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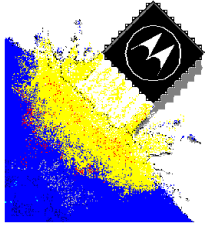
# Process Improvement Matrix:

A Tool for Measuring Progress Toward Better Quality

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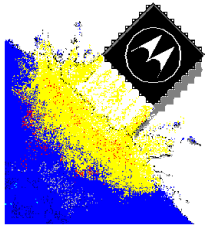


# Purpose

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- Track monthly process improvement activities
  - easy to use
  - easily tailorable
- Minimize software terminology
  - culture change in non-software environment
- Map to current reporting mechanism
  - red,yellow,green reporting scheme
  - one page project tracking report

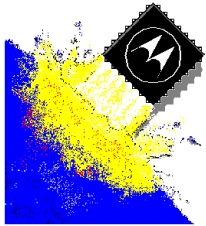


# Basic PIM Format

- First row indicates projects or teams
- First column indicates KPAs
- Intersection of each row column shows team status for each KPA

*Process Areas*

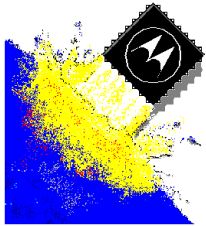
PIM	Team 1	Team 2	Team 3
Project Planning	Yellow	Green	Yellow
Project Tracking	Red	Green	Yellow
Requirements Management	Green	Green	Green
Configuration Management	Red	Red	Red



# PIM Outline Format

- Utilization of spreadsheet outline format gives specific KPA details to the SEPG and QA
- Expanded outline can be added and removed depending on audience

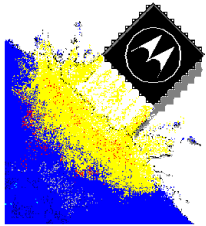
	Team 1	Team 2	Team 3
Project Planning	Yellow	Yellow	Yellow
• <i>The project plan is documented</i>	Green	Green	Green
• <i>Critical resources are estimated</i>	Yellow	Green	Yellow
• <i>Software Risks are identified</i>	Red	Red	Red
Project Tracking	Red	Green	Yellow
Requirements Management	Green	Green	Green
Configuration Management	Red	Red	Red



# PIM Summary Format

- Change monitoring shows progress since last report and cumulative change
- Management can easily identify progress and backsliding

	T e a m 1	T e a m 2	T e a m 3	Change Since Last Report	Cumula tive Change
Project Planning	Yellow	Yellow	Yellow	1	3
Project Tracking	Red	Green	Yellow	1	4
Requirements Management	Green	Green	Green	2	5
Configuration Management	Red	Red	Red	-1	3
<b>Change Since Last Report</b>	-1	1	1		
<b>Cumulative Change</b>	2	5	3		



# Scoring Matrix

## - RM (goals & activities)

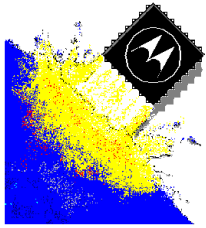
Goals	0	1	2	3	4	5	6	7	8	9	10
1. System requirements allocated to software are controlled to establish a baseline for software engineering and management use.											
2. Software plans, products, and activities are kept consistent with the system requirements allocated to software.											

Activities Performed	0	1	2	3	4	5	6	7	8	9	10
1. The software engineering group reviews the allocated requirements before they are incorporated into the software project.											
2. The software engineering group uses the allocated requirements as the basis for software plans, work products, and activities.											
3. Changes to the allocated requirements are reviewed and incorporated into the software project.											

