



NORTHROP GRUMMAN

DEFINING THE FUTURE



Interpreting High Maturity Practices for Your Business Objectives

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Rick Hefner, Northrop Grumman Corporation
Alice Parry, Raytheon Corporation

“To apply CMMI best practices, you must use professional judgment when interpreting them for your situation, needs, and business objectives.”

- *Introduction, CMMI-Dev*

- **How do we characterize an organization’s “business objectives”?**
- **How does this characterization influence the manner in which they implement CMMI practices?**
- **Can high maturity organizations differ in their implementations, or does everyone need to implement Level 5 exactly the same way?**

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- **A Tale of Two Organizations**
- **Defining Business Needs and Objectives**
- **Process Performance Baselines and Models**

A Tale of Two Organizations

Organization A



- 200 people, one building
- 10 projects for 3 clients; all fixed-price; all developing banking SW
- Deployed ML5 practices as a competitive discriminator during organization stand-up

Organization B



- 18,000 people, offices in all 50 states
- 200+ projects for 20+ clients; fixed-price, cost-plus, LOE; SE, SW, HW, services
- CMMI ML5, ISO 9000, AS9100, etc.; continuously re-organizing and acquiring new pieces of the organization

See "How Six Sigma Organizations Implement CMMI Level 5", Hefner and Parry, 3:00 Thursday

Setting Business Goals

Commercial Organization

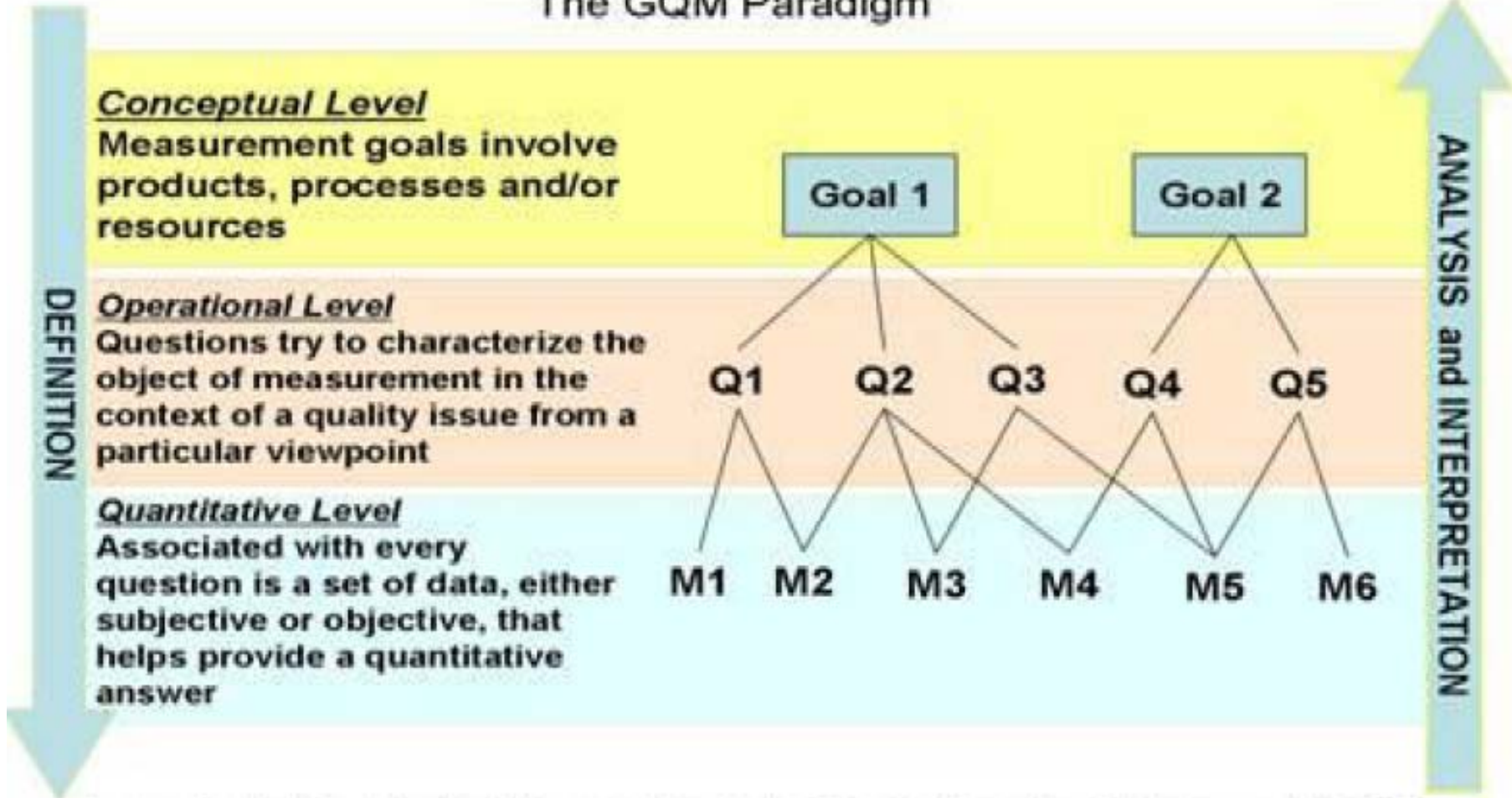
- Organizational goals – profit (productivity, low fielded defects), growth
- Project goals – same as the organizational goals
- Investment strategy - ROI

