“Measurement and Analysis: How Can I Optimize My Transition from CMM to the CMMI?”

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Paradigm Shift

- CMM basic measurements are used to determine the ***status of the related software process***
- CMMI measurements and metrics are not the target, but they ***support the achievement*** of the business goals and objectives

A new challenge

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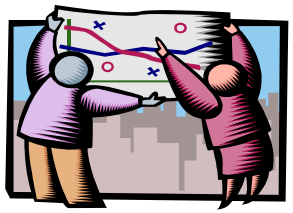
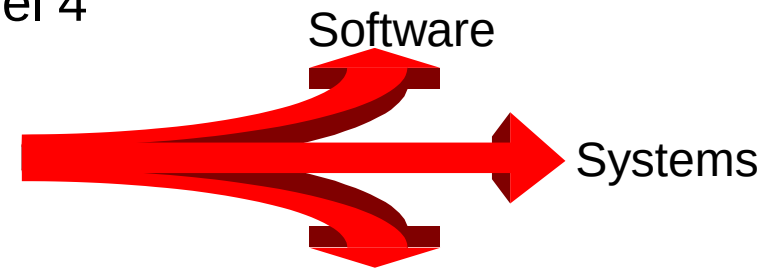
Measurement and Analysis – Process Area

- Measurement and Analysis (MA) is a Key Practice in the CMM
- MA is a Process Area in the CMMI:
  - ✓ It is an integral element that supports ***all*** Process Areas in a cohesive manner
  - ✓ Involves measurements of more than just software processes
  - ✓ Not having a MA ***emphasis*** early in CMM implementation, i.e., Level 2, made it more difficult to achieve Quantitative Project Management at Level 4



Measurement and Analysis



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Moving MA from a Key Practice to a Process Area

- Requires:
  - ✓ Identifying information needs and objectives
  - ✓ Identifying and specifying correct measures
  - ✓ Determining your current/desired measurement capability
  - ✓ Developing processes and methods to define, collect and analyze the measures
  - ✓ Communicating the measures to Stakeholders
- Institutionalization of MA activities includes:
  - ✓ Integrating the MA activities into the processes used by the organization
  - ✓ Using measures as part of a ***cause and effect relationship***
  - ✓ Using measures to ***focus priorities***

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Pre-CMMI Transition

- Take inventory of your current CMM measurements and consider the following questions:
  - ✓ What is needed to benchmark them against the CMMI?
  - ✓ How are they generated?
  - ✓ What's working now?
  - ✓ Where do they reside and who has access to them?
  - ✓ Who is receiving them? Stakeholders?
  - ✓ Who is analyzing the measurements?
  - ✓ What is the frequency of existing measurement report(s)? Is this frequency sufficient for the Stakeholders?
  - ✓ Is there any redundancy across multiple disciplines?
  - ✓ Do they enable business decisions?

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Common Measurement Problems - CMM

- No Measurement Plan/Design
- Measures collected, but not used
- Measurement Repository is questionable
- Misinterpretation of measures collected:
  - ✓ Most measures are collected to satisfy a Key Process Area's requirement:
    - Do not provide insight into the Key Process Area's implementation status/effectiveness
    - Normally, do not provide insight into accomplishment of business goals and objectives
  - ✓ Graphical representations of data ***do not relate to being proactive*** about the data shown, i.e., A good graphic is after the fact.

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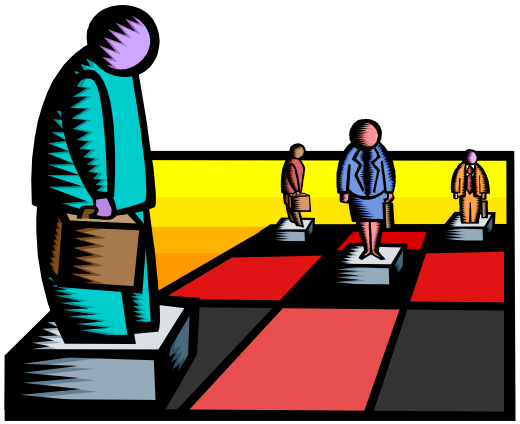
Transition Strategy

- Alignment of processes, products, and services to maximize customer satisfaction
- Customer focused – Results driven
- Strategic – Tactical – Practical
- Integration of MA activities with existing processes



