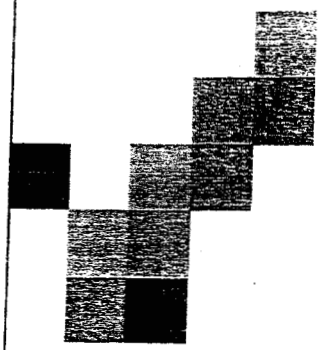

Software Engineering Research / Developer Collaborations

Tom Pressburger, Research Infusion Lead (ARC)
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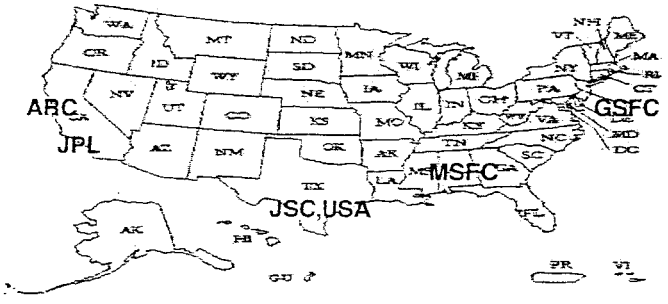
Outline

- Problem
- Hypothesis
- Approach
- Importance/Benefits
- Relevance to NASA
- Accomplishments
- Next Steps

Relevance to NASA

- Has historically been difficult for NASA-sponsored research to penetrate into actual NASA use.
- This is a new mechanism.



Accomplishments

- **For ViTS of 09/23/2003, 7 software engineering technologies were selected**
  - 5 NASA-funded research technologies
  - 2 commercial products
- **13 customer-initiated, high-quality proposals were submitted**
- **6 proposals were funded and initiated**
  - *C Static analyzers* applied to Station/Shuttle code (ARC,MSFC)
  - *Perspective-Based Reading* applied to flight project/Station code (GSFC, USA)
    - **Penetration 9!**
  - *Orthogonal-Defect Classification* applied to DSN antennae controller (JPL)
  - *Code browsing tool* applied to guidance code (JSC)
- **Funding**
  - SARP!
  - Substantial additional cofunding; *indicates researchers/projects are committed*
- **One completed, rest ongoing—results at this time to be presented.**

Problem

- State-of-the-art software engineering research required to meet NASA demands
- Tech transfer into NASA of Software Engineering Research difficulties:
  - Technology providers can't find customers
  - Software developers unaware of new technologies
    - Ignorance
    - Too many to evaluate
  - Developers can't afford up front costs and risks

Hypothesis

- Relatively small awards can overcome cost and risk of technology insertion
- Target innovators and early adopters
- Target technologies perceived as having low integration cost

Accomplishments (contd)

- ViTS on 05/18/2004 showcasing 6 new technologies
  - Technologies tuned to reflect feedback from software developers who attended the first ViTS.
- 4 proposals submitted

Next Steps

- Reports on lessons learned deploying the technologies.
- On the lookout for
  - new research products to infuse.
  - new forums to reach developers to find...
  - new customers.
- **2005 time line**
  - Mid-**February** Technologies selected: RESEARCHERS!
  - Mid-**March** ViTS: CUSTOMERS!
  - Mid-**June** Collaboration proposals due: CUSTOMERS!
- Info:
  - http://ic.arc.nasa.gov/researchinfusion
  - tom.pressburger@nasa.gov

Approach

- Select several software engineering research products
  - Emphasis on those funded by NASA
  - Usefulness already demonstrated
  - Easy insertion
- Present them across NASA in hour-long Video Teleconference Presentation (ViTS)
  - Publicize using center-specific mechanisms and the Software Engineering Process Groups at each center.
- Solicit proposals from customers
- Fund pilot projects deploying the research
  - actual use, not a shadow project
  - competitively-selected

Importance/Benefits

- Researchers now have testbeds, obtain feedback on
  - Efficacy
  - Deployment concerns
- Developers deploy new, valuable technology
  - Goal: incorporation of valuable technology into their practice
  - Goal: *mechanisms for further migration identified*