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Enterprise Performance Measurement
The Basis for Organizational Excellence
15 April 2009
Cheryl L. Jones



Perspective



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Overview



- Measurement Basics
- Enterprise Measurement
- PSM Insight Demonstration



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Enterprise Measurement



- A measurement and analysis process that addresses integrated organizational level information needs
- The process provides executive level decision makers with insight into the characteristics, activities, and performance of the overall organization
- The process is implemented to evaluate organizational performance against established operational and strategic objectives



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Effective Measurement Programs



- Are information driven
- Are dynamic and adaptable
- Generate trusted data and information - that can be interpreted and understood “in context”
- Provide information that is actually used by project and enterprise decision makers
- Are an integral part of how a successful organization does business
- They are not “check in the box” activities
- They are not based on a “laundry list” of pre-defined “metrics”



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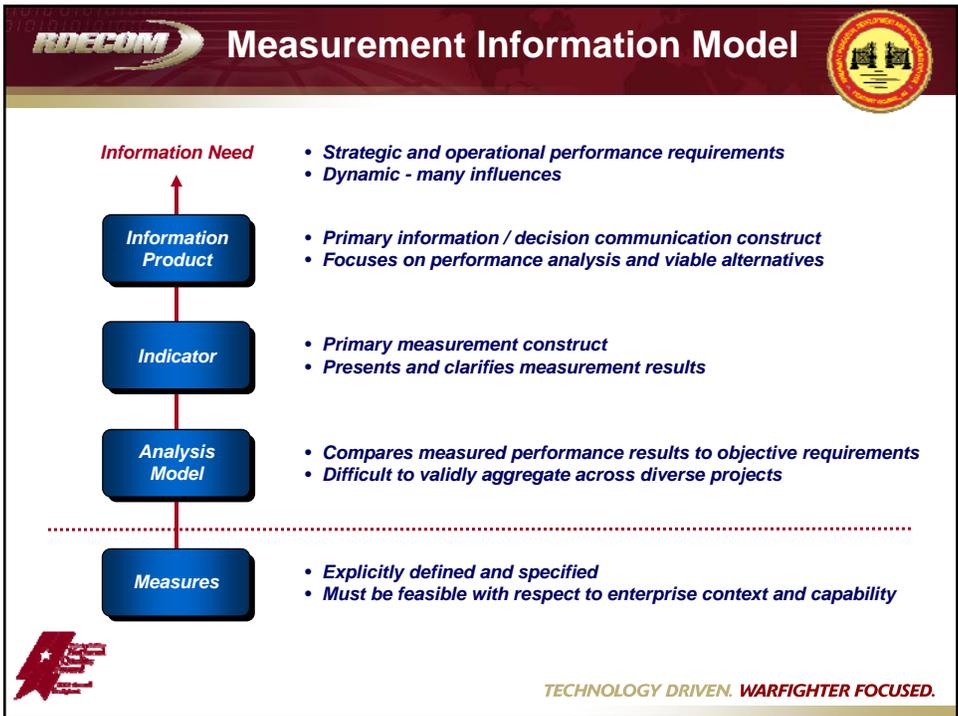
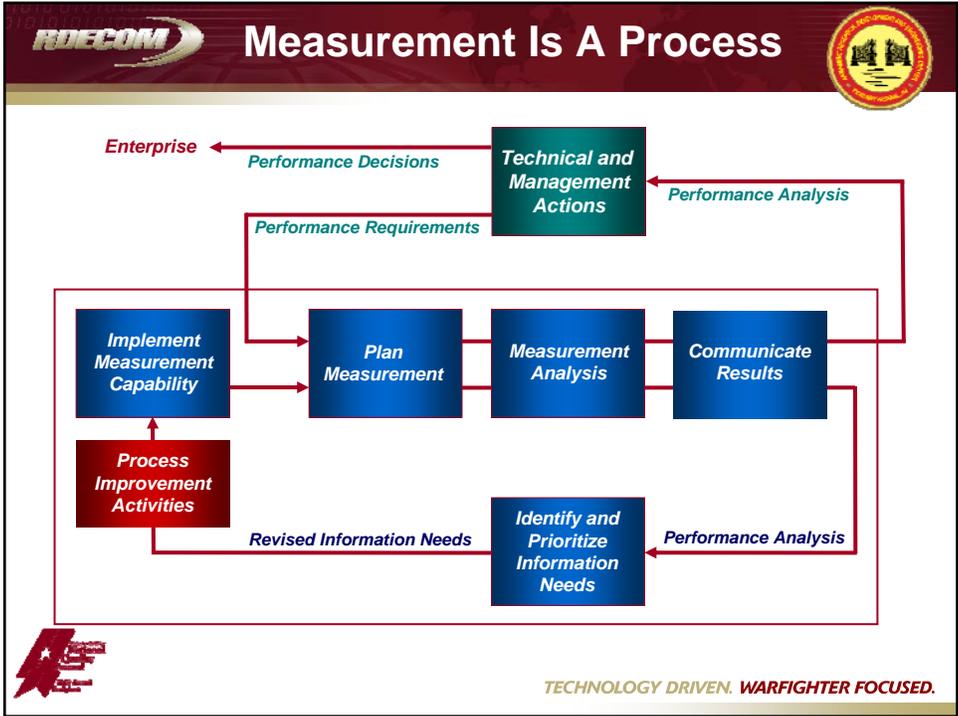
Information Needs



