

# Ogden Air Logistics Center



**U.S. AIR FORCE**

## The Next Step in Process Evolution: CMMI and TSP/PSP

*The Software Maintenance Group  
Hill Air Force Base, Utah*

**Panel Member: David R. Webb**



# About the Software Group

At Hill Air Force Base

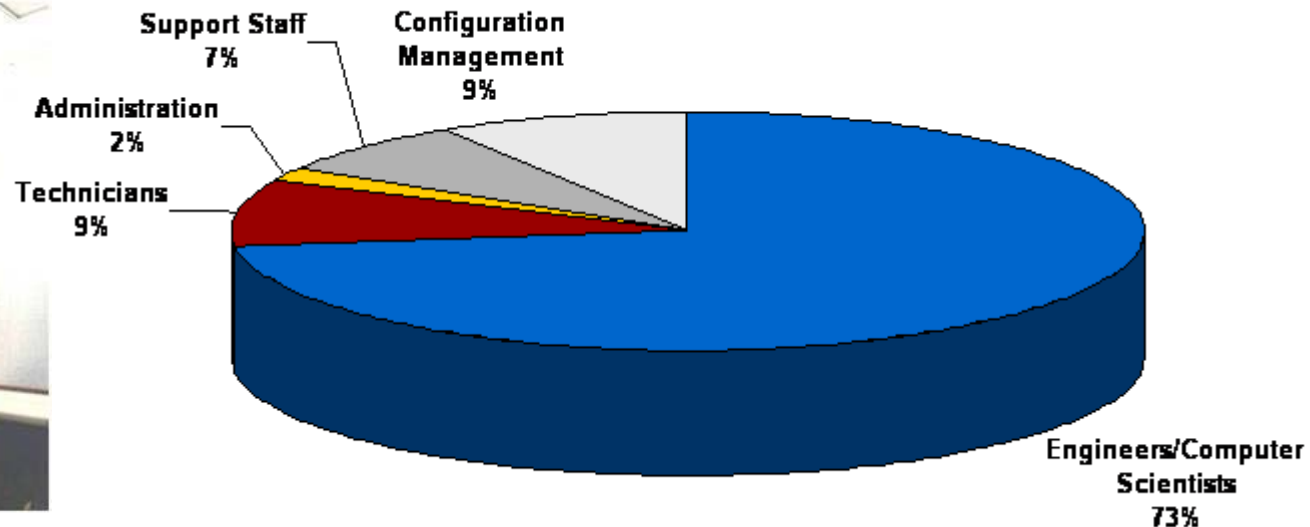
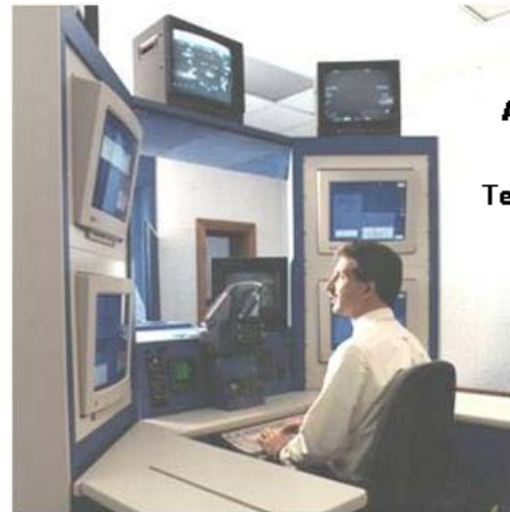


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## ■ Large Cadre of Talented People:

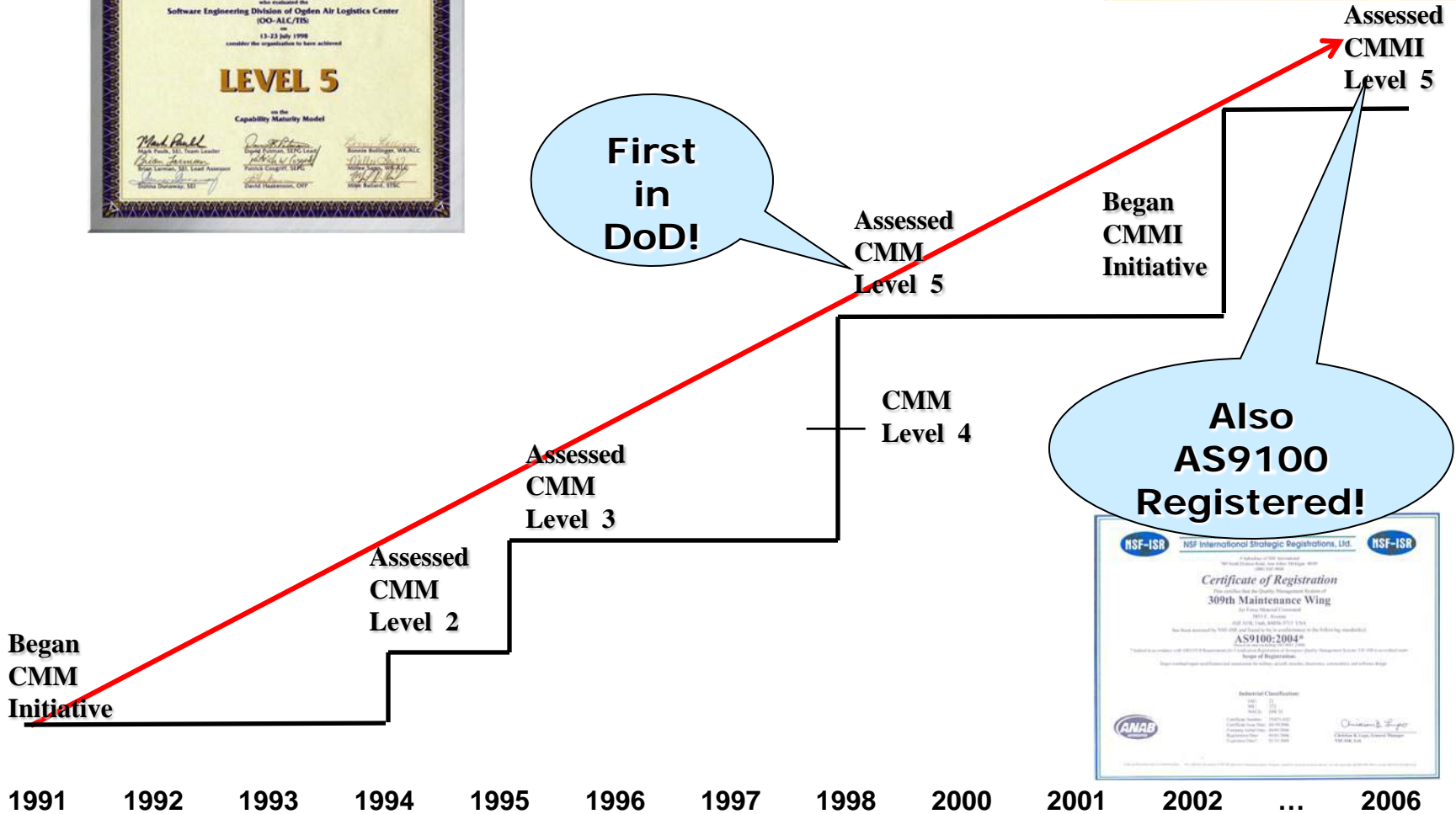
- 820 + Personnel
- Average over 10 years technical experience
- Growing by ~50 PEs/Year





# Hill & CMM / CMMI

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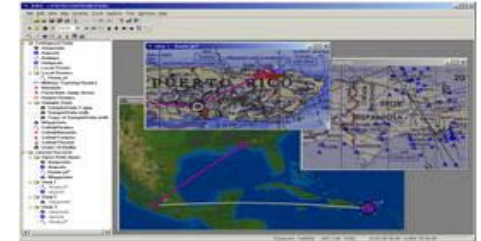
# TSP Projects at Hill – 1



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## ■ TaskView (Since 1997)

- Air Tasking Order Parser
- Used TSP since inception
- Was a focus project for the 1998 SW-CMM CBA-IPI



## ■ Ground Theater Air Control System (GTACS – 2001)

- Air Force Control Reporting Center (CRC)
- Began using TSP to address quality issues
- Was a focus project for the 2006 SCAMPI A



## ■ Expeditionary Fighting Vehicle (EFV – 2006)

- Amphibious “Tank” – Replaces AAV
- Used TSP to “kick start” new team using High Maturity Practices
- Planned as focus project for 2010 SCAMPI A





# TSP Projects at Hill – 2



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- **Command and Control System – Consolidated (CCS-C 2009)**
  - **Developing documentation for the CCS-C program office**
  - **Preparing for IV&V and software sustainment roles**
  - **Used TSP to get team focused early**
  - **Did a non-software TSP launch with only team leader training**
  - **PSP training held later**
  - **Integrating SCRUM concepts with TSP:**
    - **Daily Stand-ups**
    - **Sprints (with launches/relaunches)**