Next Steps

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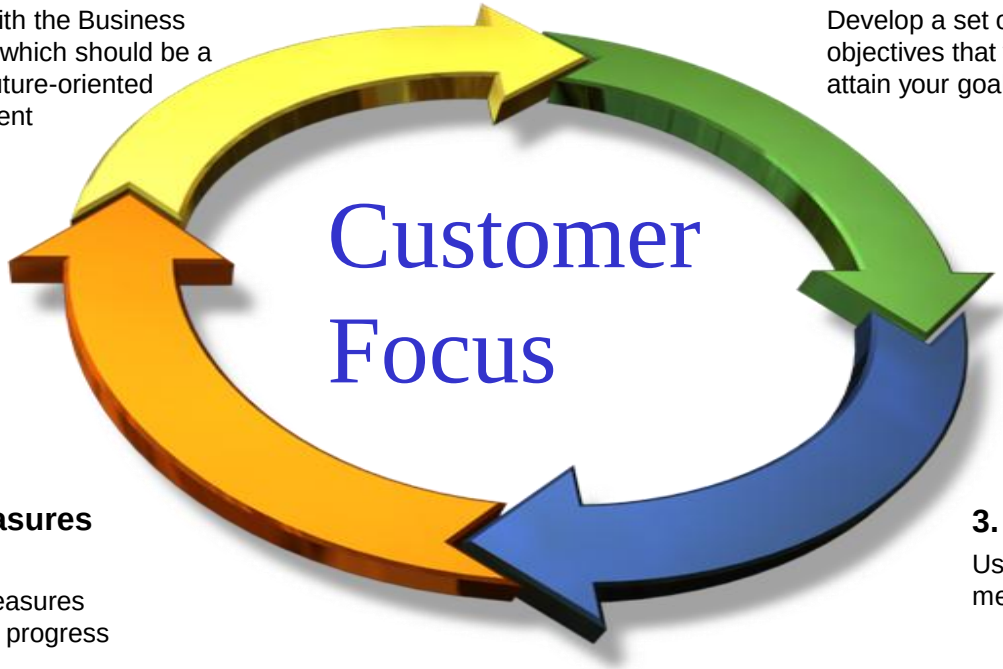
Approach for Continuous Measurement and Analysis

1. Business Goals

Start with the Business Goals, which should be a bold, future-oriented statement

2. Business Strategy

Develop a set of strategic objectives that will help you to attain your goals



4. Practical Measures & Metrics

Develop specific measures and metrics to track progress

3. Tactical Execution

Use objectives to identify the measures that will be used

On-going Implementation

Gather measures, to support information needs, and use it to make decisions.
Incorporate a continuous improvement philosophy in the process

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Motivation for Pragmatic Measurements

- *Communicate Effectively:*
  - ✓ Measurements provide objective information throughout the organization.
- *Track Specific Project Objectives:*
  - ✓ Measurements can accurately describe the status of project processes and products.
- *Identify and Correct Problems Early:*
  - ✓ Measurements facilitate a proactive management strategy.
- *Make Key Trade-off Decisions:*
  - ✓ Every project is subject to constraints and Trade-offs occur to meet established project objectives.
- *Justify Decisions:*
  - ✓ The current technology business environments demand successful project performance. Decisions are based upon objective measures.

