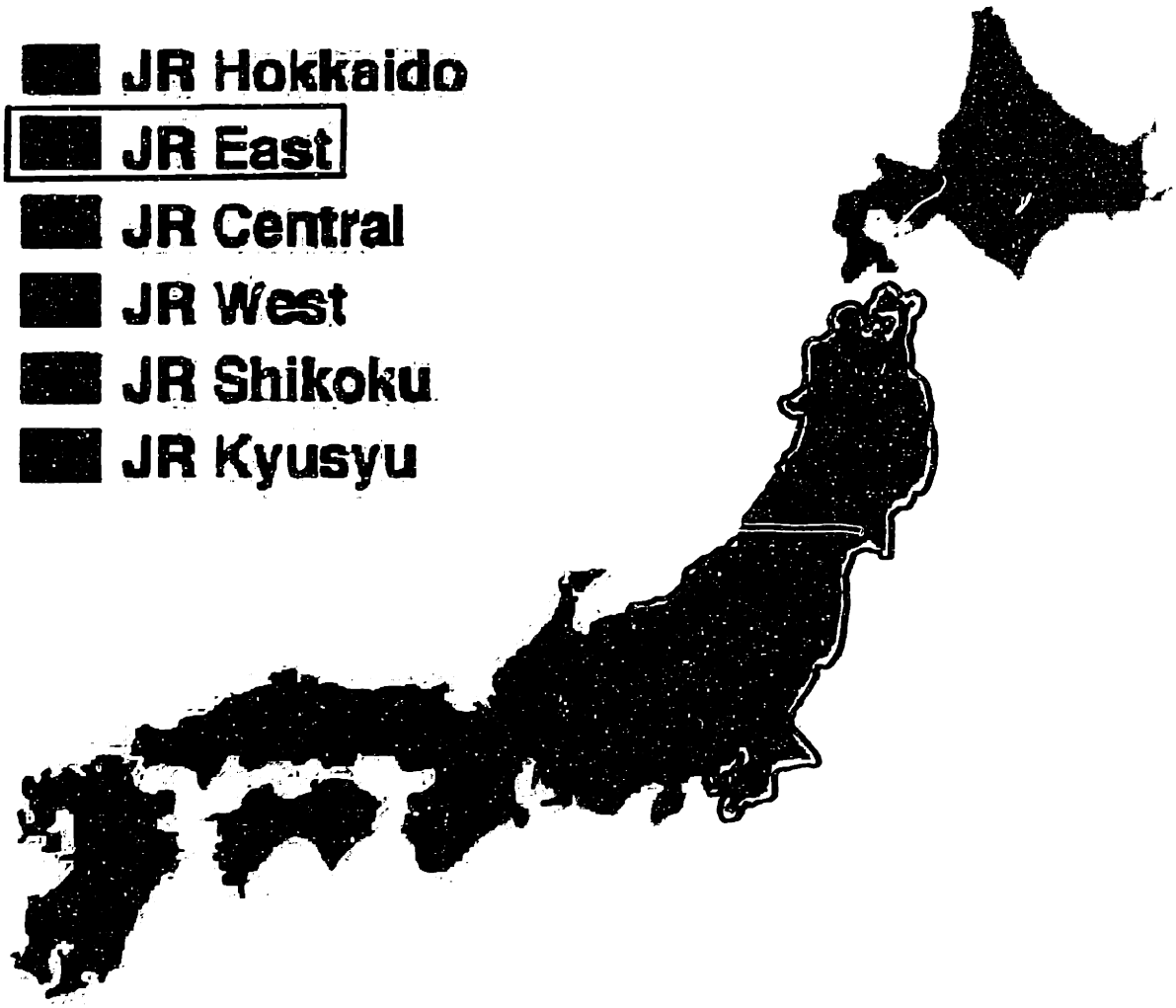

Figure 3.1: East Japan Railway Company Rail System

3.5 Japan - JR East Railway Company

3.5.1 Background

Commuter rail in Japan become a predominantly private sector market in the 1980's when national Japanese rail companies underwent a major shift from public to private ownership. The largest of these privatized companies is the East Japan Railways Company (JR East,) one of the JR Group, which was established as result of the privatisation of the debt-ridden and inefficiently run Japan National Railway Company. The privatisation of this company occurred in 1989 since which time it has turned into a highly integrated and profitable business. JR East is a major player in the Japanese commuter rail market which is almost entirely privately run. Urban subways, on the other hand, remain in public hands.

After privatisation took place in the late 1980's, one of the primary questions facing JR East officials was that of how to finance infrastructure costs without increasing its own debt as well as that of local and central governments. It was determined that the station could be a highly strategic vehicle with which to meet this objective. Since that time the station has become to symbolize much more than a simple means of conveyance. In the Japanese model, and for JR East in particular, the rapid transit station is a strategic urban node in the most complete way. It is a highly integrated multi-purpose complex in which transit is one of many different activities place.

3.5.2 Context

JR East is currently Japan's largest railway company with a stated mission when it was formed in 1989 to "ensure a reliable and economical means of moving customers in safety and comfort." It provides transportation services to a population of approximately 60 million people in metropolitan Tokyo and in 16 prefectures of eastern Japan. With its 1,708 stations JR East transports approximately 6.08 billion passengers per year.

In Japan, there are approximately 27,000 km of railway lines under operation serving 358 billion passengers per year. There are five types of railway operating organizations: the JR companies; local governments; private railway companies ("mintetsu;") companies jointly invested in by local government and private companies ("third sector" entities[1];) and the Teito Rapid Transit Authority.

Until the late 1980's the only player in the commuter rail market was the nation-wide Japanese National Railways Company (JNR.) Due to huge accumulated debt and labor problems, JNR was privatized and divided into six passenger companies (the JR Group) in 1989. This has occurred, in part, due to increased operating efficiency. However, with particular focus placed on the JR East stations as strategic revenue generators, the company has managed to achieve a host of goals and objectives which stem from its "Station Complex Concept." In this model the station has become a sophisticated urban tool which is whose role in its zone of impact is described by JR East as:

- The Gateway to Surrounding Areas
- The Nucleus of Urban Development
- The Focus of Local Activities
- The Source of Information and Culture
- The Symbol of the Community
- Shopping
- Office and Hotel Space

The JR companies run trunk lines between cities in Eastern Japan as well as intra-city lines and are responsible for a total of 20,251 km of rail lines. Almost three quarters of the revenue for JR East comes from the Tokyo metropolitan area where population density and road congestion are such that three out of every four trips are made by train.

1. "Third sector" entities which are joint venture corporations established by private sector parties set up specifically to coordinate with the public sector. These corporations are often jointly owned by local government, industry members that are related to or beneficiaries from the station project, and leading Japanese companies, typically financial institutions or power companies. One of the advantages of this type of cross-disciplinary and cross-sector organisation is the ability to internalize gains from land development and to cross subsidise its benefits for other uses such as construction or operations.

3.5.3 Strategy

JR East is a company that views itself as much more than a transit company. Its stated goals specific to the delivery of rapid transit stations are to create new landmarks, to enhance the standard of living, and to truly influence urban change in a positive way in eastern Japan.

Japan has a long history and tradition of delivering and maintaining mass transit which is highly integrated with its surrounding urban development. As part of this effort, JR East has sought to involve a host of the private sector partners who generally have more financial flexibility than their public sector counterparts. JR East has a much broader view of the rapid transit station than most North American transit agencies which is, in large part, due to business practices which are unique to Japan and integral to Japanese culture.

While JR East is first and foremost a rail transit company, it is one of a number of closely affiliated companies from a diverse set of industries that work together to deliver the rapid transit station complex as an unit which integrates transit, culture, recreation, business, and residential functions. The successful utilization of this integrated strategy is due to the company's in-house access to a broad array of core competencies which are by no means limited solely to transit service provision.

3.5.4 Techniques/Tools

Taxations or subsidies from the private sector are utilized often and successfully by local Japanese governments in rail and rail station construction. These are either in the form of direct subsidies for construction and operations or low-interest loans from the private sector to the agencies themselves. In the case of new extensions, the central government will subsidise the construction not of stations but of the underground lines. These subsidies cover seventy percent of the costs of construction and are generally paid in ten installments which commence only after service has begun. Local governments are

expected to pay one half of this subsidy and will sometimes set up "Special Railway Funds" through tax increment financing.

Cost-sharing techniques under the administrative guidance of local governments is applicable only to what are known as "New Town Railways." This was established as policy in 1972 resulting from a joint effort by the ministries of finance, transport, and construction. It is a series of clear and explicit guidelines which govern the interaction, financial and otherwise, of the key public and private sector players. Developers are expected to pay fifty percent of the cost to deliver ground level infrastructure. They also must transfer rail rights-of-way to the eventual operator at its original value if the land happens to be in the designated "New Town Area." If, however, the land is needed or required but does not lie in the "New Town Area," the operator is responsible for its acquisition. However, the developer must pay to the operator the difference between the original price of the land and its actual purchase price.

Station construction in Japan is often realised through voluntary cost sharing schemes between community organisations and railway operators. Community organisations are typically comprised of municipal governments, housing authorities, private developers, and "land readjustment cooperatives"

JR East commonly uses value capture as a justification for integrating the delivery of a rapid transit station. It is measured using a sole comprehensive index which accounts for all benefits from increases in accessibility to increases in business opportunities afforded by the station to its catchment area. This process is facilitated by the internalization of benefits through third sector entities.

One of the key differences between urban mass transit station delivery in Japan and the U.S. is the fact that, in the case of Japan, land development is carried out by railway companies or by close affiliates. This means that development and railway operations are

essentially performed by a single entity which allows for complete integration and the ability to internally cross-subsidize all activities. This is a common structure for Japanese rail companies and began as a phenomenon approximately fifty years ago when most of the fourteen major private railway companies in Japan were founded.

Much as with the "streetcar suburb" companies in the United States in the early part of the twentieth century, these companies must create demand for their rail services that they deliver to initially less populated and less developed areas. Thus, in addition to providing rail services, it is necessary to take an active and lead role in the development of residential areas in order to increase ridership.

This means that, from the start, the planning and implementation of land development activities are intimately tied to the eventual operations of the system and the stations. This type of integrated, life-cycle arrangement is a much more accepted and likely model in Japan than in the U.S. as Japanese tradition has tended to focus to a much greater degree and more aggressively on organisational growth than on increased profits. These goals are generally set through affiliates, or "Keiretsu." Each of the major rail companies is a member of a Keiretsu. These affiliated are described in more detail in the following section.

JR East has developed a highly diverse real estate operation which has undertaken the development of many new communities including "Fioret Kitsuregawa," its first residential development in Tochigi completed in 1988 which is currently home for roughly 1,000 families. The real estate arm of JR East is also owner and proprietor for over 2,000 hotel rooms and, as such, is one of Japan's leading operators of city hotels. The JR East conglomerate also plays a central role in cultural and community life in eastern Japan. 1987 saw the world's first ever station concert in JR East's Tokyo station. In addition to concerts, which now occur on a regular basis, this station is also home to the Tokyo Station Gallery which is managed by the East Japan Railway Culture Foundation.

JR East has, in recent years, sought for alternative means of getting more mileage out of its rapid transit stations. Through stores that are directly operated by the company and which are housed in station buildings managed by subsidiaries and affiliates, JR East has realised substantial revenue. There are currently over 350 stores under the auspices of JR East at most of its major stations. One of the fastest growing chains in Japan is the "JC" chain of convenience stores which account for 100 of the JR East retail stores.

With holdings of approximately 22,000 hectares, JR East is one of the largest corporate landholders in Japan, allowing the company to aggressively pursue and successfully implement and manage integrated strategic urban nodes centred around their rapid transit stations. JR East is a company that is constantly undertaking strategic planning efforts with regard to the future expansion of its real estate business. The real estate arm of JR East emerged as a separate but affiliated entity as a result of the 1989 privatisation of JNR. Although it is essentially a separate entity, its operations are viewed as essential and fundamental to the overall success of JR East's station delivery process.

To this end, in order to maintain the highest level of skill in delivering such projects, JR East has established its "Professional Property Appraisal Training Program." This is an intensive and ongoing training program designed to ensure that employees have the necessary expertise and skills necessary to make accurate appraisals when buying and selling land. Furthermore, company employees are periodically shifted from one group to another so that negotiating skills and understanding of the transit/development connection for strategic urban node development is present at all levels of operations.

3.5.5 Special Context: Keiretsu

To understand the remarkable strength and success of Japanese companies today, it is necessary to examine the functions of the "keiretsu", or business group, and its impact on

the present and future strength of Japanese firms. Before World War II several large industrial groups which were centrally owned and controlled dominated Japanese economic activity. After the war these groups dissolved as they were in conflict with anti- monopoly regulations. Since that time a number of major groups, or keiretsu, have reformed. Each group is clustered together in voluntary association with a central bank at the core.

The companies in each cluster are drawn from every industrial sector. Although a keiretsu is a single entity, each company within the group has its own separate owners, shareholders, and a board of directors. In general there are twenty or thirty member companies in a keiretsu with varying degrees of affiliation.

There are four mechanisms which hold affiliated companies together: cross-shareholding, commercial transactions, personnel movement, and strategic coordination.

Each company is likely to own small amounts of the shares of many of the other companies. In all cases, controlling shares are held by member companies and are held long-term. Thus, what happens to prices on the stock exchange is of little consequence as the majority of shares are held firmly and securely by inside members.

As much as fifty percent of sales volume within the family of firms is distributed to others in the same group. Companies purchase supplies, raw materials, and equipment from each other. Cross movement of personnel, particularly senior personnel, makes it possible to transfer expertise when member firms move into new areas of operation.

The CEOs of the 25 most strategically important companies will meet regularly to plan and discuss their business strategies. They give assistance to each other and they are kept informed about projects which affect the whole group. Intercompany accounts can be stretched over a longer term to provide extra liquidity. In an informal sense all other firms in the group can subsidize a company in an important strategic position.

The role of the main bank which exists at the heart of each keiretsu is qualitatively different from the role of commercial banks elsewhere. In the case keiretsu, the bank stands as a virtual guarantor of the long term liability of the companies within its own group, forming a long term supportive relationship.

If a company gets into financial difficulty and cannot meet its interest and principle repayments the bank will allow deferment of repayment and will continue making new loans to that company. Even when a company is no longer financially viable, the bank does not foreclose, but engineers a merger to draw the ailing company under the wing of one or more of the other members in the family.

In return for long term security and support the bank at the centre of the keiretsu gets a great deal of control and influence. Traditionally many Japanese companies have been financed almost entirely by bank loans. The bank participates directly in corporate management decisions, and has implicit veto power. Companies can undertake risky investment to develop new product lines with other keiretsu members providing subsidies, technological know-how, as well as captive markets. The keiretsu have the ability to link together different products and services while enabling each individual company to specialize in what it does best.

The result is that JR East, part of one of the largest Keiretsu in Japan, has the capacity to create truly integrated rapid transit station projects through solid financial backing, intense up-front integrated planning, consolidated land ownership, and the ability to cross subsidise and internalize the costs of construction. JR East is a member in a keiretsu which combines businesses from a variety of industries including transportation, retailing, real estate, and leisure and recreation. This has provided a highly solid and integrated framework from which to deliver rapid transit stations that are "value-engineered" to a significant degree.

JR East is regarded as having delivered some of the most successful rapid transit stations in the world. The company owes its success, in large part, to its "Station Complex" concept (see "JR East - The Role of the Station" on page 106) In the JR East model, the station is specifically seen as a starting point for and an integral component of large-scale urban redevelopment projects.

One of the most ambitious projects that JR East has undertaken to date is the Ikeburo Metropolitan Plaza. The JR East real estate arm owns and financed the construction of this facility which is a 22 storey complex housing office space, shops, and cultural facilities. Completely embedded in the complex is the JR East station which is located in dense downtown urban core in Tokyo. The complex was implemented as part of concerted effort on the part of JR East to further its prototypical model of station delivery of a means of enhancing the creation of a dense and active destination with sustainable growth. Since every function necessary to achieve the creation of a sophisticated and integrated strategic urban node is in-house, the company is able to simultaneously design and construct the

complex with coordination of real estate development and rail activities occurring in a seamless fashion.

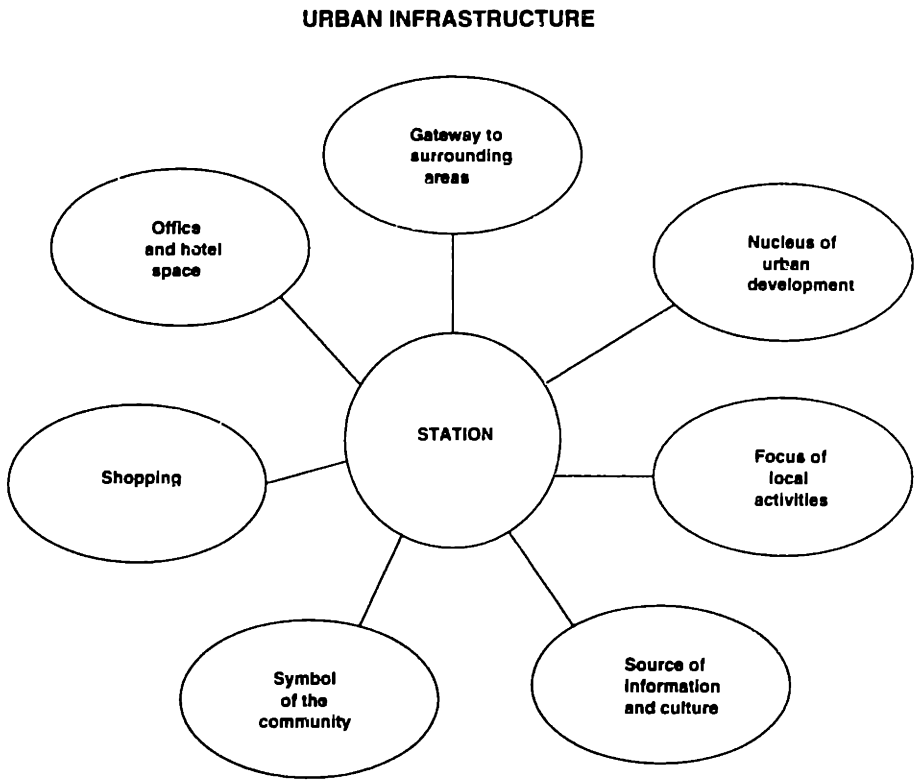

Figure 3.1: JR East - The Role of the Station

This station is an impressive multipurpose and truly integrated strategic urban node. Revenues generated by the station have more than offset its operations and have been channelled back into it's maintenance and rehabilitation as well for the construction, maintenance and operations of other stations on the network. With this heavy cross-subsidization of rapid transit station activities, the company is currently able to undertake a substantial upgrading effort in anticipation of significant ridership increase during the winter Olympics in Nagano.

Not only is JR East a member of an affiliated group of companies but it is also an umbrella for non-transit branches which complement the furthering of its broader goals

and objectives. For instance, in 1992 the East Japan Railway Culture Foundation was set up through a grant from the East Japan Railway Company to focus on the utilization of JR East stations as tools for promoting regional culture. The stated mission of this foundation is to "create a humane railway and transportation culture. Within this context, the JR East Company has embarked on ventures which, by North American standards, might seem far afield of activities related to transit. However, these activities have had significant influence in the creation of highly successful and integrated strategic urban nodes.The Tokyo Station Gallery, opened in April of 1988, displays paintings, sculpture, posters, photographs, and a variety of works in various other media. The Gallery offers lectures. In line with a philosophy of investing in Japanese culture, the Gallery provides opportunities for young Japanese artists.

The Ikeburo is one of many East Japan Railway stations that house a large number of artworks that are rotated from station to station. The galleries have been established as part of East Japan Railways Company's efforts to cooperate with local governments in the promotion of regional culture. In July of 1987 held the first of what have become routine large-scale station concerts. Today, about 1.8 million passengers pass through the station each day.

3.5.6 Lessons/Results

The integrated approach taken by JR East is effective in its ability to provide demand for rail services through development and, conversely, to enhance its development with provision of rail service. The most significant effect that this engenders is the creation of bi-directional demand during both peak and off peak travel periods. Crucial to the ability of these companies to undertake and deliver these projects is the positive and facilitative role that government assumes. As part of this effort, local governments all have administrative infrastructure with the capacity to appraise projects and perform both implementation and

management roles.

Of transit agencies around the world seeking to deliver rapid transit stations as strategic urban nodes, Japanese companies are the most ambitious. This is due, in part, to a unique Japanese sensibility toward the role of rapid transit stations in the urban fabric. It is also due to the fact that companies such as JR East have sophisticated real estate operations with which the cost of rail construction can be internalized in the cost of land development. Thus, when seeking to link satellite communities with rail lines, these costs are absorbed as part of the development costs of new towns much in the same way as would be other necessary and integral infrastructure such as roads and sidewalks.

It is important to note that in Japan urban mass transit is seen and dealt with as an absolute necessity and not simply a luxury or an alternative to a small sector of the population that either will not are cannot utilise the automobile as a primary mode of transit. In Tokyo alone, where the population has hovered around eight million for the past twenty years, roughly twenty six million passengers per day utilise urban mass transit. In this same eight year period, the population has increased by 160 percent or twenty million in the areas surrounding Tokyo.

The key lesson to be garnered in this case is the break down of the barrier between "public" and "private." In the case of JR East rapid transit stations there exists no such boundary as the company, in control of the entire station delivery process of the station as well as complementary real estate development with in-house expertise and resources, *is* private. The result is that the company has a vested interest in making not just that the station facility is properly engineered or that the cost of its construction is minimized but that the entire complex, consisting an entire zone of impact with the rapid transit station facility at its core, functions as an integrated unit where the individual parts complement each other. Thus, by defining the "problem" in a complex and imaginative way within the con-

text of a highly integrated functional group, the JR East Company is able to capitalise on the inherent advantages of the station as a strategic urban node with multiple functions far above and beyond simply conveying passengers from inside to outside the transit vehicle.

