Measurement in a Hierarchy

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Measurement and Hierarchy

- General considerations
- Types of Hierarchies
- Aggregation
- Information Needs for Decision Making

Measurement Hierarchy

- Creating a hierarchy of a measure has several advantages, including:
- The right people can more easily access the right level of information at the right time.
- Higher-level measures do not have to be directly measured.
  - can simply be derived from previously collected measures.
- Provides a quick diagnostic system for the organization.
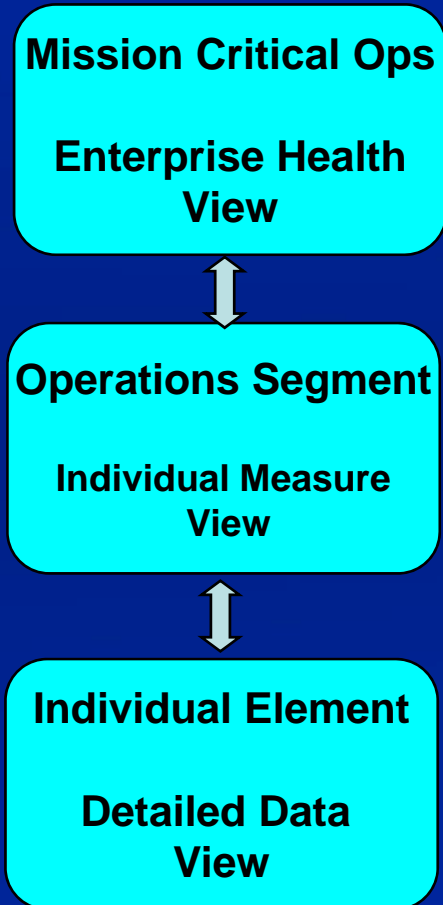
Measurement Application in a Hierarchy

Enterprise Management
- Performance Measurement
- Technical and Business Policy
- Enterprise Decision Analysis
- Strategic Oversight

Organizational/ Business Unit Management
- Process Improvement Insight
- Project Planning Guidelines
- Performance Based Guidelines
- Organizational Baselines / Thresholds
- Organizational Decision Analysis

Project Management
- Project Estimation & Planning
- Project Performance Tracking
- Project Decision Analysis
- Resource Management
- Project Baselines/Thresholds

Risk & Quality Management Processes

Issue-Driven Measurement Process

© **Practical Software Measurement: Objective Information for Decision Makers, Addison-Wesley; McGarry, Card, Jones, Layman , Clark , Dean , Hall**
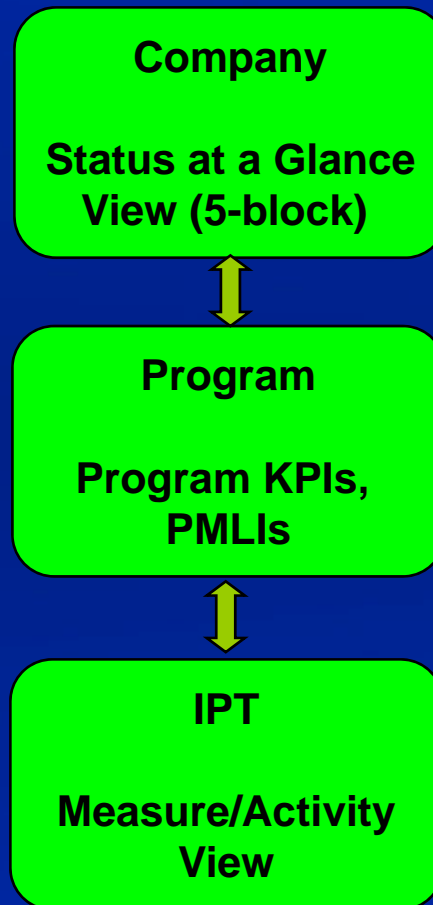
Measurement Hierarchies and Objectives

