USAT
(User System of Astrogeology Technologies)

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Introduction

USGS:

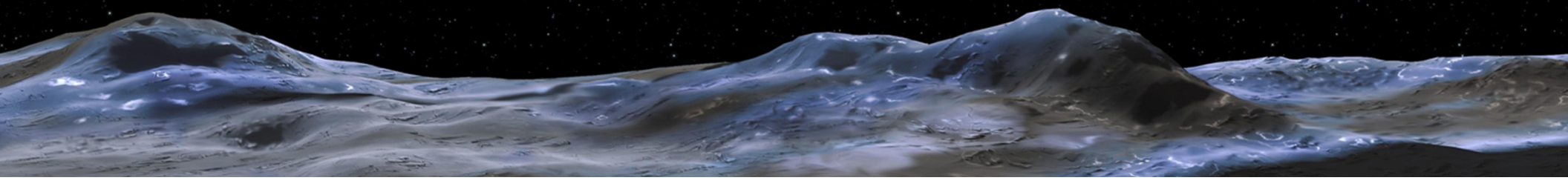
- Quality Science and Integrity

Sponsors:

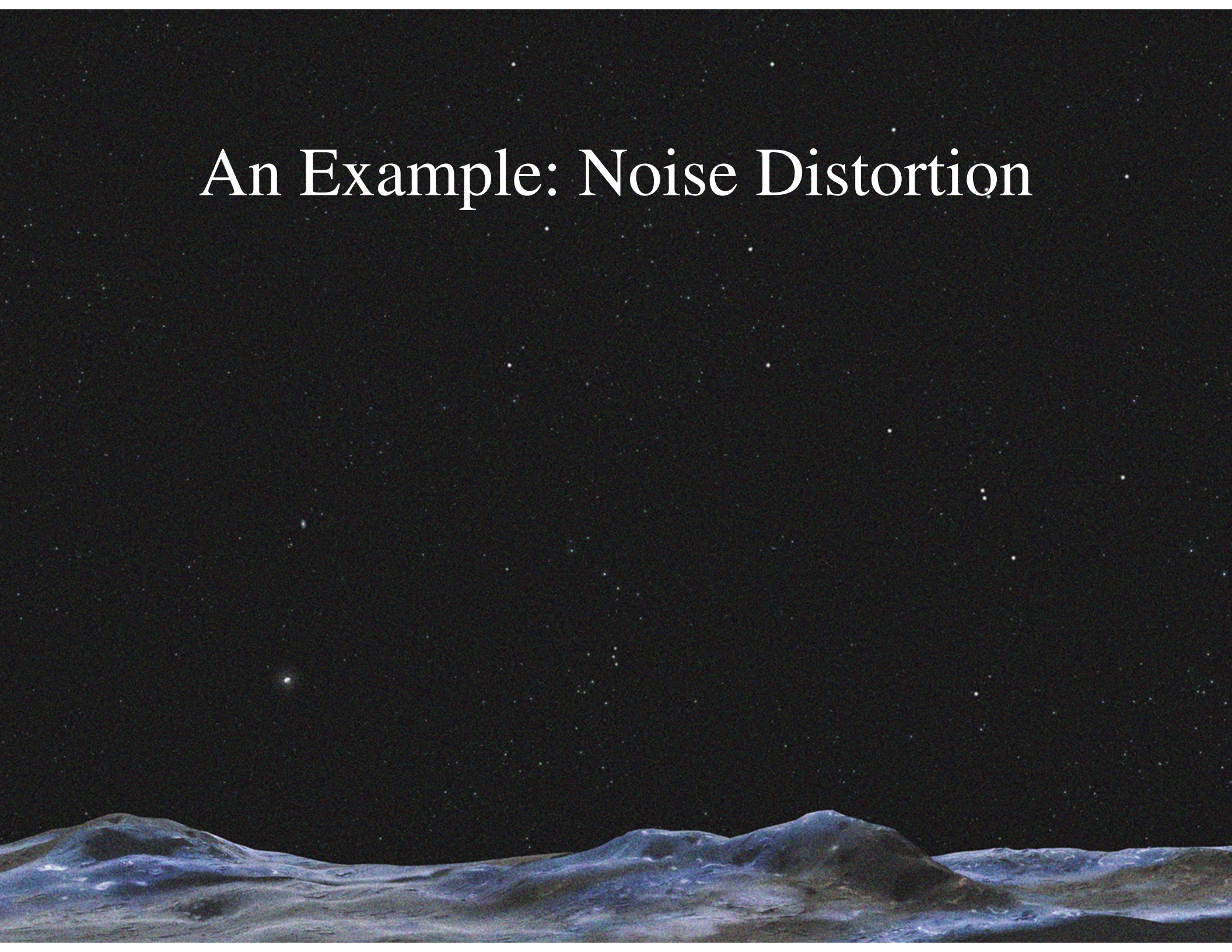
- Trent Hare and Moses Milazzo
  - USGS Astrogeology Research Program
    - 95% work for NASA