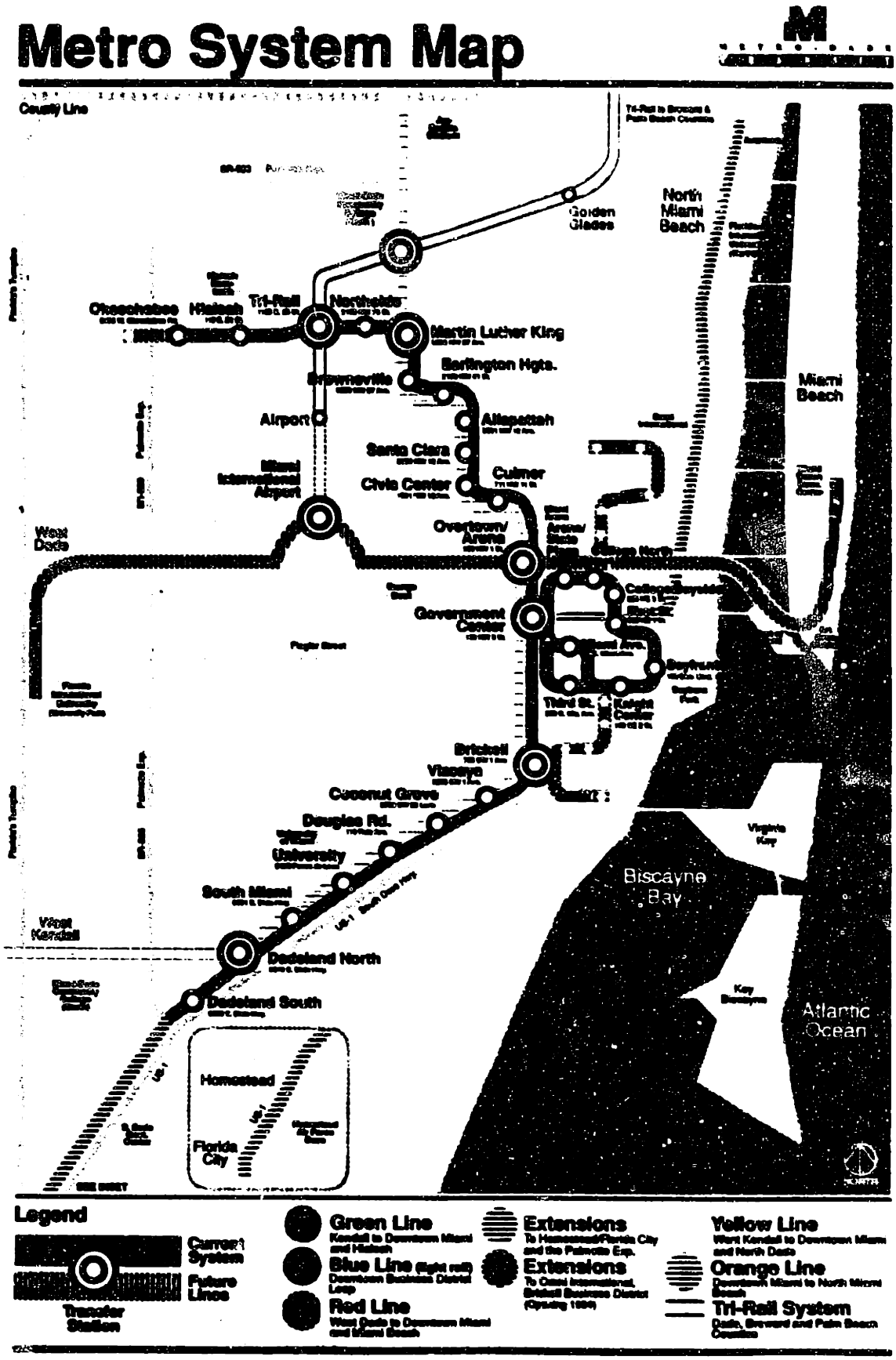

Figure 3.1: Metro-Dade Transit Rail System

3.6 Miami - Metro Dade Metrorail

3.6.1 Background

Operations for the 21 mile Miami-Dade Metrorail began in December 1984. Planning has taken place in Miami at the County-wide level and is coordinated by the Metro-Dade MPO. This has provided the opportunity to elicit systemwide planning which has helped the agency realise more $20 million in joint development lease revenues despite far less than expected levels of ridership.

3.6.2 Context

Dade County is home to 26 municipalities which make up Greater Miami. Formally known as "unincorporated Dade," it has a population of over 2 million in Greater Miami alone. Miami has many similar characteristics to San Juan. First, as in San Juan, tourism is a significant force in the local economy. In 1992, 11.1 million people visited Greater Miami. Second, with more than 30 hospitals Miami has one of the best health care industries in the United States. San Juan has been establishing itself as a major medical center of excellence in the Caribbean and Central American regions. Third, like San Juan is to the Caribbean, Miami is one of the major ports on the Eastern Seaboard of the U.S.

3.6.3 Strategy

The Miami Metrorail Joint Use Policy was established in 1981, the year in which it s Dadeland stations began operations. It was based on the premise that it was in the best interest of the community at large, and the Metrorail system in particular, to encourage the joint utilisation of transit properties for office, commercial, residential, and other development. The stated objectives of the policy are:

- to promote desirable economic development
- to recapture previously expended land acquisition costs
- to promote high density land use at appropriate station sites leading directly to

greater transit ridership

- to offset portions of the Metrorail capital cost through private construction of parking and ancillary facilities
- to promote economic benefits directly attributable to Metrorail investment
- to support the County Comprehensive Development Master Plan (CDMP) by encouraging cluster development at Metrorail station areas

Under the Metrorail Joint Use Policy, potential private sector partners are selected competitively on the basis of expected financial returns from a given project, design, uses, and community integration, among other criteria. Developers are first screened out utilising stringent requirements for development experience and financial resources. As part of a submitted proposal, developers must include information regarding expected annual rent, percentage payments, and a financial deposit to the County.

Proposals are then judged based on a set of selection criteria which include the following:

- the proffered financial return to the County
- the proposed participation in Metrorail capital costs
- the overall design solution, including conformance with joint use criteria and Master Plan Development Standards
- the overall integration of the proposed project with Metrorail including system construction, operation, and safety requirements

Techniques/Tools

In the late 1970's, the Board of Metro-Dade County Commissioners established a series of "rapid transit zones" in order to create an inventory of surface, subsurface, and air rights lease and/or sale possibilities along the Metrorail corridor followed by the establishment of the Metrorail Joint Use Policy in 1981 to provide the framework for joint use and joint development projects in anticipation of requests from the private business community looking to be involved in the delivery of the Metrorail system. This policy, intended to encourage and promote private development in conjunction with the Metrorail transit system, placed special emphasis on Rapid Transit Zone property owned by the County. To

achieve these objectives in conjunction with the transit agency, the Board of County Commissioners in Metro Dade was given significant authority by the state of Florida:

> ....to sell and convey any property real or personal, and to lease real property, belonging to the County, whenever such board shall determine that it is in the best interest of the County to do so, to the highest and best bidder for the particular use it deems to be highest and best...

The County also received the rights to exercise several options with respect to public mass transportation projects through a series of amendments to the Florida State Statutes including the right:

- to enter into all contracts and agreements to perform functions necessary and incidental to the performance of its duties and to exercise its power
- to grant franchises to individuals and parties for the operation of concessions on and in connection with public mass transportation facilities
- to pledge revenues arising from the operation of the projects to pay for cost incurred in sustaining said projects and to adopt separate budgets for such operation without including them in the general County budget.

At the local level, the Metro-Dade County Comprehensive Development Master Plan (CDMP) provided the general policy framework for the implementation of development projects in conjunction with the Metrorail system. The plan specifically called for the creation of high intensity activity centers related to the county-wide transportation network, linked by urban mass rapid transit station facilities. More precisely, the plan provided a framework with which to identify transit joint development opportunities, evaluate the feasibility of joint use opportunities, and sell or lease properties and air rights on and over public transportation facilities. The specific local basis for Metrorail Joint Use Policy is found in Metro-Dade County Ordinance No. 78-74, "Fixed Guideway Rapid Transit System Development Zone:"

> .....the Stage I fixed guideway Rapid Transit System may only be planned, engineered, implemented, and administered on a County-wide basis, in a manner which will: (a) provide maximum opportunities for development to serve

> as financial assistance to the system, and (b) provide incentives for joint development with the private sector.

3.6.4 The Case of Dadeland North Station

In 1981 a joint use prospectus was issued by the Dade County Transportation Administration which outlined the scope of a project for a ninety year lease at Metrorail's Dadeland North Station. The project was to take place within a corridor that had been designated by the Board of County Commissioners as a "rapid transit zone" which included the surface, subsurface, and airspace along the transit corridor. The lands specifically included within the Dadeland North Station Area were designated as a Rapid Transit Development Impact Zone.

The project was for the lease and development of 16.5 acres at the Dadeland North Metrorail Station in Dade County. The station is bordered by U.S. 1 to the east and the Florida East Coast Railway on to the west. North of the station is the Snapper Creek Expressway. At the time of the prospectus, the station was the second from the southern terminus of the State I Metrorail system which consisted of 20 stations, was 21 miles long, and due to open in mid 1984. The project included a kiss-n-ride lot and a bus bay facility.

The prospectus called for proposals to lease and jointly use the property. The authority clearly sought to control of the process by maintaining ownership as delineated in Article 4(h)(i) of the lease agreement:

> Dade County retains all of its sovereign prerogatives and rights as a county under Florida laws and shall in no way be estopped from withholding or refusing to issue any approvals of applications for building, zoning, planning or development under present or future laws and regulations of whatever nature applicable to the design, construction and development of the Buildings and improvements provided for in this Lease.....

In Article 4(h)(i), the Agency made clear its desire to create a cooperative relationship with committment to the development of a fruitful and symbiotic relationship:

> Landlord and Tenant shall utilize their best efforts to induce the Florida Department of Transportation to allow usage of a portion of that Department's right-of-way for the Snapper Creek Expressway.....

As the Metrorail system is the first of its kind in Miami, it was necessary for the agency to exhibit committment to potential partners. For instance, the developer's design, once approved by the Authority, would have protection against unexpected changes and committment to consistency throughout the life of the project, as shown in Section 4.08:

> Landlord hereby acknowledges....that the Station Plan shall not be changed in any material way which would materially and adversely affect the Tenant's developing the Demised Premises in accordance with its tendered Concept Plans.

In an effort to create a flexible delivery environment and to allow for market forces to play a significant role in the evolution of the project, the Authority opted to include provisions for the Tenant to develop according to changing feasibilities as dictated by market forces in Section 4.09 (b):

> Landlord hereby acknowledges that the Development Rights established by this Article provide projected development levels and Tenant,...,shall be entitled to develop pursuant to the minimum Concept Plan or the maximum Concept Plan, and each Phase shall be developed according to one plan or the other as tenant selects at the time it submits its Preliminary Plans for each Phase. Tenant shall be entitled to make changes in the square footage levels of any particular Phase (so long as the minimum building areas are completed as required by the time frames....), to change the uses from office to retail to hotel to residential, or any combination thereof, and after the commencement of the construction of Phase I, ... , to change the order of the development of the Phases.....

The Authority recognized that its inherent capabilities were in facilitating the process. What it brought to the table was the fact that it was in a much better position than private sector players to move the process forward within with regulatory and policy realm. Section 4.09 (b) states that:

> Landlord agrees that, while it is the responsibility of Tenant to prepare all approvals as may be required for the Permits and/or approvals as may be required for the development of the Demised Premises, Landlord will cooperate with Tenant in connection with obtaining such Permits and/or Approvals. Such cooperation shall include executing, in timely fashion, such documents prepared by Tenant as may be reasonably required of Landlord to accomplish the foregoing, and giving testimony before any governmental authority including any review required for any DCI or DRI. Landlord agrees to grant permits for electric, telephone, gas, water sewer and such other public or private utility lines and utility facilities and curb cuts as may be reasonably necessary for the construction of the Buildings and operation of the Demised Properties.

The lease granted the developer for a period of ten years the exclusive right to construct connections above grade to the Station and Demised Premises. Furthermore, the Agency practically created a station area non-competitive niche for the selected developer. Within this structure, the Authority retained the right to:

> authorize the construction, or construct itself, at, above, and below grade connections between the station and any facilities or improvements owned, provided or utilized by public or governmental agencies provided that the facilities so connected shall not contain any commercial use that may compete with any use that may then or in the future be established by Tenant, except that Landlord shall have the right to have minor, incidental and insubstantial chimerical uses in such facilities.

After enjoying a ten year period of exclusive rights, the developer would then continue to have the same connection rights except that they would be non-exclusive, provided that no connection be made to any property owned wholly by the developer without the developers approval.

A key move which served to create a single point of access with the necessary authority to undertake effective deal-making appeared in Section 4.19:

> The County Manager.....shall have the power, authority or right,..., in its capacity as Landlord...to:

> (a) review and approve documents, plans, applications, lease assignments and requests required or allowed by Tenant to be submitted to Landlord....; and
>
> (b) consent to actions, events, and undertakings by Tenant for which consent is required by Landlord;
>
> .....
>
> (e) sign and all documents on behalf of Landlord necessary or convenient to the foregoing approvals, consents, and appointments.

The project, as outlined in the 1981 joint use prospectus, was set to be a mixed-use project under the ownership of Metro Dade County. This project was let as a clear component of Metro Dade County's desire to reaffirm its committment to encouraging and actively pursuing joint use projects on Metrorail property for office space, commercial space, residential development, institutional properties, and other projects.

The agency's stated objectives in this effort were to develop transit property in order to increase ridership, recapture its land acquisition costs, enhance local tax bases, increase accessibility, and share in the capitalization of its parking facilities.

The Authority had decided, from the point it located the station, that it intended to deliver and create a strategic urban node at Dadeland North Station. A 1978 Transit Zone Ordinance was followed in 1981 by the Dadeland North Station Area Design and Development Plan (SADD.) For reasons associated primarily with poor systemwide ridership and a weak local real estate market, the original expectations for the evolution of Dadeland North station area as a strategic urban node have never materialized. Due, in part, to the lack of an effective feeder service and poor station access, actual daily ridership fell 50,000 below the projected figure[1]. In addition, the lack of this station's success is due to a number other reasons. First, the station area development was not already of a transit friendly nature as it had been designed purely to accommodate the automobile with exten-

1. Projected ridership = 200,000 pax/day; Actual ridership = 150,000 pax/day

sive surface parking and street coverage. The station, which has average daily boardings just below 5,000 passengers, has evolved as more of a kiss-n-ride transfer location.

By contrast, the most significant strategic nodal project to date on the Miami Metrorail system is the Datrans Center which is a major mixed-use station complex at Dadeland South Station. This project, which houses office, retail, and hotel facilities has a 1,000 space parking garage provides the transit agency with $500,000 or 4% of gross income annually in lease payments. The Datrans Center is a 1.6 million square foot development which sits on a one acre lot originally dedicated for station use. Through shared parking, energy, and ventilation facilities, the project helped the agency realise $4 million in savings.

The Dadeland South Station is found at the southern terminus of Stage I of the Miami Metrorail rapid transit system which is found in unincorporated Dade County. The site was and is characterised by numerous intensive land uses and easy accessibility to most of the county. The system opened in 1983, two years after the opening of the Snapper Creek Expressway in 1981. With increasingly younger and more educated population that had doubled to over 6,500 over the 1970's, this was Dade County's fastest growing community. It was also the major commercial activity center of the region with numerous office buildings and freestanding businesses.

Already a regional center, this was a site that had many essential factors for successful development and redevelopment in conjunction with Stage I of the rapid transit system. In the vicinity of the station, residential and commercial land uses dominated. This densification had been influenced by the Comprehensive Development Master Plan. Moreover, the community had been designated one of seven "Metropolitan Diversified Activity Centers" in 1975 where a mixture of commercial, residential, office, cultural, entertainment, recreational, and supporting facilities was called for. At the time that the project was let, the

existing buildings were in generally good condition and infilling of higher density development into the spaces between the existing Dadeland regional mall built in the early 1960's and the apartment and office buildings surrounding the mall.

Figure 3.1: Toronto Transit Commission Rail System

3.7 Toronto - Toronto Transit Commission (TTC)

3.7.1 Background

Metropolitan Toronto is Canada's largest and most important centre of business and finance. Founded in the early 1800's, the city granted the first franchise for a street railway in 1861. Almost sixty years later, in 1920, the Toronto Transportation Commission (TTC) was established which, in 1921, took over and amalgamated nine privately owned systems.

During the Great Depression and later Second World War, heavy burdens were placed on the ability of the municipalities to finance themselves as they had to cope with general welfare costs and assistance to the unemployed. The war put an end to the depression and migration from rural to urban areas increased. The municipalities were thus faced with the problem of extending services to accommodate this increased population. Ironically, the one municipal service that prospered during the war years was public transit.

When Metropolitan Toronto was founded in 1953, public transit was one of the essential services identified by its founders. The following year on January 1, 1954, the Toronto Transportation Commission was renamed the Toronto Transit Commission and public transit was placed under the jurisdiction of the new Municipality of Metropolitan Toronto. The assets and liabilities of the TTC and four independent bus lines operating in the suburbs were acquired by the Commission and in 1954 the TTC became the sole provider of public transportation services in Metro Toronto. In that year, Toronto was the first North American city after World War II to add rail rapid transit. The first phase of the alignment was constructed under Yonge Street, the city's busiest and most consolidated streetcar corridor.

Toronto has a strong transit tradition that predated the subway which was based on travel by streetcar, by bus, and by suburban rail lines. The city experienced high regional

growth in the 1950's and 1960's both economically and demographically creating significant demand for new urban housing. Contemporaneous to this population influx was the region's transformation from an economy that had been based primarily in agriculture, the exploitation of natural resources, and manufacturing to a public and private service sector economy creating significant demand for new urban office space.

3.7.2 Context

The Toronto Transit Commission (TTC) serves Metropolitan Toronto's 632 square km area with over 2400 transit vehicles, which include subway cars, streetcars, and buses. More than 1.2 million passengers use the system each working day. The 1994 annual total ridership was 388.3 million passengers. The subway is the backbone of the system with over 200 bus and streetcar connections. 1970 was the last year that fare box revenues met operating expenses. In 1988, TTC ridership reached a record level of 463.5 million. The 1995 operating budge was CAN$665.8 million for conventional transit expenditure with fares of CAN$449.8 million.

Two traditional, heavy rail subway lines service 60 stations. One line, the Bloor-Danforth, runs east and west. The other, the Yonge-University-Spadina line, runs north and south with three connections to the Bloor-Danforth. Another line, a light rail transit service known as the Scarborough Rapid Transit (SRT), connects with the Bloor-Danforth and serves Metro's eastern- most vicinity with six stations. The whole system connects with the regional system known as GO Transit (Government of Ontario Transit).

3.7.3 Strategy

The TTC owes its early success to the fact that it approached its transit system as exactly that: a *system*. However, fundamental to this effort was that it was, first and foremost, a system of interconnected *discrete elements*, each one regarded as an independent

strategic urban node. Thus planning of the original alignment was cognizant of the important and necessary links that exist between individual stations and their immediate surroundings.

The TTC is one of the few transit agencies in North America that made extensive early use of right-of-way acquisitions as a means of spurring private sector involvement in its stations and station areas. In fact, this agency has had what is probably the most extensive program of joint use of transit facilities for private development. Once it has the right of way, the agency works to establish incentive programs such as density bonuses.

In the 1970's, the agency set about an aggressive effort to issue annual long and short term leases as well as selling station area properties on its already constructed alignments. The emphasis at the time was on long-term land leases. The agency felt this to be a sound strategy for two key reasons. First, the land would eventually be reverted back into its complete possession at the end of the lease term. Second, by assembling and owning development parcels itself it reduced the need for developers to assemble financing for significant front-end costs during a time when the real estate climate was not healthy.

There are several reasons why Toronto has chosen specifically to utilise its subway system to create and reinforce its network of compact, mixed-use nodes, and corridors which act as the central physical organizing mechanism of the city's urban form. The primary reason is that high mixed-use density, more often than not, means high ridership. Thus it has viewed as essential to increase the live/work balance in the vicinity of downtown stations.

The key factors in attracting development to Toronto's station areas have been flexibility on the part of the agency and local governments. This is necessary as it is often difficult to predict the exact quantity and type of development that will be supported at a particular station. Furthermore, joint development opportunities often will not produce return on

investment until five to ten years after the project has commenced. Thus the TTC has into agreements whereby developer payments are delayed during until project completion.

The Toronto Transit Commission, having experienced decades of success relative to other agencies, regularly receives requests and unsolicited proposals from developers and other private sector players that wish to be involved the delivery of rapid transit stations whether it be to connect to a station or to finance the design, and construction of the station as part of a larger project. The difficulty since the 1970's, however, the agency's philosophy has changed dramatically such that newer station projects have most often been viewed as "minimal threshold[1]" projects along alignments which have been selected almost entirely for political expediency and minimization cost and physical impact. In this model the station is defined as purely a technical solution to convey passengers from one point to another. With this as the only criterion by which the success of a station is judged, the newer rapid transit stations have been delivered as nothing more than "concrete boxes" with little to no physical or economic relation to anything in their midst.

According to Dennis Callen, General Manager for Engineering and Construction with the TTC, the only motivation for bringing the private sector on board at present would be to build the station "cheaper and faster" than might the public sector. However, this is not likely occur as the TTC has developed over a period of decades, the specific skills and the know-how necessary to design, construct, and operate "minimal threshold" station facilities within reasonable timeframes at a reasonable cost.

3.7.4 Techniques/Tools

In the 1950's Toronto was already a city with a strong streetcar patronage tradition. From that period through the 1970's the TTC undertook a program of supplemental expropria-

1. see definition

tion of land around stations to which bonus zoning was applied so that the agency could actively exploit air-rights leasing opportunities.

In order to deal with the TTC's extensive land holdings, the Subway Property Committee, a quasi-public agency was established to guide this development. From the perspective of the development community, this gesture was viewed as the establishment of a professional organisation that dealt in a business manner and not a political group that had as its sole purpose the satisfaction of its constituents. The TTC also made a clear move from the implementation of the first subway lines to create a climate with supportive zoning and early developer involvement in station area planning.

The TTC has long pushed for highly reduced parking as part of its strategic urban node strategy. The most recent example is at the new SkyDome, Toronto's recently completed professional sports stadium which houses a hotel and several restaurants, located near Union Station near the downtown core. The delivery of the stadium was achieved with significant negotiations led by the TTC within the bounds of an extensive regional planning effort. The result was that the stadium, which has a capacity for roughly 60,000 spectators, offers only 600 parking spaces and was designed with highly integrated access to all three of the TTC's major modes of transit. This part of the city is one of the most heavily used and densest areas of business, restaurant, commercial, theatre activity.

In an effort to combat the trends of urban migration and decentralization of the urban core in the 1970's, the TTC hired Henson Consulting to develop a station classification hierarchy in order to better understand and approach existing stations as unique sets of circumstances. This system broke stations down into the six categories: Community Stations; Development Nodes; Areas of Change; Terminus and Interchange Stations; and "Locationally Challenged" Stations.

Community Stations are considered to exist in stable development environments which have good potential for intensification. Development nodes are stations that are prime for development activity to take place. Areas of Change are locations in transition communities which are undergoing unstable and unpredictable transformations. Terminus and Interchange stations were given a specific category as, due to their unique role on the transit system, they have attributes which are not found in any other type of station. "Locationally Challenged Stations" stations are those which have been located in areas which, for one reason or another, are unattractive to potential private sector partners due to their poor location. The final classification is the Central Business District station which, naturally, is found in the densest downtown core.

These classifications helped in large part to understand the role of a particular station within the context of its surroundings so that the private sector could be brought on board in an effective and appropriate fashion. They also served to describe a particular station in terms of its zone of influence, its role within the transit system, the densities and mixes of uses in the surrounding urban fabric, and, last but not least, its development potential. Descriptions were also given of the employment/resident balance within five hundred meters of the station, of the level of physical integration of the station into its surroundings, of the degree of visibility of station entrances, of pedestrian and vehicular patterns, and of the level of physical amenities that complement the station's activities. That is, the fundamental unit of measure was within the bounds of a precinct plan which forced the agency to understand the public-private interplay in order to develop strategies to leverage this interaction.

This fell in line with the public sector's committment to growth along transit supportive corridors is demonstrated in Policy 30 of the Metro Official Plan which reads as follows:

"Policy 30: ***...to prepare, in cooperation with the Area Municipalities and GO Transit, development plans for future, relocated or enhanced rapid transit stations and their surroundings which include consideration of the following:***

a) physical integration with surrounding developments;

b) physical integration of pedestrian and vehicular circulation systems with the surrounding area:;

c) high quality design of the public realm, including built form and streetscape; and

d) public access and safety;

and that the preparation of such plans, whenever possible, be undertaken in conjunction with Area Municipalities official plan, zoning or site planning processes for the relevant area. These development plans are intended to facilitate a form and scale of development commensurate with the reorganization objectives of the Plan and with the significant investment in the Metropolitan Corporation's infrastructure."

Special Context: Canadian Culture/Transit Connection

Unlike in the U.S. where transit planned and regulated primarily at the local level, the Provincial Governments in Canada are the primary authority for transportation. In this context the Ontario Government has played a key role in inducing private sector interest and involvement in TTC rapid transit station areas by tying funding to development targets. At the regional level, the urban growth strategy has specifically centred around strategic urban nodal locations along transit alignments. The municipal governments, in turn, have established and maintained pro-active, responsive, and flexible planning processes. Municipal governments also worked extensively to develop neighbourhood comfort with transit based intensification. This has been somewhat facilitated by the fact that, in Canada, the perception of transit clientele is somewhat different than in the U.S. That is, the

cross-section of riders in Canada tends to spread across a much wider spectrum of economic strata.