- Information Needs drive what you measure, analyze, and evaluate
- They are directly related to established objectives
- They define where you focus your attention
- They may be different for different organizational levels
- They are usually dynamic
- They may have both positive and negative connotations
- If you can adequately address your information needs you can make and justify a decision
- In other words - they are what you need to know



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Types of Measures



Characterization Measures

- Quantify the attributes of an organization, product, project, etc.
- Helps to describe and categorize things based on their characteristics (size, weight, color, quality, frequencies of occurrence, etc.)
- Provide a general context

Activity Measures

- Tell you if you are doing what you said you were going to do
- Largely relate to schedules and planned accomplishments
- Are what most measurement processes focus on



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Types of Measures



Outcome Measures

- Measure the change in a process, product, or organizational attribute after an overt action is taken
- Address the impact(s) of a previous decision
- Explicit exit criteria are identified in the measurement definition

Performance Measures

- Measure the change in a process, product, or organizational attribute (outcome) against a defined threshold of required performance
- Requires that success factors be defined in measurable terms and linked to measured attributes
- Focus on effectiveness, efficiency, quality, and timeliness



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Enterprise Measurement



- Most organizations have a significant number of diverse information needs across multiple management levels
- Usually the initial measurement focus of an organization is what the project teams need to know to guide a successful project
- The next requirement that emerges is what executive managers need to know to evaluate organizational performance against established strategic and operational objectives



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Information Needs Hierarchy



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Strategic Performance

- Multiple Objectives
- Multiple Projects/Initiatives
- Multiple Stakeholders
- Competing Interests
- Enterprise Capability
- Effectiveness, Efficiency, Quality, Timeliness
- Portfolio Perspective
- "Good of the Many"

Enterprise

Measurement and Analysis

Project

Organizational Components

(Teams, Competencies, Divisions, Directorates, etc.)

Operational Performance

- Customer Focused
- Requirements Driven
- Product Capability, Quality
- Project Cost, Schedule
- Mission Perspective
- "Good of the Few"



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- Project and enterprise measurement implementations are closely related
- They largely encompass the same principles, processes, personnel, and resources
- But there are key differences in the information needs, analytical techniques, communication structures, scope, and degree of complexity
- Most of the measurement data that drives enterprise analysis is derived from the project level



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Enterprise Measurement Drivers



- Government Performance and Results Act of 1993
- Clinger-Cohen Act of 1996
- Information Technology Management Reform Act of 1996
- Federal Acquisition Streamlining Act of 1996
- OMB Circular No. A-11, S-300, Planning, Budgeting, Acquisition, and Management of Capital Assets of July 2004
- Department of the Army Regulation AR-70-1, Army Acquisition Policy
- GAO Report 08-519 of May, 2008 - DoD Business Systems Modernization
- Ongoing legislation, policy
- Changing acquisition, resource, and technical environments