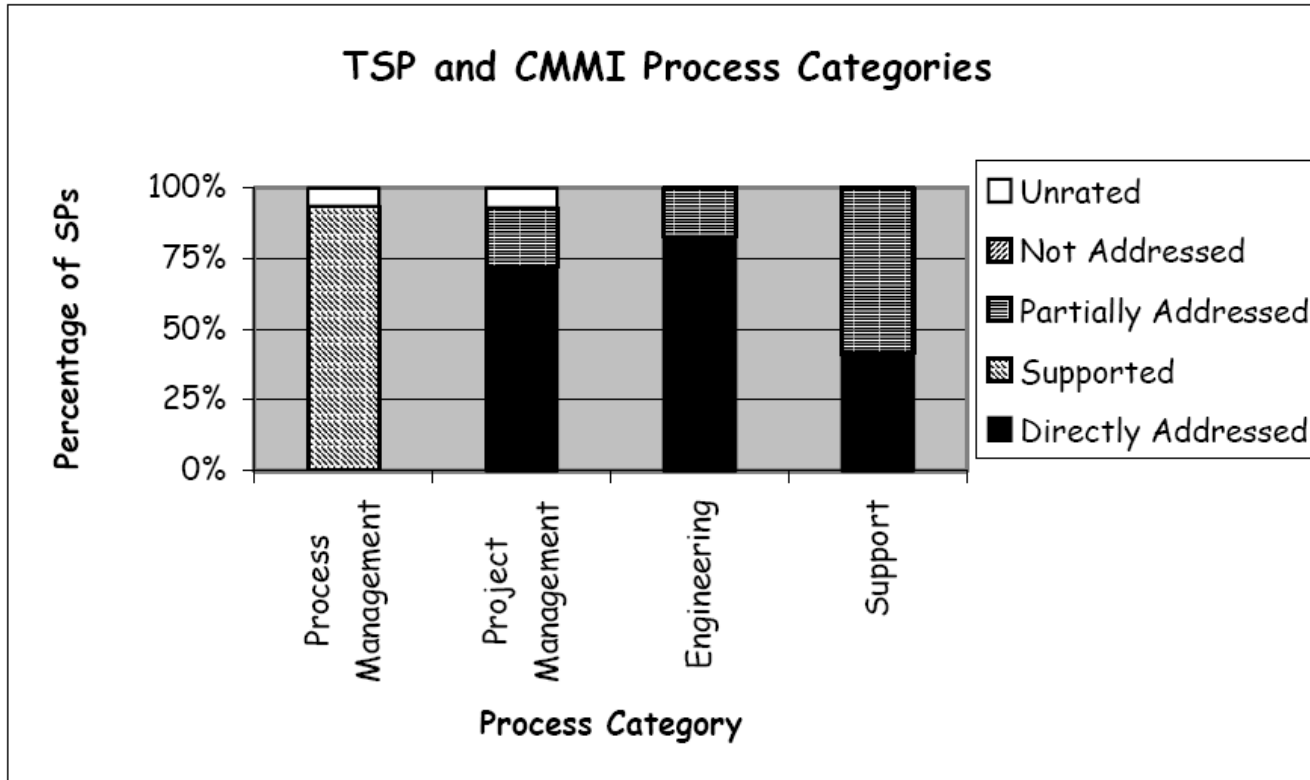




# SEI's TSP to CMMI Mapping – 1



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Source: James McHale and Daniel S. Wall Mapping TSP to CMMI (CMU/SEI-2004-TR-014)

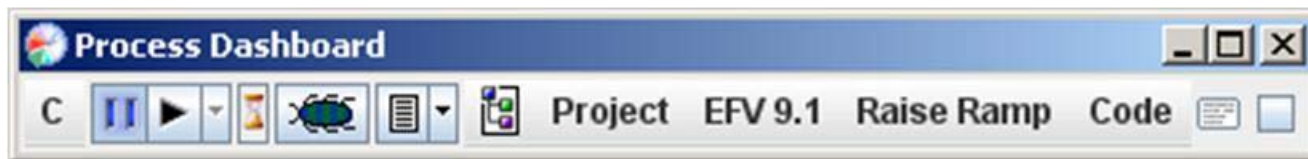


# Hill TSP Tracking Tools



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- Hill Uses The Process Dashboard Tool to:
  - support individuals and the team in using high-maturity processes for software development
  - simplify the work involved in following a high-maturity process
  - help individuals to follow a defined process and collect metrics data
  - improve the accuracy of collected metrics





# CMMI OPP and QMP Issues



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- **GTACS SCAMPI's Discovered Weaknesses in OPP and QPM**
  - **GTACS data were not analyzed at the sub-process level**
  - **Data analyses did not address an understanding of process variability**
- **TSP Paradigm was Not Consistent with CMMI Expectations**
  - **TSP teams use data for three purposes:**
    - project planning
    - project monitoring and oversight
    - process improvement
  - **TSP fundamentally considers the software development process as a single entity**



