LITHONIA LIGHTING: CASE STUDY

J. Debra Hofman
John F. Rockart

December 1989

CISR WP No. 201
Sloan WP No. 3121-90-CISR

Center for Information Systems Research
Massachusetts Institute of Technology
Sloan School of Management
77 Massachusetts Avenue
Cambridge, Massachusetts, 02139

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ABSTRACT

The use of information technology in the 1980's has evolved from the traditional transaction-based systems built in the 1960's and 70's toward more innovative and far-reaching applications. As the industry matures, studies have been undertaken to better understand the impact of information technology on organizations. Results of a recent study by the Center for Information Systems Research, MIT Sloan School of Management, suggest that information technology has joined the arsenal of traditional tools used by an organization to manage the multi-dimensional interdependence of its subunits (Rockart and Short, 1988).

Lithonia Lighting provides an interesting example of this trend. As the number one player in the $4+ billion lighting and related products market, Lithonia has recently emerged from a seven-year process of implementing a series of systems to electronically link the entities in its marketplace. This effort was spearheaded by the company's visionary Chief Information Officer and Senior Vice President, Charles Darnell. This document will discuss the implementation of this process and its impact on the lighting marketplace and on the organization within the context of "*the management of interdependence*" (Rockart and Short, 1988). The information presented here is the result of discussions with Darnell and other members of the Lithonia team, and of a reading of a number of documents provided by them.

I. INTRODUCTION

The use of information technology in the 1980's has evolved from the traditional transaction-based systems built in the 1960's and 70's toward more innovative and far-reaching applications. As the industry matures, studies have been undertaken to better understand the impact of information technology on organizations.

Results of a recent study by the Center for Information Systems Research, MIT Sloan School of Management, suggest that information technology has joined the arsenal of traditional tools used by an organization to manage the multi-dimensional interdependence of its subunits (Rockart and Short, 1988).

Lithonia Lighting provides an interesting example of this trend. As the number one player in the $4+ billion lighting and related products market, Lithonia has recently emerged from a seven-year process of implementing a series of systems to electronically link the entities in its marketplace. This effort was spearheaded by the company's visionary Chief Information Officer and Senior Vice President, Charles Darnell.

This document will discuss the implementation of this process and its impact on the lighting marketplace and on the organization within the context of "*the management of interdependence*" (Rockart and Short, 1988). The information presented here is the result of discussions with Darnell and other members of the Lithonia team, and of a reading of a number of documents provided by them.

Section II describes the lighting marketplace. Section III provides a brief overview of the Lithonia organization. Sections IV and V discuss Lithonia's approach to its market in the 1980's and 1990's.

II. MARKETPLACE

A. CHANGES:

The process described above was driven largely by profound changes occurring in the lighting industry throughout the 1970's and into the 1980's. Prior to that time, lighting equipment had been supplied by a large number of independent manufacturers, each specializing in a few lighting products in localized markets. This highly fragmented market began to consolidate, through mergers and acquisitions, into a smaller number of producers, each providing a greater array of products. At the same time, the products themselves became increasingly complex and sophisticated as new technologies exploded onto the scene. By the end of the 1970's, the industry saw the emergence of "*super lighting companies*," large conglomerates with the capabilities to offer a diverse product package to the lighting market. In the late 1960's there were approximately 1,300 lighting manufacturers; by the mid 1980's, only about one-third of these continued to exist in some form. The commercial and industrial lighting market today is dominated by nine major players (Electrical Wholesaling, 1988). With over $600 million in sales in 1988, Lithonia Lighting holds the number one position in its industry in market share, and has held this lead since 1970. (See Exhibit A).

B. IMPACT OF CHANGES:

Changes and consolidation within the lighting industry have impacted the market in three primary areas:

First, the competitive nature of the marketplace has changed radically. The emerging lighting giants were committed to success, and each had the resources to back up its commitment. Increasing volumes and economies of scale allowed vigorous price

Commercial & Industrial Lighting Market
Major Players

Name	1987 Sales (millions)	Parent Co.	Location
Lithonia Lighting	$559	National Service Industries, Inc.	Conyers, GA
Cooper Lighting	$510	Cooper Industries, Inc.	Elk Grove Village, IL
USI Lighting	$235	Hanson PLC	San Leandro, CA
Kidde Inc.	$265	Hanson PLC	San Leandro, CA
The Genlyte Group, Inc.	$320	Bairnco Corporation	Secaucus, NJ
Emerson Lighting Division	$150	Emerson Electric Co.	Tupelo, MS
Thomas Lighting Group	$145		Louisville, KY
American Electric Lighting Group	$120	FL Industries, Inc.	Memphis, TN
Hubbell Lighting Division	$100	Hubbell, Inc.	Christianburg, VA
GE Lighting Systems	$ 50	General Electric Co.	Hendersonville, NC
Jac Jacobesen Industries	$ 50		Greenwich, CT

Source: Electrical Wholesaling, "Today's Lighting Giants", April, 1988.

Exhibit A

competition. Most of the players began to lean toward a "*product package strategy*," whereby each strives to provide a complete lighting package which will satisfy a given customer's or project's needs.

Second, the challenges faced internally within each of these organizations have become increasingly complex. Many of them have grown from "mom and pop" shops to multi-product, multi-function and multi-geographical entities in a relatively short period of time. Management of this growth is essential in order to maintain quality and service and remain competitive.

Third, the roles of the market entities and the nature of the distribution channels have shifted. On a typical lighting job, the ***owner*** hires an ***architect*** to design the building and site. The architect submits his plan to a team of ***specifiers***, who write the specs for the project, including the electrical work. The specifiers produce a bill of materials which lists the materials to be used on the project; typically, the materials are referred to generically, but in some cases the actual manufacturer to be used may be specified. The specifier then puts the job out to bid with the appropriate ***contractors***. Once they receive the specifications, the electrical contractors seek quotes and the contractor awarded the job orders the material.

It is at this point in the distribution chain that the roles have changed over the last ten years. In the era of fragmentation, the contractor would order the equipment through an ***electrical distributor***, who kept an inventory of items from multiple manufacturers; the distributor ordered these items from the various independent ***manufacturers representatives***, also known as ***agents***. During this time, the distributor provided three important functions: 1) technical (lighting) expertise; 2) an inventory of the actual goods from various manufacturers; and 3) financing. Essentially, the distributor served to coordinate the purchase of the specified equipment from multiple

lighting manufacturers, each of whom produced a few products. With the consolidation of the industry and the emergence of the "*product package strategy*," it became more feasible for contractors to deal directly with agents. At the same time, the distributors' ability to provide technical expertise and on-hand inventory began to dwindle with the increasing number and complexity of products available, further hastening a key shift in roles. Agents have taken over the "*central*" position between the customer and the manufacturer, with the distributor providing some financing and inventory of commodity items.

III. DESCRIPTION OF LITHONIA LIGHTING

Lithonia Lighting was founded in 1946 in Lithonia, Georgia as a manufacturer of fluorescent fixtures, selling on a local and regional basis to customers in the Southeast and Midwest. In the late 1950's, the company expanded and moved to nearby Conyers. To finance future growth, the company went public in 1961 and continued to expand its product line, services, capabilities, and geographical customer base throughout the 1960's. Lithonia's introduction of an extensive system of field warehouses in the late 1960's catapulted it to the number one position in its industry, a position it has held since. In 1969, Lithonia merged with National Service Industries, Inc., to further broaden and strengthen its financial base.

Throughout the 1970's, Lithonia continued to increase sales through the expansion of its product line. Unlike many of its competitors, this growth came about primarily through internal development of new product offerings, as opposed to acquisitions. Each new product line was typically offered through a new division. As such, the company is organized along product lines in dispersed geographic locations. (See Exhibit B). Each product division has its own marketing and manufacturing capabilities. Support functions (i.e., personnel, finance, etc.) are generally centralized at corporate headquarters, with certain exceptions based on geographical considerations. Exhibit C shows a senior managerial organization chart.

By the mid-1980's, Lithonia distributed its products through a national network of 86 independent agents. Its agents are not permitted to carry competitive lines, though they may carry complementary lines. These agents work with approximately 2500 distributors nationwide, carefully selected from a pool of approximately 30,000. There are 14 manufacturing plants, 3 distribution centers, and 40 field warehouses.

Lithonia Lighting: Product Overview

Division Name	Year Founded	Products	Location(s)
Fluorescent	1946	Fluorescent lighting fixtures	Conyers, Georgia Cochran, Georgia City of Industry, CA
Hi-Tek Group			
Hi-Tek Industrial & Outdoor	1971	High Intensity Discharge lights, e.g., floodlights	Crawfordsville, Indiana
National Lighting Standards	1979	Aluminum & steel poles for outdoor fixtures	Louisville, KY
Lithonia Downlighting	1979	Downlighting/architectural lighting	Vermilion, OH
Major Reflector Products	1979	Reflectors	Northbrook, IL
Lithonia Track Lighting	1986	Track Lighting	Crawfordsville, IN
Management Information & Electronic Systems			
Lithonia Emergency Systems	1979	Standard & emergency exit signs, inverter/battery packs, emergency units	Decatur, GA
RELOC Wiring Systems	1977	Relocatable/flexible wiring systems	Conyers, GA
Lithonia Control Systems	1986	Dimming, electrical switching, sensing	Decatur, GA

