Implementing the CMMI within an Information Technology (IT) Organization

March 2005

Honeywell

AGENDA

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- Organization Overview
- Information Technology (IT) Diversity
- SEI CMMI IT Sponsorship
- Information Technology Process Group (ITPG) Structure
- Corporate Level ITPG Responsibilities
- SBG Level ITPG Responsibilities
- Sharing Best Practices
- Tailoring the CMMI for the IT Environment
- Incorporating Six Sigma Concepts
- Digitizing Processes - PI Focus is on Data
- Data Collection - Organizational/SBG Level
- Automated Reporting - eProject & Business Objects
- Metrics are Defined in Detail
- Appendix

Organization Overview

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- **Honeywell….**
  - employs over 100,000 people in 95 countries.
  - is a diversified technology and manufacturing leader of
    - aerospace products and services
    - control technologies for buildings, homes and industry
    - automotive products
    - power generation systems
    - specialty chemicals
    - fibers, plastics and advanced materials
  - is organized into 4 Strategic Business Groups (SBGs) and Corporate
  - includes multiple sites within each SBG

Honeywell products touch the lives of most people everyday

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Information Technology (IT) Diversity

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Honeywell IT is includes both applications and infrastructure

- Applications
  - **Commercial off the Shelf (COTS) packages**
  - **ERP solutions**
- Infrastructure
  - **servers, mainframes**
  - **desktops, workstations**
  - **Security**
  - **Telecommunications**
- Project Size (typically)
  - **support - under 40 to 100 hours and includes customizations, upgrades, break-fix work**
  - **small projects - over 100 hours**
  - **large projects - over 400 hours**
- Majority of development is outsourced

All Honeywell IT sites have achieved the equivalent of SEI CMM Level 3 using an internal progress assessment approach

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SEI CMMI IT Sponsorship

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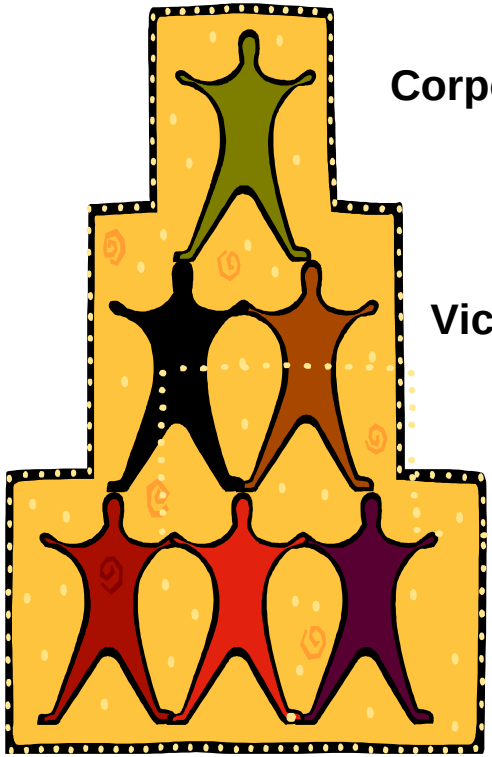

Corporate IT CIO

Vice President Corporate IT

SBG IT Leadership

IT Site Managers / Directors

Sponsorship is at all levels of the IT organization from the CIO to the site directors and managers. This enables key common processes to be established at the highest level of the organization. It also ensures that the IT CMMI initiative is part of the organizational goals.

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Information Technology Process Group (ITPG) Structure

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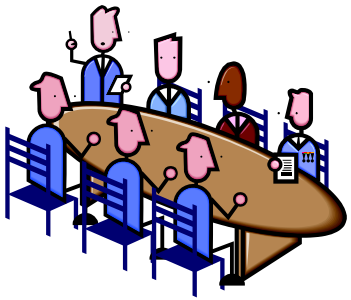

Corporate Level ITPG Lead

Appraisal Team

7 SBG Level ITPG Teams

An ITPG exists at both the Corporate and SBG Levels

Site Level ITPG Member US

Site Level ITPG Member Asia Pacific

Site Level ITPG Member EMEA*

Site Level ITPG Member Canada/Mexico

Each site has representation on the SBG level ITPG

***** EMEA- Europe, Middle East, Africa

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Corporate Level ITPG Responsibilities

