Decision Analysis and Resolution: "Can This Process Area Be Used Across Organizations and Disciplines?"

4th Annual CMMI Technology Conference & User Group 15-18 November 2004

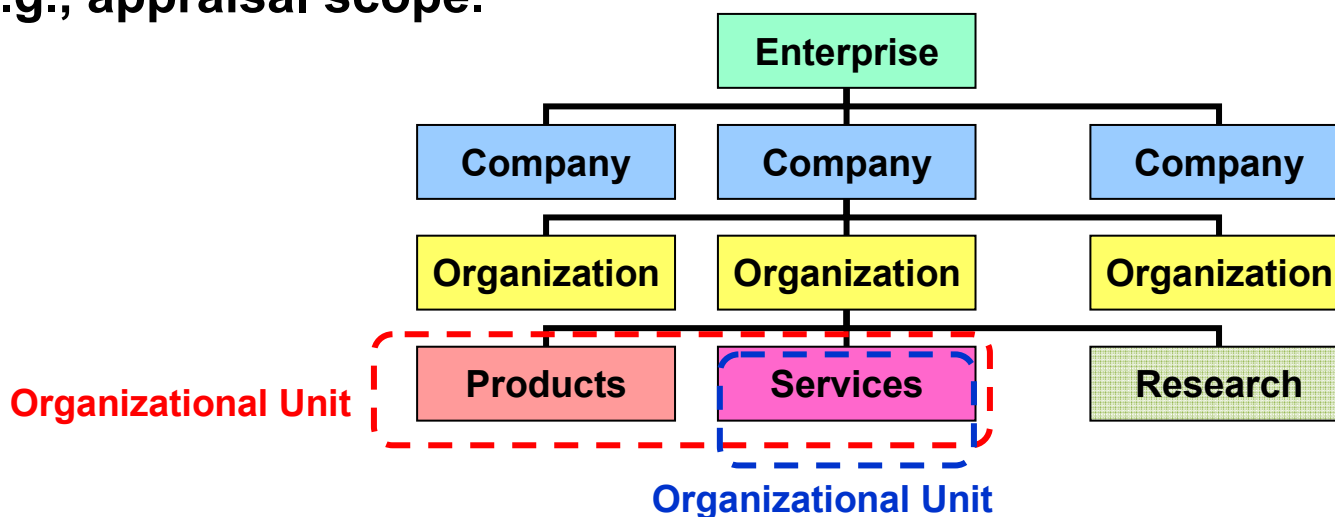## Gary F. Norausky, President
Norausky Process Solutions, Inc.
November 17, 2004
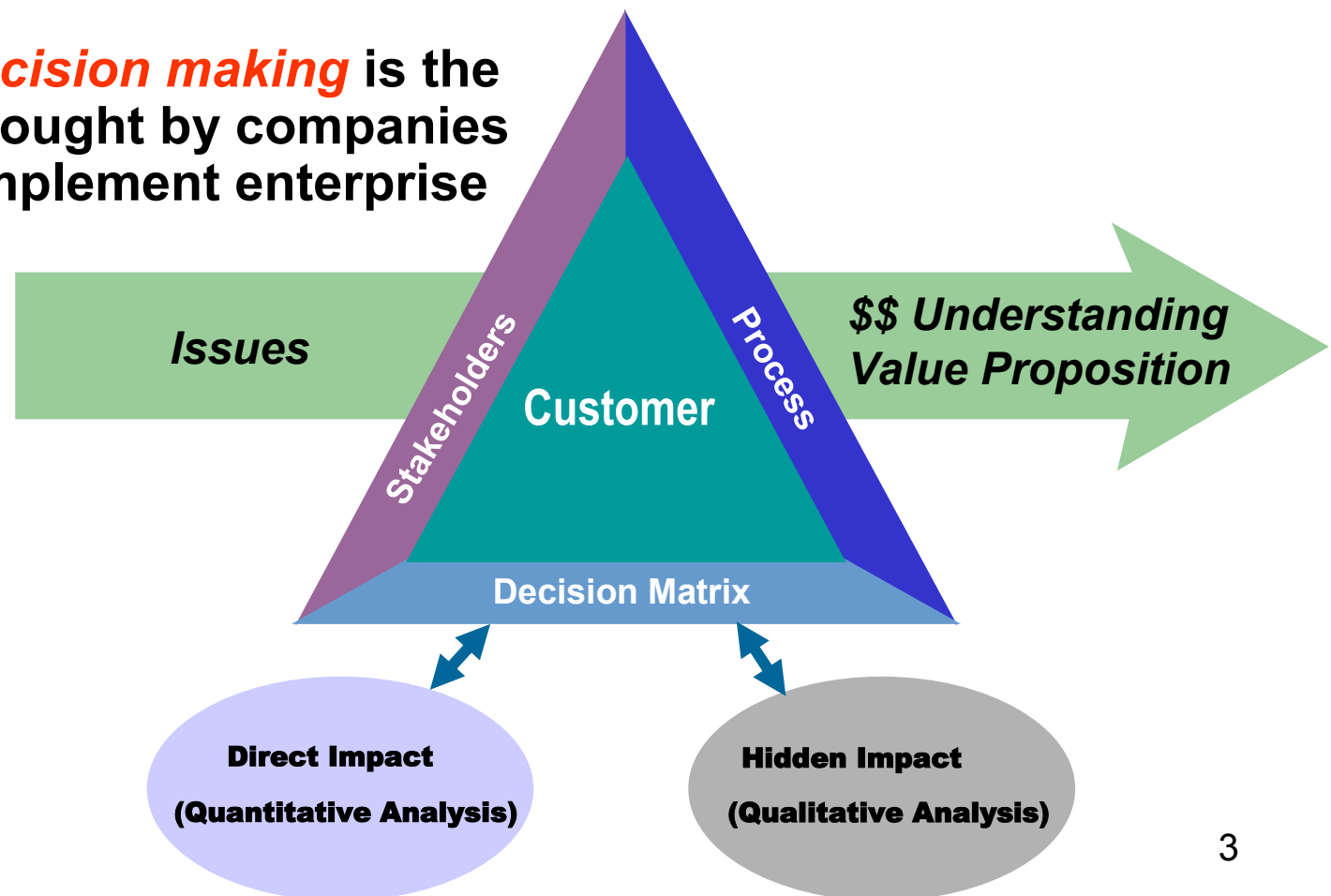
CMMI Definitions Involving "Organization"

