

Understanding Organizational Performance through Measurement

Practical Software Measurement User's Conference
July 2010

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Distributive Management



Distributive  Management

About Distributive

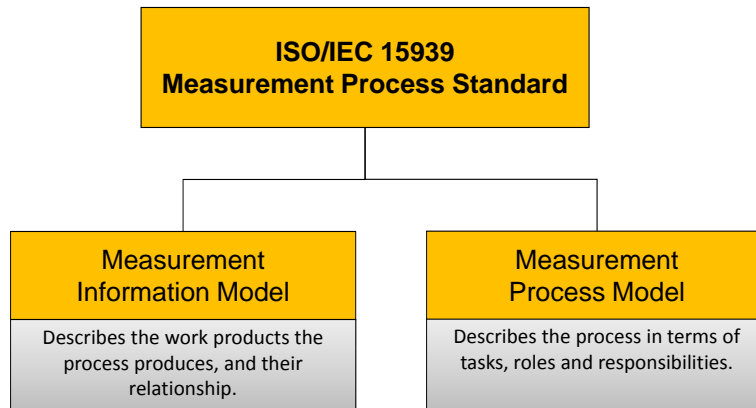
- Market, sell and support the DataDrill measurement tool for collection, storage, analysis and reporting
- DataDrill currently in use at over 300 sites in US, Europe and Asia primarily high maturity (with 95% at CMMI level 3+)
- Distributive has privilege of implementing or expanding measurement processes in environments using advanced practices – we get to visit a lot of processes in many different applications



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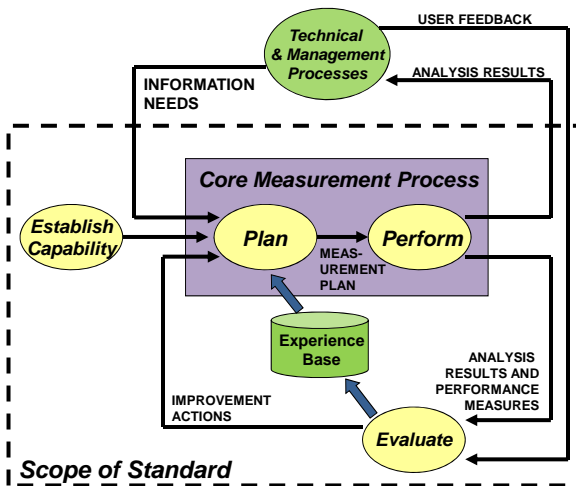
1. ONE PROCESS – MANY USES