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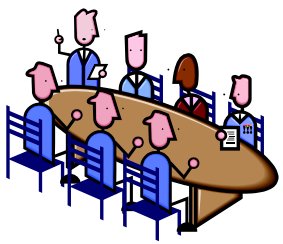
Corporate Level ITPG Lead

- 1 FTE (Full-time employee)
- Reports to the VP of Corporate IT
- Tailors the CMMI for IT
- Trains the SBG level ITPG Leads
- Develops Corporate Metrics
- Runs the Corporate Metrics program
- Holds monthly ITPG Lead team meetings
- Mentors SBG Teams
- Sets basic expectations for SBG processes
- Creates Corporate level standards
  - Process Improvement Plan
  - Metrics Scorecard
  - DFSS training
  - Co-source (SAM) process
  - IT Appraisal Process
- Performs PPQA reviews on Corporate level processes
- Leads Appraisal Team for Honeywell IT



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SBG Level ITPG Responsibilities

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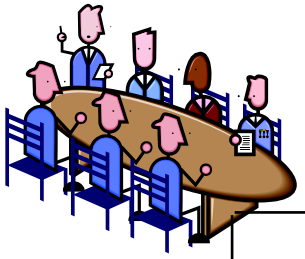

7 SBG Level ITPG Teams

- **Site Level ITPG Member US**
- **Site Level ITPG Member Asia Pacific**
- **Site Level ITPG Member EMEA***
- **Site Level ITPG Member Canada/Mexico**

SBG Level ITPG

- tailors the Corporate IT recommendations to their specific needs
- establishes common processes for the SBG sites
- trains the organization in the new processes
- performs site level PPQA reviews
- prepares for appraisals
- collects and uses corporate and SBG level metrics
- creates Process Action Teams to address process improvement action

Sharing Best Practices

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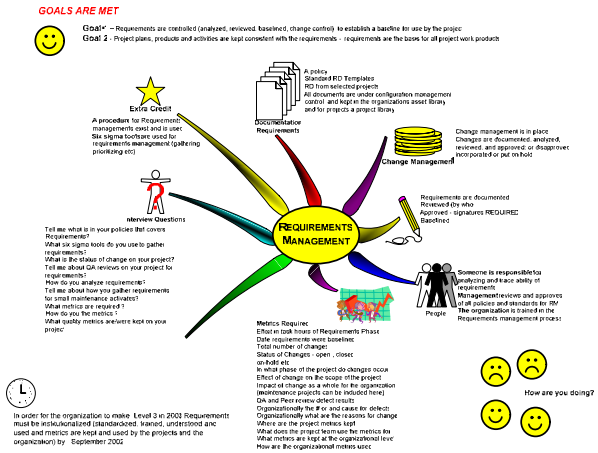
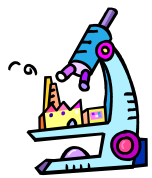


Common training - Corporate ITPG trains the SBG Leads

Corporate ITPG enables the sharing of best practices through organizational-wide ITPG meetings and website

Corporate Metrics Program provides insight and visibility into best practices across the organization



