



Information Technology @ NASA

Office of the Chief Information Officer

***NASA IT Vision:** The NASA IT
Organization is the **very best**
in government*

Linda Cureton – NASA CIO
Federal Networks '11

February 15-16, 2011



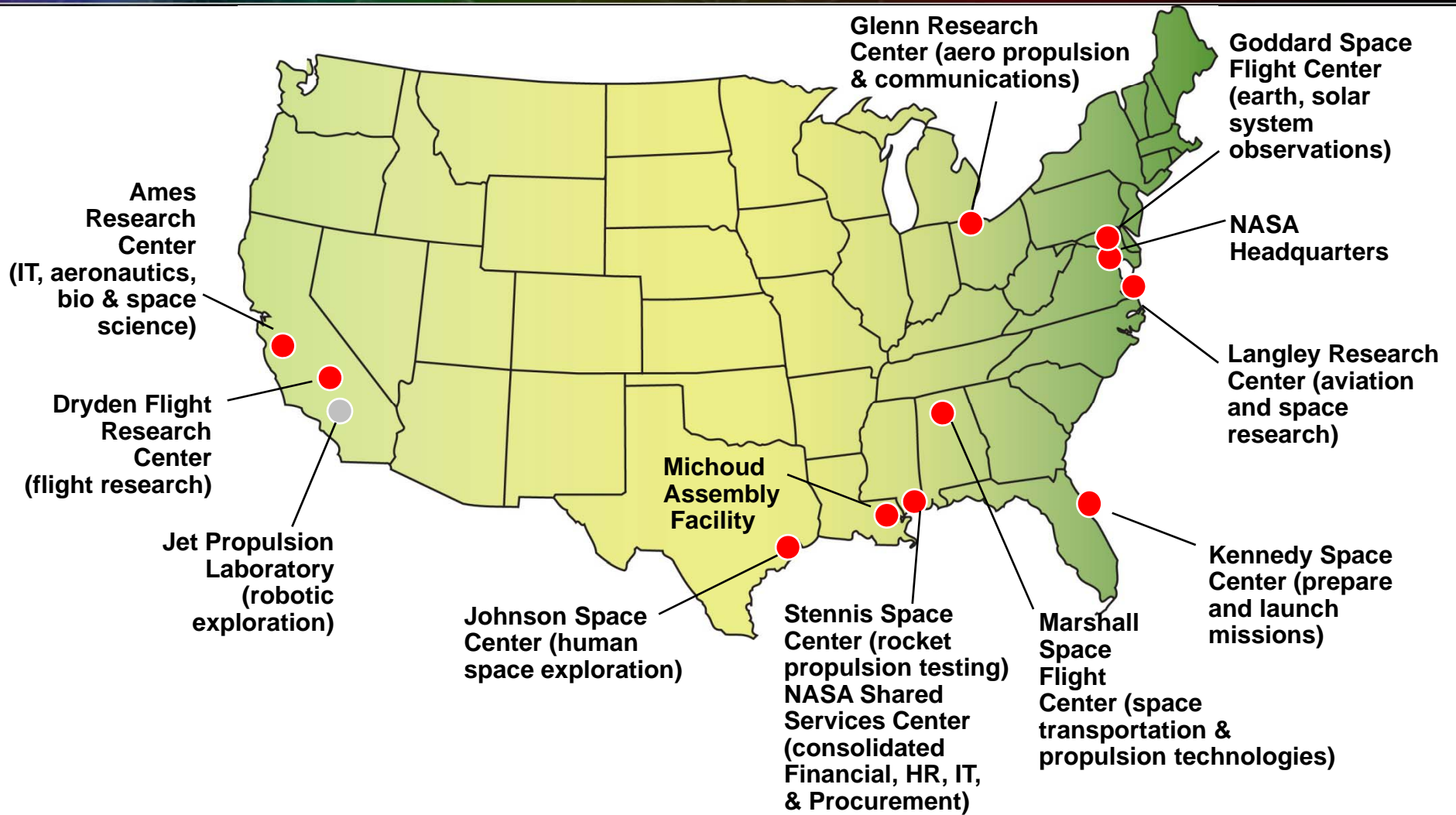
Agenda

“The NASA Chief Information Officer will provide an **overview of her agency’s IT initiatives and priorities** to enable the operational effectiveness and efficiency of NASA and its mission support organizations. She will highlight NASA’s near-term requirements for industry.”