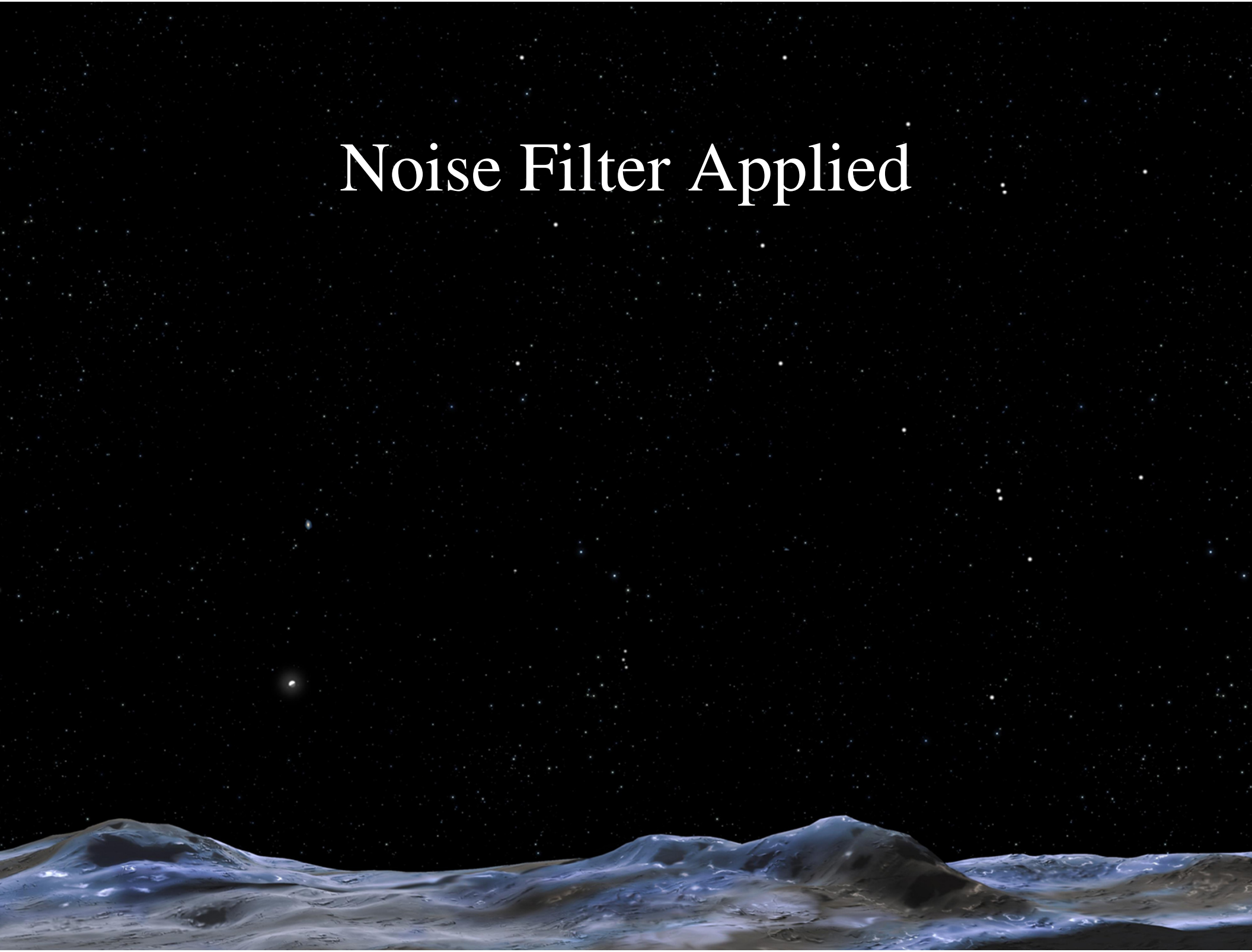
Business operations:

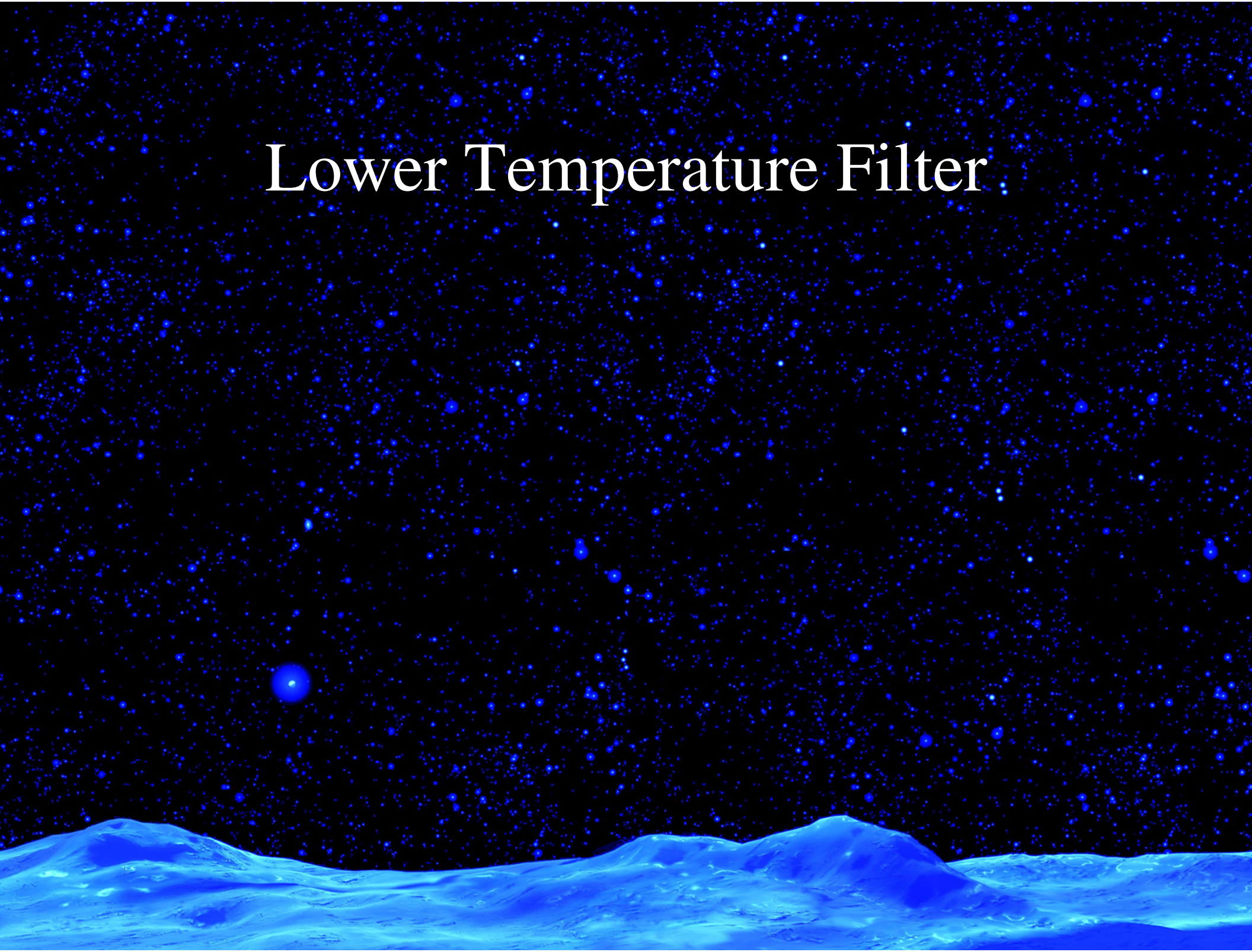
- ISIS is used to process images collected from planetary missions
- Create mosaics from a few to thousands of images