In Toronto, with regional governance playing a much more prominent role that it does in the U.S., rapid transit has gained significant advantages. Due to the role of the regional agencies it has been possible to develop and enforce systemwide, coordinated planning with respect to land use, zoning, and taxation policies. This consolidation of planning efforts has helped to create a consistent and predictable pro-development environment throughout the alignment. Within this context, Toronto has managed to control and direct urban growth around its strategic urban nodes and thus contain a much higher percentage of regional employment in their downtown cores on average than their U.S. counterparts[1].

Canadian transit agencies have generally adopted a much more entrepreneurial spirit than U.S. agencies and have also experienced much less competition from the private automobile. This is due, in large part, to the fact that there has never existed a federal highway programme as extensive as that of the United States Interstate Highway Program. Finally, Canadian cities generally have a much greater committment to controlling and limiting parking in their downtown cores thereby increasing the utilisation of urban rapid transit as a viable alternative to the automobile.

As an attestation to the success of Canadian Transit in general, 1983 saw Canadian transit agencies recover a total of 83% of their operating cost with farebox return while U.S. agencies were only able to recover 40%. During this same period, the TTC with a vehicle miles per transit employee ratio that is 47% higher than U.S. agencies, recovered 70% of its operating costs.

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1. "R. Cervero. Urban Transit in Canada: Integration and Innovation at its Best, Transportation Quarterly, vol. 40, no. 3, pp. 293, July 1986" on page 231

Residential concentration, which is vital to the successful of strategic urban nodes has flourished at TTC rapid transit stations to much greater degree than in most U.S. cities. This trend has been significantly influenced by the fact that there exists no personal income tax deduction for interest payments on a home mortgage thereby making the apartment rental market traditionally a much more competitive alternative to the single family housing market. Thus the development of high rise residential buildings has been a more secure investment for developers and potential landlords.

The primary differentiating factors between the U.S. and Canada with respect to transit use and development are the following:

- Canada has significantly higher gasoline taxes
- Canadian cities have limited parking supply in along transit corridors
- Canadian cities have minimal urban expressways compared to U.S. counterparts
- Zoning in Canada is specifically designed to create compact, transit friendly land-use patterns
- There are no federal subsidies for suburban landowners in Canada

3.7.5 The Success of the Yonge Corridor

In 1954 the first 7.4 km of subway line were opened between Union and Eglinton stations along the Yonge Street corridor. This portion of the alignment was conceived and built with transit revenues gained during the war when gas rationing limited the use of automobiles. This line has been the most successful historically with respect to private sector involvement as it provides direct connection to downtown Toronto. The success of this alignment attributable to the fact that an overall programme was undertaken to select nodes specifically where there already existed dense mixed-use activity along the Yonge Street axis. This is only part of the picture, however. As stated above, Toronto owes much of its success to clear and intentional integrated policy decisions. Rapid transit stations on this corridor have historically been prioritised in a hierarchy of "development priority" and described in terms of Transit Oriented Development Zones rather than as isolated

fixed facilities. The most important feature of the TTC's strategy before the 1970's was to locate rapid transit stations at specific high concentration destinations while seeking to avoid locations that have physical barriers to future development such as highways, interchanges, grade-separated rail corridors, or inaccessible ravines.

This was particularly important for commercial development as firms wanted and needed their office facilities to have ready access to the downtown core. Recognizing this fact form the outset, the TTC established and has maintained a strong continued partnership between itself and the commercial development community. Over the last twenty five years, the five largest national banks have located their national headquarters in the centre of the city along the Yonge transit corridor in partnership with the TTC. This migration, spurred by access to the transit corridor has led to the subsequent advent of insurance, brokerage, accounting, and other firms which support the financial industry. In conjunction with the TTC, these firms have financed the efficient underground pedestrian network that links all of the downtown stations and that is lined with intense commercial retail activity. (see "PATH - Toronto's Downtown Walkway" on page 131)

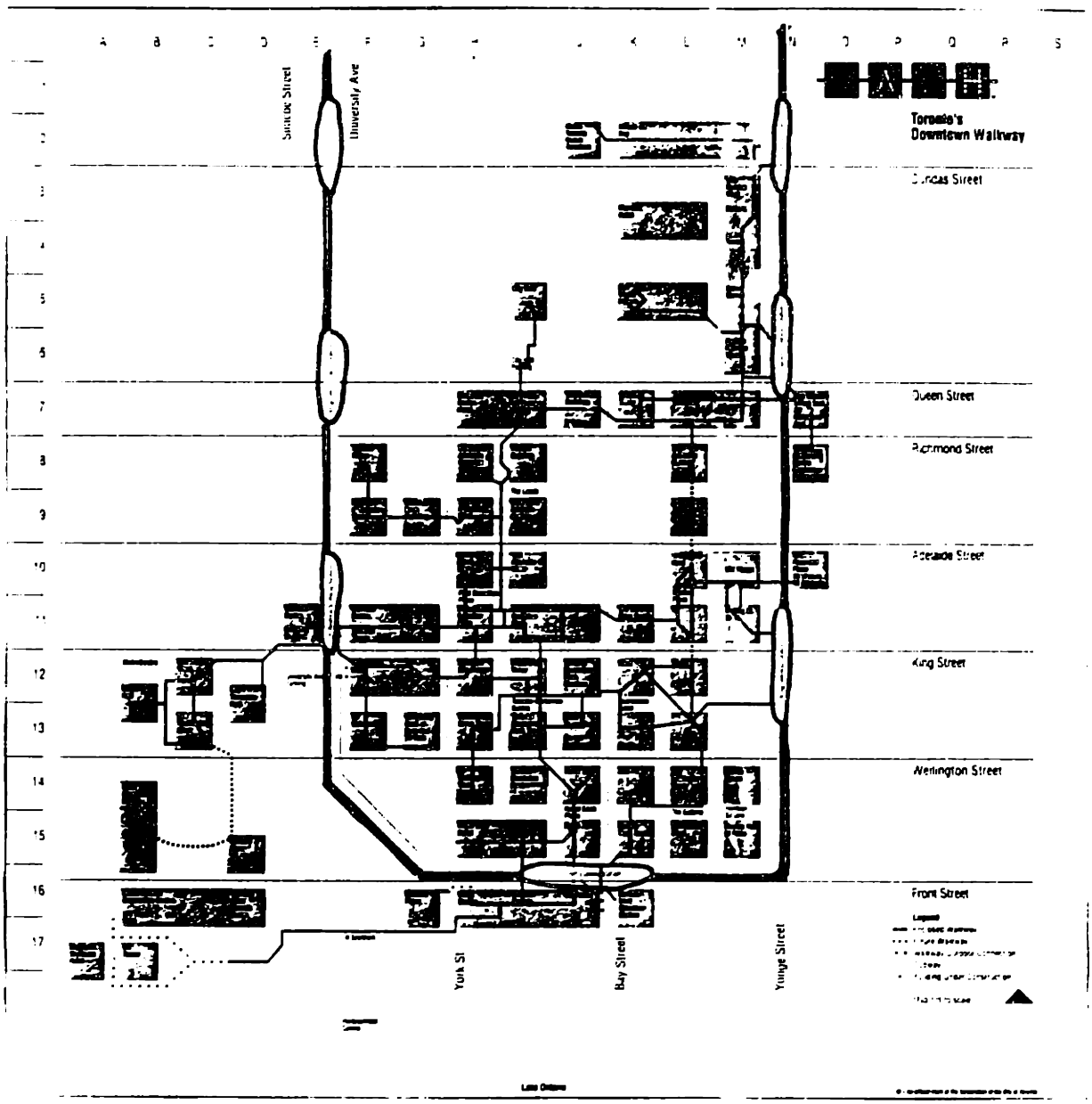

Figure 3.1: PATH - Toronto's Downtown Walkway

The most significant sustained partnership with a primary private sector partner is with Bramalea Developments which has developed and jointly owns five buildings with direct access to Toronto's subway system including the hugely successful Hudson Bay Centre at the heart of the city where the north-south east-west alignments intersect.

In addition to strategic urban nodes in the centre of the downtown core, a prime example of the success of this corridor is the St. Clair East Station which lies just north of central downtown on Yonge Street. This station, part of the TTC's first phase, was developed and delivered as a true strategic urban node. That is, in addition to the fact that it was specifically located at the primary intersection in order to achieve maximum impact, private developers were approached and encouraged front-end to build on the air rights as part of an integrated station complex. This station was originally delivered by the TTC as a "minimal threshold" with provisions for integration with future development right up to the platform itself. In addition to the TTC-built access, the station currently has over six underground entrances, all of which have been privately financed and which are lined with commercial and retail functions. The station has a daily ridership of over 34,000 passengers per day. Through carefully planned "upzoning" and strategic sale of air rights, a true strategic urban node was created where over 10,000 people live and work within a five minute walking distance of the station.

3.7.6 The Failure of the Spadina-University Corridor

In Toronto, as in other North American cities, the 1970's and 1980's saw deconcentration of urban development. In 1978 a 9.9 km extension was constructed between St. George and Wilson Stations. Unlike along the Yonge Street corridor, private sector development in and around station areas along the Spadina-University extension was highly unattractive and, in fact, difficult with unfavorable zoning, restricted land supply, local opposition to densification. However the most important impediment was the fact that, unlike the Yonge Street corridor, the alignment runs down the middle of a winding ravine (see map) which follows no logical north-south progression of destinations or strategic nodes.

Less than five minutes west of St. Clair East Station is St. Clair West which was delivered as part this extension under very different conditions and with a highly different strat-

egy than the St. Clair East station. The result has also been much less successful with several key factors leading to its failure to evolve into a strategic urban node.

First, the selection of the alignment took clear precedence over the identification of a set of key nodal destinations with potential for logical evolution. For reasons of political expediency and cost minimization, the alignment was selected to pass through TTC owned right-of-way that was originally intended for the shelved Spadina Expressway. As noted by Dennis Callen of the TTC:

> ...the logical corridor would have been to run north from Bathurst which already had an existing network of urban nodes. The stations would have been more integrated and ridership would have easily matched or superceded that of St. Clair East.

The Station itself does not sit at any logical intersection and zoning was never changed to allow for the high-density residential or commercial construction that characterizes the successful Yonge Street stations. To this day, zoning at this station allows only for medium density commercial. The resulting station is truly a "concrete box" that sits in the middle of circular buffer up to which private sector developers have built over ten high-rise residential buildings since station completion but within which practically no built form exists (see "Yonge vs. Spadina-University Corridor" on page 134.) Furthermore, while new stations on the Yonge corridor were not delivered in conjunction with increased road capacity, the station at St. Clair West was delivered such that bus and streetcar traffic enter underground 150 m from the station entrance. This was intended to reduce interaction with and increase the capacity of automobile traffic. This experiment achieved its desired effect and the station entrance opens onto the most desolate and automobile oriented (i.e. pedestrian unfriendly) portion of St. Clair Avenue. This move all but destroyed any possibility of creating the pedestrian and transit-friendly qualities that are essential for rapid transit station areas.

As with all TTC stations, the accessibility provided by St. Clair West Station, albeit limited, is still a magnet for high-rise apartment construction despite the fact that the station site itself is an undesirable location for development. The surrounding built form is clear evidence of the desire of private sector players to capitalise on access to a larger rapid transit network. However, the station is also demonstrative of the fact that, with poor station specific planning and short-sighted strategy with respect to the creation of destinations, the agency can very easily discourage the creation and evolution of a network of integrated strategic urban nodes. St. Clair East Station has a daily ridership of 20,000 passengers, 70% of which arrive by bus.

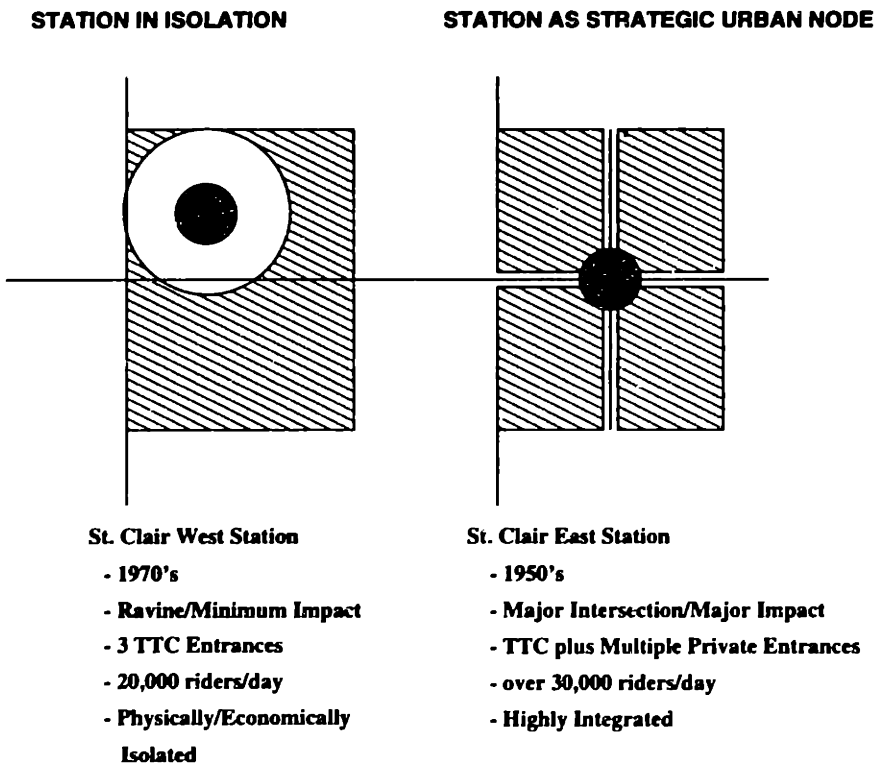

Figure 3.1: Yonge vs. Spadina-University Corridor

3.7.7 Lessons/Results

Toronto is a city which is recognized worldwide as a model for transit-oriented urban design. This has not been achieved by a stroke of good luck. Rather, it is the result of careful and strategic policy decisions. The stations of the Toronto subway system most especially along the Yonge Street corridor, have acted as catalysts for urban development by inducing and then reinforcing the centralised growth patterns of the city. Within the context of a widely recognized model city, the TTC is an agency which is also recognized internationally as one that addresses the needs of the private sector when it comes to transit infrastructure investment by creating an atmosphere of agreement and cooperation when working through complex public-private deals for station area development. With a tool as powerful as the rapid transit system, the TTC and Metropolitan Toronto have long sought to achieve a reasonable return on their transportation investment.

Since 1954 with the opening of the first line of the Toronto subway, more construction has taken place in Toronto than in the previous 120 years. The rapid transit system has played an important role in the location of roughly $30 billion in new real estate along its alignments.[1] In the early 1960's, one half of the high-rise residential and ninety percent of office construction took place within five minutes walking distance of TTC rapid transit stations. From the early 1970's to the early 1980's fifty percent of the 90 million square feet of newly built office space was located along the Yonge Street corridor. Real estate derives its value primarily from its location and accessibility to and from larger outlying areas. From 1955 to 1965 the assessed values of properties adjacent to downtown subway stations increased approximately sixty percent while the average increase throughout the rest of the region was only twenty-five percent.

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1. $10 billion on N-S, $20 billion on E-W, $20 billion more through 2001

Joint development has been one of the most important components of the success of Toronto's subway system. The creation of Metropolitan Toronto in 1954 and its ensuing emphasis on regional planning coupled with a broader unified tax base meant that regional coordination and decision-making became much more consistent, clear, and understandable. Furthermore, Toronto is one of the few cities in North America that has experienced significant high-density residential development around its rapid transit stations. In addition to supportive policy, it should also be noted that this was achieved during a period when land economics supported apartment construction. That is, the costs of land an construction were relatively low which made it possible for landlords to offer rents at affordable prices.

A few key measures have helped significantly in the overall effort at strategic urban node creation along the Yonge Street corridor. First, the TTC had a history of working with an entrepreneurial, consumer-driven, and less engineering directed attitude. Second, urban design guidelines were essential in establishing a basic design framework that was understood while leaving room for innovation on the part of private sector players right up to the platform of the underground stations. Third, Metropolitan Toronto routinely established enterprise zones with relaxed regulations surrounding development much has been done in England, particularly on the docklands of London.

Understanding the sequence of events along the Yonge Street corridor in the case of Toronto is an important part of understanding why the system has evolved the way that it has. Development existed to some degree before the subway was put in place. However, with the subway came greatly increased accessibility along what had become congested corridors. The accessibility that facilities along the corridor enjoyed became such an attractive attribute that further development occurred through the 1950's and 1960's. This trend was further entrenched during the 1960's when an extensive network of under-

ground walkways was designed, financed, and built by private sector developers hoping to increase and enhance this accessibility. These walkways were first built to connect the skyscrapers that are found in Toronto's densest downtown core. However, it was quickly realised that there would be potential benefits to both the public and private sectors were these walkways to connect directly to the subway stations themselves. This period was followed by a series of developments that were jointly planned and developed by the TTC and private sector partners as strategic urban nodes. Most notable are the Eaton Centre, an impressive shopping centre with a glass galleria that sits over top of over three hundred and twenty shops, restaurants, and services, located at the Queen Street subway station, and the Hudson Bay Centre which is built over top of the Yonge-Bloor subway station,

The 1960' and 1970's development in the metropolitan area began to expand away from the traditional centre and the development connection to rapid transit thus became less obvious, most clearly demonstrated on the Spadina-University line north of St. George Station. In response to the failure of this alignment, the Planning Department of Metropolitan Toronto stepped in during the delivery of the recently opened Sheppard Centre station to encourage the TTC to negotiate for the construction of a direct entrance to air rights development. Due to initial private sector reluctance and in an effort to demonstrate committment to the project, the TTC financed the cost of this connection which will be reimbursed by a private sector developer as part of an air rights agreement over the station. The developer, in turn, will be required to grant to the TTC an easement for the placement of future utilities.

Despite a lapse in the 1970's, the TTC has worked to make the deal -making process as simple as possible to which the private sector has responded. Since the mid to late 1960's many rapid transit station projects have been implemented including Commerce Court and the Royal Bank Plaza in the downtown core and Cumberland Terrace and Col-

lege Park just north of downtown. In all of these cases, the agency has adopted a strategy of delivering "minimal threshold" stations that have an almost seamless boundary right up to the platform between the transit service and the surrounding commercial and residential activity. For example, the Cumberland station is embedded in the Cumberland Terrace shopping complex with hundreds of shops and restaurants which can be accessed within meters of exiting the station platform.

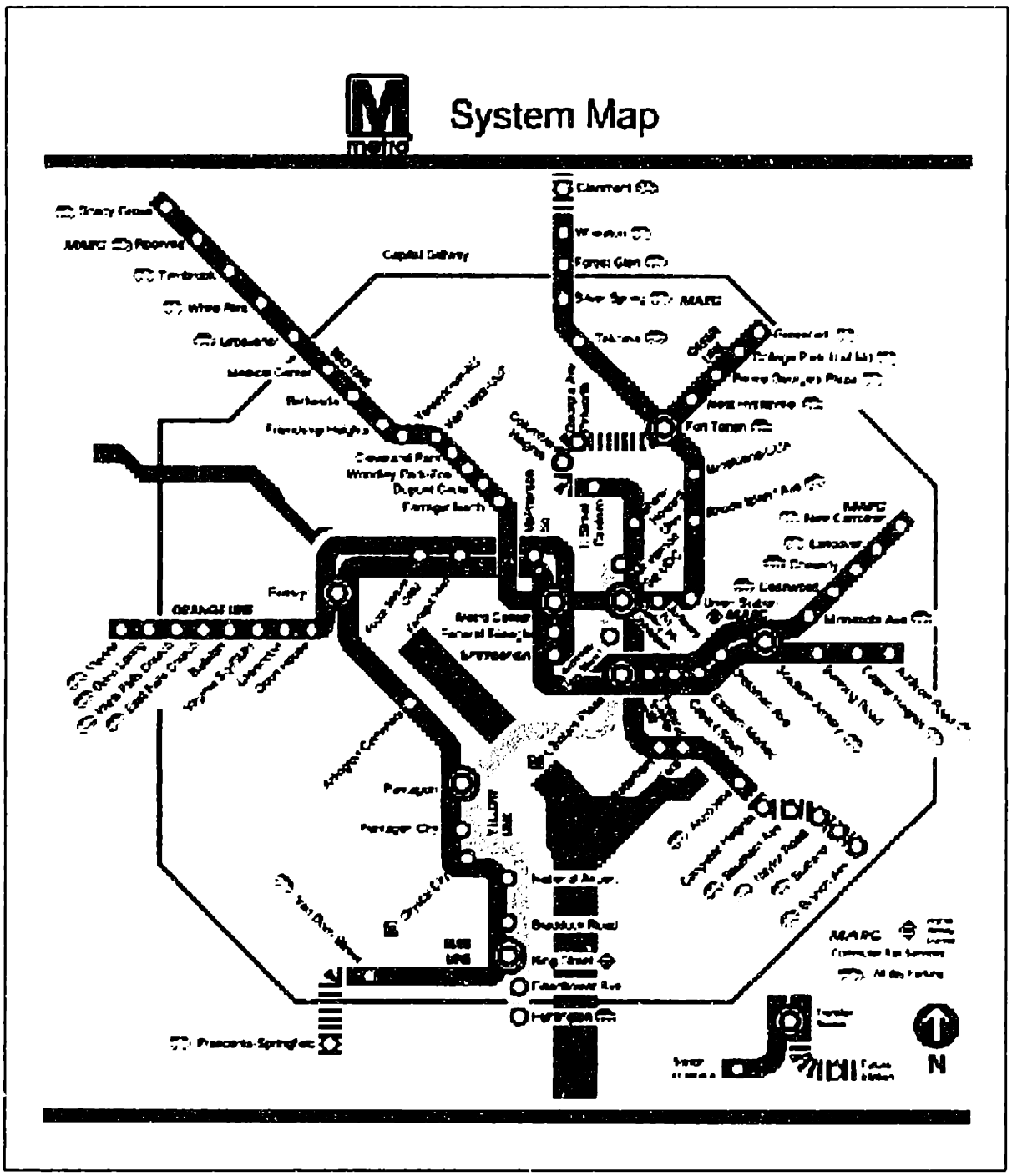

Figure 3.1: Washington Metropolitan Area Transit Authority Rail System

3.8 Washington D.C. - Washington Metropolitan Area Transit Authority (WMATA)

3.8.1 Background

WMATA was founded in 1966 as the result of an interstate compact between Maryland, Virginia, and the District of Columbia. While it was conceived primarily as a transit service provider, it was also established to be a driving force in shaping the urban growth and development of the region. The new rapid transit system was to be a key component of the regional infrastructure, intended both to encourage and to enable concentrated development along the transit corridor in areas with the highest densities immediately in the vicinity of the stations.

In the 1960's, the federal government established the National Capital Transportation Agency which was a temporary agency charged with planning the transportation system and securing rights-of-ways in strategic locations. This agency lasted seven years and, during this time, amassed significant land holdings which have been central to WMATA's success at engendering private sector investment in the creation of strategic urban nodes. By 1976 WMATA had in its possession 1900 individual properties with total real estate costs to that point of $240 million. One quarter of this amount, or $65 million, has been recovered through the disposal, sale, and/or lease of WMATA's real property rights. To date, the Washington Metro is one of the largest transit projects in the United States.

Context

Metrorail is operated by the Washington Metropolitan Transit Authority (WMATA) and has 89.5 miles in operation with 22 stations in Montgomery and Prince George's counties. An additional 15 miles is currently under construction.

