



Enterprise Performance Measurement

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Objectives

- Define EPM for software-intensive organizations:
 - Vendors of software products
 - Internal IT departments
 - Developers of software-intensive systems
- Provide a method for defining enterprise information needs and providing measurement feedback to meet those needs
- Focus on the role of the enterprise manager and staff
- Incorporate established methods and techniques into a systematic approach

Agenda

- Perspectives on Enterprise Measurement
- EPM Concepts
- Benefits
- Tools and techniques
- Summary

What is Enterprise Performance Measurement?

EPM is a process for developing, aligning and using effective measures to view and manage a wide variety of near term and strategic challenges at all levels of the enterprise

What is an Enterprise?

Any corporate or business unit organized with a distinct mission, market segment, or suite of products and services

- A Company
- A Major Division within a Company

Enterprise managers have a focus on the long term health and profitability of the enterprise

Measuring the State of the Enterprise



SS Enterprise

Where are we going? Are we headed in the right direction?

What's our cargo capacity relative to the East India Company? How fast did we go last time? Are we gaining or losing ground against them?

Where are we?

How far have we come?

How far do we have to go?

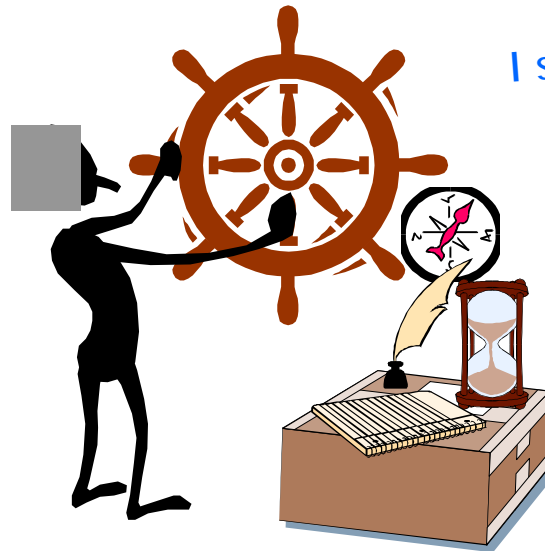
Status of the rigging-upgrade program?

How much will the new gyrostat system cost?

What must we do to satisfy our patron? Are we on track in terms of profits? Do we need more or bigger ships?

Sail capacity? Are sails being used effectively?