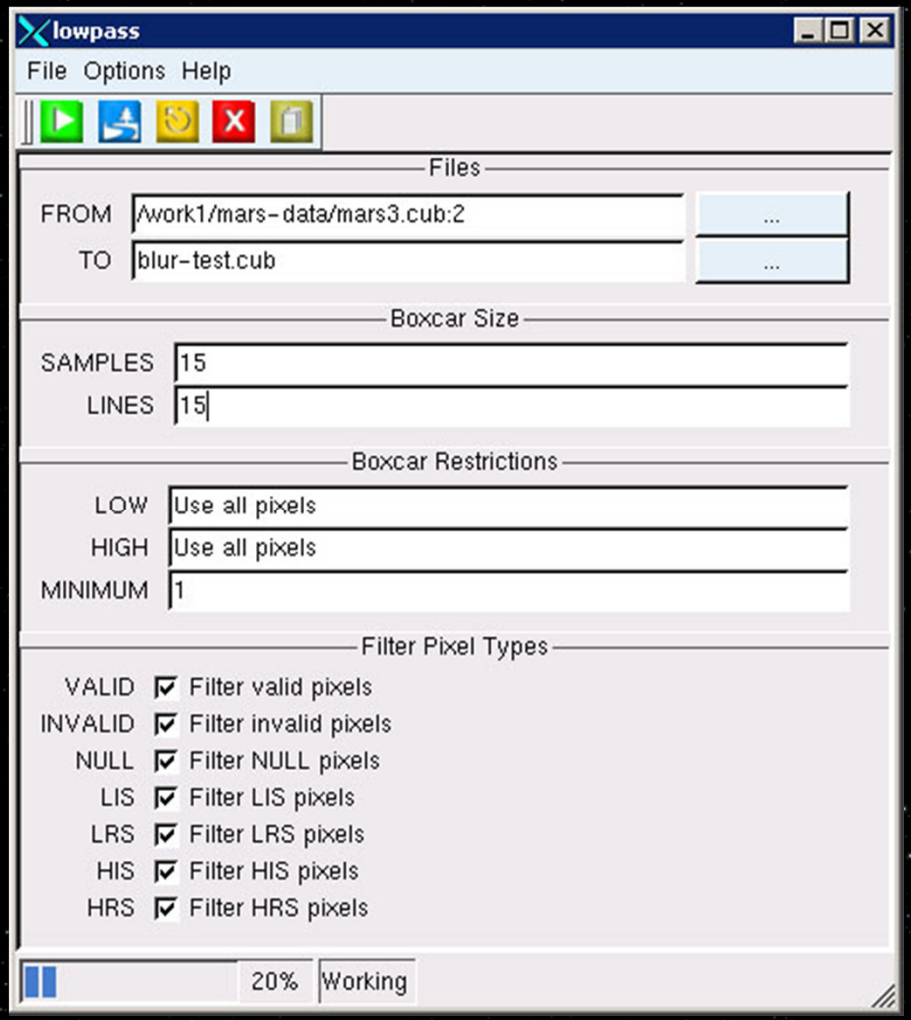
An Example: Noise Distortion




Noise Filter Applied


Lower Temperature Filter

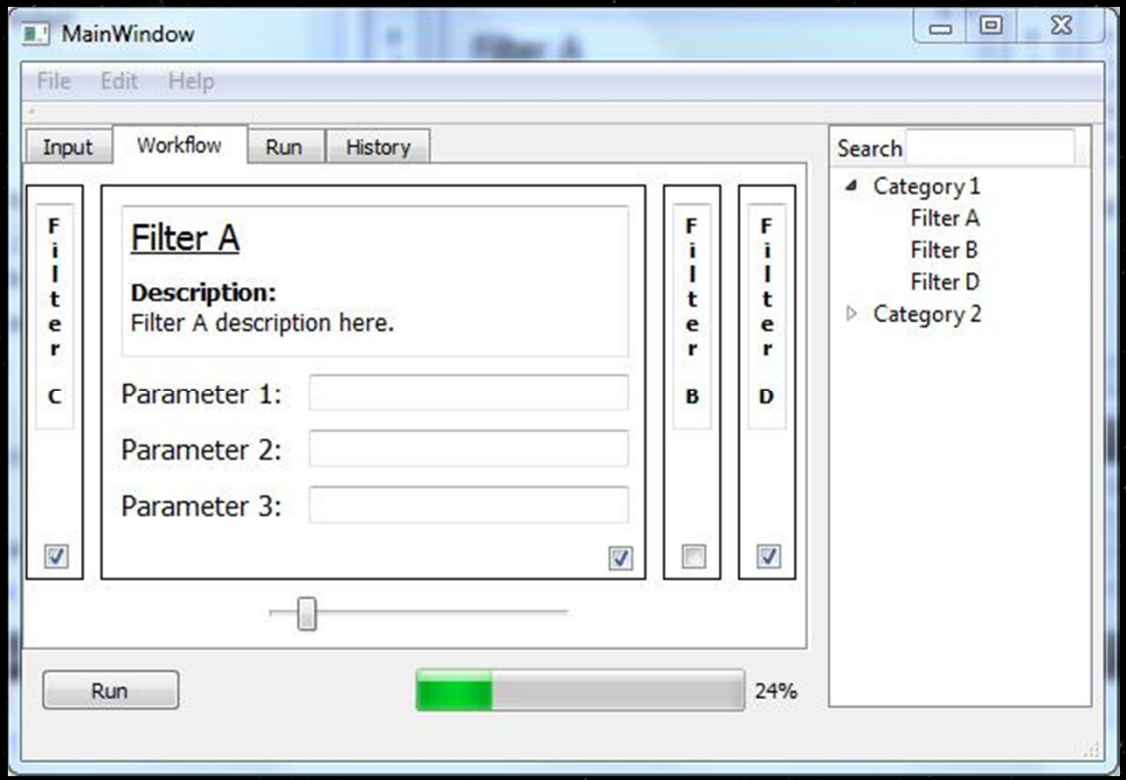
Current Situation



- Integrated Software for Imagers & Spectrometers
- 300 separate programs
  - rudimentary GUI
  - command line system calls
- Training takes 3-5 months

