Integrating CMMI into the Enterprise

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Raytheon's CMMI Strategy:

- **Sponsor Enterprise Activities to Incorporate CMMI into On-going Raytheon Integrated Product Development System (IPDS) and Raytheon Six Sigma (R6*s*) Efforts**

  - **Although we understand the importance of maturity ratings, we are not interested in CMMI just as a score. We are interested in real process improvement to increase quality and productivity and reduce risk, cost, and time-to-market for the systems that we develop and thereby satisfy our customers' needs.**

CMMI is an integral part of process improvement, not a "stand-alone" initiative just for a score

IPDS, CMMI, and R6σ Work Together

IPDS provides an integrated set of best practices for the entire product development life cycle using a program tailoring process.

R6Sigma guides us to use CMMI and IPDS as tools to deliver value to customers and integrate industry best practices.

CMMI provides guidance for creating, measuring, managing, and improving processes.

Programs integrate R6s, IPDS, and CMMI into their plans

Integrated Product Development <u>System</u>

Product Development Disciplines:
- **Integrated Product Development Process**
- **Analog/RF/Microwave**
- **CM / DM**
- **Digital Design**
- **Materials**
- **Mechanical**
- **Parts & Libraries**
- **Quality**
- **Reliability**
- **Software**
- **Systems**
- **Test**
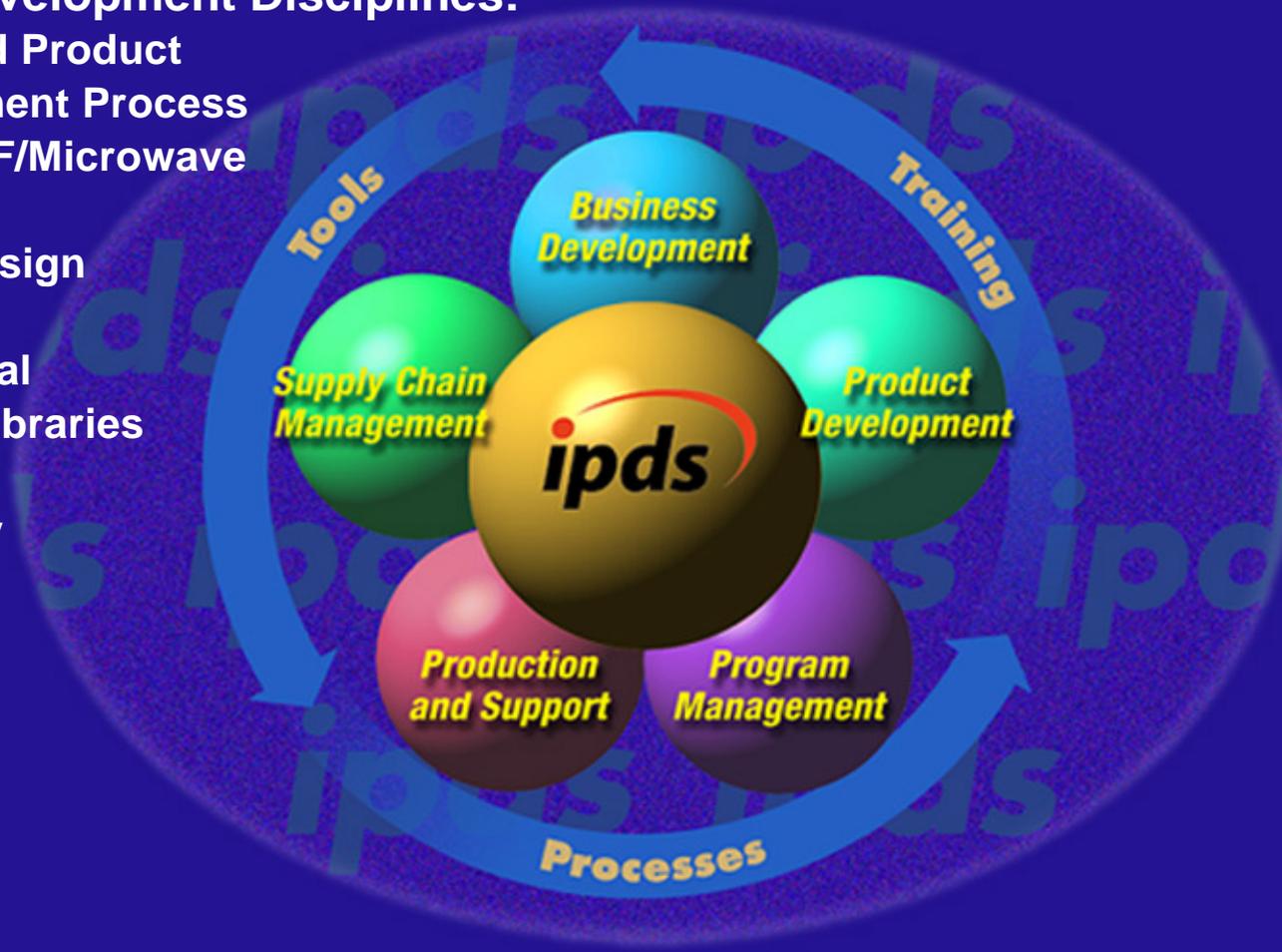
The IPDS "System" includes process deployment and improvement

