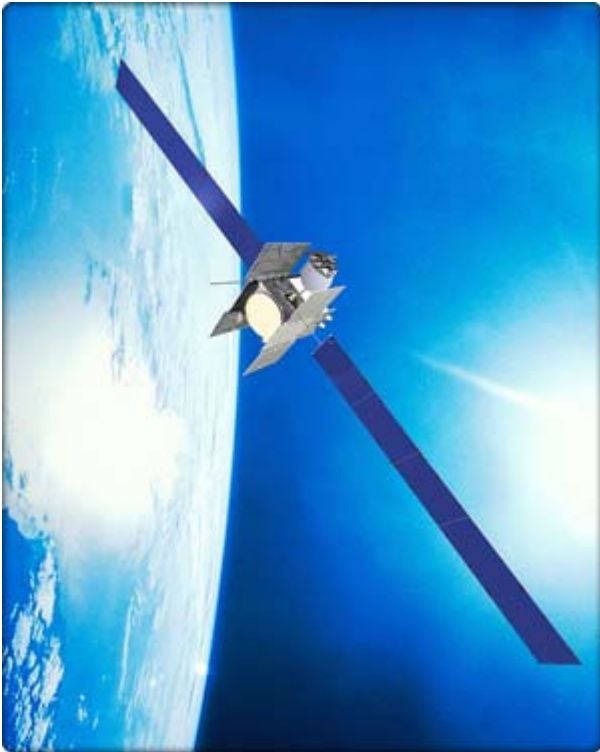# Journey from CMMI® ratings to Value added process improvement

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Boeing Space and Intelligence Systems

- **Boeing Space and Intelligence Systems (S&IS), headquartered in Seal Beach, Calif., is the company's center for satellites and experimental space systems. S&IS is a world leader in the design, development and manufacturing of satellites for government, civil and commercial customers. The division includes Boeing Satellite Systems International, Inc.**

CMMI® Core Team located in El Segundo, Southern California

# Abstract: Journey from CMMI® ratings to value added process improvement

"Ok, we have been working CMMI® for years, and finally got our CMMI® Level 5 rating. Why are we still having problems?"

Sound familiar? Isn't it ironic that it's so hard to use an improvement tool for the main purpose for which it was developed?

This presentation covers the challenges we overcame in our journey from CMM® Level 3 to CMM® Level 5 to CMMI® Level 5 to CMMI® for improvement value. The key is in communicating the methodology without using CMMI® terminology. All it takes is translating a 700 page book into 3 charts, a 6 hour self assessment and priority driven improvement plans.