The NASA Environment





The NASA Mission

Today we are launching a bold and ambitious new space initiative to enable us to explore new worlds, develop more innovative technologies, foster new industries, increase our understanding of the earth, expand our presence in the solar system, and inspire the next-generation of explorers...



NASA Administrator Charles Bolden
February 1, 2010



The NASA Mission

NASA's mission is to pioneer the future in space exploration, scientific discovery, and aeronautics research.



[Aeronautics](#): pioneers and proves new flight technologies that improve our ability to explore and which have practical applications on Earth.

[Exploration Systems](#): creates capabilities for sustainable human and robotic exploration.

[Science](#): explores the Earth, solar system and universe beyond; charts the best route of discovery; and reaps the benefits of Earth and space exploration for society.

[Space Operations](#): provides critical enabling technologies for much of the rest of NASA through the space shuttle, the International Space Station and flight support.



The NASA Mission

- **Spinoff Technology:** NASA has been issued over 6,300 patents, nearly one in a thousand of all patents ever issued by the U.S. Patent Office (since 1790).
- **Modeling Innovations Advance Wind Energy Industry:** In 1981, Glenn Research Center scientist Dr. Larry Viterna developed a model that predicted certain elements of wind turbine performance with far greater accuracy than previous methods.
- **Image-Capture Devices Extend Medicine's Reach:** NASA's Advanced Diagnostic Ultrasound in Microgravity (ADUM) experiment led to the development of revolutionary medical ultrasound diagnostic techniques for long-distance use, including frame-grabber and data archiving technology that enables ultrasound users with minimal training to send diagnostic-quality ultrasound images and video to medical professionals via the Internet .



NASA IT Strategy

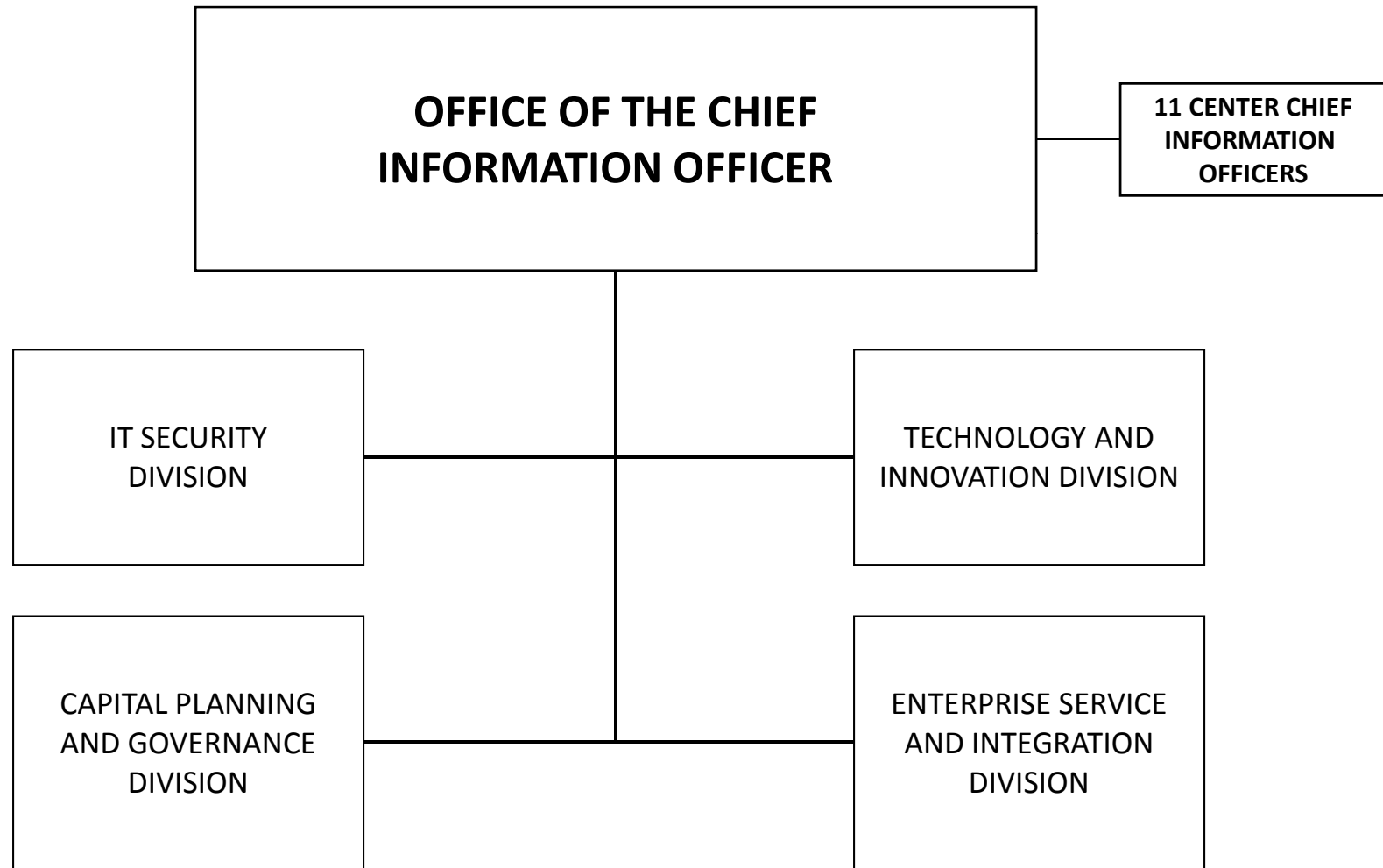
Make the NASA IT Organization the very best in government based on project execution, results, innovation, and value to the mission