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Implementation Requirements



- Enterprise measurement requires a viable “measurement infrastructure”
 - Capable Technical and Business Processes - project management, strategic planning, budgeting, etc.
 - Mature project measurement capability - tools, people, expertise, historical performance data, etc.
 - Capable organizational constructs and processes - financial cost accounting system, well-defined work structures, open communications, etc.
 - Collaborative decision environment - visible performance results viewed by all stakeholders as a way to improve the enterprise (opposite of “organizational information hiding”)



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Observed Implementation Strategies



- Enterprise requires that lower level organizations (projects) all collect and forward the same data (same measures defined exactly the same)
- Enterprise requires that lower level organizations (projects) use “standard” management constructs (WBS structures, EVM procedures, etc.)
- Enterprise requires that lower level organizations (projects) use the same tools (that export the same data)
- These are implemented in an attempt to validly aggregate lower level data at the enterprise level
- These top-down approaches never work



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Why Not?



- Every project is different in terms of information needs (risks, priorities, life cycle phase, etc.)
- Every project is different in how it defines its measures to satisfy the same information need (technical characteristics and processes, customer definitions, contractor methods, etc.)
- Project measurement capabilities at the project level are inconsistent and somewhat immature
- People do not implement measurement for someone else - they do it because it helps them meet their objectives
- Change is hard



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Other Issues



- Enterprise-wide business and technical processes may be inconsistent
- Enterprise information systems can be immature with respect to interfaces and usability
- The context data may not be available at the enterprise level to support informed decisions using measurement results (jumping to conclusions based on the graph)
- Capacity and resource constraints
- People fear higher level visibility into their performance



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Relative Information Priorities



Enterprise

Division contribution to Enterprise product portfolio performance and capability - **HIGH+**

Productivity improvement and resource efficiencies - process improvement - **HIGH**

Reductions in product delivery cycles - **HIGH**

Project resource, product, and financial profiles - quantitative organizational characterization (people, dollars, product) - **HIGH**

Degree of Staff and resource resource sharing - **MEDIUM**

Product quality and reliability growth - **MEDIUM**

Enterprise risk profile - **LOW**

Project

Project management and performance status information - (progress, financial management, personnel resources) - **HIGH+**

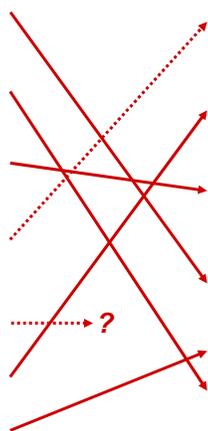
Platform requirements and implemented product quality information - **HIGH**

Objective work package estimation and interrupt driven task impact information - **MEDIUM**

Customer derived mission capability and product performance assessment information - **MEDIUM**

Project risk profile - **LOW**

Process efficiency - **LOW**



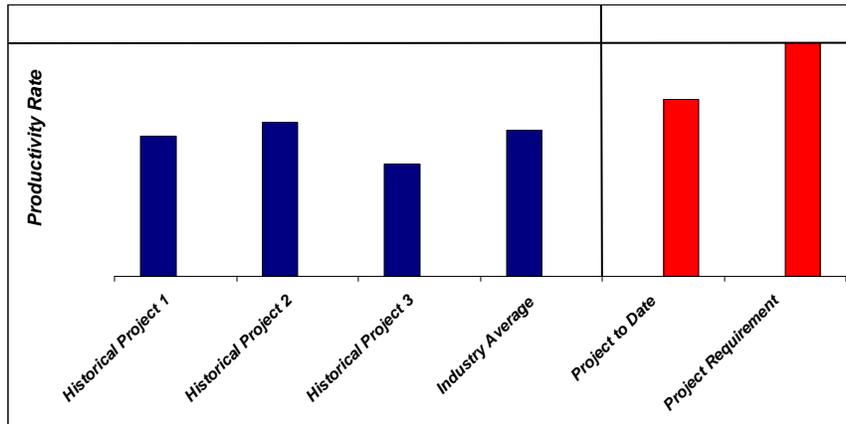
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Enterprise Performance Measurement



