# CMMI SM Mini-Assessments

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SM - CMMI is a service mark of Carnegie Mellon University

# Harris Corporation

## Harris Corporation

**$1.95 Billion in Sales**
**10,000 Employees**
**Customers in More than 90 Countries**

### Government Communications Systems


- Airborne Communication Systems
- $C^4I$ Systems
- Satellite Equipment
- Advanced Avionics
- Information Technology Systems
- Environmental Systems
- Commercial Technology Insertion
- Transportation Communication Systems

### RF Communications

- Strategic Radio
- Tactical Radio
- Secure Products/Law Enforcement

### Microwave Communications

- Transport
- Access
- Wireless Local Loop
- Systems Integration and Services

### Network Support

- Network Management Systems
- Test and Management Systems
- Test Sets and Tools

### Broadcast Communications

- Television/Radio Systems
- Antenna Systems and Encoders
- Systems Integration
- Studio/Transmitter Links
- Communications Interfaces and Multiplexers

# Government Communications Systems Division

· $850 M in Sales · 5,400 Employees · ISO 9001 · SEI SW-CMM Level 4

## Aerospace & Ground Communication Systems

- Advanced Avionics
- Airborne Communications
- Satellite Antennas
- Satellite Electronics

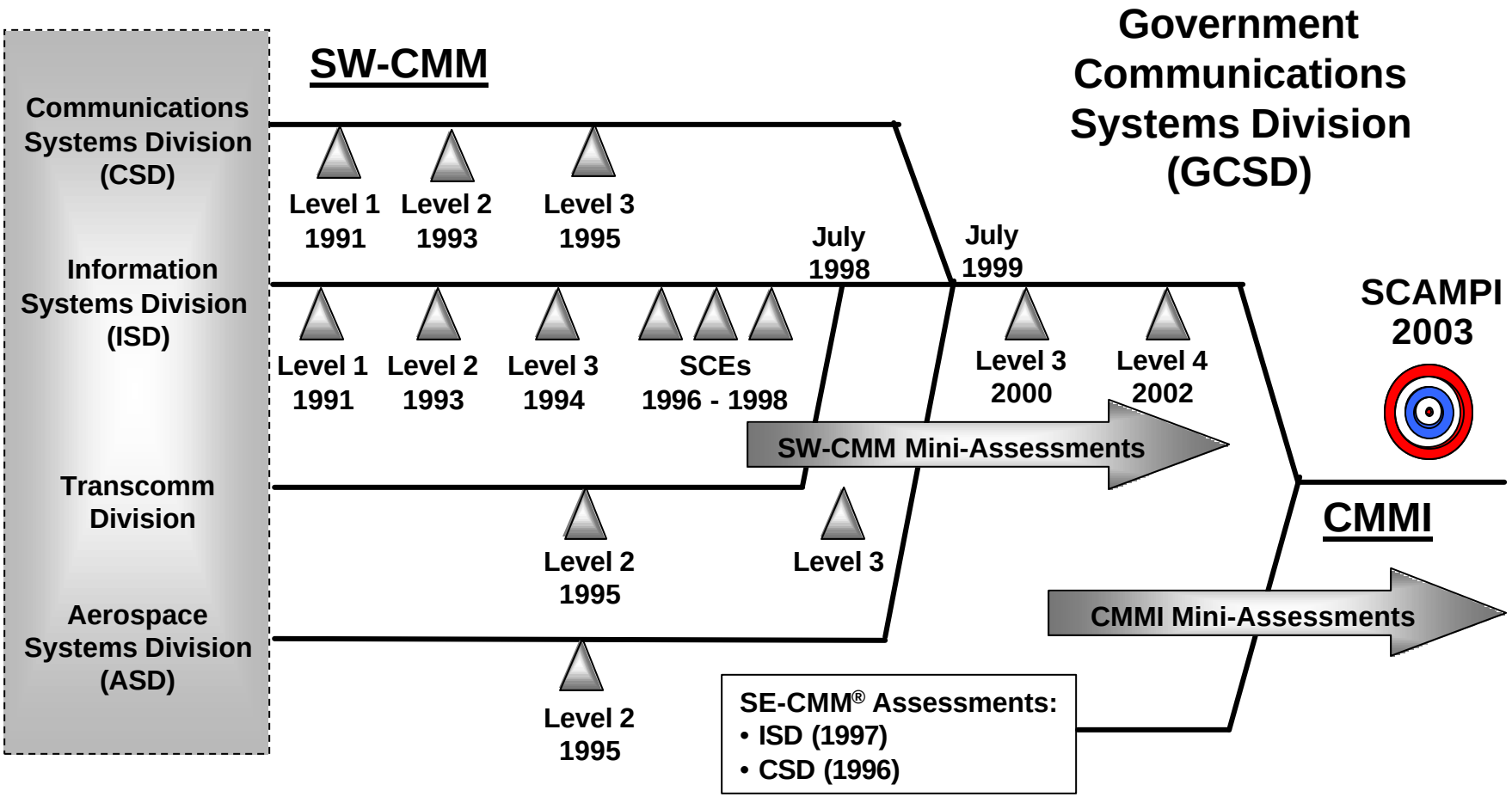
- C⁴I Systems
- Communications Systems (SATCOM and Terrestrial)
- Intelligence Systems
- Information Warfare and Network/Internet Security
- Commercial Systems and Products

