

## A Note on Business Drivers, Business Configuration, and Information Technology Strategy

Over my 40 year career in the information technology (IT) industry I have evolved a way of looking at business drivers, business configuration, and IT strategy.

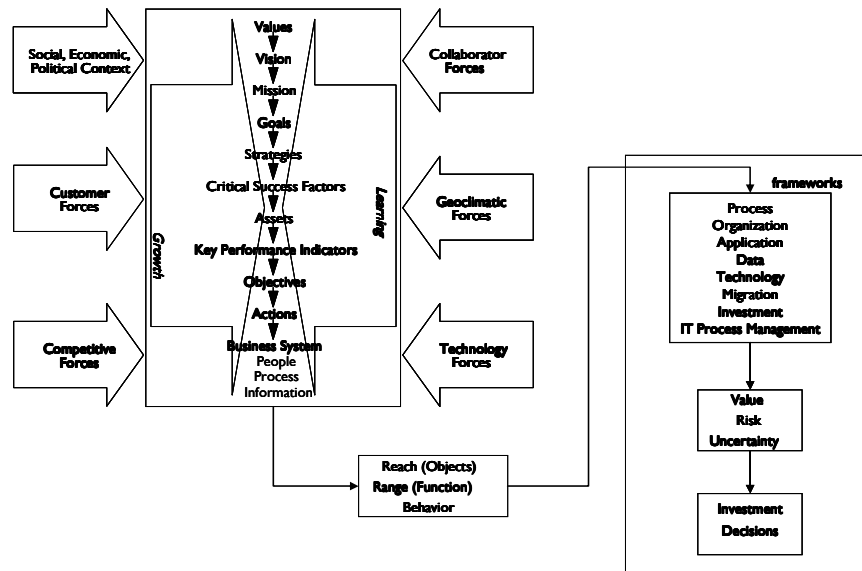


Figure 1 Business Drivers, Business Configuration, and IT Strategy

This note is an explanation of this look.

A **business driver** is a significant force in the organization's environment, largely independent of their control, which constitutes either an opportunity or a threat. Six of these drivers I consider **external** to the organization.

### Social, Economic, Political Context

*Comprises the business environment in which the organization conducts its operations.*

### Customer Forces

*This specifies 1.) the forces buffeting the customer and causing him to undergo change, and 2.) what is required to delight the customer.*

### Competitive Forces

*This specifies 1.) the forces buffeting the competitor and causing him to undergo change, and 2.) what is required to establish competitive dominance vis-à-vis the competitor.*

### Collaborator Forces

*This specifies 1.) the forces that are buffeting the organization's partners and causing them to undergo change, and 2.) how that affects the ability of the organization to delight its customer.*

### Geoclimatic Forces

*These are the forces such as hurricanes, earthquakes and the like that often give rise to force majeure.*

## Technology Forces

*These are the forces caused by technological advancement. Steam to diesel engines; piston to jet power; the Internet; the ubiquity of hand carried technology linked with wireless communications are examples of technology forces.*

These forces are shown as the right and left facing arrows focusing on the rectangle to the left of the diagram.

Two of these forces are **internal** to the organization. These are shown within the left rectangle that represents the boundaries of the organization.

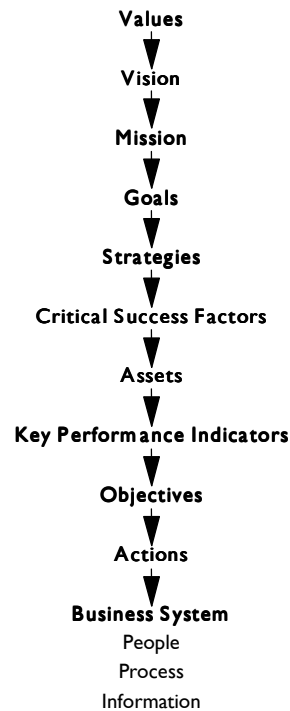
## Growth

*Growth could occur in a number of dimensions. For example, revenue, numbers of customers and employees, laws and regulations. Growth tends to drive complexity in the organization. Complexity gives rise to interaction costs (time and money). Interaction costs tend to be countered by increasing control systems.*

## Learning

*Organizations, especially those that are successful, learn. Learning leads to new understanding which suggests new ways of dealing with the strengths, weakness, opportunities, and threats faced by the organization.*

These forces shape the organization represented by the contents of the rectangle (reproduced below) in the center of the diagram.



