

***Practical Software and Systems Measurement***

***Slides #2-7 are intro slides used in general session***

***Slides #8-26 are workshop slides***

***Slides #27-33 are outbrief slides from Friday, 18 July***

PSM 1

July 2008

***Practical Software and Systems Measurement***

***Practical Software and Systems Measurement***

***A foundation for objective project management***



***Measuring in Services Mgt***

***Tuesday, July 15th***

***Beth Layman***

***PSM Users Group Conference***

***14-18 July 2008***

***Mystic, Connecticut***

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## ***Practical Software and Systems Measurement***

### ***Measuring in Services Management***

- ***Service Management***
  - ***Focus on ongoing IT service operations - day-to-day activities (vs. projects)***
  - ***Involves the operation of hardware, software, applications, data, and networks needed to run the business***
- ***Industry models: ITIL, ISO/IEC 20000, eSCM-SP, COBIT, eTOM, and SMBOK***
  - ***Process Areas we'll focus on – Event, Incident, Problem, Release, Change Mgt; Request Fulfillment, Service Desk, Capacity Management***
- ***Measurement is key to effective management***

## ***Practical Software and Systems Measurement***

### ***Objectives of the Workshop***

- ***Begin to examine the proper use of measurement in service management/service operations***
- ***Develop a preliminary list of common information needs and potential measures that are useful in this domain***
- ***Provide lessons learned, barriers, data quality issues, best practices, how to establish baselines, etc.***
- ***Provide examples of good practice***

## ***Practical Software and Systems Measurement***

### **Workshop Agenda**

<b>1:30 – 2:00</b>	<b><i>Introductions – Participant Analysis</i></b> <i>-Your role in Ops, models your shop uses, maturity of shop</i>
<b>2:00 – 2:30</b>	<b><i>Review of ITIL process areas of focus</i></b> <i>-Mapping to org structures, technology</i>
<b>2:30 – 3:00</b>	<b><i>Common issues &amp; information needs in ops shops</i></b> <i>-brainstorming &amp; discussion</i>
<b>3:30 – 4:00</b>	<b><i>Available examples of measures to meet needs</i></b> <i>-Show-and-tell; best practices</i>
<b>4:00 – 5:00</b>	<b><i>Drafting of ICM entries/measurement specs</i></b> <i>-break outs</i>

## ***Practical Software and Systems Measurement***

### **Workshop Background**

- ***PSM history in this area***
- ***Where we're heading***
- ***Issues, questions, and topics***

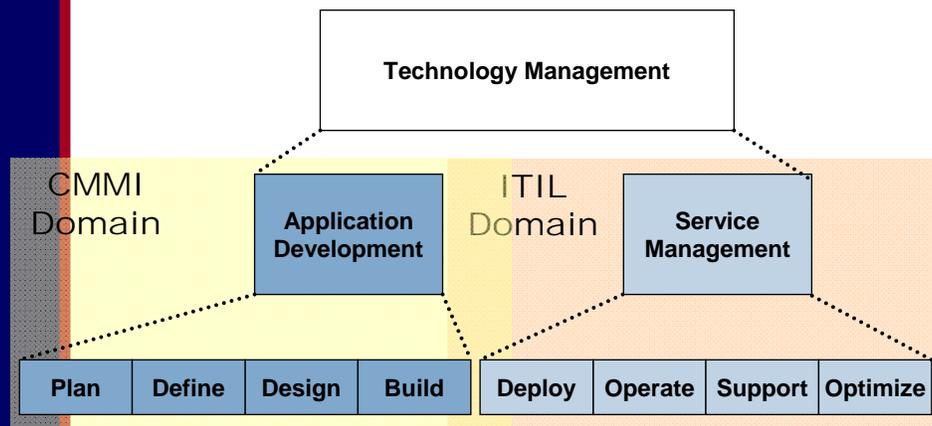
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**Intended Output**

- *Drafted ICM table*
- *Recommendations/plans for continued evolution*

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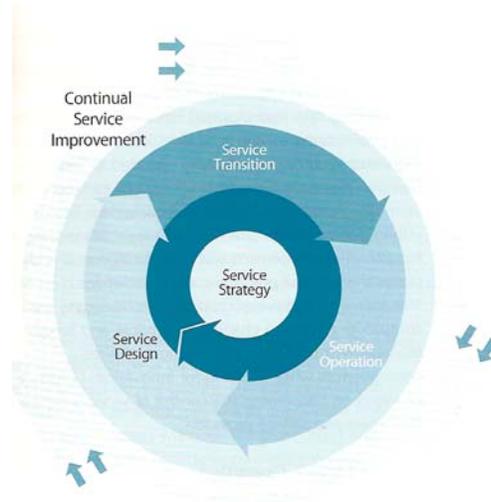
**Service Management in Context**



