Attachment 2 : Study Group report
SG.4.1. Knowledge Management of Space Systems

Short Study Description

- Define the organizational and inter-organizational issues that support or inhibit knowledge sharing amongst aerospace organizations (including capturing knowledge of our key experts and aging workforce)
- Identify and recommend standards for knowledge management activities and initiatives to promote interoperability of key systems (such as lessons learned or publications)
- Create, through consensus, a position on the recommended approaches for an aerospace organization to investigate to excel at knowledge management

Website Study Information up to date?

- Information will be given to secretary for inclusion on web site

Issues requiring resolution?

- Formal acceptance of charter occurred in Spring 2008.

Progress and Product Deliveries on Schedule?

- **Plan**: Support a better understanding among member and aerospace organizations of the ways in which they can share knowledge
    - **Action: C**o-chair, Roberta Mugellesi Dow from ESOC is attending this IAC in her new role.
    - **Action:** Held second *Southern California and International Aeorspace Conference on Knowledge Management for Aerospace* at Pepperdine University, Malibu, California, September 9-11, 2008. Papers were solicited from government, academia, and industry. Board representation is international (U.S., Canada, Australia). Last year, there were 85 attendees, this year 125. More at http://bschool.pepperdine.edu/newsevents/kmforum/
    - **Action:** Proposed international ontology for aerospace with a consortium of government space agencies, academia, and industry. Proposal was given to *International Conference on KM for Aerospace* in (above) and at Dublin Core Metadata Conference in Berlin (September 25). ESA, NASA, US Air Force, US Missile Defense Agency, Boeing, Pratt Whitney, Northrup Grumman, Aerospace Corporation, and others participating so far.
    - **Action:** Continue to co-lead a consortium of US aerospace industry, academia, and government space organization meetings on knowledge management. Team meets face-to-face 4-6 times a year. Participants include Northrop Grumman, The Aerospace Corporation, Boeing, Pratt Whitney Rocketdyne, Lockheed Martin, Raytheon, Computer Sciences Corporation, University of California at Irvine, Pepperdine University, California State University at Northridge, and NASA.
    - **Action**: ESA and NASA coordination on organized collaboration between KM strategic plans.

- **Plan**: Ensure that there is a set of related papers from workshop participants at the 2008 IAF conference that exemplifies excellent knowledge management practices at aerospace organizations.
    - **Action**: Continue to have combined Knowledge Management and Quality Management tracks.

- **Action**: 16 papers submitted for the KM track for the Glasgow, the following were accepted:
  1. **Status of Working Group on Knowledge Management for Space Missions**, Mrs. Jeanne Holm, NASA/Jet Propulsion Laboratory, Pasadena, CA, United States.
  2. **Enabling Innovation and Collaboration Across Geography and Culture: A Case Study of NASA's Systems Engineering Community of Practice,** Daria Topousis and Keri Murphy, California Institute of Technology, Pasadena, CA, United States
  3. **Knowledge Management for ESA's Rosetta Mission,** Gerald Schwerm (ESAC, Madrid) and Joe Zender (ESTEC, The Netherlands)
  4. **Applying Knowledge Management to an Organization Transformation,** Shannon Potter, Kennedy Space Center, NASA, Titusville, Florida, United States.
  5. **Knowledge Management and Innovation at Pratt-Whitney Rocketdyne**, Kiho Sohn, Pratt-Whitney Rocketdyne, Woodland Hills, CA, USA
  6. **Experience In Making An Analysis Of Safety and Fail-Safety Of "Proton" Launcher During Satellite Orbital Injection**, Dr. Sergey Lysyy, Space Systems Research Institute - Branch of Khrunichev Space Center
  7. **Information modeling of spacecraft failure diagnosis system based on integrated space-ground conception,** Dr. Xiaoning Du, Xi'an Jiaotong University
  8. **The Management and Principle Model of Software Engineering in Auto-Control System for Space Launch**, Prof. Mengyuan Li, China
  9. **Studying the role of narrative across aerospace knowledge management systems**, Mr. Nathan Eng, University of Cambridge Engineering Design Centre, UK
  10. **Software Dependability and Safety**, Mr. Bart Roeloffs, LogicaCMG, UK and Netherlands
  11. **Safeguarding space systems against counterfeit electronic parts**, Mr. Stan Purwin, The John Hopkins University Applied Physics Laboratory, USA
  12. **International Knowledge Transfer - an engineering perspective**, Patrick Hambloch, Niederrhein University of Applied Science, Germany
  13. **Knowledge Management in ESA and ESOC,** R. Mugellesi Dow, ESOC, Germany
  14. **Semantic Web as an Aide to Space Exploration**, S. Decker et al. DERI, Ireland
  15. **Critical Success Factors Required for Knowledge Management and Collaboration,** Sasi Pillary, Glenn Research Center, NASA
  16. **Simplicity: A pragmatic approach for knowledge management,** Siegmar Pallaschke, Germany

- **Plan**: Ensure that there is a set of related papers from workshop participants at the 2009 IAF conference that exemplifies excellent knowledge management practices at aerospace organizations.

  - **Action**: Continue to combine Quality and Knowledge Management Track will be submitted for Korea. Track has been accepted.

- **Plan**: Information will be posted on a web site for each of communication and status reference.

  - **Action:** Group has an online collaboration workspace and discussion forums.
  - **Action:** Expanded online community to 128 members.

- **Plan**: Coordination with other key working groups such as the OMG standards committee for knowledge-based engineering and the W3C committees for interoperability.

    - **Action:** NASA has formalized an Information and Data Management Program that will support the coordination of knowledge management standards and interfaces with other space organizations. Study Group Chair leads that area of the new program.
    - **Action**: U.S. Federal Knowledge Management Working Group has broadened it's membership to include those interested in government issues for knowledge sharing globally. Joint partnership with Canadian government and CSA has been formalized. This group will be identifying emerging standards in the KM area and best practices in the field, with a focus area on space-related organizations. These will be brought up as part of the IAA group discussions for any potential applicability. Study Group Chair was elected to lead this group for next two years.

- **Plan**: A position paper on the recommended approaches for an aerospace organization to follow in knowledge management that would promote knowledge sharing and interoperability with other organizations
    - **Action**: Discussions have begun, paper has been outlined for draft review. This week's KM Study Group workshop will focus on how to complete draft.

Study Team Member Changes?

- New co-chair—Roberta Mugellesi-Dow, ESOC
- Formulated online community to supplement working group—128 members.

Name of Person Providing Study Group Status

- Jeanne Holm, Chief Knowledge Architect, NASA, Jet Propulsion Laboratory

Status Report Date

- 28 September 2008