The passenger revenue on the WMATA system covers approximately 54.5% of the combined rail and bus operating costs and 75% of the rail operating costs. The balance is

currently covered with appropriations budgeted to subsidise operations. Operations began in 1976 and, to date, investment in the systems has exceeded $8.5 billion. WMATA has ridership of 500,000 passengers during the week and 50,000 on weekends.

WMATA itself does not have the power to imposes taxes. Therefore costs are allocated to member jurisdictions in the metropolitan area on the basis of the level of service provided.

3.8.2 Strategy

With respect to development activities, the transit authority is governed by the following requirements which have been limit the authority to acquiring and utilising lands only when necessary solely to provide effective transit service:

Public Law 89-774

Article V, Section 12(d):

> .....may acquire, own, maintain, sell, and convey real and personal property, and any interest therein by contract, purchase, condemnation, lease, license, mortgage or otherwise, but all of said property...shall be necessary or useful in rendering transit service or in activities incidental thereto,....

Article XVI, Section 82(a):

> .....The Authority shall have the power to acquire by condemnation, whenever in its opinion it is necessary or advantageous to the Authority to do so, any real or personal property, or any interest therein, necessary or useful for the transit system authorized herein, except property owned by the United States, by a signatory or any political subdivision thereof, or by a private transit company.

Since the mid-1970's, WMATA's policy has been and still is to select joint use developers for long-term dispositions through competitive bidding. This is governed by its Joint Use Policy which states that:

Prospective proposals will be evaluated based on the ability to satisfy the following criteria:

- *To maximize WMATA's financial benefit from the development.*
- *To generate transit ridership for the system by encouraging a mix of uses attractive to transit users.*
- *To maintain optimal conditions for station operation and maintenance.*
- *To enhance the architectural features of the area.*

WMATA, considered to be a pioneer in joint development, had 20 major projects in place by 1992 and was receiving tens of millions of dollars in yearly revenue. Two dozen smaller projects were completed between 1984 and 1990. The agency has entered into a variety of deals including air-rights leasing, station connections fees, and cost-sharing agreements.

In 1975, before the system opened for operations, the Station Area Development Program was established. This was a formal policy which set forth a program of station specific joint development procedures and provisions for the agency. Due to the fact that the stations in the Metro system are mostly below grade, this policy was necessary to allow for needed land assemblage and clearance and to address the subsequent management of the interaction with the private sector at these strategic urban nodes. It was recognized that theses nodes, chosen through a careful selection process, would be highly attractive development locations.

Although the real estate/transit connection was taken into account from the very beginnings of the WMATA system, it wasn't until construction had already begun that the benefits of Metro access to surrounding property and development became starkly apparent. In response to rapidly increasing station area land value, a Congressional subcommittee study was formed in 1980 to evaluate options for capitalising on these trends. It was subsequently concluded that WMATA and local governments should take a more active

role in capturing the benefits and using them to fund the expansion and rehabilitation of the system.

Through this subcommittee, WMATA's role vis-a-vis development became thus:

1. It shall be the general policy of WMATA to promote, encourage, and assist in the creation of high-quality, more intensive development at or near appropriate station areas.

1. It shall be the policy of WMATA to study the development potential which may exist at present or future station areas and to prepare a development program with a three to five year work program, and in a longer range time frame, which will identify actions and positions by the Authority to enhance or protect the longer range development potential.

1. It shall be the policy of the Authority to advocate positions before the public, local government entities, the development community, and others which promote high-quality, more intensive development at or near station areas.

Direct access agreements were to be dealt with as follows:

2. businesses should construct entrances at their own expense into "free" areas of Metro stations;

3. negotiations on direct access compensation paid by businesses should occur on a case-by-case basis;

4. compensation should be paid to WMATA and any revenues realized should be applied to WMATA system revenues to offset operating deficits. The transit system should share the benefits of the enhanced value of the development project due to Metro; and

5. the WMATA Board will decide on request by staff to negotiate and execute a contract with a developer desiring direct access.

3.8.3 Techniques/Tools

As far back as 1968 WMATA had already established its "Real Estate Program" as a means of integrating and enhancing the recognized real estate/transit connection. This program was designed to ensure that WMATA would have the authority to acquire and control necessary rights-of-way along *and around* the Metro corridor, particularly in the vicinity of its stations. As part of this and subsequent programs, WMATA has continually developed clear policy objectives regarding the identification, disposal, and reuse of its transit properties. This has paid off in the form of substantial cost recovery through the disposition of its excess property rights.

WMATA has taken an active interest in ensuring the development of residential properties in and around its station areas. Care is taken to ensure viable projects for private sector players through land assembly, amortising the cost of parking replacement and creating attractive lease and sale arrangements. A commonly used technique is the flexible delaying of payments to the agency from private sector partners during development stages until project completion. The agency also often participates as an equity partner, subordinates debt, and works to acquire assistance through Housing and Urban Development (HUD) funding for residential development which is viewed as a necessary factor in the creation of strategic urban nodes. With respect to design, the majority of WMATA stations have been delivered with "knock-out" panels laying the groundwork for expanded future station development.

The most frequently used approach for interaction with private sector developers used by WMATA is the lease option in which leases are negotiated between WMATA and a joint use developer generally for a term of 50 years with a renewal option for an additional 40 years. This was originally seen as a means of cost recovery when the transit/land value connection was first identified. This objective has clearly been successful as, by 1979, a report by a private civic group estimated that the WMATA system had generated more than $970 million in private investment with another $5 billion worth of private development expected at or near stations once the full system was completed.

The 1981 Station Area Development Program was established to facilitate relations between the agency, the private sector development community, and local business communities, and worked to create an environment which by 1992 had led to $8.5 million in annual lease payments. The Office of Planning and Development was established in the same year to carry out and manage this development program with the specific mission of promoting and capturing potential benefits due to WMATA's rapid transit stations.

The Station Area Development Program consisted of three primary components: joint development, system interface; and transit zone development.[1] The tasks for WMATA's Real Property Utilization program, within the Station Area Development Program are outlined in "WMATA - Tasks for Real Property Utilization" on page 226

The primary benefits sought after by the Station Area Development Program were both an increase in ridership and the possibility of more income for the Authority. The stated goals of this program also included station specific goals strategic goals such as:

- allocation of scarce resources in more optimal fashion;
- reduction of urban sprawl; and
- encouragement of good quality development.

Objectives to meet these goals included:

- addition of real property to the tax rolls;
- increase of tax base;
- improvement of cost/benefit ratios of public goods in services provided by local government; and
- provision of revenue to WMATA for subsidy offset.

Thus the agency had a clear orientation toward establishing strategic urban nodes that would each act as a generator of urban activities to enhance ridership and non-ridership related revenue. That is, the station was viewed as more than a mechanism of conveyance and the system was viewed as more than an alignment connecting minimal threshold stations.

In an effort to allay concerns over potential legal action regarding excess land acquisition, WMATA was initially mandated to adhere to a relatively stringent program of acquiring land solely for "transit needs." However, in recent years, as financing transit has become more burdensome, the timing and strategy of real estate acquisitions and joint

1. WMATA defines joint development as "development integrated with transit which occurs on property owned or controlled by WMATA. System interface is defined as "a direct physical connection of transit to an individual property. Transit zone development is defined as "any development or substantial rehabilitation within a 3,000 foot radius of a station entrance, other than joint development or system interface projects.

development potential have come to play an increasingly larger role in the planning process and have had to become much more integrated and interrelated.

WMATA's original focus in negotiating system interface projects was on the limited objective of "cost recovery." However, as private sector players showed increasing interest in system interface and other station related projects, WMATA recognized the importance of these connections to achieve other goals and objectives. Station architects were retained to study the interface potential of existing and future stations and consultants were hired to study the economic and financial aspects of these system interfaces.

As result of this work, 150 potential projects were identified with an estimated potential one-time return of $60 to $75 million[1]. This was seen as an opportune means of offsetting the agency's rising operating costs. WMATA thus adopted an approach which was more heavily focused on these connections wherein negotiations were made with private sector entities such that WMATA could recover part of the increase in real estate and related values resulting from the interface. The joint development process has followed a series of steps illustrated in "WMATA Joint Development Process" on page 227.

3.8.4 The Success of Bethesda

Prior to the arrival of the Metro, Bethesda, in Montgomery County, Maryland was developing into a high concentration area of commercial activity. It was thus selected by WMATA as a site for strategic nodal development. The first development project to be delivered was part of a long-term agreement between WMATA and R & K Associates and consisted of an office building, a hotel, and a retail arcade and comprised more than 600,000 square feet with underground parking provision and kiss-n-ride facilities.

1. 1982 dollars

In this case, an agreement was set up in which the agency flexibly agreed to accept a share in the gross proceeds from condominium sales instead of entering into a standard long-term lease agreement with the tenant due to the fact that condominiums, unlike rental apartments, are purchased with fee simple ownership of property.

Subsequent to this project, the Bethesda Metro Center, developed at the same station, opened in 1984. This project is a classic example of successful joint development/system interface and integrated transit and community planning. This $160 million project sits on 156,000 square feet of land and includes a 17-storey office complex, a 12 storey luxury class hotel, 1,400 parking spaces in a four-level underground garage, an underground Metrobus and auto pickup/dropoff level.

The original lease agreement stipulated that the joint developer of WMATA's land pay annual rent of $251,000 until the end of 1985 with the opening and operations of the hotel and office building, at which time the annual ground lease would be approximately $1.6 million. Two years later the rental became a minimum guaranteed level to which was added a small percentage of the project's gross income over a base level. The joint developer was responsible for building the underground bus bays and kiss-and-ride parking spaces, the portion of the plaza that decks over WMATA's property and the vertical circulation facilities between the two levels. A tunnel was designed to link Metro Center with the east side of the main artery. WMATA also had joint developers adjoining Metro Center to the north and south who were committed to extending the plaza platform in order to make connection between WMATA's property line and the entrances of their respective buildings as seamless as possible. This required sophisticated negotiating capacity and a clear understanding of real estate deal making on the part of WMATA.

The design and construction of the tunnel by the private sector saved WMATA the cost of building and maintaining this additional vertical element. Beyond this project, the sta-

tion brought myriad benefits to this strategic urban node. That is, the station improvements provided the impetus for additional concentration of high-rise residential apartments and office employment in the Bethesda Central Business District, adding to the tax base and ridership potential of the strategic urban nodes.

Central to WMATA's strategy of attracting private sector investment in the delivery of this rapid transit station was the fact that it was part of an active and consistent effort to locate WMATA stations where local plans already called for concentrations of employment and higher density residential development.

In anticipation of the Metro station's arrival, the Montgomery County Economic Development Office developed a station area scheme based on the concept of what was called a "transit development area." This plan called for the acquisition of more land than was required for the Metro station. However, in keeping with its committment to transit delivery WMATA felt that any development undertaken would have to be initiated and financed through the private sector. Furthermore, one of the major hurdles to overcome was the fact that the additional land, comprising 23 parcels, was held by 18 different private parties. Assembling the land would not pose insignificant costs to a private developer and could, in fact, turn out to be a liability in trying to attract private sector participation in the rapid transit station delivery process. This despite the fact that the zoning of the "transit development area" was the most permissive commercial category in effect at the time.

Thus the county took it upon itself to explore other alternatives as a means of mitigating this risk. Two possibilities, in particular, were examined. The first involved the County Revenue Authority, an agency with the authority to exercise eminent domain to acquire land for projects deemed by the County Council "to improve economic good or general welfare" of the County. This Authority organized a consortium of small property owners in the vicinity of the Metro station site as a means of assembling enough land for a devel-

opment of the scale envisioned for the project. They then requested $50,000 in order to conduct detailed planning and feasibility studies.

The second alternative, which was adopted by the County, was put forth by an appointed Citizens' Advisory Committee created to represent the interests of the developer community and civic associations countywide. The committee recommended the creation of public development corporations to acquire, replan, and dispose of land in the Central Business Districts, to enter into joint development with private enterprise and to oversee Central Business District development. The corporations would retain ownership of public areas but not of the office or residential buildings to be built. Despite the endorsement of the County, a constitutional amendment was required to provide legislation allowing the creation of the public development corporations. The bill was ultimately struck down ending any possibility of this alternative moving forward.

Despite similar subsequent setbacks, the County continued to show persistent committment to the creation of this true strategic urban node. In its Sector Plan the County government indicated a willingness and desire to cooperate in an effort to secure land for "an attractive and profitable development" for the area placing particular stress on the desire to have public gathering spaces, outdoor amenities, and a mixture of daytime and nighttime uses at the Metro Center. WMATA and the Planning Board worked together to create a scheme that would then be put out for proposals in a joint development prospectus. which included committments that the selected developer would provide amenities and change ground floor design in accordance with the urban design study.

Three proposals were submitted and the developer was chosen whose scheme conformed closely with the desired urban design concepts. By late 1980, the station which is situated on a 3.5 acre site, had already realised $100 million worth of joint development with a gross development value to WMATA exceeding $430 million.

The eventual success of this project provides many valuable lessons to be gleaned for use elsewhere. First, WMATA showed initiative, creativity, and flexibility. Second, WMATA made a specific and strategic choice to select alignments and locate stations through corridors in the path of urban development and redevelopment. That is, Bethesda was, by all accounts, not a slow growth area. Metrorail simply offered the opportunity to organize and control this growth and to accomplish WMATA's joint development objectives.

In addition to the important role that WMATA played in the process, the local government, community, and private sector players all brought key ingredients to the table, some before a WMATA station was even anticipated. In particular, Montgomery County had already created the zoning context formed on the eventual arrival of Metro and elicited essential community acceptance. Consistent efforts were made to enable legislation such that the County could help developers supercede the difficulties and costs associated with land assembly. Furthermore, the County both reached out to the development community and sought to make it profitable for private sector players to conform to official plans with zoning and density incentives.

This is a case demonstrative of the long-term difficulties in managing interrelationships necessary to deliver a highly complex project. Despite the failures of proposed innovations to Montgomery County's regulatory processes, the key players continued to work toward goals in which each had a stake and for which each played clearly understood roles. WMATA naturally had the key role of constructing the subway and had the capacity to exercise station area eminent domain. The local government undertook a series of broad responsibilities which included comprehensive planning, the provision of complementary infrastructure and facilities, facilitating debate and discussion, balancing key player interests, and administration of the delivery process. The private sector players took an active

role in the planning and decision process and worked within these bounds to build economically feasible and publicly acceptable projects.

Using a cost/benefit approach, it was initially found that, over the 50 year lease period for the Bethesda Station project, the net benefits would be approximately $130 million, $48 to WMATA and $81 to Montgomery County. The rent in joint development leasing at Bethesda station currently covers operating costs for that station. An important footnote to this case is that, since the development of this project, WMATA has come to be recognized in the U.S. as the industry leader with respect to its state-of-the-art joint development prospecti.

3.8.5 The Success of the Rosslyn-Ballston Corridor - Ballston Metro Center

Arlington County is a suburb located across the Potomac river from Washington's Central Business District. Prior to the completion of the rapid transit system, a comprehensive planning process was undertaken that was intended to help manage and shape the urban growth of the region. It was part of a county-wide strategy adopted in 1975 that outlined a long-range community plan and program with the help of development incentives, a capital budgeting program and sector planning for lands around rapid transit stations.

The county of Arlington is traditionally a low and low-medium density region. In the early 1980's the desire was to limit office growth and promote residential development in the vicinity of Metro stations. The alignment which serves Arlington, the Metro Orange Line, also known as the Rosslyn-Ballston corridor, is a designated as high-density residential and mixed-use on the Arlington County General Land Use Map.

In 1980, the county established the Ballston Sector Plan which served to outline, direct, and encourage new commercial growth within a 1 mile radius around the station. This plan created the designation of a coordinated mixed-use development district with

higher than normal allowed densities. A concerted rezoning effort set the stage for transit oriented development. However, the county still felt that it was necessary to make the first move in 1982 by helping to finance, through industrial development bonds, a 3,200 car garage for the Ballston Common mall and for Metrorail patrons located three blocks from the station.

WMATA produced "Sector Planning" documents for five key rapid transit stations on the Rosslyn-Ballston line to encourage mixed-use development, ensure "good design," and demarcate high density zones. The implementation of these sector plans was intended to keep capital investment in public infrastructure in pace with private investments in the area. The first to be implemented was the Rosslyn plan which served as a testing ground for future plans.

Ballston was to be a "new downtown," created through the cooperation of private developers, the landowning public agency, and the local government. This in itself was a significant departure from normal delivery and operating procedures. That is, until this point it had not been common practice to award exclusive development rights to a private sector player. Furthermore, in this case, the developer even permitted the financial involvement of the transit agency in the ensuing residential development.

Key to the success of this corridor is the Arlington County site plan approval process which provides a framework whereby developers are granted additional stories as an incentive bonus or "trade-off" in negotiations with WMATA. Arlington has received a great deal from this process, indicated in "*Bonuses by Site Plan: Measuring the Benefits*," for a

> ...total direct public investment of about $5 million...$13 million of private investment in public infrastructure" has been achieved.[1]

According to Stephen Weinstock, an Arlington developer who was a city planner at the time, the county:

> ...spent almost nothing on Rosslyn and got at least $5 million annually in revenues.

He notes that, through the site plan review process, developers built ancillary and complementary station area infrastructure such as streets, sidewalks, sewer and water lines, light standards, pedestrian bridges, setbacks of building, garage parking spaces in their buildings.[1] In some cases, developers connected lights into their own electrical service.

In discussing the process Weinstock commented that:

> It was surprising how easy it was. We'd say to a developer, "Before we can give you 12 stories, we'd like to have such and such," and he'd say, "Fine."[2]

In June 1975, a citizens advisory group, the Rosslyn-Ballston Corridor Committee was established in response to this surge in development. On their agenda was the desire to create a more human environment that was less focused on the type of high-rise construction that had been realised at and around the already completed Rosslyn station.

Before the arrival of Metrorail to Ballston, the surrounding neighborhoods were depressed economically and were in a period of transition from being previously dominated by older, lower-middle income single family homes to marginal land uses. In anticipation of the station's arrival, Arlington planners and local officials worked closely with

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1. "T. Parker, et. al. Bonuses by Site Plan: Measuring the Benefits, Unpublished Report, Arlington, Virginia, 1975, pp. 2" on page 232
1. "R. Nathan. Office and Residential Uses in the Rosslyn-Ballston Corridor: Can Public Policy and Private Interest Coincide?, Bachelor Thesis, George Washington University School of Government, 1985." on page 232
2. "R. Nathan. Office and Residential Uses in the Rosslyn-Ballston Corridor: Can Public Policy and Private Interest Coincide?, Bachelor Thesis, George Washington University School of Government, 1985." on page 232

developers and local residents to create a station specific area plan that was intended to transform the neighbourhood into the city's premier urban centre.

The Ballston transit station area development is a zone that covers 39 blocks or 270 acres in Arlington, Virginia. In 1982 invitations to competitively bid for the right to develop three stations as part of larger developments were issued. These were for White Flint station in Montgomery County, Maryland, for Gallery Place in Washington D.C., and for Ballston. The only station to receive a bid was the Gallery Station project. In particular, development companies felt that the 72,118 foot square Ballston site could not be a viable development as a stand-alone parcel and that it would be more attractive were it to be included as part of a full block assemblage. It turned out that the rest of the block, 31,414 square feet, was owned by a single party who was willing to undertake a rapid transit station based project. WMATA negotiated with and subsequently issued exclusive rights to this developer for the Metro station property on which the Ballston station would sit.

In the 1984, the Ballston Metro Limited Partnership (BMLP) was formed to undertake the project which was performed using a twin track development process consisting of the design of a mixed-use development and the long-term lease and purchase of the remainder of the property.The BMLP was an alliance of developers, businesses, residents, and local officials and was charged with coordinating infrastructure improvements, marketing the project, and some building activities.

The terms of the lease agreement included annual rent to be paid by IDI, key developer in the project, a design review process, WMATA inspection rights, and the rights for IDI to renew their lease once it expired.

The Ballston Center is currently comprised of a twin tower project which accommodates bus and rail transit at and below grade, a 26 storey hotel and residential complex, a

health club, retail, and underground parking. The total development cost was $96.2 million, $68 million of which was for improvements and $28.2 million for "soft" costs. WMATA decided to sell land for the development of condominiums for which it agreed to receive 3 lump sum progress payments as part of a gross percentage share. During the development period it accepted small rent payments and a fixed sum minimum guaranteed rent was set for project completion. There was also a participatory rent to be paid which was to be calculated as 8% gross commercial income above an agreed amount. The renewal period would be after 65 years with an option for an additional 34 years. While the private sector financed and built the project, it was given substantial help in the way of facilitation on the part of WMATA.

The key factors in the success of this project were the establishment of a sole source contract, flexibility on all sides of the negotiating table, the agreement of the developers to open their books to public scrutiny, and modification of WMATA's leasing practice so that developers would be able to acquire financing for the project. Moreover, the project could not have occurred without unprecedented flexibility and interagency cooperation.

3.8.6 The "Transit Village" Concept - Potomac Yard

Potomac Yard is currently the largest consolidated developable property under single ownership in Metropolitan Washington D.C. The property is owned by RF&P Corporation, a private, for-profit company, and is a former railyard which has not been utilised as such since 1994. RF&P is one of the largest commercial real estate companies in the Mid-Atlantic region and is solely in the business of commercial real estate development. The Potomac Yard property is a 342 acre site, 46 acres of which sit in Arlington County. The remaining 296 acres are located in the city of Alexandria.

Potomac Yard is a site of exceptional development value due to its close proximity to the Washington D.C. downtown core, its current non-transit accessibility, and its generous zoning and land use plan. The site has allowance for an aggregate of 16 million square feet of commercial and residential space. The current plans call for a mixed use development with a centrally located station providing quick, inexpensive, and comfortable access to the site. Once complete with the addition of a Metro station to be financed by the developer, it will be the most integrated transit hub in Northern Virginia.

The Metrorail station has been an integral part of the development concept for approximately ten years. As such, it is a fundamental component of the comprehensive planning effort for the Potomac Yard community. WMATA and RF&P have worked closely together and it is expected that both will benefit substantially once the development is complete. As with the streetcar suburbs of the early part of the twentieth century, this project has offered the opportunity to plan a transit station and development simultaneously to integrate and optimise the best functional aspects of both.

According to Alvin McNeil, Manager for Joint Development at WMATA, the Potomac Yard Station will:

- be the first example of a new public system station created by a private company underwriting the design and construction
- create new facilities, jobs and an expanded tax base
- serve to help create a major, integrated transportation hub for Northern Virginia
- improve transit access to surrounding neighborhoods
- increase Metro ridership, in particular for off-peak direction and off-peak hour, weekend and holiday travel

The development concept for the site includes provision for over 6 million square feet of office space, almost 600,000 square feet of hotel space, 0.5 million square feet of retail, and over 15 million square feet of residential space.

Due the scale and the complex and integrated nature of the project, it will be built-out incrementally over several years. However, the development of the central 65 acres in the

vicinity of the planned transit hub is projected to coincide with Metrorail commencement of operations on the site which is currently slated for the year 2000.

It is no doubt a rare occurrence to have a land parcel this large with the development potential that can support the financing of an underground transit station. However, it is a clear example of the ability and willingness of WMATA to negotiate flexibility with the private sector to contract out the delivery of needed station infrastructure to achieve the objectives of both the public and private sectors. Furthermore, the fact that this station will not only be integrated through design and construction but also completely financed by the private sector will allow for the innovation and creativity space to create a true strategic urban node. Precisely in the same vein as the "streetcar suburbs," RF&P has the incentive to create a transit station that will reinforce development and a development project that will capitalize on excellent access to WMATA's entire transit network.

3.8.7 Lessons/Results

WMATA can be given credit for its market driven entrepreneurial approach to station delivery and for its constant willingness to fine tune its procedures and policies.