DoD Contractor

- Organizational goals – satisfy shareholders (growth, stability), consistent project performance
- Project goals – all different because of different domains, different customer needs (training delivery, action item closure, estimation, field support, etc.)
- Investment strategy – customer satisfaction, ability to justify reduced bids

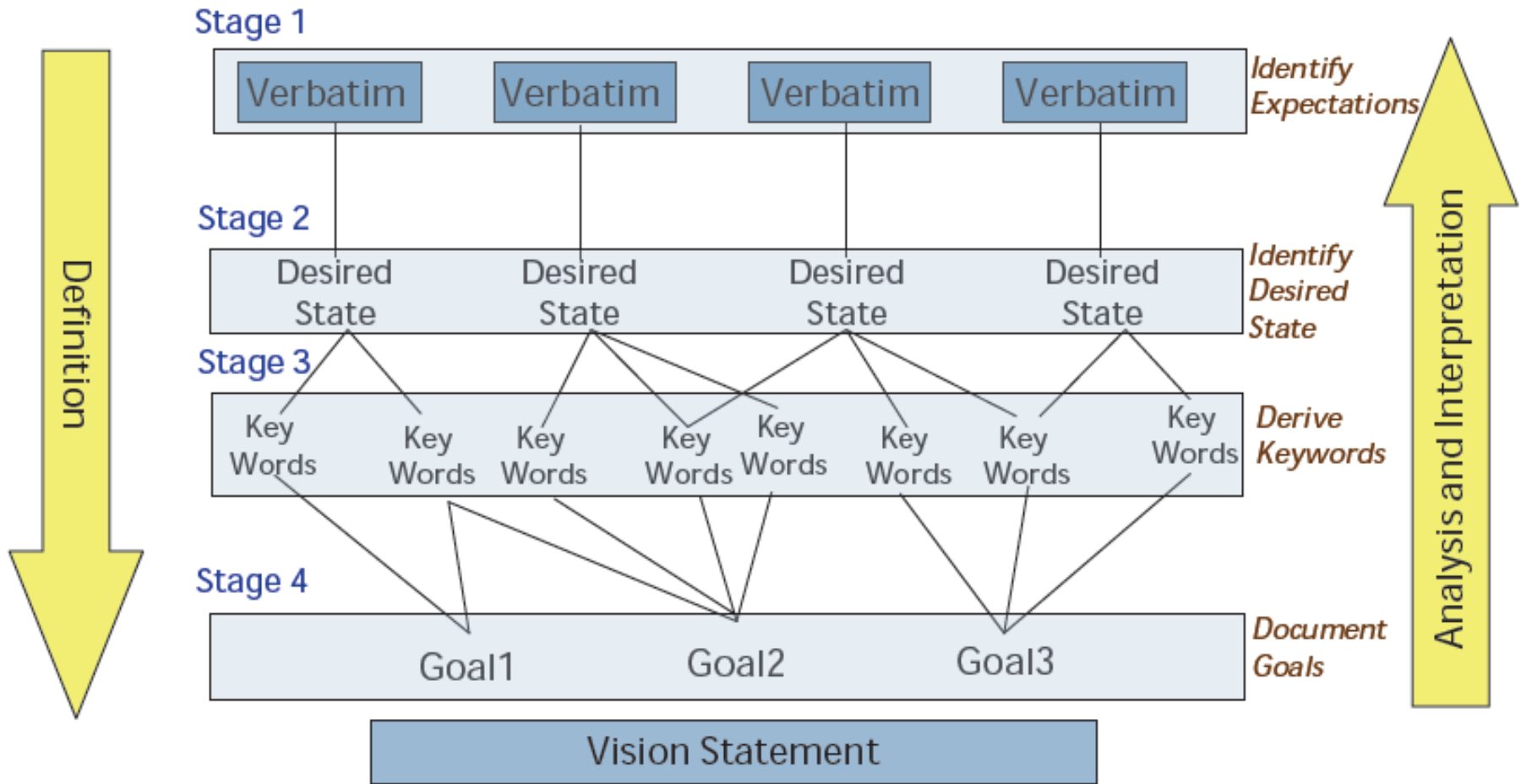
Approaches to Setting Business Objectives – Goal-Question-Metric