Corporate PPQA Program also provides visibility into best practices

Tailoring the CMMI for the IT Environment

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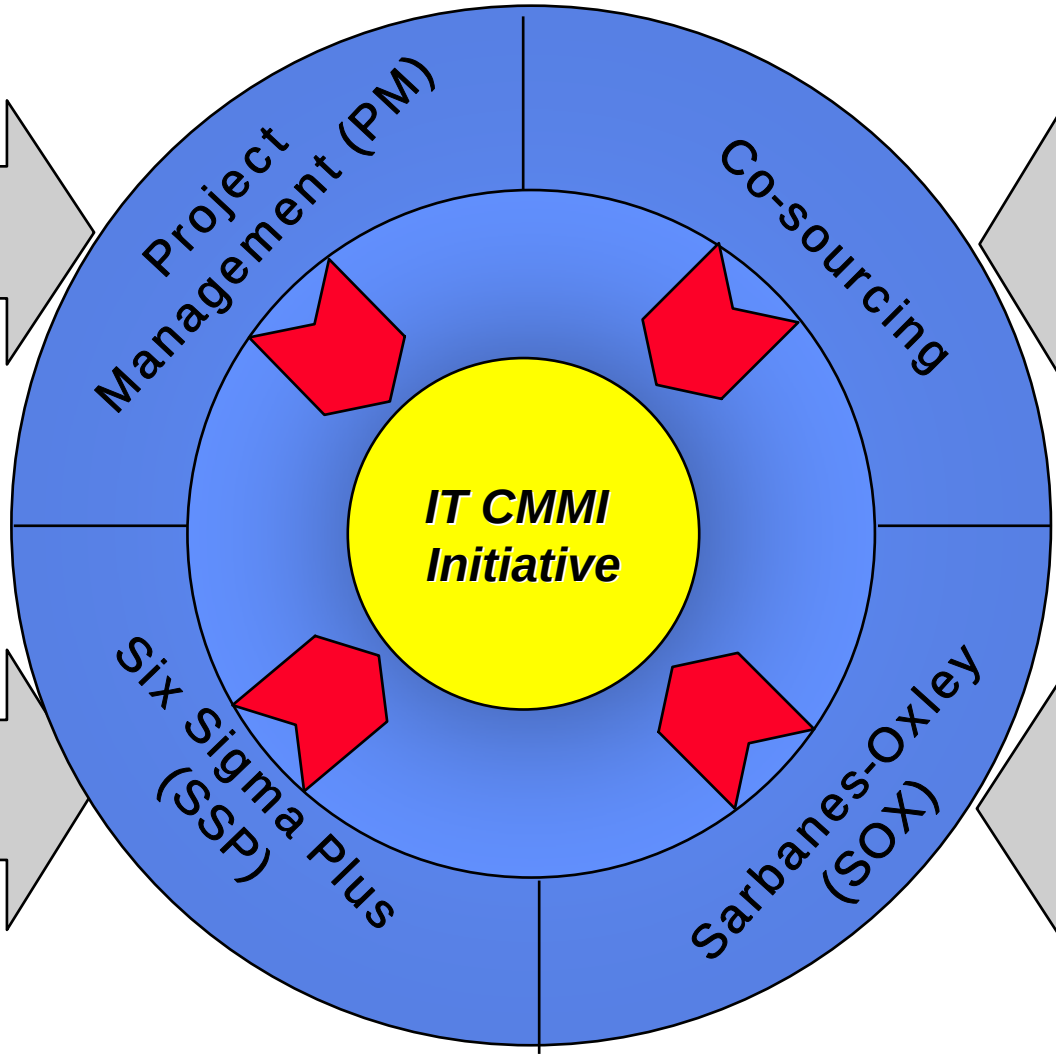
- PM representation on ITPG required
- Processes address Project Management Institute (PMI) concepts
- Organizational training gives an overview of the Project Management Book Of Knowledge (PMBOK)

- SSP representation on ITPG required
- Use of SSP tools built into the CMMI processes
- SSP develops and maintains the SSP training materials and toolset
- SSP tools helped to satisfy DAR and TS Process Areas



- Corporate process
- Corporate co-source team supports the process with PPQA, metrics and training
- Co-source team member on ITPG teams

- CMMI based processes helped HON meet SOX requirements
- SOX representation required on ITPG teams
- CMMI processes address SOX requirements

Collaboration with potentially competing initiatives - the CMMI is not the only bible for Process Improvement

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Incorporating Six Sigma Concepts