- **Organization - Typically an administrative structure in which people collectively manage one or more projects as a whole, and whose projects share a senior manager and operate under the same policies.**
  - ✓ Can be a functional entity, e.g., Quality Organization
  - ✓ Does not mean entire corporate entity
- **Organizational Unit – That part of an organization that is being appraised, e.g., appraisal scope.**

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                        ┌──────────────┐
                        │  Enterprise  │
                        └──────────────┘
        ┌──────────────┐┌──────────────┐┌──────────────┐
        │   Company    ││   Company    ││   Company    │
        └──────────────┘└──────────────┘└──────────────┘
        ┌──────────────┐┌──────────────┐┌──────────────┐
        │ Organization ││ Organization ││ Organization │
        └──────────────┘└──────────────┘└──────────────┘
        ┌──────────────┐┌──────────────┐┌──────────────┐
        │   Products   ││   Services   ││   Research   │
        └──────────────┘└──────────────┘└──────────────┘
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Organizational Unit (red dashed box around Products/Services)
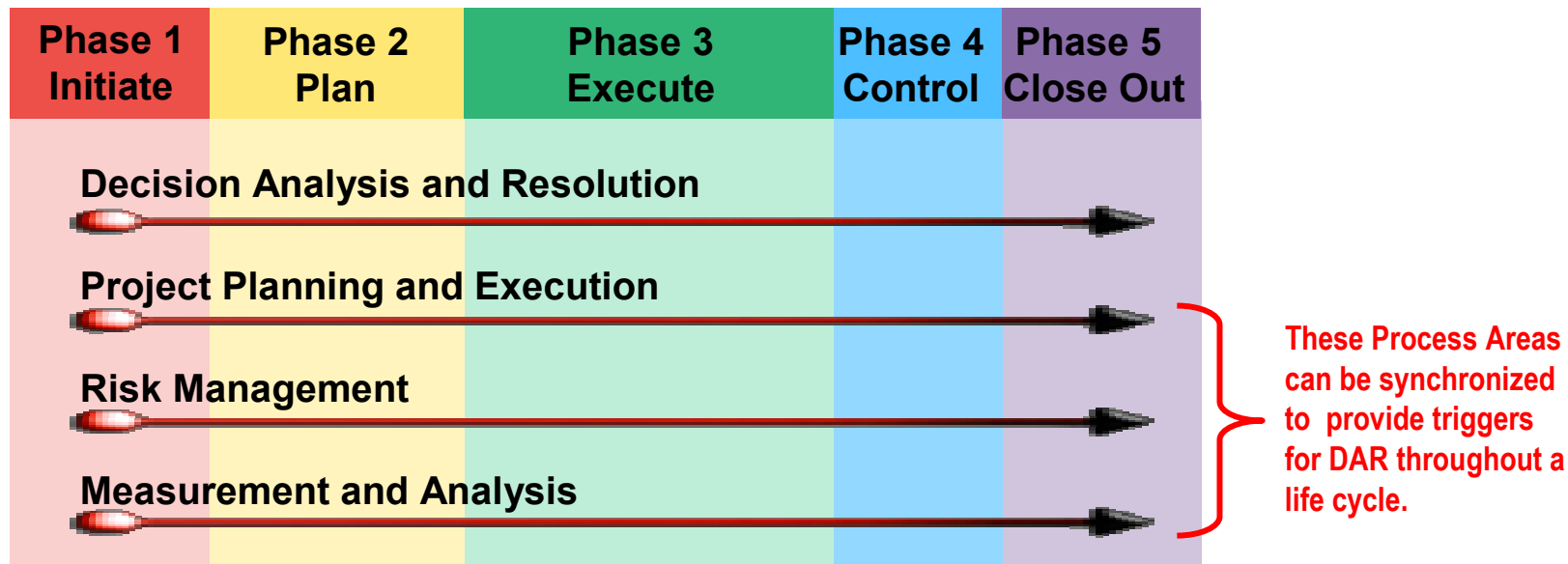
Organizational Unit (blue dashed box around Services)

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Why Decision Analysis and Resolution (DAR) is Necessary