In the early years, WMATA was in a situation much like that of Tren Urbano in that the extent to which it could enhance the accessibility of its station areas was as yet unproven. With the early success of a few station area projects WMATA set the stage for what would eventually become a highly regarded public-private joint use program for its station areas.

One of these projects was a system interface agreement that was negotiated with one of the largest retailers in the region, Woodward and Lothrop. As part of the agreement, WMATA was granted easements at 50 percent of market value which freed up land for surface and subsurface rights on Woodward and Lothrop property in the centre of the

retail zone. The department store was authorized, in return, to build a direct pedestrian access between the downtown store and the Metro Center station and a commercial mezzanine linking the facilities. This agreement helped to save WMATA $250,000 in construction costs by sharing the cost of common structural elements for the Metro tunnel and the commercial mezzanine. In 1977, the retailer performed a $6 million renovation of its downtown store which placed direct focus on the Metro connection and 1979 over one quarter of the store's customers were arriving by Metro. At the Metro Centre, which is the most important transfer station, the Woodward/Lothrop department store paid for a direct access underground walkway.

The ridership impacts of transit-focused development on the WMATA system were studied in 1987 and 1989 by JHK and Associates. In this study four types of nearby land uses were examined: residential; office; retail; and hotel. In the 1987 study of eight multi-family projects within 300 to 3000 feet from a rapid transit station, each consisting of at least 75 units, it was found that the share of trips by rail and bus transit declined approximately .65 percent for every 100 foot increase in distance from the Metrorail station portal. Similar results were arrived at in a 1989 study of ten sites near five stations. As one would expect, a 1987 study determined that ridership is significantly higher at downtown stations than at suburban stations and that ridership fell off steadily as distances of offices from stations increased. For downtown offices, ridership fell .76 percent for every 100 foot increase from the station. These results were also confirmed in 1989.

The JHK and Associates study concluded that:

> ...the most significant factor affecting the percent of trips by transit are:
>
> 1. location of the site within the urban area and on the system;
>
> 2. proximity of building to Metrorail station entrance;

3. origin-destination pattern of trips.

This last point was found to be highly important as poor accessibility at either end of the passenger's trip was found to translate into poor ridership between the pair of destinations. It is therefore essential that the transit alignment be considered *first and foremost* as a line which connects a series of strategic urban nodes.

The success of the Ballston Metro Center is the result, in part, of the agency's aggressive pro-active tactics. Not a single proposal was submitted in response to the 1982 RFP as the project was deemed only marginally feasible as it had originally been packaged. As a stand-alone site, private sector players saw little to no way of creating revenue such that they could realise a fair return on their investment. This was a clear example of the private providing a "free" feasibility study to the public sector. The agency thus regrouped with this information to assemble a parcel adjacent to the station site and alter the competitive process to allow for a sole source agreement with the Ballston Metro Limited Partnership.

By the mid to late 1980's eight major office buildings had been built within a 1/3 mile radius of the station. Ballston has also become home to a series of public sector agency headquarters including the National Science Foundation, to the National Pollution Fund Center, the U.S. Army Legal Services Foundation, the Federal Deposit Insurance Corporation, the Applied Research Planning Agency, and the National Rural Electric Cooperative Association. The private sector also has established a significant presence led by Eastman Kodak, Environ, Sedgewik James, and Uslico all os which have chosen their headquarters due to the proximity to an efficient and effective regional transit network.

As it was planned, the Ballston Metro Centre has been the centerpiece of the city's redevelopment plan. In addition to its urban success, the station development brings approximately $200,000 per year in air rights into the agency's coffers. Land prices in the

vicinity of Metrorail stations have increased by roughly 100% since service began and, in some places, by as much as 400%.

By 1982, $970 million in private development had occurred adjacent to Metro stations which was an integral component of WMATA's intermediate and long range station area development plans.[1] Although the original Metrorail route alignment was chosen primarily due to cost and right of way considerations, a strong market and advantageous land ownership in the vicinity of these Metro stations set the stage for joint development to flourish in accordance with specific guidelines set out in WMATA's "System Interface" policy. As part of this policy, if the benefits accrued to a private developer exceed the costs associated with a particular project, then a negotiated percentage must be paid to WMATA.

The key to WMATA's success is that it has anticipated, planned for, and accommodated growth in a systematic manner before the fact. There has also been clear and consistent participation on the part of regional government in the identification of appropriate opportunities for intensification and the development of a comprehensive growth management strategy. Leaving broad planning issues to this level of government has helped municipalities overcome differences in opinion as to how to approach Metrorail stations. Front-end planning and pro-active measure to ensure clear rules have been two of WMATA's fortes.

A series of studies have shown that major retail sites near WMATA stations are responsible for 2 to 6 times the number of person trips as compared with other uses, that transit modal shares for downtown office buildings near stations exceed 50%, and that residential developments near stations supply between 35% to 45% of the station ridership.

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1. 20 intermediate station plans and 82 long range plans

Recognizing this fact, joint development has been a key part of WMATA's strategy to reduce subsidies and work to establish and maintain a break even operational status.

The WMATA development program has sought to encourage joint development of transit properties and adjacent real estate, direct connections between transit stations and adjoining development, and coordination of Metrorail station planning with comprehensive planning performed buy local governments. Below are four salient components of the WMATA joint development program.

1. Station location decisions have generally been determined with local planners to support local land use policies with each local government preparing specific plans for each station which, more often than no, have include establishment of increased density.

2. Development did not occur as quickly as WMATA officials had originally anticipated. First, the delivery of rail service took longer than expected. Second, interest rates at the time were, increasing the risk for private sector players.

3. Development was made much more feasible by recognizing that a sufficient market was necessary to attract private sector interest. Where the market was strong, the public sector didn't look to share in the benefits so aggressively that the project eventually became unfeasible.

4. Some level of guarantee that a station would be completed and operating was needed in order to instill confidence in the private sector such that potential partners would be willing to participate in project early on in the process.

Washington D.C. has benefitted more than any other transit agency in the U.S. from air-rights and system interface leases which have generated more than $20 million since the late 1970's.

By the year 2000, WMATA is expected to realise $150 million annually in joint development profits. To date WMATA has negotiated 11 joint development projects and 11 revenue-sharing connection projects at Metrorail stations throughout the system, providing nearly $5 million in annual revenues. Through its joint development efforts, WMATA realized over 1 million new subway trips in annual increased ridership. In addition, over $20 million in annual tax revenue to local jurisdictions is generated. Joint development on the Metrorail system is estimated to provide 25,000 primary jobs, 4 million square feet of office space, 500,000 square feet of retail space, and includes almost 1,000 hotel rooms and 300 residential units.

Chapter 4

Lessons and Implications

4.1 Introduction

In the previous chapter, seven case study transit systems have been examined with respect to their station delivery strategies. Each system has been studied in order to gain insight into both its successes and its failures in delivering stations as true strategic urban nodes. While this analysis does not represent an exhaustive investigation of all possible delivery strategies, it does offer transit agencies seeking to delivery strategic urban node rapid transit stations a valuable set of lessons and implications. These lessons fall into seven broad categories which will be discussed in this chapter:

- The Role of Regional Planning
- "System" (alignment) vs. "Discrete Element" (stations) Precedence
- Addressing the Public-Private Boundary
- The Private Sector as a Potential Strategic Ally
- Station Specific Strategies
- Public Sector Institutional Orientation
- The Benefits of Strategic Nodal Development

4.2 The Role of Regional Planning

Strategic urban node rapid transit stations are defined in terms of their connection and interaction with their surrounding urban fabric, or their "zone of impact." One can also define an entire transit network of nodes as connecting to and interacting with its own impact zone. By increasing urban mobility and accessibility within this zone, a transit network has the potential to exert tremendous influence on the affected population in a variety of ways, including economically, socially, and environmentally.

First, from an economic perspective, by connecting outlying areas to a central core the transit network can increase access to and reduce the effective cost of labor[1] making a

region a more attractive location for investment. Furthermore, as outlined in the WMATA and TTC case studies in particular, accessibility provided by the transit system will invariably increase land values within and around the transit corridor, increasing the tax base and thereby helping to create a healthier regional economy. Second, from the perspective of social equity, the nodal network can have a distributive effect by providing access to concentrations of services and amenities such as education, healthcare, and recreational activities to a wider portion of the population. Finally, transit clustered urban development reduces dependence on automobile travel helping to reduce congestion, auto emissions pollution, and the need for expensive infrastructure outlays required for less densely populated and less transit-accessible urban forms.

The essential point is that the crucial interplay between regional growth and urban mass transit necessitates the need for a continual comprehensive regional planning effort in order to understand, plan for, and in some cases, redirect regional trends that result from city/transit interaction. Planning at this level provides the framework with which to identify effective strategic nodal formations that will further regional goals which may include the consolidation of a growing downtown core, the management of rapid growth due to sudden population influx, or, as in the case of San Juan, the implementation of a rapid transit system into an already active and dense urban area.

As indicated in the case study of the TTC, regional planning has been a major force in the evolution of the urban mass rapid transit network by laying out regional, systemwide goals and objectives which have been based around a collection of strategic urban transit nodes. After the formation of Metropolitan Toronto in 1953 and the subsequent establishment of the Toronto Transit Commission the following year, the Ontario Provincial Gov-

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1. "D. McWilliams. The Economic Benefits of Refurbishing the London Underground, Public Transport International, vol. 43, no. 3, 1994." on page 232

ernment, recognizing the potential of the urban subway, set about an extensive planning effort to provide a framework for the evolution of rapid transit in Southern Ontario. It was within this planning context that the TTC evolved into one of the most successful inter-modal transit networks in the world.

In Atlanta, the Atlanta Regional Comprehensive Plan, which was constructed around the strategic nodes of an urban subway system, was developed four years before the Metropolitan Atlanta Rapid Transit Authority (MARTA) was even in existence. The plan was produced in specific anticipation of the central role that the transit system would play in the urban framework and was one of the key tools utilized in the location and delivery of the first station nodes on the system.

Both Washington D.C. and Caracas benefited greatly by early planning efforts which consolidated visions of their respective transit systems as well as guided the creation of the key strategic nodes around which the rest of the system would be designed and delivered.

While this level of planning is essential in identifying and outlining appropriate alignments, it is not an end in and of itself. This has been demonstrated in the case of Miami, where a seemingly effective station area development plan at the Dadeland North station fell far below expectations, due not because of lack of planning but due to the fact that station selection was not performed within the bounds of a comprehensive plan providing a logical framework for how selected nodes would and should work within a larger system.

In general, the case studies indicate that there *is* the necessity for a regional system-wide planning effort, but that it should be done in *conjunction* with clear and well developed nodal studies in order to understand how stations will fit together to form a robust network.

4.3 Precedence of "System" vs. Precedence of "Discrete Elements"

This section presents two approaches to alignment and nodal selection that emerged through the case studies. In the first case, the "system" approach, the agency and the political powers that be concentrate their efforts on determining, first and foremost, the transit alignment, after which a set of nodes is superimposed onto that alignment. In the second case, the "discrete elements" approach, the agency will actively and rigorously identify the absolutely essential key nodes and then superimpose the alignment onto those nodes. The difference between these two strategies, while seemingly subtle, can cause highly different results as demonstrated in the cases of Toronto, Atlanta, and Caracas.

In delivering the first phase of the Toronto system, along the Yonge Street Corridor, the TTC selected a series of the most strategic nodes of concentrated urban activity while working within the bounds of the Metropolitan Regional Plan. Subsequent to this exercise, the alignment was delineated to connect these nodes. They were specifically designed to fall directly under the centre of each intersection on the Yonge Corridor such that underground access would be equally effective to all four corners. This was a clear case of building a system out of discrete elements that, in the case Toronto, are sometimes referred to as "pearls on a necklace." The result has been the creation of a series of interconnected strategic urban nodes which, through the excellent accessibility that they provide, have attracted significant amounts of residential, commercial, and institutional investment.

This process is in stark contrast to the methodology that was used to deliver the Spadina-University extension running north from St. George Station. In this case, the concept of locating strategic urban nodes was all but forgotten and the delivery process that had made the Yonge Street Corridor such a success was nonexistent. The first stage (and the most crucial to the eventual outcome) of the delivery process was the decision to align the

system through a ravine that was already publicly owned. This decision was driven principally by the fact that it was the lowest cost option. Then, in an almost arbitrary fashion, a series of station locations was selected each of which *happened* to fall along the alignment. In almost all cases, these stations were placed at neither logical intersections nor at locations of commercial or residential concentration. The result is a system composed of *unstrategic* nodes which, by virtue of their poor location, have realised no station area development activity to anywhere near the same degree as the Yonge Street Corridor. Further reasons for this are discussed in "Station Area Strategy" on page 172. The same analysis holds true when comparing the successful nodes on the North Line of the MARTA system with the less successful nodes on the East-West alignment.

In Boston, The MBTA's Wellington station is a clear example of the successful delivery of a *discrete element* strategic node whereby consideration was given first and foremost to the evolution of a station zone that would serve as a node of concentrated commercial and institutional activity with effective transit access.

4.4 Public-Private Boundary

One of the most interesting exercises to come out of the case studies is the determination of what is "public" and what is "private." The question is raised whether or not there exists a *physical boundary* between the two and, if so, where that boundary is and what happens there.

In the case studies there is a clearly a wide variety of interpretations of what should be planned, designed, delivered, and operated by the public and private sectors respectively. In "Serving the "Public Interest" - Market vs. Government" on page 20, two different but compatible roles are proscribed for the public and private sectors. It is concluded that there is, in fact, a "public interest" and that there is a clear distinction between the ultimate

motivations of the private sector and the public sector. This is proposed with a presentation of the conceptual elements of the market system and the public policy process. That is, fundamental to the market system, is the exchange process in which values are assigned to particular goods and services and in which the decisions that result with respect to the allocation of resources for the production and distribution of these goods and services are made.

Within this context, it becomes difficult to place value on concepts such as *equitable distribution* and *accessibility*, both of which are clearly goals of an urban mass transit provision. It is argued, however, that it is possible for the market process and the public process to come together in a hybrid approach to serve "public interest" in such a way that responds to the needs and inherent interests of both. While the distinction is made between the *roles* of the two sectors, the analysis does not proscribe a standard for the delineation of a *physical boundary* between what is provided by the public sector and what is provided by the private sector in the delivery of the rapid transit station.

Does the boundary exist at an impenetrable buffer zone as artificially created through zoning disincentives and unapproachable station design as in the case of the TTC's St. Clair West Station or does it not exist at all as in the case of the JR East Stations? The case studies imply that the more integrated a rapid transit station is into its physical and economic surroundings, the more successful it will be at attracting ridership and increasing the possibility for bi-directional flow creating a more robust strategic urban node. While the highly integrated model such as the "Station Complex" in the case of the JR East stations, the U.S. "streetcar suburbs" in the early part of this century, and, potentially, the future Potomac Yards station in Washington D.C., has been hugely successful, it is by no means the only one. Caracas has delivered a successful network of strategic urban nodes with a clearly demarcated boundary between what is public and private *with respect to*

delivery. The rules are simple. Government does all and the private sector does nothing. However, by "up-zoning" and locating the stations precisely in the center of the densest concentrations of urban activity, the stations are delivered with such a compact buffer between public and private that they become, by sheer brute force, almost as embedded as in the integrated delivery model despite the absence of the same amount of contemporaneous station development that occurs with integrated delivery.

Faced with both diminishing public funds, rising operating costs, inherent inefficiencies in their respective infrastructure procurement strategies, and a strong desire to create more integrated strategic station nodes, transit agencies in the U.S. are looking to their stations with broadened objectives, similar to the JR East model. However, unlike the JR East Company, most transit agencies in the U.S. are public sector entities and thus don't have the legal charge or inherent skills to undertake the complex set of tasks required to deliver true strategic urban nodes. Therefore, private sector players are increasingly being viewed as potentially capable of enhancing the value of the transit station as a strategic urban node through the simultaneous delivery of increased commercial and residential activity and thereby inducing increased ridership. The fundamental recognition is that the public and the private sectors *will* interact at a physical urban level via the public-private boundary. Case studies, most notably WMATA, JR East, and TTC, suggest that this boundary can come right up to and, conceivably even include, the station platform. The question is how should the opportunity provided by this inherent relationship be exploited and optimized?

4.5 Private Sector as Strategic Partner

There are very few transit agencies in the world that have fully taken advantage of the inherent capabilities of the private sector as a means of enhancing the success of delivering a strategic urban node rapid transit station. The case studies indicate that private sector

players have the potential to play a key role in this process in certain instances. The case of the JR East Railway company is the only one of those studied in which the private sector is fully integrated into the delivery process because the private sector *is* the only party delivering the entire "public" product.

In the other case studies, the private sector has been involved to a lesser degree in the delivery process of rapid transit stations. In all cases, private sector players, although interacted with in differing fashions, have been regarded as potential public sector strategic allies who possess unique market driven skills in management, real estate, cost control, and innovation in design and integration.

The private sector is, at a fundamental level, driven by one bottom line: *return on investment*. However, with respect to transit, the case studies show that land value at or near to strategically located and developed rapid transit stations is significantly more valuable than elsewhere due to its higher level of accessibility. It is accessibility that delivers the essential key to the transit agency's ultimate success: *ridership*. Thus if both parties' interests can be aligned around the common objective of increasing ridership, albeit for different motives, the rapid transit station has at least the impetus to become a strategic urban node. The public sector must therefore look for opportunities to ensure that revenue streams exist and to condition them to attract private sector participation, when appropriate, while maintaining the integrity of its stated goals for a particular project.

This is a non-trivial task, however. For instance, high-rise residential development in conjunction with other commercial uses has been shown by Robert Cervero[1] to significantly increase the viability of a strategic node station through high ridership. However, a common difficulty in attracting private sector players to participate in the delivery of

1. "R. Cervero. Ridership Impacts of Transit-Focused Development in California, University of California at Berkeley, Institute of Urban and Regional Development, Berkeley, 1993." on page 230

mixed-use projects necessary to a station's success is that many North American developers specialize in either commercial or office or residential development. Very few are in the business of both. Furthermore, developers and other private sector parties will most often want to build whatever the market will support which, at the time of station delivery, may not be in line with the transit agency's short- or long-term goals for the rapid transit station. Therefore, to create a true mixed-use development, it is often necessary to phase the projects so as to induce critical masses of key residential *and* commercial activities early on in the process as a foundation for future sustained growth. Complementary to success is the provision of necessary physical amenities to create a pedestrian friendly environment.

These are all bounds that private sector players have shown themselves capable of working within. The key is that the private sector was regarded as a *partner.* That is, in all cases studies, the public sector, agency, and government alike, all had some level of participation, whether it was to facilitate the process of permitting and approvals as in the case of Miami-Dade, to lay the groundwork for assembling consolidated development parcels through extensive land acquisition as in the case of WMATA, or to separate the task of the public and the private sector completely along clear, sensible and understood lines as in the case of Caracas.

Capitalizing on the discipline created by competition in the private sector marketplace is also a means of putting pressure on the public agency to review its own services. Through competitively contracting services related to the delivery of the station and station area on which the public sector can *also* compete, there is the opportunity to keep in-house operations efficient. This has clearly been the strategy in the case of the MBTA, which recently contracted a private company to manage its station area landholdings which had been deemed to be inefficiently run in-house. Furthermore, when contracts are

competitively bid, the rigor of the private sector can provide a "free" feasibility study by its response (or lack thereof) to a particular RFP. This was the case with WMATA's Ballston project in which private sector players did not submit bids to the initial plan but provided the agency with the information necessary to rework the project such that it could become a more fruitful venture for all parties involved. The bottom line is that, recognizing the potential of the private sector up-front whether it is through negotiation, or competition, or simply in an advisory planning capacity, forces the agency to orient its delivery processes such that the station is delivered with provisions for evolution into a true strategic urban node.

4.6 Station Area Strategy

The delivery of a rapid transit station as a strategic urban node can only be achieved through a clear and consistent station area strategy, evident in the case studies. No one strategy is *necessarily* better than another, which was evident in the case studies. The agency may or may not have certain tools at its disposal in order to effectively develop and implement a particular station area strategy.to accomplish the task. It is therefore necessary to strategize appropriately given the context at hand.

4.6.1 Problem Definition

The first step is to define the "problem" to be "solved." That is, if the rapid transit station is to evolve into a true strategic urban node, it must be defined in terms of more than just a technical means of conveyance from the inside of the transit vehicle to the sidewalk. The solution to such a limited problem definition will more than likely be one which simply seeks to "convey passengers from the vehicle to the sidewalk and vice-versa in the least expensive manner." However, when the agency begins to address issues such as the identification and enhancement of a true "destination" with accessibility and mobility as

primary concerns, it has the ability to take advantage of what might otherwise be missed opportunities. In this vein, the transit station is defined in terms which engage many disciplines including urban design, economic development, finance, the social sciences, real estate, and, of course, transit service provision.

A prime example of this process is the JR East definition of the station as:

- The Gateway to Surrounding Areas
- The Nucleus of Urban Development
- The Focus of Local Activities
- The Source of Information and Culture
- The Symbol of the Community
- Shopping
- Office and Hotel Space

Such a definition, much like a corporate mission statement, then allows the agency and its public and private sector counterparts to build a consistent strategy which is geared toward meeting broad but understood goals and objectives.

4.6.2 Station Area Study/Task Force

A useful tool to realize the goals mentioned above utilized by some of the case study agencies is a program of in depth station area "development potential" studies as were performed by MARTA with its Transit Station Area Development Studies. These studies served as strategic blue-prints for the eventual creation of strategic urban nodal stations on the North Line. The timing of such studies is important. Performing them after the fact (i.e. after the station has been delivered) essentially forces the agency to try to retrofit a process onto a station area and force it to perform in a way that it may or may not have been initially designed to do. Other systems which undertook successful extensive pre-delivery studies include WMATA with its Station Area Development Program and the MBTA with its Wellington Station Joint Development Reconnaissance Study. Both were useful not only in-house, but they also provided a sound basis on which to identify and

understand the potential of a station and to put together high quality joint development prospecti.

WMATA took this process one step further with the creation of a series of station area task forces, each of which focused on one or more specific station locations and acted as a public-private liaison and a database of development related information relevant to the specifics of the rapid transit station delivery.

4.6.3 Station Functional Type

Crucial to the development of a consolidated strategy is the determination of a station functional type as outlined in *Section 1.5 Station Description.* On one extreme is the Japanese example in which the station is conceived of, designed, constructed, and operated as a strategic node within the bounds of a highly integrated corporate structure, or Keiretsu. On the other extreme is the delivery of the original Yonge Street alignment in which the TTC, with similar *overall* objectives as the JR East Company, opted to deliver the basic station facility as a minimal threshold under the principal corridor in such a way that adjacent private sector landowners could deliver the complementary physical infrastructure necessary to create a strategic urban node in the form of access, building and surrounding commercial and residential projects. In this case and in the case of the Caracas Metro stations, the result was a clear and intentional part of the strategy. On the other hand, perhaps due to the success of previous stations on the Yonge Street line, the TTC delivered its Spadina-University stations with the same functional type. However, due to the fact that this delivery was performed in the absence of a long-term strategy, the result was far less effective.

If the minimal threshold model is selected by the agency than it may be decided to deliver stations with reinforced foundations and "knock-out" panels as have MARTA and

WMATA in those stations that haven't had immediate interest on the part of the private sector.

4.6.4 Development Policy

Each of the agencies studies has had, at some point, a clear policy with respect to development. In some cases it has been to competitively bid station area projects (WMATA) and in others to specifically not do anything in the way of creating development projects (Caracas.) In both these cases, the decision has been made within the bounds of a larger, consistent strategy. In the cases of the St. Clair West station in Toronto and the stations on the MARTA Buckhead line, lack of any stance with respect to development has led to the uncoordinated delivery a series of stations that bear no physical, economic, or other connection to the surrounding fabric.