Measurement Standard



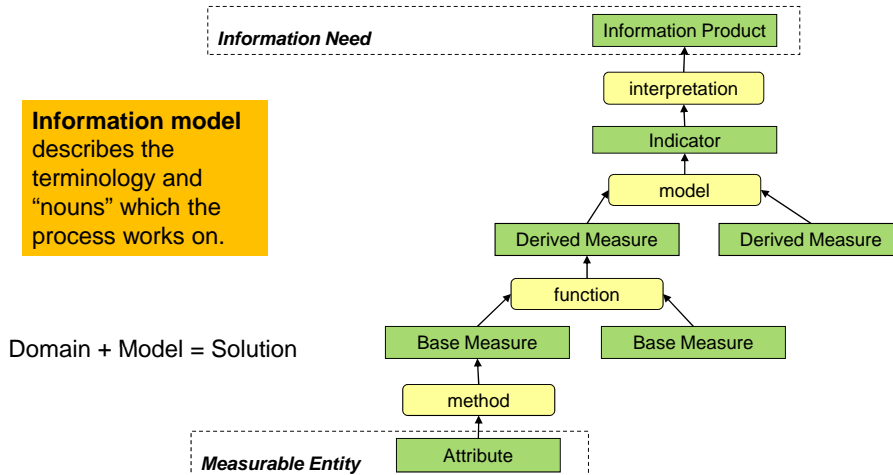
Measurement Process Model

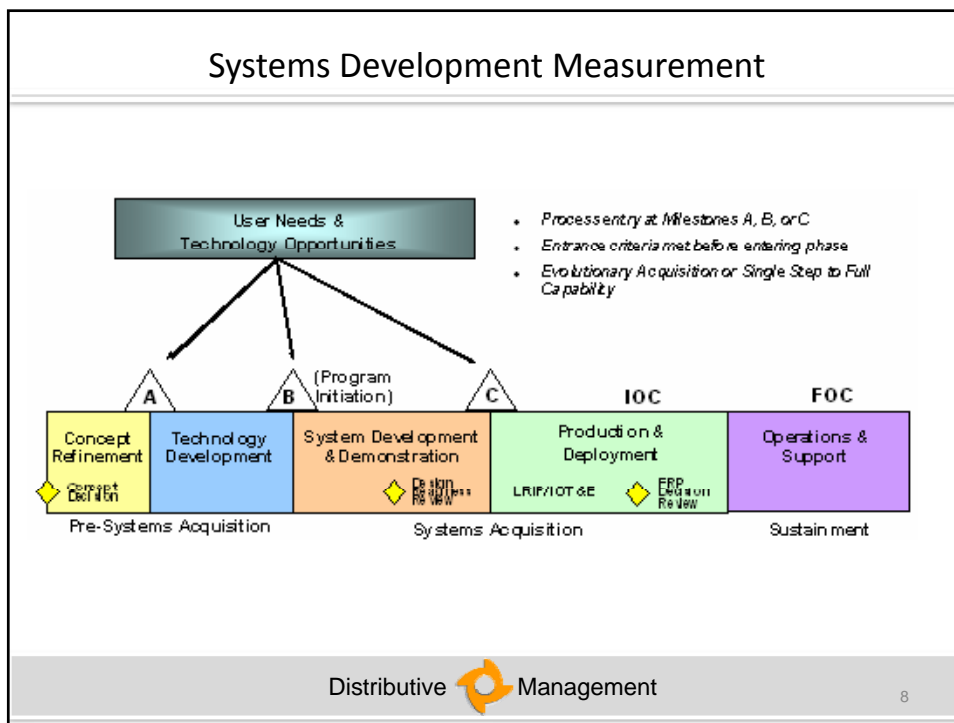
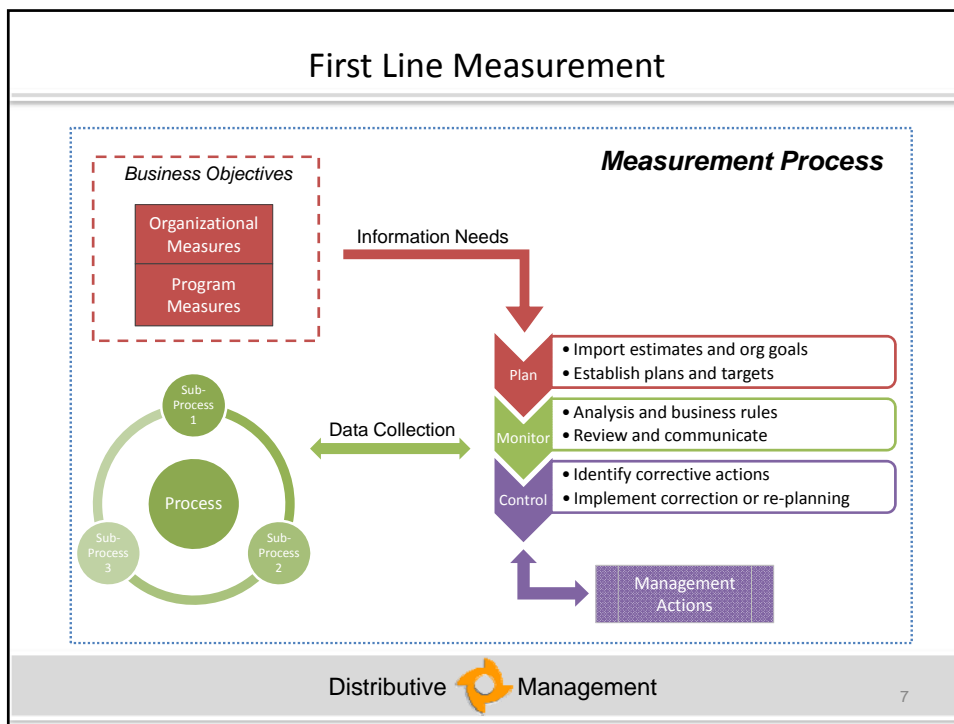
Process model describes the activities and tasks that an organization performs to satisfy the information needs of managers. There is always a trade-off between readability and adoption.