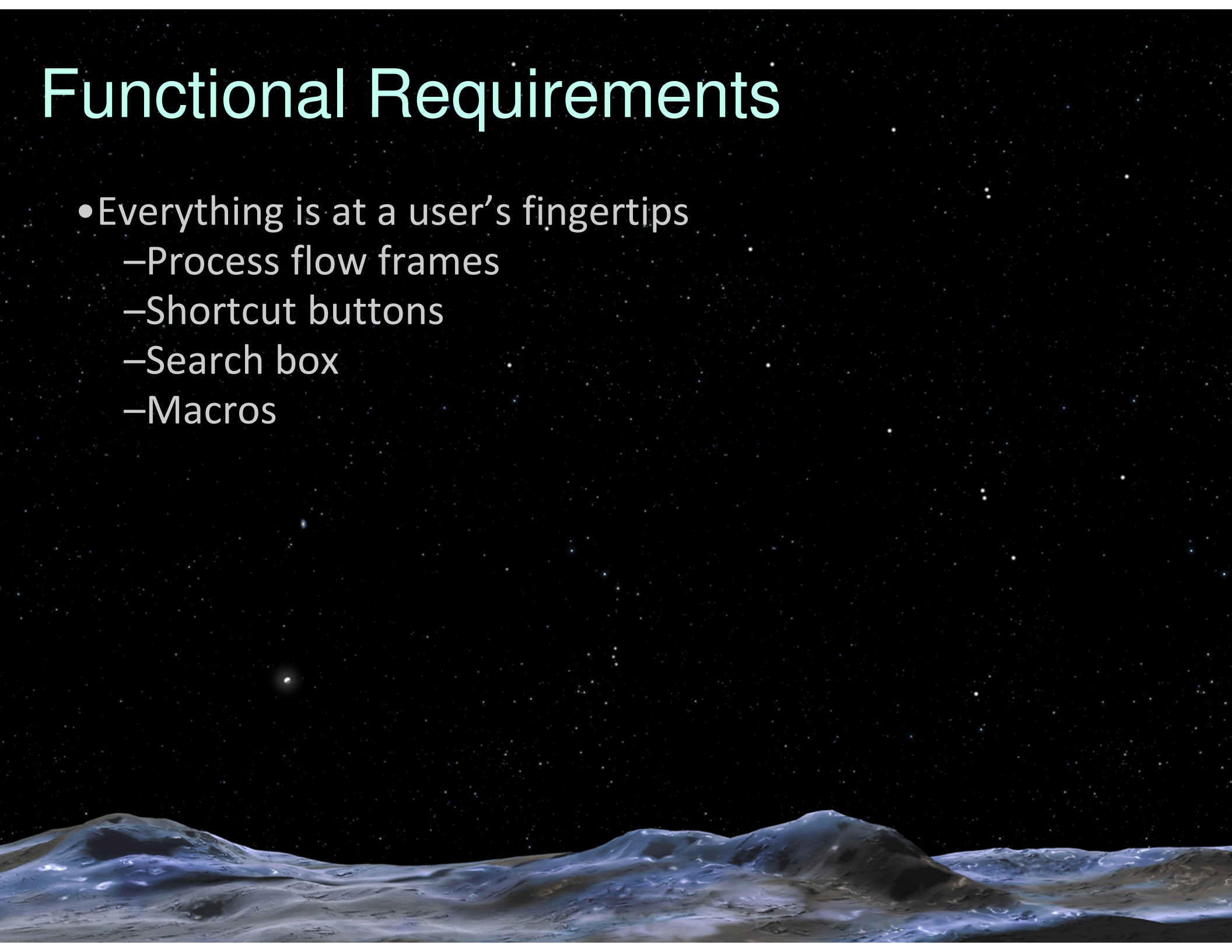
Solution

- Centralized GUI
  - encompasses all the programs and features that ISIS provides
- Help Center
  - located within the GUI
  - provides detailed descriptions and examples



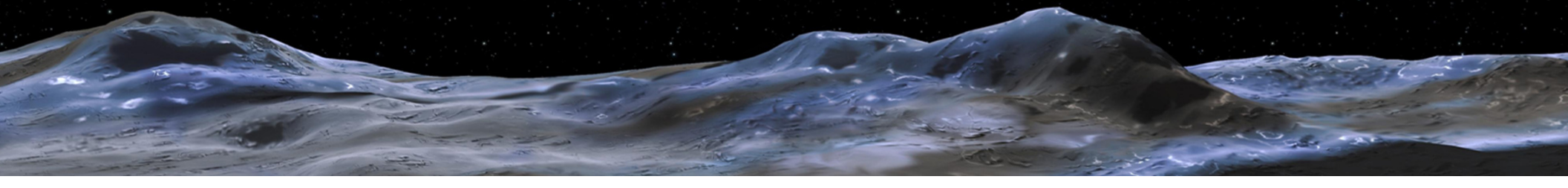
Functional Requirements

- Everything is at a user's fingertips
  - Process flow frames
  - Shortcut buttons
  - Search box
  - Macros



