



# ***Using CMMI To Improve Contract Management Within DCMA***

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## Outline

- DCMA Overview
- Transformation Within DCMA
- How DCMA Plans on Using CMMI
- Conceptual CMMI-Based Contract Management Framework
- Pilot Program
- Next Steps
- Questions



# ***DCMA Overview***



- DCMA: Independent combat support agency within DoD
- We are DoDs contract's manager. Responsible for ensuring Federal acquisition programs, supplies, and services are delivered on time, within cost and meets performance requirements
- Provides direct service on DoD contracts at Contract Management Offices (CMOs) throughout CONUS and Overseas

# ***Transformation Within DCMA***

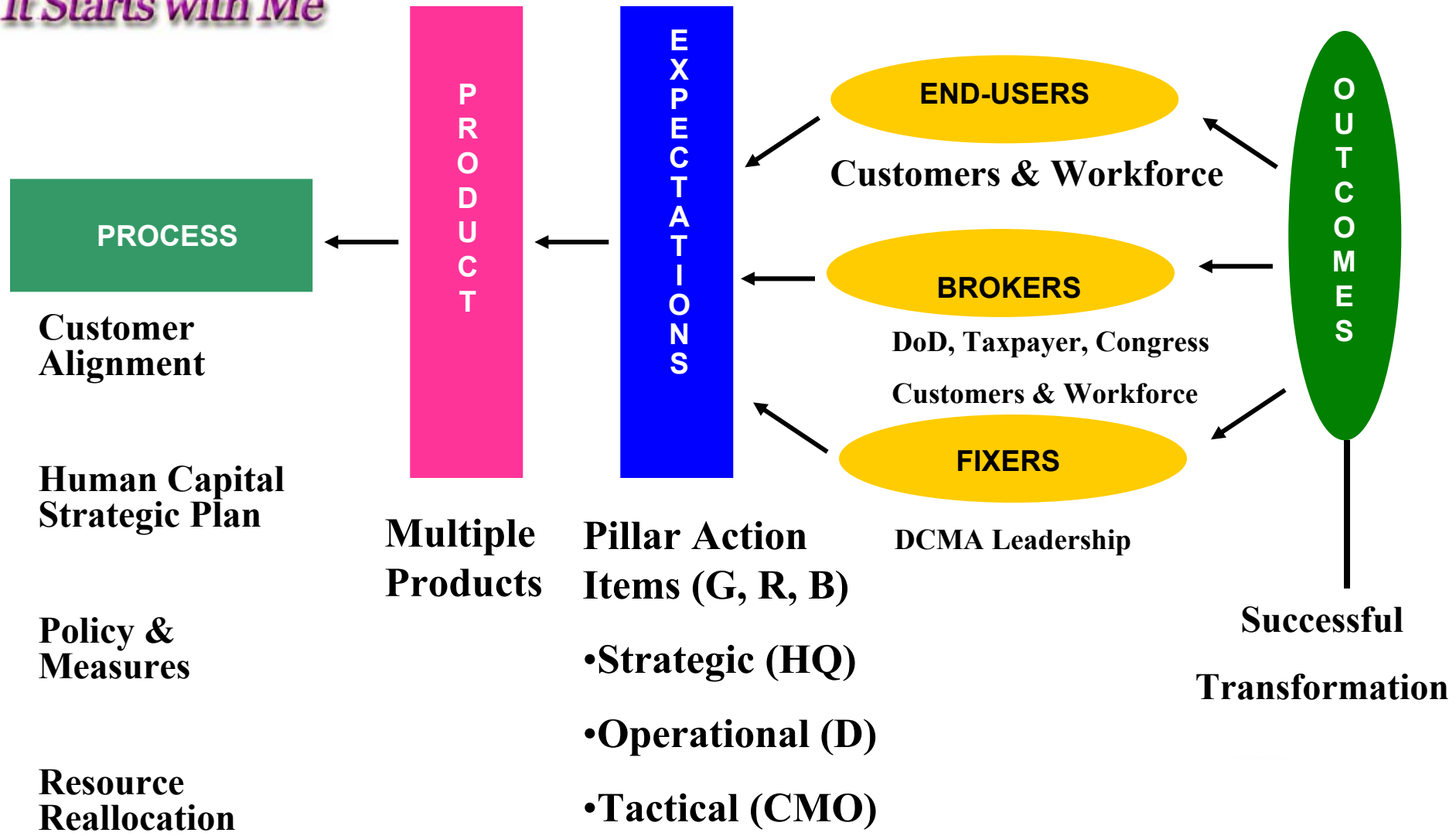


## How did Transformation Get Started?

- Defense Industry
  - Underway since 1980's
    - Congress: Reduced Spending
    - Exec: Government Reinvention
    - OSD: Acquisition Reform Initiatives
- OSD Perspective
  - Transformation being pushed hard in every arena – all the Services, financial management, acquisition payments, etc
  - Performance-Based Management is major focus



- DCMA
  - Embrace and Adapted to these sweeping changes
  - Initiated a Strategic Health Check (360° Assessment) to better understand the issues and challenges
  - Customer feedback mixed
    - Generally satisfied with past & current performance
    - Concerned with DCMA's ability to meet future needs – both capacity & capability issue