Productivity



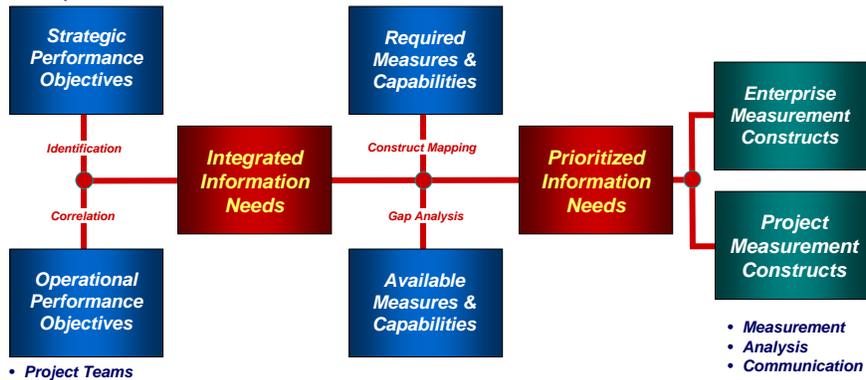
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Recommended Approach



Enterprise



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Information Need Priority by Project and Enterprise

Sorted by PSM Measurable Concepts

Measurable Concept	P1	P2	P3	P4	P5	P6	P7	P8	DIV	ENTERPRISE
Financial Performance	15%	16%	16%	14%	22%	23%	13%	11%	20%	17%
Work Unit Progress	12%	6%	12%	19%	21%	17%	17%	22%	16%	15%
Personnel Effort	16%	16%	11%	17%	20%	15%	12%	10%	14%	15%
Functional Size and Stability	21%	19%	11%	2%	13%	8%	19%	13%	14%	15%
Functional Correctness	5%	8%	8%	8%	10%	6%	11%	8%	6%	9%
Milestone Completion	4%	10%	12%	3%	6%	12%	6%	11%	5%	8%
Process Efficiency	6%	5%	3%	14%	2%	6%	4%	10%	5%	5%
Physical Size and Stability	2%		5%	2%	1%	6%	1%	1%	9%	2%
Process Effectiveness	4%	4%			1%			1%	5%	2%
Dependability-Reliability	2%	4%	1%	2%	1%		2%	2%	4%	2%
Usability	2%	4%	5%	2%	0%		3%		1%	2%
Incremental Capability		1%	3%				3%		1%	1%
Customer Feedback	2%	0%	3%	3%	1%	2%	1%	2%		1%
Customer Support	2%	1%					2%	1%		1%
Portability			4%						1%	
Supportability-Maintainability			4%							
Efficiency		1%				0%	1%			
Process Compliance							0%			

Priority
High
Medium
Low
Not identified

Percentages indicate how many of the identified information needs were related to the measurable concept



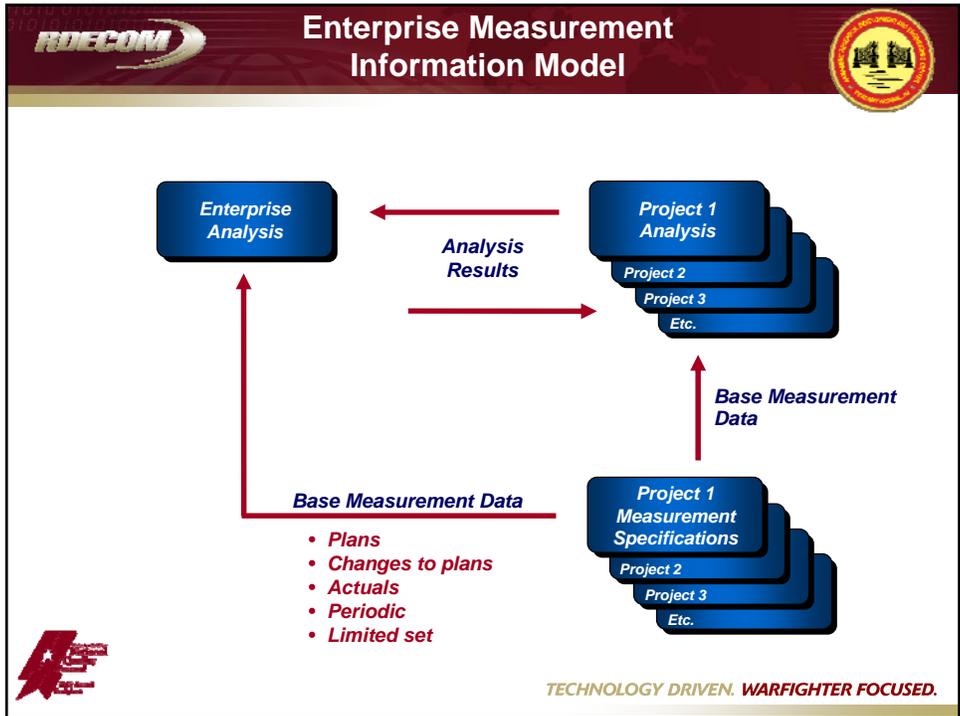
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Base Measure Coverage Project Data Availability