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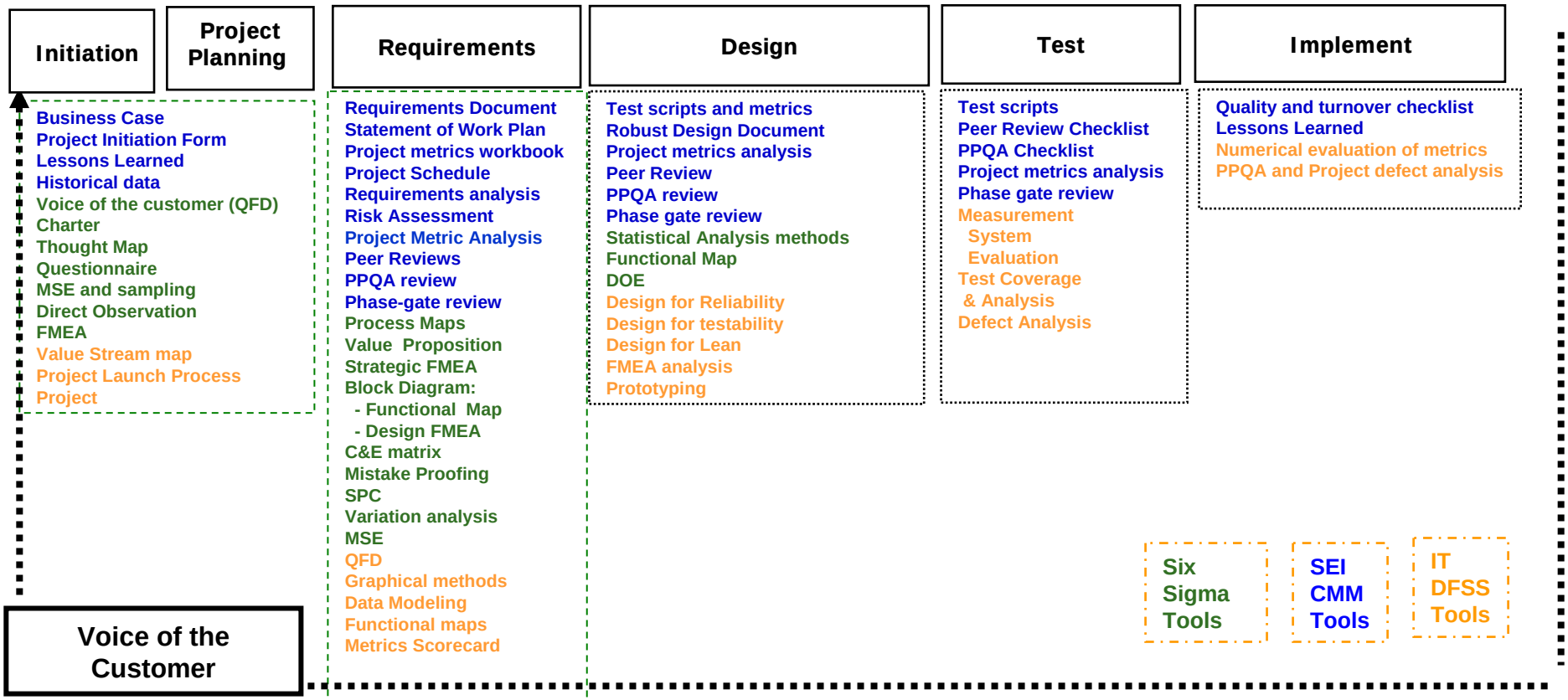

Side Benefit - Most TS and DAR requirements can be met if these tools are used effectively

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Digitizing Processes - PI Focus is on Data

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The focus of the SEI CMMI processes is on

- collecting
- understanding and
- using **data**
  - **project data**
  - **quality data**
  - **testing data**
  - **six sigma data**

NOT just creating paper

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Data Collection - Organizational/SBG Level

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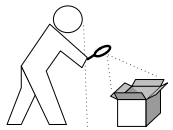
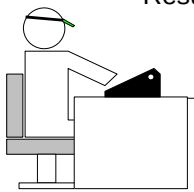


Product Quality Defects

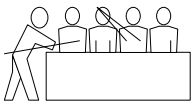
Appraisal Results



DEFECT METRICS

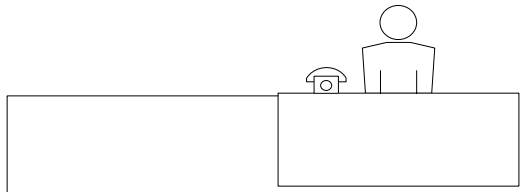
Process PPQA review defects

Test defects



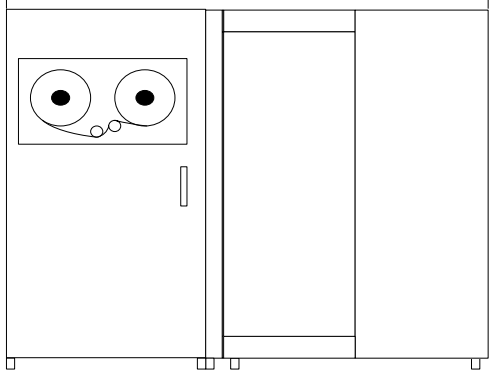
Peer Reviews Defects

Automate Data Collection



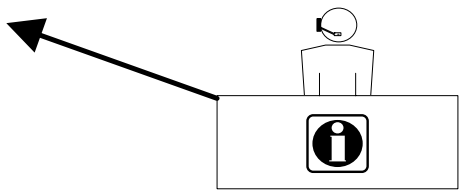
Project Management Metrics

Cost
Schedule



Organizational Metrics Database

Evolve the metrics



Other Metrics

Schedule impact of change
Cost impact of change
Total number of changes
Status of changes on a project
Cause of changes -organizationally

