



# **Information Technology Infrastructure Committee (ITIC)**

*Report to the NAC*

**October 2010**

**Al Edmonds**

**Chair ITIC**

# OUTLINE



- I. Committee members
- II. Update on Committee activities
- III. ITIC work plan
- IV. Questions/Comments

# Committee Members



## Membership

- *Lt. General (Ret) Albert (Al) Edmonds (Chair), President- Edmonds Enterprise Services, Inc.*
- *Mr. Alan Paller, Research Director- SANS Institute*
- *Dr. Robert Grossman, Professor- University of Chicago*
- *Dr. David Waltz, Director, CCLS- Columbia University*
- *Dr. Larry Smarr, Director- California Institute of Telecommunications and Information Technology*
- *Dr. Charles Holmes (Vice-Chair), Retired- NASA*
- *Ms. Debra Chrapaty, Senior VP – CISCO*
- *Dr. Alexander Szalay, Professor- Johns Hopkins University*
- *Dr. Alexander H. Levis, Professor- George Mason University*  
*Chair of the AVIONICS, SOFTWARE AND CYBERSECURITY SUBCOMMITTEE*
- *Ms. Tereda J. Frazier (Exec Sec), Special Assist. to CIO, NASA*

# Update On Committee Activities



- ◆ Attended the IT Summit
- ◆ Commenced IT Organizational Review
- ◆ Visited NASA Centers
- ◆ Cyber Security Update

# Update On Committee Activities (con't)



## ◆ Committee met last week at AMES

- Reviewed areas of collaboration in NASA
- Status of work plan
- Visited the NASA Astrobiology Institute (NAI) (picture included)
- Visited the NASA Advanced Supercomputing Facility (NAS) (picture included)
- Visited Nebula Container
- Visited the Security Operating Center (SOC)



# NASA IT Organizational Review

# Project Objective:



Examine the role of the OCIO, its strategic plans and projected resources, and IT governance across NASA.

- ◆ *Review current IT organization*
- ◆ *Evaluate people, processes, projects*
- ◆ *Recommend where appropriate*

# OCIO Purpose, Vision, Mission and Principles



## NASA IT Vision

*By advancing NASA's space and research program results through secure, efficient, innovative, reliable, and responsive services that are valued by stakeholders. The NASA IT organization is one of the most highly regarded Federal IT organizations, a sought-after innovator, and respected partner for NASA's mission and mission-support organizations.*

## Mission

*The mission of the NASA IT organization is to increase the productivity of scientists, engineers, and mission-support personnel by responsively and efficiently delivering reliable, innovative and secure IT services.*



# Objective and Approach

Examine the role of the OCIO, its strategic plans and projected resources, and IT governance across NASA

Interviews were held with various stakeholders

## OCIO

- Deborah Diaz – Deputy CIO
- Gary Cox – Enterprise and Integration Chief
- Marion Meissner – Acting Security Chief

## Mission Directorate CIOs

- Beverly Hamilton – Exploration
- Scott Goodwin – Space
- Phillip Milstead – Aeronautics
- Joseph Bredekamp - Science

## GSFC CIO

- Adrian Gardner - CIO
- Dennis Vander Tuig – Director of Operations

# Helping Define the Phases of Success



# Early Observations



## Organization

New CIO

Gaining some credibility

Eliminate silos

Drive more innovation

Manage reductions

Attracting talent, building  
the team will be key

## Processes

Cross team meetings/councils  
appear to be working

More stakeholder requirements  
and involvement

Clearer governance process  
between IT, missions and  
centers

Clear and measurable metrics  
and ROI

Incentives to optimize

## Projects

More focus on shared  
solutions

Use cross-NASA and  
external sources where  
possible



# Next Steps

- ◆ Complete interviews with all major stakeholders
- ◆ Review with CIO
- ◆ Draft final report with recommendations



# Committee Visit to Ames



Astrobiology  
Institute

# NASA Astrobiology Institute Workshop Without Walls



University of Hawaii

NASA Ames showing six  
videoconferencing sites



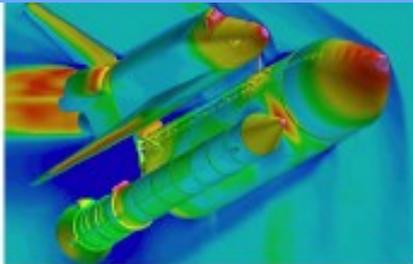
Rensselaer  
Polytechnic Institute

# NASA's Leading Edge Supercomputer--Pleiades

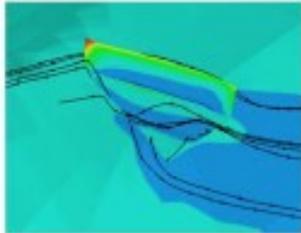


# Recent HEC Support for NASA Projects

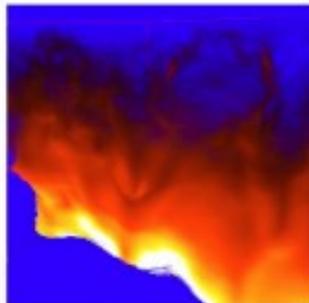
NASA Advanced Supercomputing (NAS) Facility