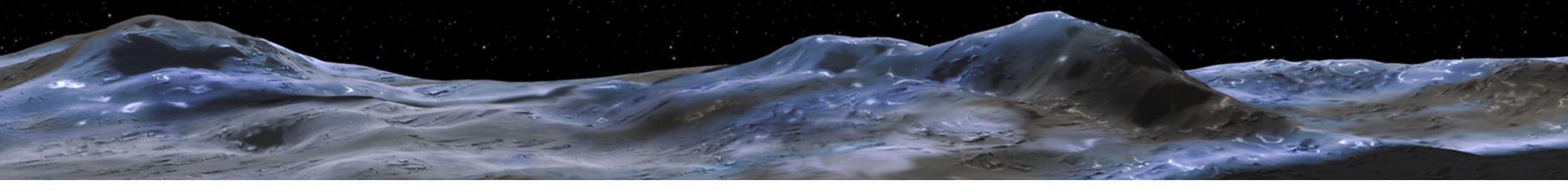
Nonfunctional Requirements

- Process
  - Waterfall like
- Environment
  - Hardware
  - Software
    - UNIX Systems
- Technologies
  - QT GUI Framework
  - C++
  - UNIX system calls
  - XML



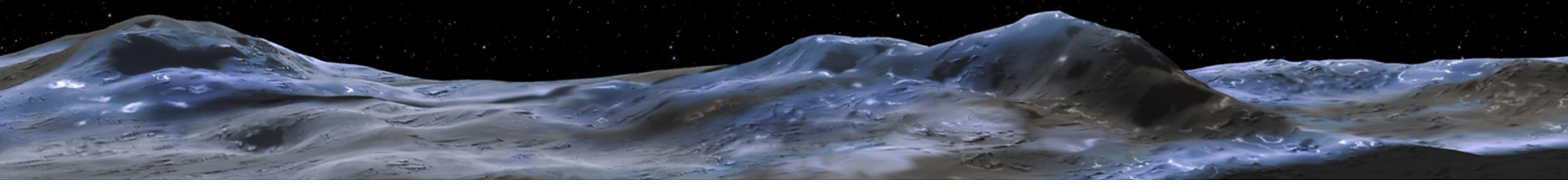
Nonfunctional Requirements Continued

- Maintainability and Expandability
- Understandability
  - Learnability
  - Ease of Use
- Performance
- Reliability
- Robustness



Present Challenges

- Finding even development workloads for each group member
- Learning QT
- Coming up with new innovative design ideas
- Organizing real user testing



Project Timeline

Currently:

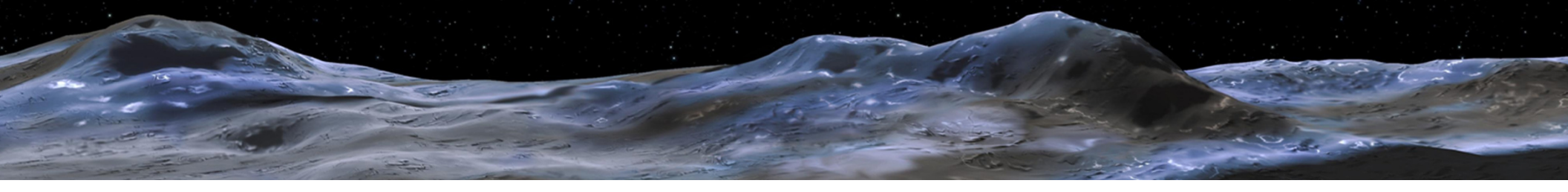
- Developing creative designs
- Prototype
  - Core GUI functionality.
- Virtual Machine

March:

- Implementation month
- Following spring break
  - Initialize the testing process.

April:

- Design Presentation 4/5/2012
  - Strenuous user testing
  - Implementation Complete
- Capstone Conference Final Project Presentation



Summary

What we are creating:

- A centralized GUI
  - With a Help Center

What we have:

- Knowledge
- Creativity