**Figure 2 Business Configuration**

The organization's **components** are defined as follows.

## Values

*The fundamental elements or a set of beliefs that lie behind the organization. Examples include the Nicene Creed and the Bill of Rights of the United States of America. Values should be simply stated, readily understood, and evident in the conviction, attitude and actions of all employees.*

**Vision**

*The desired state of the organization at a point in the future, stated in the present tense as if already achieved. It is expressed through statements from the executives, employees, customers, stakeholders, and competitors' viewpoints. It's what you want them to say about you. It creates a vivid picture stating what the organization wants as opposed to the organization wants to get rid of. The vision communicates, inspires, and gives focus to the organization.*

**Mission**

*A reasonable destination/aspiration. It describes what the management team is to achieve.*

**Goals**

*High level "objectives" owned by the Board and set from the Vision comprising quantity and timescale elements. They represent specific endpoints at which the organization must arrive.*

**Strategies**

*Statements of intent, especially for meeting the Vision. They describe principle approaches and actions that the organization plans to implement to achieve the Goals or Objectives.*

**Critical Success Factors**

*Critical Success Factors (CSFs) are the limited number of areas in which results, if they are satisfactory, will ensure competitive performance for the organization. They are the few key areas where 'things must go right' for the business to flourish. If the results in these areas are not adequate, the organization's efforts in the period will be less than desired.*

**Assets**

*Customers, employees, intellectual capital, plants and equipment, money and so forth form the asset base that is managed according to predefined business rules (embodied in the processes) to produce profit.*

**Key Performance Indicators**

*Those relatively few measures descriptive of the health of the organization.*

**Objectives**

*Owned at the management level and set from the Strategies comprising quantity and timescale elements. They represent specific endpoints at which management must arrive.*

**Actions**

*The specific actions that result in the establishment, exploitation and enhancement of a Business System that will deliver on the Objectives.*

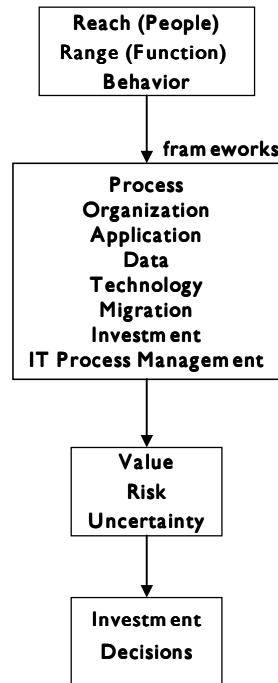
**Business System**

*Comprises people, processes, and information. The function of the Business System is to manage the integration of the organization's assets in order to deliver on the Objectives.*

The Values defined the Vision which defines the Mission and so on until one reaches the bottom, the Business System, of the organization. One ought to be able to describe this definitional relationship between the components with simple, direct, declarative language.

Looking at this diagram from the bottom up one could say the Mission supports the Vision which supports the Values. One ought to be able to describe this supporting relationship between the components with simple, direct, declarative language.

The third major portion of this diagram represents the information technology strategy planning process.



**Figure 3 IT Strategy**

The connection between the business configuration and the IT strategy can be thought about in terms of reach, range, and behavior.