## Integrated Information Communication Systems

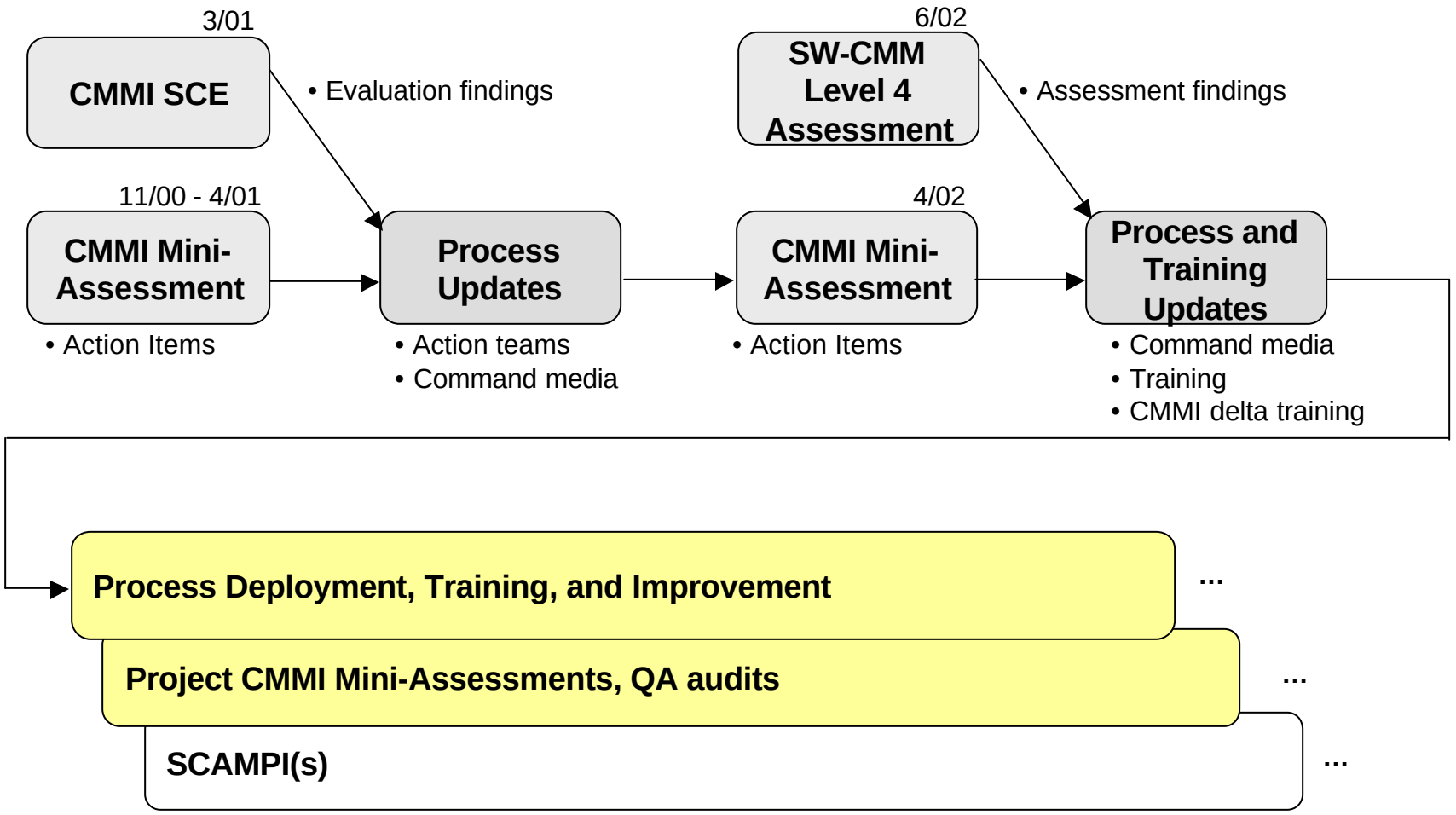
- Computer-Controlled, Highly Distributed Communications and Control Systems to Support Air Traffic Management
- High-Reliability Satellite Communications Systems to Support Air Traffic Management
- GPS Applications for ATM—Automatic Dependent Surveillance