Use the data

eProject or MS Project 2003 Enterprise Edition

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Automated Reporting - eProject & Business Objects

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Project Overview / Budget

Project Name :

Key Contact : SBG: SBU:

Project Desc.:

Project Category : Desc.: In AOP Y/N:

Project Budget : PL. Spend To Date : $ Status:

Act. Spend To Date :

Planned Start Date : Planned End Date :

Project Manager :

Open Issues (High Priority)

Med ____ # Low____

G/Y/R	Issue Topic	Assignee	Age	Due Date

Open Risks (High Priority)

Med ____ # Low____

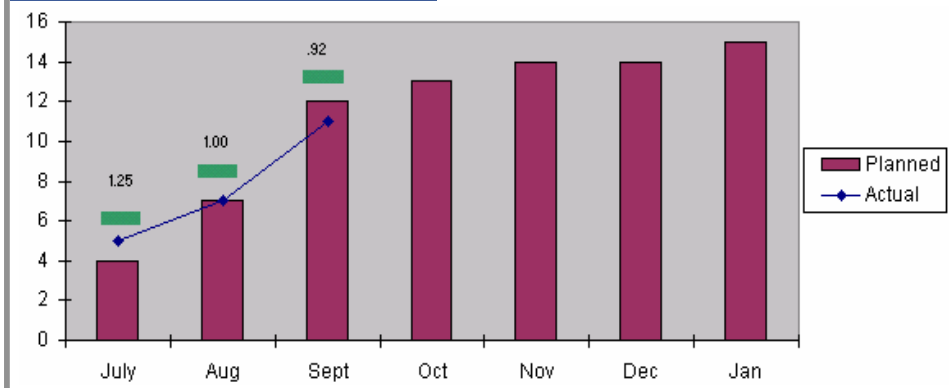
G/Y/R	Risk Topic	Due Date	Impact	Type	Prob

Project Milestones

Re-Plan Count : # Change Requests: Dollars Associated:

Milestone Name	Due Date	Actual End Date	Completed Y/N
Project Initiation			
Requirements Management			
Development			
Implementation			

Planned vs Actual Tasks / Schedule



Green = Meeting Objective

Yellow = Missing Objective > 10% and < 20% - Calculation must be between .80 and .90

Red = Missing Objective > 20% - Calculation must be less than .80

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Metrics are Defined in Detail

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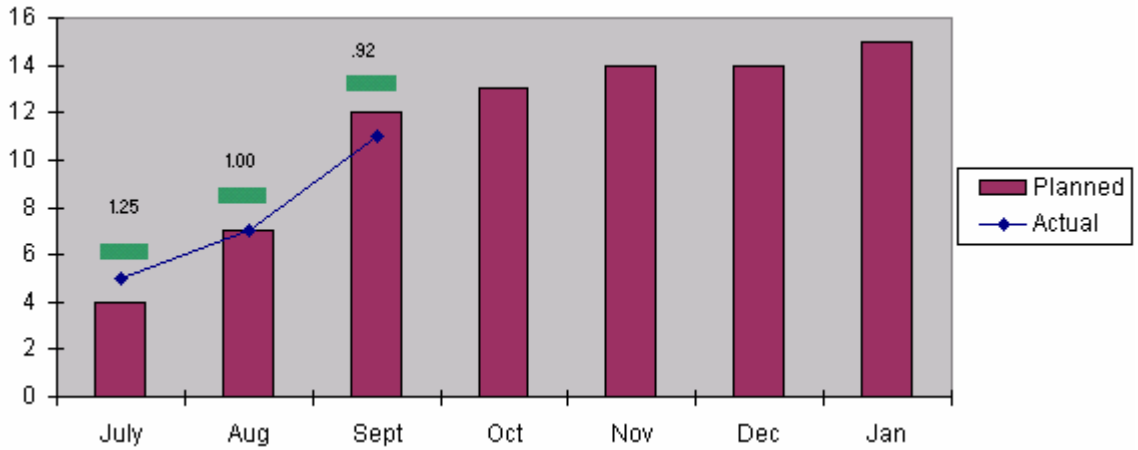
	July	Aug	Sept	Oct	Nov	Dec	Jan	Proj Total
Planned	4	3	5	1	1		1	15
Actual	5	2	4					11