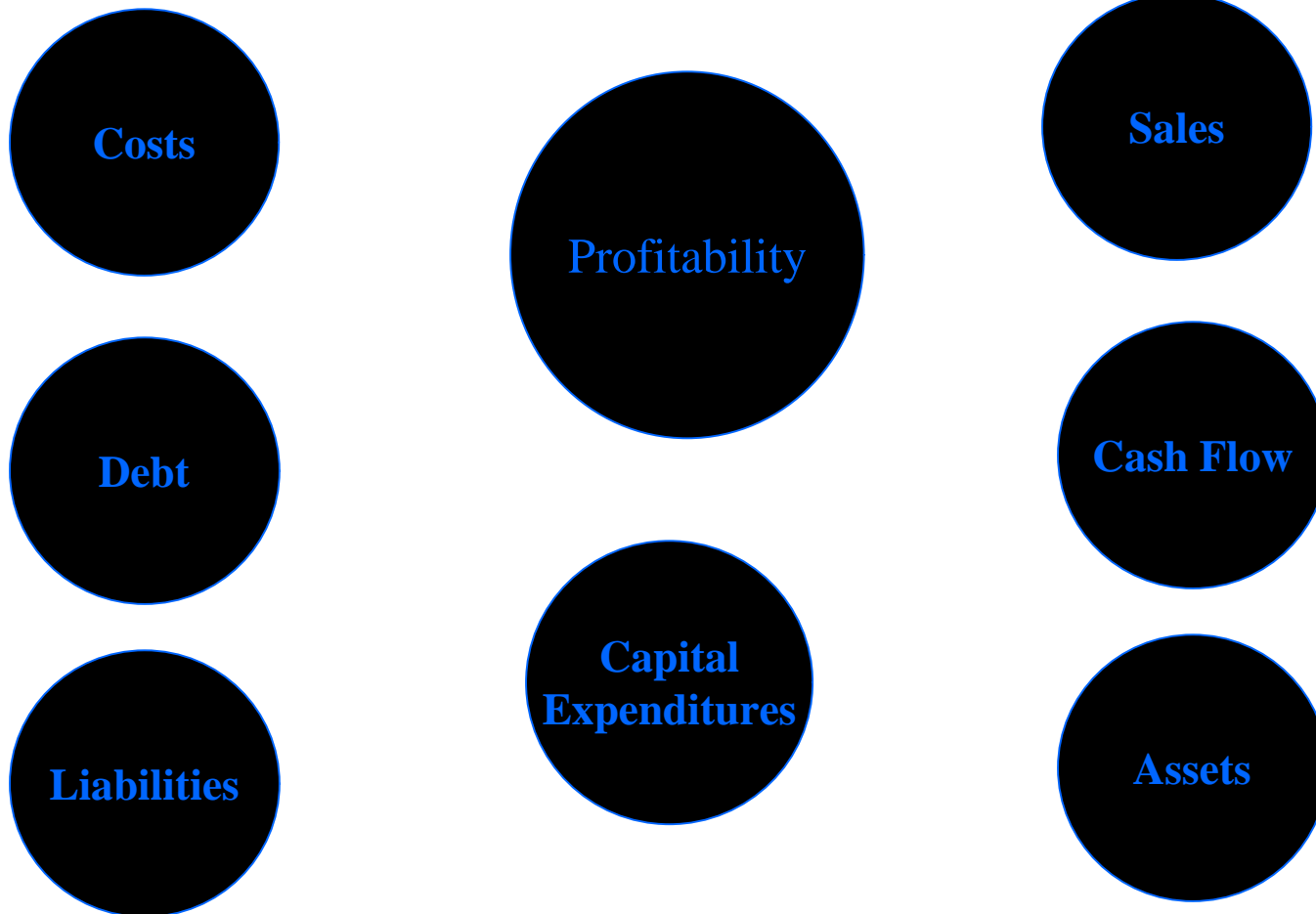
Are we prepared for storms?



Is crew excited about this adventure? Do we have enough food supplies? Are they competent?

Can we handle the shoals? What about threats from pirates?

Dashboard of Performance Measures (1980)



Source: Bogan and English, Benchmarking for Best Practices

Dashboard of Performance Measures (1999)