Source: ITIL: Application Management (2002, p.7)

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**IT Infrastructure Library (ITIL)**



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**Initial PSM-ITIL Areas of focus**

**Units of Work**

- **Change Management (Transition)**
- **Incident & Problem Management (Ops)**
- **Request Fulfillment (Ops)**
- **Event Management (Ops)**

**Capacity Management (Design)**

- **Personnel**
- **Hardware, SW, Network, etc.**

Looking at these areas as a starting point will help with SLM

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## **Change Management**

- **Change Request (RFC): A formal proposal for a change to be made.**
  - **Examples: Push application release into production, fix a production problem**
    - **An implementation of new functionality**
    - **Any repair to an interruption of service**
    - **Any repair of existing functionality**
    - **Any removal of existing functionality**
  - **Change Advisory Board (CAB)**
  - **Issues: Unauthorized changes, unsuccessful changes, emergency changes**
  - **Considerations: Risk of making the change, Relationship to other activities, Return expected if change is made**

## **Incident/Problem Management**

- **Incident: Any unplanned interruption to an IT service or reduction in the quality of the service**
- **Problem: The CAUSE of one or more incidents**
  - **Reporting Sources**
  - **Categories**
  - **Urgency, Prioritization, Impact**
    - **SLA – timescales**
  - **Incident: Problem relationship**
  - **Status**
  - **Resolution (and Satisfaction with)**

## **Request Fulfillment**

- **Request: Demands placed on IT by the users (Help Desk/Service Desk)**
  - Give access to user, install SW, move a PC
  - These things can and should be planned (vs. incident)
    - When needed

## **Event Management**

- **Event: Any detectable occurrence that might cause a deviation to service**
  - **Categories:**
    - **Normal Events:** Scheduled operation starts, completes; user logs into an application,
    - **Exception Events:** Smoke, fire, license violation, security (intrusion detection), application failure, poor server performance
- **Significance Categorization**
  - Informational, Warning, Exception
- **Event Response**

## **Capacity Management (HW/SW)**

- **Monitoring performance, utilization patterns, and throughput**
- **Levels, layers, and relationships are important**
  - **Business: Number of orders processed**
  - **Service: Transaction rates/response times**
  - **Component: Network link performance**

## **Capacity Management (People)**

- **Workload → Resource relationship**
- **Issues: Not enough personnel to meet SLA targets, given current/projected workloads**

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### **Insights Needed**

- **Monitor and Control Operations**
  - (SLA) targets being met
- **Stability of Operations**
- **Predicting Future Needs**
  - e.g., Volumes = Workforce
- **Improvements over time**

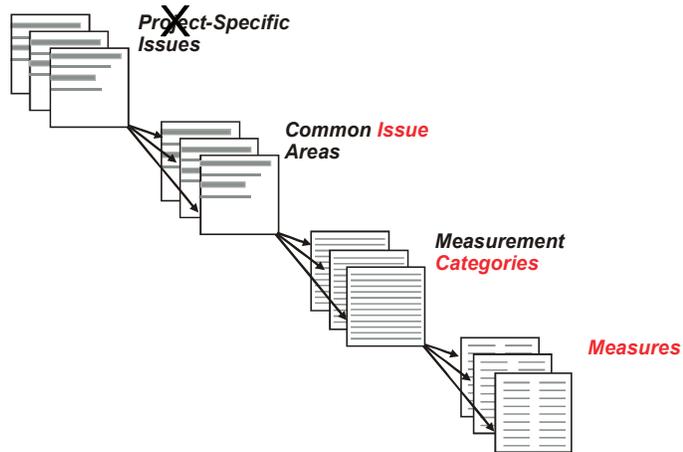
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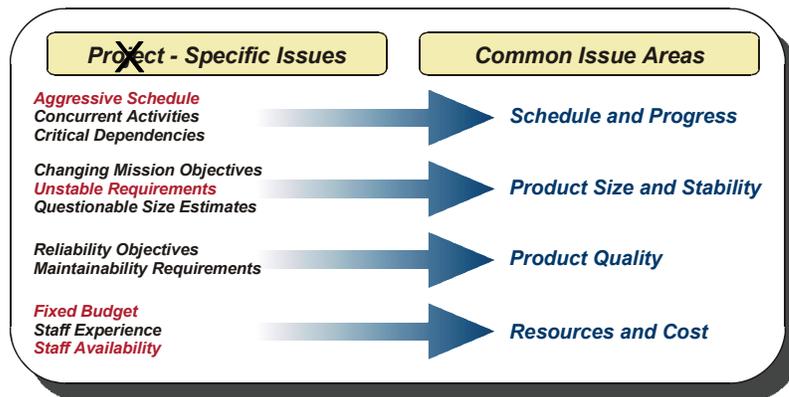
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**Thinking about an ICM Table**