Data is reported from eProject

Planned Tasks

Planned is equal to all tasks with a "planned finish" date in the month you are reporting on.

Actual Completed Tasks

Actual is equal to all completed tasks that have an "actual finish date" in the month you are reporting on.

Calculations

The above sample graph is calculated in the following manner. It's a cumulative graph indicating for each month weather you are on schedule with your tasks, or behind. This is indicated with the green, yellow, red box above each bar. The determination of green, yellow, or red is described by our guidelines below. For each month's calculation, the cumulated actual completed tasks are divided by the cumulated planned tasks. In July's case, the percentage is 125. This is 5 divided by 4. In August's case, the percentage is 100, this is 7 divided by 7. When we reach September, we have 12 total accumulated planned tasks, and 11 total accumulated actual completed tasks. The percentage is 92, which is 11 divided by 12.

Green = Meeting Objective

Yellow = Missing Objective > 10% and < 20% - Calculation must be between .80 and .90

Red = Missing Objective > 20% - Calculation must be less than .80

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Deployment Lessons Learned

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- Strong sponsorship
- Align CMMI goals with the goals of the organization
- Involve the entire organization
  - rotate ITPG members
  - train members of the organization in PPQA
  - have members of the organization peer review new/revised processes
  - establish a process for self-assessments
- Include the customer in CMMI training sessions where they are involved
- Evolve PPQA to focus on process improvement not just process compliance
- Start small/simple - evolve with time
- Have Fun!

Contact Information

Honeywell

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Appendix

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- **Examples**

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Project Work Products - Large Project Example

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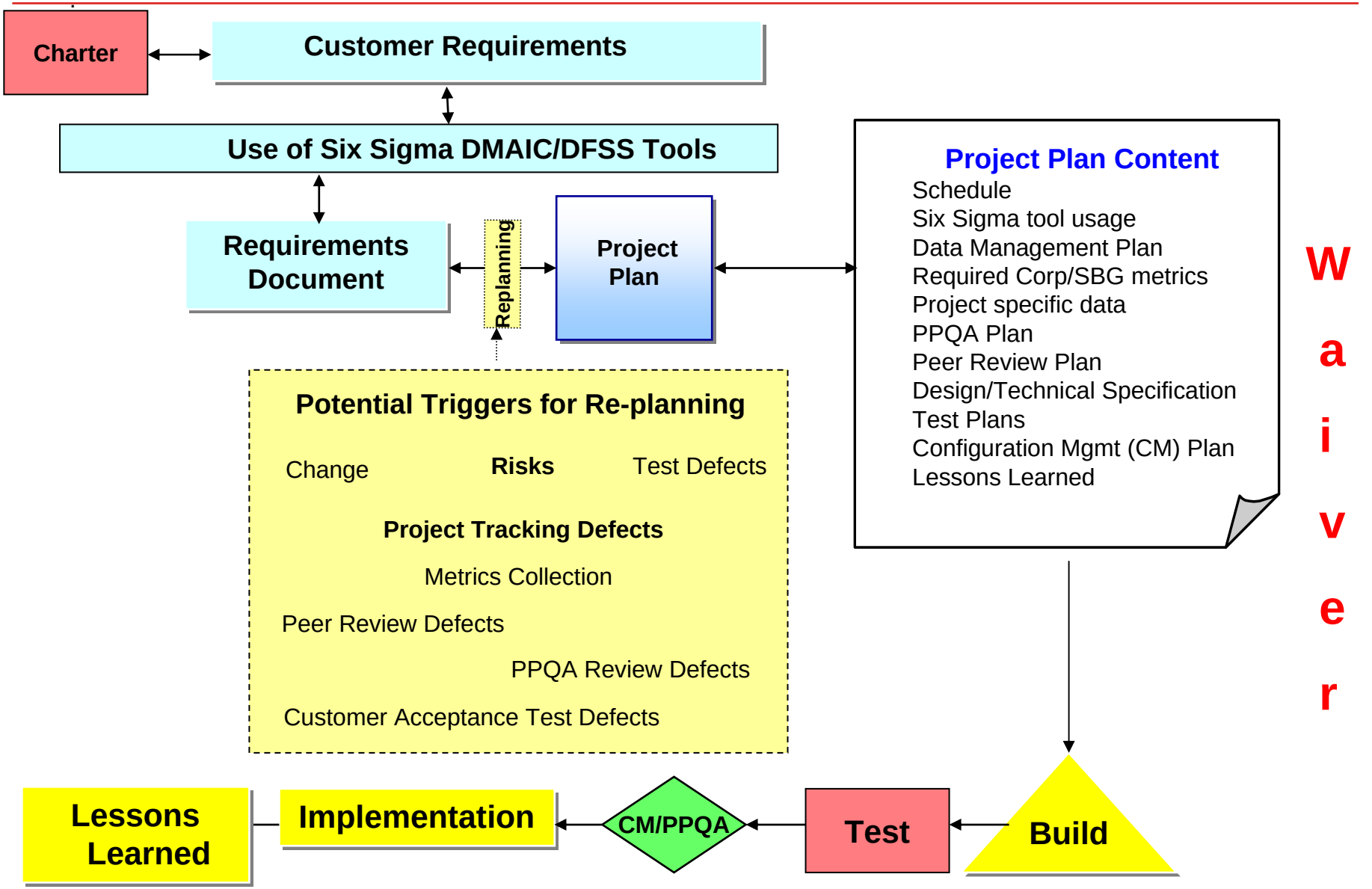