Exhibit B

LITHONIA LIGHTING

Organizational Overview

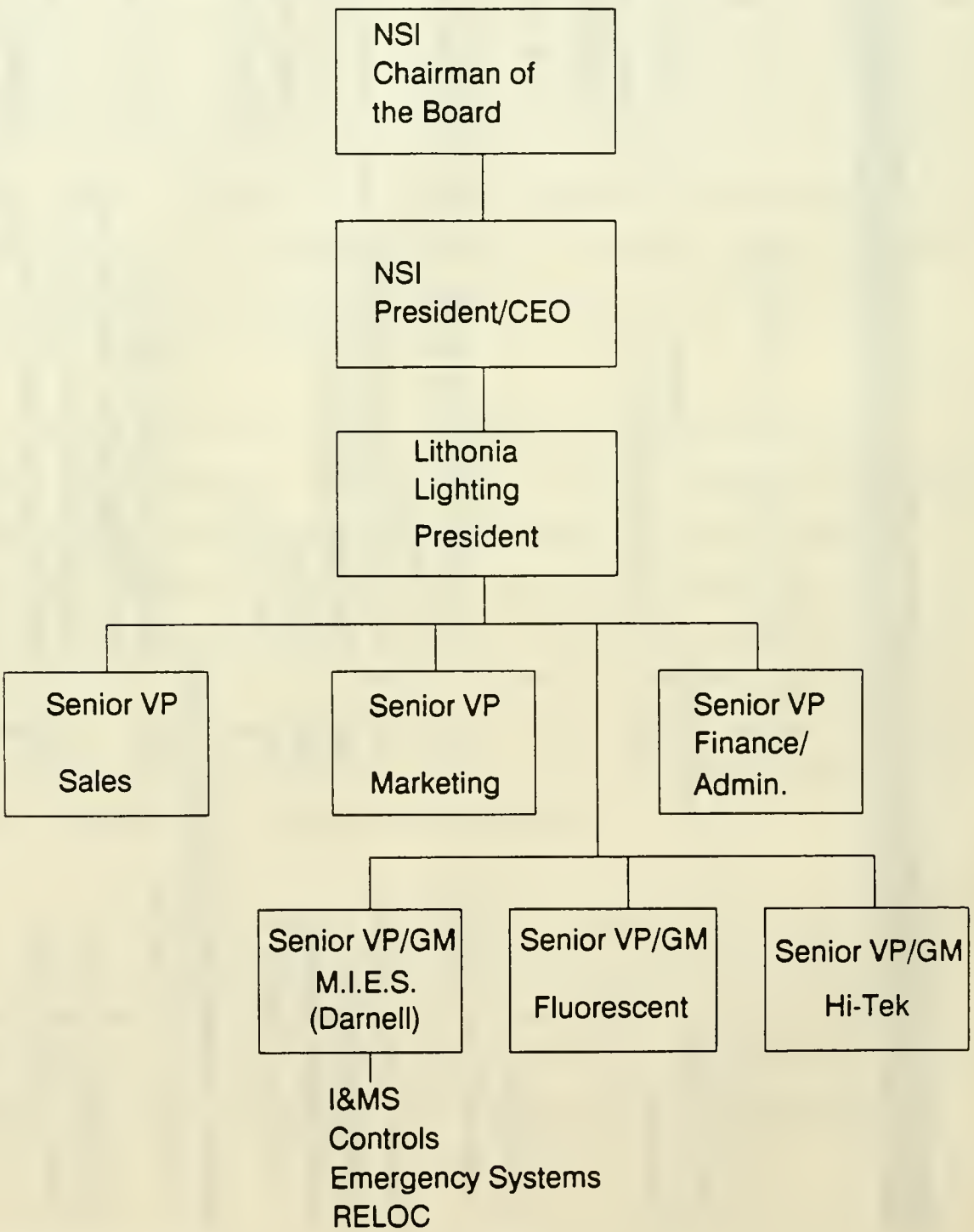


Exhibit C

Lithonia handles both stock and manufactured items. Orders may be "*Job*" orders, in which the equipment is manufactured for a specific project; "*Distributor Stocking*," which are orders from the distributor to stock his own inventory; or "*Will Call*," where the distributor buys directly from the field warehouse for a specific customer. Most of Lithonia's business is domestic, with exports at 2-3% of sales.

In 1983, Lithonia's sales were at $300 million. By 1988, sales had doubled to $600 million, representing more than 40% of its total parent company (NSI) sales. The senior management team of Lithonia strongly believes that a significant portion of this increase is a result of the innovative use of information technology resources.

IV. MANAGING INTERDEPENDENCE: LITHONIA'S APPROACH TO ITS MARKET IN THE 1980'S

In 1979-80, the members of Lithonia's senior management team initiated a series of strategic planning discussions. A key member of the team was Charles Darnell, the Senior Vice President and General Manager of the Management Information and Electronic Services group (MIES). Darnell had joined Lithonia in 1963 as its first (and only) programmer, to take care of the new Univac computer purchased by the Finance department. He reported to the Assistant Controller. By 1965, Darnell had hired a programming staff and had created a separate Information Systems department in order to support functions in the company other than Finance. From there, he rose quickly through the positions of Manager, Director and Vice President, until he became a Senior Vice President in charge of both the Systems group as well as three product divisions. As the top MIS person in the company, Darnell possessed a rare combination of both business and technical knowledge, as well as a clear sense of the potential advantages to be gained by aligning information technology with the overall business strategy.

The focus of the initial management discussions in 1979 was the development of a business vision for the 1980's, and a clear definition of Lithonia's approach to the market. The challenge was clear. There was a need to intelligently plan for and accomodate continued future growth in order to best serve the needs of the lighting marketplace. As one member of the team expressed it, "*we knew we were the best in the industry, but we also knew we could be even better.*" Three questions were at the heart of the matter. First, how could Lithonia "*be better?*" Second, how could the senior executive team proactively manage the organization and its market in an integrated and coordinated fashion, and retain the number one position? Finally, how

could Lithonia competitively position itself in the evolving marketplace for even greater market share?

The outcome of these discussions was a new approach, encompassing change in three critical arenas: strategy, organization, and information systems. Among these three arenas, the new strategy was to be the driver for change throughout the organization. That is, the development of a strategic vision would be operationally implemented through substantive and focused organizational management programs, and through the concurrent development of appropriate information systems. The interaction of the programs for change in the three areas is depicted in Exhibit D, and is further discussed below.

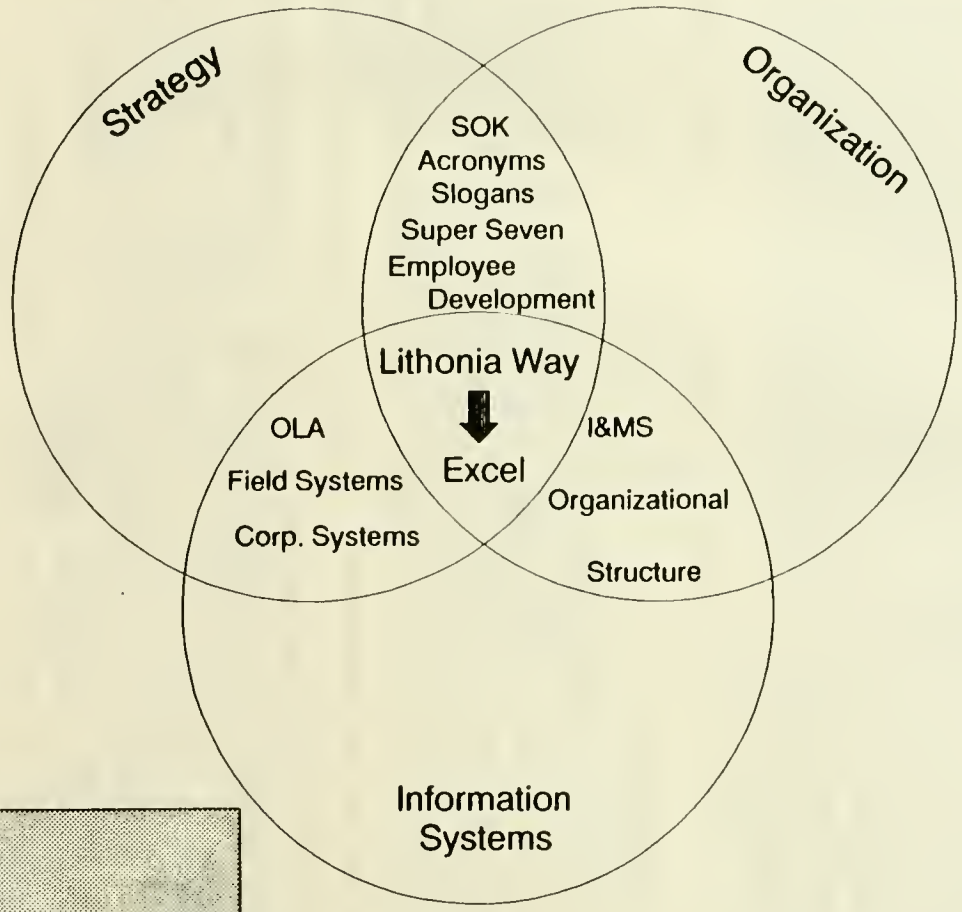
A. STRATEGY:

The strategy which emerged from these meetings had two critical segments. The first was a clear, unified understanding of Lithonia's structural relationships with the entities in its external marketplace. These relationships were embodied and communicated in the form of a diagram, referred to as the Lighting Business Cycle. The second was the development of a vision of Lithonia's internal approach to doing business in this external marketplace, a set of defined objectives which would enable it to remain successful in the decades to come. The explicit statement of these objectives is referred to as "*The Lithonia Way,*" and would eventually form the internal guidelines leading to the creation of a coordinated orientation to the business on the part of each and every member of the Lithonia organization.

1. The Lighting Business Cycle:

The entities which comprise the distribution channel for Lithonia's products are: Specifiers; Contractors; Distributors; Agents; the Lithonia Sales Management Team; the

LITHONIA LIGHTING



KEY:

SOK = Seat of Knowledge

OLA = One Lithonia Architecture

I&MS = Information & Management Services

Exhibit D

Field Warehouses; and the Lithonia Product divisions. The functions of the first four are described above in Section II. The charter of the Lithonia Sales Team is to manage the agent network. The Field Warehouses provide localized access to stock items. The product divisions develop, market and produce products within their scope of knowledge.