- Improved *decision making* is the top benefit sought by companies when they implement enterprise solutions.
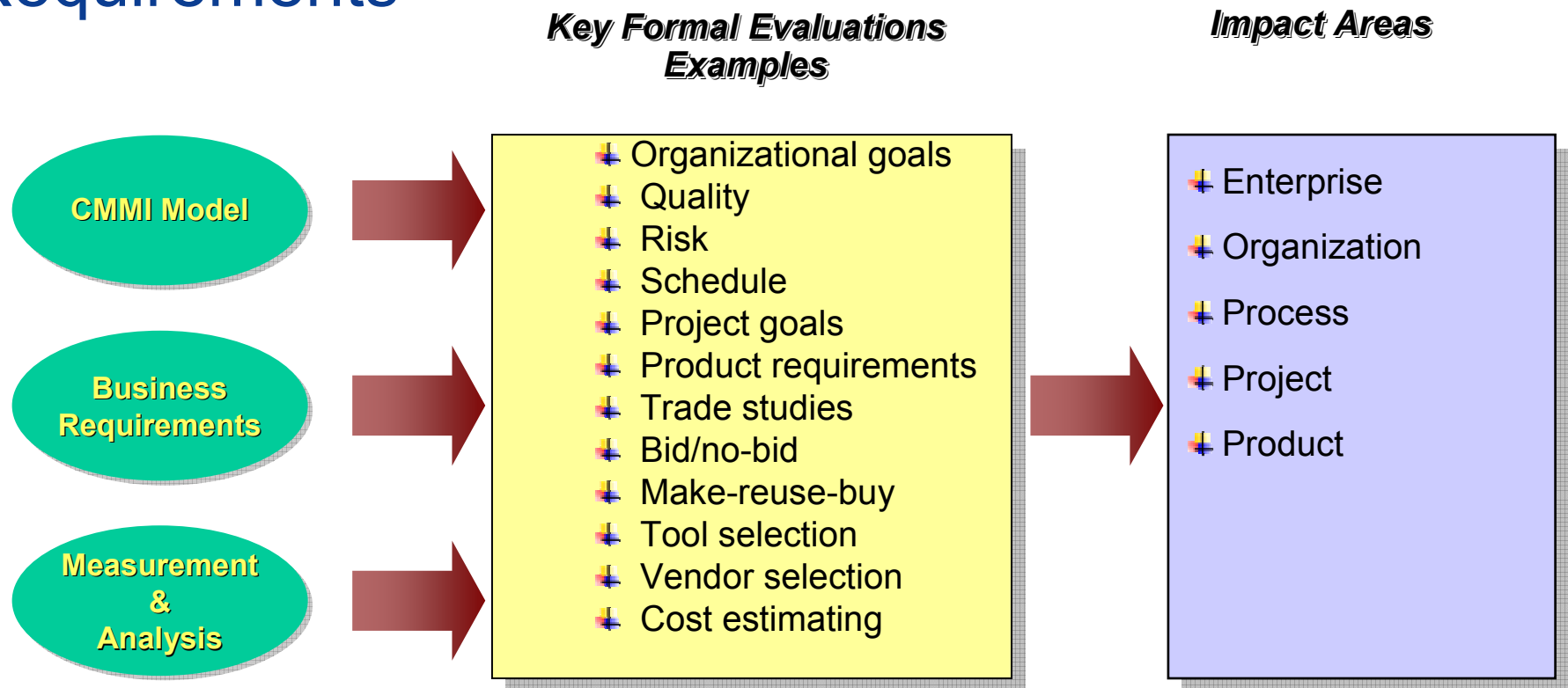
Issues

$$ Understanding Value Proposition

Stakeholders

Process

Customer

Decision Matrix

Direct Impact

(Quantitative Analysis)

Hidden Impact

(Qualitative Analysis)

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What Is Needed to Enable Decision Analysis and Resolution (DAR) to Be Used Across Organizations and Disciplines?

Phase 1 Initiate	Phase 2 Plan	Phase 3 Execute	Phase 4 Control	Phase 5 Close Out

Decision Analysis and Resolution

Project Planning and Execution

Risk Management

Measurement and Analysis

These Process Areas can be synchronized to provide triggers for DAR throughout a life cycle.

In addition to synchronizing triggers in the above Process Areas, Stakeholder involvement for decisions can be coordinated by:

- **Defining the context of "formal evaluation process"**
  - ✓ Determine recording, feedback, and repository requirements
- **Defining process elements to enable consistent application across disciplines and projects**
- **Defining guidelines for handling external influences**

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Aligning DAR to Meet Both Model and Business Requirements

Key Formal Evaluations Examples

Impact Areas

CMMI Model

Business Requirements

Measurement & Analysis

- Organizational goals
- Quality
- Risk
- Schedule
- Project goals
- Product requirements
- Trade studies
- Bid/no-bid
- Make-reuse-buy
- Tool selection
- Vendor selection
- Cost estimating

