

Mistakes, Obstacles and Conflicts in using CMMI for Process Improvement

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SEPG North America 2008
Tampa, Florida March 17–20, 2008

Topics

- Background
- Different Views of CMMI
- Typical Mistakes and Conflicts in applying CMMI
- Results of misusing the CMMI
- How to avoid typical mistakes and conflicts

Israel Aircraft Industries (IAI)

- Largest industrial company in Israel
- Activities encompassing: Development, Production, Maintenance and Service of Aerospace Systems
- IAI divisions are certified for ISO9000 and AS9100
- Started SW-CMM-based process improvement efforts in 1992
- Started SE-SW CMMI-based process improvement efforts in 2002

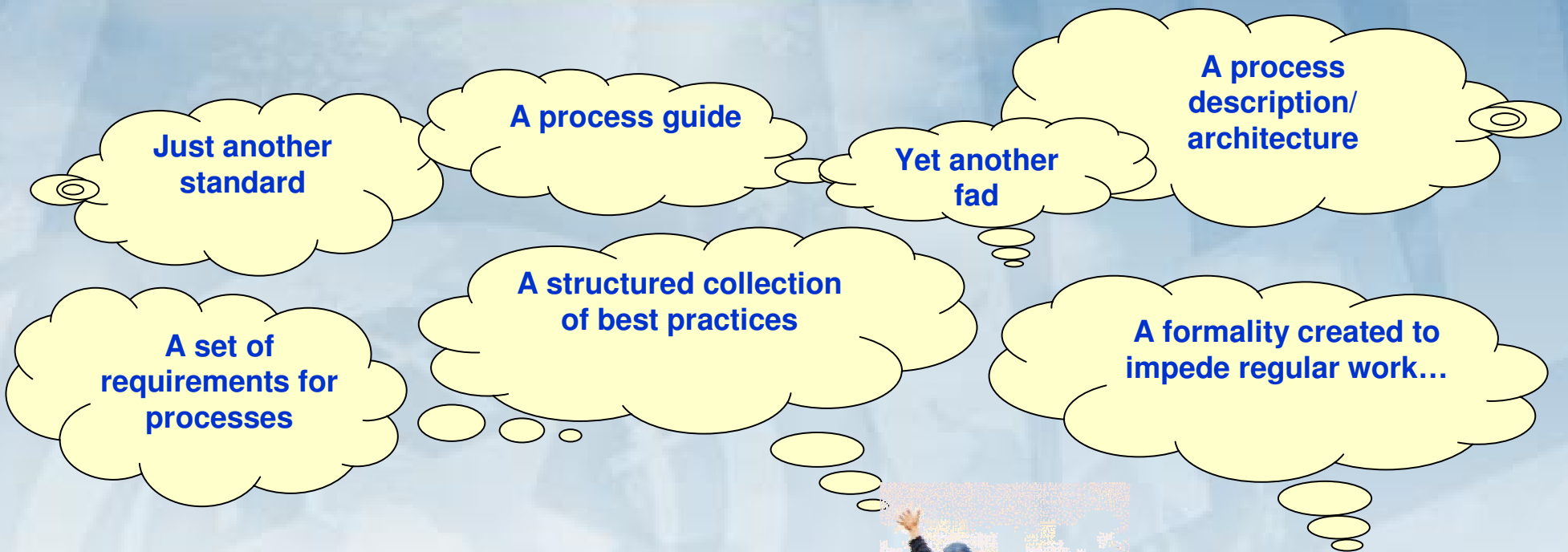
Israel Aircraft Industries Groups and Divisions



Israel Aircraft Industries Process Improvement Strategy

- Process improvement efforts are coordinated at the corporate level and sponsored by the corporate VP of Operations
- Core Process assets are developed at the corporate level and are then adapted by the groups and divisions. Other assets are developed directly at the group or division level
- Process improvement implementation is conducted at the group and division level and sponsored by the group or division management

Different views of CMMI



Sponsor



Managers



Process Leader



Practitioners

Typical Mistakes and Conflicts in applying CMMI

- Regarding the CMMI specific practices as a process description rather than process characteristics
- Misinterpretation of CMMI practices
- Misunderstanding the integrative aspects of the CMMI – “how it all fits together”
- Regarding the CMMI as a “standard” rather than as a process improvement guide
- Competing over resources: Budget, Time and Staff
- "Best" vs. "Good enough"
- Attempting to apply standard processes to different projects uniformly without tailoring

Regarding the CMMI as a process description

- Trying to apply the CMMI practices directly
- Copying CMMI practices into the organizational process guide
- Building process audit checklists directly from the CMMI practices
- Ignoring the subpractices or attempting to implement them literally
- Ignoring issues like:
 - ◆ Who should do what (responsibility)
 - ◆ When should it be done and in what order
 - ◆ What input is required
 - ◆ Entry and Exit conditions
 - ◆ How should it be done – methods and tools
 - ◆ How should the work product be documented and where