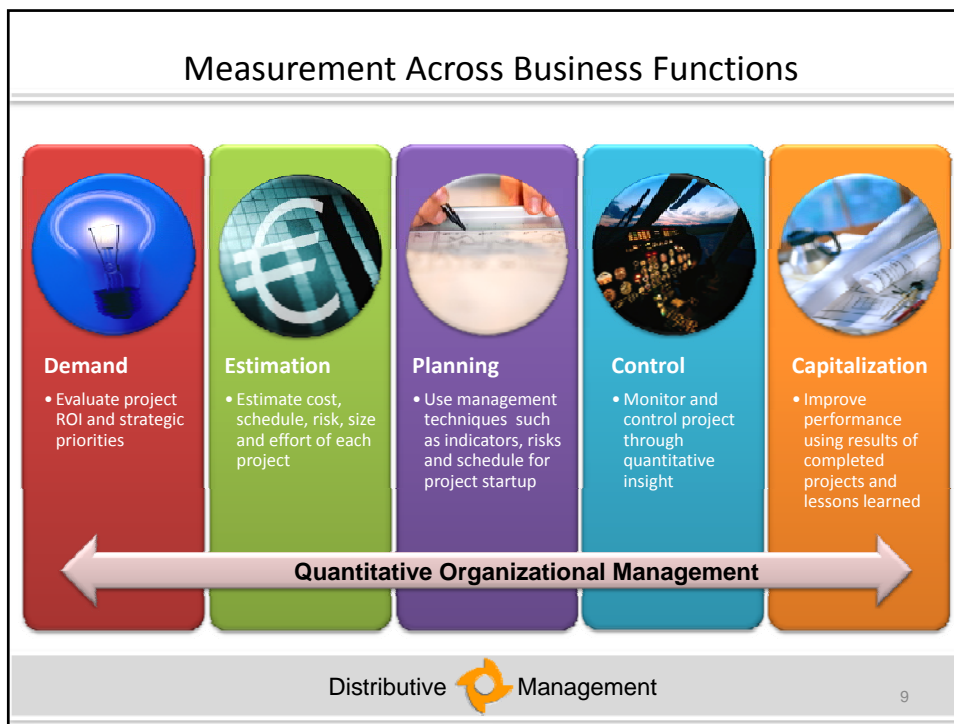


Measurement Information Model

Information model describes the terminology and "nouns" which the process works on.







Audience Challenge

Does the guidance encourage the desired practice or behavior?

**2. ORGANIZATIONAL
MEASUREMENT SCENARIOS**

Why We Need Organizational Measurement?

To create a program or business unit view of project and process data to form higher level pictures of progress

To group program, project and team measurement data so that it is valid for making organizational decisions

Some practices, such as estimation and defect prediction, require parameters that must be tuned using organizational data

To identify the organizational process areas that are most unstable (have the greatest difference from their plans) so they can be fixed first

To provide evidence that process change is resulting in higher capability (i.e. defect removal process results in higher product quality)

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13

Measurement Supports Specific Activities

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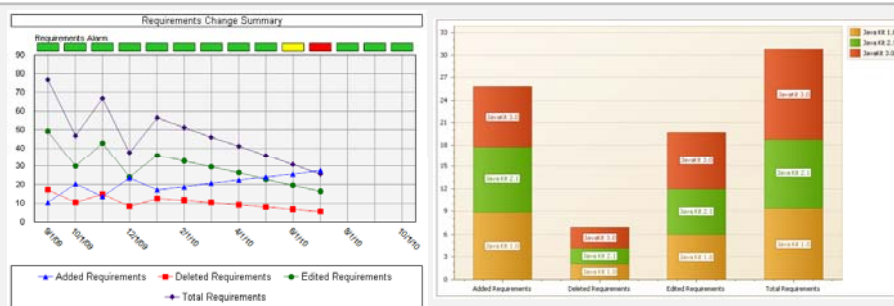
    graph TD
      Manager((Manager)) <--> Activity((Activity))
      Activity <--> Decision{Decision}
      Decision <--> Information((Information))
      Information <--> Analysis[Analysis or Technique]
      Analysis <--> Data((Data and Attributes))
      