Transitioning to a culture that Uses CMMI® as an improvement tool

- **Background**

- **Training approach that got us a CMMI® level 5 rating**

- **Improved training approach that got everyone to use CMMI® as an improvement tool**
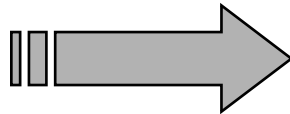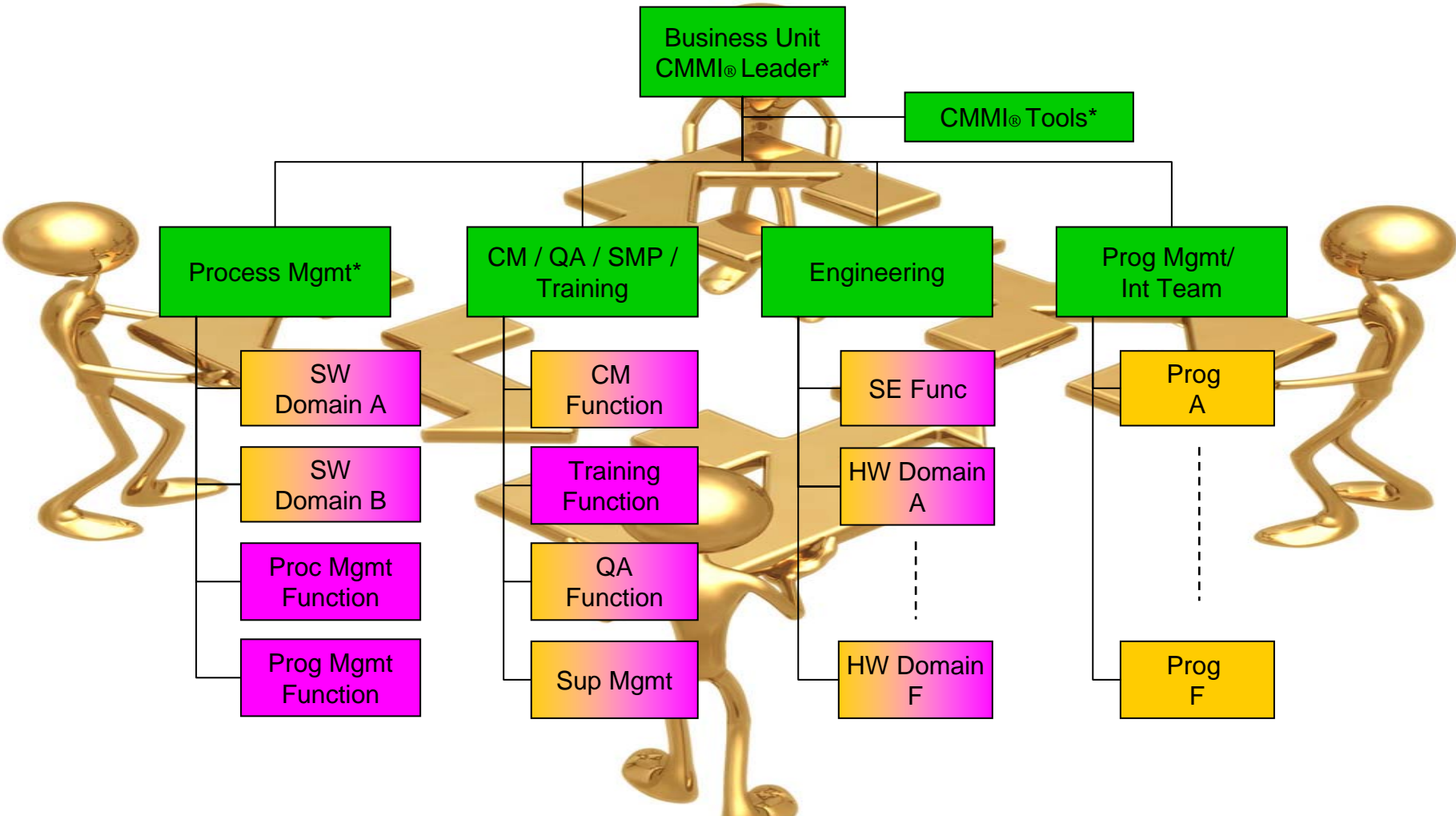
Where have we been on our CMMI® Journey?

- **Started using CMMI® as an improvement tool in early 2000**

- **Obtained numerous business unit CMM® / CMMI® Level 3 / 5 ratings**

- **Developed a CMMI® Self Assessment Tool and deployed across the business unit**
  - Initially priority driven
  - Currently mandatory

- **Received numerous RFPs that have CMMI® level 2/3 requirements**

Adopted CMMI® as one of our Lean+ improvement tools

CMMI® Team includes all product development and process management stakeholders

Business Unit CMMI® Leader*

CMMI® Tools*

Process Mgmt*
- SW Domain A
- SW Domain B
- Proc Mgmt Function
- Prog Mgmt Function

CM / QA / SMP / Training
- CM Function
- Training Function
- QA Function
- Sup Mgmt

Engineering
- SE Func
- HW Domain A
- HW Domain F

Prog Mgmt/ Int Team
- Prog A
- Prog F

CMMI® SMEs / Focus area   Prog / Proj Execution   Process Owner   * Global CMMI® Knowledge

Our start was probably similar to yours

- **Sr. Management wanted a CMMI® Level 5 rating**

- **Good to be an organization that optimizes its performance**

- **Management knew it was difficult**
  - Level 3 in year 1, Level 5 the next
  - Willing to fund training and books