The concept of reach and range is borrowed from Keene.<sup>1</sup>

Keene defines these two concepts as follows:

1. "Reach determines the locations the platform can link, from local workstations and computers within the same department to customer and suppliers domestically, to international locations, or – what is an impractical idea to but perhaps not five years from now – to anyone, anywhere."
2. "Range determines the information that can be directly and automatically shared across systems and services. At one extreme, only systems built on exactly the same hardware and software can process messages and data created by each of them. At the other, any computer-generated transaction, document, message, and even telephone message can be used in any other system, regardless of the technical base."<sup>2</sup>

Remember that Keene's book was published in 1991 and significant advancements have been made in what is possible.

Early in 1999 Keene's concepts of reach and range was complemented with the following:

1. Everything that is important is always visible.

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<sup>1</sup> P. G. W. Keene, *Shaping the Future: Business Design Through Information Technology*, Harvard Business School Press (1991), 0-87584-237-2

<sup>2</sup> *ibid*, p 39

2. Everything that needs to be managed is always reachable.<sup>3</sup>

The businessperson when specifying what he wishes IT to address can, therefore, specify it in terms of reach and range. For example, a statement of reach and range is "provide inventory visibility information to all customers."

Behavior represents a statement of how the information technology solution should perform. Here is an example of a specification of behavior.<sup>4</sup>

The extract from the report begins immediately below. The desired behaviors are in **bold**.

The Phase I Report, *Strategic Business Requirements and Potential Technology Enablers*, identified certain behaviors the system should exhibit. These are listed below with further explanatory detail.

**No interruption of service to the user under any circumstances.**

Implications

- Fallback and recovery, as well as alternative means of operation, are never apparent to the user.
- Service to the user is defined by the user.
- The user may be a software and hardware agent.
- The system should sense, and act upon, incipient interruptions.

**An ability to recognize and adapt to any change in, or change of, a resource in the infrastructure.**

Implications

- Plug it in, it plays. Primitively at first, then with increasing sophistication.
- Action/Reaction

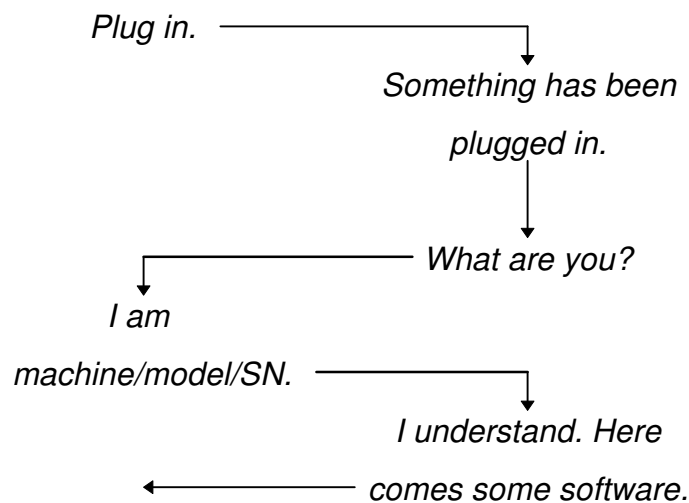


Figure 4 Adaptive System I

**Automatic recognition of a user and configuration to meet the user's needs.**

Implications

<sup>3</sup> J. Drogan, *Ideas to Initiatives to Business Value*, Final Project Report (March 1999)

<sup>4</sup> J. Drogan et. al., *Information Technology Strategic Planning Project, Phase I: Future Business System*, (February 1998)

- Unambiguous and secure user identification.
- Need for increased level of knowledge about users and the functions they perform.
- Action/Reaction