      subgraph Measurement_Process [Measurement Process]
        Decision
        Information
        Analysis
        Data
      end
  
```

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14

Activity Scenarios for Organizational Measurement

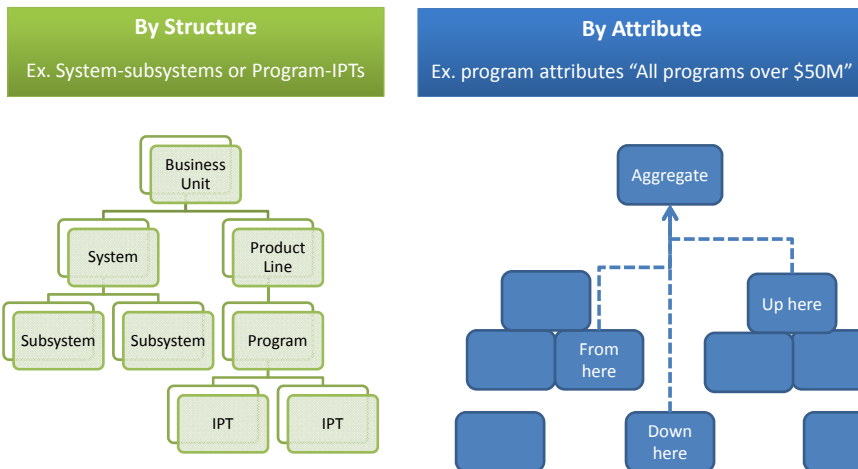
1. **Aggregate** project data for monitoring and oversight
2. **Characterize** organizational performance
3. **Support estimation** (parametric, PPM or other)
4. **Benchmarking**
 - a) Compare performance against internal programs and divisions
 - b) Compare performance against industry/competitors

1. Aggregation

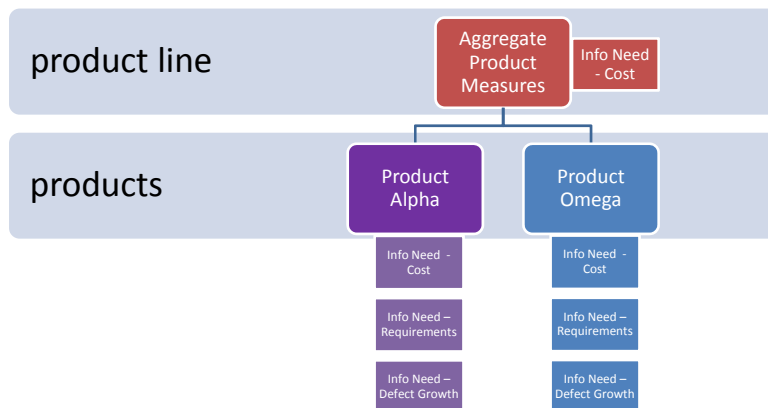


Series	Unit	9/1/2009	10/1/2009	11/1/2009	12/1/2009	1/1/2010	2/1/2010	3/1/2010	4/1/2010	5/1/2010	6/1/2010	7/1/2010
Added Requirements		18.78	20.35	21.91	23.48	12.52	13.57	14.61	15.65	16.70	17.74	18.78
	Java KR 1.0	4.17	4.70	5.22	5.74	6.26	6.78	7.30	7.83	8.35	8.87	9.39
	Java KR 2.1	4.17	4.70	5.22	5.74	6.26	6.78	7.30	7.83	8.35	8.87	9.39
	JavaKR 3.0	10.43	10.96	11.48	12							
Deleted Requirements		11.18	10.13	9.39	8.35	7.65	6.96	6.36	5.67	4.87	4.17	3.18
	Java KR 1.0	5.22	4.87	4.52	4.17	3.83	3.48	3.13	2.78	2.43	2.09	1.74