- Data Handling and Control Systems
- Image Processing
- Meteorological Processing Systems
- Range Systems
- Air Traffic Control Systems
- Transportation Communications Systems

# Appraisals & Mini-Assessments

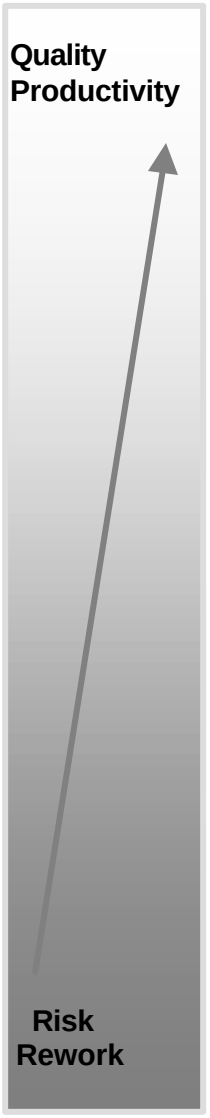


# GCSD CMMI Migration



# CMMI-SE/SW (Staged Representation)

| Maturity Level | Focus | Process Areas |
|---|---|---|
| 5 Optimizing | *Continuous Process Improvement* | Organizational Innovation and Deployment<br>Causal Analysis and Resolution |
| 4 Quantitatively Managed | *Quantitative Management* | Organizational Process Performance<br>Quantitative Project Management |
| 3 Defined | *Process Standardization* | Requirements Development<br>Technical Solution<br>Product Integration<br>Verification<br>Validation<br>Organizational Process Focus<br>Organizational Process Definition<br>Organizational Training<br>Integrated Project Management<br>Risk Management<br>Decision Analysis and Resolution |
| 2 Managed | *Basic Project Management* | Requirements Management<br>Project Planning<br>Project Monitoring and Control<br>Supplier Agreement Management<br>Measurement and Analysis<br>Process and Product Quality Assurance<br>Configuration Management |
| 1 Initial | | |



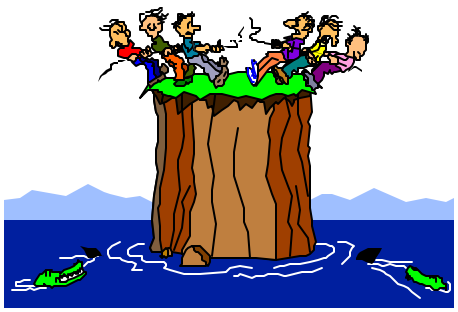
# Mini-Assessment Overview

- **Periodic process assessment of projects to measure progress in achieving the organization's engineering process goals:**
  - **Adherence to CMMI-SE/SW[1] Level 3 and SW-CMM[2] Level 4**
  - **Advancement towards CMMI-SE/SW Level 4**
- **Rating and evaluation method results provide:**
  - **Quick & easy way to assess projects engineering process maturity**
  - **EPG and division management with insight into the success of engineering process institutionalization efforts**
- **Method is based upon previous mini-assessment methods:**
  - **SW-CMM progress assessment process used by Motorola[3]**
  - **Enhanced with CBA-IPI[4,5] methods by Harris[6]**
  - **Updated with SCAMPI[7] methods by Harris**