Customer Satisfaction, Retention

Return on Investment

Risk Exposure

Costs

Cycle Time

Productivity

Portfolio Management

Profitability

Sales

Assets

Employee, Knowledge Retention

Defect, Rework Rates

Product Enhancement

Long Term Capability and Growth

Cash Flow

Debt

Strategic Infrastructure Capability

Market Share

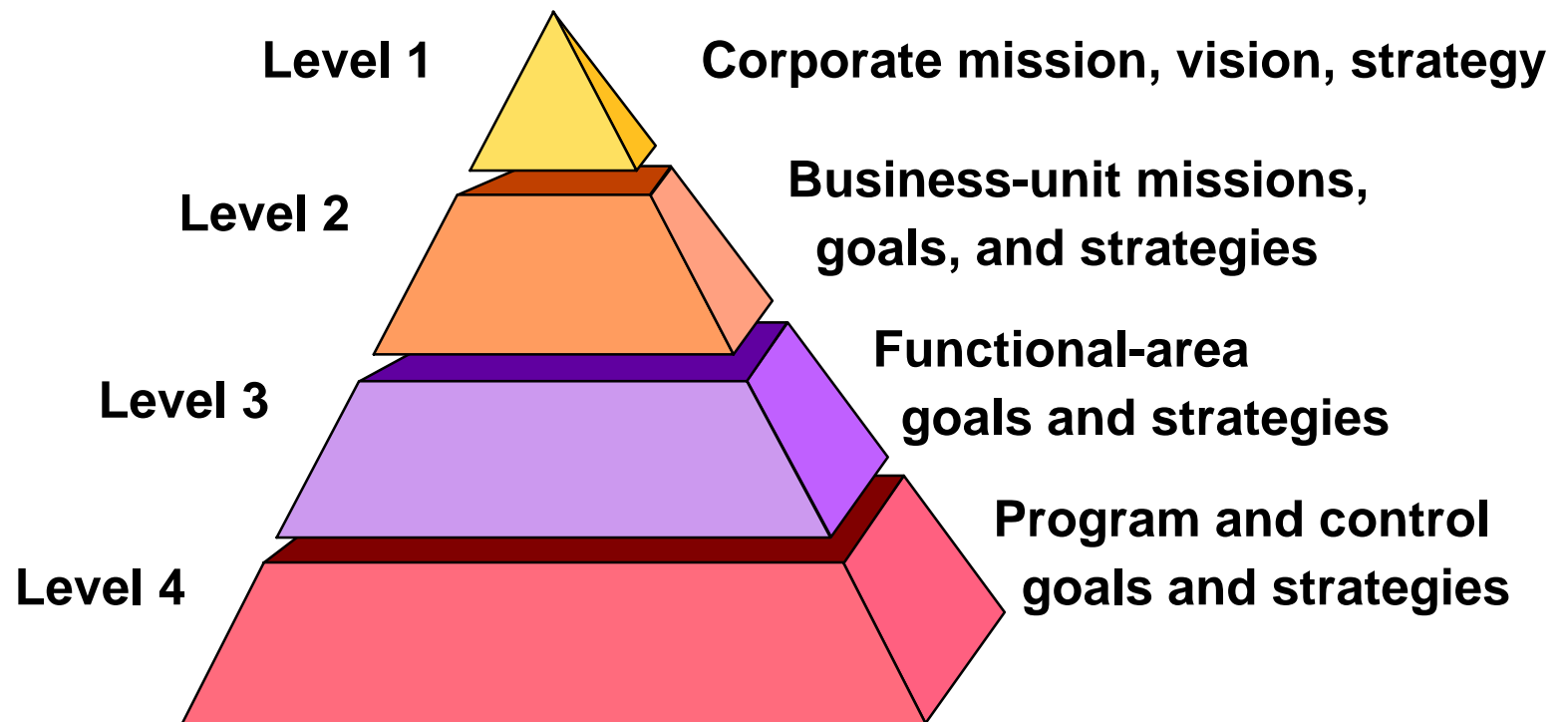
Opportunities and Threats

Cost of Quality

Capital Expenditures

Liabilities

EPM Supports all Levels of an Enterprise



Building The EPM Process

Enterprise

- Vision
- Strategy
- Objectives
- Risks