The GQM Paradigm



Source: Derived from Basili, Caldiera, and Rombach, "The Goal Question Metric Approach", 1990

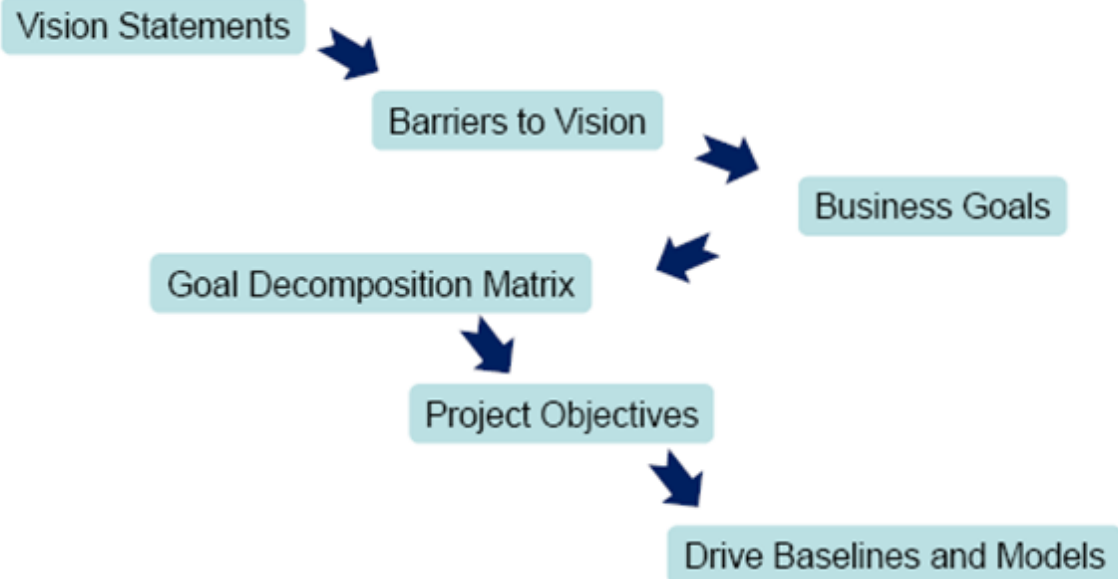
Approaches to Setting Business Objectives – VDKG Method



"How Not to Short-Circuit your Process Improvement Program", Poppe, Vaid, Rushton (General Motors), SEPG Europe, 2008

Approaches to Setting Business Objectives – SEI Framework

The Overall Process to Reach the Goals and Objectives



*"A Jumpstart Method for Business Goals and Project Objectives Supporting CMMI High Maturity",
SEI Webinar, 21 August 2008, Robert W. Stoddard*

organization's business objectives

Senior management developed strategies designed to ensure an organization's continued existence and enhance its profitability, market share, and other factors influencing the organization's success. (See also "quality and process performance objectives" and "quantitative objective.")

Such objectives may include reducing the number of change requests during a system's integration phase, reducing development cycle time, increasing the number of errors found in a product's first or second phase of development, and reducing the number of customer-reported defects, when applied to systems engineering activities.

What would be the result of meeting such objectives in a DoD program?

quality and process performance objectives

Objectives and requirements for product quality, service quality, and process performance. Process-performance objectives include quality; however, to emphasize the importance of quality in the CMMI Product Suite, the phrase quality and process-performance objectives is used rather than just process-performance objectives.