- Enterprise
- Organization
- Process
- Project
- Product

"The most common source of mistakes in management decisions is the emphasis on finding the right answer rather than the right question."
Peter Drucker

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Decision Context

Categories of Decisions

- **Strategic decision making**
- **Management control**
- **Knowledge-level decision making**
- **Operational control**

Types of Decisions

- **Unstructured decisions**
- **Structured decisions (DAR addresses these decisions)**

Levels of Decisions

- **Enterprise**
- **Organization**
- **Project**
- **Day to Day**

" **The key to success in today's business environment lies in spotting a pattern with the fewest possible facts - before it is too late to respond and before the pattern is so obvious that your competitors catch on first."**

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Decision Analysis and Resolution (DAR)

- The purpose of Decision Analysis and Resolution is to analyze possible decisions using a *formal evaluation process* that evaluates identified alternatives against established criteria.

SP 1.1 Establish Guidelines for Decision Analysis
Establish and maintain guidelines to determine which issues are subject to a formal evaluation process.

SP 1.2 Establish Evaluation Criteria
Establish and maintain the criteria for evaluating alternatives, and the relative ranking of these criteria.

SP 1.3 Identify Alternative Solutions
Identify alternative solutions to address issues.

SP 1.4 Select Evaluation Methods
Select the evaluation methods.

SP 1.5 Evaluate Alternatives
Evaluate alternative solutions using the established criteria and methods.

SP 1.6 Select Solutions
Select solutions from the alternatives based on the evaluation criteria.

Defines conditions that require a formal (structured) evaluation decision process

Established criteria enables objectivity and enables buy-in

Helps eliminate the "one size fits all" mind set.

Important to record why solution was selected, may need re-analysis later.

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An Example of a High Level Worksheet for DAR

State the issue and identify the customers for the issue.

Define targets for the features.

Measure feature importance for each customer.

Need	Goals	Resources	Options	Screening	Alternatives	Evaluation	Select	Apply	Monitor
						SP 1.4			
SP 1.1				SP 1.2	SP 1.3	SP 1.5	SP 1.6		

Decide what to do next.

Itemize the important features of a solution.

Generate alternative solutions.

Measure the Stakeholders' knowledge of the alternatives.

Determine the Stakeholders' overall evaluation of the alternatives

Determine belief that alternatives satisfies criterion

"Availability of information is completely decoupled from the issue of whether Stakeholders pay attention to it or not."

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DAR High Level Worksheet Steps

Need - SP 1.1
- ✓ Needs help determine the appropriateness of everyone's involvement. Threshold for formal evaluation.

Goals
- ✓ Use the goals as your mission statement-- put them in clear view every time you meet.

Resources
- ✓ Without an accurate assessment of resources and constraints, developing solutions is pure speculation--you don't know if the solution is even possible.

Options
- ✓ Options are the building blocks for future alternatives. A wide range of options now means a wider, more comprehensive range of alternatives later.

Screening - SP 1.2
- ✓ Screening criteria are applied to identify fatal flaws of proposed actions or elements. Once you screen for these fatal flaws, you can then concentrate on the remaining viable options.

Alternatives - SP 1.3
- ✓ Having eliminated options with fatal flaws, we now recombine our list of viable options to formulate desirable alternatives .

Evaluation – SP 1.4, SP 1.5
- ✓ This is where most of the analytical work takes place. Disciplines work together to compare alternatives through various analytical techniques. At this stage, professional judgment is replaced with factual data as much as possible.

Select – SP 1.6
- ✓ Now that alternatives have been evaluated and ranked, the decision maker selects one and sets the stage for implementing.

Apply
- ✓ Once the decision is made, take action. This is the most challenging part of the decision process.

Monitor
- ✓ Now that the solution is operating, make sure it continues to solve the problem.