How Organizations Fulfill CMMI Requirements

Raytheon

Business Needs

Business P&P

CMMI Requirements

Organization

Policies

Procedures

Tailoring Guidelines

Org.Training

IPDS

Work Instructions

Program specific Procedures and Work Instructions
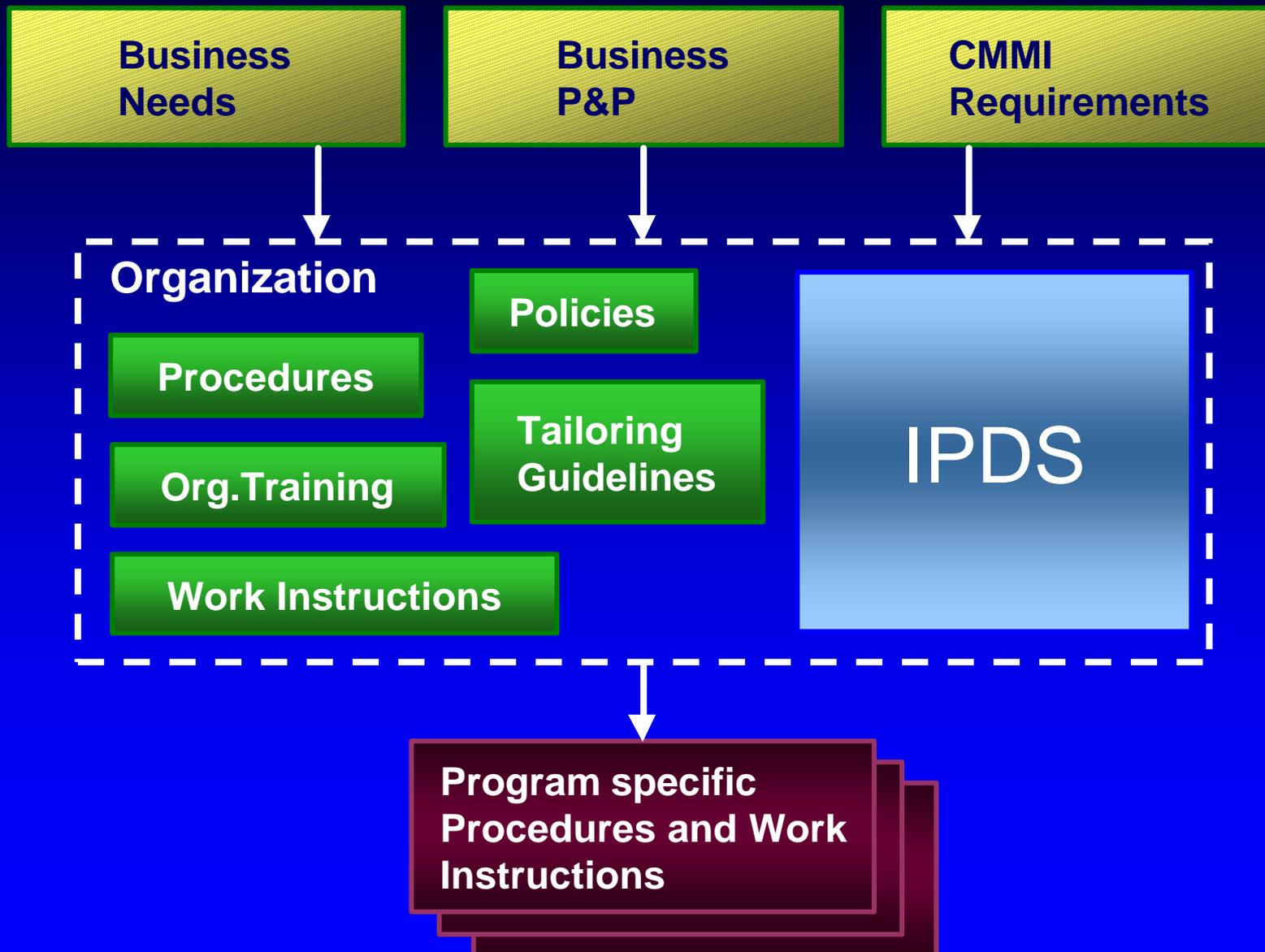
Raytheon Six Sigma Is Our Process Improvement Method