In their discussions, the management team ran into difficulty when they attempted to define and draw the inter-relationships and connections between all these entities. As Darnell describes it, when they drew the boxes and tried to connect them in a traditional hierarchical organizational chart, they ended up with "spaghetti" charts. The lines and connections went every which way, crossing and re-crossing each other in a maze of complexity. The drawings served as the focus of the discussions, a tangible vehicle by which to test proposed theories of the inter-relationships. Finally, Darnell realized what the problem was: it was the agent who belonged in the center of their "universe," rather than Lithonia itself. The remaining entities revolved around the agent. With this realization and the resulting Lighting Business Cycle drawing came a clearer understanding of and insight into the interactions among these entities, and the importance of each. This understanding in turn led to a vision of a new approach: the entities which comprised the business cycle came to be viewed as Lithonia's partners in the process of getting the product to market. (See Exhibit E).

Once they developed an improved and unified understanding of the external market, the management team could concentrate on developing a coordinated internal approach to operating within that market. The explicit statement of this approach, and a definition of the relationships among these market entities, was embodied in "*The Lithonia Way.*"

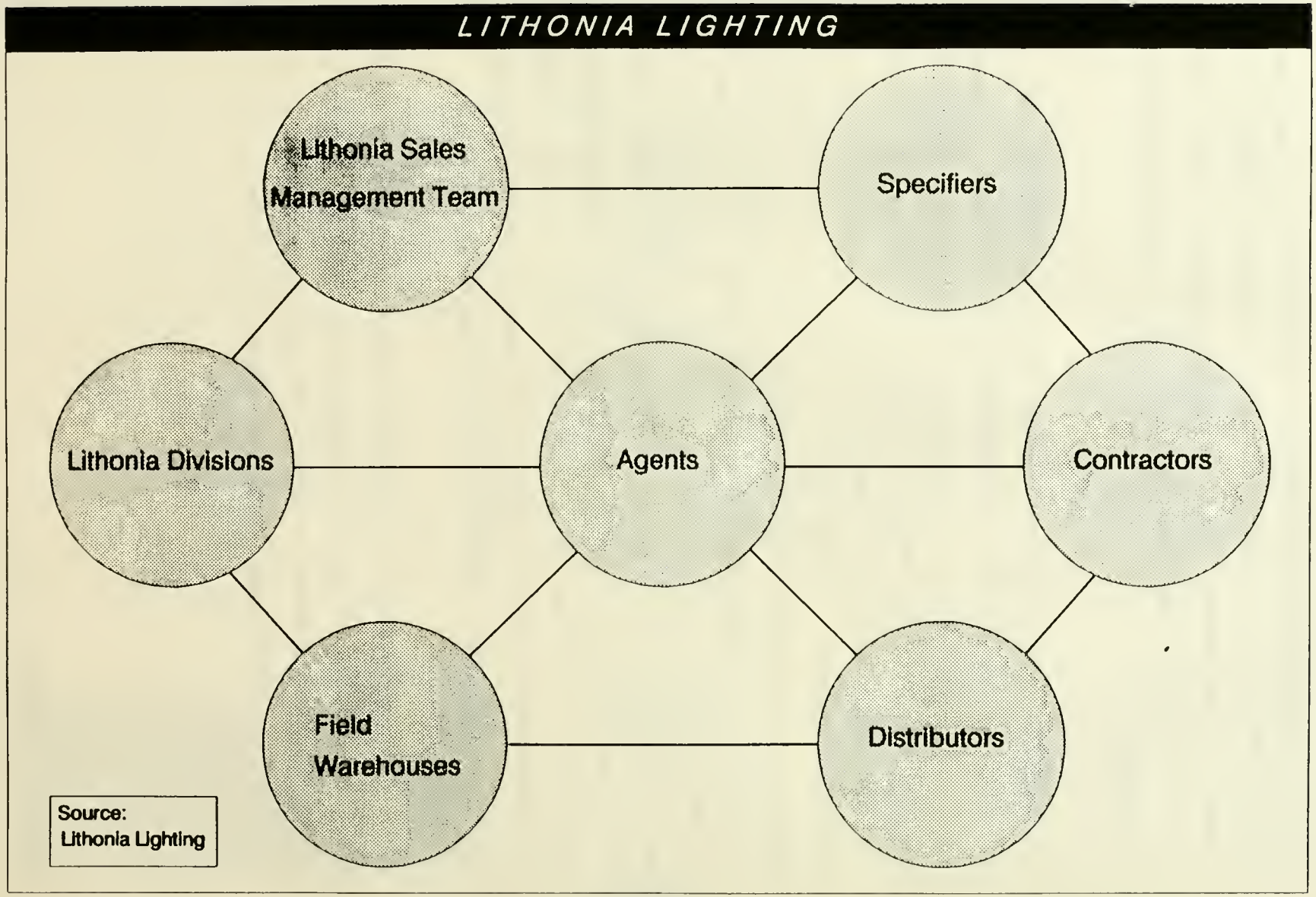

LITHONIA LIGHTING
Lithonia Sales Management Team
Specifiers
Lithonia Divisions
Agents
Contractors
Field Warehouses
Distributors
Source: Lithonia Lighting

Exhibit E

2. The Lithonia Way:

As defined in an internal company manifesto by the same name, "*THE LITHONIA WAY is providing the best value in lighting, being easy to do business with, and caring that we do things right for our business, our customers and our people.*" At Lithonia, each portion of this definition is translated into a slogan, and its daily operational implementation is defined in detail. The common underlying theme is that of customer service: give the customer what s/he needs to succeed, and Lithonia in turn will be successful.

"*BEST VALUE IN LIGHTING*" refers to product value, which is defined as product performance relative to its cost. This portion encompasses the notions of high quality, competitive costs/prices, and superior service. The choice of adjectives describing quality, price and service is no accident. Lithonia realized that it could not compete on a price basis, since all the super lighting companies had achieved the economies of scale with which to drive down prices. Quality was also relatively homogenous. Therefore, the competitive differentiator would have to be service. Customers would have to be able to get the products they wanted, when they wanted them, easily and painlessly. The company which excelled in customer service would remain in the number one position.

"*BEING EASY TO DO BUSINESS WITH*" means "*being responsive to the needs of our customers and our agents and having a can do attitude in our business dealings with others.*" It means employees with expert knowledge of the products, quick and accurate communication, prompt fulfillment of orders, and clear, understandable business documents. And, it means "*going the extra mile.*"

"*CARING ABOUT DOING THINGS RIGHT FOR OUR BUSINESS, OUR CUSTOMERS AND OUR PEOPLE*" refers to stockholders, customers and employees.

Lithonia defines its "*customers*" as "*those persons who purchase or who are in a position to influence the purchase of our products.*" The four primary customer groups are: 1) their "*partners*," the agents; 2) their "*teammates*," the distributors; 3) their "*judges*," the specifiers (this group includes architects, building owners, corporate occupants, electrical engineers and lighting designers) and 4) their "*friends*," the contractors who install their products. The value, contributions and unique needs of each are explicitly stated.

The sales agents are independent companies with exclusive rights to sell Lithonia's products in their sales territories for a commission. Some consist of one person, while others have 20 or more people. These agents are valued as "*members of the Lithonia family*" for their local market knowledge, existing customer relationships, and their power to represent Lithonia to other buying influences in their territories. Agents work with specifiers to get Lithonia's products specified; they work with distributors to quote prices, enter orders and pass on order status information; and they provide contractors with product information. In turn, Lithonia strives to make the agents successful through superior commissions, training, product performance information, and product availability.

Distributors serve local markets and work regularly with contractors, purchasing agents, and other buying influences. They provide an extended sales arm by stocking inventory and bearing the payment risk from customers. They require competitive pricing, on-time delivery and quick response to questions and problems.

The specifiers judge the appropriateness of Lithonia's products for inclusion in their specifications. They look for high quality and dependable products, and utilize lighting science technical data to make their configuration decisions.

Electrical contractors depend on the design, quality of construction, and ease and cost of installation of the lighting products for which they in turn are responsible. They look for trouble-free products, on-time deliveries to avoid job delays, and easy installations.

The Lithonia Way also provided the framework for an explicitly defined employee development program. The thrust of the program is to develop and implement a career plan for each employee. Underlying the program is the belief that it is Lithonia's responsibility to "*help the employee learn to do the job and to provide a climate of opportunity for growth*". Promotion from within is the norm wherever possible, and communication is emphasized.

B. ORGANIZATION:

Lithonia's organization was designed to support its market/customer orientation. With the development of each new product came an addition to the organizational structure with the charter to conceptualize, design, develop, produce and market the product line.

As such, each product corresponds to a division; the divisions are combined into logical families or groups of products. For example, the Hi-Tek group (named for its High Intensity Discharge products) is comprised of the Downlighting Division, Track Lighting, Industrial and Outdoor, National Lighting Standards, and Major Reflector Products.

At Lithonia, the terms "*division*" and "*seat of knowledge*" are used interchangeably. The division is the seat of knowledge about the product for which it is responsible. In keeping with The Lithonia Way, everyone in the division is an expert about that product, from clerks to senior managers. In a company which is determined

to provide the best value in lighting and service the needs of the lighting marketplace, the seat of knowledge is king. The industry demands a broad product line from each company. At the same time, products have become more complex. In order to be able to provide a large number of products and still retain expert knowledge about each one, Lithonia decentralized the organization along these lines. Each division has its own design, purchasing, manufacturing and marketing capabilities. Finance, Human Resources, Distribution and Information Systems are generally centralized; the exceptions are based on geographical need. A centralized Sales Management group manages the agent network. A centralized Marketing group coordinates the activities of the divisional marketing groups, and also provides those services for which diseconomies of scale would exist if decentralized; this includes, for example, video production, merchandising materials and national advertising.

The organizational structure described above thus serves to reinforce the Lithonia strategy of providing customer service through a broad product line with expertise in each product. The responsibilities assigned to each function are also based on this customer orientation. For example, in addition to handling product pricing and agent margins, the divisional marketing groups at Lithonia have recently been given responsibility for new product development and for product sales/service, which includes setting levels for finished goods inventory. Again, this reflects the implementation of The Lithonia Way strategy: it is divisional marketing which is closest to the customer and knows the needs of the market best, therefore, it is divisional marketing which drives new product development and the manufacture of existing products.