Priorities:

1. Improved IT Management and Planning, Enterprise Architecture, and governance processes to optimize the NASA Mission;
2. Improved Cyber-Security through risk-based measures to secure NASA's information and systems from threats;
3. Improved management and effectiveness of NASA business systems, including new solutions to address gaps in business system capabilities as prioritized by the customer base;
4. Developing common IT infrastructure to satisfy Agency requirements; and,
5. Focused innovation to address NASA's biggest IT challenges.

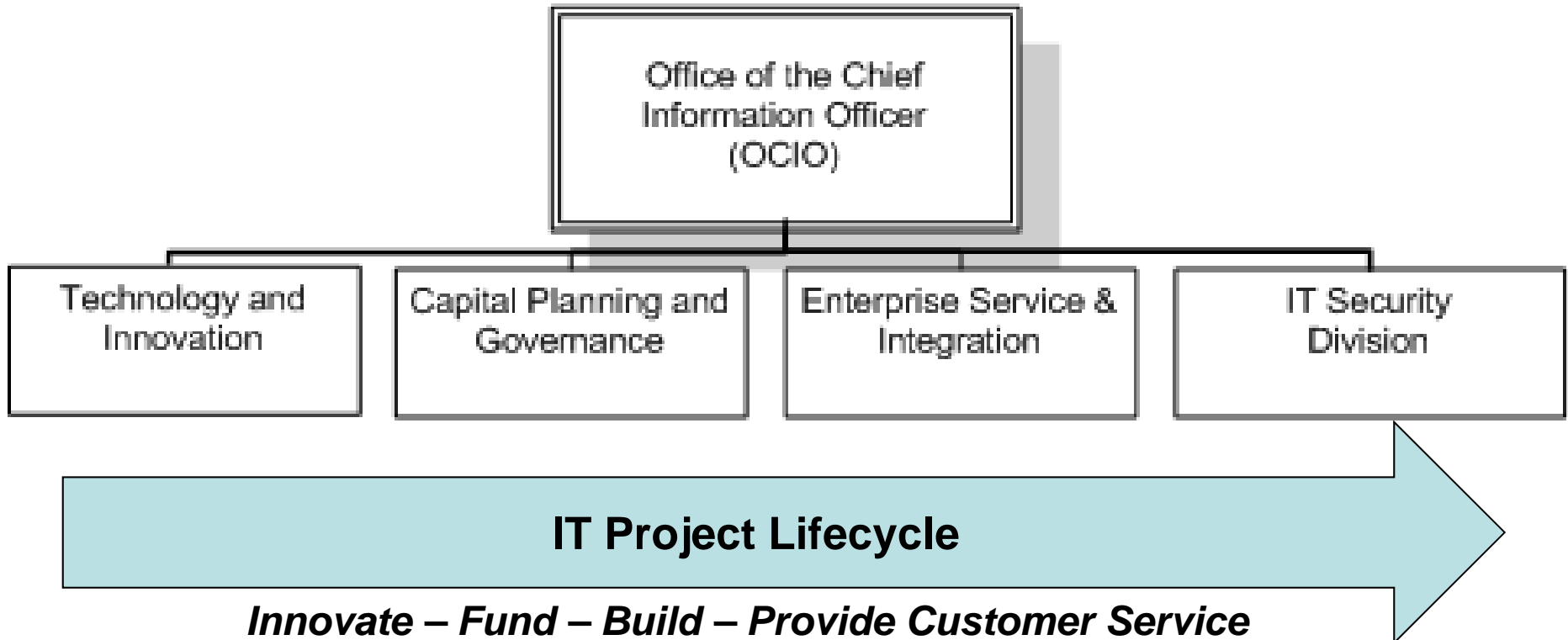


OCIO Organization





Aligned with IT Lifecycle





Center and Mission CIOs

Linda Cureton – Associate Administrator NASA CIO

Center CIOs	Mission Directorate CIOs
HQ/Ms. Kelly Carter	Aeronautics Research/Mr. Phil Milstead
