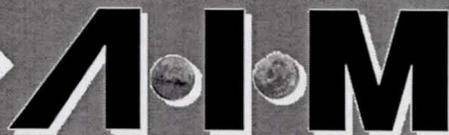
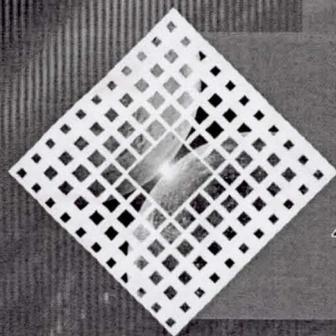


# PI Informational Briefing



Heather Paul

# Mission Needs Statement

*Our success will be measured by the extent to which early ground-based testing of mission capability identifies successful system implementations and operations, hidden risks and hazards, unexpected system and operations interactions, mission mass and operational savings, evaluates solutions to requirements-driving questions, and enables NASA to develop more effective, lower-risk systems and more reliable cost estimates for future exploration missions.*

# SCOPE



- Two primary functions
  - Develop, test, and validate the integration of mission systems for long-duration human exploration missions
  - Develop and test baselines for mission operations protocols and procedures
- Activities
  - Develop solutions & requirements
  - Evaluate systems
  - Validate solutions & requirements



# GENERAL OBJECTIVES & EXPECTATIONS

- Solve system-level integration and interface issues
- Investigate bioastronautics systems
- Investigate common issues
- Develop scalable solutions
- Support agency commitment to an exploration mission
- Be an agency strategic resource

# TECHNICAL APPROACH

- A system is more than the sum of its parts
  - Collect individual projects into an integrated test environment
  - Study and optimize system-level interactions
- Start small and expand
  - Technology validation
  - Baselines for further development
  - Breakthrough concepts
- May utilize Bioastronautics Laboratory (BAL)
- Distinct from existing analog sites

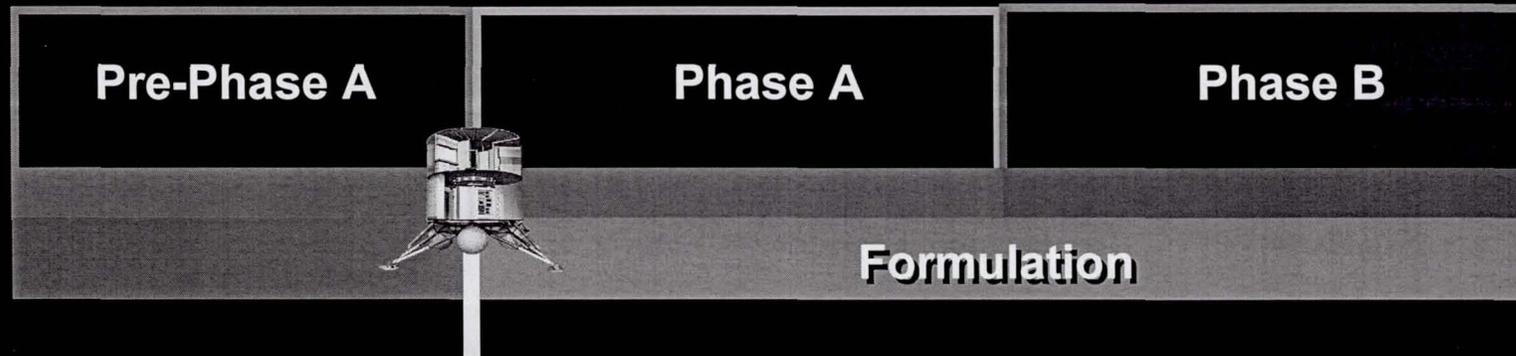


# AIM IS AN AHST ELEMENT

## Examples of shared risks and critical questions with other AHST Elements

	AHST Element	AIM	Examples of Potential Integration Areas
Advanced Environmental Monitoring & Control	<b>AEMC</b>		Control systems architecture requirements & integration
Advanced Life Support	<b>ALS</b>		Crop growth, processing & storage, autonomous operations
Space Human Factors Engineering	<b>SHFE</b>		Human engineering, operational systems and processes effects on human performance
Advanced Extravehicular Activity	<b>AEVA</b>		Surface dust, EVA communications, pre-breathe (ALS)
Advanced Food Technology	<b>AFT</b>		Food preparation impacts on life support systems loads; tracking food inventory; processing & crew time; etc.