- **Process Improvement**
- **Tailoring of IPDS to a program or proposal**
- **Risk Management**
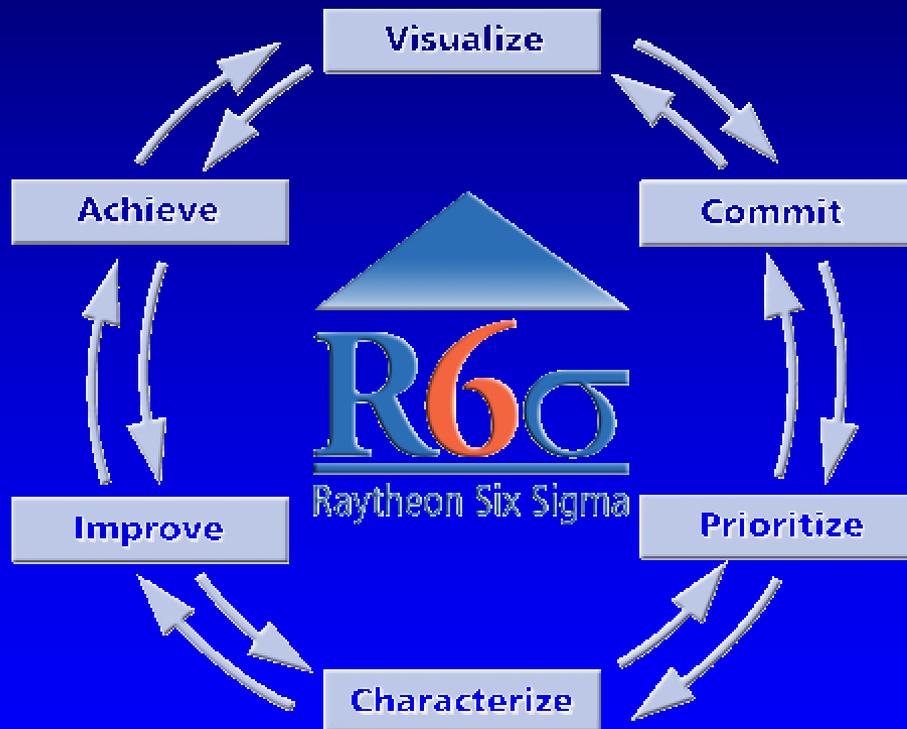
Principles of Raytheon Six Sigma

- **Specify value in the eyes of the customer**
- **Identify value stream; eliminate waste and variation**
- **Make value flow at pull of the customer**
- **Involve, align & empower employees**
- **Continuously improve knowledge in pursuit of perfection**