- **Constraints**
  - Minimize impact to current programs
  - Work within current process group funding
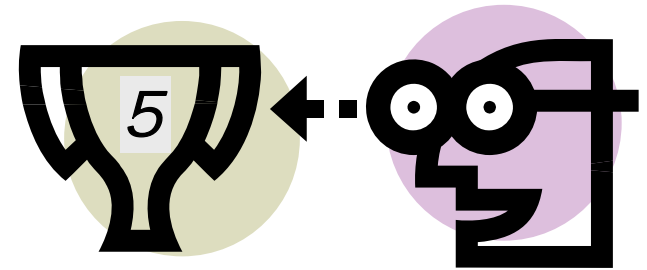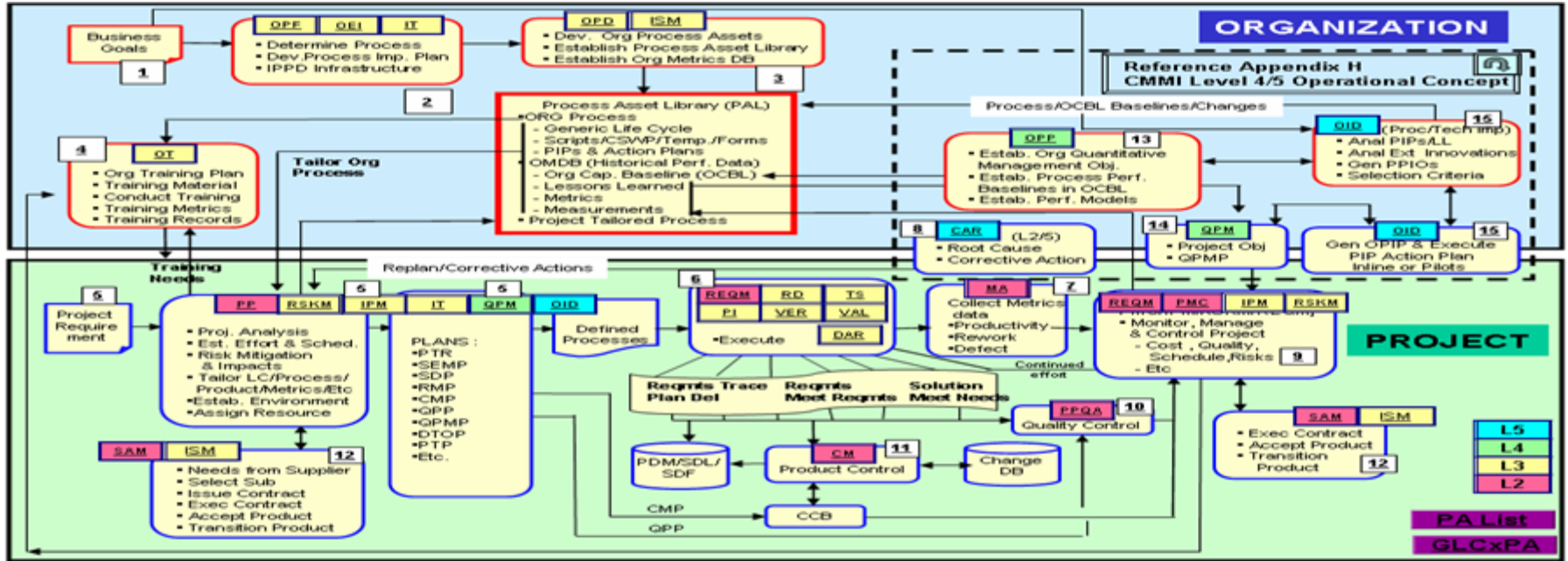
Sure, I can do it!