- Critical Success Factors

- Resolve issues
- Approve measures
- Revise objectives
- Direct Implementation

Business Units

- Define vision, based on perspective
- Develop objectives
- Define CSFs

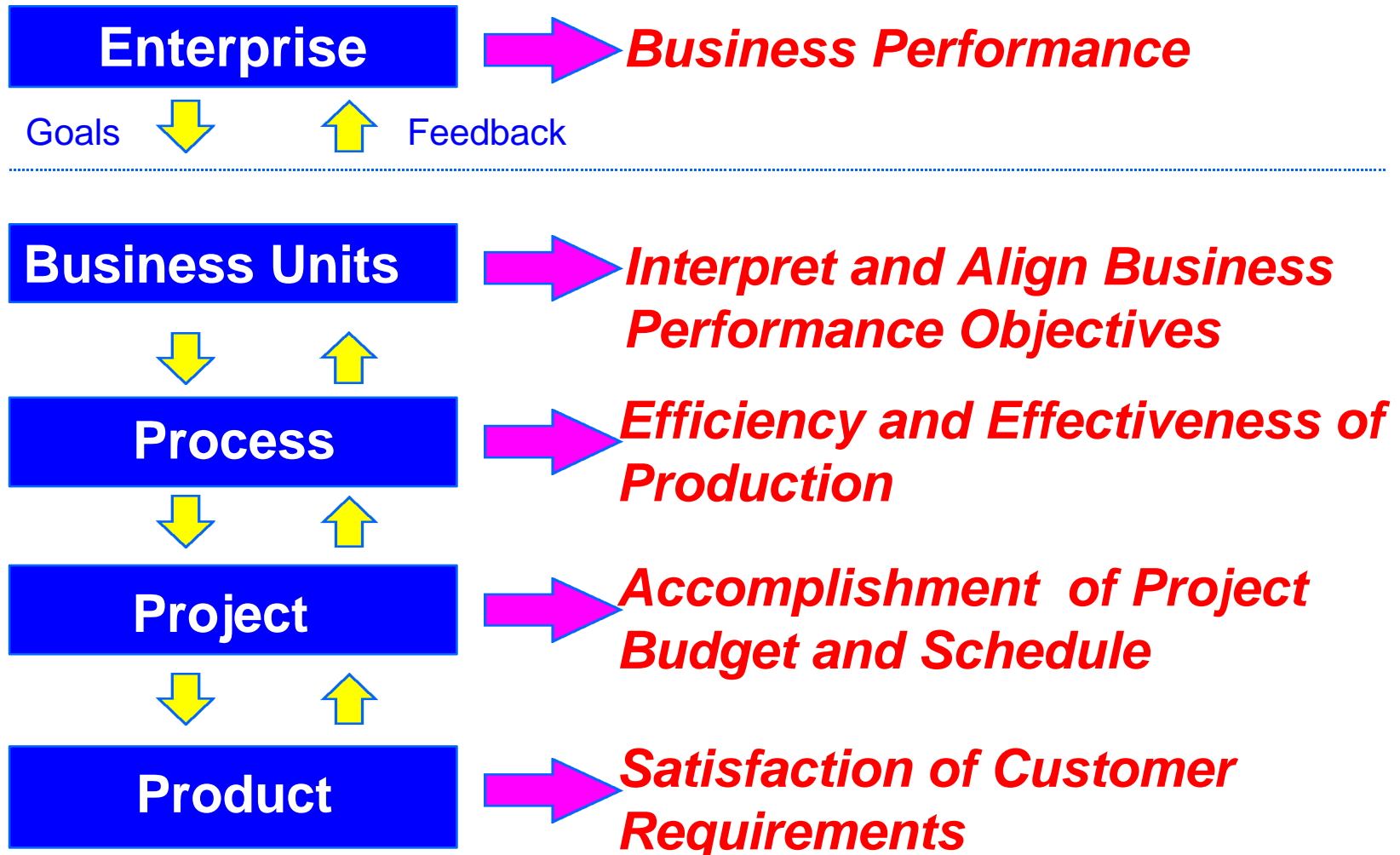
- Align and approve definitions, baselines and indicators
- Resolve or report issues for resolution

Functional Levels

- Use PSM to develop new categories and measures
- Define Collection and reporting methods
- Establish Baselines

- Definitions of data and collection methods
- Defined baselines
- Recommended indicators
- Issues for resolution