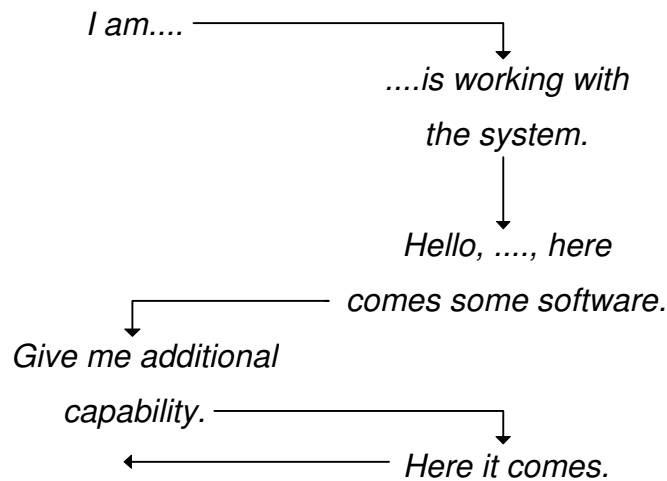


Figure 5 Adaptive System 2

**An ability to match performance of the infrastructure to the needs of the supported processes.**

Implications

- The Intelligent Environment will sense evolving changes in performance and usage characteristics and
  1. Move the process to that part of the structure better able to support the process.
  2. Suggest changes to the structure to enable it to better support the process.

**Self-assessment of performance against criteria coupled with an ability to suggest opportunities for improvement.**

Implications

- Need for an "agent" combining expert systems and neural computing (an ability to learn).
- Need to assure that the criteria are in concert with the times means that the human will always be in the loop.

**Translation of user needs directly into executable processes.**

Implications

- Analogy: One doesn't go to the calculator department when one needs a calculator.
- Multiple media for interaction keyboard, mouse, touch, handwriting, voice, data, text, image, graphics, full-motion video, digital and analog input/output.
- The traditional information systems department may not be required.
- A new generation of tools?

**Horizontal integration of multiparty supply chain management systems and vertical integration of management information, and command, communication and control systems.**

Implications

- Inter and intraorganizational integration.
- Adoption of business process engineering skills, tools and techniques. Is there an increased opportunity for parallelism?
- High degree of organizational commitment and teamwork, from top to bottom.
- An ability to accept suboptimization of a personal space for the greater good.
- Sustained effort over a multiyear period.
- Linkage of organizational value, risk and uncertainty.
- Integration of railway communications and signals, dispatch systems, and emerging Advanced Train Control Systems and Automatic Equipment Identification systems.
- Tighter, more responsive control of the environment enabling a higher quality of service.

### **Simplicity of use.**

#### Implications

- Apparent simplicity versus real complexity.
- The Intelligent Environment, by its nature, intrudes upon personal space.
- How much will the person tolerate?
- Simplicity is a product of standards and architecture, both of which imply status quo.
- Does maximum practical simplicity imply minimum possible insight?

The extract from the report ends immediately above.

You'll notice there is little in the statement of behavior that discusses technology. That is there is no specification of "speeds and feeds", operating systems, and the like. This statement of behavior had its origin in a project in 1991 for a customer whose intent was to develop the requirements for a new information technology infrastructure to support the needs of their business into the following decade.

The project team recognized that it was virtually impossible to predict the technological capabilities and the firms offering those capabilities some ten years hence. For example, we likely would not have predicted the availability of the LINUX operating system.

Our conclusion, therefore, was that the best we could do was to specify the required behavior and use that to select technology when the time came.

Reach, range, and behavior are a bit abstract for the purposes of preparing an IT strategy. This set of specifications can, however, be used to develop a set of models (frameworks) to allow the strategic process to proceed.

There are eight models:<sup>5</sup>

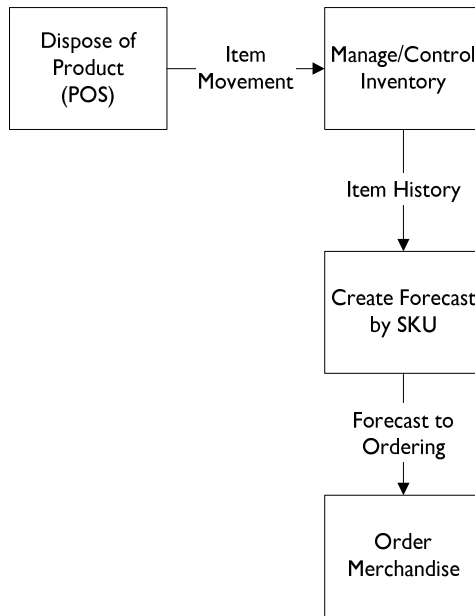
### **Process**

Process models describe how the business works. For example, here<sup>6</sup> is a brief process model for a retail store.