- **Not a formal assessment or evaluation!**

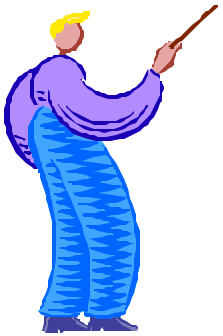
# Mini-Assessment Method

- **Project selection by Management**
- **Participant preparation led by EPG**
  - **Program Management, System Engineering, Software Engineering and Quality Assurance**
  - **PA worksheets completed (scores and artifact notes)**
  - **Inputs consolidated**
- **Delphi group meeting conducted by EPG**
  - **Lowest score if consensus cannot be reached**
  - **No examination of data**
- **Results presented to project by EPG**
  - **CMMI-SE/SW summary**
  - **PA strengths/weaknesses**
- **Action Plan developed and tracked by project**
- **Organizational improvements facilitated by EPG**
  - **Management involvement**



# Evaluation Guidelines

- **Scoring matrix is applied to all the PA practices (specific & generic) to ensure the CMMI goals are addressed**
- **Each PA practice is scored:**



  - 5 : Exemplary Best Practice (Outstanding)
  - 4 : Fully Implemented (Strong)
  - 3 : Largely Implemented (Marginal)
  - 2 : Partially Implemented (Weak)
  - 1 : Not Implemented (Poor)

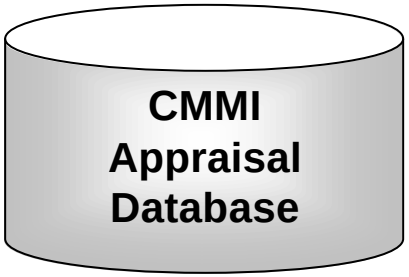
- **Evidence is noted to include:**
  - **Direct Artifacts: tangible resulting directly from implementation of a specific or generic practice**
  - **Indirect Artifacts: a consequence of performing a specific or generic practice or that substantiates its implementation**

# Evaluation Matrix

| Score | Practice Characterization | Deployment |
|---|---|---|
| 5<br>Outstanding | Exemplary<br>Best Practice<br>(FI+) | • Above expectations, organizational best practice<br>• Zealous leadership and management commitment to ensure consistent deployment<br>• World class results sought by others |
| 4<br>Strong | Fully<br>Implemented<br>(FI) | • Process documented, consistently deployed, effective<br>• Strong infrastructure and management commitment to reinforce process implementation<br>• Appropriate evidence exists to verify implementation (direct and indirect artifacts) |
| 3<br>Marginal | Largely<br>Implemented<br>(LI) | • Process documented, with mostly consistent deployment and positive results<br>• Some support provided by infrastructure/management<br>• Appropriate evidence exists to verify implementation<br>• One or more weaknesses are noted |
| 2<br>Weak | Partially<br>Implemented<br>(PI) | • Some process documentation may exist<br>• Inconsistent deployment with spotty results<br>• Some evidence exists to substantiate partial deployment<br>• Significant weaknesses are noted |
| 1<br>Poor | Not<br>Implemented<br>(NI) | • Documentation, deployment, and infrastructure are poor<br>• Little support, commitment, or recognition of the need<br>• Limited/no evidence to substantiate implementation |

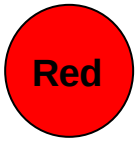
# Process Area Scoring

| Process Area | Goal & Practice | Title | Statement | Typical Work Products / Evidence | Score | Project Artifacts/Notes |
|---|---|---|---|---|---|---|
| **Project Monitoring and Control** | **SG2** | **Manage Corrective Action to Closure** | **Corrective actions are managed to closure when the project's performance or results deviate significantly from the plan.** | | | |
| Project Monitoring and Control | SP2.1 | Analyze Issues | Collect and analyze the issues and determine the corrective actions necessary to address the issues. | List of issues needing corrective actions | | |
| Project Monitoring and Control | SP2.2 | Take Corrective Action | Take corrective action on identified issues. | Corrective action plan | | |
| Project Monitoring and Control | SP2.3 | Manage Corrective Action | Manage corrective actions to closure. | Corrective action results | | |