Hierarchical Information Needs

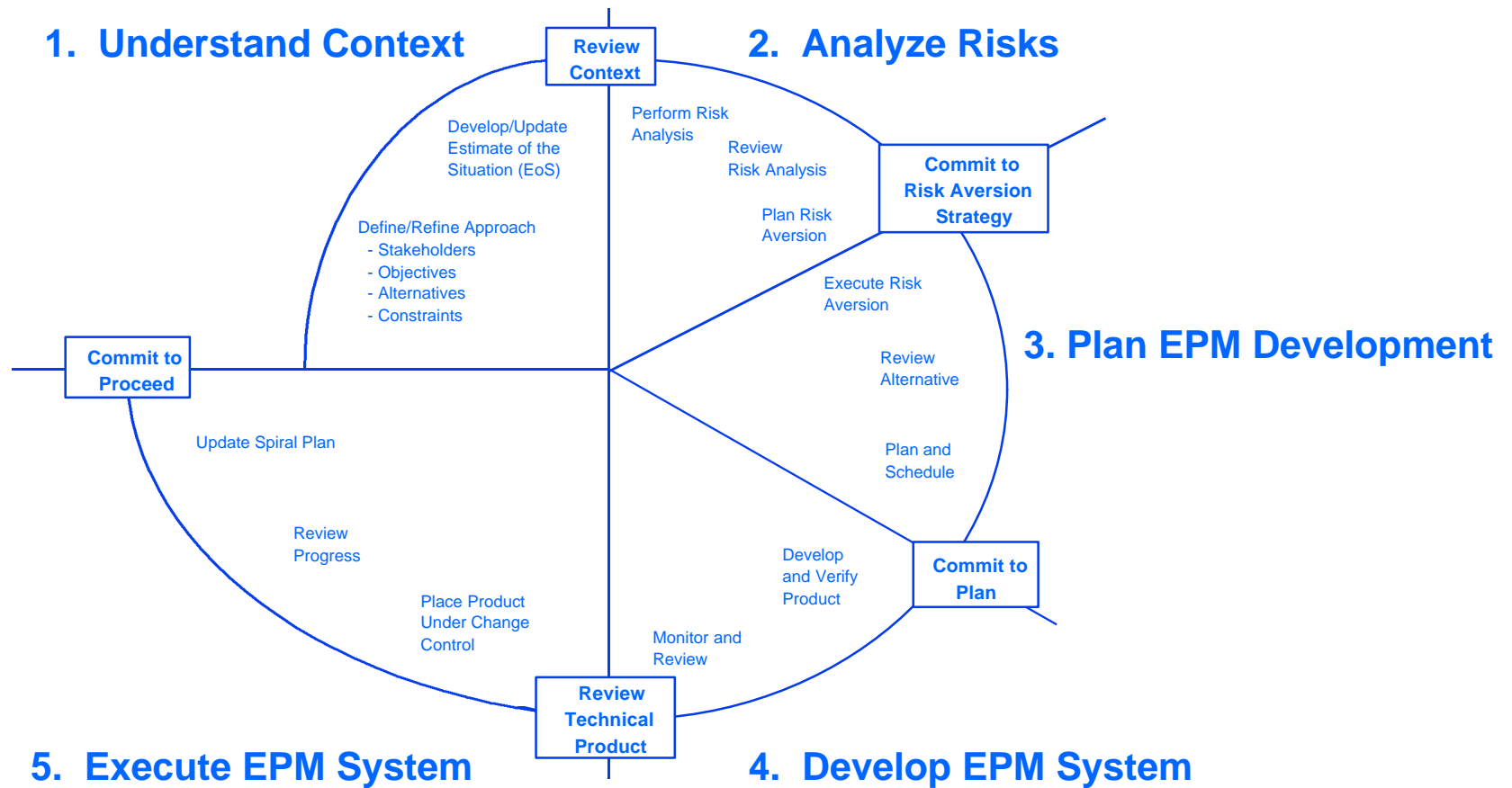


EPM Process Cycle

- Understanding the external context
- Establishing goals appropriate to the business strategy
- Understanding internal processes and identifying opportunities
- Making investment decisions in projects and initiatives
- Measuring performance relative to the strategy



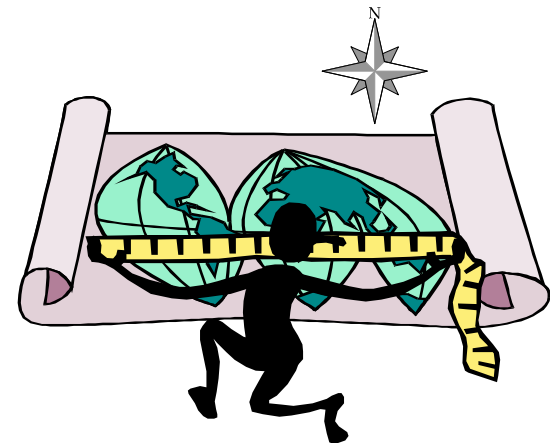
EPM and Measurement are Evolutionary



Fundamental Contributions

At the enterprise level, measurement serves three fundamental purposes:

- Defines the focus of business objectives and strategies and aligns them across all levels of the organization
- Establishes a common language for communicating targets, capabilities, payoffs, risks, status, outcomes, impacts
- Provides proactive feedback for strategic-level monitoring, problem identification, decision making, action planning



The Power of Alignment

A true enterprise perspective can be achieved only when measurement systems are aligned across all levels of the enterprise

- Entire organization focuses on a limited number of initiatives
- Everyone knows what is important and what is being measured
- Everyone understands the essential standard terms and data
- Everyone understands how their effort contributes to the corporate objectives

Alignment of Measurement Systems

Some Misconceptions:

1. Measurement systems can grow from the ground up
 - Very few bottom-up initiatives are successful
 - Lack resources, priorities, management requirements
2. Goal-Based Measurement programs can be implemented without a framework
 - Leads to independent measurement systems at each level/project
 - Lack risk assessments, documented assumptions, historical data, baseline data to measure growth
3. EPM often implemented as an executive management system
 - Danger of becoming an uncoordinated collection of data for senior management, disconnected from lower levels and supporting data

Defined Measures Provide a Common Language

Measures define the objectives

Drive agreement on issues

Promote understanding

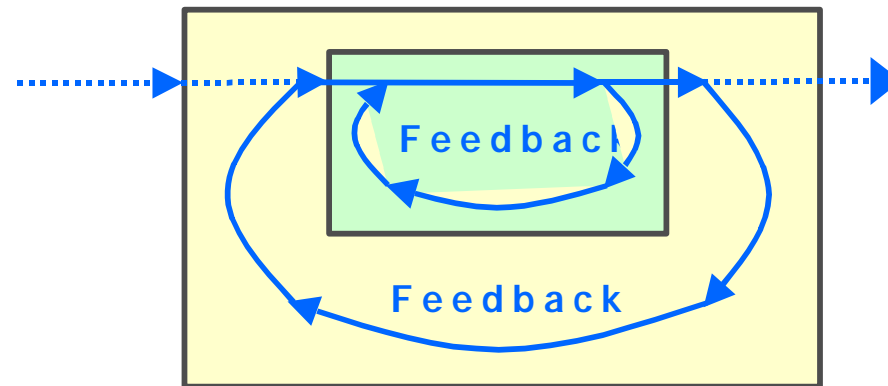
Cycle time, defect, error, etc.