    - *You are too internally focused!*
  - DCMA is changing its focus to a more Customer-Centered thinking utilizing Transformation & The Pillars





- What does the Customer want?
- CMMI methodology supports DCMA's Transformation efforts
- Liaison interviews were conducted with our customers, and the results are:
  - Have more insight into program cost, schedule, and technical risks
  - More proactive involvement; predictive data analysis
  - Performance of risk assessment and mitigation
  - More insight into contractor systems and processes



## Drivers

- Address customer needs
  - Driven by customer concerns and priorities
- Integrate functional surveillance activities
- Mechanism for targeted surveillance
  - Risk identification, handling and monitoring
- Provide input for Predictive Analysis
  - Leading indicator of potential problems



# ***How DCMA Plans on Using CMMI***



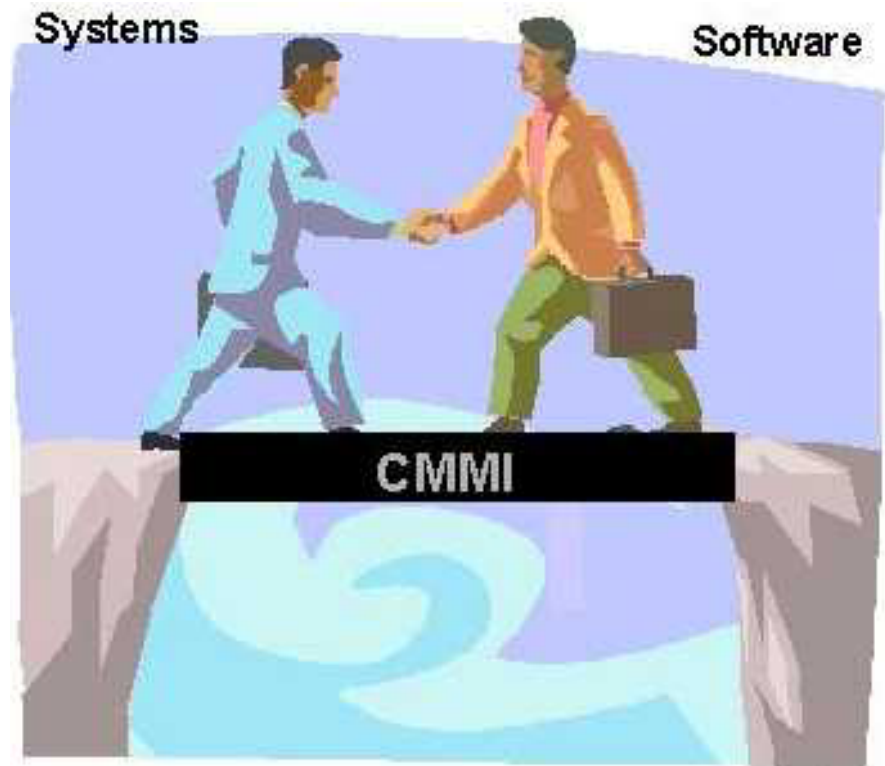
- First, let's look at some history on using CMM's within DCMA
- DCMA has developed CMM-Based Insight (CBI)
  - Continuous process appraisals, based on SW-CMM
  - Data collection tool developed
  - Limited implementation to date
    - Some success, usually based on heroics
    - Not fully integrated with DCMA “standard” business
    - Low “perceived” value / Return on Investment (ROI)
    - Seems cumbersome and resource intensive
    - High training overhead (relative to ROI)