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Basic Team Decisions

Decision-making
- ✓ Identify when decisions need to be made
- ✓ Identify a process for fact finding
- ✓ Allow for multiple perspectives
- ✓ Articulate the teams scope of authority to make decisions, and to make recommendations
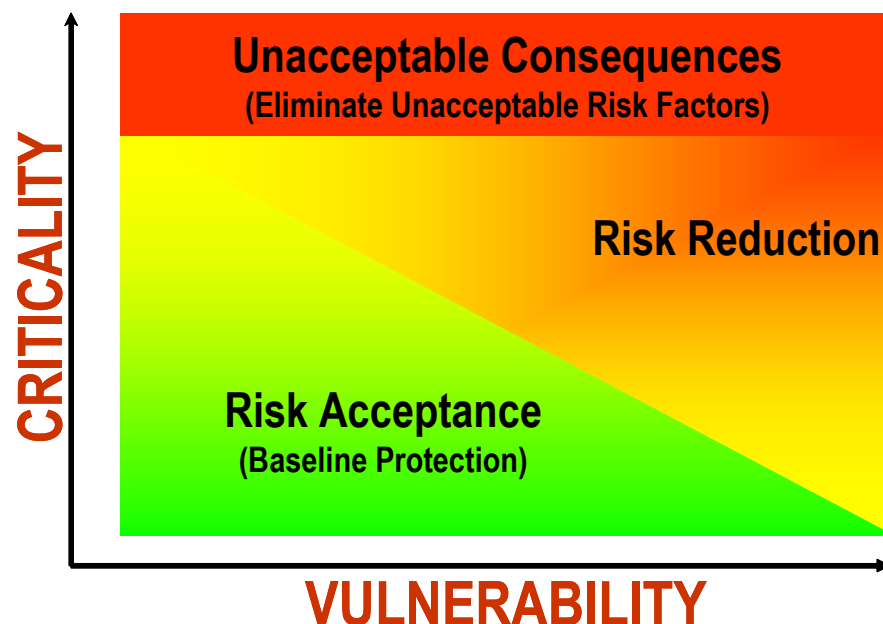- ✓ Create a decision log system for future reference

Communication
- ✓ Articulate a process for note distribution
- ✓ Identify follow up communications