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<sup>5</sup> The sequence in which these models are presented is the general sequence in which they are created.

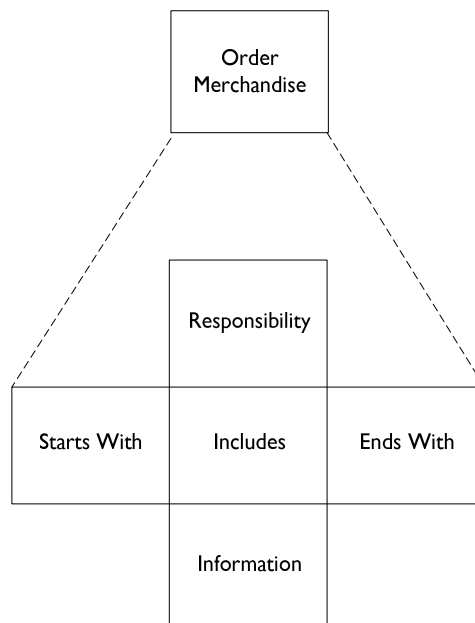
<sup>6</sup> J. Drogan, International Logistics MKT 9774 Spring 2002, Zicklin School of Business, Baruch College



**Figure 6 Process Model**

This shows four processes and how they are related by means of message.

I've found it useful in the early stages of determining how a business works to think of processes as comprising a set of business rules and the data that is used by those rules. This leads to another diagram.



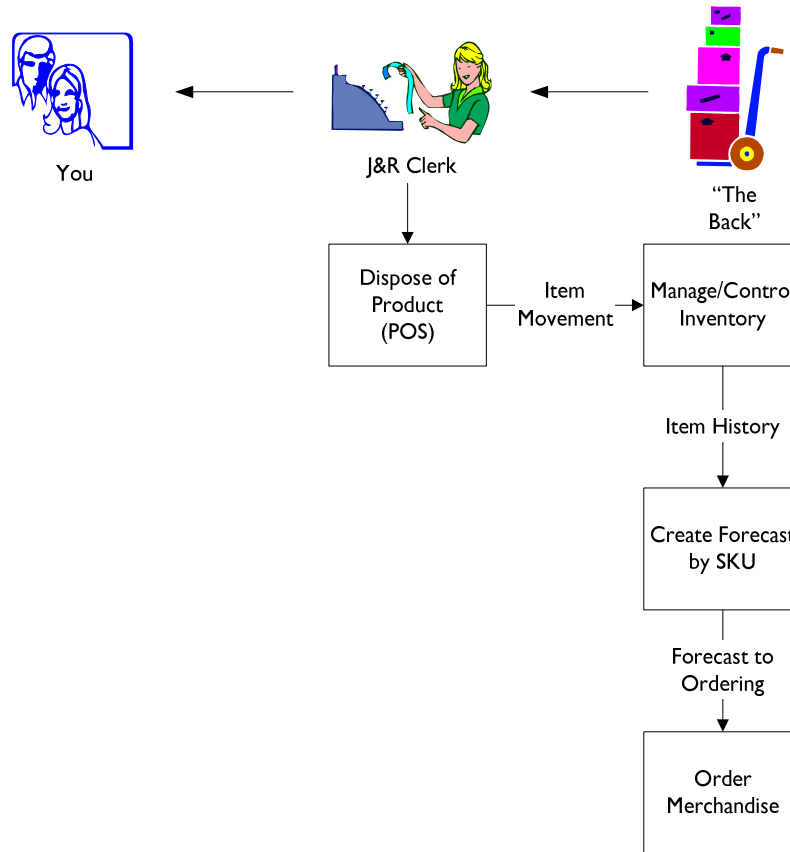
**Figure 7 Process Template**

The Order Merchandise process starts with a Forecast to Ordering message from the Create Forecast by SKU process and ends with an order being issued to, most likely, a distribution center (this order is not shown on the diagrams). The includes box in this diagram is representative of the business rules used by the process.