- Now let's see how we're going to use CMMI with DCMA
- CMMI "Core Team" established:
  - Use lessons learned from CMM Based Insight
  - Develop Method Description Document (MDD) that clearly describes the usage of the CMMI within DCMA
  - Develop education strategy & materials
  - Pilot program to validate MDD and training
  - Provide status to DCMA HQ Management on results

- DCMA is not the “typical” CMMI user
  - Not seeking a benchmark “Maturity Level”
  - Responsible for oversight NOT development
  - Primary goal is risk management and Predictive Analysis. Process improvement is a secondary goal.
- Need to ensure CMMI is integrated as part of DCMA business - NOT additional work
- Need right balance of “process” and “product”
- DCMA will utilize the Quantitative Management Disciplines in PSM as part of the CMMI Process

### Why should DCMA use CMMI as a tool to assist in performing Contract Administration activities?

- Systems engineering and software disciplines integrated into one reference process model.
- Provides a framework for introducing new disciplines as needs arise.
- Covers most of the disciplines used by our contractors
- Builds on (and improves!) the SW-CMM, SE-CMM and EIA 731



- To facilitate a risk-based contract management approach:
  - Map CMMI Process Areas to WBS Elements
  - Prioritize and evaluate suppliers' processes
  - Identify and assess suppliers' process-related risks
  - Predict future program performance (Predictive Analysis) based on the suppliers' process capability and process-related risks
  - Select, plan and conduct targeted risk management and surveillance activities to address high priority risks
  - Collect, analyze and report process-related risk information
  - Continuously monitor & evaluate suppliers' processes



## Plans for CMMI Usage

- Address customer needs!
- Integrate into DCMA standard business
  - Support One Book (SRM, SPRDE & SAM)
  - Basis of structured surveillance approach
  - Provide input for Predictive Analysis
  - Integrated with other activities (e.g. TPM, EVM etc)
- Fully tailorable / maximum flexibility, e.g.:
  - Selecting only high priority Process Areas for specific program requirements
- Tool of choice



## Plans for CMMI Usage

- Tool to aid contract surveillance<sup>o</sup>
  - Primary purpose:
    - Risk identification, handling and monitoring
    - Aid Variance Analysis
    - Support Predictive Analysis
- Independent of supplier's Process Improvement efforts (e.g. CMM, CMMI, etc)
  - Supplier attaining "Maturity Level" rating is not a factor
  - Supplier process improvement is secondary benefit



## Integration with Risk Management

- CMMI helps identify risks:
  - Analysis of CMMI mapping helps identify relative consequence of project process areas
  - Determinants of likelihood:
    - CMMI based evaluation
    - DCMA specific knowledge
    - Measurement analysis
    - Past performance
    - Others



## Potential Benefits

- Improve insight into high impact project processes
  - Efficient use of resources by targeting effort on the higher priority processes
  - Objective evaluation of process effectiveness (e.g. Cost Estimation)
  - Detailed analysis of process strengths and weaknesses and their impact on future program performance
  - Promote constructive teaming to improve program performance (PMO, DCMA and Supplier)