Misinterpretation of the meaning of CMMI practices

- Language issues
 - ◆ E.g. “We know what **Validation** is; we don’t have to consult the Glossary”
- Ignoring the sub-practices and “typical work products”
 - ◆ “If they are not **required** than they don’t apply to us”
- Attempting to produce **all** “typical work products”
 - ◆ Even when not a natural outcome of the activity
- Misunderstanding the purpose of practices
 - ◆ e.g. the “analyze” practices: Confusing informal discussions with applying formal and repeatable analysis methods
- Misunderstanding the High Maturity Practices
 - ◆ e.g. Confusing **Measures** with **Sub-processes**

Misinterpretation of the meaning of CMMI practices

Examples (1)

- Process and Product Quality Assurance (PPQA)
 - ◆ Auditors attempting to evaluate the correctness of documents, rather than adherence to organizational standards
 - ◆ Auditors attempting to evaluate processes against the CMMI
 - ◆ Focusing on the audit quantitative data and Ignoring specific problems and defects identified in audit reports
- The meaning of “Higher Level Managers” in GP2.10
 - ◆ Focusing on ordinary Project status reviews rather than involving higher-level managers in Process issues

Misinterpretation of the intention of CMMI practices

Examples (2)

● Parametric estimation models

- ◆ What is meant by “Work Product and Task Attributes”? – “can the number of staff on the project be used as an attribute of the work?”

● The significance of Product Integration

- ◆ How does it differ from V&V? What does it mean to focus on interfaces?

● The significance of Validation

- ◆ How is Product Behavior tested ? How is this different from testing required functionality?

Misinterpretation of the intention of CMMI practices

Examples (3)

- Integrated Project Management vs. Project Management at ML2
 - ◆ e.g.: “Manage stakeholder involvement” – beyond “plan and involve”
- Weak implementation of M&A
 - ◆ “what can we measure?” rather than “what information do we really need?”
- Understanding the many aspects of stakeholder involvement:
 - ◆ Identification of different types of stakeholders
 - ◆ Planning their involvement and actual participation in various project activities
 - ◆ Ensuring their involvement according to plan

Misunderstanding the integrative aspects of the CMMI

- Ignoring or Misunderstanding the “refer to...”
- Process areas that build on the foundation required in other process areas
- Misunderstanding how ML5 builds upon ML4
- Architecting the organizational process strictly around PAs, rather than building according to logical process flow
 - ◆ e.g.: Supporting the testing process with separate Integration, Verification and Validation guides, rather than one complete testing guidebook covering all three process areas, including the interrelationships among them

Misunderstanding the integrative aspects of the CMMI

Examples

- Relations between M&A and VER SG2 (Peer Reviews)
- Relations between RD, and VER & VAL
- IPM building on OPD, PP and PMC
- QPM building in M&A, OPP and IPM
- CAR building on OPP and QPM
- OID building on OPF, OPP and QPM

Regarding the CMMI as “standard” rather than as a process improvement guide

- Some managers may fall into the trap of seeing only the value of the rating rather than the value of process improvement
- May lead to the illusion that processes and process improvement don't have to be maintained until a short time before the next SCAMPI-A
- May cause the improvement efforts to concentrate only on projects in the focus of the appraisal rather than on meaningful, long-lasting, organizational-wide improvements
- May cause the date set for the appraisal to take precedence over the ability of the organization to complete the improvement activities required

Competing on resources: Budget, Time and Staff

- Sometimes Process improvement is not conducted as a planned, coordinated, and orchestrated effort. Instead they consist of a collection of separate, unrelated, uncontrolled efforts, that may be:
 - ◆ Unaware of each other
 - ◆ Missing a common set of objectives
 - ◆ Get in each other's way
 - ◆ Compete over resources
 - ◆ Disrupt practitioners' work

"Best" vs. "Good enough"

- Failing to see the value of incremental improvement
 - ◆ Demanding “all or nothing”
 - ◆ For example: Demanding the full deployment of a new tool or technology before a new process can be introduced or improved
- Delaying the deployment of a new and improved process, indefinitely, because of some local or minor resistance

Attempting to apply uniform processes to different projects without tailoring

- Claiming that one single lifecycle model is all that is needed
- Not allowing the different project defined processes to express differing customers, differing contractual situations, differing business constellations, etc.
 - ◆ Eventually gets reflected in the work plans only
- Organizations not offering projects a choice of process elements with a range capabilities to select from (required in ML4)

Results of misusing the CMMI

- Creating ineffective or unnecessary processes
- Waste of resources
- Loss of credibility towards future process improvement endeavours
- Frustration and antagonism

How to avoid typical mistakes and conflicts

- Make sure that CMMI implementation efforts receive high priority and continuous management attention
- Make sure that managers at all levels have **basic** understanding of what the CMMI is and how it should be used
- Make sure that the leaders of CMMI efforts in the organization have **deep** understanding of the model
 - ◆ Reading the CMMI book is essential but not enough
 - ◆ Attending the Intro to CMMI training is required but not enough
 - ◆ More advanced CMMI training is helpful but not enough
 - ◆ Participating as appraisal team members is one of the best ways to gain understanding of the model
- Set – and maintain – appropriate expectations from the model

Thank you

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