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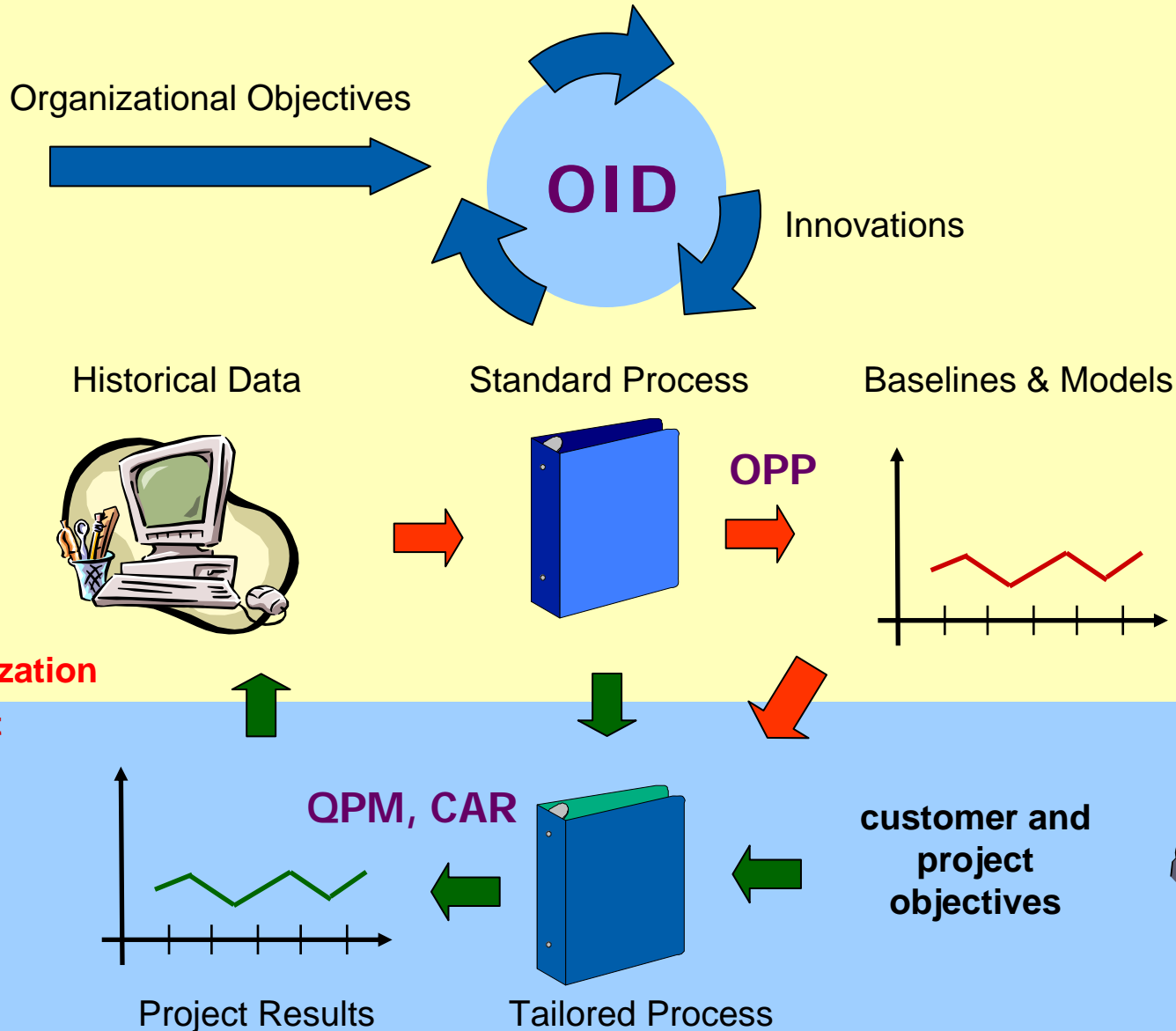
By < some date > , our organization will improve < some attribute >
from today's performance baseline of < some distribution > to a new
performance baseline of < some distribution > with
< some percentage > of confidence without sacrificing < some attribute >.

- **What should a project do in response to an organizational goal?**

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By 12/31/2011, our organization will improve time to market from today's performance baseline (a normal distribution with mean=215 days and standard deviation=13 days), to a new performance baseline (a normal distribution with mean=185 days and standard deviation=7 days), with 95% confidence and without sacrificing delivered quality (no more than 0.1 delivered defects per KSLOC).