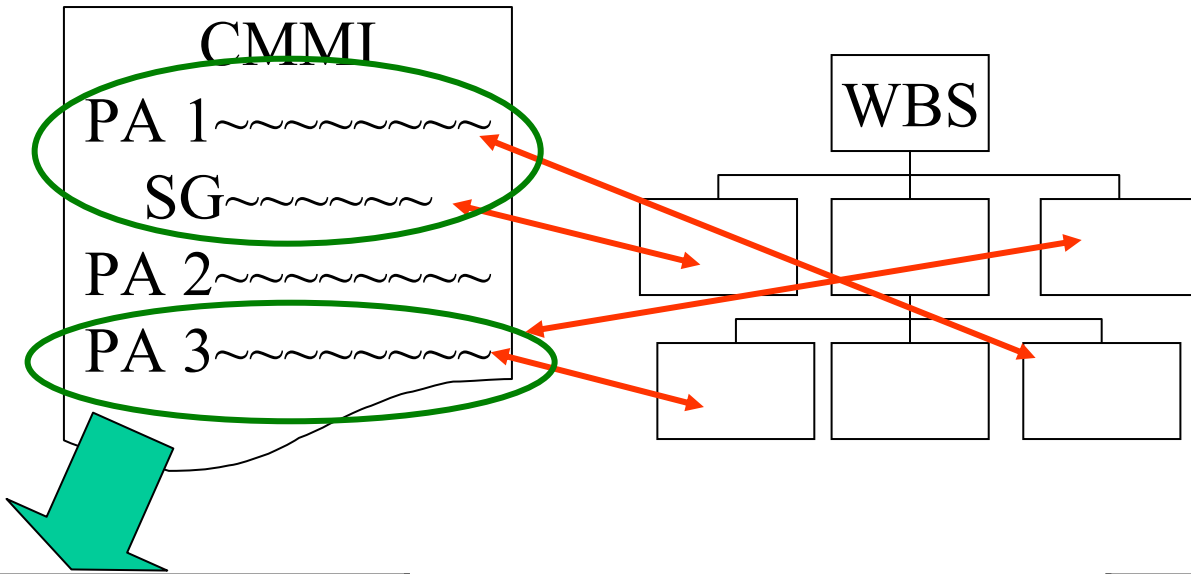
**Program Success!**



***Conceptual CMMI-Based Contract  
Management Framework***



# Conceptual CMMI-Based Contract MGT Framework

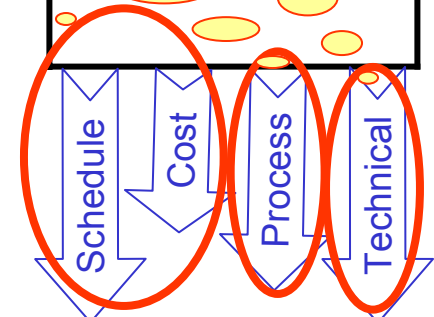
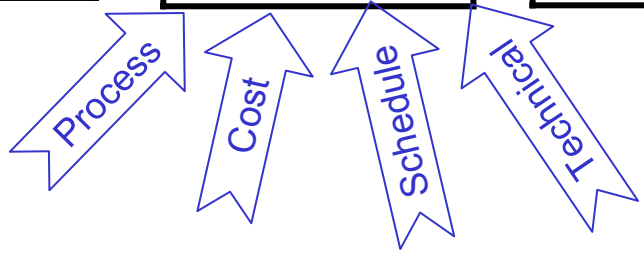
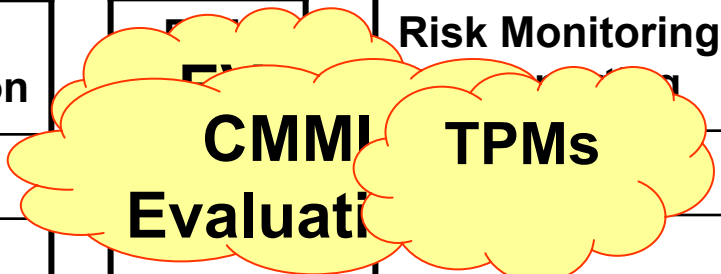


Key Process	Program Element Mapping
PA 1	CM plan, WBS Item 1
PA 3	QA Plan, System Spec
PA 6	WBS Item x, etc