Team attended training and read CMMI® book
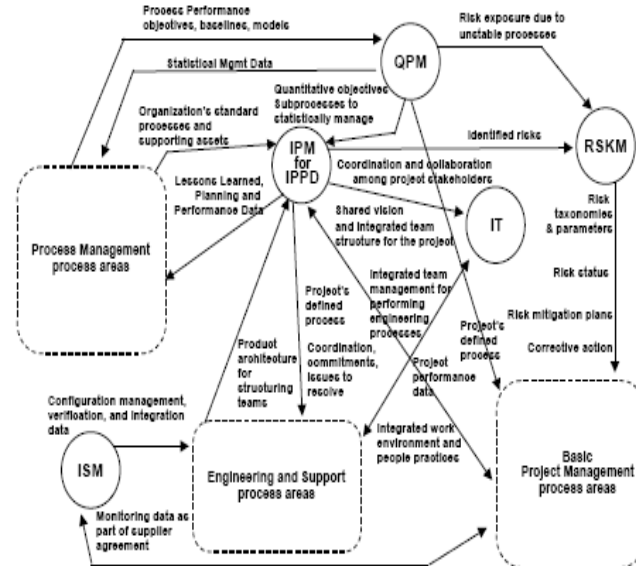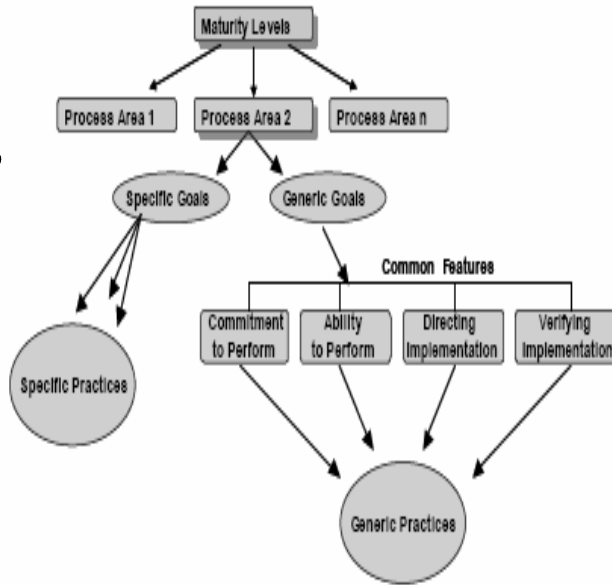
- **Multi-Day CMMI® training class**
- **700+ page text book**
- **22 Process Areas, 173 Specific Practices, 352 generic practices**
- **Numerous diagrams that seem to keep you in an endless loop**

Team got trained, but was a little confused

To avoid confusing the enterprise, CMMI® Team generated own training material

- **CMMI® terminology (Process Asset, Org capability, Metrics repository, process performance ….)**
- **Acronyms du jour with endless "loops"**
- **All 5 levels blended together**

Enterprise got trained, but was a little confused

We stayed the course!

- **Goal was to get everyone to learn the CMMI® terminology**
  - Everyone read and understood ISO 9000 & AS9100
  - People learned the Japanese terms of Lean
  - We had six sigma black belts ….

- **Created more and more training material**

- **Gave more and more CMMI® briefings**

- **We obtained CMMI® ratings!!**

And succeeded in meeting our CMMI® Objectives

CMMI® became an "official" improvement tool

- **CMMI® related activities continued on a priority driven basis: Developed CMMI® Self Assessment Tool and Process**

- **Improvement initiatives were funded and implemented**

- **Company deployed improved standard processes**

- **CMMI® Self Assessments started to identify numerous challenge areas via systemic gaps**

- **Few understood the value in resolving some CMMI® gaps**
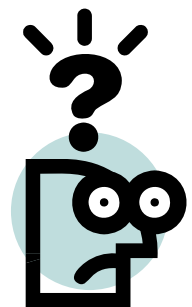
People used CMMI®, but still did not understand it

As issues surfaced, Resistance to the model increased

- **Teams wanted specific cookbook instructions on how to implement CMMI® - Passive Resistance**

- **Some saw the 1" thick book and thought it had to be too complex to implement / sustain**

- **Teams questioned why Lean was so simple and CMMI® was so complex**

- **People remembered the "CMMI® guys" that no one could understand**

**"CMMI® guys" knew that
Training had to be improved**

Adopted new training approach

- **No CMMI® terminology**

- **Simple diagrams with minimal arrows**

- **Not more than 3 charts**

- **Describe in 30 minutes are less**

- **Relate to something everyone already understands**
  – Plan, Do, Check, Act improvement cycle
  – Organizations concept of operations