	Java KR 2.1	5.22	4.87	4.52	4.17	3.83	3.48	3.13	2.78	2.43	2.09	1.74
	JavaKR 3.0	1.04	0.70	0.35	0							
Edited Requirements		33	30	27	24	22	20	18	16	14	12	10
	Java KR 1.0	15	14	13	12	11	10	9	8	7	6	5
	Java KR 2.1	15	14	13	12	11	10	9	8	7	6	5
	JavaKR 3.0	3	2	1	0							
Requirements Alarm		green	green	green	green	green	green	green	green	green	yellow	red
	Java KR 1.0	green	green	green	green	green	green	green	green	green	yellow	red
	Java KR 2.1	green	green	green	green	green	green	green	green	green	yellow	red
	JavaKR 3.0	green	green	green	green	white	white	white	white	white	white	white
Total Requirements		51.65	46.96	42.26	37.57	34.43	31.30	28.17	25.04	21.91	18.78	15.65
	Java KR 1.0	23.48	21.91	20.35	18.78	17.22	15.65	14.09	12.52	10.96	9.39	7.83
	Java KR 2.1	23.48	21.91	20.35	18.78	17.22	15.65	14.09	12.52	10.96	9.39	7.83
	JavaKR 3.0	4.70	3.13	1.57	0							

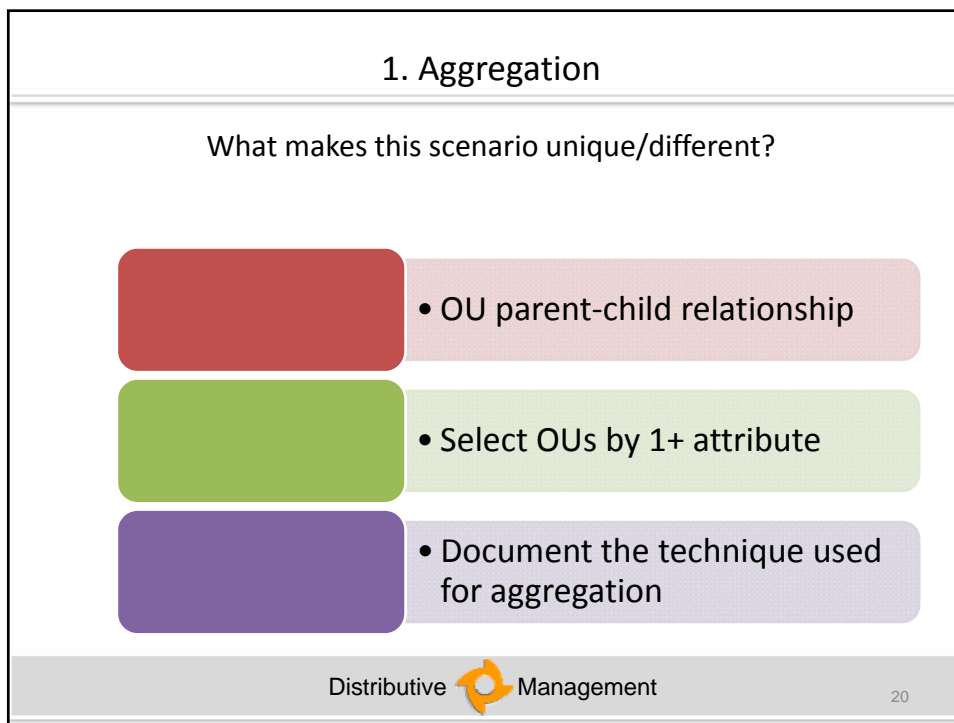
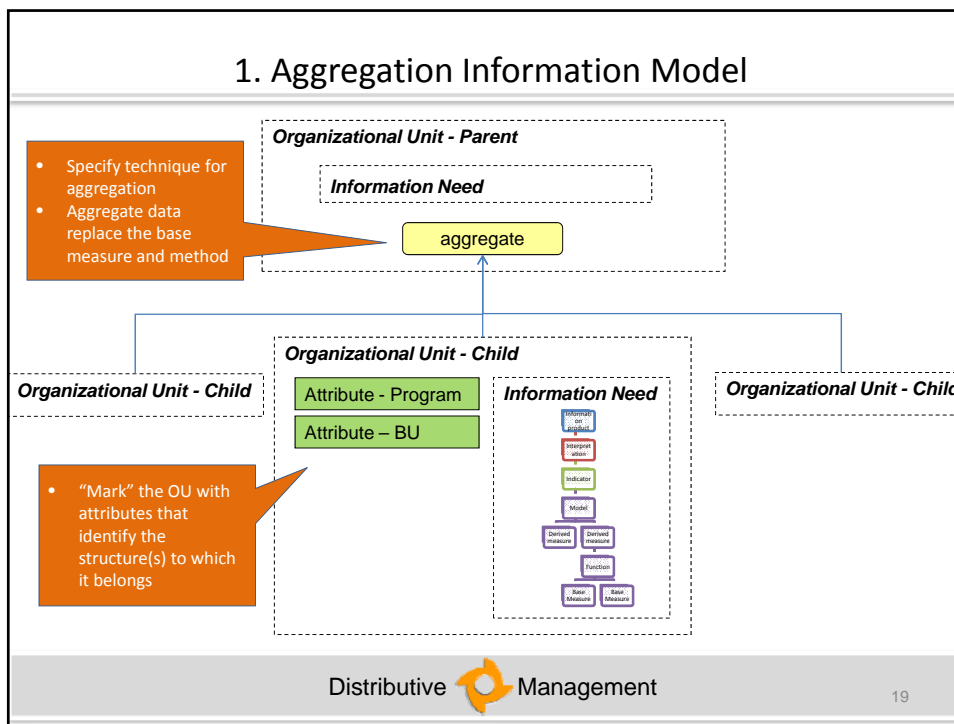
1. Aggregate – Scenarios



1. Aggregation



- Assumptions
- A measurement repository of ongoing, active projects
 - Each project uses same information need definitions



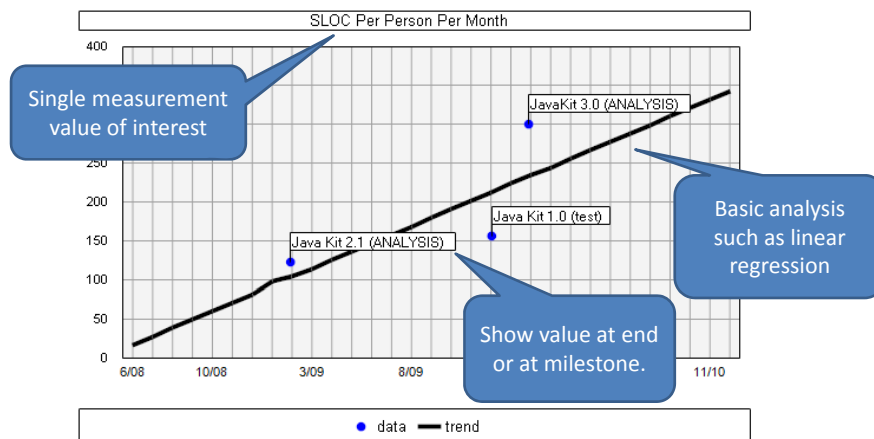