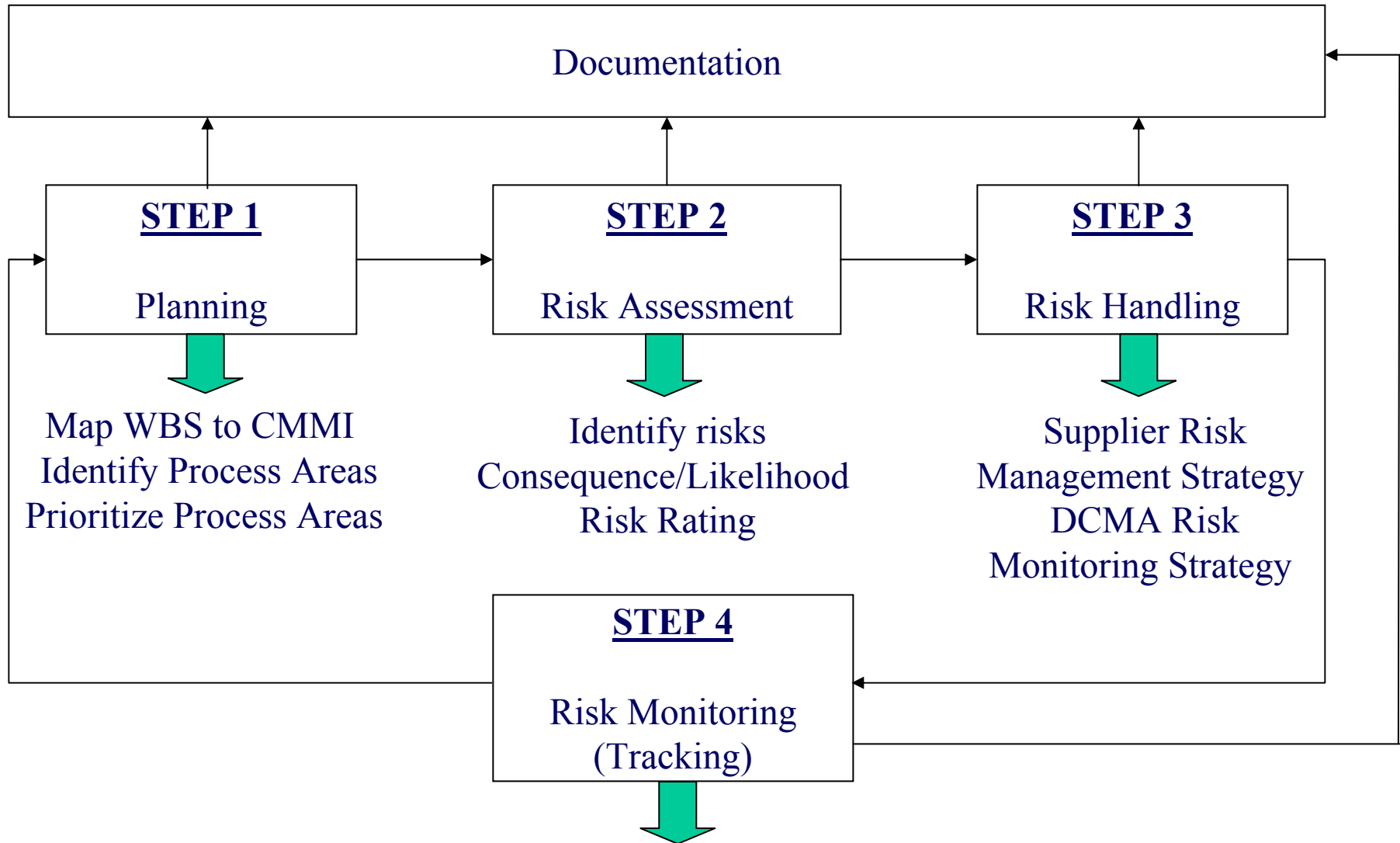
Risk Identification

Risk Evaluation

Risk Monitoring



# Conceptual CMMI-Based Contract MGT Framework



DCMA Risk Monitoring Strategy: Execute Risk Monitoring/Management Plan  
Periodical re-evaluation of risks

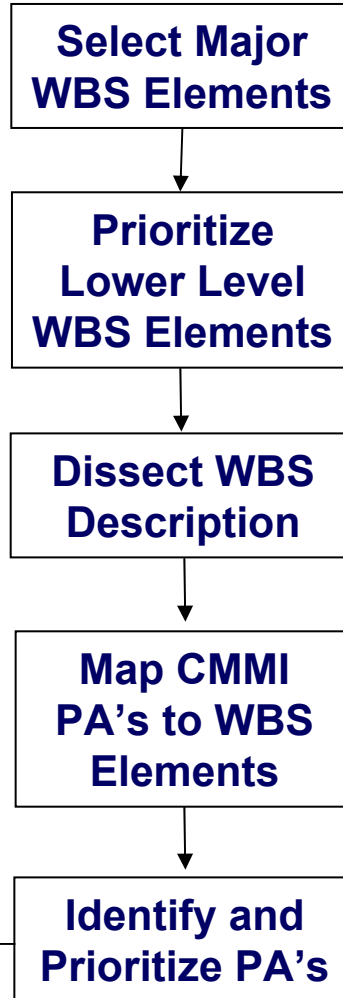
# ***Pilot Program***





- Phased pilot program
  - Test high risk concepts first
  - Full stakeholder visibility and involvement
    - Customer, HQ, Districts & CMO
    - Part of pilot evaluation process
- Phase 1
  - Determine feasibility of “Planning” step
  - 2 sites (East & West)
  - Attributes of pilot site identified at Workshop
  - Phase 1 Pilot Sites:
    - DCMA Raytheon (June 2-3, 2003)
    - DCMA Northrop Grumman (June 16-20, 2003)