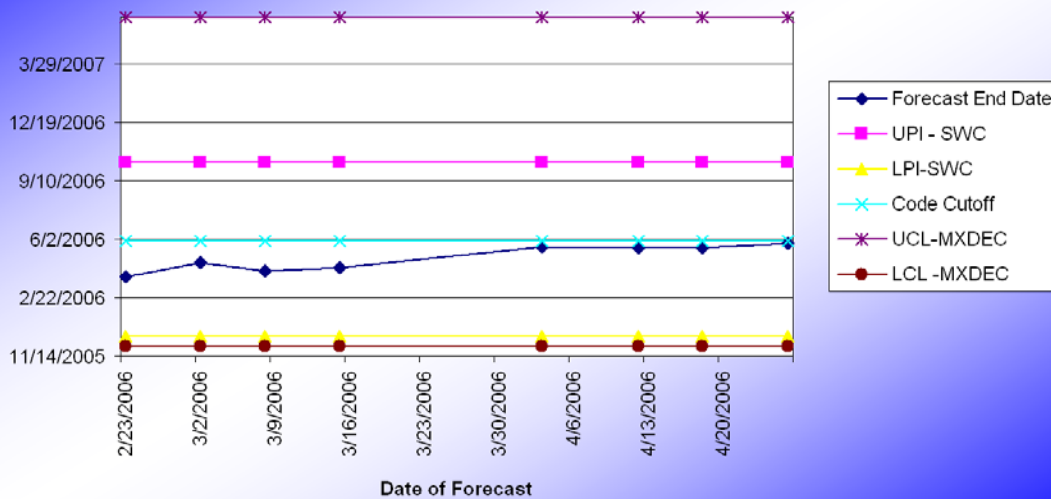


# Hill Used TSP Data to Solve the Apparent Conflict

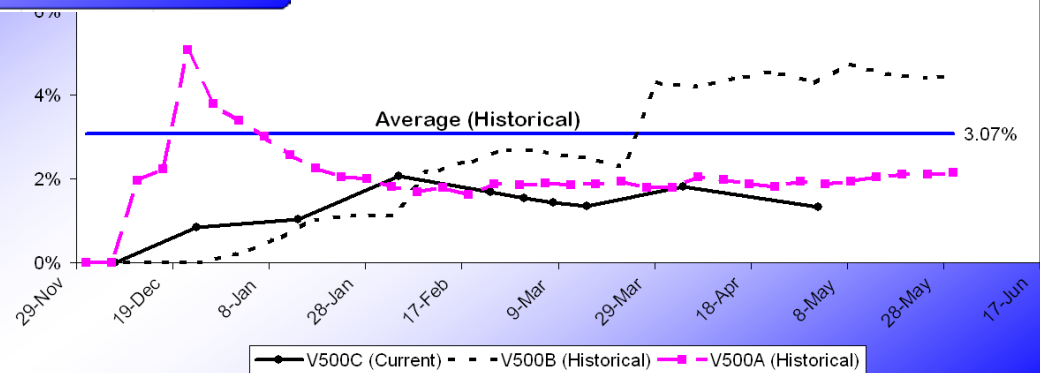


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Run Chart - Forecast Task Completion with control limits



GTACS % Rework



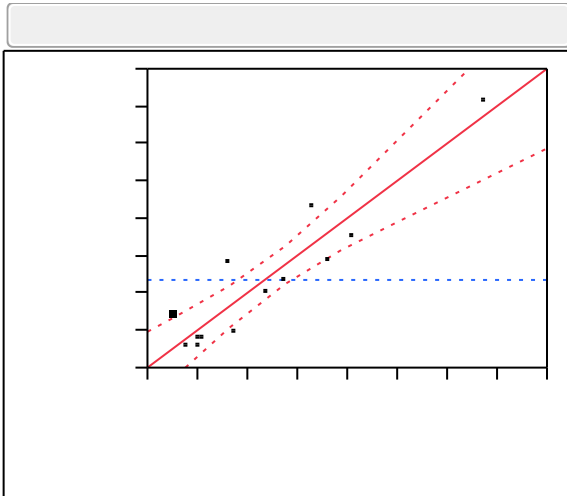


# Other Level 4 TSP Implementations



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- Expeditionary Fighting Vehicle
  - Used regression techniques on TSP-gathered data
  - Found a close correlation between SLOC and Task Hours, suitable for an estimating model





# Summary



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- **The Software Group at Hill Air Force Base Continues to Follow CMMI Level 5 Practices**
- **TSP Has Been Used on Specific Projects Since 1998 with Great Success**
- **Hill Has Found CMMI and TSP to be Strong Allies**
- **Hill Has Used TSP to “Kick Start” CMMI High Maturity Teams**
- **Additional TSP Scripts, Forms and Reports are Needed to Meet the Full Intent of the CMMI**