In addition to its implementation through the organizational structure, manifestations of The Lithonia Way can be seen throughout the organization's programs and processes. Educational programs were set up to carry the new message. Company newsletters are circulated periodically which describe the components of The

Lithonia Way, and the progress being made. Slogans and acronyms are visible. In fact, Lithonia - and Darnell in particular - takes the art of naming and acronyms to new heights of creative application, as will be seen below.

The educational program has been an ongoing effort, and The Lithonia Way permeates every function and level of the organization. Functional areas which typically never see the external customer - Finance or Manufacturing, for example, - strive to make their daily decisions based on what is best for the customer. For example, in the Finance area, a recent project has been to redesign the invoices to more closely resemble the customer's original order.

The clearest manifestation of The Lithonia Way was the development of The Super Seven, a list of seven short-term objectives for the 1980's. This list converts the ideas embodied in The Lithonia Way into short, easy-to-remember, steps for every member of the organization. They are:

1. Get our agents' support for all division products.
2. Be more effective in communicating with and servicing our customers.
3. Expand into new lighting markets; fill gaps in existing product packages.
4. Develop and implement programs to gain greater preference from all buying influences.
5. Improve our logistical performance.
6. Provide employees the opportunity to grow professionally and personally and to contribute to our customer satisfaction.
7. Be more sensitive and responsive to customers' and employees' needs.

The seat of knowledge concept satisfied the company's need for differentiation and expertise along product lines. At the same time, however, there is a substantial

need for mechanisms which integrate these disparate functions into one company. At Lithonia, information technology has been used alongside alternative structural mechanisms to provide this integration.

C. SYSTEMS:

Between 1980 and 1988, Lithonia Lighting developed and implemented a series of information systems. These have been divided into the broad categories of external, or field systems, and internal, or corporate systems. The capabilities of these systems and the ways in which they have been used have played an important role in Lithonia's ability to retain its competitive advantage in the market. Moreover, as will be seen below, the application of information technology at Lithonia has evolved to the point where it is being used not only to enable the company to manage its internal and external interdependencies, but to transform them as well.

1. Development of ACE and ACE+:

In 1980, a separate group was created within the Information and Management Systems group (I&MS) to work on a new system: the Agency Communication Environment, or ACE. The original concept of the system was a simple one, and was a direct outgrowth of the strategic management discussions described above. If the agent was the hub of the wheel, and service the key theme, then the easier and faster Lithonia was able to get the agents' orders in, the better. ACE was originally conceived as one small step in the effort to speed up the order fulfillment process by simply eliminating the mail float which existed when the agent mailed an order to Lithonia.

Prior to ACE, agents in the field would take an order over the telephone, write it onto an order form, and mail it to Lithonia. Once it was received at Lithonia, clerks

would convert the information to codes understood by the system (e.g., product codes), and key it into the company's databases.

The original ACE system was a simple order entry system, designed to combine these manual steps by allowing the agent to enter the order directly into the system. This would eliminate the steps involved in writing, mailing and entering the order to Lithonia's internal systems, as well as the time the order was in the mail.

The original ACE team was comprised of three people: one technician, one programmer, and one training analyst. While the concept of the system was relatively straightforward, the specification development process was not. Lithonia's agency force was a diverse group dispersed throughout the country, and their operational processes varied greatly from one to the next. Compounding this was the fact that most were fiercely protective of their independence from Lithonia; they were suspicious that Lithonia might use the proposed new system to see how much the agents were actually charging for their equipment, and might then cut into their profits by raising the price.

However, at the same time, a core group of higher volume agencies began to actually demand an electronic order entry capability as a critical support tool to enable them to further increase volume. Lithonia decided to use this more receptive group as a "beta" test group. The ACE team spent a great deal of time visiting the agents and talking with them to understand how they did business, to reassure them that it was not in Lithonia's best interests to reduce their profits (it directly contradicted The Lithonia Way), and to interactively write the specifications for the new system. Once the system was implemented, it was only a matter of time before the remaining agents saw for themselves the potential benefits, and began to clamor for their own.

By 1982, the system had been developed and installed at 17 agency sites, each using different hardware. The typical site had one user dedicated to order entry, communicating directly to Lithonia. Lithonia licensed the systems to the agency for a nominal fee, providing both the hardware and the support services on a subsidized basis. At this time, the systems group began to develop a filter module which would accept and convert some of the orders directly to Lithonia's databases, thus reducing the amount of work performed manually by the order entry clerks. The functionality of this module was later expanded to include price checking and credit approval; it became known as ACE Express after Darnell's invitation at a national sales meeting for more agents to "*get on board the ACE Express*!"

The next critical step in the process was the enhancement of the ACE system to ACE+. The major difference between the two systems had strategic significance: ACE had been based on an order orientation, while ACE+ was designed with a job orientation. This change was directly correlated to the recognition of two conflicting needs: while the demand for extensive technical expertise and local presence necessitated an organizational structure comprised of different divisions for each product, the market also demanded the ease of dealing with one company to provide this set of products. The new ACE+ system would begin to serve this coordinative function.

For example, the ABC construction project might specify five different lighting products for its job. The agent who was ordering these products from Lithonia through ACE would enter five different orders (one for each Lithonia product division), keeping in mind that they all belonged to the same job, and then track these orders separately through delivery. Using ACE+ on the other hand, the agent could set up one job and specify the various products which belonged to it. Once the "order" came into Lithonia, it would be split and sent off to the appropriate divisions through the

ACE Express processing module. In this way, the system was adjusted to better reflect the realities of business operation.

2. Forward Integration:

The development and successful implementation of ACE and ACE+ set the stage for a continued, ongoing field systems development process. ACE+ represents the use of technology as a tool to connect an integral piece of the external sales and distribution chain directly to the organization. Since its initial implementation, the functions of ACE+ have continually been expanded. Job processing capabilities now include the ability for the agent to automatically price an entire bill of materials, either by line item or lump sum, based upon factory authorized price/commission levels. The quote can then be converted by the system into an order, and sent electronically to Lithonia's internal systems for order processing. The system provides information on the status of each order (as of the previous day) as it travels through Lithonia, from initial order processing to manufacturing, distribution and invoicing.

Today, however, the system provides much more than just order processing. An extensive Engineering Applications module allows computer-aided lighting design and layouts, providing a base of technical expertise for the agent to use in his dealings with the customer. An Office Management module provides access to off-the-shelf office processing systems such as word processing or spreadsheets. An Agency Management System helps the agent to analyze and better manage his business. These system enhancements have served to strengthen the ties between Lithonia and its network of independent agents. Moreover, the new capabilities have gone beyond the goal of simply speeding up the process, and have now helped Lithonia achieve its goals of being easy to do business with and doing things right for the customer. Technology has become a strategic weapon in the battle for market representation. As Darnell

explains it, even if Lithonia's competitors start copying them, it would take seven years just to catch up.

But Lithonia has taken the concept of electronic integration even further. Concurrently with the expansion of ACE+ capabilities has been the development and placement of appropriate information systems for each entity in the lighting business cycle. (See Exhibit F.) Each of the systems serving each user (e.g., DIAL-L for distributors) is connected directly to the agent system, ACE+, through which all orders are transmitted to Lithonia. With the placement of each system, Lithonia has taken a step-by-step approach to integrating and connecting the critical entities in its distribution chain to itself, to the Agent as the hub of the cycle, and among the entities themselves. The communication network which enables this electronic interaction was christened Light*Link at Lithonia's annual national sales meeting in 1986.

Each system was designed for the specific needs of Lithonia's "customers." (Exhibit G provides a summary of each field system.) The Field Warehouses, as part of Lithonia, utilize a Stock Order System (SOS). It includes an order function, which provides the ability to place a stock order directly with the warehouse, and an inventory tracking capability. It is connected directly to ACE+, and to DIAL-L (the distributor system) as well as to Lithonia's internal systems.

The Specifier customer group has SPEC-L, CALC-L I and CALC-L II. These systems give these customers what they need: computer-aided lighting design and layouts through access to Lithonia's lighting science database, as well as the economic analysis associated with varying design considerations. Essentially, these systems are an extension of the engineering applications capabilities of ACE+. While the specifiers are not required to name Lithonia's products in their specifications in return for its use, the system serves to remind them of Lithonia's existence on a continual and visible basis.