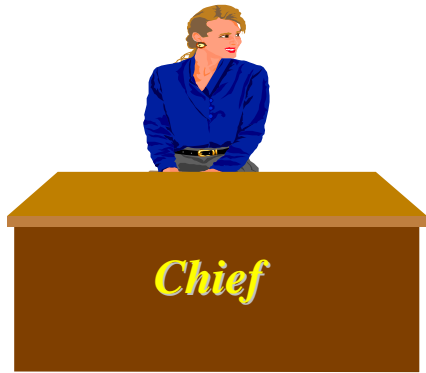
Communicate status

Define and predict causes of concern

Support effective decisions

Feedback loops are
a primary ingredient



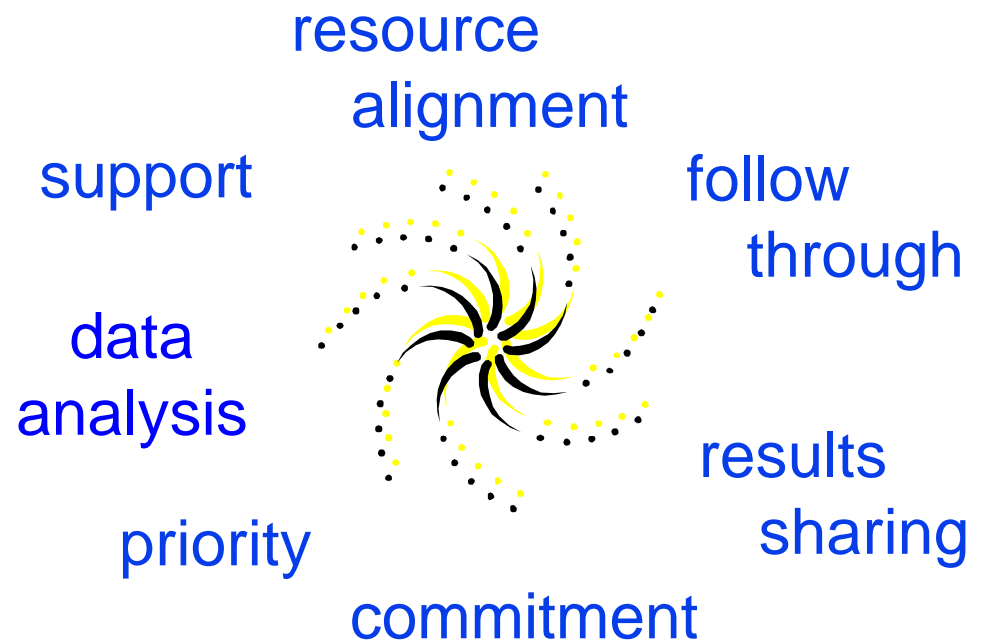


Executive Leadership Required

(Chaos is not)

Business, rather than
technology perspective

Both strategic and tactical
PLUS...



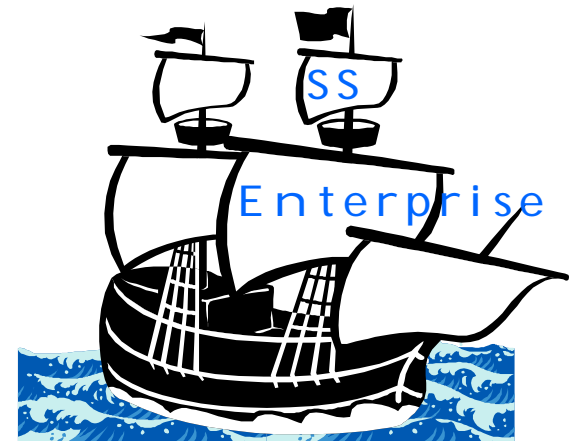
What Should Result

Ability to better manage enterprise as a single complex, ever-changing system, rather than as disjointed parts

Ability to assimilate and communicate critical information for situation assessment and proactive decision making

- Information about important shifts in industry and the marketplace
- Information about the enterprise's own "vital signs"

A well-founded business case for selecting, prioritizing, and staging investments in IT



Some Specific Techniques Involved

A sampling :

 Customer surveys

 Knowledge Management

 Benchmarking

 Balanced scorecards

 Activity value chains

 IT portfolio analysis

 Activity-based costing

 Return on investment analysis

 Risk management

 Many more

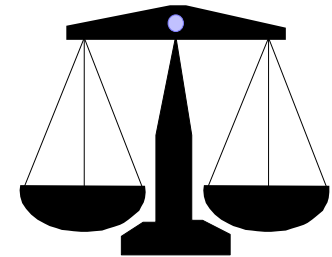
 Cost of Quality



Balanced Scorecard

Typically four kinds of measures to balance

- Customer demand & satisfaction
- Internal capability & performance
- Learning capability & performance
- Financial capability & performance



Outcomes vs. outputs

- Outcome measure: Assessment of the results of a function or program activity compared to its intended purpose. E.g., goods delivered on time, informatics capability attained.
- Output measure: Recording or calculation of an activity or effort. e.g., delivery miles logged, lines of code written.

Leading vs. lagging indicators

- Leading: What might be; performance drivers—inputs & outputs
- Lagging: What has transpired; outcomes & impacts

Example Scorecard

Business

Market Share

Profitability

Customer Satisfaction

Corporate Value

Return on Investment

Process Performance

Efficiency (Cost of Quality)

Time to Market (Cycle Time)

Quality (Defect Rate)

Price (Productivity)