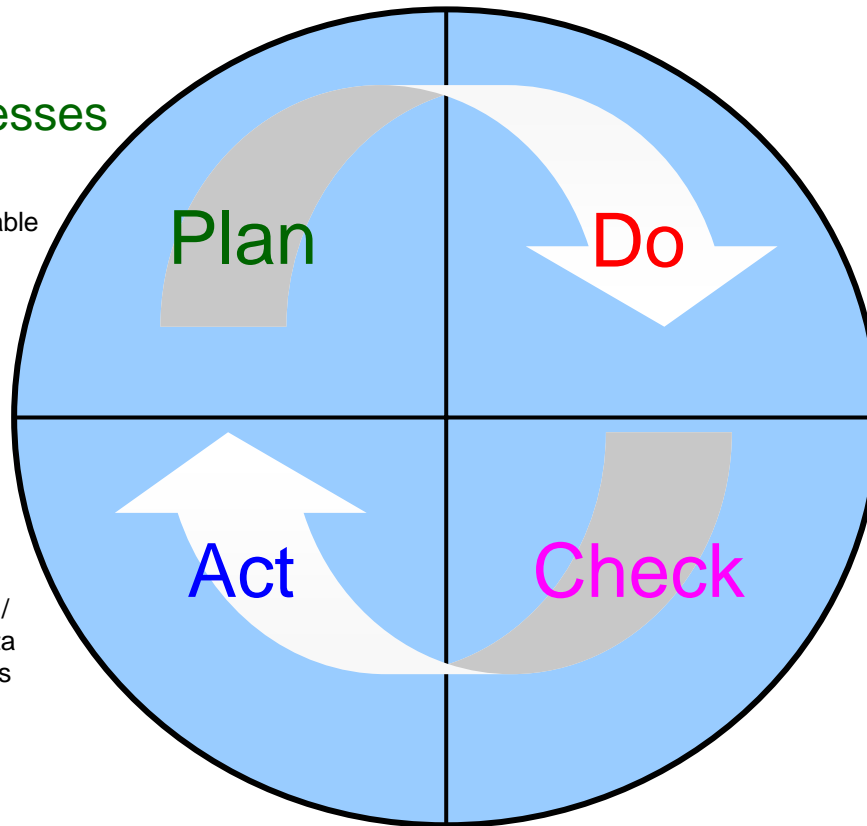**Needed to turn a 700+ page book into 3 charts**

Related process management to the improvement model already in use

Define / Refine Processes
- Establish Org Process Assets (standard processes, tools, training material …) which address the applicable CMMI best practices

Implement Processes
- Deploy standard processes / tools / improvements
- Train people

Plan **Do**

Act **Check**

Improve Processes
- Collect and analyze lessons learned / change requests / appraisal & perf data
- Identify process needs and objectives
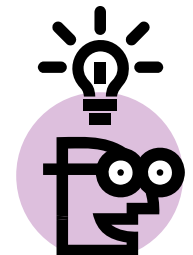- Plan and implement improvements
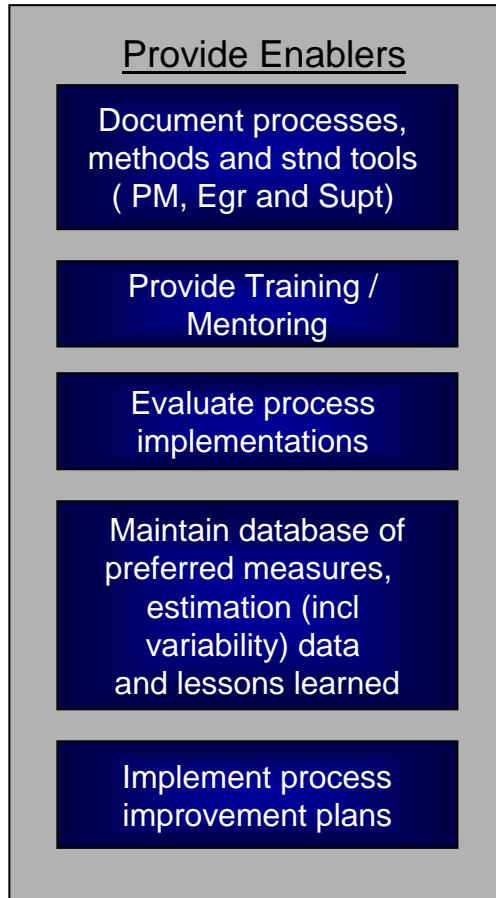
Measure and Analyze Process Performance
- Monitor for process compliance
- Measure performance of processes
- Stabilize and characterize process performance