The responsibility for the process along with the information required are also identified.

**Organization**

Organization describes how the people work together to accomplish a task. Typical hierarchical organizational charts do not show how works gets done, but only formal reporting relationships. One might, for example, add an element of organization to the process chart immediately above.



**Figure 8 Process and Organization Model**

In this expanded view you can see that there are three organization entities – you (the consumer), the sales clerk at J&R, and the "back room" operation in the J&R store.

People are the most important aspect of an information system. As I write this I'm reminded of the following quote.

"Systems aligned with human motivational factors will sometimes work. Systems opposing such vectors will work poorly or not at all."<sup>7</sup>

When one has in hand the process and organization models one can begin to ask how IT can be applied to improve performance of the business.

### Application

The application model represents a subset of the process model of the business. It is those business rules (the contents of the Includes box in Figure 7 Process Template) which the organization decides can be better applied by machine (the computer).

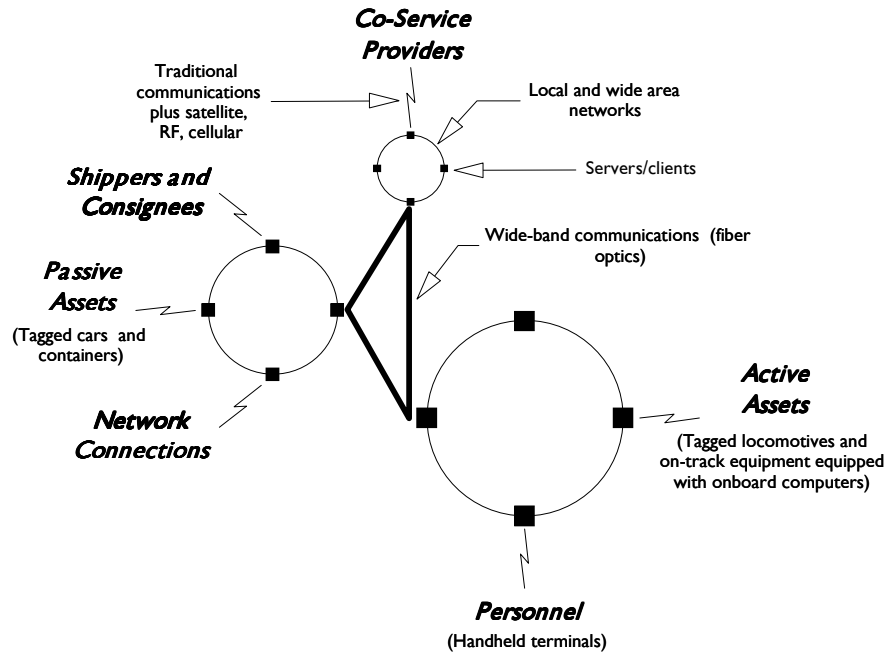
<sup>7</sup> John Gall, author of *Systemantics: How Systems Work and Especially How They Fail* (Fontana, 1979) as noted in *Railroad Business Information and Control Systems* (January 1980), IBM, published in draft form.

## Data

The data model also represents a subset of the process model of the business. It is that information (the contents of the information box in Figure 7 Process Template) which the organization decides can be better gather and managed by machine (the computer).

## Technology

The technology model represents the collection of hardware and software that supports the applications and data. Here, as an example, is a high level depiction of this model.



**Figure 9 Technology Model**

This diagram represents communications networks (circles, broad lines, and lightning strokes) and devices (the black rectangles) attached thereto.