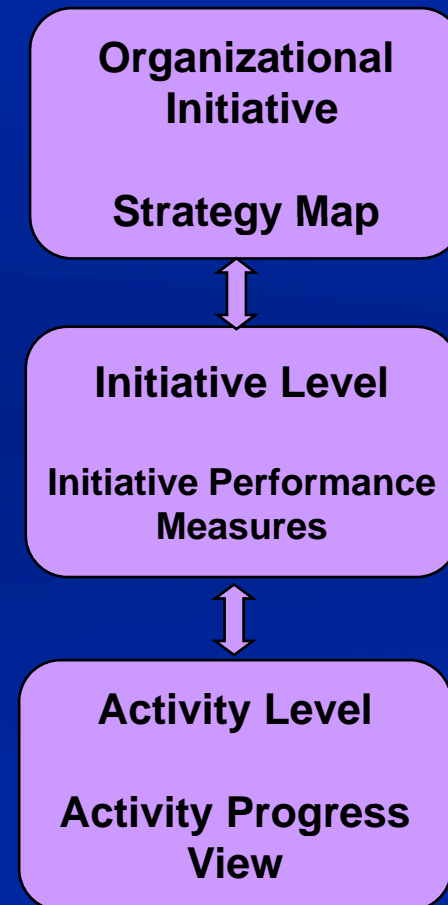## Operational
Monitor real-time processes

Tactical
Track Program/Org Goals

Strategic
Strategic Objectives

Operational	Tactical	Strategic
Mission Critical Ops **Enterprise Health View**	**Company** **Status at a Glance View (5-block)**	**Organizational Initiative** **Strategy Map**
Operations Segment **Individual Measure View**	**Program** **Program KPIs, PMLIs**	**Initiative Level** **Initiative Performance Measures**
Individual Element **Detailed Data View**	**IPT** **Measure/Activity View**	**Activity Level** **Activity Progress View**

Use a chartered improvement event
- The Sponsor or the Team Leader should be the decision maker at the top
  – Useful to have insight to the level(s) above
- Top level information needs discussion in advance
- Participants should include decision makers at the levels of the hierarchy
- Build the measurement plan capturing decision points and assumptions.

Aggregation can be useful

- Provides a roll-up of all of the related measures in a hierarchy
  (TPMs, e.g. Launch weight, Resource budgets)
- Can provide an aggregate error for a measure (alignment, error budget)
- Simple to understand a roll-up versus a target

Aggregation can be misleading

- Aggregating a Measure – What information is lost?
- Are like measures being aggregated?
- Is the aggregation being done by phase, by measure type?

Decision Making Considerations

Decision Support

- Consider the Information "Load" of each level of the hierarchy
- Each level should have enough information to support the decision

Abstraction

- Upper levels often have more abstraction, with drill down capability

Decision Reference

- Refer back to the original Measurement Planning
  - What were the information needs for each level of the hierarchy
  - What were the possible decisions that could be made as a result of the data
  - What assumptions were made.

Measurement Reporting in the Hierarchy

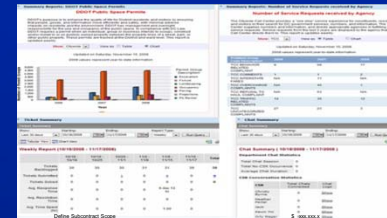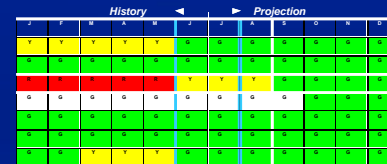| Level	Products	
Enterprise	**Business Review Summary**	
Business Unit	**LOB Reports**	
Line of Business	**Standardized Program Measures**	*History* ◄ ► *Projection*
Program	**Program Scorecards** • **Programmatic** • **Program Priorities**	
Supporting Teams IPTs	**Scorecards Measures Reports**	**Measurement Repository** DB