ARC/Mr. James Williams	Exploration Systems/Ms. Beverly Hamilton
DFRC/Mr. Ken Norlin	Science/Mr. Joseph Bredekamp
GRC/Randy Humphries	Space Operations/Mr. Scott Goodwin
GSFC/Mr. Adrian Gardner	
JSC/Mr. Larry Sweet	
KSC/Mr. Mike Bolger	
LaRC/Ms. Cathy Mangum	
MSFC/Mr. Jonathan Pettus	
NSSC/Mr. Bruce O'Dell	
SSC/Ms. Dinna Cottrell	

JPL CIO - Mr. Jim Rinaldi



NASA's IT Environment

Users

- 90,000

Devices and Data Centers

- 80,000 Desktops/Laptops
- 15,000 servers
- 54 data centers

Websites

- 8,000 websites
- 2,000 public facing sites

NASA IT Workforce

- 3,700 IT FTE
- 700 government employees, 3,000 contractors

Networks

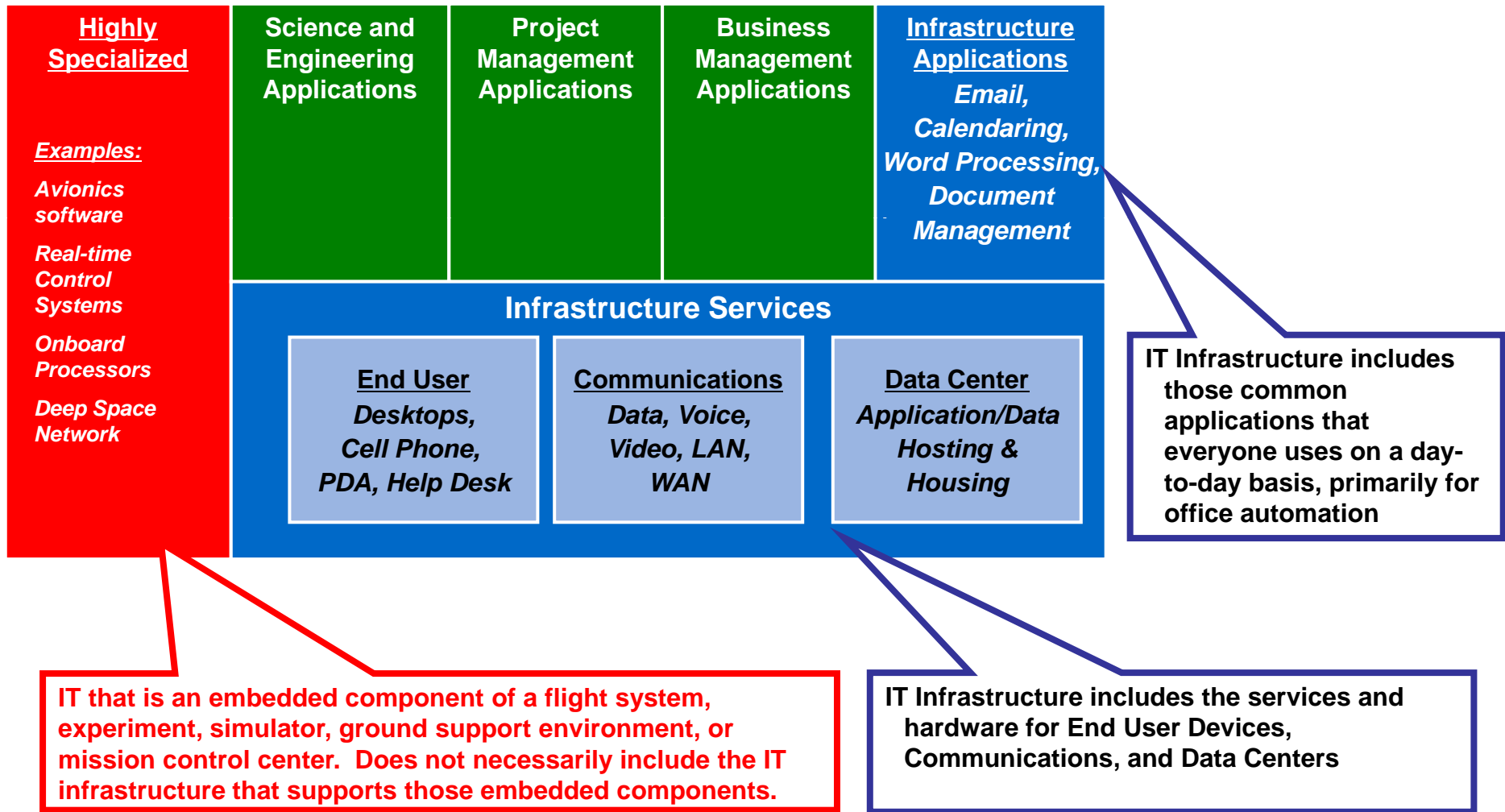
- 3 Wide Area Networks
- 20 Center-specific LANs
- 200 connections to universities and partners