- Strategic selection by **top competent team**, answering "What?," based on career experience knowledge
- Control & coordination by **executive staff**, answering "In what order?," based upon expertise from professional education
- Operations, by **managers**, answering "How?," based upon training and experience.
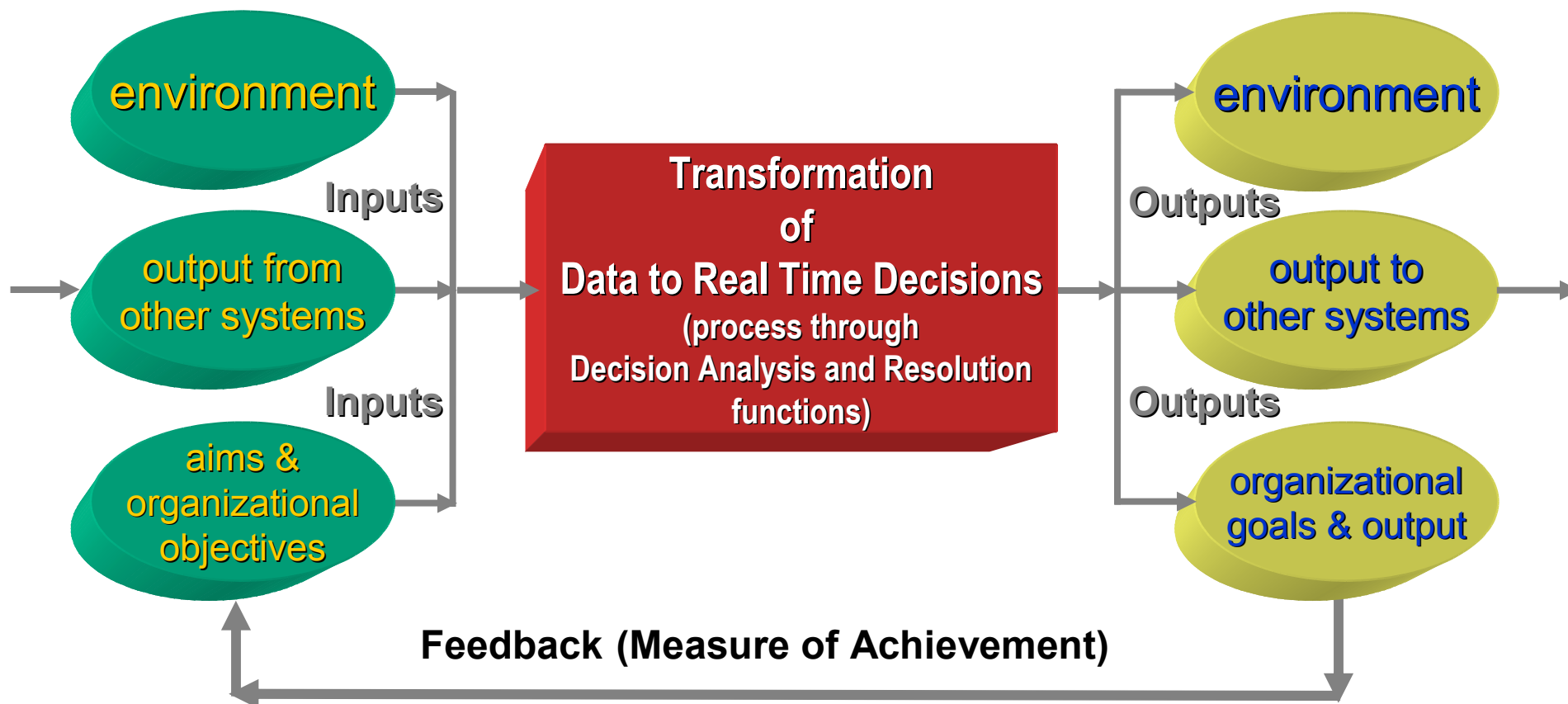
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Present Results to Final Decision Maker

- **Present the results of the formal evaluation to the original decision maker and other relevant stakeholders**
- **Provide reporting and "drill-down" capabilities**
  - ✓ Critical Success Factors (CSF)
  - ✓ Status access
  - ✓ Analysis
  - ✓ Exception reporting
  - ✓ Communication

Unacceptable Consequences
(Eliminate Unacceptable Risk Factors)

Risk Reduction

Risk Acceptance
(Baseline Protection)

CRITICALITY

VULNERABILITY

Source: ManTech, Inc.

YOUR VALUE PROPOSITION MUST BE COMPELLING, QUANTIFIABLE, PROVEABLE, REFERENCEABLE, AND EASILY EXPLAINABLE….

Generic System Approach for Decisions

environment

output from other systems

Inputs

aims & organizational objectives

Inputs

Transformation of Data to Real Time Decisions (process through Decision Analysis and Resolution functions)