- **Assessments**
- **Evaluations**
- **Mini-Assessments**

# Process Area Satisfaction



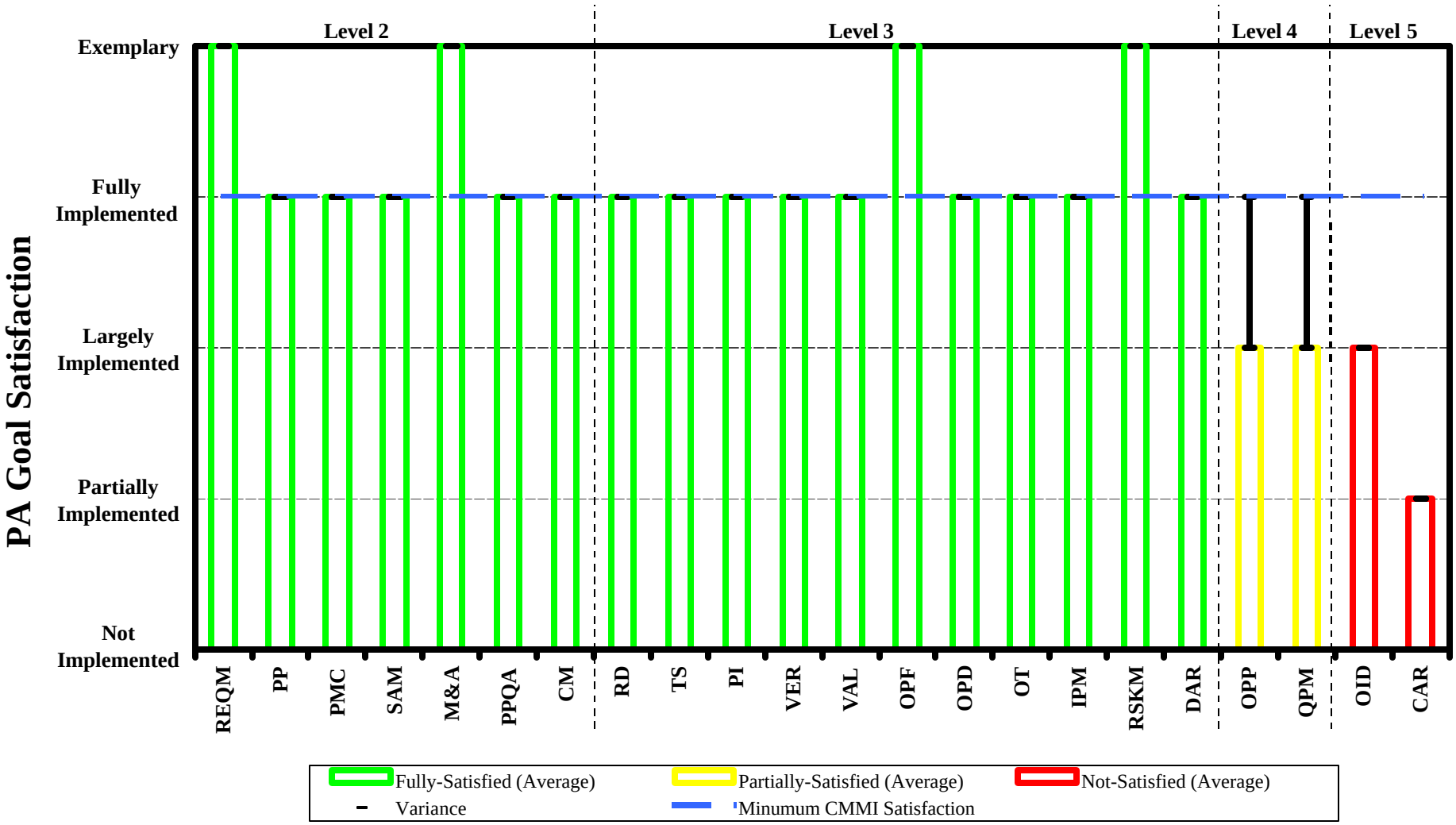

- **Not-Satisfied**
  - **Score < 4 on all goals**
  - **Indicates no organizational institutionalization**
  - **Will NOT pass a formal assessment or evaluation**