2. Characterize Organizational Performance

- Executives use organizational performance measures to monitor/verify output and efficiency (changes over time) to:
 - Achieve strategic goals
 - Realize benefit of investment and process improvements
- Process engineers use organizational performance to establish baseline at the appropriate level (process, program, parametric)
 - Initial characterization of process and processes
 - Establish limits for/reduce process variation

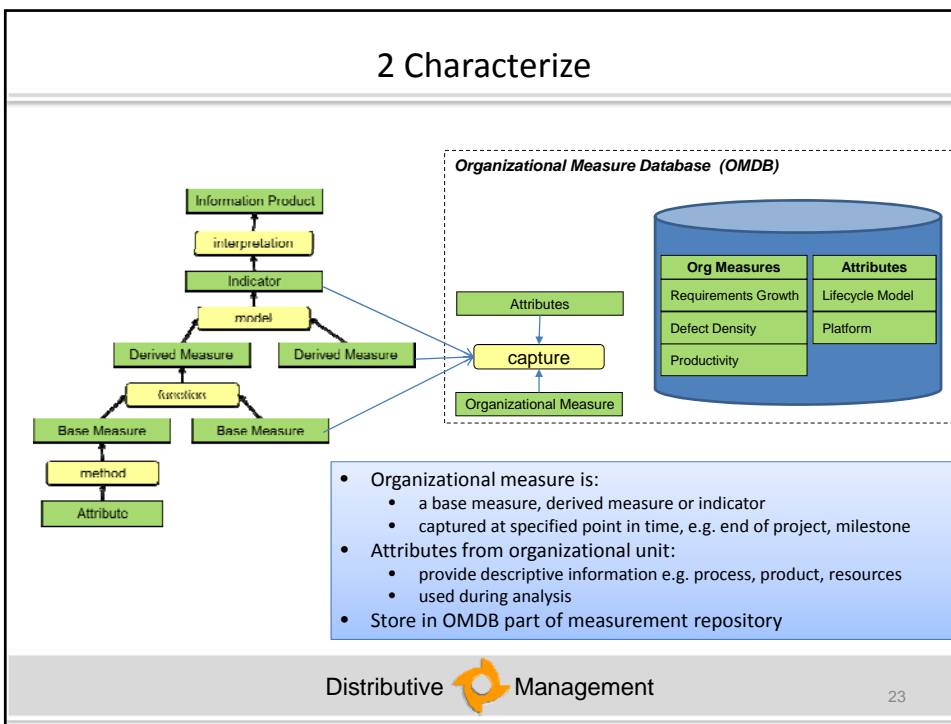
Unlike aggregation, characterization casts as wide a net as possible, using attributes to select the correct fish

2. Characterize

Organization wants to know:
Are we getting better in this specific area?



2 Characterize



2. Characterize

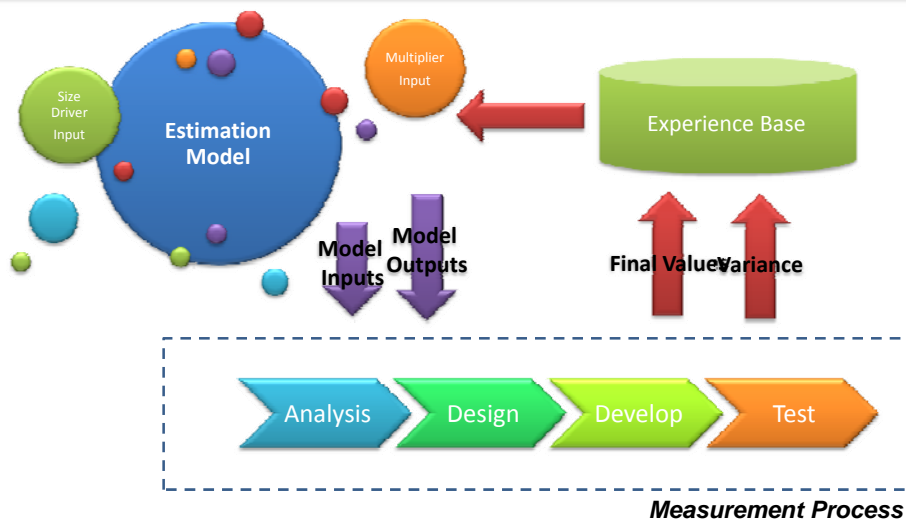
What makes this scenario unique/different?

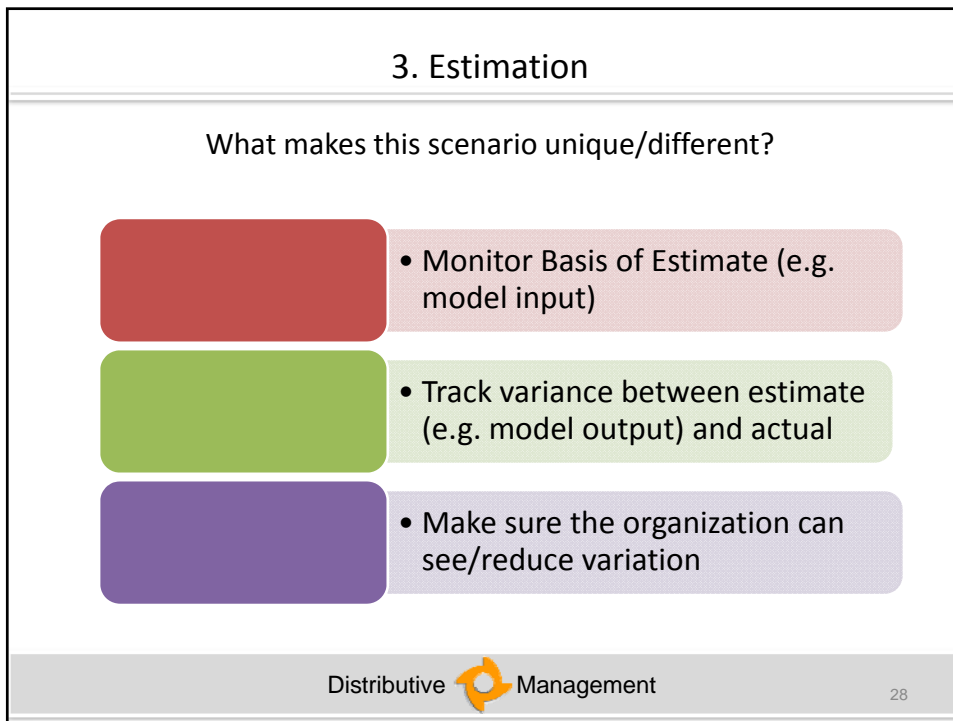
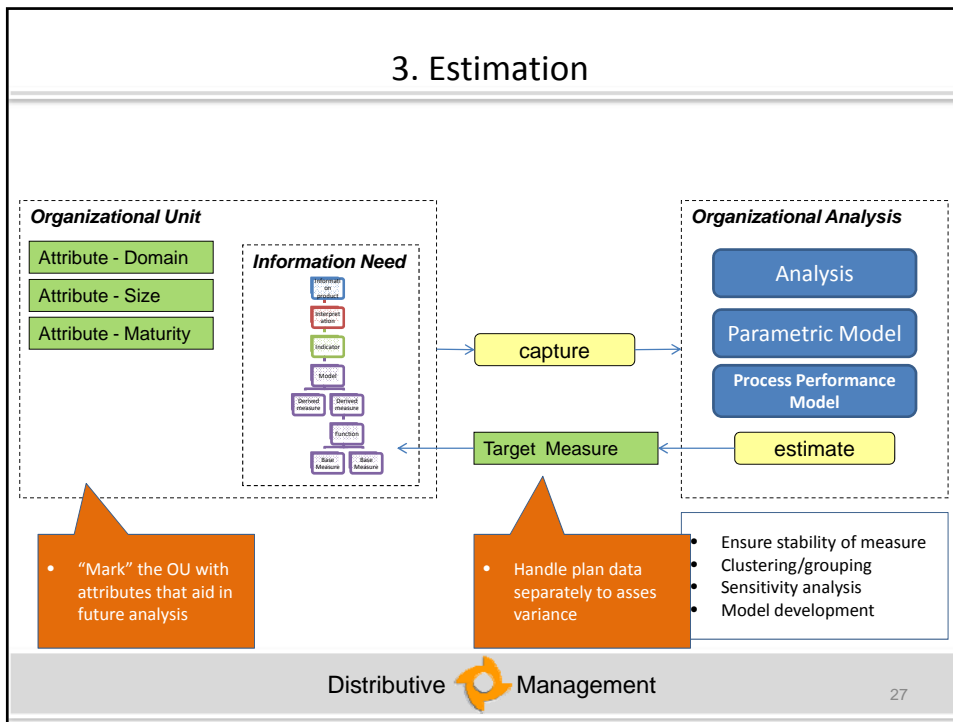
- Concept of an organizational measure
 - Extracted at key points
 - Either base meas, derived meas or indicator
- Select OUs by 1+ attribute
- Make sure the data is suitable for the most common types of analysis (e.g linear regression)

3. Estimation

