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Customer Success Is Our Mission

Automating Support for CMMI Level 5 Organizational Improvement

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Overview

- CMMI Level 5 Specific Goals for organizational Innovation and Deployment (OID)
- North Texas Software Engineering Center's organizational improvement web site
  - Improvement Proposal Submissions
  - Process State Model
  - Database Design
  - Electronic Software Improvement Plan (SWIP)
- Expectations and Future Plans

Electronic Systems, North Texas Engineering
Software Engineering Center
Achieving CMMI Level 5

CMMI Level 5 Specific Goals for Organizational Process Improvement

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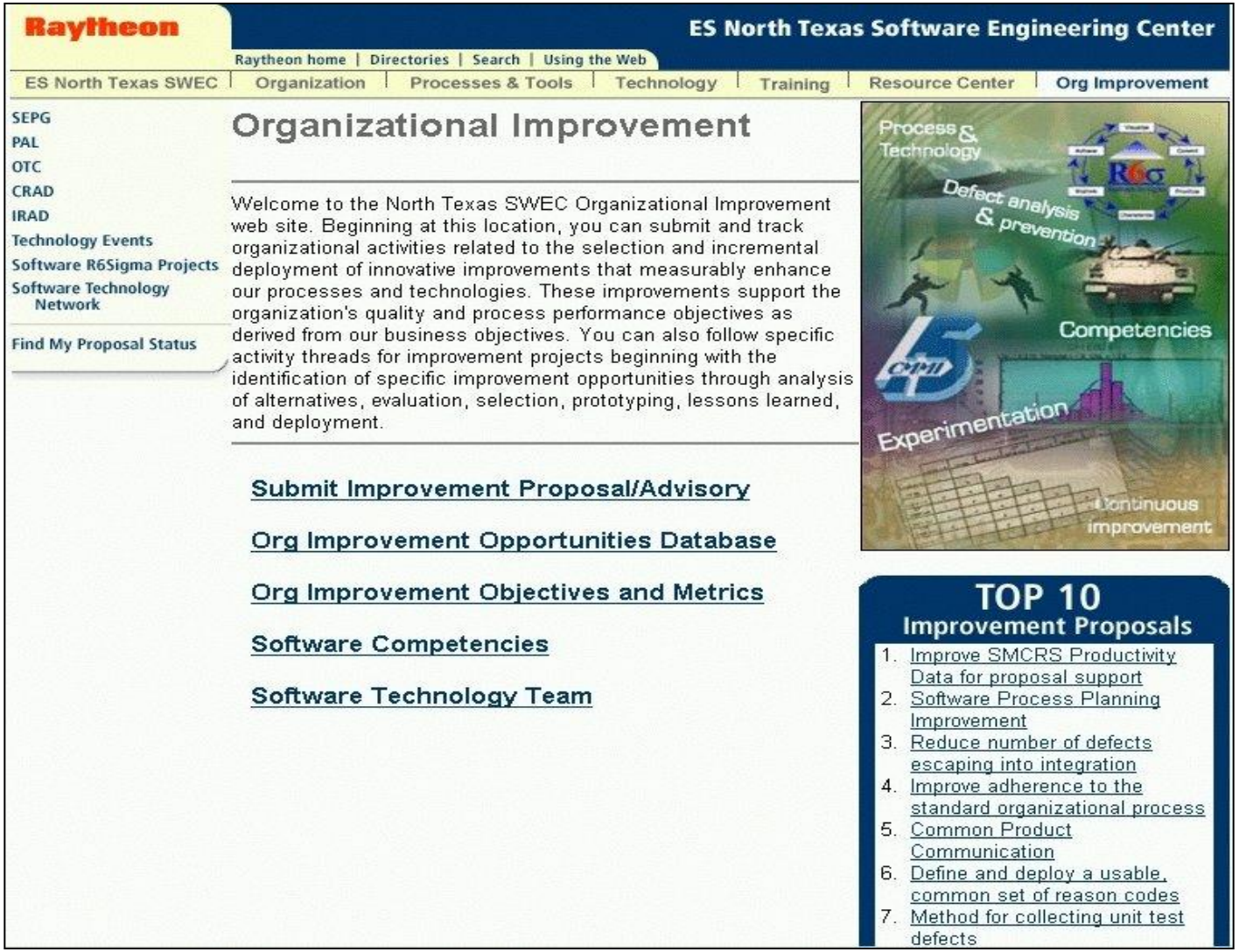
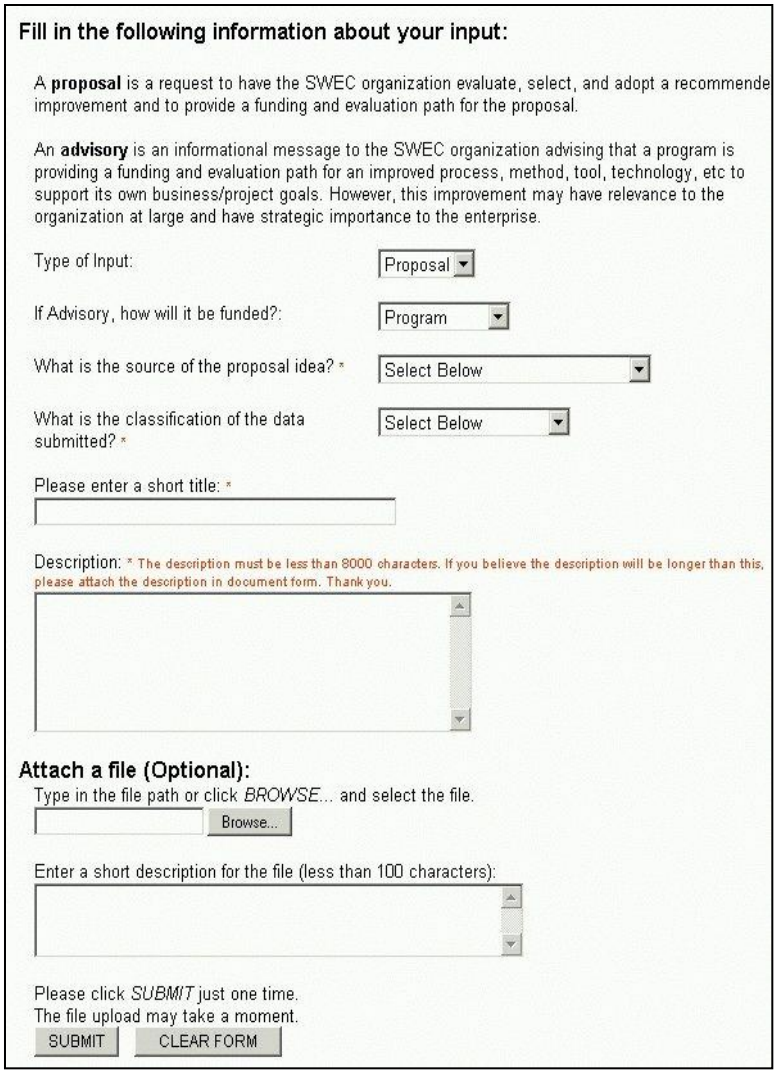
- SG-1
  - Process and Technology improvements that contribute to meeting quality and process performance objectives are selected.
- SG-2
  - Measurable improvements to the organization's processes and technologies are continually and systematically deployed.
- SG-3
  - The process is institutionalized as a defined process.