R6s includes principles of lean and robust design

Enterprise CMMI Strategy

Raytheon

- **Incorporate changes to bring IPDS into Level 3 compliance with CMMI**

- **Update IPDS to Level 5 compliance using incremental releases**

- **Upgrade support infrastructure in conjunction with IPDS upgrades (web sites, Process Asset Libraries, tools…..)**

- **Support Raytheon businesses in their CMMI deployment, assessments, and improvements**

- **Continue involvement in external activities with CMMI**

- **Team with the Software Productivity Consortium (training, assessment, consulting…)**

Building on successful (IPDS) process deployment and usage expedites CMMI deployment

Enterprise Program Ties CMMI and IPDS together

D. Burnham
CEO

G. Shelton
VP Corp. Engineering

Raytheon Engineering Common Program (RECP) ~$5M Budget

- CMMI
- IPDS
- Engineering Technology Networks & Councils
- Company-wide Engineering Symposia

EVMS Status Tracking

Funded activities using site personnel

$ Overhead

$ Overhead

$ Overhead

Business 1

1 or more sites

Business 2

1 or more sites

• • •

Business n

1 or more sites
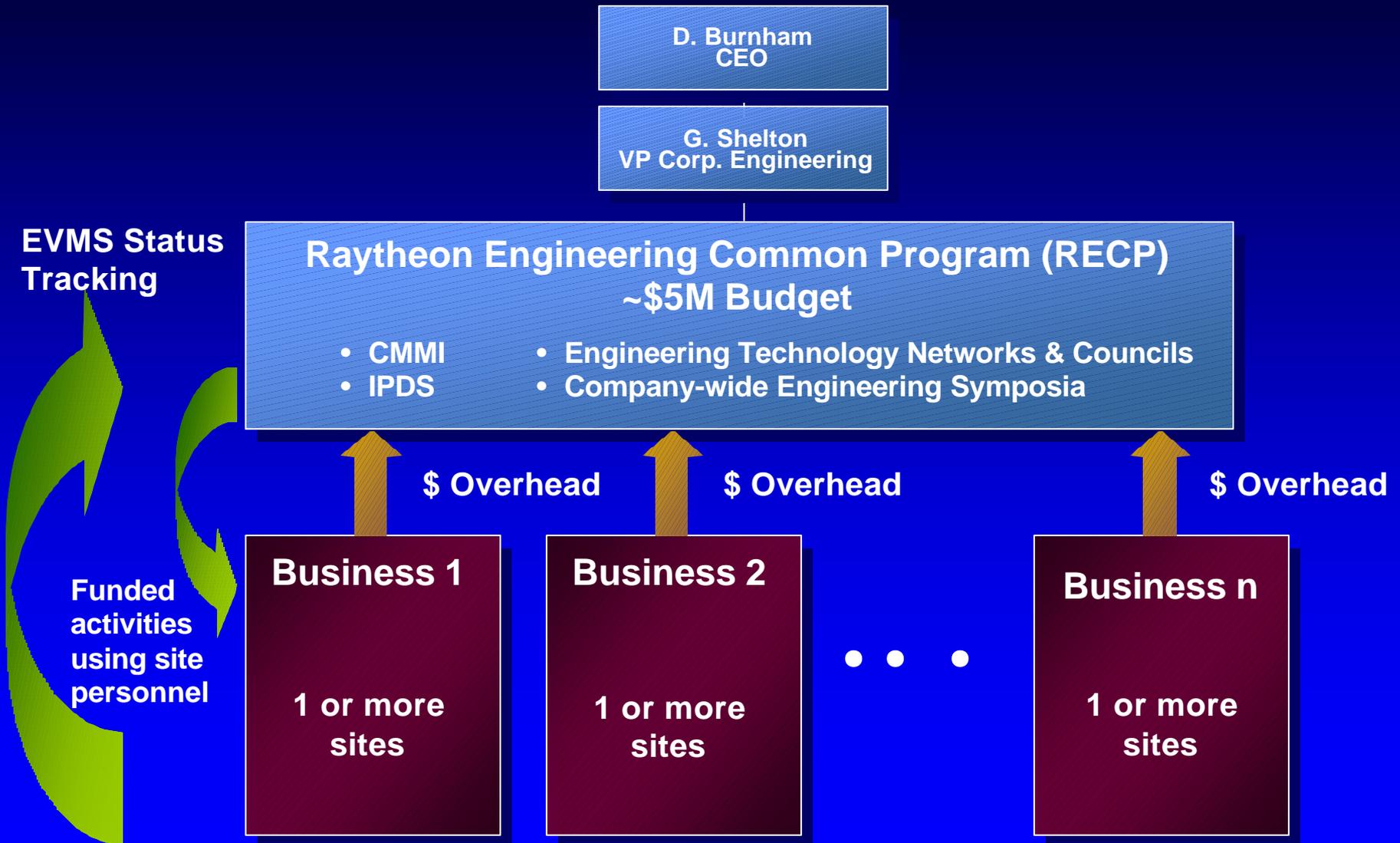
Provide Enterprise-Wide Training