The Relationship of High Maturity Process Areas



- **Does each project quantitatively manage the same subprocesses as the organization?**

Organizational Process Performance

SG 1 Establish Performance Baselines and Models

- SP 1.1 Select Processes
- SP 1.2 Establish Process-Performance Measures
- SP 1.3 Establish Quality and Process-Performance Objectives
- SP 1.4 Establish Process-Performance Baselines
- SP 1.5 Establish Process-Performance Models

Quantitative Project Management

SG 1 Quantitatively Manage the Project

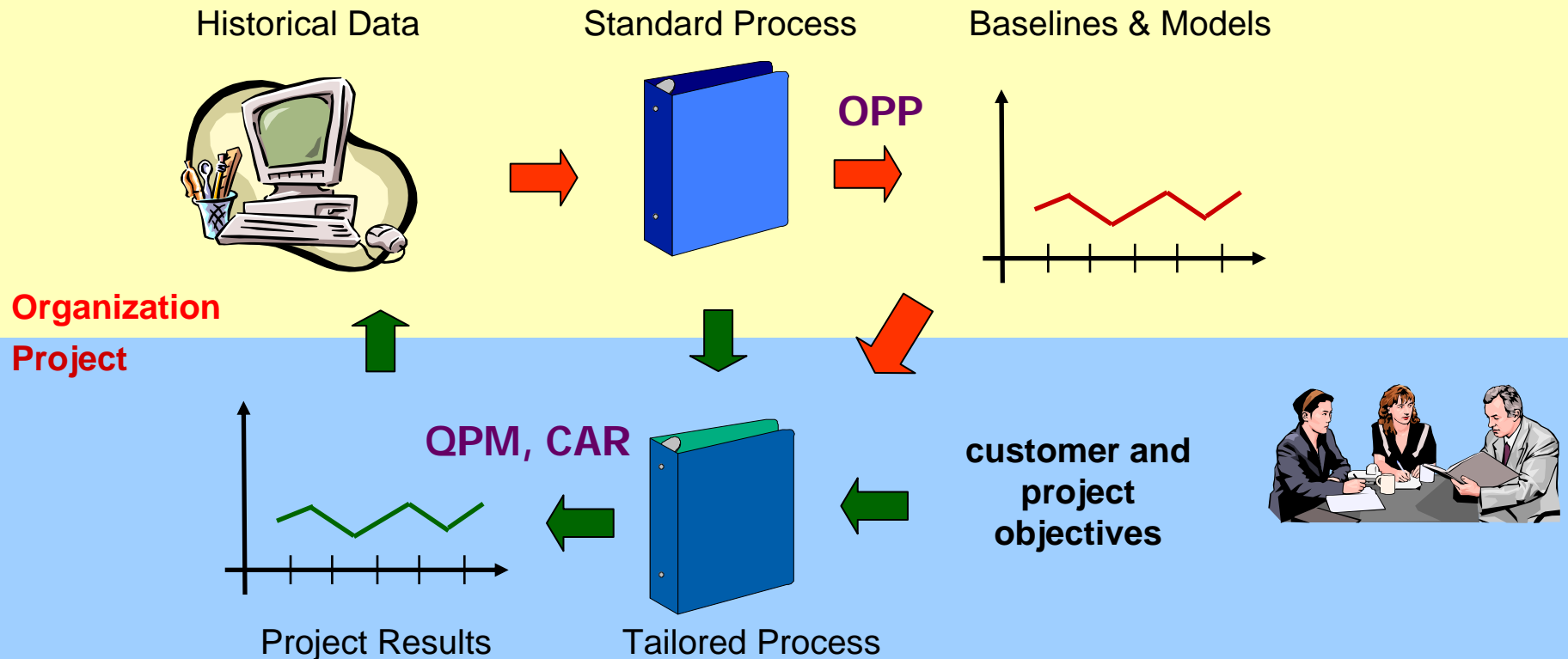
- SP 1.1 Establish the Project's Objectives
- SP 1.2 Compose the Defined Process
- SP 1.3 Select the Subprocesses that Will Be Statistically Managed
- SP 1.4 Manage Project Performance

SG 2 Statistically Manage Subprocess Performance

- SP 2.1 Select Measures and Analytic Techniques
- SP 2.2 Apply Statistical Methods to Understand Variation
- SP 2.3 Monitor Performance of the Selected Subprocesses
- SP 2.4 Record Statistical Management Data

Why the Organization and Project Focus on Different Subprocesses

- The organization builds baselines and models to help projects compose their process AND to identify organizational improvements
- The projects quantitatively manages subprocesses of importance to their customer – requires separate baselines and models



- **Can quantitative management be applied to short duration projects?**
- **Can quantitative management be applied to small projects?**
- **How do we establish the value proposition for high maturity practices?**

- **Business needs and objectives drive choices in the types and sophistication of Process Performance Baselines and Process Performance Models that add value**
- **Commercial and DoD contractors have marked differences in their investment strategies, which greatly affect the ways in which PPBs and PPMs are used both the organizational and project level**