The lesson to be learned is that the establishment of a development policy provides the agency with a framework to direct the evolution of the station such that it meets the agency's criteria for strategic nodal creation through programs like Atlanta's Surplus and Property Rights policy. The public sector can significantly enhance the potential success of a rapid transit station project by promoting coordinated land use programs which encourage the high density of mixed uses which must surround a transit station if it is to work as a strategic urban node. For instance, Toronto has been widely recognized as a city in which specific transit-related limitations to downtown parking have led to an increased transit-auto modal split.

As part of a development policy, the agency may also wish to create a single entity real estate or development arm that has the authority to make decisions with respect to station area development and the capacity to deal with private sector players in an entrepreneurial, flexible, and simple fashion. Toronto, Washington, Atlanta are all examples of cities

that have implemented this strategy successfully, each one with a real estate arm that is accessible and efficient in private sector dealings.

4.6.5 Land Acquisition

The three primary constraints to effective delivery of strategic nodal rapid transit stations are multiple station area land ownership, institutional fragmentation, and physical factors which create limited development potential in the station area.

The assemblage of station area land may be a useful strategic move for agencies wishing to create developable station area parcels, as was the case most notably in Washington D.C. and Toronto. However, an extensive land acquisition program is not without costs. There are, in fact, direct costs which will affect the overall feasibility and nature of the rapid transit station project. Land banking requires the public sector party in question to expend resources in the appraisal of the land to be acquired followed by either negotiation and purchase or, if need be, condemnation through the powers of eminent domain. The land must then be held until a use congruent with the objectives of the rapid transit station strategic urban node has been determined. As in any financial venture, these costs must be weighed heavily against the opportunity costs and other economic externalities.

Land banking can be a useful tool for a number of reasons. First, it places control of the eventual development of the site in the hands of the agency. Second, the acquired land can be a useful negotiating tool as was the case with the development of the Ballston Metro Center. Washington and Toronto have both utilised this technique extensively and successfully. In contrast to Washington and Toronto, neither Caracas nor Atlanta has undertaken any land acquisition plan as a means of enhancing the potential success of their stations. However, they have achieved success with other measures such as zoning and density incentives.

A strategic urban node, by its very nature, is an area of concentrated mixed-use. That is, if one is to create such a node it is necessary to see that both commercial and residential development takes place. Housing policies which promote station area residential density have been shown to directly impact ridership figures (TRR no. 908 pg. 7.) Private residential development can be promoted by using a variety of techniques including incentive zoning[1], fiscal incentives[2], joint development and cost sharing[3]. The best barometer of private sector interest, and thus the financial viability of a rapid transit station project, is the willingness on the part of private sector firms to enter into benefit-sharing agreements with the public sector.

The questions to be answered by government are whether or not the financial strategy is to seek a revenue stream or a reduction in capital expenditures out of the partnership or both. This will be highly influenced by whether or not new taxes are possible or even desirable and on the structure of the property market surrounding the station. That is, the difficulty in building consensus around a particular rapid transit station project generally increases with the fragmentation of landownership around the station project. This will also effect and, to some degree, determine the institutional arrangements between the public and private sectors such as the rights of the party which operates the developed facilities.

Atlanta and Washington D.C. have focused their efforts to date almost solely on joint development while Boston has actively pursued benefits assessments as part of its strategy. WMATA spends approximately 0.7% of its total capital costs associated with rail on capital cost sharing. This is the result of 9 station leases which include connection agree-

1. density bonus, air rights, mixed-use
2. tax-increment financing, tax-exempt bond financing, enterprise zone creation
3. co-development, supplemental property leasing, land dedication

ments. MARTA spends approximately 0.2% of its total rail capital costs and 3 air rights leases and connection agreements.

Generally speaking, joint development should follow a three step process beginning with a comprehensive planning and public policy making phase. At this point in the joint development process, the agency should first define its joint development goals and policies. With this framework in place, the agency can seek out and identify joint development opportunities along the alignment. Once opportunities have been identified, it is important to begin the necessary process of coordination with other public agencies and the building of public support.

The second phase consists of developing a project that is conceptually marketable to ensure private sector interest in the project. A project team should be assembled to undertake the preparation of a realistic project budget and market analyses, both of which should be included as part of a conceptual plan. At this stage in the joint development process, the agency will be required to address a variety of important issues spanning a wide array of disciplines.

Efficient and anticipatory intergovernmental and interagency coordination will aid significantly in the success of the joint development process. By this stage in the joint development process, the agency should have a clear understanding of which parties will have legal authority for various aspects of a given project. It should also have a clear understanding of the regulatory changes that may be necessary or advisable to facilitate the delivery of a particular rapid transit station. This phase of the process is important for laying the groundwork for a successful joint development project. The agency, by examining the above issues will be forced to assess the existing and future accessibility between the rapid transit station and the private development and determine whether or not it should

acquire and assemble additional land parcels surrounding the station. Arrangements for the funding and financing of the project should also be made at this point in the process.

In the third phase of joint development, the public sector should actively seek out interested and capable developers, select one and begin to negotiate a mutually beneficial agreement. The role and expectations of the developer should be clearly defined and understood early on this phase. The agency should have the expertise and means to monitor the developer on an ongoing basis and it should be prepared to enter into renegotiations if need be.

4.7 Institutional Orientation of the Transit Agency

There are many ways in which the transit agency may orient itself to establish an effective means of delivering rapid transit stations. Through the case study process four patterns have emerged which warrant special mention. Each one has implications with regard to the institutional structure of the agency, the means by which the agency delivers its rapid transit stations, and, in particular, the means in which the agency interacts with private sector players in the process. The roles as defined here are the agency as "facilitator," "entrepreneur," "leverager," and "venture capitalist."

In the first instance, the agency adopts a role in which it works to create an environment conducive to bringing out the best in the key players (including the agency itself) by allowing each one to focus on what it is each one is inherently best equipped to do. As far as the public agency is concerned this includes tasks such as assembling land parcels for easier development, obtaining necessary permits and approvals, establishing and maintaining interagency agreements, all of which were self proclaimed agency tasks in the case of the Miami Dadeland-North project as well as in MBTA's Wellington Station project. This strategy appears to have the most effect when the agency is trying to engage private

sector players in delivering large, inherently complex rapid transit station related development projects.

In the second case, the agency is more oriented toward aggressively seeking out and negotiating or bartering with private sector players and other public sector agencies and institutions to achieve its goals with respect to the delivery of strategic urban nodal stations. The entrepreneur agency requires a flexible non-bureaucratic structure and outlook in order to be prepared for and responsive to new opportunities as they arrive. By arranging itself into a flat organization of strategic business units that come together periodically to produce highly complex projects as they arise and that share expertise and financial resources fluidly, the JR East is a prime example of a successful entrepreneur agency with its ability to create highly complex strategic urban node projects such as the Ikeburo Plaza Station Complex.

One of the primary difficulties that transit agencies have to deal with in soliciting private sector participation in the delivery of a rapid transit station is the fact that most developers will want to wait until transit service begins before entering into station related ventures. To offset this reluctance, the public sector has a variety of possible tools at its disposal to engender action on the part of the private sector in delivering rapid transit station. These tools, such as zoning incentives and density bonuses, are useful in attempting to make a rapid transit station project attractive to private sector proposers. Private sector parties often require incentives, either monetary or land use based to help make a potential station project more feasible.

The third case, the leverager, shares qualities with the first two, except that, in this case, the agency constantly performs internal assessments of its assets, physical and other, and looks for ways in which to utilise them as negotiating instruments. This provides the agencies with the opportunity to leverage often scarce resources to achieve strategically

desirable station area complements such as street expansion, new sidewalks, and enhanced provision of ancillary infrastructure such as sewer and water service. This was clearly the role adopted by WMATA in its Ballston project. This role may also take the form of MARTA's leveraging access for redevelopment with Bell South, or of WMATA undertaking an extensive land acquisition program to build up a landholdings with which to leverage when entering into agreements with private developers once stations have been delivered.

In the final instance, the agency works with the public sector, most likely state government, to take on the role of a "banker," acting as a long term institutional financial partner. In this way the agency is able to ensure the extension a favorable borrowing position well as low interest or, in some cases, interest free loans as WMATA has done by seeking out HUD funding for the creation of transit related residential development projects.

Specifically related to station are development, the agency can orient itself in three different ways as outlined in "Joint Development Strategies" on page 41. This section outlines three models related to joint development: "laissez-faire;" agency driven; private sector agent. Caracas adopted a "laissez faire" approach to the market which has been successful primarily due the public sector's insistence on locating the stations at nodes where the existing conditions were such that success was almost guaranteed. JR East, by virtue of its extensive in-house capabilities and integrated approach to station delivery follows more of an agency driven approach in which it, as the agency, manages the entire delivery process. Finally, in competitively selecting developers through in-house created RFP's and Joint Development prospecti, WMATA, in particular, and, to some degree, Miami, have set industry standards with respect to development related promotional materials and institutional joint development processes.

4.8 Public-Private Strategic Urban Node Creation - Potential Benefit

Engaging the private sector in the delivery of rapid transit stations as strategic urban nodes may or may not reduce the net costs to the public sector. However, cost reduction is not the sole benefit that can be derived from this method of delivery. By leveraging the skills of the private sector the public sector can focus on its own inherent capabilities to facilitate the creation of rapid transit stations that are successful with respect to mix of uses, aesthetics, environmental quality, security, and convenience. The benefit that the private sector can bring to the process is the ability to affect economic growth through real estate development leading to increased employment, commercial activity, and a healthy population of residents. This increased mix of activity can play an important role in the attraction and long-term retention of businesses and residents in the station's zone of impact. The key is to utilise the private sector's desire to maximise return on investment to achieve better planned station areas and greater ridership by exploiting public-private opportunities that support taxpayer investments.

The "transit/village" model, the "streetcar suburbs," and the JR East "Station Complex" most closely fit the model of a truly integrated strategic node with private sector and public sector interests interacting intimately in the delivery process. Despite the fact that delivering rapid transit stations within the "transit/village" model has received much attention in the U.S., the model is not a common phenomenon due, in part, to inertia in the public sector to change delivery processes, and to local and community opposition to increased housing densities. The closest contemporary expression of this model will be WMATA's Potomac Yard station and development project.

The bottom line for the public sector is assessing how it can best utilise the resources, financial and otherwise, possessed by itself and by the private sector to assure effective delivery of public benefit. Public benefit is an elusive notion which should reflect the

broad goals and objectives of public sector entities. Delivering a rapid transit station as a strategic node has far reaching implications. There is the potential for spawning economic development and job creation in the vicinity of the station. By aligning itself with the private sector, the public sector can gain access to a highly developed market driven desire to innovate and develop creative solutions that are financeable and feasible. With this in mind, the rapid transit station can become more than just the access point for rapid transit vehicles. It has the potential to become a strategic location for businesses, residents, institutional facilities, community activities, and public spaces.

4.9 Conclusion

The delivery of rapid transit stations as strategic urban nodes requires the development of clear and concise regional policies aimed at nodal growth. This type of strategising will assist in the creation of true destinations with concentrations of activity in their midst. This will help to conserve land, reduce auto travel, and through concentrated development, optimise expenditures for and outlays of infrastructure and public services. The key is to coordinate transit route alignment and station locations within the context of an overall growth management policy. There must also be site specific policies which address the immediate needs of a particular station location by allowing for appropriate uses and densities.

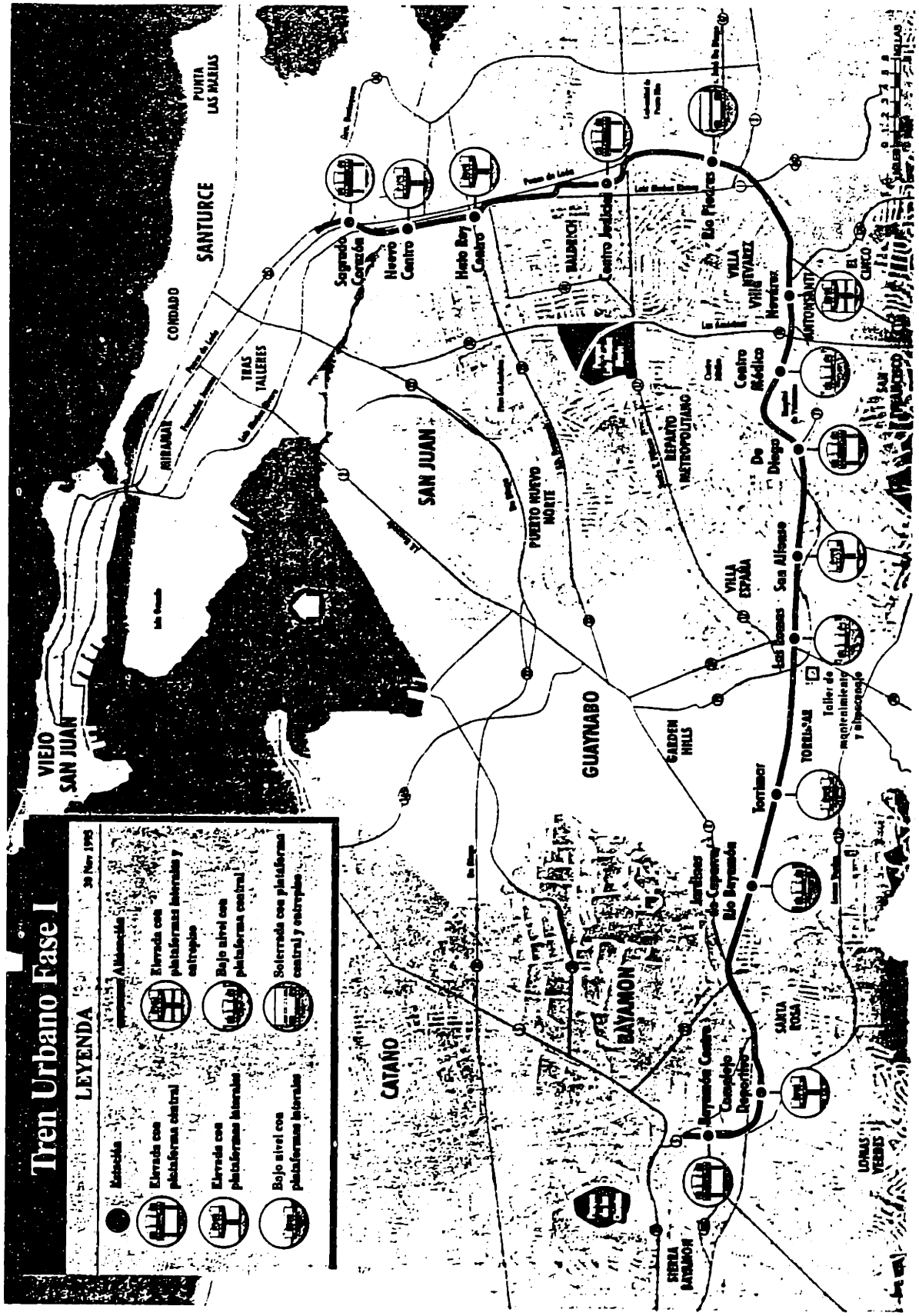


Figure 4.1: Tren Urbano - Rail System

Chapter 5

The Case of San Juan - Tren Urbano

5.1 Background

Although Tren Urbano wil' be the first urban mass rapid transit system in San Juan, passenger rail transportation is not new to Puerto Rico. Puerto Rico's economy was almost entirely based on sugarcane export until just before World War II. With the growers of sugarcane dispersed around the island, rail was a necessary means of transporting the crop to port. The accessibility provided by rail also allowed for relatively easy distribution of goods and services and thus made it possible to live outside of the largest city, San Juan, and still "stay connected." The combination of an urban trolley and longer distance passenger service, both of which travelled through the old city center of Santurce down the primary north-south axis to Rio Piedras, was the primary force in the shaping of the urban development and in the consolidation of 78 municipalities on the island. (see "San Juan Trolley/Train Network - Pre World War II" on page 186) The sugarcane economy collapsed just before World War II and was followed by a series of key events over the next three decades which led to the demise of the important transit/city connection.

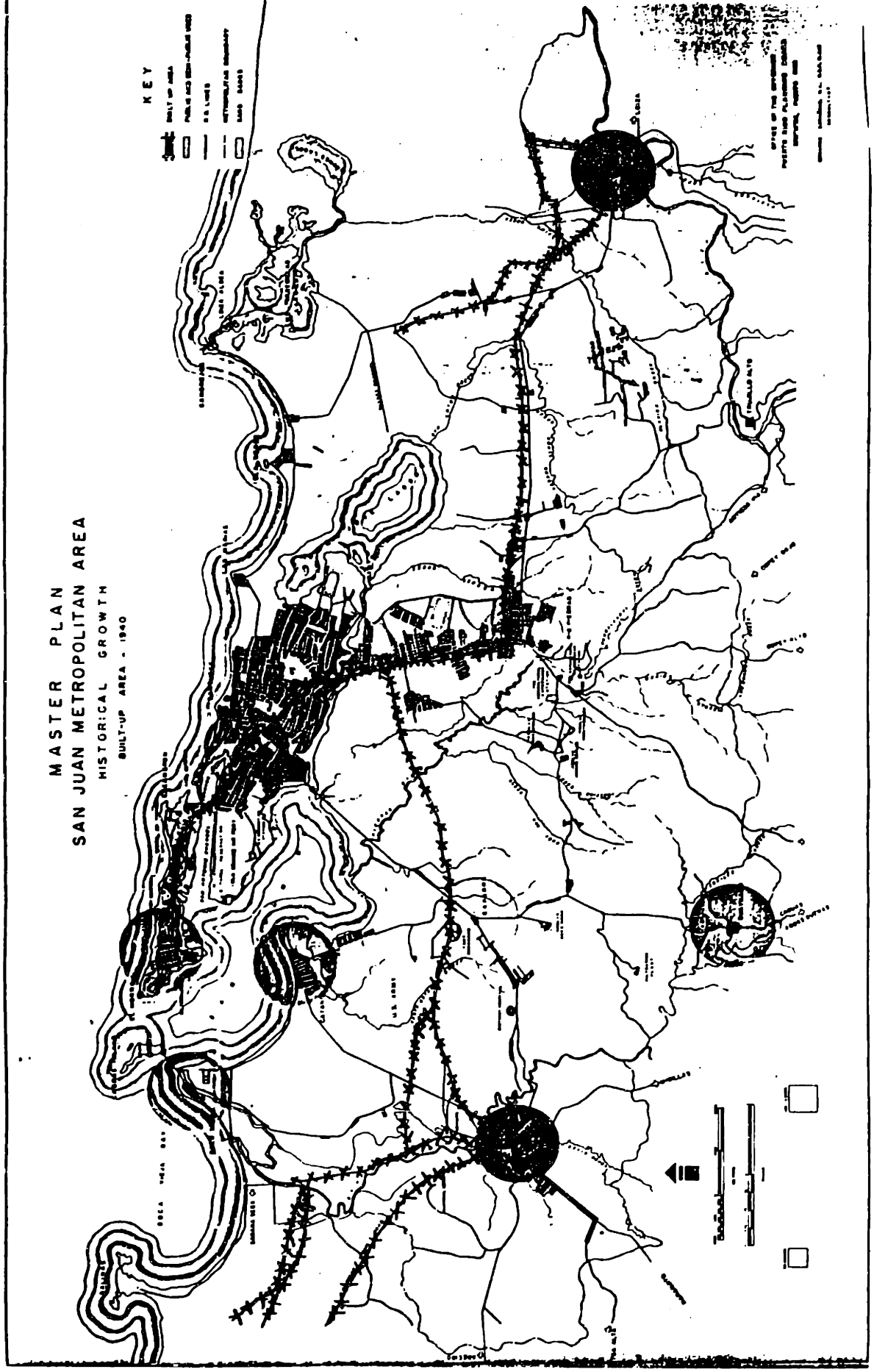


Figure 5.1: San Juan Trolley/Train Network - Pre World War II

of registered vehicles to road space in the world. The resultant congestion coupled with an expected population increase of 20% by 2010 has created the urgent need for a high-quality, effective, and efficient urban mass transit system. Hence, the Tren Urbano rapid transit system.

Having passed through moderate growth in the 1980's, the high-consumer Puerto Rican economy has experienced renewed growth in the last three years, averaging 2.9% annually, led by a healthy construction industry financed almost entirely with private sector investment.

Following on the success of the Puerto Rican economy in the past decade and with the desire to establish future competitive advantage for the island, the planning of the system has focused on innovative delivery and procurement strategies. The $1.2 billion project will be funded one third through federal government discretionary funds, one third through a grant from the 1991 Intermodal Surface Transportations Efficiency Act (ISTEA) and one third through local funds.

The 14 mile alignment has been broken down into seven contracts for civil and structural works. The first of these contracts, the Systems and Test Track Turnkey (ST^3,) in addition to the procurement of the portion of the alignment running between and including Las Lomas and Torrimar stations and the yards and shops, includes the procurement of the rail cars and rail system for the entire alignment. This contract has recently been awarded to a team led by the German rail car manufacturer, Siemens.

Once complete, according to current plans, the Tren Urbano will eventually extend between Old San Juan and the international airport, between Caguas and Santurce, and between Bayamon and Carolina. The system will be built in phases with the first phase beginning in Bayamon in the western part of the San Juan Metropolitan Area (SJMA.)

The alignment will then pass from Bayamon through the 65th Infantry Highway Corridor, which is owned by the State and which was previously slated for highway construction.

The alignment continues eastward passing through low density residential communities along the corridor until it reaches a high concentration of medical facilities known as Centro Medico. From here, the alignment turns north into the system's only subway stop at the edge of the University of Rio Piedras campus. Trains will cross the Luis Muñoz Rivera Avenue and stop at the Centro Judicial station approximately 100 meters from the principal corridor behind what is now the headquarters of the Puerto Rico Telephone company. It will then move north, passing over Munoz Rivera on an elevated platform and stop behind the current Metropolitan Shopping Center at the Hato Rey Centro stop. Again, the stop is set back from the corridor, away from the primary intersection, this time on the other side of the street. From this point, passengers will continue north to the Nuevo Centro Station which will serve the Acua Expreso and public bus terminals and cross over the Martin Pena Canal ending at the phase I terminus at Sagrado Corazon Station in Santurce.

In a public statement, Secretary of Transportation, Carlos Pesquera, indicated that Tren Urbano is committed to "not increasing taxes or coming up with any new taxes to cover operating costs" which are expected to be between $27 million and $39 million annually. The true test of the system's success will be its ability to attract riders. For the stronger system to work, so must the stations. Critical to the success of both the first phase alignment and future alignments is the development of a strategic framework for station delivery.

The turnkey procurement strategy that has been established for the system is hoped to:

- minimize completion and performance risks by PRHTA
- ensure that operations are commenced as soon as possible
- ensure that risk is allocated appropriately
- cap capital costs

- cap operating costs
- maintain service quality

This strategy effectively places primary focus on the Tren Urbano system as a whole. It does not, however, address the procurement and delivery of the stations as a set of strategic, discrete, interconnected elements. Planning for Tren Urbano thus far has not focused on station specific evolution as strategic nodes. A discussion of short-term opportunities for the delivery of strategic urban node rapid transit stations on the Tren Urbano System follows. In the next chapter, options to capitalise on these opportunities are presented followed by a discussion of opportunities and options for subsequent phases of the Tren Urbano system.