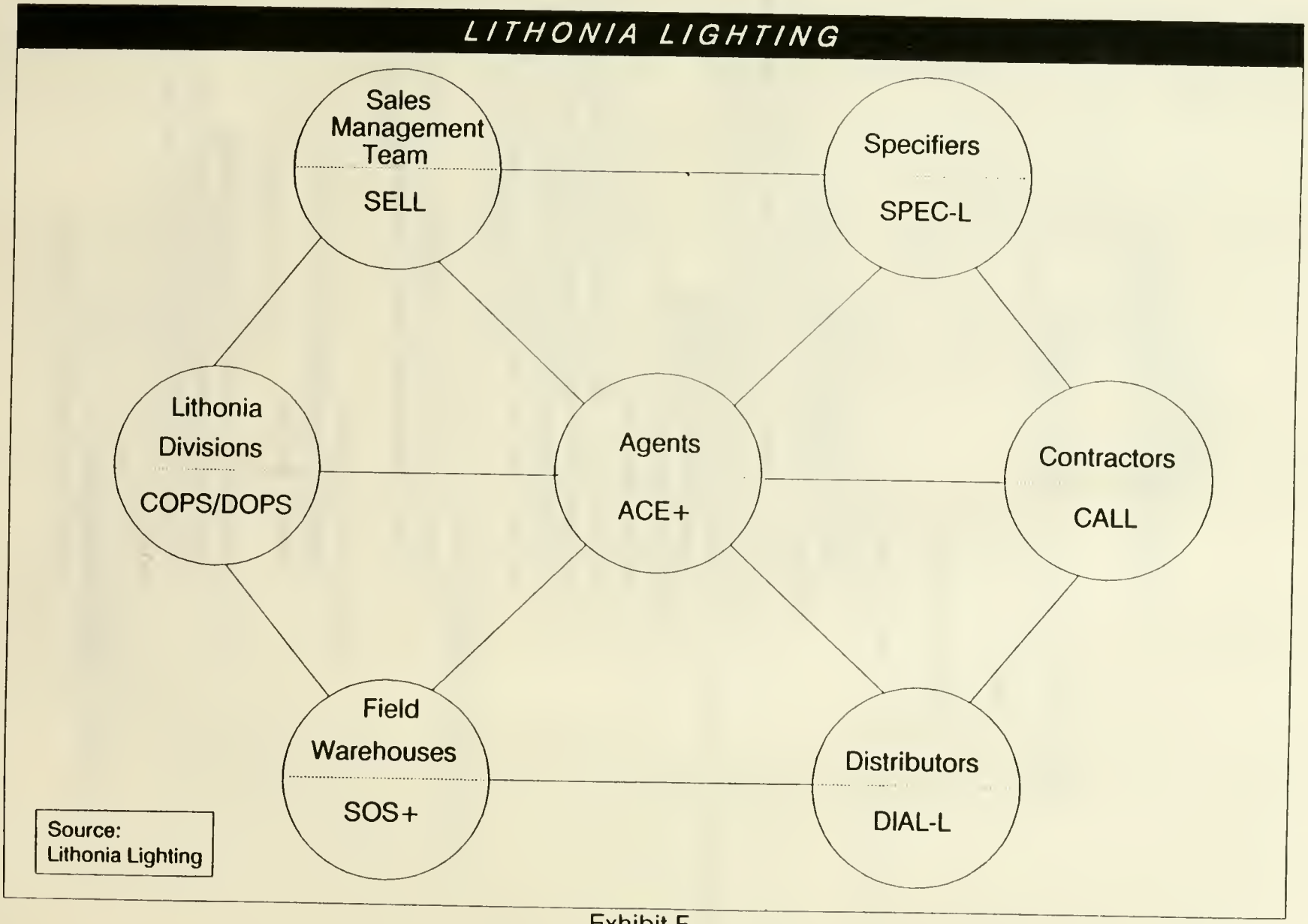

LITHONIA LIGHTING
Sales Management Team
SELL
Specifiers
SPEC-L
Lithonia Divisions
COPS/DOPS
Agents
ACE+
Contractors
CALL
Field Warehouses
SOS+
Distributors
DIAL-L
Source: Lithonia Lighting

Exhibit F

EXHIBIT G
LITHONIA LIGHTING
SUMMARY OF FIELD SYSTEMS

1. Agency Communication Environment (ACE+)

* Used by the agents

* Capabilities include:

  * Job Processing
    * Job ID identifies project
    * Enter specification for bill of materials
    * Enter a bill of material and generate a price quote on it;
    * Receive requests for quotes from the DIAL-L system used by distributors, and respond with a confirmed quote;
    * Convert quotes into orders;
    * Transmit orders to Lithonia;
    * Confirmed orders sent back to agency as an acknowledgement
    * Transmit notes - short notations which can be attached to any point (electronic document) in the system.
    * Transmit memos - messages and memos can be sent via system to any user including company personnel

  * Status
    * Access factory and field warehouse inventory status;
    * Receive updated order/inventory status daily;

  * Engineering Applications
    * Lighting layout design
    * Economic analysis

  * Agency Management module (currently in testing)
    * Reports and information to help analyze the business; e.g., backlogs, commissions by manufacturer, sales and product history;

  * Office Management
    * Access off-the-shelf office systems

EXHIBIT G, cont.

2. Stock Order System (SOS+)

* Used by the field warehouses

* Capabilities include:

  * Orders
    * Receive orders from DIAL-L and/or ACE+, or enter orders directly
    * Allocate available inventory
    * Print bill of lading for shipment

  * Daily Transactions
    * Keep track of inventory movements in and out of warehouse
    * Adjustments to inventory
    * Receipts by item and by trailer in total

3. SPEC-L, CALC-I and CALC-II

* Used by specifiers, lighting engineers, etc.

* Capabilities include:
  * same as those provided in Engineering Application portion of ACE+;

4. DIAL-L

* Used by the distributors

* Capabilities include:

  * Job Processing
    * Request quotes
    * Convert quotes into orders
    * Access order/inventories status information
    * Create quotes for their customers (the contractors)

EXHIBIT G, cont.

- Test & Sell
  - Query field warehouse inventory status
  - Allocate and reserve inventory to the on-line transaction
  - Enter a purchase order directly to the field warehouse
- Memos and messages

5. Contractor Access to Lithonia (CALL)

- Used by contractors
- Capabilities include:
  - same as those provided for the distributors through DIAL-L (with the exception of quote creation for customers)

Distributors use DIAL-L. Connected directly to ACE+, DIAL-L allows a distributor to receive an electronic quote from the agent for job or stock business. The system can then convert the quote into an order and electronically transmit it back to the agent. The distributor can also convert the quote into a quote for his customer, the contractor. The status capability allows a distributor to use the system to check on the status of an order and inventory, thus eliminating the time consuming and frustrating task of constant telephone calls between the distributor and the agent. The newest feature of this system, TEST&SELL, connects certain select distributors directly to the field warehouse SOS system to query inventory there and enter an order for shipment.

With the installation of the latest field system, CALL, each entity in the business cycle will be electronically connected. This is the Contractor Access to Lithonia Lighting system. CALL will place the contractor in direct communication with the distributor, and ultimately will allow the contractor direct access to the field warehouse SOS system as well. Distributors will be allowed to transmit prices to each contractor for doing business with the SOS system.

Currently, both the Agent and Lithonia's sales management team control which distributors, specifiers and contractors receive their systems. The financial and service arrangements for these systems are similar to those for ACE.

3. <u>Impact of Forward Integration:</u>

At the very least, these systems "*make it easier to do business with*" Lithonia. Certainly, by offering their customers systems to help them do their jobs faster, better and easier at minimal cost and with no obligation to Lithonia, the organization "*cares that it does things right for its customers.*" And, of course, the ability to know immediately whether an item is available, or the ability to optimally and cost effectively

design a lighting layout, exemplifies Lithonia's continuous attempt to provide the "*best value in lighting.*"

However, the impact of this forward integration of systems and technology into the marketplace has even greater significance. As mentioned in Section II, changes in the lighting industry over the past ten years have resulted in a changing role for the distributor. Connecting the contractors through the CALL system directly to Lithonia warehouses effectively allows them greater and easier access to Lithonia's products and services, and to start dealing more closely with Lithonia's agents. Not only are these systems enabling the organization to manage the interdependencies in its marketplace, the technology is being utilized as a tool to facilitate a strategic transformation of this marketplace. The availability of these systems, and Lithonia's ability to choose who gets them, empowers them to actually change the interactions among the members of the market and/or to target new customer groups with which to directly interact.

4. Backward Integration:

While the field systems took priority at first, Lithonia quickly realized the importance of internal systems which could 1) support the external systems' capabilities and 2) allow Lithonia to handle the increased order volume which had resulted.

Towards the middle of the 1980's, Darnell launched a new campaign: the EXCEL program. Excellence through Customer Service Emphasis at Lithonia was conceived as an extension of The Lithonia Way, "*dedicated to achieving new heights in customer service*", and was aimed at every position in the organization, from senior to entry level. The drivers behind the resurgence of effort in this area were increasingly heated competition in the newly consolidated marketplace, an increased understanding on the part of customers regarding service performance, and an increasing trend among competitors toward better internal productivity and efficiency.

The EXCEL campaign was based on both the strengths and weaknesses of the organization. Management believed that continuous improvement in process was necessary to stay ahead, that the structure and framework existed within which to improve, and that Lithonia had a vision of excellence and a unified set of goals, philosophies and policies which far exceeded the competition. At the same time, they explicitly recognized those areas in which possibilities for improvement existed. Volume had exploded beyond the capability of existing internal processes and systems to handle it. For example, investments in manufacturing plants had increased capacity to the point where existing human and automated resources could not optimally schedule loads; and, manual handling of inventory levels could not keep pace with the volumes. These problems had an adverse impact on customer service. Complaints were received regarding shortages, missed promises, and non-availability of inventory. In addition, the functions of the field systems had been enhanced to the point where external units had more capabilities than Lithonia's internal employees; for example, agents often had more information on the status of an order than the Lithonia marketing and sales liaison.

Driven by the need to improve quality of service and reduce costs, the organization began to apply the same spirit of innovation to its internal operations and "market" as it had to the external one. Darnell developed a new framework which categorized the processes used by Lithonia to fulfill an order into logical functional groupings, as follows:

* SELL = Sales Environment at Lithonia Lighting
* MILL = Manufacturing Information at Lithonia Lighting
* ROLL = Routing Orders at Lithonia Lighting
* BILL = Billing Information at Lithonia Lighting

The concept and view of the organization as an internal market became a new theme. In this view, each function was both a customer and a supplier of those functions with which it interfaced within the organization. The EXCEL campaign and the new names for the groupings (which crossed many functional lines) provided the vehicle through which this concept was communicated throughout the company. The orientation toward customer service thus permeated the entire organization, from senior to entry level. It became the norm for each person to view his/her role in relation to the larger business processing chain.

Darnell then categorized Lithonia's automated information systems according to the business functions they supported, and reorganized the I&MS group under these categories. (See Exhibit H.) In addition, the training function was enhanced and evolved into a separate group comprised of three subunits: field training, internal training, and a telephone support center. The goal of the reorganization was not only to better support the business cycle, but for line personnel to begin to view information technology as an integral tool with which to improve their business functionality, rather than as the sole jurisdiction of the I&MS group.

A series of Excel Today tasks, including both manual and automated systems improvements, were targeted for immediate action. A list of longer-term tasks and future improvements evolved into a cohesive framework which then became a separate but complementary program to EXCEL: the One Lithonia Architecture, or OLA, program.

