Capturing 50 Years of Human Manned Spaceflight Knowledge

JSC/Brent Fontenot
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Expanding 50 Years of Experience to Chart New Horizons
Agenda

• The Start
• The Concept
• Key Elements
• Tacit Knowledge
• Explicit Knowledge
• Social Networking
• Collaborations
The Start

• JSC officially formalized the need and requirement for knowledge management in September 2006
  – Appointed the Center’s first Chief Knowledge Officer
  – Direct report to the JSC Center Director

• Goals set out for the CKO were simple:
  – Develop and implement a Center-wide KM program to identify, capture, and make available fifty years of human manned flight knowledge for current and future generations
The Concept

What We Know

Who We know

What Everyone Knows

Tacit Knowledge (Experiences)

Social Networks (family, friends, colleagues, etc.)

Explicit Knowledge (available to all)
**The Concept – Key Elements**

- **Future**
- **Who We Know (Social Networks)**
- **What We Know (Tacit)**
- **What Everyone Knows (Explicit)**

**Storytelling**
- Pause and Learn
- Mentoring

**Lessons Learned**
- Case Studies
- Taxonomy
- Enhanced Search
- Enterprise Content Mgmt
Tacit Knowledge

- Storytelling
- Pause and Learn
- Mentoring Programs
  - Sponsored by HR
  - Both formal and informal
Storytelling

• Created a JSC Storytelling Program
• Purpose is to transfer tacit knowledge from person to person
• Approach included
  – NASA Alumni League members
  – JSC Today Announcements
  – PM Challenge
  – Recommendations for topics
  – Recommendations for individuals or teams
First Storytelling Session

• ~43 People attended
• ~20 people were turned away
• ~100 People downloaded video
• Online Feedback has been very positive

Wisdom and Lessons Learned From the JSC Propulsion and Power Division

This first storytelling session will feature several retirees from the old Engineering Propulsion and Power Division (now the Energy Systems Division). The story tellers will be:

- Guy Thibodeaux - NASA veteran and retired as chief, Propulsion and Power Division
- Chester Vaughan - chief of Propulsion and Power Division, and retired as ISS chief engineer
- Norman Chaffee - deputy chief of Propulsion and Power Division, and retired as deputy chief of the Automation, Robotics and Simulation Division
- Bernard Rosenbaum - senior engineer, Propulsion and Power Division - now the Energy Systems Division (still working)

Audio of Session (MP3)
Video of Session (WMV)
Contamination, Compatibility, Cleanliness and Leakage (DOC)
Management Tips (DOC)
Review and Comments on Detonation of Space Shuttle Liquid and Solid Propellants (DOC)
“The knowledge and wisdom presented is invaluable. This presentation would be most valuable to the Orion Service Module (SM) propulsion team. I will encourage the Orion SM propulsion team to view these valuable lessons learned. The other people who need to hear this wisdom are those that manage the program and control the budget.”

“I am glad I took the time off to attend this lessons leaned’ seminar. I believe that this is a good way for others to get lessons learned right from those who personally experienced and lived it. I am looking forward to the next seminar.”
Pause and Learn

- Participated in Pause and Learn (PaL) training from ESMD -- excellent
- Many JSC organizations use a form of PaL in their ongoing activities
- We are utilizing PaL or equivalent – the challenge is how effective we are infusing the knowledge back into workforce and making it accessible
- PaL was used by Center management after Hurricane Ike to capture LL and best practices
Explicit Knowledge

- Lessons Learned
- Case Studies
- Taxonomy
- Enhanced Search
- Enterprise Content Management
Lessons Learned

JSC Organizational Lessons Learned Repositories

JSC Lessons Learned Library

External Lessons Learned and Case Study Repositories
Welcome to the Johnson Space Center Lessons Learned Database.

This database is the official vehicle for documenting lessons learned in various Johnson Space Center programs.

Currently the Lessons Learned process has undergone an extensive redesign. The new process can be found in JPR 2310.1 "The JSC Organizational Learning Program".

The ownership of the Lessons Learned Process is the Chief Knowledge Officer. The JSC Lessons Learned Process is composed of local lessons learned programs supported by and coordinated through the JSC Center Data Manager.

The lessons we have learned are captured in this database and are intended to be used as tools for improvement.

About this Database

LLDB RSS Lesson Feed
- Integrated via Google search engine
- Continue to identify additional repositories
Case Studies

• Case Studies
  – Finding existing JSC case studies and including in JSC LL Library
  – Linking to Agency and other external sources off JSC LL Library
  – Advertise weekly a new case study in JSC Today, which reaches over 10,000 JSC employees
  – Sources: PBMA, NSC, APPEL, GSFC CKO, and Air Force Institute of Technology
Making it Easier to Find What’s Already Out There

• Taxonomy
  – Develop robust Center taxonomy structure for data tagging
  – Integrate into Center search system

• Enhanced Search
  – Identify 100’s of existing repositories
  – Use taxonomy/thesaurus for refined results

• Enterprise Content Management
  – Repository for capturing knowledge at end of life for existing programs/projects
  – Repository for capturing knowledge from past programs/projects that has intrinsic value to current and future workforce
Forward Work

• Social Networking Analysis
• Case Studies
  – Go beyond advertising what’s available
  – Want to infuse the LL from the case studies through focus group discussions
  – Develop case studies from ongoing mishaps, technical issues, etc.
• Create ability for “JSC StoryCorps”
  – Short knowledge nugget capture from individuals
  – JSC capture or individual submissions
Collaborations

- ESMD Risk and Knowledge Management
- Goddard Chief Knowledge Officer
- American Productivity and Quality Center
- Continual Benchmarking with industry, commercial, and contractor entities