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**Issue Mapping**



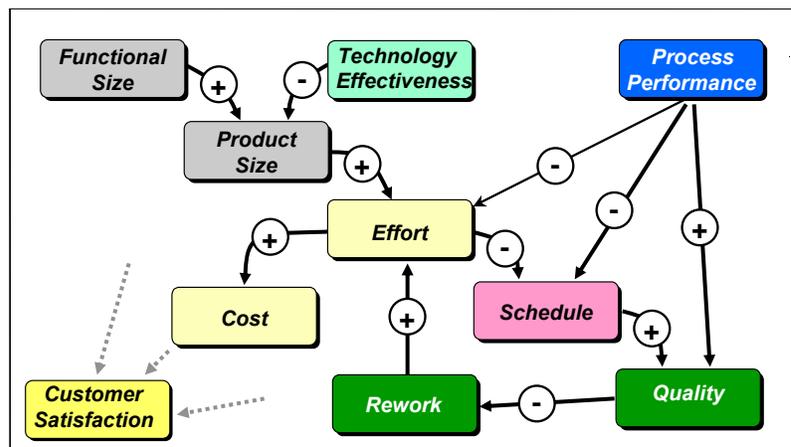
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## Practical Software and Systems Measurement

### Existing PSM – Related Areas



## Practical Software and Systems Measurement

### PSM Mapping of Issues, Categories, and Measures

Issue - Category - Measure Mapping		
Common Issue Area	Measurement Category	Measures
Schedule and Progress	Milestone Performance	Milestone Dates Critical Path Performance
	Work Unit Progress	Requirements Status Problem Report Status Review Status Change Request Status Component Status Test Status Action Item Status
	Incremental Capability	Increment Content - Component Increment Content - Functionality
Resources and Cost	Personnel	Effort Staff Experience Staff Turnover
	Financial Performance	Earned Value Cost
	Environment and Support Resources	Resource Availability Resource Utilization
Product Size and Stability	Physical Size and Stability	Database Size Components Interfaces Lines of Code Physical Dimensions
	Functional Size and Stability	Requirements Functional Change Workload Function Points

## Practical Software and Systems Measurement

### PSM Mapping of Issues, Categories, and Measures (cont)

Issue - Category - Measure Mapping		
Common Issue Area	Measurement Category	Measures
Product Quality	Functional Correctness	Defects Technical Performance
	Supportability	Time to Restore Cyclomatic Complexity Maintenance Actions
	Efficiency	Utilization Throughput Timing
	Portability Usability Dependability	Standards Compliance Operator Errors Failures Fault Tolerance
Process Performance	Process Compliance	Reference Model Rating Process Audit Findings
	Process Efficiency	Productivity Cycle Time
	Process Effectiveness	Escapes Rework
Technology Effectiveness	Technology Suitability Impact Technology Volatility	Requirements Coverage Technology Impact Baseline Changes
Customer Satisfaction	Customer Feedback Customer Support	Survey Results Performance Rating Requests for Support Support Time

## Practical Software and Systems Measurement

### Some examples-1

		Impact		
		High	Medium	Low
Urgency	High	Priority: Severity 1 Response Time: 30 min. Target Resolution Time: 2 hrs.	Priority: Severity 1 Response Time: 30 min. Target Resolution Time: 2 hrs.	Priority: Severity 2 Response Time: 60 min. Target Resolution Time: 8 hrs.
	Low	Priority: Severity 1 Response Time: 30 min. Target Resolution Time: 2 hrs.	Priority: Severity 2 Response Time: 60 min. Target Resolution Time: 8 hrs.	Priority: Severity 3 Response Time: 24 hours Target Resolution Time: Best Effort