The concept behind OLA was to proactively create an architecture through which to coordinate and unify Lithonia's many product divisions, thereby enabling the company to market its product lines as one entity. The external systems had provided the first steps toward this goal by providing the capability to enter all the orders for

LITHONIA LIGHTING

Information & Management Services (I&MS) Organizational Structure (1982-1988)

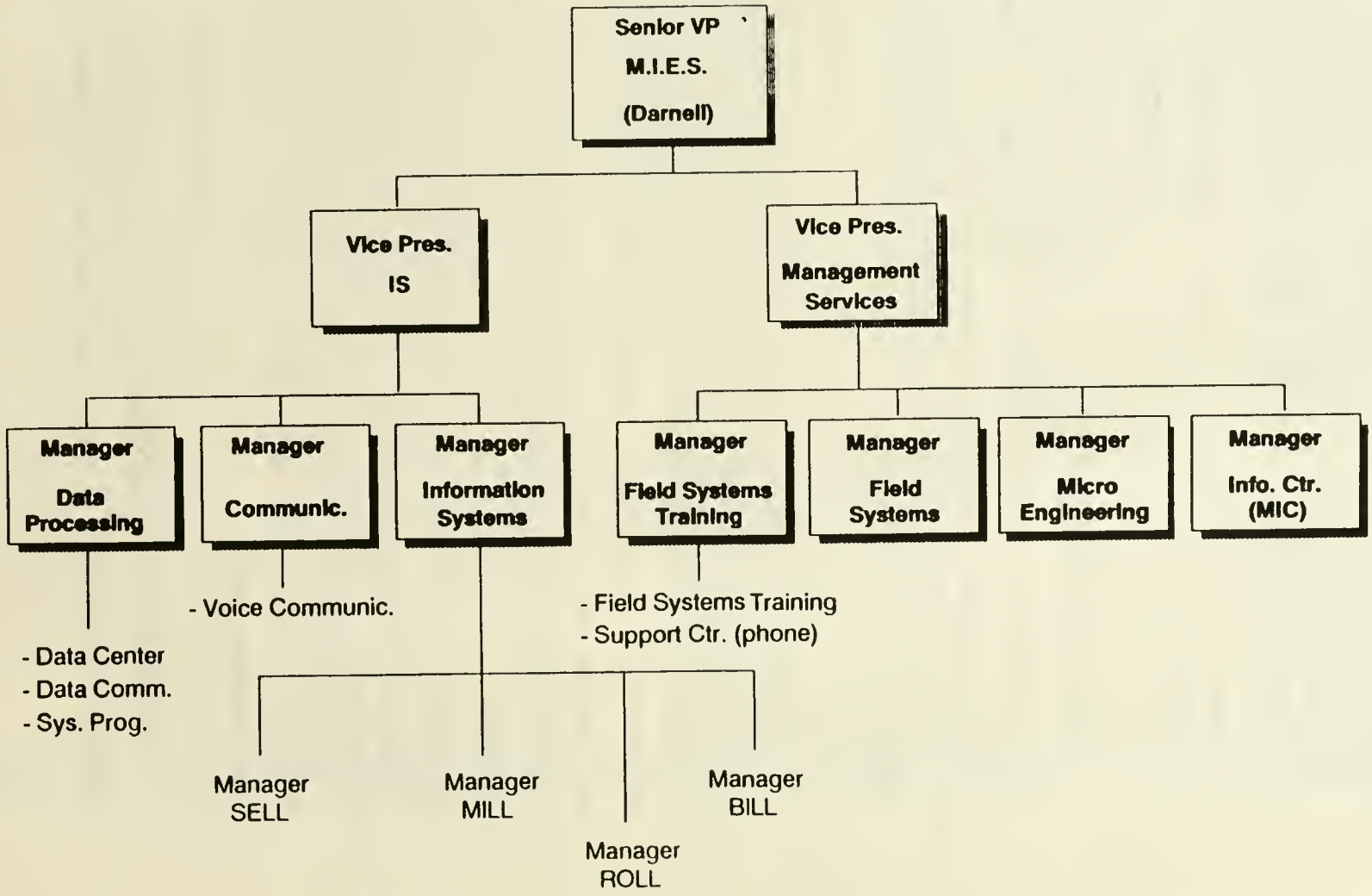


Exhibit H

one job under one order number. However, agents were still required to deal with multiple divisions and product locations in order to price the job and to place and track the status of the line items in the order. On the other side of the coin, Lithonia did not have the capability to consider each job as one company; from the company's perspective, each job was viewed - and priced - as multiple, divisional jobs. The work which had begun on the external systems had to be continued on the internal systems.

OLA made the one-company goal explicit, and provided a foundation from which to aggressively pursue the EXCEL campaign goals. A separate OLA team was set up within I&MS to specify the necessary enhancements to existing internal systems as well as the development of new systems which would lead Lithonia down the road toward the one-company goal.

Changes to the information systems were specified and scheduled under the SELL, ROLL, MILL and BILL categories. The SELL function is supported by both the internal and external systems used to obtain the business. The external portion of this has been described above. On the internal side, improvements were scheduled for the order processing modules (i.e., upgrades to Ace Express) and for the systems used by the Lithonia divisions for quotations, product information, and order status information. In some cases, the planned divisional SELL systems would simply bring the capabilities of the internal marketing teams at Lithonia on par with those already installed for the independent agents. Conversely, the scheduled enhancements to the order processing systems would mean that divisional employees could spend less time on routine order processing tasks while delivering more consistent, timely information to their multiple clients.

Improvements were scheduled for the MILL support systems in the areas of scheduling and expediting as well as material/capacity requirements planning. Additions

and enhancements in the ROLL systems included a Finished Goods Flow system, inventory planning, carrier/transportation management and various modules which would provide a greater ability to meet ship-promise dates. In the BILL area, improvements were scheduled for claims processing, cash application, and credit approval functions.

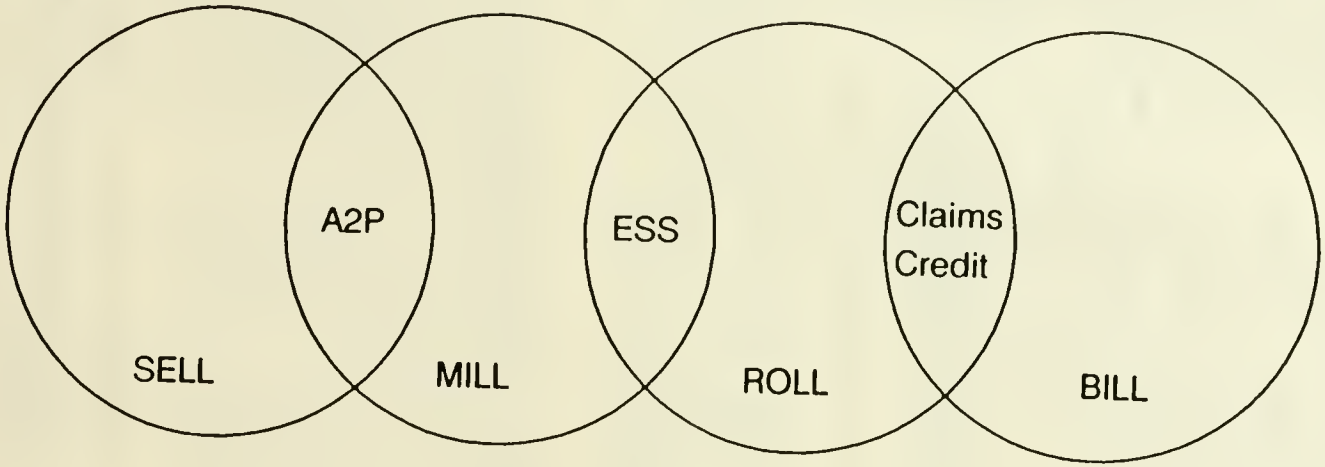
In addition to the system improvements within each functional area, new systems were specified which would allow greater coordination and connection between the functional areas as well. (Exhibit I) For example:

* The Available to Promise (A2P) system would use MILL information to calculate product availability dates to be used in the SELL function. If a requested product was not in inventory or in the production schedule, the A2P system would check inventory for availability of each of the product's components and calculate the time it would take to manufacture the product, instead of automatically reporting non-availability of the product and possibly losing the sale.

* The Effective Scheduling System (ESS) would connect the MILL and ROLL functional areas by scheduling the load for each plant based on shipping date requirements from the nearby distribution center. For example, products scheduled to be shipped out of Conyers will be manufactured in Conyers; ESS would schedule the Conyers plant based on the shipping requirements for the Conyers distribution center.

* Credit authorization systems would connect the ROLL and BILL areas; prior to shipment, the product would be held for an automatic credit authorization check.

LITHONIA LIGHTING



Source: Lithonia Lighting

Exhibit I

In addition to the development of new coordinative systems, Lithonia began to implement a set of managerial and process improvements as well. This included, for example, dramatic changes in the manufacturing processes. Reporting structures were reorganized and new management installed. Procedures and work environment were re-tooled to be more efficient. Teams and group problem solving were encouraged. Safety, productivity and quality became key words and goals. Each organization was "right-sized" for its duties.

The EXCEL campaign and the implementation of the OLA concept have continued through the 1980's. Significant progress has been made in the development of these systems, as Lithonia looks ahead to the next decade.

V. LITHONIA: LOOKING TO THE 1990'S

As the 1980's come to a close, Lithonia is in the process of re-thinking and reshaping its strategy. The Super Sevens for the 1980's are giving way to a new set of goals and objectives. Lithonia plans to:

* More effectively market an increasingly complex set of products as a coordinated, integrated company unit, while retaining the independent nature of each product;

* Achieve a sales goal of $1 billion by the early 1990's;

* Improve logistical performance, with special emphasis on the distribution function;

* Enter the arena of world class manufacturing; strive to become the lowest cost, highest quality producer of lighting equipment in the world.

Driven by increasingly heated market competition, with an emphasis on improved service and decreased cost, Lithonia continues to utilize information technology as a tool to more effectively manage the interdependence among its internal and external business processes. Already the boundaries between the organization and its external customer base have begun to blur, as an increasing number of customer groups are provided with more advanced capabilities in their connections to Lithonia and their ability to manage the order fulfillment process. Development of technological bridges between functions within the organization has begun. These and other efforts continue.