## Step 1: Planning



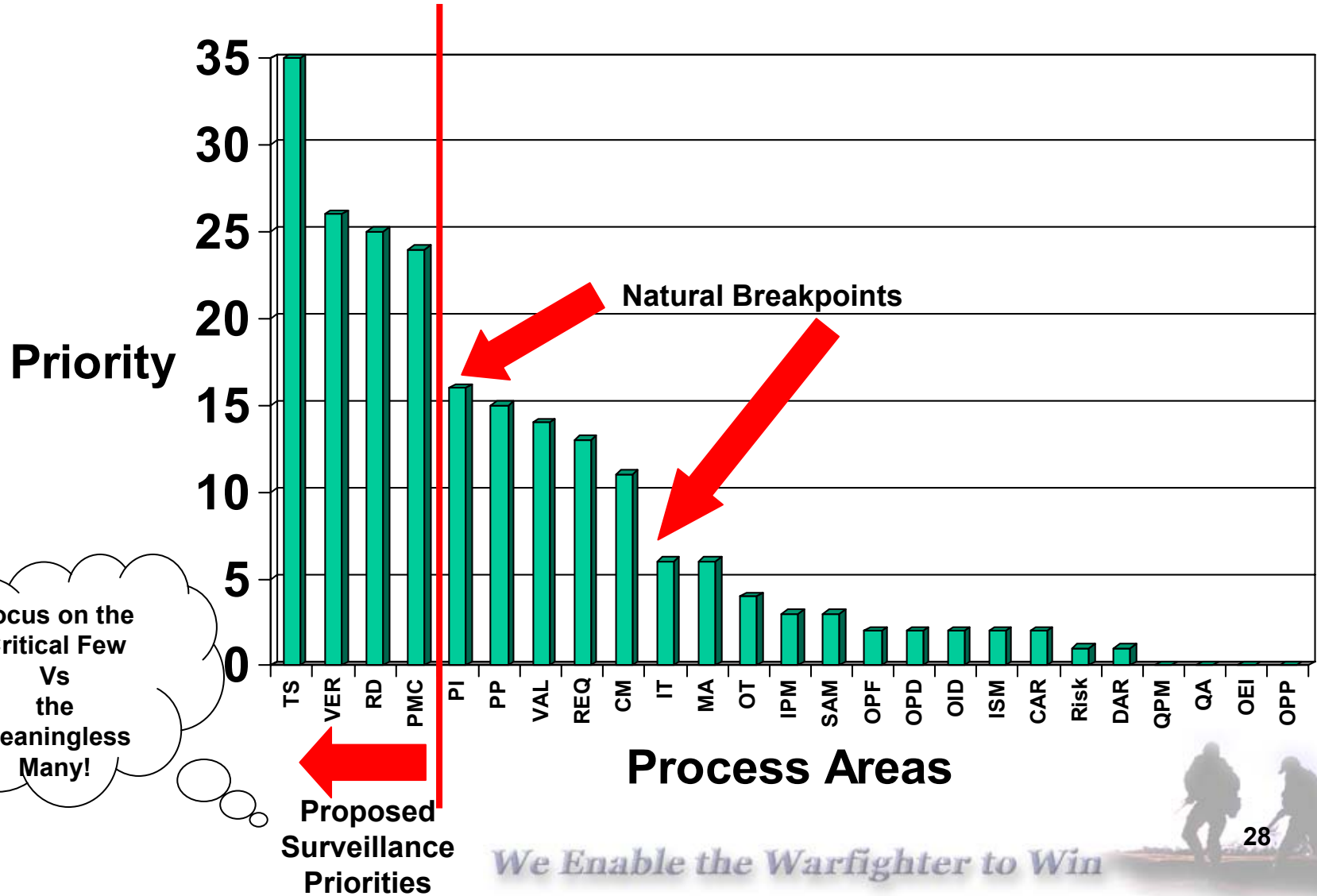
**STEP 2:**  
**Identify and Assess** ←  
**Process Risk**