Urgency	Description	Ask the question:	Can The User Work?
High	<ul style="list-style-type: none"> <li>Critical Server Outage</li> <li>Network Outage</li> <li>Key Application Outage</li> <li>Critical User</li> </ul>		No
Medium	<ul style="list-style-type: none"> <li>Non-critical Server Outage</li> <li>Non-essential Application Outage</li> <li>Reduced performance of critical system or network.</li> </ul>		Yes, with some issues
Low	<ul style="list-style-type: none"> <li>No Outage</li> <li>Workaround Available</li> <li>Support Services (installs, office moves, etc.)</li> </ul>		Yes, with no issues or a known error

Impact	Description
High	<ul style="list-style-type: none"> <li>&gt; 5 incidents on same issue</li> <li>&gt; 5 people affected</li> <li>Critical User</li> </ul>
Low	<ul style="list-style-type: none"> <li>&lt; 5 incidents on same issue</li> <li>&lt; 5 people affected</li> </ul>

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## Practical Software and Systems Measurement

### Some examples-2

#### Change Acceptance Rate

- Number of RFCs submitted/rejected
  - High > 99%
  - Accept  $\geq 95\% \leq 99\%$
  - Low < 95%

#### Incidents attributed to Changes

- Number of Incidents/problems resulting from an implemented RFC
- Service Desk is Single Point Of Contact for Customer Incidents (Total Volume)
- High > 95%
  - Accept > 70%  $\leq$  95%
  - Low  $\leq$  70%

#### Percentage Resolved – 1st Call

#### Percentage Incidents Escalated

#### Restore Normal Service 1st Call Avg. Time (Aging)

#### Number of System Outages Due to Out of Space Condition

All systems maintain at least 10% free capacity at all times

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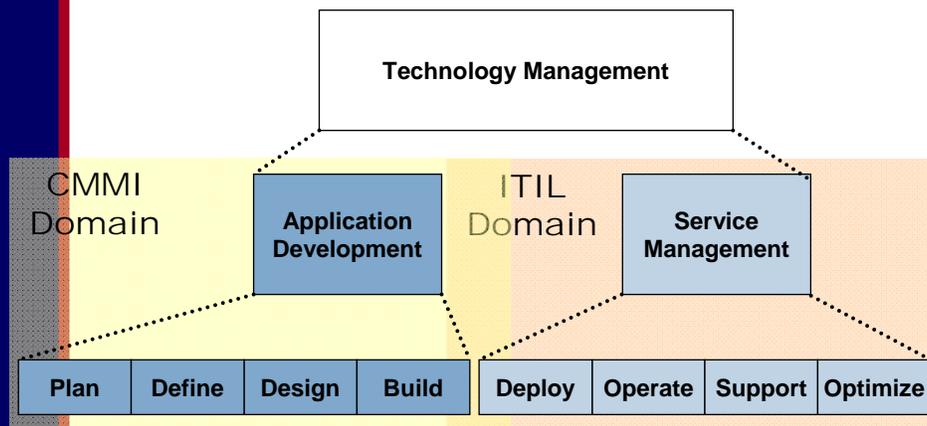
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# **Service Management in Context**



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## **Workshop Areas of focus**

### **Units of Work**

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### **Capacity Management (Design)**

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## **Summary**

- **Most participants had experience living in Service Mgt**
  - *e.g., run help desk, working on organization measurement program, etc.*
- **We identified the issues in Service Mgt we've experienced**
  - *drive the need for measurement to make decisions*
- **We identified some (but not all) of the often-used measures**

## **Workshop Participants**

- *Beth Layman*
- *Allison (ARDEC)*
- *Peter (IBM)*
- *Beth (Pfizer)*
- *Carlos Gonzalez (CPS)*
- *David Herron*
- *David Chao*

## **Conclusions, Recommendations, and Results**

- *This is a (too) data rich environment; challenge is how to use what data to make informed decisions*
- *It looks like the common issue areas of PSM are the same for this domain*
- *However, Customer vs. Service Provider perspectives may be key in covering the domain*
- *We need a few more SME's to form a working group*

## **Next Steps/Action Items**

- ***Pull in more SME's to form a working group***
  - *Please tell Cheryl if you want to be on mailing list*
- ***Draft and fill in the ICM Table for foundational Service Mgt areas***
  - *Map Issues to Common Issues*
  - *Draft Information Needs and clarify key stakeholders*
  - *Develop Measurement Specs*
- ***Expand ICM Table for additional Service Mgt areas***