5.3 Opportunities

In order to create a rapid transit strategic urban node, there are several factors which are fundamental to first, selecting appropriate strategic nodal locations and then attracting the investment to create the necessary mix of uses and activities necessary to sustain the vitality and viability of the node. As outlined in "Transportation and Urban Development: Perspectives for the 1990's" by Robert Cervero they are:

- a healthy, growing regional economy
- an expanding market for office, retail, and housing development
- ease of land assembly
- hospitable station area environment
- unwavering political support
- pro-development zoning
- strategic land use policies

5.3.1 Hato Rey Corridor - "Golden Mile"

Ideally one would want to select a series of such nodes to be connected by sensible alignment. However, in the case Tren Urbano, other factors have come into play in the alignment selection such as the need for political expediency, finite funding, and a stated desire to minimise the physical impacts of system construction. However, given the alignment of

the first phase, the agency must identify those stations with the potential to develop into strategic urban nodes and establish a framework for their delivery to evolve as such.

In the first phase of the Tren Urbano alignment, the Hato Rey Corridor, which runs from the station site at Centro Judicial to the phase I terminus at Sagrado Corazon, most closely meets these criteria. Much like Yonge Street is to Toronto, the Hato Rey Corridor is the centre of business and finance for Puerto Rico and, as such, is known as the "Milla de Oro" or the "Golden Mile." (see "Hato Rey Corridor" on page 192)

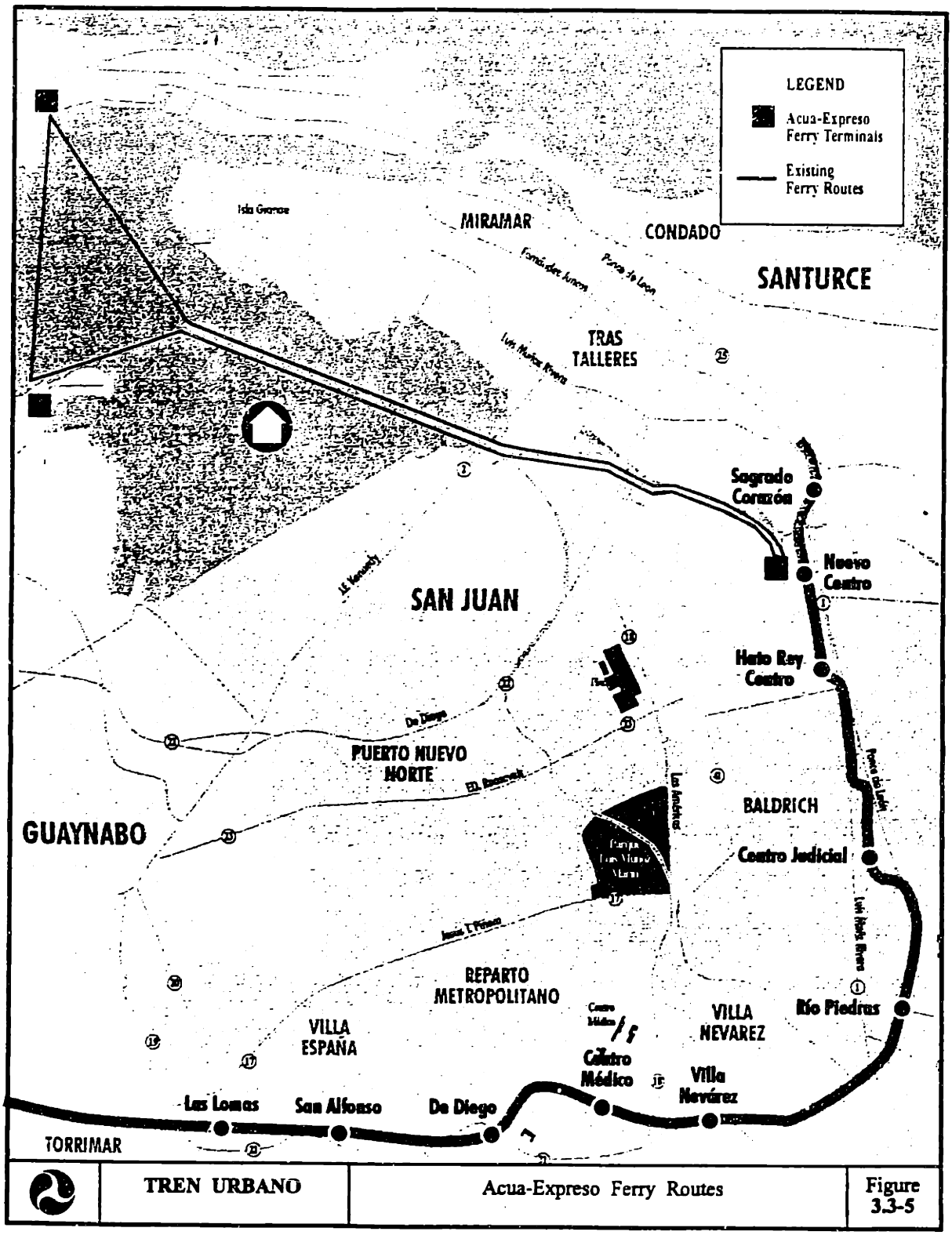


Figure 5.1: Hato Rey Corridor

This section of the alignment covers 3.6 km and will be included in the seventh and final contract on phase I at an estimated valued of $175 million. There are over twenty major office buildings lining Ponce de Leon Avenue, one of the two principal north-south axes, which house more than four million square feet of leasable space. The current average occupancy of the commercial properties on this corridor is 92%. Above all else private sector players will always look for a high probability for a reasonable return on investment. In all cases, this most likely to occur in the most dense central business district through which urban mass rapid transit passes. In the case of San Juan, Hato Rey will most closely fit this profile.

The corridor is also home to a large number of institutional facilities including those of government, hospitals, schools, religious institutions, and commercial centres. Despite this high concentration of development, the corridor is also characterised by significant amounts of surface parking, particularly in the vicinity of the proposed station sites.

The Sagrado Corazon station in Santurce is at the northern-most end of the corridor and will be the initial terminus of the phase I alignment and will be a primary point of Tren Urbano/publico interchange. The catchment area surrounding this station is home to a population of over 8,000 residents with a projected decreased population of just over 7,000 in 2010. Ridership at this station is estimated at over 13,000 daily. The station will sit on a 20 acre parcel of land near the one-time centre of San Juan which is already owned by the Highway Authority and has an estimated developed value potential $30 million. The station itself is estimated to cost $6.3 million. The area is home to the Sagrado Corazon University and is currently undergoing transition from a extended period of depression, the result of migration from this traditional city centre south into San Juan and further into outlying areas. With a variety of museums and one of the more popular theatres in San Juan, the site has been a magnet for cultural activity. It is also becoming a

more fashionable location for young professionals to reside. The site thus has the potential to become a prime centre for development if managed sensitively.

The Nuevo Centro station has clear locational advantages as a transition point between Santurce and the Golden Mile as well as connection to Old San Juan via the Aqua Expreso terminal. Thus far, the Tren Urbano Office has done little planning in this area which is home to over 7,000 residents. However, it is expected to be a prime centre for residential, commercial, and institutional development. The station, which will sit next to what are currently large tracts of publicly owned and undeveloped land, is expected to cost roughly $6.1 million. Daily ridership is projected at over 18,000 per day with the area's population presently expected to decrease to less than 5,000 by 2010.

It is expected that the extensive amounts of land devoted to parking near the Hato Rey Centro Station will be developed once the Tren Urbano is in place. Apart from surrounding office buildings on the principal corridor, this station area is a semi-industrial commercial zone with a variety of small artists studios, electronics shops, and auto repair garages. From a population of 3,840 in 1970, the area has continually been losing residents. By 2010, it is expected to be home to only 1,598 residents with daily ridership of just over 4,000 passengers per day. In addition to the Polytechnic University, the station will serve the medical services, banks, institutions, and restaurants that line Ponce de Leon Avenue. An interesting physical characteristic of the buildings that line this corridor is the elevated first floor mezzanines which were constructed in anticipation of a previously planned elevated rapid transit system which was intended to run along Muños Rivera Avenue. The estimated cost of the station at this site is $6.6 million.

The Centro Judicial station will serve an area which is currently home to over 7,000 residents. It is currently projected that this number will decrease to over 5,000 by 2010 and that over 5,000 passengers per day will board at this station. Despite this decline the

centrated development and the most congested zone along the transit alignment.

A 1.2 mile extension to Minillas Government Centre has been added to the original phase 1 alignment which will make this phenomenon even more profound as the potential for bi-directional flow along the corridor will be significantly increased.

Transit patrons travelling to and from commercial and residential centres along the corridor will have significantly increased mobility. Second, a more mobile population will mean a more accessible market for business and commercial centres that are located at or near the interconnected nodes. Third, increased non-automobile access to the corridor significantly reduces the need for the excessive surface and garage parking that currently lines the Golden Mile. This result translates into increased potential lease revenues for property owners ultimately translating into a stronger tax base. Alleviating the need for parking also provides the opportunity to create denser urban form as the surface parking lots that are currently omnipresent along the corridor will no longer be necessary.

5.3.1.3 Land Ownership

Land ownership along the Golden Mile at present is fairly consolidated, owned by developers and large corporations, most of which intend to build commercial and office development along the corridor with or without Tren Urbano. To the northwest of the Nuevo Centro station, ownership is largely in public hands which presents an ideal opportunity to have complete control over the growth and evolution of this station, as assemblage costs to create consolidated parcels will be significantly lower. Furthermore, the fact that the all of the stations along this corridor are surrounded by a significant amount of empty land means that the costs associated with future development will also significantly be reduced.

5.3.1.4 Regional Advantages

In addition to offering increased mobility to residents and workers, alleviating congestion,

reducing pollution, and a host of other locally based but highly important objectives, the Tren Urbano has the potential to carve out a sustainable competitively advantageous niche for San Juan in particular and Puerto Rico in general. Tren Urbano will be implemented during a period when several parallel forces are working in concert to put Puerto Rico in an enviable regional position.

The North American Free Trade Act (NAFTA) has had the welcome effect of creating numerous new opportunities for Puerto Rican films to serve expanding Mexican markets creating employment opportunities and injecting capital into the Puerto Rican economy. Second, Puerto Rico also has a modern telecommunications system which is the most advanced in Latin America. Third, consolidated along the Hato Rey Corridor is a first class international banking system. Fourth, led by its successful pharmaceuticals industry, the island has a highly industrialized economy with a strong service sector. Moreover, with a system of international hotels, San Juan is the leading cruise ship home port in the world. It attracts approximately 20% of the visitor arrivals to the Caribbean and accounts for roughly 15% of the total tourist expenditures in the Caribbean which amount to over $10 billion. According to a World Tourism Report, these figures are expected to increase over the next decade. Over the past two years, an average of 9 million passengers have passed through San Juan's international airport.

With some of the best hospitals in the Caribbean, Central, and South America, San Juan has become a magnet for those seeking high-quality healthcare and is evolving as a medical centre of excellence. Finally ideally positioned between North, South, and Central America and with strong cultural and economic ties to all three, Puerto is ideally positioned to become an intercontinental economic and business link.

What does all of this mean and how does Tren Urbano fit into the picture? First Tren Urbano has the potential to provide significant locational advantages both for those firms

already in Puerto Rico and for those firms looking to conduct business throughout the Americas. By increasing accessibility to the downtown core from outlying areas, the effective cost of labour can be reduced through increased access to a given skillset at a given level of pay, thereby reducing the cost of doing business. This then makes a location more attractive for increased investment and continued concentration of industry services around *strategic nodes*[1]. This leads to the essential point. Although the transit *system* must be effective, it is the transit *nodes* that work to make it strategically advantageous. Therefore government and public agencies, first and foremost the transit agency, have an opportunity to capitalize on the regional advantages by ensuring the creation of strategic urban nodes along the Hato Rey Corridor.

5.3.1.5 Limited Highway Expansion

While strategic urban nodes are characterized by a mix of uses and activities, they are also, almost without exception, characterized by a pedestrian friendly environments that are places "to be." With limited highway expansion planned in the immediate vicinity of the stations on the Golden Mile, the agency has the opportunity to ensure the evolution of a pedestrian friendly environment without increased competition from automobile traffic.

5.3.1.6 Limited Budget

While this would be viewed by some as a severe constraint, a limited budget sets the stage for innovative solutions to fund rapid transit station projects. Imagination in problem definition and subsequent procurement can make the difference between the delivery of rapid transit station as a "minimal threshold" and a true strategic urban nodal station. This requires significant up-front planning effort to properly define the desired rapid transit station product and to understand how the series of these nodes fit together in such a way as

1. "D. McWilliams. The Economic Benefits of Refurbishing the London Underground, Public Transport International, vol. 43, no. 3, 1994." on page 232

to make a successful whole. Viewed individually each of the stations along the Hato Rey corridor presents unique opportunities to create more than just minimal threshold with the participation of private sector capital and market-driven expertise. The task for Tren Urbano is to decide *now* how this opportunity can be leveraged and included in the delivery process. The next chapter presents a series of options to achieve these goals both in the short-term (phase I of alignment) and in the long-term (subsequent phases.)

Chapter 6

Conclusions and Recommendations

6.1 Introduction

This thesis seeks to make recommendations for the delivery of rapid transit stations as strategic urban nodes. In part, recommendations are made so that transit agencies may sustainably offset rising operating costs and correct inefficient strategies for the delivery of rapid transit stations.

Fundamental to this thesis is the premise that, in the delivery rapid transit stations, there will *always* exist, a priori, a physical interface or threshold between the public sector (transit agency) and the private sector (numerous competing firms) which can be increased, decreased, or even transcended. Case Studies have demonstrated that, by facilitating the interaction of the two sectors during the delivery process such that their fundamental interests are aligned, the transit agency has the opportunity to take advantage of the inherent capacity of the rapid transit station to function as an integrated urban economic and physical generator (*strategic urban node*) by virtue of increased urban accessibility and mobility.

This chapter outlines in two sections a series of options that are available in order to deliver Tren Urbano rapid transit stations as strategic urban nodes. The first section presents options for the first phase of the alignment and the second provides a brief description of options for future alignments.

6.2 Phase I Options

While the "do nothing" alternative is certainly an option, it is not an advisable one unless, of course, it is done within the framework of a clearly defined, understood, and consistent strategy as was the case in Caracas. Therefore this chapter will outline options with which

to actively capitalize on the opportunities available for the delivery of Tren Urbano stations as strategic urban nodes while addressing the numerous and varied competing private sector firms as potentially advantageous allies.

6.2.1 The Role of Regional Planning

6.2.1.1 Regional Strategy

The creation of a system of interconnecting strategic nodes, if it is to be successful, must also respond to the given conditions at each station site. However, the framework must also be grounded in a solid, consistent, and comprehensive regional strategy.

The success of this level of planning is manifest in the high quality integrated networks of Toronto's TTC and Washington D.C.'s WMATA both of which have achieved consolidated and controlled growth along transit corridors centered around key strategic urban nodes. While listed as a short-term *option*, this task should be considered as *essential*. A project as large as Tren Urbano *must* be an integral part of larger regional strategy as it is an ideal tool with which to enhance regional objectives. San Juan enjoys a number of inherent regional advantages which can be exploited if the transit network evolves so as to enhance, and not hinder, them. In the case of San Juan, the local and regional economies are becoming increasingly more prominent within the national and international marketplaces. With this will come urban growth due to a variety of factors. First, San Juan, is already the most important center of employment and business on the island and is likely to become more so with the increased urban access mobility that Tren Urbano will bring. Second, as a regional economic center, migration from neighboring islands in the Caribbean and other parts of Latin America, already a phenomenon, will become increasingly attractive.

A sound regional strategy should address these growth phenomena in order to integrate San Juan's significant regional advantages which include:

- A leading pharmaceutical industry
- A center of regional medical excellence
- Heavily used international airport
- Center of regional business and finance
- Unique strong bi-cultural and business ties to United States *and* Latin America
- Center of high-quality post secondary education
- Center of high tourist traffic

A robust regional planning effort should utilize Tren Urbano to integrate these factors into a cohesive strategy for sustained regional competitive advantage. This is precisely what has happened in Toronto which, with the TTC network as its backbone, has been planned within the context of Greater Toronto Area (GTA) Regional Planning. The GTA is a region centred around Metropolitan Toronto which encompasses a large part of south-eastern Ontario. This has helped to consolidate the region in a logical evolution of transit-oriented growth.

However, it is not enough to simply construct the system based on a regional strategy and hope everything else will fall into place. That is, careful attention must be paid to how each strategic node can and should evolve on a case by case basis in order to remain consistent with the region's overall system objectives.

A clear regional strategy will allow for the evolution of strategic nodes to take place within the bounds of a larger picture. As in the case of the Yonge Street alignment in Toronto, this is an important feature in creating a consolidated downtown corridor that will densify and attract the investment necessary to consolidate growth. It is hoped that the Tren Urbano system will perform in a similar fashion along the Hato Rey Corridor.

Strategising at this level gives the agency and other key public entities a sense of purpose and mission which is crucial in establishing the interagency and cross-disciplinary

support and cooperation that is necessary to deliver rapid transit projects of the level of complexity of strategic urban node stations. It is this level of strategising that has been a key feature in the evolution of the JR East's "Station Complex" model. The result is a clear and widely understood vision, a priori, of the role of the station within its impact zone.

The primary caveat when strategising at the regional level is that it is possible to lose focus on the fact that the system is, fundamentally, composed of a series of nodes, each one of which should be dealt with according to its particular physical and economic circumstances. If a broader vision is developed up-front of the role of Tren Urbano stations, the agency will be able to establish a clear sense of purpose in their delivery such that they can become more integrated into the macro-plan. For example, a station at Hato Rey Centro could be delivered as a minimal threshold station designed to "convey passengers to and from its immediate environs." However, if the "problem" is defined with a broader vision and sense of imagination, and in terms of establishing a node designed to not only consolidate growth along the financial corridor, but to provide access to a variety of other urban activities and services to tourists, business people, and residents as has happened along the downtown core on Toronto's Yonge Street Corridor, the station becomes less of technical engineering formality and more of an integrated and sophisticated urban machine.

6.2.2 Planning Department (Junta de Planificacion)

In San Juan, the Planning Department or "Junta de Planificacion" has traditionally enjoyed highly centralised regional jurisdiction which is unique among U.S. planning agencies. In fact, it is often referred to as the "fourth power" after the executive, legislative, and judicial branches of government. Despite this fact, there is a current trend underfoot to break up this department's monopoly on power. This trend could result in a highly

fragmented and disaggregated approach to planning in the San Juan Metropolitan Area and to Tren Urbano in particular.

The Junta de Planificacion was founded in 1945 with the charge of island wide planning. Earning its reputation as a "fourth power," it took precedence and had control over all other public agencies and was directed to form the "Plan Integral." This comprehensive plan addressed the urban framework from the perspectives of economic development, infrastructure, zoning, and the provision of water and power.

Regional planning processes began to decentralize in the late 1960's and at the state level, individual agencies began to develop their own plans. In this vein, the role of the Planning Department became one primarily of coordinating the work of other agencies.

The Planning Department continues to have a large degree of influence on the physical evolution of the metropolitan area through complete control over the permitting process. However, this influence is in serious jeopardy resulting from the Municipal Reform Law, or "Leyes de Reforma Municipal," a law driven by the mayors of the SJMA which was passed in 1991. It is part of a movement to give municipalities more control over the planning process at the local level by transferring permitting and zoning power to the municipalities. Thus far, only Bayamon and Ponce have undergone the year-long process to have a municipal program approved. This movement has the potential to seriously affect the evolution of Tren Urbano stations as there is currently no consolidated strategy to integrate these autonomous plans.

As as has been demonstrated in a series of case studies, comprehensive regional planing is essential to the creation of a system of strategic urban nodes. Whether or not it is agency led, care should be taken to ensure that a disaggregated planning process does not hamper the development of a successful network of strategic nodes which work together

within a cohesive framework. Without exception, all successful case study strategic node deliveries were within the bounds of clear and consolidated regional planning efforts.

6.2.3 "System" (alignment) vs. "Discrete Element" (stations) Precedence

6.2.3.1 "System" vs. "Discrete" Delivery of Stations

As indicated by Secretary of Transportation Carlos Pesquera, a primary desire throughout the delivery process of the Tren Urbano is to create a major transportation project that has a life of its own and to "isolate the procurement of Tren Urbano from politics." While these goals have been necessary in order for the project to move forward, this perspective may place too much attention on the *system* and not enough on the *nodes* that make up the system. By placing focus on delivering the stations as the primary elements, or building blocks, of the transit system and the surrounding urban fabric, simply minimizing expenditures and physical impacts becomes less important and creating strategic nodes with the possibility of sustained evolution become more important. Regardless of what strategy is taken to achieve this, it is necessary to understand fundamentally how the stations will fit together and work as a network of important nodal destinations *before* they are delivered.

The process thus becomes one of creating a system of strategic urban nodes which are connected by a logical alignment as opposed to one of establishing an alignment on which one searches to superimpose strategic nodes. (see ""System" vs. "Discrete Element" Delivery of Stations" on page 208)

In a 1993 report of the Puerto Rico Department of Highways and Transportation. It was stated that there should be:

> ...emphasis on the design and location of the stations as part of a coordinated public-private effort to revitalize key areas of the urban core that have suffered erosions of their economic base in recent years.

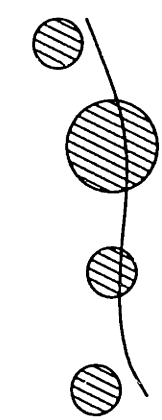
The Tren Urbano Office has not yet addressed how to utilise the stations as discrete components of a larger system to achieve this goal as the progression of activities thus far has focused almost solely on alignment selection and funding which are clearly *system* goals. However, since the stations *will* have significant economic and physical interaction with their immediate surrounding public and private interests at the local level long after the more immediate problems associated with initial delivery are resolved, it is important to understand how to optimize these interactions, each one with its own characteristics and potentials for development.

The agency must realize that while the system level is a useful level of planning, private sector players will view the stations as a set of discrete potential localized opportunities. The challenge is to align and combine the objectives of the two sectors, not only in the short term, but in the long term as well. In an era where transit funding is scarce, an appropriate approach may be to adapt Tren Urbano's delivery of strategic nodes to meet funding constraints through phasing options, and station designs which permit and encourage the longer term development of the nodes selected now as "strategic."

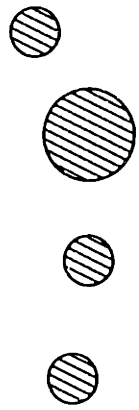
Focusing solely on the *system* does not require the necessary focus and rigor of the *discrete element* approach that is necessary to address station specifics. Ignoring the *discrete element* approach can put the agency in danger of selecting sub-optimal nodes that may not perform individually as effectively as they might otherwise. A classic example of this dichotomy is the contrasting methodologies used and resultant relative successes of the Yonge Street Corridor and the Spadina-University extension in Toronto.

To date, Tren Urbano planning has focused almost exclusively the system approach for a variety of reasons, including political practicality, the need to pass through a rigorous environmental approvals process, and both the need and desire to secure federal funding. Given that the alignment and station locations for the first phase have been selected, it is

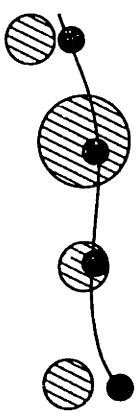
now essential that the discrete elements be examined and delivered with respect to their specific contexts and to how they function within the larger network of nodes.