Organizational Improvement Web Site



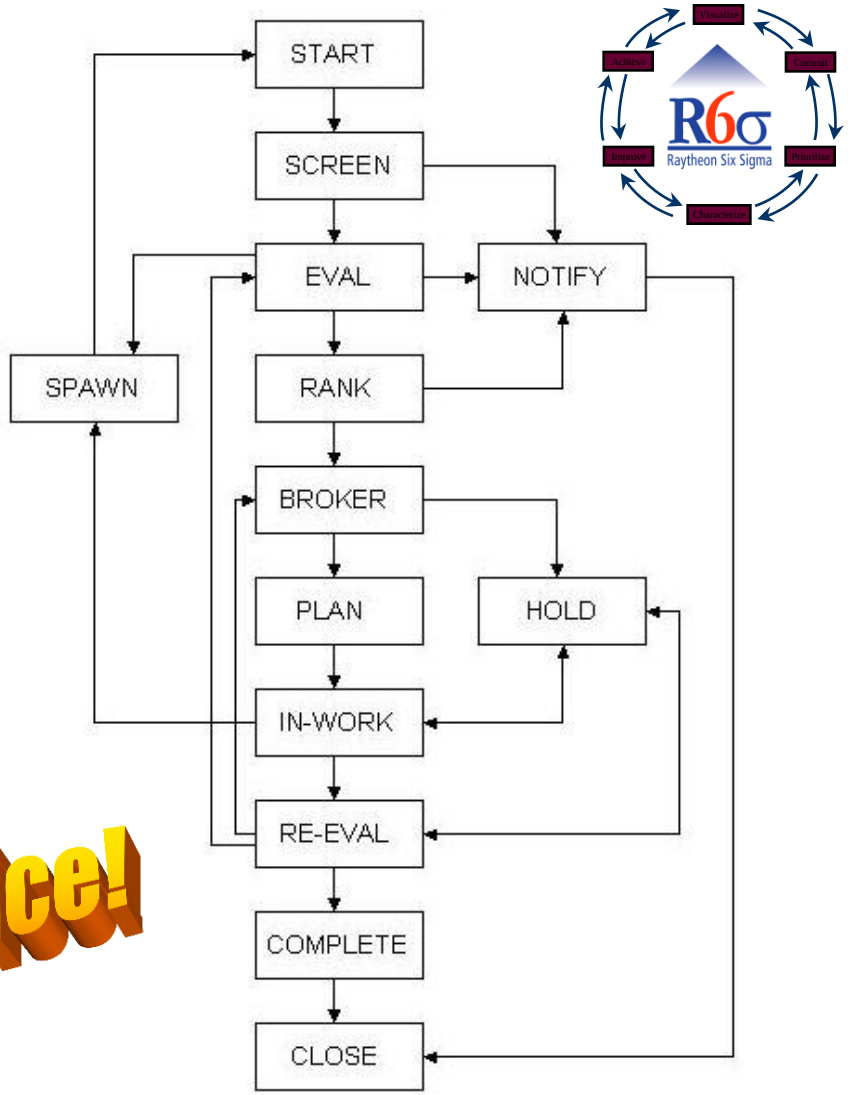
Improvement Proposal Submissions

- Type of Input
  - Proposal or Advisory
- Funding Type (Advisory)
  - CRAD, IRAD, Process Pool, Overhead, Unknown
- Source of Proposal Idea
  - Tailoring Analysis
  - Program/Org Metric Analysis
  - Appraisal/Assessment Results
  - Regular Cap. Analysis Results
  - Informal Behavior Assessments
  - Findings from DAR/ATS process
  - SWIP Root Cause Analysis
  - Output from Org. Imp. Projects
  - Symposium
  - Customer Contact
  - Standards Committee
  - Library Search
  - Industry/University Training
  - Technical Journal
  - Web Search