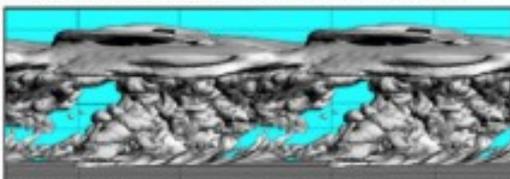
SOMD: Shuttle Aerodynamics



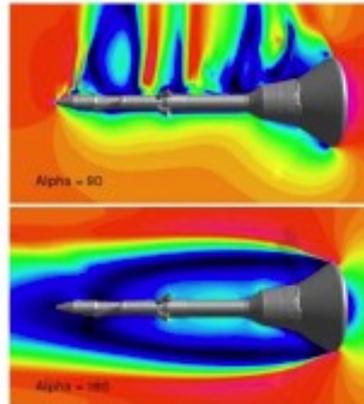
SOMD: Shuttle Damage Analysis



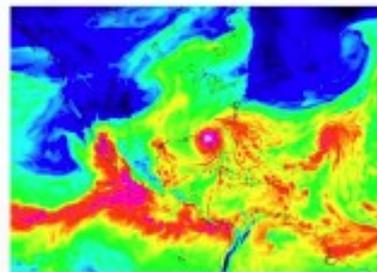
SMD: Solar Surface Convection



ARMD: Jet Aircraft Wake Vortices

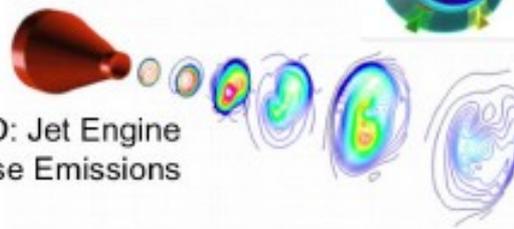


ESMD: Orion Launch Abort

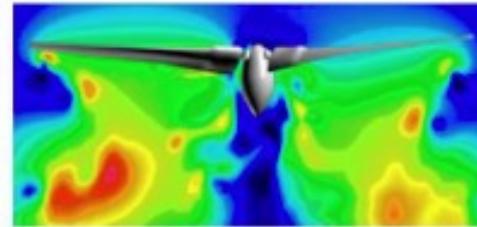


SMD: Hurricane Prediction

ESMD: Ares I  
Aerodynamic Database



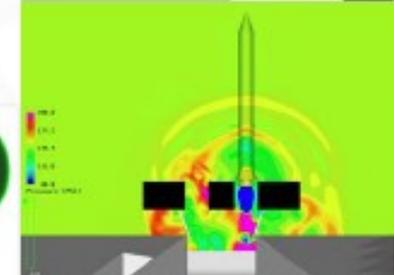
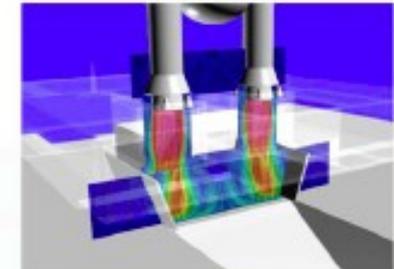
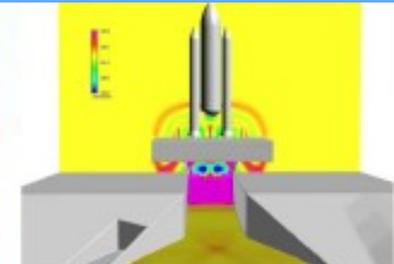
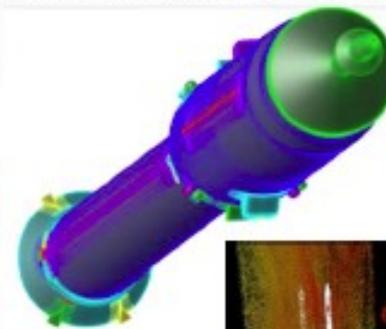
ARMD: Jet Engine  
Noise Emissions



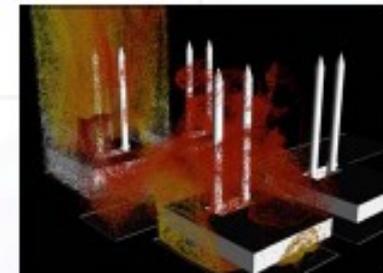
ARMD: V22 Tiltrotor



SMD: Spinning Black Holes



ESMD: Flame Trench



NESC: SRB  
Burn in VAB

# NEBULA—NASA Ames Cloud Prototype



# Inside NEBULA—Modular Compute and Storage



Chris Kemp



# Cyber Security

# Cyber Security



## ◆ Visited Lockheed-Martin Cyber Lab

- Looking for best industry practice
- Consider recommending a pilot (Proactive)
- Subcommittee members activity

## ◆ SOC Plus

- Tools
- Contracts

## ◆ Mission Requirements

- Mission Area CIOs Interest



# ITIC Projected Work Plan for 2011

# ITIC Projected Work Plan for 2011



1. Examine the ongoing and planned efforts for the IT Infrastructure and mission areas.
  - a. *Examine best practices across the government and the private sector and suggest approaches that are appropriate for NASA's unique mission.*
  - b. *Investigate the state of NASA's software and infrastructure support for collaborative teams. What collaborative systems and services should NASA make available to enhance distributed teams?*
  - c. *Recommend areas of disruptive technology where NASA needs to be prototyping innovative systems which may require major changes in established NASA IT procedures, processes and acquisitions.*

# ITIC Projected Work Plan for 2011 (cont'd)



2. Investigate the state of NASA's high performance networks, computing and visualization systems, as well as data intensive computing and storage systems. How do these compare to other federal agencies and other large scale efforts, including commercial facilities? Recommend opportunities for NASA to use leading edge capabilities in these areas.
3. Examine NASA's data and communications environment for its aerospace operations and point out areas in need of attention in order to improve efficiency and reliability for all users end to end.

# ITIC Projected Work Plan for 2011 (cont'd)



4. Continue to examine the role of the OCIO, its strategic plans and projected resources, and IT governance across NASA. Make recommendations on how IT infrastructure should be managed at NASA. Identify deficiencies and opportunities for improvement and innovation.



# Questions?