Reaction: Why didn't you tell us this 4 years ago?

Related overall improvement framework to RAAs that everyone understood

Process owner RAAs

Provide Enablers

- Document processes, methods and stnd tools (PM, Egr and Supt)

- Provide Training / Mentoring

- Evaluate process implementations

- Maintain database of preferred measures, estimation (incl variability) data and lessons learned

- Implement process improvement plans

Processes, Tools, Data, Training and Improvements →

← Measures, products and improvements resulting from the processes

Product Development RAAs

Develop Products

- Define and Manage Requirements

- Define team conops / structures and obtain stakeholder buy-in

- Review common processes and Tailor as required.

- Develop plans (incl risk/process map) using hist process data

- Execute plans to produce and Integrate Products

Monitor Development

- Collect measures and track progress / risks

- Assure Quality and Manage Configurations

- Manage Suppliers

Translated and simplified details of the CMMI® Model architecture

Goals explain overall intent

Expected tasks illustrate overall methodology

Includes Program & Process Owner Roles

Continual Process Improvement Best Practices

Categories		Product and Process Development Activties	Goals	Basic Operation *		Consistent Improvement **	
				Prog	Process Owner	Prog	Process Owner
PROCESS MANAGEMENT	1	Document processes / establish data library / teaming rules	2	3	9	0	12
	2	Deploy / improve stnd processes	3	4	9	0	12
	3	Training on processes	2	5	7	0	12
PROJECT MANAGEMENT	4	Establish integrated teams / use standard processes	3	14	5	12	12
	5	Plan projects	3	14	0	12	9
	6	Manage Risks	3	7	0	12	9
	7	Collect / analyze performance measures	2	8	0	12	9
	8	Review progress and manage corrective actions	2	10	0	12	9
	9	Manage suppliers	2	8	1	12	9
ENGINEERING	10	Develop Requirements	3	10	0	12	9
	11	Manage Requirements	1	5	0	12	9
	12	Develop / implement product design	3	8	0	12	9
	13	Conduct trade studies	1	6	0	12	9
	14	Integrate products	3	9	0	12	9
	15	Verify products	3	8	0	12	9
	16	Validate products	2	5	0	12	9
SUPPORT	17	Control process outputs	3	7	0	12	9
	18	Evaluate prods / process compliance	2	4	0	12	9
			43	135	31	180	174

Note: Header row "Expected Tasks" spans Basic Operation * and Consistent Improvement ** columns.

Total Program tasks: 314 (134+180)
Total Process Owner tasks: 205 (31+174)

* Able to get the work done in the given activity
** Can achieve consistent process improvement

Training was successful and Now CMMI is part of our culture

- **Established executive level CMMI® Steering Team**

- **CMMI® goals were flowed to individual's performance objectives**

- **CMMI® Self Assessments became mandatory across the enterprise**

- **Started sharing CMMI® lessons learned with some customers**

CMMI® was no longer a bad four letter word!!

How we aligned everyone to use CMMI® as an Improvement Tool

- **Relentless support from Sr. Management**

- **CMMI® SMEs available to support enterprise needs**

- **CMMI® focals in every organization**

- **User friendly training material**
  - Simple and concise
  - Related to something everyone understood

CMMI® Is A Good Improvemnt Tool

CMMI® in 30 Minutes

Training was key to our success