Process State Model

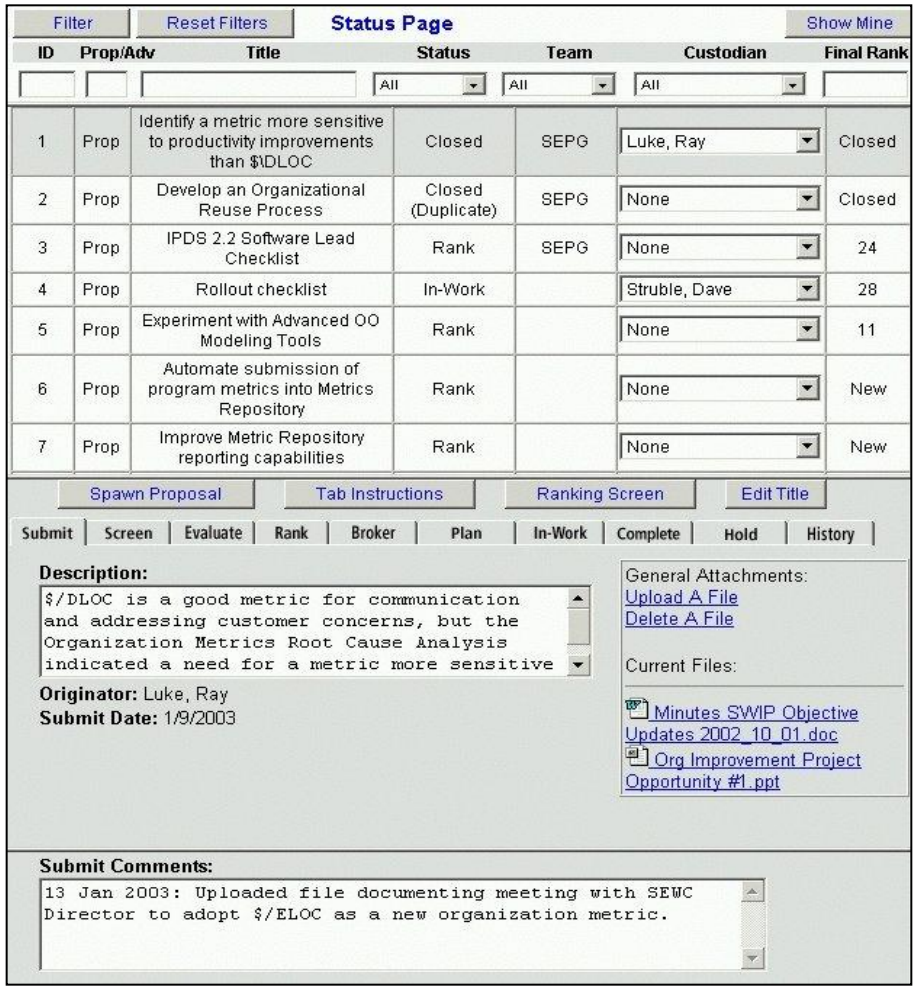
- Formalizes the process for handling proposed improvements from submission to deployment
- Supports ranking and prioritization by management, process, and technical teams
- Proposal life cycles mirror the Raytheon 6-Sigma process model
- State model underlies the Organizational Improvement Database



Best Practice!

Organizational Improvement Database

- Repository of submitted proposals and advisories
- Viewable by anyone in North Texas Software Engineering organization
- Administrators can modify any field of any record
- Proposal custodians have administrator privileges only for their specific proposals
- Tabbed screens generally correspond to states in the process model



Electronic Software Improvement Plan (SWIP)

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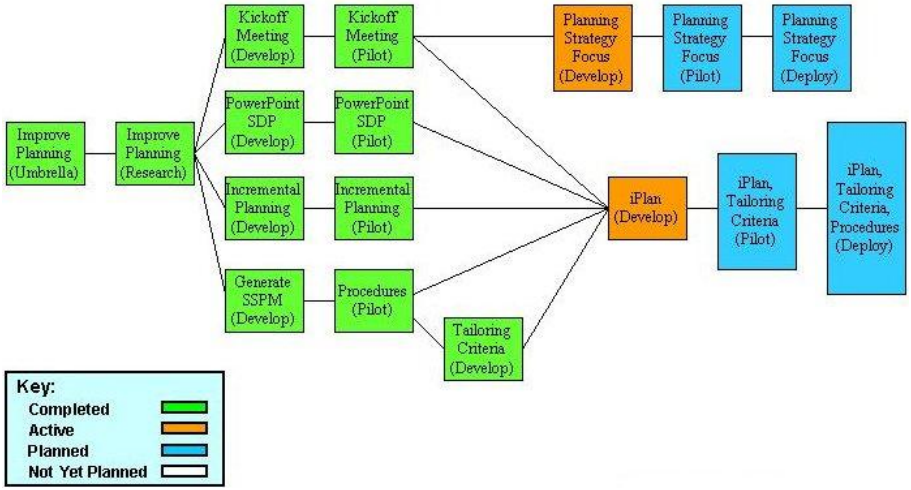
- Replaces Microsoft Word document containing organization's specific improvement goals and expected ranges of values
- Adds ability to easily and dynamically link improvement goals to activities the organization has in place to achieve those goals
- "Threads of evolution" can be maintained showing specific improvement opportunities associated with advancing each goal
- New proposals can be "spawned" from existing proposals
- Exposes the many dimensions of process improvement that the organization has in place

Current Status

- Incorporating the concept of *themes* into the OI database that capture high-level improvement thrusts
- Themes are collections of improvement proposals contributing to an overall improvement objective
- Proposals in a theme are prioritized and structured to provide incremental progress toward the overall thrust
- Themes simplify the ranking process used by organizational leadership

- Examples of Themes
  - Improve productivity
  - Move toward Model Based Software
  - Increase levels of software reuse
  - Improve Planning