New Features

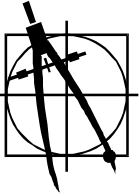
Organizational Health

Turnover

Project Oversight

Composite Status

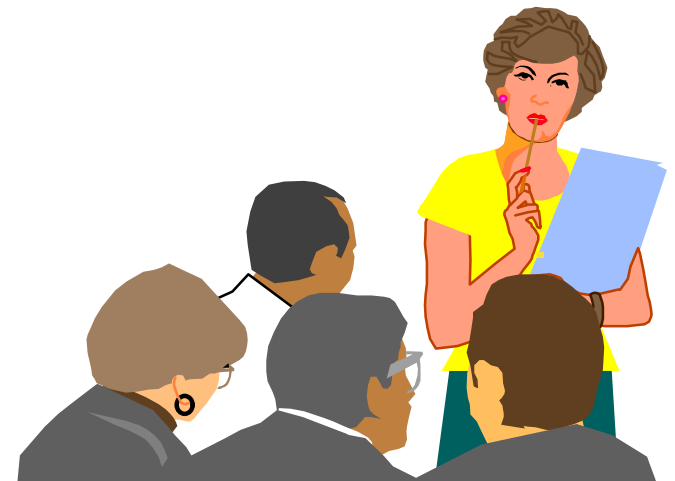
Risk Exposure

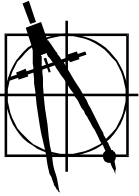


Customer Surveys

Understand customer demand and satisfaction by studying experiences with, perceptions about, and expectations for your products and services

Understand which factors contribute most to current and potential satisfaction





Activity-Based Costing

Reduce costs by...

- Assigning identifiable costs (and sometimes allocating common costs) to specific tasks, which roll up to specific processes and outputs
- Identifying opportunities for improved effectiveness and efficiency

Enables determination of the profit contribution that each activity and product bring to the company, irrespective of organizational structure

Comparison of Alternative Budgeting Approaches

Traditional Cost Basis	Budget (\$K)	Activity Cost Area	Budget (\$K)
Direct Labor	1,000	Marketing	200
Indirect Labor	500	Staffing	300
Other Direct Costs	500	Project Management	200
		Quality Assurance	100
		Software Production	450
		Inspections & Reviews	100
		Rework	200
		Testing	100
		Delivery	50
		Configuration Management	100
		Financial Reporting	200
TOTAL	2,000		2,000

Worksheet Calculations for an Activity-Based Estimating Model

Activity	New Code (Size = 450)			Reused Code (Size = 710)		
	Base Est.	Modifier	New Est.	Base Est.	Modifier	New Est.
Preliminary Design	0.59	1.20	0.71	0.035	1.00	0.035
Detailed Design	0.89	1.20	1.07	0.055	1.00	0.055
Code and Unit Test	2.21	1.10	2.43	0.120	0.00	0.000
Integration Test	0.74	1.00	0.74	0.200	1.00	0.200
Correct and Retest Integration	0.41	1.00	0.41	0.060	1.00	0.060
System Test	0.73	1.00	0.73	0.150	1.00	0.150
Total						

Note:

Once the estimating factors are derived, they are applied to the Effort and Cost elements to derive the estimates in terms of staff months and dollars



Risk Management

Identify and assess risks

- Group the risks, analyze timings and develop trigger points
- Calculate probability, consequence, risk exposure

Plan mitigation strategies; track the results

Risk Management Table

Risk ID #	Risk Name	Description	Risk Grouping	Risk Timing	Risk Trigger	Original			Mitigation Options	Mitigation Results	Current		
						P	C	E			P	C	E
1													
2													
3													



Business Value-driven IT Investments

-  Strategic linkage
 - Hierarchy of goals & strategies throughout organization
-  Core competency development
 - Knowledge management techniques for managing intellectual capital
-  Alternatives identification & selection
 - IT portfolio analysis
-  Alternatives selection & justification
 - Return on investment (ROI) analysis

Summary

- EPM is a process for developing effective measures to view and manage the enterprise
- Starts with corporate strategy, objectives, critical success factors
- Holistic objectives, associated measures and feedback loops are aligned throughout the organization
- Balanced Scorecard hands off to PSM to develop detailed measures based on critical success factors
- Key Elements:
 - Consistency of focus on business issues
 - Common definition of measures
 - Development of baseline project data

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