This is not meant to be a process map but a depiction of work products and where in the process they might occur

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Training Material Example - Mind Mapping

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Purpose

to provide staff and management with objective insight into processes and associated work products

Typical Work Products

Quality Plan
QA Checklists
Noncompliance Reports
Corrective actions tracked to closure
Organizational QA Reports for Management
PPQA Lessons Learned
Trend analysis
QA metrics
Organizational quality goals and standards
List of process improvements driven by QA results
Quality Assurance Training (mentoring, OJT, etc.)

Generic Practices

A **policy** exists
A **PPQA Plan** exists for both QA and Peer Reviews and the Plan is **monitored**
Adequate resources (not just people) are assigned
All PPQA documents are under **configuration management**
control in the organization's asset library
Improvement measures and **information** is collected
Objective evaluation occurs (Corporate appraisals)
PPQA is **institutionalized** as a developed and **maintained**

Critical Factors

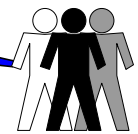
- A PPQA checklist for co-sourcing
- Checklist for Sarbanes-Oxley
- Obtain QA results from co-source partner
- Create PPQA checks for all process areas
- Proof QA actions are tracked to closure
- Management must take QA seriously - give it authority
- Start with compliance checks move to checking weak processes based on data
- Trend analysis

Potential Findings

PPQA Group/Person
No 'living' QA Plan that's followed
PPQA roles have not been defined in the organization so PPQA is adhoc
Noncompliances are just checked with no reason for the noncompliance identified
PPQA checklists only check for compliance - haven't evolved
QA results are not used to drive process improvements
Management
Management is not kept abreast of the PPQA reviews results or doesn't understand the value of QA
Management doesn't support QA (wave the hot)
QA Project Managers
Project Managers do not understand the value QA reviews

PPQA

Metrics
Number of PPQA reviews per a specified time period (wk, mo, qtr) vs plan
Effort expended for PPQA
Root cause categories and # of non-compliances
Trends
Quality Goals met
# of improvements made due to PPQA findings



People (Generic Practices)

Management **Sponsorship** exists
A PPQA role exists
Management reviews and **approves** all policies and standards for PPQA
The organization is trained in PPQA
Stakeholders are identified and involved

Related Process Areas
Project Planning
Verification

2005 is ticking closer

CMMI changes are to obtain approvals for PPQA Plans, use Six Sigma tools to analyze process improvement opportunities based on PPQA findings, involve stakeholders, establish quality goals. No longer just compliance - yes, no answers. Also evaluates services.

How are you doing?