Where from here?

Everyone
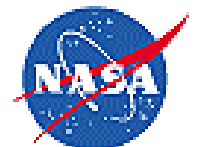
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- **Pairwise contacts / collaborations?**
- **Graduate student research**
  - **Dissertation topics**
  - **internships**
- **Project Courses – Undergraduates (within reason)**
  - **UC Santa Cruz – CS 115 Whitehead**
  - **UC Irvine – ICS 125 – van der Hoek**
  - **Distance collaboration …, e.g. between UCSC and UCI courses above**

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- **Proposals**
  - **Internal proposals w/university collaborators**
  - **(External) Open competition – joint NASA and University Pis (NASA Research Announcements – NRAs)**
  - **Director's Discretionary funding**
    - **W/in NASA, possibly student funds**
  - **Proposals to NSF**
    - **NASA staff is non-funded collaborators**
    - **NASA contractors funded**
    - **University members funded**
  - **USRA**
    - **Tech transfer between universities and NASA**
    - **RIACS – research institute for advanced computer science (visiting faculty, students, ...)**
  - **Educational Associates**
    - **visiting faculty, students, post-docs...**
  - **Web sites (proposals.hq.nasa.gov/proposals.cfm)**

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- **Near term**
  - **Funding from ECSP (Engineering of Complex Systems Program)**
  - **What "problems" can we address?**
    - **Advanced software tools**
    - **Process and collaboration**
    - **Organizational Barriers of migrating technology to missions**
      - **Organizational diffusion issues**
    - **Evaluation**
      - **Sharing of data or experiences? (to facilitate adoption)**
      - **Ethnographic study of how software is developed for missions …**
        - » **Would require funding of a team**
        - » **Establishment of trust and sharing**
        - » **(or help existing teams – local experts – to make needed observations)**
  - **Or, rather, how can we observe problems**

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- **Near term / long term? (cont)**
  - **How long do the above take?**
  - **How difficult are they?**
  - **ECS Program is trying to fill gap between long–term research and immediate adoption**
    - **Examples**
      - **Hardware constraints on advanced interfaces like aware–technologies**
      - **Managing change and versions, hardware, parts, command protocols**
    - **3 problems (scenarios?)?**
    - **Technologies / ideas that have been "flight tested"**
    - **Other NASA funding apply to programs that are 10–20 years out**
- **CMMI ("Integrated" CMM) adoption**
  - **Is this a way to leverage studies, trials of tools?**

- **Research Questions**
  - **Roland**
    - **inspections, quantification of results, metrics?**
    - **CMM was originally configuration maturity matrix**
  - **Complement of quantitative and qualitative**
    - **Behaviors**
    - **Organizational issues**
    - **Effect of usage of technologies, second order metrics**
    - **Risk reduction / mitigation is an important "metric"**

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– **Scenarios benefits and pitfalls …**

- **Can sell a program or put off potential customers**
- **Can be a vision to coordinate activities**
- **But, what are real "risk" issues at NASA**
  - **Are they just the ones articulated by the high dependability research effort?**
- **Many small problems vs. large test bed (operational vs. developmental aspects)**
  - **What problems are overlooked by existing test beds?**
  - **E.g., organizational and work practice sources of risks**

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