Slides Used by Tom Allen

Cross Functional Teaming and Collaboration
The Process of Innovation

INNOVATION

Technology

Market

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Project Team Organization

Technology

P1  P2  P3  P4  P5  P6

Market

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Matrix Organization

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Matrix Organization

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The Basic Tradeoff and Dilemma in Product Development Organization

- **Departmental Organization**
  - Departmental structure is more closely mapped to the structure of the supporting technologies.
  - It thereby provides a better connection to those technologies and better ongoing technical support to the project effort.
  - This is, however, accomplished at the cost of much greater difficulty in coordination of the project tasks and less responsiveness to market change.

- **Project Team Organization**
  - Project Team structure groups people from different disciplines together in a single team all reporting to a common manager.
  - It thereby provides better coordination of the project tasks and increased sensitivity to market dynamics.
  - This is, however, accomplished at the cost of a separation from the disciplinary knowledge underlying the project effort. When this is carried to an extreme, it will gradually erode the technology base of the organization.
The First Variable

\[ \frac{dK}{dt} = \text{rate of change of knowledge} \]
The Second Variable

\[ I_{ss} \]

\[ \frac{dK}{dt} = \text{rate of change of knowledge} \]

\[ I_{ss} = \text{subsystem interdependence} \]
Locating Projects in the Space

\[ I_{ss} \]

\[ \frac{dK}{dt} \]
Locating Projects in the Space

Project Team

Departments

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Dividing into Two Regions

Project Team

Departments

I \text{ss} \quad \frac{dK}{dt}
A More Normal Situation
Locating People in the Space

[Diagram showing a plot with a dashed line, labeled as $I_{ss}$ and $dK/dt$, with points labeled as Project Team and Departments.]

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Locating the Boundary

\[ I_{ss} \]

\[ Project\ Team \]

\[ T_1 = \text{Duration of project assignment} \]

\[ T_1 > T_2 \]

\[ \text{Department} \]

\[ \frac{dK}{dt} \]
What About This Situation?

\[ I_{ss} \]

- Project Team
- Departments

\[ \frac{dK}{dt} \]
What About This Situation?

- Periodically rotate engineers on a temporary basis between team and departments over the life of the project.
- Make use of spatial location to offset organizational separations.
• **Standard Industrial Practice**
  – Ignores the rate at which technologies are developing (despite the fact that this can often be measured).
  – Usually ignores the interdependencies in project work (seasoned project managers are an exception).
  – Focuses on project duration (and usually makes the wrong decision on this parameter).
Balance in the Matrix

• Should there be a balance of power between the project side and the departmental side of the product development Matrix?
  – Some argue for balance.
  – Some argue for “Heavyweight Project Managers”.
  – Does project size and complexity make a difference?
Nature of the Survey

• Engineers and managers working on over 100 projects in 10 organizations were surveyed.
• There were approximately 2500 responses.
• Projects were divided into those that were smaller and/or less complex and those that were larger (top quartile in size) and more complex.
The Nature of the Survey

Project team members were asked to indicate on a scale where the locus of influence lay for each of the following:

Influence Over Technical Decisions
Influence Over Salary & Promotions
Influence in the Organization

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Project Manager  Equal  Departmental Management

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Box & Whisker Representation of a Distribution

Project Performance

25% 25% 25% 25%
Project Performance as a Function of Project Size and Complexity and Locus of Influence Over Salaries and Promotions

Size and Complexity of Project

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Project Performance as a Function of Project Size and Complexity and Locus of Organizational Influence

Project Performance

Less

More

Size and Complexity of Project

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Project Performance as a Function of Project Size and Complexity and Locus of Influence Over Technical Decisions

Size and Complexity of Project

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What Have We Learned?

• There are four variables that are important in determining organizational structure for product development.
• Whether balance is necessary in the product development matrix is dependent upon the nature of the project.