## 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**

Vlowpass	
File Options Help	
Files	
FROM /work1/mars-data/mars3.cub:2	
TO blur-test.cub	
Boxcar Size	
SAMPLES 15	
LINES 15	
Boxcar Restrictions	
LOW Use all pixels	
HIGH Use all pixels	
Filter Pixel Types	
VALID 🔽 Filter valid pixels	
INVALID 🔽 Filter invalid pixels	
NULL 🔽 Filter NULL pixels	
LIS 🔽 Filter LIS pixels	
LRS Filter LRS pixels	
HIS Filter HIS pixels	
HRS 🔽 Filter HRS pixels	
20% Working	

 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

nput	Workflow Run History		Search
E	Filter A         Description:         Filter A description here.         Parameter 1:         Parameter 2:         Parameter 3:	F i i i l l l t t e e r r r B D	Filter A Filter B Filter D ▷ Category 2
	-0		

### **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 April:
- Prototype
  - Core GUI functionality.
- Virtual Machine

#### March:

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

- 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

