Future space missions will be significantly longer than current shuttle missions and new systems will be more complex than current systems. Increasing communication delays between crews and Earth-based support means that astronauts need to be prepared to handle the unexpected on their own. As crews become more autonomous, their potential span of control and required expertise must grow to match their autonomy. It is not possible to train for every eventuality ahead of time or on the ground, or to maintain trained skills across long intervals of disuse. To adequately prepare NASA personnel for these challenges, new training approaches, methodologies, and tools are required. This research project aims at developing these training capabilities. By researching established training principles, examining future needs, and by using current practices in space flight training as test beds, both in Flight Controller and Crew Medical domains, this research project is mitigating program risks and generating templates and requirements to meet future training needs. Training efforts in Fiscal Year 08 (FY08) strongly focused on crew medical training, but also began exploring how Space Flight Resource Management training for Mission Operations Directorate (MOD) Flight Controllers could be integrated with systems training for optimal Mission Control Center (MCC) operations.

The Training Task addresses Program risks that lie at the intersection of the following three risks identified by the Project:

- Risk associated with reduced safety and efficiency due to poor human factors design
- Risk of error due to inadequate information
- Risk associated with poor task design

Some Research Questions:

- What are the basic and generalizable skills underlying different tasks?
- What is the optimal distribution of topics across training opportunities?
- What is the optimal delivery method and media for a given training topic?
- How do we assess proficiency?

**FY08 Deliverables**

- **Trade Study of Analogue Environments to Conduct Studies for Training**
  - March 21, 2008
  - Space Human Factors Engineering Training Directed Research Project
  - Demonstration of JIT Training Technique
  - Space Human Factors Engineering Training Directed Research Project
  - September 23, 2008
  - SFRM Generic Training Framework Concept Prototype
  - June 30, 2008

**Future Research Direction**

The Training Continuum

**Some Research Questions:**

- What are the basic and generalizable skills underlying different tasks?
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- What is the optimal delivery method and media for a given training topic?
- How do we assess proficiency?

**Stakeholders:**

Robert Banfield, Chief, Expedition Vehicle Division, JSC/DI
Dr. Joseph Schmid, Lead, Space Medicine Training, Medical Operations, JCS/SD