Base Measure	P1	P2	P3	P4	P5	P6	DIV	ENT
FY Planned Funds								
FY Funds Received								
FY Spend Plan								
FY Funds Expended/Actual								
FY Funds Obligated + Committed								
FY Planned APN Funds								
FY Planned FMS Funds								
FY Planned OM&N Funds								
FY Planned RD&E Funds								
FY Planned WPN Funds								
FY Planned Other Funds								
ACWP								
BCWS								
BCWP								
Total Planned Effort (FY)								
Planned Effort to Date (FY)								
Actual Effort to Date (FY)								
# Personnel Need								
# Personnel On-Board								
# Personnel - Entry-level experience (0-5 years)								
# Personnel - Mid-level experience (6-15 years)								
# Personnel - Senior-level experience (16+ years)								
# Personnel - Retirement-eligible experience (~30+ years)								
Operational Rqmts								
Operational Rqmts Tested								
Detailed Rqmts								
Detailed Rqmts Tested								
Detailed Rqmts Implemented								
Detailed Rqmts Changed								
Original Planned SLOC								
Current Planned SLOC								
Planned Changed SLOC								
Actual Defects Written								
Actual Defects Closed								
FY Planned Milestones								
Planned Milestones (to date)								
Actual Milestones (to date)								

Key	Yes	Partial	No	N/A
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Worst case summary based on initial measurement review



-
- Lessons Learned**
- Good project measurement is hard - enterprise measurement is really hard
 - Many information needs, across the project base and between the projects and enterprise, are similar
 - There may therefore be an opportunity for some degree of “common” measures useful to all stakeholders
 - Each project, and the enterprise, need their own measurement analysis capability - the decision makers ask different questions
 - You cannot “force” measures or measurement definitions just because the enterprise wants them
- AS** logo is in the bottom left corner.
- TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.** is in the bottom right corner.



Lessons Learned



- It really helps if the enterprise strategic objectives are defined well enough to be quantified - even if the performance thresholds are only “expectations”
- The enterprise needs to be able to map its operational activities to its long term performance objectives
- The most difficult thing is to normalize “unlike” lower level data at the enterprise level - but you do not always have to do this to make good enterprise decisions
- Start with activity measures - then integrate the performance measures - at all levels
- Always communicate the context data - the numbers and the indicators are only part of the information product



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Lessons Learned



- Right after the enterprise beats up a project based on the real data the performance of the projects, based on the “submitted” data, will show a marked improvement



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Practical Software and Systems Measurement **PSM Insight**



Sponsored by the
US Army, RDECOM - ARDEC



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What is PSM Insight?

- PC-based tool that automates the PSM process
- Insight includes tailoring, data entry, and analysis functions
- Templates for commonly-used information needs and measures
- Completely flexible to allow customization to project and enterprise needs



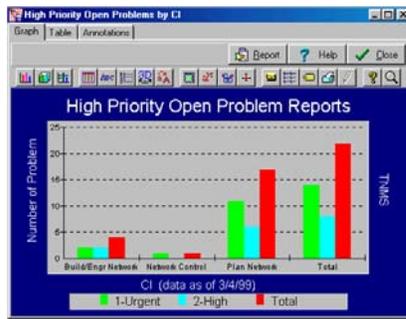
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What is PSM Insight?



- Users can view graphic displays of the measurement data



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Insight Highlights & Benefits



- Import and export electronic measurement data
- Flexible data definitions and analysis tools
- Presentation-quality graphs and reports
- Online help system, user's manual, and interactive training program
- Training is available



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