CMMI Based Risk Management

Presented By:

Tom Solosky & Brian Weber

16-18 November, 2004

CMMI Technology Conference and User Group

Denver, CO

DCMA
Defense Contract Management Agency

Outline

- Role of DCMA
- Customer Expectations
- DCMA Use of CMMI
- Benefits of CMMI
- CMMI Pilot Efforts
- Conclusion

DCMA
Defense Contract Management Agency

What We Do

Achieve Customer Outcomes!

Provide Customer Focused Acquisition Support Services

- Right Item = Quality
- Right Time = On-Time Delivery
- Right Price = Value for Money

Combat Support Agency

- Military Operations
- Readiness of Fielded Systems
- Modernization of Military Equipment
- Industrial Surge – During Conflict

Teaming with Military Services and Defense Contractors to ensure that tax dollars achieve mission requirements

DCMA
Defense Contract Management Agency

Full Service Acquisition Impact

Scope of work

- *All major weapons system programs*
- *$1,173B in Contract "Face Value"*
- *$129B Unliquidated Obligations*
- *335,000 Contracts*
- *16,000 Contractors*
- *Flight Operations (1200 Aircraft/yr)*
- *$86B Government Property*
- *$8B Progress Payments*
- *$12B Performance Based Payments*
- *$37B in Small Business subcont. plans*

Span of Control

- *11,000 Professionals*
- *Over 800 Locations Worldwide*
- *50 Major Field Commands*
- *$1.1B Budget Authority*
- *$81M Reimbursable/Foreign Military Sales*
- *Combat Support Agency*

Readiness and Combat Support

The Apparent

Big Items - Big $ - High Attention

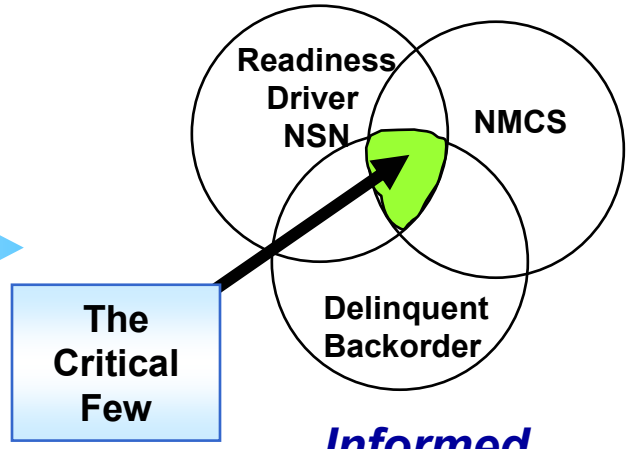
Depot Maintenance
Timely Return to Mission
Capable Status

DCMA covers…

The Full Spectrum

The Less Apparent

Small Items - Small $ - *High Importance*



Informed
Engagement
on Spares

Combat Support Agency

78 personnel in 9 different countries including
Iraq and Afghanistan

Influencing Program Success

DCMA
Defense Contract Management Agency

Teaming & Real-Time Communication:

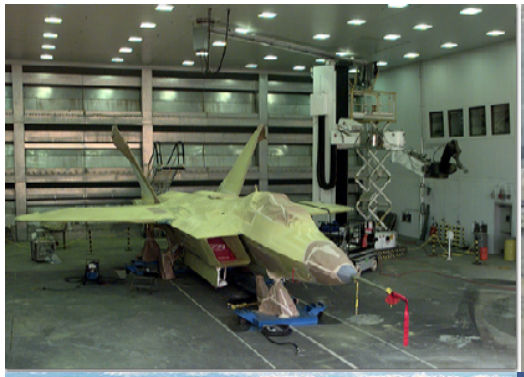
PM -- DCMA -- Suppliers

Cost Visibility & Reporting:

Direct & Indirect Rates

Schedule:

Proactive insight; Early delay notification



EVMS:

Predictive, Timely Analysis

Software:

Early engagement at Prime/Subs

Risk Assessment/Risk Mitigation

plus

Right Staffing/Skills Mix

DCMA
Defense Contract Management Agency

What do our customers want?