- Estimators and Enterprise Planners
 - Use measurement data to establish estimation inputs/BOEs
 - Perform analysis outside the measurement process (sensitivity, grouping, clustering, etc.)
- Program Managers
 - Monitor that project does not deviate too far from the estimation outputs (assumes tracking of actual versus estimate)
 - Verify that their project is within tolerance of BOEs
- Acquirers
 - Need to develop models for new programs and follow-on phases
 - Data is typically sparse
 - Don't have complete program measurement data, only organizational measures at key project milestones ... maybe.

3. Estimation



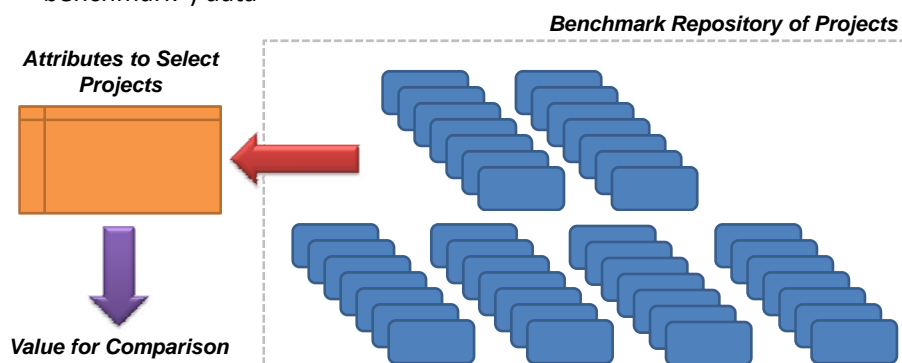


4. Benchmarking

- Capture program data for programs not in the organizational measurement repository ... this could be completed/historical programs or secure/disconnected programs
- Import data from industry repositories (ex. Gartner, ISBSG or Promise) or from other Business Units
- Compare specific organizational measures within your organization to those from other sources

4. Benchmarking

- Organizations want to compare their performance with that of other companies in the same/similar industries
- Compare organizational performance data to external performance (i.e. “benchmark”) data



4. Benchmarking

What makes this scenario unique/different?

- Use attributes to select the applicable projects for comparison

- Sub-select an organizational measure

- Monitor benchmark and provide relevant comparison criteria

3. SUMMARY

Definition

Organizational measurement is analysis performed and information created by analyzing measurement data from two or more projects/programs/O.U. s(?) for the benefit of the next level of the organization.

Summary

- Clarify the types of activities that are considered “organizational”
- Start a discussion about what techniques are applicable and how measurement supports them
- With just a little “glue” added to the terminology, organizational measurement techniques are more easily accessible to potential adopters
- Measurement becomes more central in the critical business practices where measurement is often not well integrated
- Measurement process is more cost-effective, as it supports more users by supporting more functions

Question & Answer



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