Systems/Applications

- 4,500 Applications

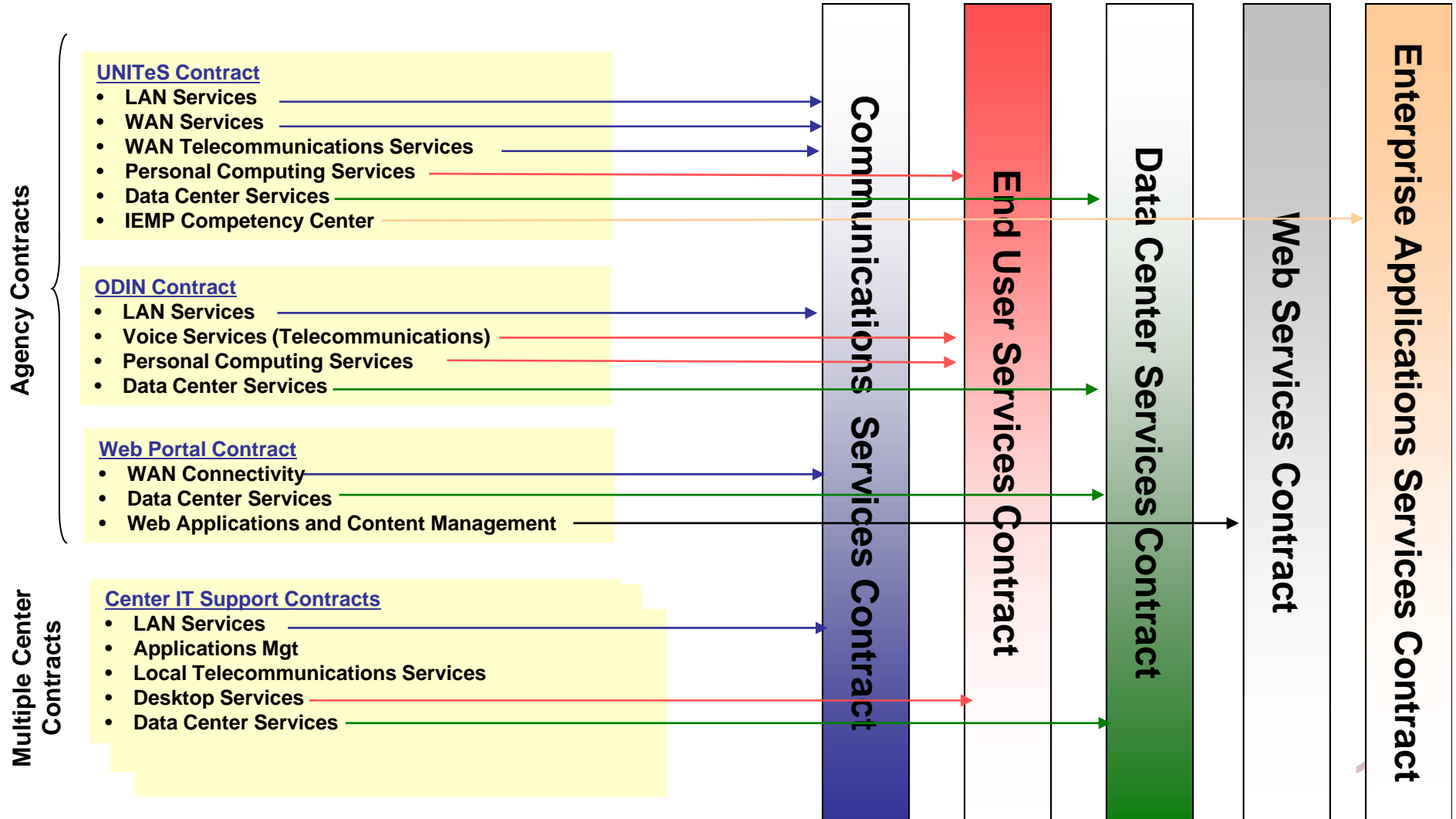


NASA's IT Environment





Current to Future Requirements





IT Infrastructure Integration Program (I³P)

- **Procure services to provide agency-wide management, integration, and delivery of IT infrastructure services.**
- **Several component contracts collectively known as the IT Infrastructure Integration Program (I³P) Acquisition.**
- **Will also procure Enterprise Applications Services and Center-unique IT services.**