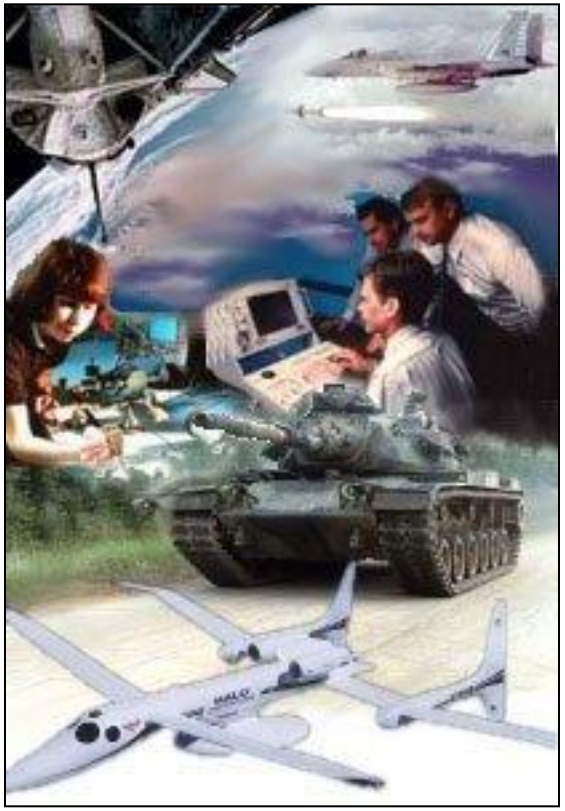


Expectations

- Process model will undergo transformations and improvements as more proposals move through their life cycles
- Addition of “theme” projects will change some database mechanics
- Overall web site will evolve as process matures to include integration of systems engineering and software
- “Threads of evolution” will provide important objective evidence of sustaining process improvement

Summary

- Organizational Improvement web site provides significant measure of automation
- Assists with collection, evaluation, prototyping, and deploying organizational improvements
- Allows submission of new improvement ideas and provides a database for ranking, tracking, and maintaining historical threads of process evolution
- Directly addresses the objective evidence requirements for CMMI Level 5 Specific Goals for OID
- Web based SWIP provides ability to dynamically link process improvement goals to associated improvement proposals
- A highly visible and essential enabler for our journey to CMMI Level 5 process maturity



Postscript

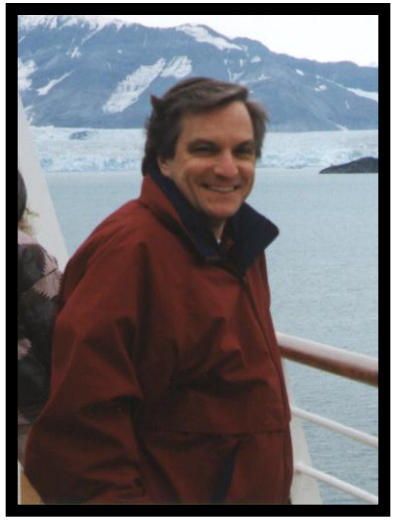
- On September 26, 2003, the Raytheon North Texas Software organization became the first in Raytheon to achieve the Capability Maturity Model Integration (CMMI) Level 5 certification.

- Only five organizations in the world, three in the United States, have achieved this level of software maturity.

From left to right: Amy Brunson, SAS Software Director; Johnny Barrett, NCS Software Director; John Ryskowsi, CMMI Lead Appraiser

CMMI Appraisal Team

Dave Struble



Dave is a Senior Software Technologist in the Network Centric Systems (NCS) North Texas Software Engineering Center. He holds a M.S. in Computer and Information Sciences from Ohio State University and a B.S. in mathematics and computer science from the University of Dayton. He leads the Software Engineering Center's Software Technology Team, supports the NCS North Texas CMM-I Level 5 activities, and is the FCS GSI Program coordinator for the ACE collaboration environment, with interfaces to Boeing, the subcontractors, and the NCS CPD development team. His prior assignments have included software manager for the Raytheon portion of the Joint Strike Fighter (JSF) Program teamed with Lockheed, Ft. Worth, and software manager for Raytheon's F-22 Vehicle Management System (VMS) Program, also teamed with Lockheed. He has been involved with collaborative development environments for the past three years.