Outputs

environment

output to other systems

Outputs

organizational goals & output

Feedback (Measure of Achievement)
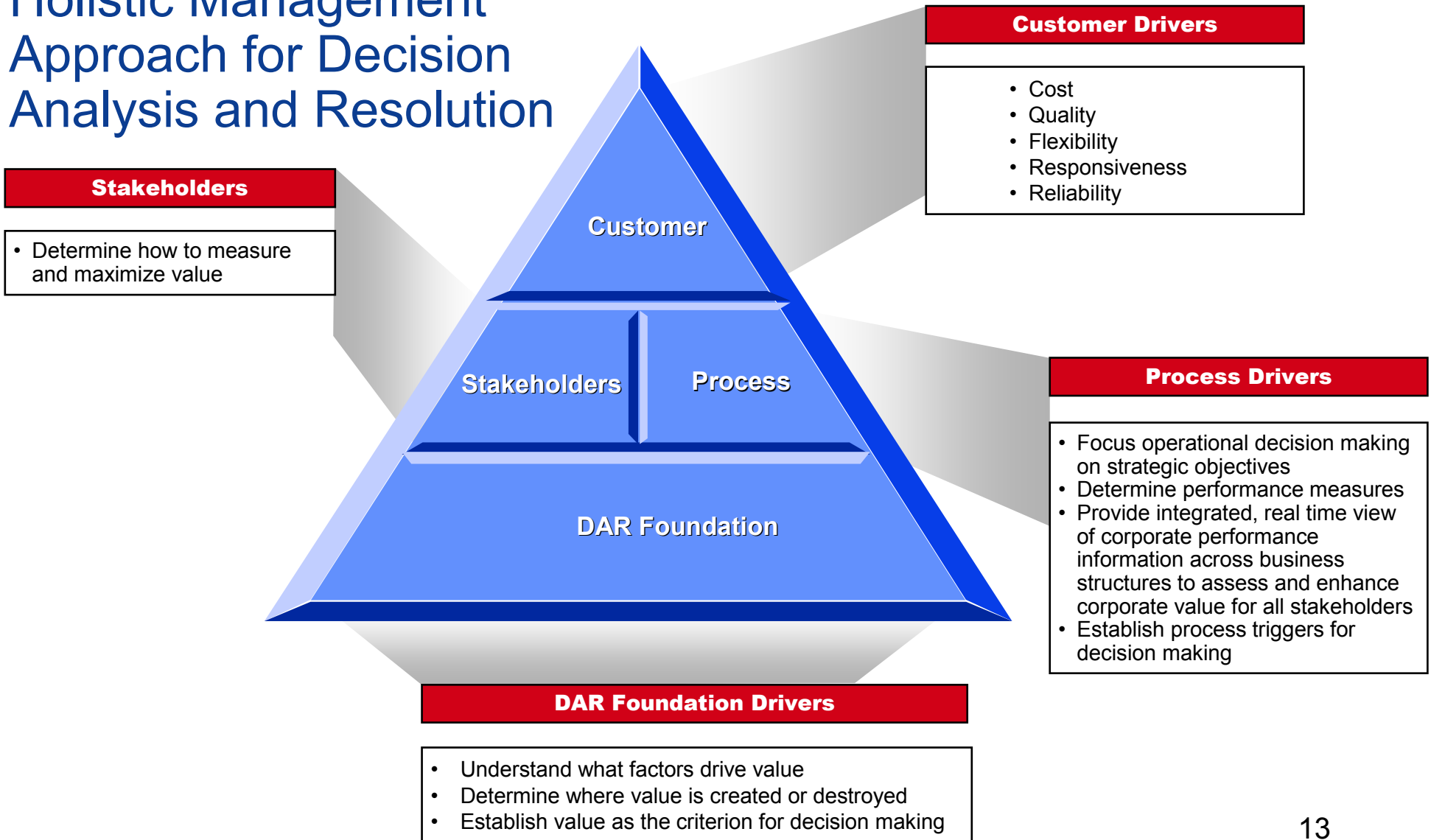
"The standard description of decision making consists of three elements: alternatives, states of the world, and outcomes."

George Day

Holistic Management Approach for Decision Analysis and Resolution

Customer Drivers

- Cost
- Quality
- Flexibility
- Responsiveness
- Reliability

Stakeholders

- Determine how to measure and maximize value

Process Drivers

- Focus operational decision making on strategic objectives
- Determine performance measures
- Provide integrated, real time view of corporate performance information across business structures to assess and enhance corporate value for all stakeholders
- Establish process triggers for decision making

DAR Foundation Drivers

- Understand what factors drive value
- Determine where value is created or destroyed
- Establish value as the criterion for decision making

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