- **Partially-Satisfied**
  - **Score of 4+ on majority of goals**
  - **Indicates partial organizational institutionalization**
  - **May NOT pass a formal assessment or evaluation**


- **Fully-Satisfied**
  - **Score 4+ on all goals**
  - **Indicates organizational institutionalization**
  - **Will likely pass a formal assessment or evaluation**

- **Goal Variance is the minimum & maximum for process area**

# CMMI-SE/SW Summary (example)



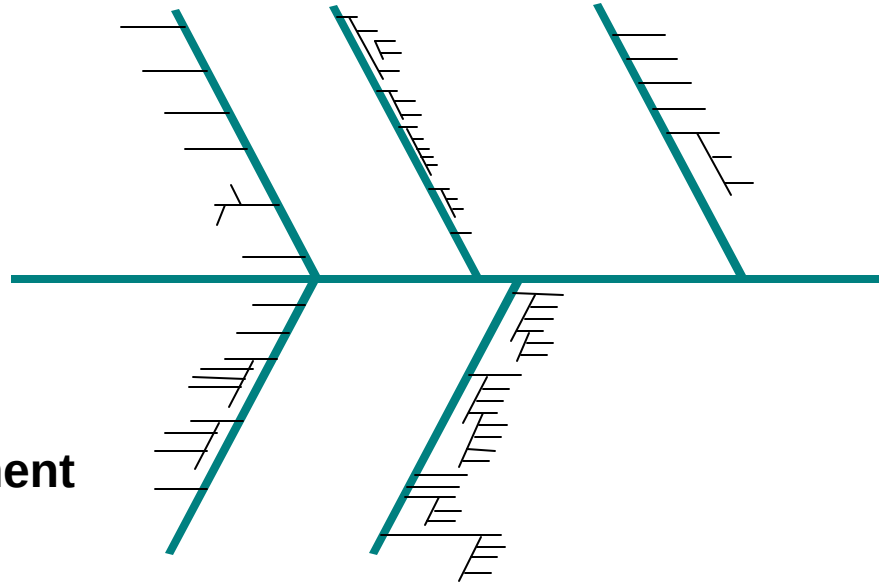
# Process Area Analysis (example)

| PA | Met | Areas of Strength | Areas for Improvement |
|---|---|---|---|
| Requirements Management (REQM) | F | • Requirements managed via System & Software Spec's<br>• Requirements DB | • None |
| Project Planning (PP) | F | • Plans complete & approved<br>• Detailed IMS<br>• Risks identified | • None |
| Project Monitoring and Control (PMC) | F | • Plans used & weekly status review<br>• Risks tracked and reported<br>• Technical Performance Measures | • Improve communication with team on approved changes |
| Supplier Agreement Management (SAM) | F | • No subcontracts | • Be aware of division policies and procedures for future use |
| Measurement and Analysis (M&A) | F | • Organizational measurement and analysis metrics implemented | • None |
| Process and Product Quality Assurance (PPQA) | F | • Quality Plan<br>• QA Audits | • None |
| Configuration Management (CM) | F | • CM Plan<br>• Audits & Reports | • None |

F = Fully-Satisfied | P = Partially-Satisfied | N = Not-Satisfied | N/A = Not Applicable

# Mini-Assessment Results

- **Analyzed all business areas in organization**
  - **Areas of Strength**
  - **Areas for Improvement**
  - **Best Practices**
- **Organizational improvement**
  - **Problem analysis**
  - **Improvement plans**
  - **Action teams**
  - **Quarterly reviews with Management**
- **Independent external appraisals**
  - **High correlation between SW-CMM Mini-Assessments and SCEs**
  - **Expect similar correlation with CMMI Mini-Assessments**
  - **SCE/CMMI aligned with CMMI Mini-Assessments**
- **Corporate adoption for use across company**



# Lessons Learned

- **Good feedback of project process strengths and weaknesses**
- **Team building is a side benefit**
- **Guidance on practices that appear to be repetitive**
- **Definition on CMMI vs. organizational terminology**
- **Complete worksheet in multiple vs. single sessions**
- **Provide guidance to participants of typical organizational artifacts supporting CMMI practices**
- **Consensus on generic practices at a Maturity Level vs. PA**
- **Mini-Assessments foster organizational process improvement**

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