WBS Number					CMMI Process Areas																			Metrics														
L1	L2	L3	L4	L5	Priority	Mapped?	OPF	OPD	OT	OID	OEI	OPP	PP	PMC	RSKM	IPM	IT	SAM	ISM	QPM	REQM	RD	TS	PI	VER	VAL	PPQA	CM	DAR	MA	CAR	CMMI	TPM 1	TPM 2	CPI (Cum)	SPI (Cum)		
100000						Y																																
	120000					Y																																
		122000				Y																																
			122100			Y																																
				122110	1	Y			1				1	1		1											1								1.09	1.00		
				122120	2	Y	1	1		1						1													1	1				0.72	1.00			
				122130	1	Y							1		1																			1.72	0.84			
				122140	2	Y							1									1					1											
				122150	1	Y								1	1								1	1					1	1				1.03	1.02			
				122170	2	Y								1	1			1	1			1		1				1						0.90	0.95			
				122180	3	Y							1	1								1												0.98	0.96			
				122190	3	Y									1										1									1.21	1.00			
Process Area Hits								1	1	1	1	0	0	4	5	1	2	0	1	1	0	2	2	2	0	1	0	0	3	1	2	1						
Weighted PA Priority = SUM(WBS Priority x PA Influence)								2	2	1	2	0	0	7	10	1	3	0	2	2	0	4	4	3	0	3	0	0	5	1	3	2						
CMMI Appraisal Results																																						

Notional Process Evaluation Data

Notional  
CPR  
Data



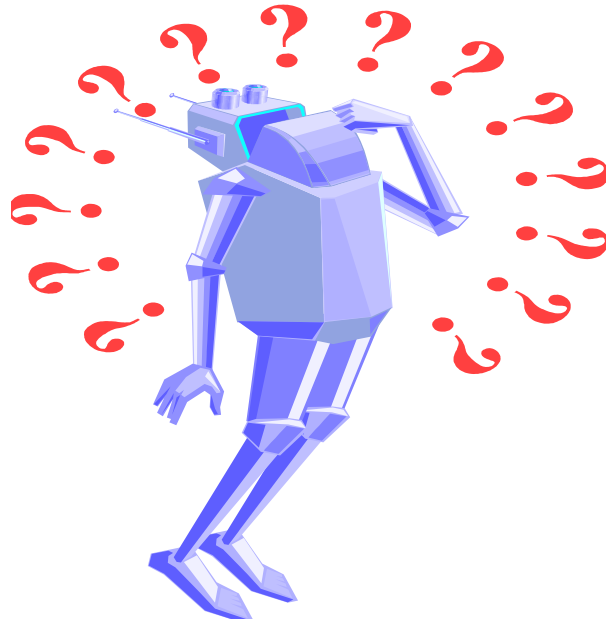
PA	PA Name	Schedule	RAM	Means of Verification	
				CMMI Ref	Question
PP	Project Planning	Wk1	PI SW	<b>SG 1 Establish Estimates</b>	
				SP 1.1-1 Estimate the Scope of the Project	1. How is the scope of work documented? 2. How do you ensure that the planned scope of work has been decomposed to a sufficient level of detail to enable accurate estimates?
				SP 1.2-1 Establish Estimates of Work Product and Task Attributes	1. How was the size of work products and tasks performed estimated?
				SP 1.3-1 Define Project Life Cycle	1. Where and how is the project lifecycle considered, and how does the lifecycle impact project planning activities?
				SP 1.4-1 Determine Estimates of Effort and Cost	1. How was effort and cost derived from the estimated planning parameters?



- Feasible to Map CMMI to WBS
  - Easier than expected
  - Knowledge of CMMI beneficial
- Systematic WBS Dissection Beneficial
  - Provided Common Understanding
  - Facilitated Team Communication
- Value of Mapping is proportional to the planning detail
- Recommend to Proceed to Next Phase

- Present Pilot Results to Core Team
  - Evaluate Pilot Results
  - Review and Update Process (MDD)
  - Plan Next Steps
- Out Brief Executive Management
  - Approve Future Planned Effort

## Questions





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