# PHASE A / FORMULATION PRODUCTS



- Project plan and schedule
- Project budget estimate
- Trade studies and analyses
- Project systems engineering definition
- “One NASA” partnership communications
- Project and mission risk assessment and management plans
- Education outreach implementation
- Benchmark test

# PHASE B / FORMULATION PRODUCTS



- Implementation plan for integration tests
- Preliminary systems engineering designs
- “One NASA” partnership
- Project support solicitation
- Continuing education outreach implementation
- Feasibility test

# TEST FLOW PLAN

## Benchmark Test

### Objectives:

- Bring in partners & technology
- Evaluate our study process
- Develop project metrics for success

## Feasibility Test

### Objectives:

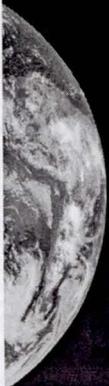
- Demonstrate feasibility of our project concept
- Expand integration scope
- Reveal unknowns & refine/direct development
- Demonstrate the project value
- Reveal and demonstrate the project metrics

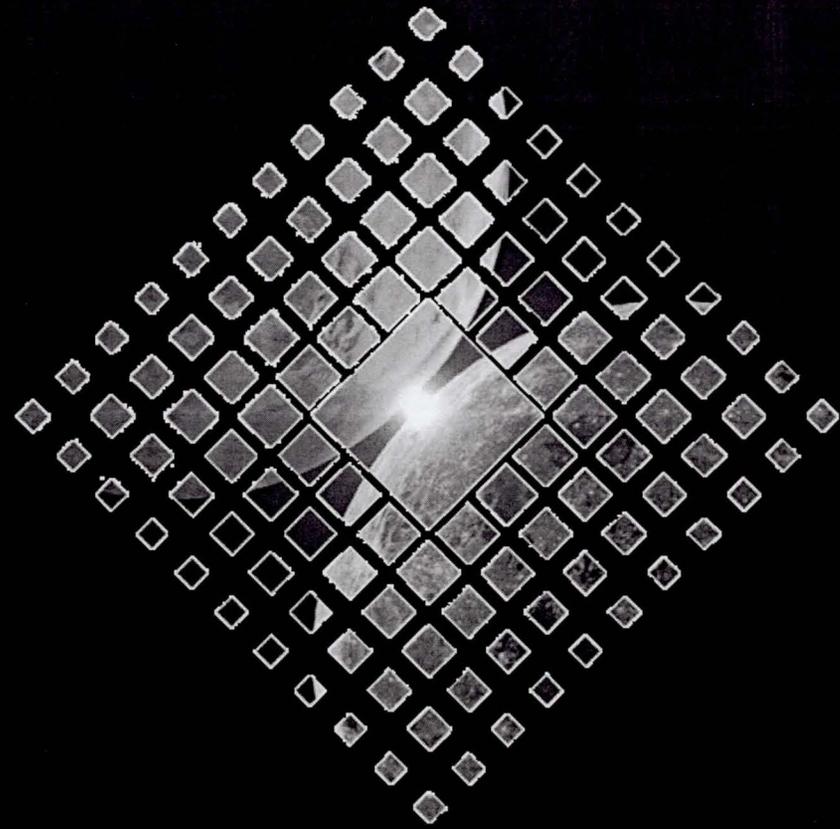
# BENCHMARK TEST

- Purpose
  - Evaluate integration of hardware, software, procedures, and processes
  - Evaluate trade and test processes
  - Perform necessary and useful test
- Integrate 3-5 SETO areas
  - Hardware of TRL 3 to 6
  - Preliminary operation/procedural concept
- Inexpensive and succinct
- Preliminary TRD/TPD: March 2004
- Test: Fall of 2004

# BENCHMARK TEST

- Teams are being formulated to investigate integration issues
  - CHeCS and ECLSS commonality issues
  - Control issues and computer system architectures
  - Modeling and simulation plans/issues
- Soliciting participants





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