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 IMPROVE LIFE HERE  EXTEND LIFE TO THERE  FIND LIFE BEYOND

NASA's Knowledge Management Strategy

March 2, 2006

KM

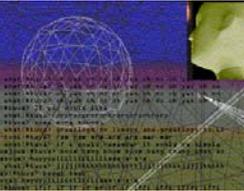
Collaborate



Communicate



Innovate



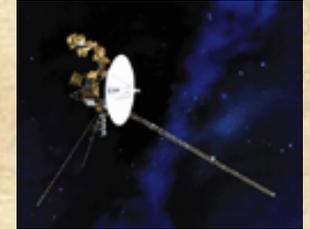
Motivate



Key Areas for NASA's KM Strategy

Sustain NASA's knowledge across missions and generations

Identify and capture the information that exists across the Agency



Help people find, organize, and share the knowledge we already have

Efficiently manage NASA's knowledge resources

Increase collaboration and to facilitate knowledge creation and sharing

Develop techniques and tools to enable teams and communities to collaborate across the barriers of time and space



KM

Framework for KM at NASA

Collaborate



Communicate



Innovate



Motivate



Sharing and Using Knowledge

People	Process	Technology
<ul style="list-style-type: none">• Enliven collaboration• Facilitate communities of practice• Reward and recognize knowledge sharing• Encourage storytelling• Drive a "One NASA" culture	<ul style="list-style-type: none">• Create end-to-end focus in disciplines• Enhance knowledge capture• Accelerate learning• Manage information	<ul style="list-style-type: none">• Enhance system integration and access• Deploy intelligent agents for people• Exploit semantic technologies• Reuse existing capabilities in new ways

Supporting Activities

Education and Training

IT Infrastructure

Human Resources

Security

KM

Critical KM Activities at NASA

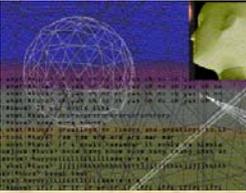
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2000

- Local KM solutions maturing
- CIO forms Team
- Focus groups and interviews
- Benchmarking
- Executive discussion

2001

- Strategic Plan
- Portal study
- Lessons learned pilot
- Federal KM Working Group
- Storytelling shares key knowledge

2002

- NASA Portal developed
- Collaboration study
- International Aerospace KM Group
- Refocus HR incentives

2003

- NASA Portal deployed
- Inside NASA pilot
- Collaboration pilot
- Focus HR, Engineering, CIO executive sponsors

2004

- 240M people learn about events from NASA Portal
- Collaborative virtual meetings commonplace
- One NASA cultural change driven by Administrator

2005

- NASA Engineering Network integrates learning and processes
- NASA web becomes a destination of choice
- Semantic technologies allow distributed search and access

KM

Looking Ahead

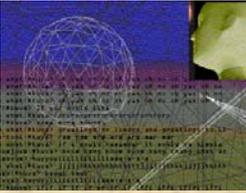
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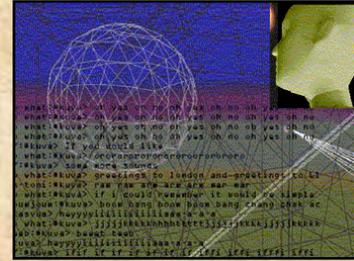


Motivate



- ◆ We are working on a variety of new initiatives that are still being formulated, including
 - Accelerating learning
 - Integrated approach to e-learning and support to the project managers
 - NASA Engineering Network
 - Customizable, organized access to information across distributed resources
 - Allow easy, secured collaboration across project partners
 - Finding experts and expertise to facilitate sharing knowledge person-to-person via social networks
 - Embed lessons and expertise into policies and processes--360° learning
 - Sharing knowledge with partners for NASA's success
 - International Astronautical Federation (IAF) Working Group on KM for Aerospace
 - Federal KM Working Group--Knowledge and Human Capital Retention
 - Access information at <http://km.nasa.gov>

Knowledge Management Roadmap

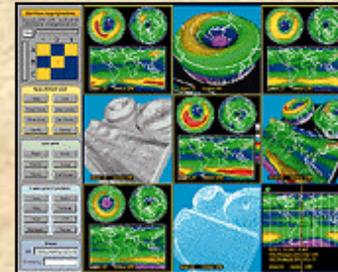


Modeling Expert Knowledge

- Systems model experts' patterns and behaviors to gather knowledge implicitly
- Seamless knowledge exchange with robotic explorers
- Planetary explorers contribute to their successor's design from experience and synthesis
- Knowledge systems collaborate with experts for new research

Enables real-time capture of tacit knowledge from experts on Earth and in permanent outposts

- Interstellar missions
- Permanent lunar and Martian colonies



Capturing Knowledge

- Knowledge gathered anywhere from hand-held devices using standard formats on interplanetary Internet
- Expert systems on spacecraft analyze and upload data
- Autonomous agents operate across existing sensor and telemetry products
- Industry and academia supply spacecraft parts based on collaborative designs derived from NASA's knowledge system

Enables capture of knowledge at the point of origin, human or robotic, without invasive technology

- Mars robotic outposts
- Comet Nucleus Sample Return
- Saturn Ring Observer
- Terrestrial Planet Finder



Integrating Distributed Knowledge

- Instrument design is semi-automatic based on knowledge repositories
- Mission software auto-instantiates based on unique mission parameters
- KM principals are part of NASA culture and supported by layered COTS products
- Remote data management allows spacecraft to self-command

Enables seamless integration of systems throughout the world and with robotic spacecraft

- Europa Lander/Submersible
- Titan Organics: Lander/Aerobot
- Neptune Orbiter/Triton Observer



Sharing Knowledge

- Adaptive knowledge infrastructure is in place
- Knowledge resources identified and shared appropriately
- Timely knowledge gets to the right person to make decisions
- Intelligent tools for authoring through archiving
- Cohesive knowledge development between NASA, its partners, and customers

Enables sharing of essential knowledge to complete Agency tasks

- MarsNet
- Mars Exploration Rovers
- Space Interferometry Mission

2003

2007

2010

2025