Rockart and Short describe six organizational contexts within which information technology (IT) is being used to integrate and more effectively manage a company's subunits (Rockart and Short, 1988). To date, Lithonia has primarily concentrated its use of IT as an integrator in the following areas: 1) within inter- organizational

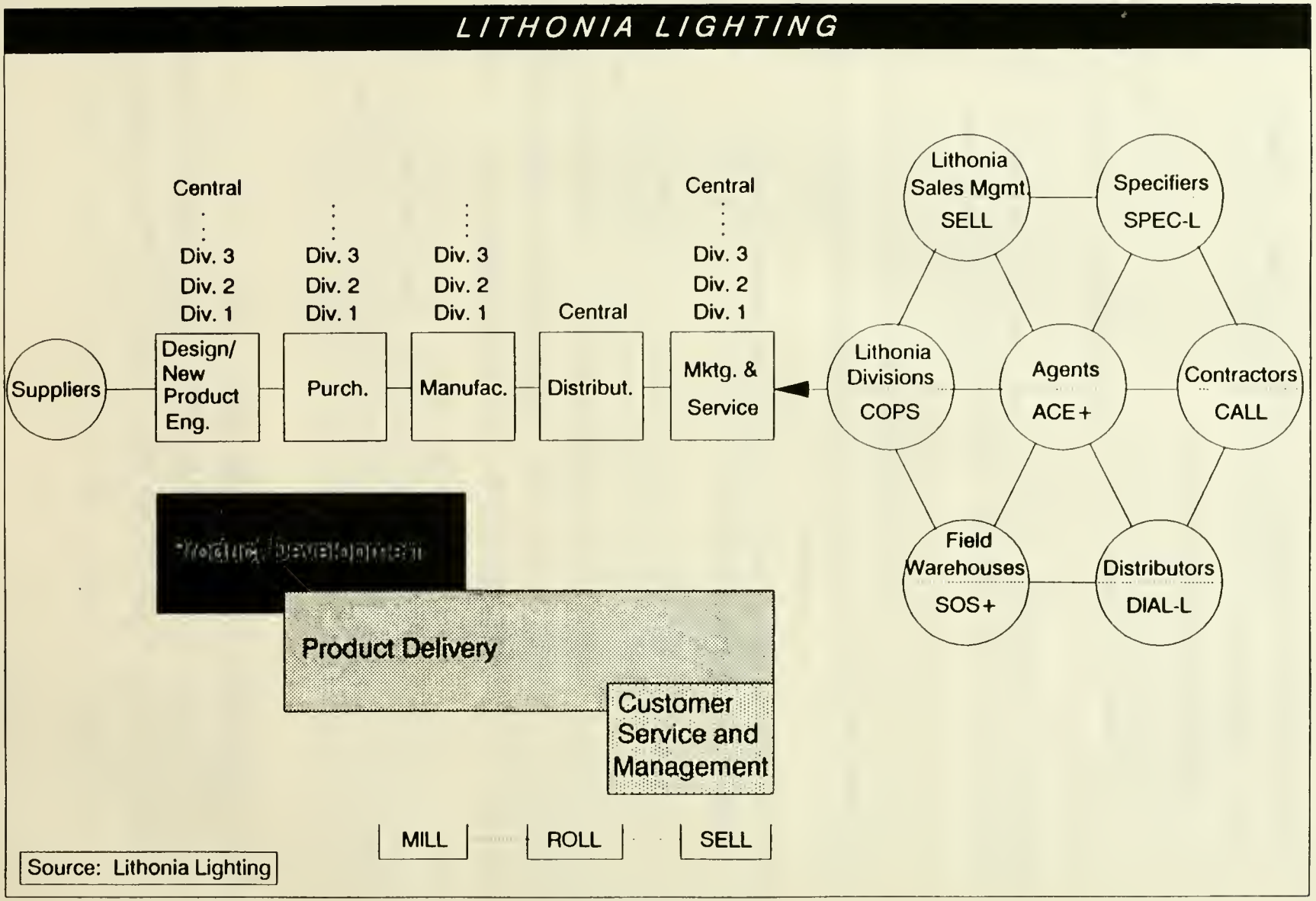
contexts; 2) across parts of its value-added chain, e.g., between marketing, manufacturing and distribution; and 3) in the coordination of its Information Systems (IS) organization with the line organization.

In Lithonia's case, the inter-organizational and value chain areas of interdependence have been combined through the use of IT into one extended industry value chain. (See Exhibit J.) Lithonia's inter-organizational integration efforts have extended forward to the "customer", using information systems to connect its many customer groups with each other and to the organization itself. This effort is now extending backward through the organization's internal value chain, integrating and coordinating each piece of the chain through appropriate information systems. To date, these efforts have extended as far back as the distribution and manufacturing processes. Using the concept of a "collapsed" value chain with three macro-organizational categories, Lithonia has concentrated its efforts to date in the areas of Customer Service/Management and Product Delivery. Inter-organizational integration using IT has continued within this process through the application of EDI to connect its distribution function with external shipping companies. In these contexts, Lithonia has successfully used IT as an alternative to a matrix or other type of organizational structure tool to network the company in multiple dimensions.

As described in Section IV, Lithonia has also made great strides in the area of IS/Line integration, both through structural reorganizations of the I&MS group and through ongoing educational and cultural efforts to bring technology to Line personnel.

A. <u>Managing Interdependence in the 1990's:</u>

Lithonia is currently continuing its efforts in the two areas described above: 1) integration across its industry value chain, and 2) IS/Line integration efforts. In


LITHONIA LIGHTING
Central
Div. 3
Div. 2
Div. 1
Central
Div. 3
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Div. 2
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Central
Central
Div. 3
Div. 2
Div. 1
Suppliers
Design/ New Product Eng.
Purch.
Manufac.
Distribut.
Mktg. & Service
Lithonia Sales Mgmt. SELL
Specifiers SPEC-L
Lithonia Divisions COPS
Agents ACE+
Contractors CALL
Field Warehouses SOS+
Distributors DIAL-L
Product Development
Product Delivery
Customer Service and Management
MILL
ROLL
SELL
Source: Lithonia Lighting

Exhibit J

addition, the company is expanding its use of information technology as an integrating mechanism into two new organizational contexts: 3) new systems which will connect the company's multiple functions to each other (e.g., all the divisional marketing groups); and 4) planning and control systems. These four areas of new and continued efforts are discussed below.

1. **Continued Value Chain Integration:**

Systems are currently under development which will serve to reinforce integration within the customer service and product delivery sections of the value chain. In addition, plans are being made to continue to move backward through the chain into the product development area, and eventually to suppliers.

In the Customer Service/Management area, a divisional Product Administration and Specification System (PASS) is currently being implemented to help manage the enormous volume of product information resident within each division. This system will codify and allow widespread access to a comprehensive base of product knowledge including product nomenclature, valid combinations of different products and parts, pricing information and picture images of the products. In addition to its use by the marketing functions within the divisions, this information may be passed outward to the customer in various formats (see discussion of COG system below). In the future, electronic bridges will be built between the SELL and new product development functions to capture customer and market information: part drawings could be passed forward from CAD systems to the product database and out to the customer, and customer requests for product combinations can be passed back from the market through the order and product databases to CAD systems.

The order processing module, ACE Express, has been enhanced to include more complex product verification, pricing authority and credit authorization capabilities, and

has been renamed the COPS system (Corporate Order Processing System). As an outgrowth of this, a Divisional Order Process System (DOPS) is currently being implemented to automate a greater portion of the divisional order processing tasks, and to provide the divisions with online access to internal databases and information.

Continuing into the Product Delivery area, efforts are currently underway to implement a fully integrated flexible manufacturing system. The first phase includes operational changes and automation of the entire assembly process. Investments are being made in new technology and equipment which will automate and increase the speed of the currently manual movement of material between steps in the assembly process, thereby increasing the capacity of existing assembly machinery. Once these processes are fully automated, automatic bridges can then be installed between the manufacturing and distribution functions. For example, the Effective Scheduling System (ESS) discussed above would be electronically connected directly to the shop floor through LAPS (Lithonia Automated Production System). An Integrated Distribution System (LIDS) would use information on daily manufactured volumes from the automated manufacturing systems to arrange and schedule the availability of distribution support materials (pallets, forklifts, etc.) at the various distribution centers.

Continual enhancements to the distribution systems which will improve customer service are also underway. For example, using bar coding and a new module in the warehouse system, completed orders received at the warehouse are now rerouted directly to the loading docks if the system calculates that the order is within a certain range of its customer expected date. New tracking systems are planned which will reside on the trucks themselves, allowing a customer to pinpoint the exact location of an order. Plans are underway to offer customers an Estimated Time of Arrival date with each order, upgrading from the traditional Estimated Ship Date.

Improvements in both process and computer systems in the distribution function have resulted in a reduction in the turnaround time for stock orders from seven days to one day. This reduced turnaround time is spurring a new trend in the industry for companies to lower their own internal inventory buffers, essentially using Lithonia as their "inventory manager."

In addition to expanding its internal coordinative and integrative systems, Lithonia continues to monitor the needs of its customer base, and provide ongoing improvements in its external systems. The Customer Order Guide system (COG) is currently being introduced for the agents and field warehouses. A direct outgrowth of the improved internal product database (now available internally through the PASS system), COG provides the agent with the ability to automatically generate a customized catalogue of the products s/he will offer and their prices. A different catalogue can be created for each distributor and/or contractor with whom the agent works, in varying product arrangements and with customized prices. Pictures of the products are maintained on a separate database, and can be embedded in each catalogue. An electronic version of the catalogue can be transmitted through the CALL and DIAL-L systems from agents to distributors and contractors, who can then use it to place their orders instead of keying in extensive product codes. In addition to being easier to use, this feature and the COG's system front-end validity checking capabilities are expected to reduce the number of errors coming into the internal order processing systems, thus reducing the number of orders which require manual intervention.

