The safe conduct of ISS operations is of great importance to NASA and International Partners.

One aspect of keeping ISS safe is careful analysis, tracking, and mitigation of Hazards.
The Need for a Change

- ISS transition from assembly phase to the sustaining & operations as an world class laboratory in low earth orbit.
- Continued need for safety review process for Research & Technology development.
- The resource limitations and increasing demands drive process improvement to provide better ways of developing, capturing, and sharing safety documentation.
- Broader work on ISS software improvement offered integration options with related S&MA and Engineering systems.
• Early 2011 process Audits (Kaizen) to identify improvements toward common and efficient processes

• Late 2011 System study (HCI user research and process analysis) to understand current state of processes & data management
The New Hazard System

- Process, data collected, workflow and integrations configured without programming
- Directly link and integrate with authoritative S&MA tools
- Maintains common record format and process
- Data security and integrity
- Web-accessible data system
- Highly structured form entry of related Safety Data packages, Hazard Records, Cause Records, Controls and Verifications
Benefits of Structured Hazards

- Minimize duplication of data
- Access & tracking of Data
- Process control
- Integration & reporting

Structured Data
(Database, XML)
Example Hazard record (edit)

This is a draft version. View all versions of this record.

- **Record Type:** Hazard
- **Hardware Category:** Payload
- **Hardware Provider:** NASA JSC
- **Subsystem/Payload:** General
- **Hazard Report Focal:** Christian Ratterman (edit)
- **Report POC:**

### Linked Causes

1. **First Cause of this Hazard**
   - INWORK: Open
   - Record 160: (No POC specified)

2. **Second Cause of this hazard**
   - INWORK: Open
   - Record 161: Kristie McCracken

3. **Another Cause now 2**
   - APPROVED: Open Phase II Complete
   - Record 102: Matt Guibert

### Link More Causes:
- **Record ID:**

### Create New Cause Record
**Controls**

CTRL1. Control 1

Controls ID: CTRL2

- Control Type: Design
- Control Title: New Control 2
- Control Description: Detailed description of the second control on this cause record.
- Control Flight Applicability:

**Related Verifications:**
- V1: title
- V2: another verification

**Related Parts:**
Link More Related Hardware
### Control(s):

<table>
<thead>
<tr>
<th>CTRL1. Design</th>
<th>Operational 34S</th>
</tr>
</thead>
</table>

- **CTRL2. Operational Design**
- **CTRL3. Design Operational**

### Verification(s):

- **1.1 (V-1) Test**
  - Verification Estimated Completion Date: No information listed.
  - Detailed description of the first verification. This verification is used to verify two of the controls on this cause record.
  - Closed to VTL Verify Each Flight

- **2.1 (V-1) Test**
  - Verification Estimated Completion Date: No information listed.
  - Detailed description of the first verification. This verification is used to verify two of the controls on this cause record.
  - Closed to VTL Verify Each Flight

- **3.1 (V-3) Ops Cntr (OCAD)**
  - Verification Estimated Completion Date: 2013-06-06
  - Detailed information on the Operational Control that will cover the third control.
  - Open
  - Verify Once
The ISS Hazard System is just the beginning of capturing safety documentation in structured data systems capable of tight integration and automated status tracking:

- Flight Certifications
- Verification Tracking & Operational Controls
- Non-Compliance Reports

Integration effort tying existing and new systems together to provide standardized and streamlined access to data.

The goal is to have an integrated system by end of FY2014.
Conclusion

• Evolve Hazard data collection to structured format
• Integrate key S&MA systems to simplify data tracking
• Increase in-context access to related data improves speed of access and understanding of data
• Reduce costs and improve safety through standardizing process and data management
• More efficient hazard analysis reduces errors and inconsistencies that compromise safety
Point of Contact

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