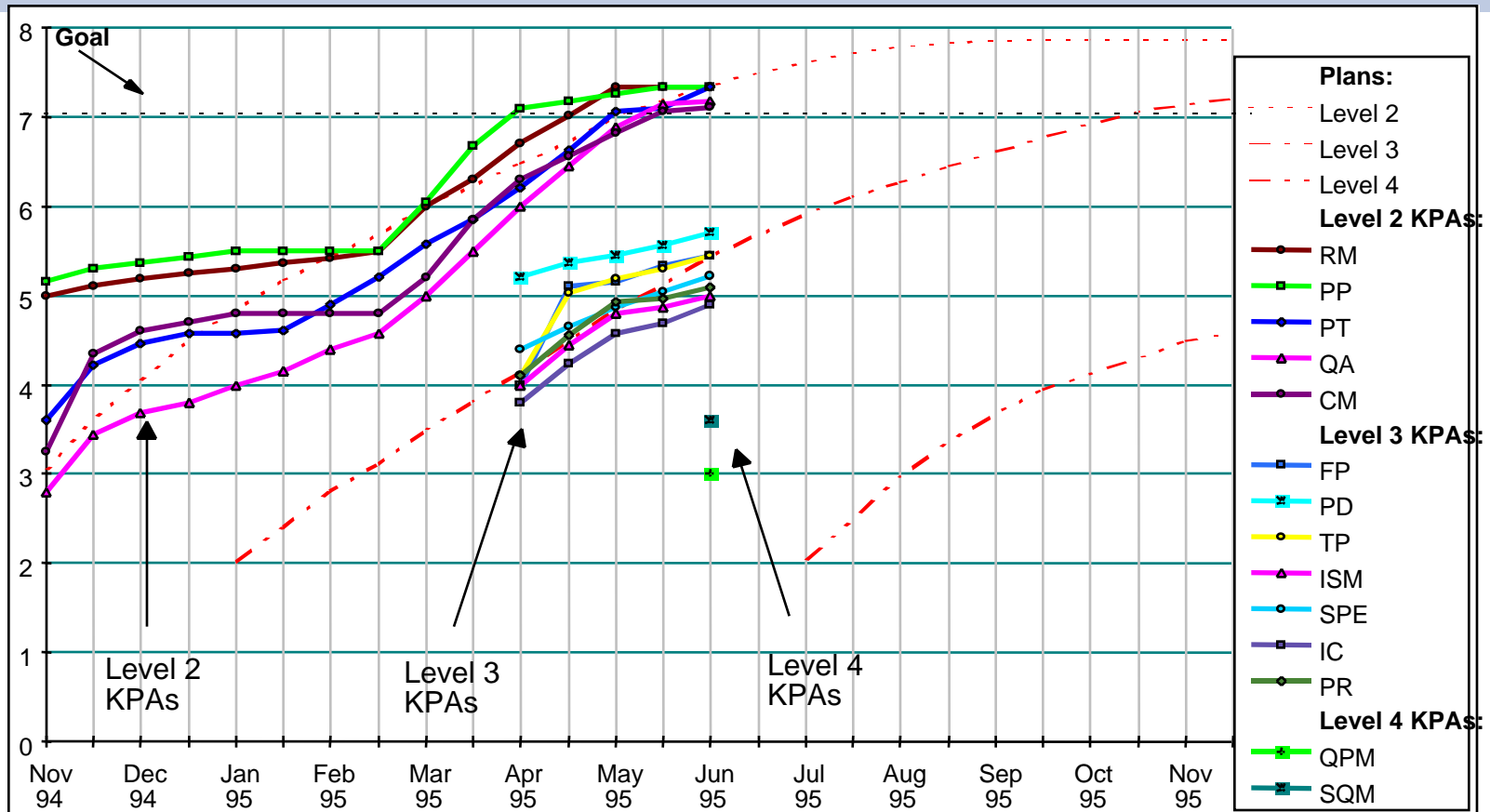
# Scoring Scheme

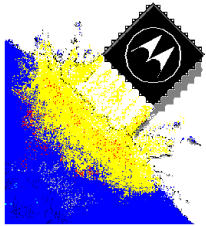
## Scoring Guidelines

Score	Key Practice Evaluation Dimensions		
	Approach	Deployment	Results
Poor (0)	<ul style="list-style-type: none"> <li>No management recognition of need</li> <li>No organizational ability</li> <li>No organizational commitment</li> <li>The practice is not evident</li> </ul>	<ul style="list-style-type: none"> <li>No part of the organization uses the practice</li> <li>No part of the organization shows interest</li> </ul>	<ul style="list-style-type: none"> <li>Ineffective</li> </ul>
Weak (2)	<ul style="list-style-type: none"> <li>Management has begun to recognize the need</li> <li>Support items for the practice start to be created</li> <li>A few parts of the organization are able to implement the practice</li> </ul>	<ul style="list-style-type: none"> <li>Fragmented use</li> <li>Inconsistent use</li> <li>Deployed in some parts of the organization</li> <li>Limited monitoring and verification of use</li> </ul>	<ul style="list-style-type: none"> <li>Spotty results</li> <li>Inconsistent results</li> <li>Some evidence of effectiveness for some parts of the organization</li> </ul>
Fair (4)	<ul style="list-style-type: none"> <li>Wide but not complete commitment by management</li> <li>Roadmap for practice implementation defined</li> <li>Several supporting items for the practice are in place</li> </ul>	<ul style="list-style-type: none"> <li>Less fragmented use</li> <li>Some consistency in use</li> <li>Deployed in some major parts of the organization</li> <li>Monitoring and verification of use for many parts of the organization</li> </ul>	<ul style="list-style-type: none"> <li>Consistent and positive results for several parts of the organization</li> <li>Inconsistent results for other parts of the organization</li> </ul>
Marginally Qualified (6)	<ul style="list-style-type: none"> <li>Strong management commitment; some management becomes proactive</li> <li>Practice implementation well under way across parts of the organization</li> <li>Supporting items in place</li> </ul>	<ul style="list-style-type: none"> <li>Deployed in most parts of the organization</li> <li>Mostly consistent use across many parts of the organization</li> <li>Monitoring and verification of use for many parts of the organization</li> </ul>	<ul style="list-style-type: none"> <li>Positive measurable results in most parts of the organization</li> <li>Consistently positive results over time across many parts of the organization</li> </ul>