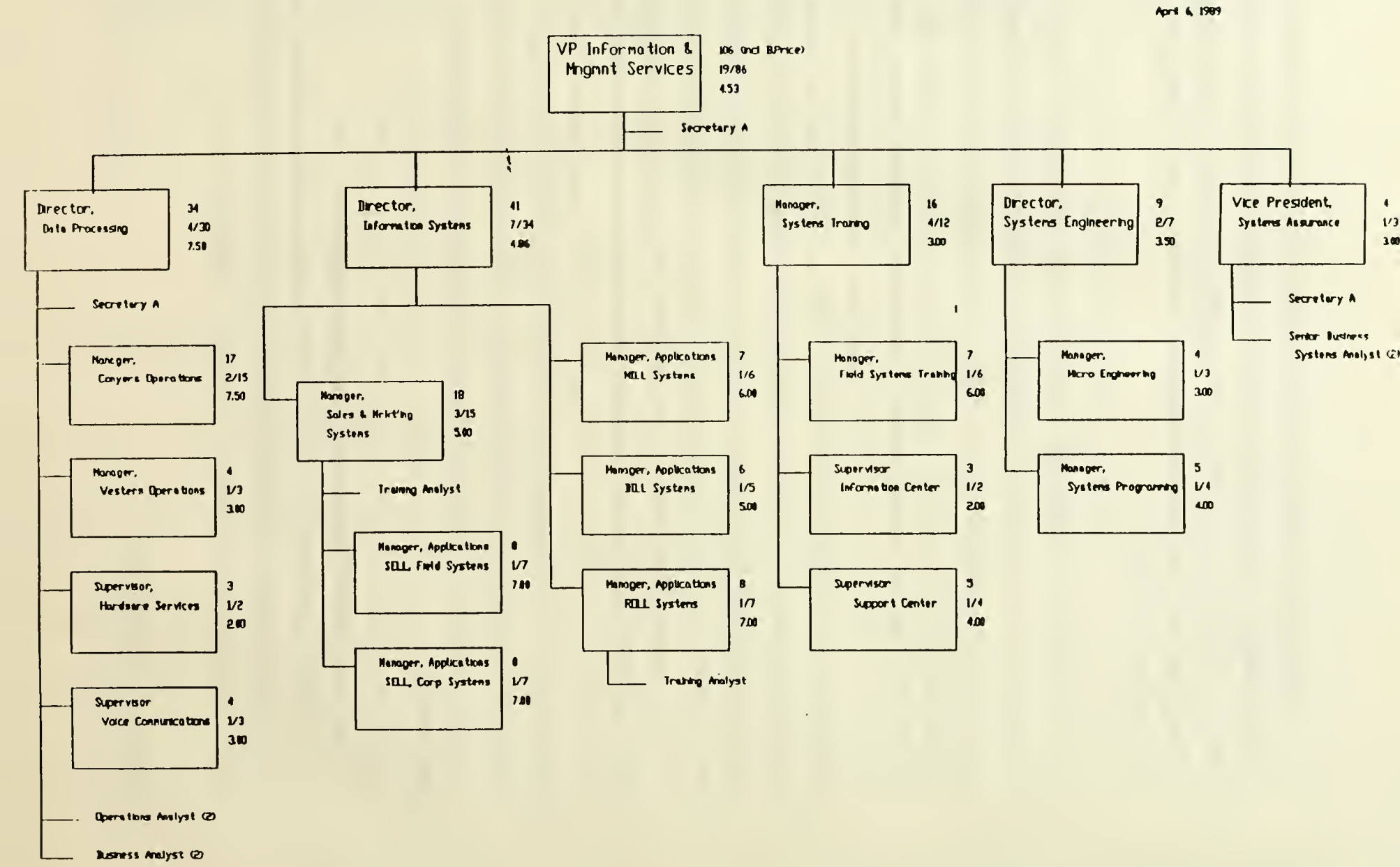
2. <u>Continued IS Organization/Line Integration:</u>

The IS organization at Lithonia, I&MS, has recently been reorganized a second time to more closely resemble the actual business cycle, and to reflect the recognized importance of the internal systems. (Exhibit K) Changes include:

EXHIBIT K: LITHONIA LIGHTING

Information and Management Services

April 6, 1989



* The internal and external systems development efforts have been organizationally integrated along the lines of the business cycle, reflecting the blurring of the internal/external organizational boundary; previously, the Field Systems portion of SELL was structurally separated from the Corporate SELL, MILL, ROLL and BILL applications.

* Within each of the groups, systems development efforts will be aimed across divisions; previously, they concentrated mainly on the fluorescent divisions' needs, with subsequent installations in other divisions.

* All systems engineering is now grouped together under one director; previously, field systems' micro engineering was grouped with Field Systems software development.

* A Systems Assurance function has been created, comprised of business analysts with responsibility to ensure that the systems being developed satisfy the business needs and are in conjunction with overall business strategy.

* The training function is undergoing change both in content and structure. In keeping with the customer service orientation, emphasis at Lithonia traditionally has been on field systems training; extensive support is provided in this area for external entities including agents, distributors, etc. Because the field systems were the primary emphasis, the training function could reside in one centralized group. The shift in strategy toward the development of internal systems has been mirrored in the training function, with new emphasis on providing systems training for internal personnel. At the same time, ongoing improvements are being made to the content and level of training provided for the external systems. With the structural changes to the IS organization described above,

certain training functions have been moved out of the centralized training group and into the development groups for the systems they support. In addition, steps have been taken to coordinate systems training with the other types of training provided by the organization (e.g., orientation, procedural, etc.).

* The OLA effort, which was previously centralized in one dedicated group, has been dispersed to each of the systems development groups.

3. Functional Integration And Coordination:

As described above, extensive strides have been made in the effort to use technology to integrate the organization across product lines, so that, as Darnell explained, "*today, when the market comes to us, Lithonia looks like one company.*" However, he went on to explain, "*Lithonia still cannot go to the market as one company.*"

One example of where this occurs is in pricing and commissions. Prices and commission rates at which each product will be sold to an agent are determined by the different divisions. Overage and actual commission dollars are calculated separately by division. (Overage is the difference between the standard authorized price and the actual negotiated price on each product; if the agent negotiates a lower price with a division, he keeps this difference). Therefore, the capability exists for the agent to manipulate the different divisions as if they were separate companies; for example, the agent could negotiate a lower price with a division which offers him a relatively low commission rate, take the resulting overage, split it with a second division where he receives a relatively higher commission rate, and increase the price on the second division's product, thereby resulting overall in higher commission dollars. With the eventual installation of the PASS system and unified pricing and commissions in all the divisions, the capability for the agent to interact with Lithonia's divisions as separate

companies will be eliminated. The new Major Opportunity Management System (MOMS) will take this concept one step further by tracking and managing the separate divisional orders as one job where appropriate. Lithonia agents will be appropriately compensated for their work without having to be involved in "time consuming" manipulations between divisions.

Connecting the various distribution centers is another area of impending functional integration. Currently, when the request for a stock order comes in to a warehouse, the system queries inventory in that warehouse only. If the part is not in stock, the system reports to the customer that it is not available. Networking the distribution systems would allow the system to go one step further and look in other warehouses to find the part requested. In addition, using technology to connect existing distribution centers will enable the planned introduction of regional distribution centers. Similar benefits could be gained by connecting the multiple manufacturing plants for each division. If an order could not be scheduled in time to meet the customer date in one plant, the system could automatically schedule production for another plant.

These and other changes will serve to shift Lithonia from a company comprised of a collection of regional subunits to becoming a truly national presence.

4. Planning and Control Systems:

In addition to the changes described above, systems which would provide greater planning and control capabilities are currently under consideration for development or purchase. These include, for example:

* *The One Page System, (TOPS)* - this is an executive support system, targeted at the director level in the company. The system would provide information similar to a paper-based management report, one "*page*" at a time.

* *Sales and Marketing Management Systems* - these systems will not only facilitate current tasks, they will enable a redefinition of the sales and marketing roles. Sales personnel will use the systems to: 1) develop marketing plans (budgets and actions to achieve them) for each agent, distributor and product for which they are responsible, and 2) to automatically track to plan. These functions currently are not performed. The systems will be integrated across the country, so that senior management can monitor sales efforts on a national basis.

The implementation of these systems represents a move by the company away from purely transactional systems which generate information toward the use of technology to analyze and manage this information. Other capabilities will eventually include aggregate order trend analyses, and budgeting and business plan management.

B. Continuous Improvement and New Platforms

Underlying Lithonia's ambitious efforts is a complete overhaul of the information systems platform, which is currently considered too fragile to adequately support current and future applications. This need is driven by a number of factors, including: 1) increased complexity of the systems being produced; 2) increasingly complex use of older systems as users become more sophisticated; and 3) rapidly rising transaction volumes as the number of users has increased and the capabilities of the systems have been expanded.

The multi-phase effort includes upgrades in micro and mainframe hardware,

operating environment, application software, database architecture, and the communications network. Lithonia is replacing the current assortment of microcomputers used both internally and in the field by its customers with IBM PS2's, and has entered into a service contract with IBM for all equipment; this addresses both the reliability and serviceability issues which previously existed. In addition, examination of CASE and other productivity tools which will shorten software development time is currently underway.

The result of all of these changes will be: 1) expanded capacity to handle the volumes; 2) the ability to build more sophisticated and complex systems, including expert systems; 3) a more stable data transmission environment with greater data tracking capability; 4) continuous, online communication between the field systems and the mainframe; and 5) a greater ability to electronically network the organization in a distributed environment as databases and systems become more consistent across the company.

Changes in the lighting industry continue. Closer coupling of business processes translates to reduced buffers between those processes. Continued technological advances create an increasingly complex and enlarged product set, and open up new customer groups with which to interact. Continually striving to fine-tune the solid strategic, organizational, and technological infrastructure it created throughout the 1980's, Lithonia is well-positioned for the 1990's.

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