- **Interviews were conducted with our customers and and the results were:**
  - **Require more insight into program, cost, schedule and technical risks to product outcomes**
  - **Desire more proactive involvement; predictive data analysis**
  - **Conduct risk assessment and take appropriate actions to to mitigate the risks**
  - **Provide assurance that the products work right out of the the box for as long as required**

DCMA
Defense Contract Management Agency

DCMA Use of CMMI

- **DCMA is not the "typical" CMMI user**
  - **Not seeking a benchmark "Maturity Level"**
  - **Primary goal is a better understanding of program risks and Predictive Predictive Analysis**
  - **Provides a structured method for targeted process surveillance activities activities**
  - **Allows the identification and evaluation of suppliers' most critical processes throughout the project life cycle**
- **Integrated surveillance for Systems Engineering and Software Software**
  - **Possible integration with other functional areas (program integration & integration & quality)**

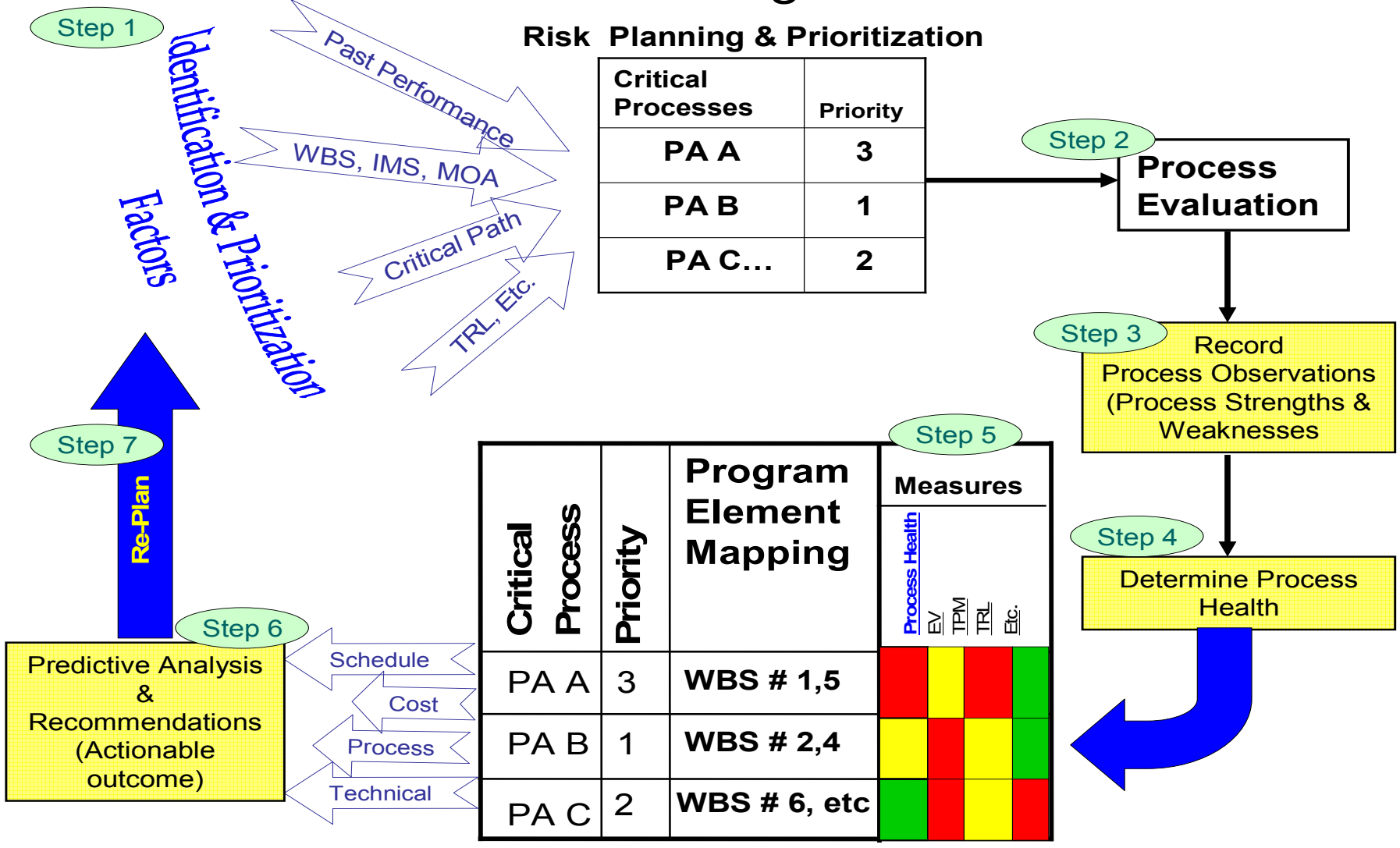
DCMA
Defense Contract Management Agency

Benefits of CMMI

- **Provides a structured method for targeted process surveillance activities**
- **Allows the identification and evaluation of suppliers' suppliers' most critical processes throughout the project life cycle**
- **Detailed analysis of process strengths and weaknesses weaknesses and their impact on product & program program performance**

Method Description

CMMI-Based Risk Management Framework



Two Implementation Methods Methods

- **Method 1**
  - **Planning steps includes WBS elements mapped to Process Areas (PAs) (Step 1)**
  - **Used as one of the inputs to process prioritization**
  - **Surveillance is structured around a well understood WBS**
  - **Supplier has a well defined work scope**
  - **Surveillance scope includes a large part of the WBS structure**

- **Method 2**
  - **Mapping to the WBS elements delayed until process health is determined (Step 5)**
  - **Surveillance is structured around contract events**
  - **WBS lacks detail**
  - **Use of other products define detailed work scope (schedules, work packages)**