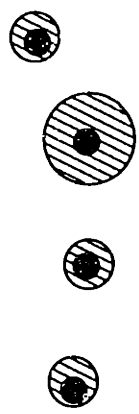
- locate alignment first



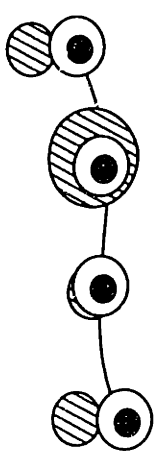
- locate strategic nodes or "destinations"



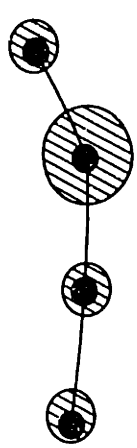
- superimpose stations on alignment



- situate stations IN strategic urban nodes



- suboptimal station locations
- impenetrable barriers



- robust network of interconnected streategic urban nodes

Figure 6.1: "System" vs. "Discrete Element" Delivery of Stations

6.2.4 The Private Sector as a Potential Strategic Ally

Given that the rapid transit station public-private boundary is not predetermined, the task of the agency is to understand how to manipulate that boundary and utilise the inherent advantages that it can offer in order to optimize the effectiveness of the station facility. The interaction *will* take place. It is simply a matter of whether this is seen as an opportunity (TTC, Washington) or a liability (MBTA Construction and Operations Directorate.) That is, if it is determined that such a boundary exists, the party on the opposite side, consisting of a host of potential private sector partners, should be understood from the perspective of fundamental motivations such that the two sectors can interact most effectively.

6.2.5 Station Specific Strategies

As discussed in previous chapters, the station, as a strategically located and used transit node, is an important vehicle for urban growth and change. In addition, as demonstrated in the case studies, it can also be important revenue source through joint development activities via the sale or lease of station area property, the leasing of concession space within the station, or via the integration of the station as part of a privately financed and built complex project comprised of a potential mix of residential and commercial functions. Below is a series of issues to be addressed in developing and implementing a cohesive strategy for station project delivery.

6.2.6 Addressing the Public-Private Boundary

As suggested in the case studies, it is not clear that a sharply defined public-private boundary must exist between the rapid transit station and its immediate surroundings. In fact, the most integrated stations studied with respect to their broadened role were those in which the private sector was involved in all aspects of station delivery except for the tracks and

systems themselves (Toronto's Eaton Centre Station; WMATA's Potomac Yard Station; JR East Ikeburo Station.) This allows for the station to become truly integrated into its surroundings and function as the seed from which germinates a whole host of activities, only *one of which* is transit patron conveyance. This means bringing the boundary closer to the actual transit service such that intensity of interaction of the rapid station facility within its zone of impact can take place.

The stations on the first phase of the Tren Urbano alignment have been almost completely designed without physical provision for future development. As outlined in the previous chapter, incorporating the delivery of the station with other functions by allowing competing private sector firms the opportunity to innovate and integrate the facility into its surrounding urban fabric increases the potential for the creation of a robust transit oriented node as has been the case on the WMATA system. By the same token, the agency may elect to deliver a minimal threshold station which includes the station into a larger project in the form of reinforced foundations and/or knock-out panels as has been the case on the TTC Yonge Street Corridor.

The bottom line is that, at some level, what the agency deems as its sole responsibility has physical boundaries. The boundary acts as a threshold between "public" and "private." It is essential for the agency to understand and define where that boundary lies as part of an overall station delivery strategy so as to maximize the potential of creating a strategic urban nodal rapid transit station. The goal should focus on the creation of a strategic node, not on whether "ground" is conceded by the public or private sector to obtain it.

6.2.7 Land Acquisition

Land acquisition can be an important strategic tool, especially in strong markets where high land costs can create assemblage problems for unassisted private sector players. The

public sector has the capacity to eliminate holdout parcels and to write down the cost of land in order to create consolidated parcels that are more attractive to potential developers. At Sagrado Corazon and Nuevo Centro stations where the majority of land is already in public hands, this technique is not of primary concern. At the Centro Judicial station, the station will sit on a tract of land which is owned entirely by the Puerto Rico Telephone Company (PRT,) an entrepreneurial public sector entity. PRT has expressed interest in including and even funding the costs of this station as part of a larger development project.

The station at Hato Rey Centro is the location where land acquisition is most likely to be a prudent strategy. This station will sit behind the Metropolitan Shopping Center on the south side of Roosevelt Avenue and behind McDonald's and the 270 Muños Rivera Avenue Building on the north side of the Roosevelt Avenue. Thus far, the owner of the shopping center has not proven to be a "knowledgeable" partner equipped to develop the property in a way that is consistent with the creation of a strategic urban node. This site, in the heart of the downtown core and central along the Golden Mile portion of the alignment, must be planned in such a way that it "works" in relation to its immediate surroundings and in relation to the other nodes on the network. One way of ensuring that this happens would be to acquire and assemble the surrounding land such that a financially feasible and strategically attractive parcel can be created.

This technique has many complexities, however, and should be performed within the context of a clear and consistent strategy devised by the agency. That is, while it can help to achieve development goals effectively, it also has the potential to work against the agency if not performed in an appropriately. On the upside, acquiring large amounts of land prior to the delivery of the network of strategic nodes can be significantly lower and stabilize the cost of assembling parcels for future development at the station or in the station area. This is important as larger parcels will generally be more attractive to develop-

ers especially if they are expected to participate in the delivery of all or part of the station facility itself. A larger parcel has the potential to provide a large enough revenue stream through the sale or rental of the development property to offset the cost of the station facility and ancillary infrastructure. This was demonstrated in the case of Bethesda Station Complex which more than offsets its operating costs with lease revenues

By obtaining station area lands through a program of acquisitions, the agency also has the opportunity to control the evolution of the rapid transit station node such that it fits the criteria deemed necessary for the particular node to work. This, in conjunction with land use controls such as zoning an density incentives, can be highly effective when trying to prevent land speculation by developers who have the potential to construct the least expensive structure possible, close enough to the station that it will almost be guaranteed to generate revenue. If not controlled, this can create an immediate station area impact zone comprised of low-rise detached projects none of which bears any relation to the concept of an integrated and vital strategic urban node.

With land assets, an agency has the opportunity to undertake itself, or "push" to the private sector, development that is integrated with a station project or, at least, built simultaneous to the delivery of a station, thereby increasing the likelihood of a solid foundation for the long term success of the strategic node. These landholdings can also be used as powerful negotiating tools when piecing together station projects which may be highly desirable to private sector players as was the case with the Ballston project in Washington D.C. once that land had been consolidated.

The technique of land acquisition can also work against the agency and, in some cases, may even be outside the legally stated scope of the agency's functions. First, working in the profit motive itself, or working with private sector players who are driven by return on investment may create conflicts of interest that become political liabilities. Second, it is a

process that necessitates significant up-front planning and requires the maintenance of a sophisticated institutional infrastructure with experience and skill in real estate dealings.

6.2.8 Functional Station Type

Tren Urbano has committed itself to a *minimal threshold* functional station type for the first phase of the alignment with provisions for upgrade to a *transit/retail cluster.* This does not, however, preclude the evolution of these stations into strategic urban nodes as demonstrated by the success of a minimal threshold strategy in Caracas. However, all case studies that have utilized minimal threshold stations as vehicles for strategic urban node creation have done so in conjunction with other tools to control the growth process such as land use controls, knock out panels, and reinforced foundations.

As the primary concerns in the delivery of Tren Urbano thus far have been acquiring and securing funding and establishing an acceptable alignment, less attention has been paid to establishment of station specific long-term goals which address how to create and sustain strategic urban node catchment areas. The long term success or failure of the stations will depend on, among other things, the evolution of the station and its protracted interaction with its surroundings. Therefore, it is vitally necessary to develop a prototype, or, at least, an understanding of how the various stations might evolve over time and how to deliver them in such a way as to increase the likelihood of their development into true strategic urban nodes. Each of the three station prototypes outlined in Chapter 1 have very different implications and are likely to lead to significantly different results without early planning. Thus, the agency, in selecting a functional station type, must do so in conjunction with a larger consolidated strategy for nodal development.

6.2.9 Urban Design Guidelines

Urban design guidelines are used by governments and transit agencies to influence and

guide development decisions from the perspective of urban design. Although such guidelines are generally complied with on a voluntary basis, they can serve many necessary and important functions.

First, they lay out a model for the eventual physical environment (an important signal for complementary private sector response,) one of the intentions of which is to improve transit service and access. Second, especially during project review process, urban design guidelines serve to inform and aid public entities. Third, they can help to promote coordination between local agencies and transit providers in project promotion and proposal selection. Fourth, they can enhance coordination by encouraging long-range planning transit-supportive policy decisions which help the public sector to "sell" transit-supportive projects to the private sector. Fifth, in addition to encouraging transit considerations during project review and educating the general public, these guidelines also contain technical information which enables potential private sector proposers to have a clear sense of their constraints and opportunities for a given project.

These guidelines are not a necessity. Rather, the decision to employ them is a matter of agency philosophy. On the one hand, they can provide the agency and possible private sector partners with a set of consistent, identifiable physical features that help the stations to become a readily recognizable "storefront" to the system. On the other hand, if too extensive and specific, they can be constrictive to the point that they leave no room for innovation in design. This is especially important if the agency elects to deliver the stations using the minimal threshold model with the intent that the private sector will embed them into the urban fabric in an almost seamless manner (i.e. Metro de Caracas.)

6.2.9.1 Concession

With costs of between $6 and $7 million per station for all non-rail system related works,

the stations along the Golden Mile will cost a fraction of the total cost to build the system ($1.2 billion) and even of the seventh contract of which they are a part ($175 million.) However, given the premiums that can be expected on the value of land in the vicinity of these stations, Tren Urbano might utilize the policy of including stations as part of a larger concession agreement. This would allow for private sector players to include the station as part of a truly integrated complex as was done in many of the case studies[1].

In this case, a private sector player would be competitively selected to develop a rapid transit project which includes provisions for a station as determined by Tren Urbano. This option is not likely for phase I as the stations have, for all intents and purposes, been designed. Furthermore, they have been designed in ways that preclude significant innovations in including these stations as part of larger integrated projects.

6.2.10 Public Sector Institutional Orientation

6.2.10.1 Development Policy

The creation of a systemwide, clear station area development policy has the potential to achieve a variety of near term goals. In the case of San Juan, this is particularly true for the high impact stations along the Hato Rey corridor.

First, the creation of such a policy will cause Tren Urbano to identify and outline the key metrics for the creation of successful strategic urban nodes through a set of guidelines to be used and adhered to in station delivery. With a clear policy toward development, an understanding can be gained of the incentives or disincentives required to achieve the agency's desired goals on a station by station basis.

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1. Competing out a station as part of a concession contract, while it can be allow for efficiencies in design and physical integration, can pose legal and contractual difficulties that must be resolved such as security measures, facilities maintenance and operations, collection of fares, and management of the public perception of a private entity controlling and profiting from the delivery of a "public" good.

Second, the very establishment of such a policy sends a signal to potential private sector players that the agency is committed to creating specific and unique station area environments. This is especially important for the early stations as early successes will lay the groundwork for subsequent fruitful dealings with private sector players by setting guidelines and creating credibility through precedence. This was a strictly followed, albeit informal, policy goal of MARTA in the implementation of its North Line. Moreover, establishing clear guidelines which are followed over time give potential and eventual private sector players a clear understanding of the agency's desires and expectations, along with a sense that government committment to these guidelines is sure and stable.

One means of achieving these goals is through the development of a Station Area Development program designed to stimulate the creation of strategic urban nodes. In the case of Tren Urbano, such a program would include a description of the basic requirements of the Tren Urbano station facility, an outline for zoning requirements necessary to induce or control what happens at particular stations, and a development planning and control process. Tren Urbano must establish a development policy as there is no paucity of land around the stations along the Hato Rey corridor. Development will need to be controlled and directed in a strategic fashion if each station is work effectively toward common system goals.

6.2.10.2 Real Estate Department

The transit-development link is vital to the success of any transit system. Strategic urban nodes of mixed residential and commercial activity must be carefully planned in order to capitalise on the inherent advantages that accessibility between two or more important "destinations" brings. The difficulty is in deciding which should come first: the development or the station? Without an associated destination or strategic node, a transit station loses its inherent value. By the same token a location without a station has much

less accessibility to the larger urban area and thus loses potential value. It is therefore necessary to anticipate and lay the foundations for the creation of a series of nodes that can, and then will evolve strategically as the system grows.

Land values along the Hato Rey Corridor have not fluctuated significantly since the project began. This fact presents a finite but highly important window of opportunity for Tren Urbano Officials. While the development community is waiting to see evidence of the long proclaimed expected success of the Tren Urbano system, the agency has a strategic but finite opportunity to educate itself and prepare for inevitable negotiations with private sector players. This preparation will permit the agency to understand what it might expect once accessibility is actually capitalised into station area land values and how to utilise this information to create desired station areas while taking into account the cost of land, interest on debt, and return on investment to private sector partners.

The creation of a real estate department could prove vital to the successful delivery and control of the rapid transit stations on the Golden Mile. This strategy has been used most successfully by WMATA and Toronto in North America and by the JR East Company in Japan which has a highly sophisticated Real Estate Company under its auspices. As there is no shortage of developable property both publicly and privately held, some level of in-house expertise will be necessary to undertake the negotiations that *will* take place between the agency and private sector players. Furthermore, a real estate function will be necessary should the agency opt to push the development of its lands near the Nuevo Centro station.

In either case, a real estate department will establish a core personnel with the expertise and focus necessary to deal with important real estate issues that will inevitably arise as Tren Urbano evolves and that can serve to interface with potential private sector players. A single access point of responsibility and authority will instill credibility within the

ranks of the San Juan development community and allow the agency to build up a repertoire of standard practice, along with predictable and widely understood strategies for directing development on, adjacent to, or near station area property. Through discussions with Tren Urbano officials it was estimated that Tren Urbano has the potential to provide impetus for almost 2 million square feet of commercial space within a decade from the start of operations[1].

If it is determined that maintaining such a function in-house is not financially feasible or not within the bounds of the agency's primary purpose then it may make sense to contract out this function to a private sector entity as the MBTA has recently done.

The real estate function can also serve to produce promotional documents as have been used by the British government. Such documents can send important signals both within the ranks of the agency and to outside potential private sector partners.They can deliver a message of professionalism and credibility as well as set expectations by establishing a sense of consistency in deal-making. Such documents themselves serve no purpose, however, unless the agency performs "as advertised."

6.3 Long-Term Options

In the previous sections, a series of options have been presented which can be utilised by the Tren Urbano to significantly increase the likelihood of creating stations which perform as strategic urban nodes. In general, the majority of these activities will have the most significant impact if they are undertaken *before* stations are located and alignments are located. As the Tren Urbano will be constructed in phases, this presents an important opportunity for Tren Urbano to focus its approach for future extensions to strategic nodal development. This approach will be even more crucial and pay even higher dividends for

1. "Bruce Goldman. GMAEC" on page 231

several key reasons.

First, as federal funding is expected to be harder to get for future phases, future stations may require innovative and creative delivery strategies which include private sector financial involvement. Second, once phase I is in place and operational, private sector players collectively will become a more knowledgeable client and partner. If the potential of the first phase is realized, there will be increased demand for involvement in station related projects on future alignments. Third, future alignments will connect with the first phase to create an ever widening network of nodes. As the system evolves and grows, specific station locations will become magnets for private sector investment due to the increased accessibility to a larger urban area provided by these locations. Fourth, with a system in place the issue of expedience in delivering the *entire* system will become a secondary issue allowing for more focus to be placed on the continued creation or evolution of specific strategic nodes.

By beginning a process of up-front comprehensive strategic planning, Tren Urbano can broaden the role that the station plays in the network and in its immediate zone of impact. If the problem can be restated from,

"station as means of transit patrons conveyance"

to

"station as urban economic and physical catalyst,"

the agency can begin to develop a set of station specific delivery strategies from among the various options described in quadrants I, II, and IV. This will prove to be an important tool in making future alignment decisions. In addition, the opportunity exists to make sure that station design becomes more responsive to the eventual role of stations as strategic urban nodes on the transit network.

While these tasks will be highly important for future alignments, it is necessary that the agency begin with the first phase by working to establish an internal culture of facilitation in the process of rapid transit station delivery. Accessibility will definitely be capitalized into station area land value and built property, once the system is operational. The agency must work to ensure that it can leverage the value provided by this accessibility which will mean addressing opportunities to work with private sector entities. In addition to the bottom line (i.e. return on investment) private sector players will also look for simplicity, consistency, credibility, and committment on the part of the public sector. Thus, Tren Urbano should work to establish its reputation for these traits in the delivery of the first phase by creating a consolidated and uncomplicated means of dealing with private sector parties.

6.4 Conclusions

In conclusion, Tren Urbano stations can become strategic urban nodes if they are planned and delivered appropriately. This will involve intense work to develop sound station specific strategies that serve to optimize the delivery process such that a network of strategic urban nodes evolves, each one integrated into its surroundings economically and physically. In addition to station specific development, Cervero concluded in a study of ridership impacts of transit focused development that:

> ...clustering of residences and workplaces near stations has the highest influence on travel behavior among all land-use factors[1].

That is, the best way to ensure high ridership is to create a true strategic urban node. This requires that delivery of the station be tied to other activities and functions, some of which the transit agency or other public sector entities can perform effectively and some

1. "R. Cervero. Transit-Supportive Development in the United States: Experiences and Prospects, University of California at Berkeley, Institute of Urban and Regional Development, Berkeley, 1994." on page 230

not. First, the agency must determine which tasks it is best equipped to perform. Second, it must establish a means of delivering those tasks that it is not capable of performing effectively. Third, it must work to coordinate and facilitate the delivery of the entire product. As a strategic urban node is a highly complex product, it requires the expertise and skills from a variety of disciplines, many of which the transit agency may or may not have in-house (or may or may not *want* to have in-house.) In this vein, the private sector can prove to be an advantageous ally in the delivery process. When the transit agency views the station in terms of its broader role, the line between "public" and "private" becomes less clear and the focus turns to the station as an integrated unit in which the interests of both sectors are united and aligned. In this context each sector stands to gain substantially, provided that care is taken to ensure that the unique capabilities of each sector are permitted to flourish within the bounds of station delivery.

Appendix A

Public Private Partnership: The English Example

A.1 British Government Promotional Public-Private Documents

Title	Obtainable From
Private Finance: Guidance for Departments (December 1992)	HM Treasury
Joint Ventures: Guidance for Departments (March 1993)	HM Treasury
Leasing: Guidance for Departments (May 1993)	HM Treasury
Competition and the Private Finance Initiative, a consultation note (September 1993)	HM Treasury
Guidelines for Contract Energy Management in the Public Sector (February 1993)	Department of the Environment
Working Together: Private Finance and Public Money (June 1993)	Department of the Environment
Dealing with NHS Trusts: Guidance for financial institutions and others trading with NHS Trusts (August 1993)	Department of Health
Public Service, Private Finance: Putting Private Capital to work for the NHS (November 1993)	Department of Health
EC procurement rules: *The Public Supply Contracts Regulations* 1991 *The Public Works Contracts Regulations* 1991 *The Utilities Supply and Works Contract Regulations* 1992 *The Public Services Contracts Regulations* 1993	HMSO
Economic Appraisal in Central Government (April 1991)	HMSO

Table 1.1: Promotional Public-Private Documents

A.2 Summary of Guidelines for Private Finance

Type of investment, etc.	Value for money test	Additionality*	Comments
Financially free-standing projects	No	Yes	Charges paid by final user
Joint Ventures	Yes for Government contribution	Yes for private sector element	Government actively encouraging joint ventures. If Government holds equity stake, not to be a controlling one
Provision by private sector of service for which public sector is responsible	Yes (but only using public sector comparator if this is a realistic alternative on a similar timescale)	Yes (i.e. capital value not offset against spending allocation)	Government looking for new opportunities where significant part of the cost involves capital
Operating leases (as defined in the Treasury guidance of May 1993)	Yes	Yes for capital value of leased asset (but leasing payments count as public expenditure)	Where great majority of the risk stays with private sector (see Treasury guidance)
Other leases (including finance leases)	Yes	No (i.e. capital value of asset against spending allocation)	

Table 1.1: Summary of Guidelines for Private Finance

Appendix B

Chapter 2

B.1 Intermodal Surface Transportation Efficiency Act of 1991 New Start Program

SECTION 3 DISCRETIONARY AND FORMULA CAPITAL PROGRAM

The Section 3 program is authorized at $12.4 billion for the 6 years. Funds are split 40 percent for New Starts 40 percent for Rail Modernization, and 20 percent for bus and other.

New Starts

Authorizations for new starts total $5.0 billion. New Starts projects must meet the criteria that they are:

1. Based on the results of alternatives analysis and preliminary engineering;
2. Justified based on mobility improvement, environmental benefit, cost-effectiveness, and operating efficiency; and
3. Supported by an acceptable degree of local financial commitment

Projects may not advance from alternative analysis to preliminary engineering, unless the project meets the requirements for project justification and local financial commitment, and is considered likely to do so at the end of preliminary engineering.

The criteria are waived if:

1. The project is in an extreme or severe nonattainment area and the plan is on the State Implementation Plan,
2. The project requires less than $25 million Section 3 funds,
3. The Federal share is less than one-third, or
4. The project entirely with FHWA funds.

A substantial number of New Starts projects are earmarked in the bill.

Projects are to be funded using Letters of Intent and Full Funding Grant Agreements. The sum of the outyear commitments may not exceed the amount authorized, although contingent commitments equal to one-half the uncommitted cash balance in the Mass Transit Account may be made.

Appendix C

Case Studies

C.1 WMATA - Essentials of Joint Development Process

DEVELOPMENT PROCESS

- site located
- developer accomplishes acquisition via contract, subject to obtaining rezoning or plan approval from local government
- system interface potential identified via coordination with WMATA and local jurisdiction
- design concepts coordinated with local jurisdiction, community and WMATA
- re-zoning, if necessary, obtained
- project and/or site plan approvals obtained. at developer's option, public amenities guaranteed in exchange for additional density and reduced requirements
- actual development timed to coincide with clearly established economic feasibility
- developer secures system interface agreement with WMATA
- financing permits construction of project, including system interface

MAIN CONSIDERATIONS (negotiation)

- design and construction of access compatible with WMATA construction and operations criteria
- costs of access construction borne by developer and are exceeded by benefits to project
- compensation determined on basis of sharing benefits

PROCESS

- detail financial feasibility study prepared
- study conclusion presented to developer
- developer's response reviewed
- negotiations proceed to reach final accord
- system interface agreement drafted and finalized

C.2 WMATA - Tasks for Real Property Utilization

- concept site plans and alignment alternatives
- environmental impact study

- general plans preparation
- general plans hearings, local review, board approval
- station area development potential analysis
- final design preparation
- certification of real property
- appraisal
- acquisition
- property management
- relocation
- demolition
- construction of metro facilities
- feasibility of joint development
- developer selection, approvals, coordination
- implementation of joint development project
- lease management

C.3 WMATA Joint Development Process

1. Classify sites (STOP?)[1]
2. Analyze site characteristics (STOP?)
3. Define excess rights and development potential (STOP?)
4. Discussion coordination with local governments (STOP?)
5. Internal screening (STOP?)
6. Begin project management
7. Feasibility analysis (STOP?)
8. Studies obtained (STOP?)
9. Prepare disposal plan
10. Obtain WMATA and local approvals (STOP?)
11. Initiate CIP, zoning etc.
12. Coordinate with owners, citizens, etc.
13. Schematics prepared
14. Discuss intensively within WMATA
15. Prepare prospectus
16. Advertise, mailings, notification
17. Briefing of potential developers
18. Appraisal prepared
19. Receive and analyze proposals
20. Recommend proposal to General Manager (STOP?
21. Select developer
22. Present proposal to public, local governments

1. "STOP" indicates option to exit project if unfeasible.

23. Prepare lease
24. Negotiate with developer (STOP?)
25. Execute lease/other agreements (STOP?)
26. File government application for review and approvals (STOP?)
27. intensify coordination with construction/operation activities
28. Obtain approvals, permits, etc. (STOP?)
29. Developer secures financing committments (STOPS?)
30. Developer obtains bids, subcontractors
31. Construction begins
32. Construction is monitored
33. Administration of contracts

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