Provide training in the CMMI model and its relationship to IPDS and Six Sigma

- **Develop an internal instructor capability**
  - **Maintain Transition Partner relationship with Software Engineering Institute**
  - **Provide 4 authorized instructors for <u>Introduction to CMMI</u>**
  - **Develop instructors for Raytheon-developed CMMI training**
  - **Consult with organizations to plan training programs**
  - **Enterprise funds trainer's time. Organizations pay for their attendees time**
- **Augment <u>Introduction to CMMI</u> with additional material:**
  - **CMMI Awareness (for Senior Management)**
  - **3 Day Assessment Team Workshop**
  - **3 Day Site Deployment Workshop**
  - **3 Day Coordinator Workshop**

Raytheon has trained over 20% of all <u>Intro to CMMI</u> attendees

Provide Assessment Resources for All Sites

- **Develop and Maintain an SEI-certified Internal Assessment Capability**
  - Maintain Transition Partner relationship for assessment services
  - Develop and maintain SEI-authorized Lead Assessors and a pool of assessment team members
  - Assess against any CMMI model and representation (e.g., continuous vs. staged, SW-SE-IPPD)
  - Train assessment teams and organizations preparing for assessments
- **Augment internal assessment capabilities with external assessment services (SPC, etc.)**
- **Form a CMMI Expert Team (CET) to help local organizations to plan assessments and improvement projects**
  - Help choose appropriate models/representations assessments.
  - Migrate from existing assessment methods for systems and software engineering.
  - Guidance on how to prepare for an assessment
  - Focus for collaboration, learning, and support for deploying CMMI
- **Conduct Site Assessments according to Multi-Year Enterprise Plan**

Most major sites have had an assessment

Additional Enterprise Activities

- **Raytheon CEO reviews CMMI progress regularly, using Multi-year Enterprise Plans**

- **CMMI commitments form part of Business' Strategic Operating Plans**

- **Company-wide engineering policy ties CMMI into IPDS**

- **Six Sigma training incorporates IPDS and CMMI concepts**

- **Workshop for all Raytheon CMMI site managers held Nov 11 in Denver**

Enterprise Lessons Learned: CMMI Is Not Just Engineering

- **Don't make CMMI a stovepipe – build on existing organizational process infrastructure**

- **Achievement of high CMMI maturity levels is impossible without engaging**
  - **Senior managers**
  - **Program managers**
  - **Quality/Product Assurance organization**
  - **Supply Chain Management**

- **Management sponsorship AND direct involvement is critical**

- **Organizational processes span programs and need enterprise commitment for success**

Enterprise Lessons Learned:
Improve Processes That Improve the Way You Do Business

- **Don't write processes, enablers, etc. just to satisfy the requirements in CMMI**

- **Write processes, enablers, etc. that reflect the way you do business**
  - **Retain a program life cycle view**
  - **Leverage IPDS (organizational infrastructure)**
  - **Focus on what makes the most difference to you**
  - **Let the process group worry about mapping to CMMI requirements**

- **Don't abandon improvements achieved in past pursuits of SEI CMM**
  - **Develop a roadmap for integrating systems and software and other stakeholder**