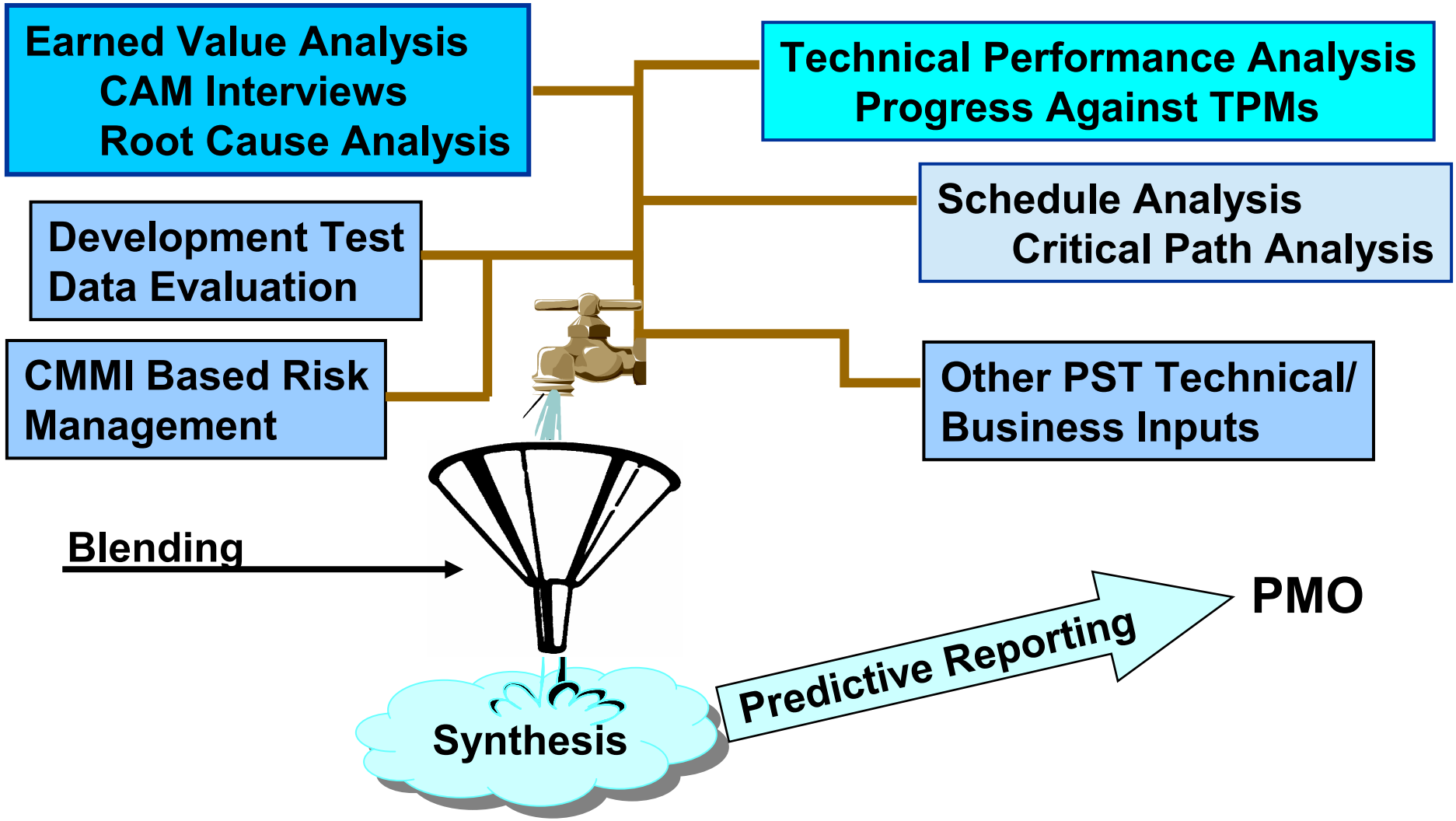
DCMA
Defense Contract Management Agency

Example Output

WBS Ref	WBS Priority	CMMI PA's					Process Measures	Other Measures	
		RM	RD	TS	PI	…		EV	TPM
1.1	3								
1.1.1	3								
1.1.2	3								
1.2	1								
1.2.1	1								
1.2.2	1								
Process Area Hits		2	1	1	1	…			
Weight PA Priority =SUM (Mapped WBS Priority)		4	1	3	1	…			
Incremental Process Evaluation Results									

DCMA
Defense Contract Management Agency

Predictive Analysis (EV+)



DCMA
Defense Contract Management Agency

Pilot Site Experiences

Brian Weber

DCMA Lockheed Martin Dallas

Software Engineer

DCMA
Defense Contract Management Agency

Good Experiences

- **Pilot sites found that CMMI based Risk Management Method provided good direction**
  - **What process areas are involved**
  - **Which process areas have most impact on cost/schedule/performance**
  - **Which WBS elements are affected**
  - **Gave newer employees a place to start**
- **Predictive Analysis**
  - **Mapping of Process Areas to WBS helped determine what elements might be affected if problems aren't fixed in the process.**

DCMA
Defense Contract Management Agency

Results

- **Findings were made at each site based on method indicators.**
  - **Findings were easily traced to Process Areas**
  - **Findings were easily traced to WBS**
  - **Knowing what would be affected by the findings made arguing their importance simple.**

DCMA
Defense Contract Management Agency

Difficulties

- **Up front planning was time consuming**
  - **Multiple functionalities agreeing on what is important can take time**
  - **Tools weren't user friendly**
  - **Tools lacked functionality**

DCMA
Defense Contract Management Agency

Revisions

- **With the incorporations of lessons learned, the pilot sites found implementation was easier**
  - **A new Database for recording observations made recording data easy**
  - **Method became easily tailored to each site**

DCMA
Defense Contract Management Agency

Summary

- Methodology, training materials, and tools are available for agency-wide use
- More DCMA sites are willing to apply the method to their facilities
- Tools are improving and DCMA resources are applied more efficiently
- Pilots and early users are collecting lessons learned for knowledge management