Qualified (8)	<ul style="list-style-type: none"> <li>Total management commitment</li> <li>Majority of management is proactive</li> <li>Practice established as an integral part of the process</li> <li>Supporting items encourage and facilitate the use of the practice</li> </ul>	<ul style="list-style-type: none"> <li>Deployed in almost all parts of the organization</li> <li>Consistent use across almost all parts of the organization</li> <li>Monitoring and verification of use for almost all parts of the organization</li> </ul>	<ul style="list-style-type: none"> <li>Positive measurable results in almost all parts of the organization</li> <li>Consistently positive results over time across almost all parts of the organization</li> </ul>
Outstanding (10)	<ul style="list-style-type: none"> <li>Management provides zealous leadership and commitment</li> <li>Organizational excellence in the practice recognized even outside the company</li> </ul>	<ul style="list-style-type: none"> <li>Pervasive and consistent deployment across all parts of the organization</li> <li>Consistent use over time across all parts of the organization</li> <li>Monitoring and verification for all parts of the organization</li> </ul>	<ul style="list-style-type: none"> <li>Requirements exceeded</li> <li>Consistently world class results</li> <li>Counsel sought by others</li> </ul>



# Maturity Progress Tracking

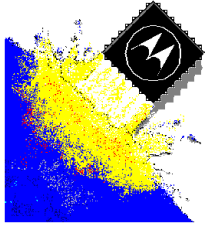




# PIM Scoring

- Scoring
  - Scoring Previously Described
  - based on percentage of satisfied KPA
    - Score 8 = 80% satisfied
- Underlying Database
- Shades of yellow can be used to give more detail
- Differentiates between ‘just talking about it’ and ‘almost satisfied’

PIM	Team 1	Team 2	Team 3
Project Planning	2	10	6
Project Tracking	0	10	4
Requirements Management	10	10	10
Configuration Management	0	0	0

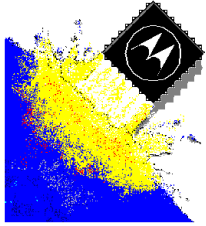


# Using the PIM

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- QA and Process Engineering
  - Easy identification of training needs
  - Identification of best use of resources
  - Areas needing management intervention
- Management
  - Roadmap of current status and progress
  - Internal benchmarking
- Other
  - Bridge education gap
  - Facilitates intergroup communications



# Results

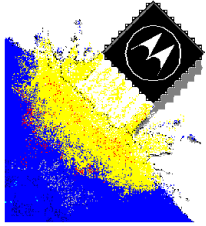
- SPS rapid increase in process capability level

	L1	L2	L3	L4	L5
1993	30	0	0	0	0
1995	16	11	2	1	0

- Reduced Post Release Defects

1993 = 80, 1994=0 for one product family

- 20-50% reduction in chip development cycles



# Summary

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- PIM supported SPS cultural change
- Helped to increase management knowledge of software
- Effective tool for identifying process improvement items
- Effective tool for prioritizing and planning training needs
- Customized to meet individual needs
- Used as long as needed.
- Expanding to business, marketing, and design areas