## Migration

The migration model explains how one moves from the current (as-is) situation to the desired (to-be) situation. Following is an example of such a model.<sup>8</sup>

<sup>8</sup> J. Drogan, Delivering New Levels of Value from the Information Technology Investment, October 2000

Stage, Characteristics	Change Process	Stage <sub>n+1</sub> Characteristics
Stage Name	Actions	
Start Date	•	
Business Drivers	Investments	
• Competitor	•	
• Customer	Resources	
• Political and Socio-Economic	•	
• Supplier	Risks	
User Groups	•	
Functional Capability	Assumptions	
System Behavior	•	
Infrastructure		
• By user group		
Value Propositions		
• By user group		
• By customer segment		
• Strategic Marketing Objectives		
Current Level of User Acceptance		
Risks		
Assumptions		

The change process affects stage<sub>n</sub>, by changing its characteristics into characteristics describing stage<sub>n+1</sub>.

**Figure 10 Migration Model**

This model specifies the state of selected properties at a particular stage (n) and of the next stage (n+1). In the middle is the description of the change process that will cause the move between the two stages.

### Investment

The investment model specifies how the IT investment decisions will be made. One approach to this is based on Information Economics.<sup>9</sup> Factors inherent in the decision-making process (other than cost) are not easily measured, and are expressions of the management strategy for the enterprise. These factors weigh heavily in the decision-making process and may reflect added value, e.g., enhanced economic impact, strategic match, competitive advantage, management information, competitive response, customer satisfaction, and strategic IS architecture. Or they may reflect risk and uncertainty surrounding the project, such as organizational risk, IS infrastructure risk, definitional uncertainty, and technology uncertainty.

Without a systematic approach to assessing these additional factors, investment decisions will be less than optimal. The purpose of Information Economics is to develop this systematic approach to the decision-making process that accurately reflects the strategy of the enterprise.

Information Economics considers a number of factors which, when included in the investment framework, provide a basis for decisions understood by both Business and Technology.

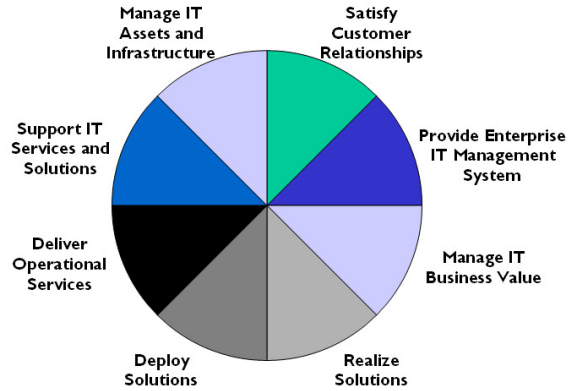
### IT Process Management

The final model is that describing how the IT investment and the technology infrastructure the results from the investment will be managed.

An example of the IT process management is that which has been recommended by IBM.

<sup>9</sup> Parker, Marilyn M., Edgar M. Trainor, and Robert J. Benson. *Information Strategy and Economics*. Englewood Cliffs: Prentice-Hall, Inc., 1989.

A processes for turning IT investment into business value.



Source: IT Process Management (IBI)  
11/2/2005

TMGT 73.00 Transportation Management

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### Figure 11 IT Process Management

Just as we need to know *a priori* how we will measure success we also want to have in hand a mechanism for managing the information technology investment process.

#### Summary

What I have described is a series of models for understanding how business drivers shape an organization and how, in turn, the organization shapes the deployment of information technology.

These models are a way to navigate through the processes of applying fundamental principles.

## Principles for Applying Information Technology

- The only legitimate uses of information systems are to improve the performance of the enterprise.
- Information systems are inextricably intertwined with the mission, objectives and structure of the enterprise.
- Disciplined approaches to applying information systems are critical to success.
- Information systems are technology plus process plus tools plus skills plus culture.

### Figure 12 Information Technology Principles<sup>10</sup>

James Drogan  
October 10, 2008

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<sup>10</sup> This note is based on J. Drogan, [Note on Building a Management System](#), January 12, 2005.