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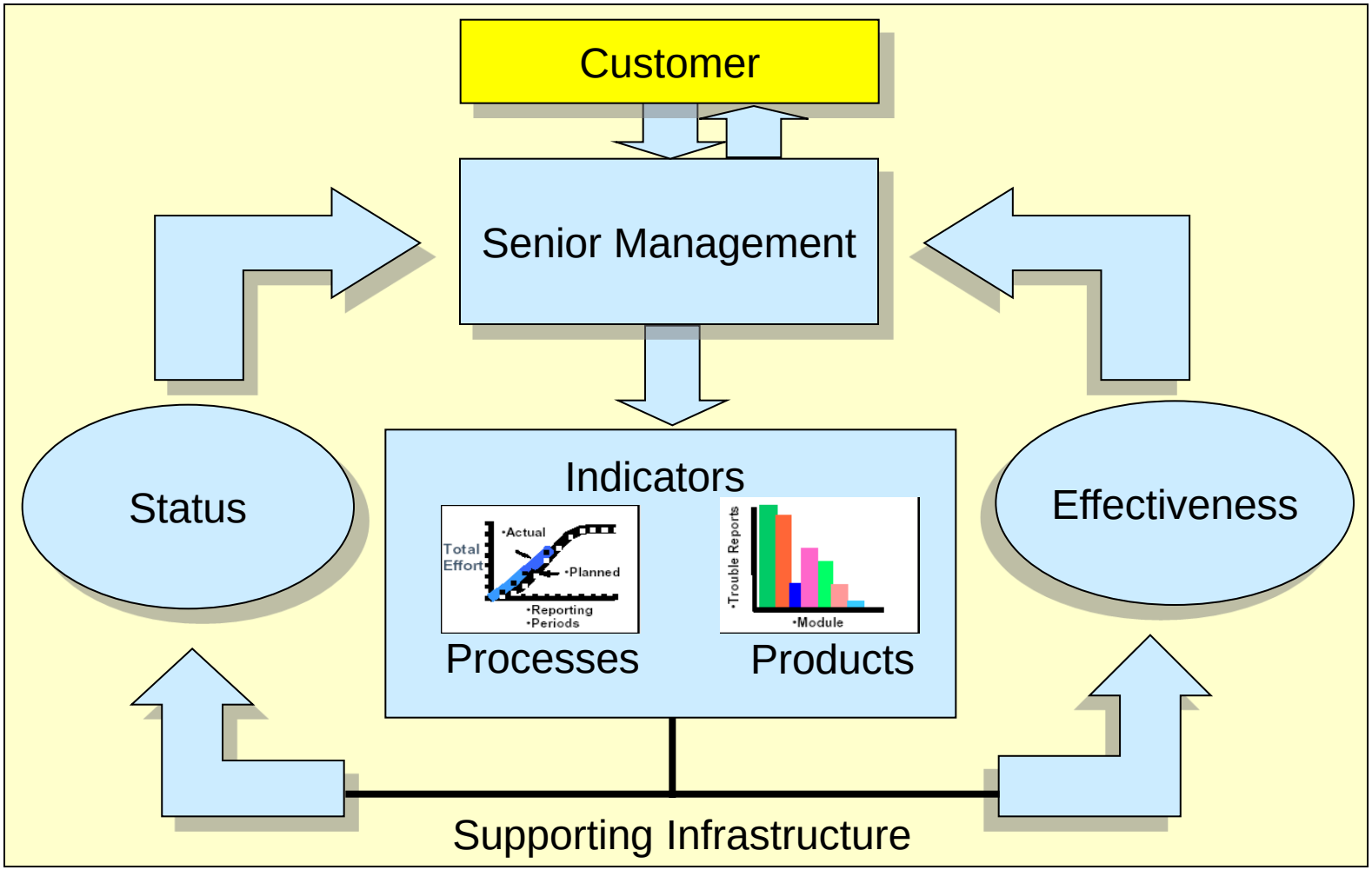
Context for CMMI Measurement Management



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Measurement Plan

- CMMI requires more measurement planning & design considerations:
  - ✓ Information needs
  - ✓ Supporting infrastructure
  - ✓ Involvement of multiple disciplines
- Many organizations transitioning to CMMI from the CMM will have to address the following:
  - ✓ Documenting information needs
  - ✓ Defining measurement objectives
  - ✓ Defining measurement specifications
  - ✓ Establish/Refine collection, storage, and analysis procedures

It's a challenge for the WHOLE ORGANIZATION, not just engineering!

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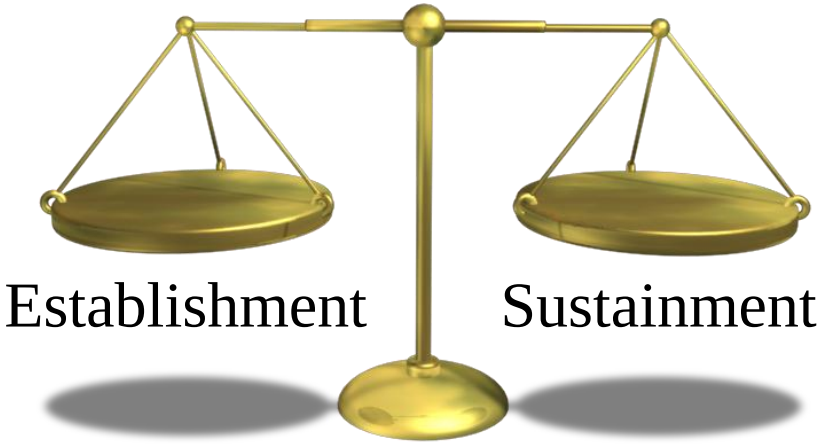
Recommendations

- Keep it simple
- Do it yourself:
  - ✓ Develop your own measurement plan addressing your own organization and primary goals
- Adjust expectations to capability/maturity level:
  - ✓ Go from visibility to improvement
- Make the measurements useful for all involved parties (Stakeholders)



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Measurement Concerns

- Ensure information is of sufficient quality for measurement goals:
  - ✓ Can you trust the data?
- Ambiguous interpretation of data:
  - ✓ If change requests are high, might mean
    - Product quality is low
    - Customers have high expectations
  - ✓ If size is large, might mean
    - Implementation is inefficient
    - Problem is complex

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What to avoid?

- Expensive measurement program:
  - ✓ Large number of measurements of all types of work products
  - ✓ Large number of predefined reports generated on a periodic basis
- Projects being delayed:
  - ✓ Staff is busy collecting and analyzing data on top of the standard metrics activity

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