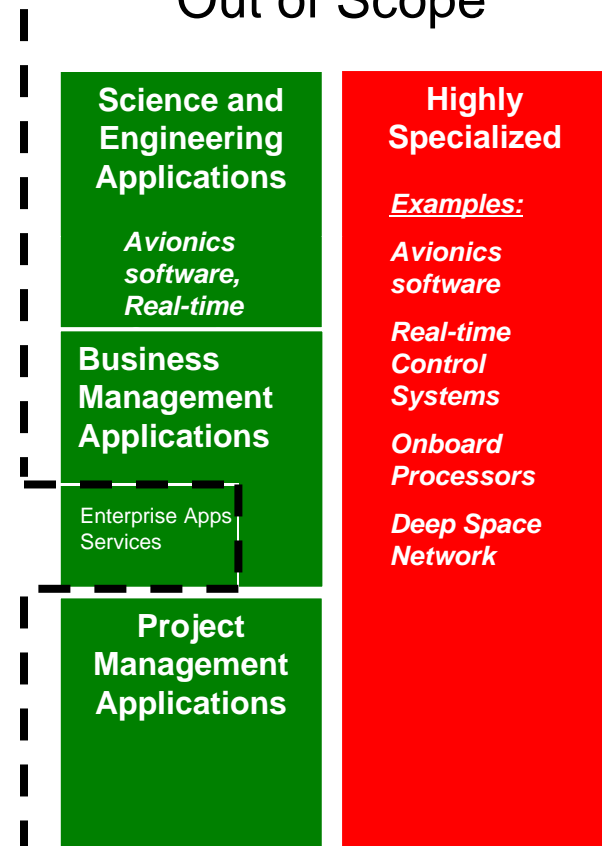


I3P Scope

In Scope

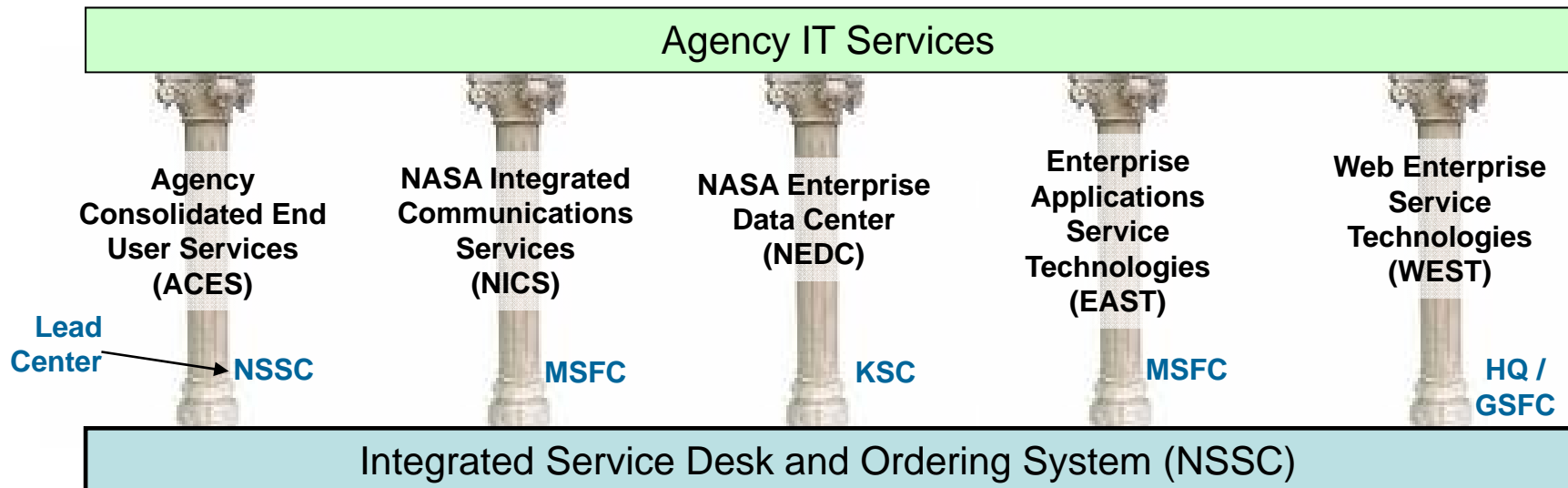


Out of Scope





NASA's IT Infrastructure Solution



- **ACES** will provide consistent, NASA-wide IT end-user services
- **NICS** will integrate networks and provide seamless operations across Centers
- **NEDC** will improve availability and access to applications and data
- **EAST** will enable more efficient development and maintenance of Agency-wide applications
- **WEST** will improve the quality of Web services

25 POINT IMPLEMENTATION PLAN TO REFORM FEDERAL INFORMATION TECHNOLOGY MANAGEMENT

Vivek Kundra
U.S. Chief Information Officer

DECEMBER 9, 2010



Action Item	Owner(s)	Within 6 mos.	6-12 mos.	12-18 mos.
7 Design a formal IT program management career path	OPM, OMB			
8 Scale IT program management career path	OPM, Agencies			
9 Require Integrated Program Teams	OMB			
10 Launch a best practices collaboration platform	Federal CIO Council			
11 Launch technology fellows program				
12 Enable IT program manager mobility across government and industry				
13 Design and develop cadre of specialized IT acquisition professionals	OMB, Agencies			
14 Identify IT acquisition best practices and adopt government-wide	OFPP			
15 Issue contracting guidance and templates to support modular development	OFPP			
16 Reduce barriers to entry for small innovative technology companies	SBA, GSA, OFPP			
17 Work with Congress to create IT budget models that align with modular development	OMB, CFO Council, Congress			
18 Develop supporting materials and guidance for flexible IT budget models	OMB, CFO Council, Congress			
19 Work with Congress to scale flexible IT budget models more broadly	OMB, CFO Council, Congress			
20 Work with Congress to consolidate Commodity IT spending under Agency CIO	OMB, CFO Council, Congress			
21 Reform and strengthen Investment Review Boards	OMB, Agencies			
22 Redefine role of Agency CIOs and Federal CIO Council	Federal CIO, Agency CIOs			
23 Rollout "TechStart" model at bureau level	Agency CIOs			
24 Launch "myth-busters" education campaign	OFPP			
25 Launch an interactive platform for pre-RFP agency-industry collaboration	GSA			



Cloud Computing

A model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.



There are five key Cloud attributes:

1. Shared / pooled resources
2. Broad network access
3. On-demand self-service
4. Scalable and elastic
5. Metered by use

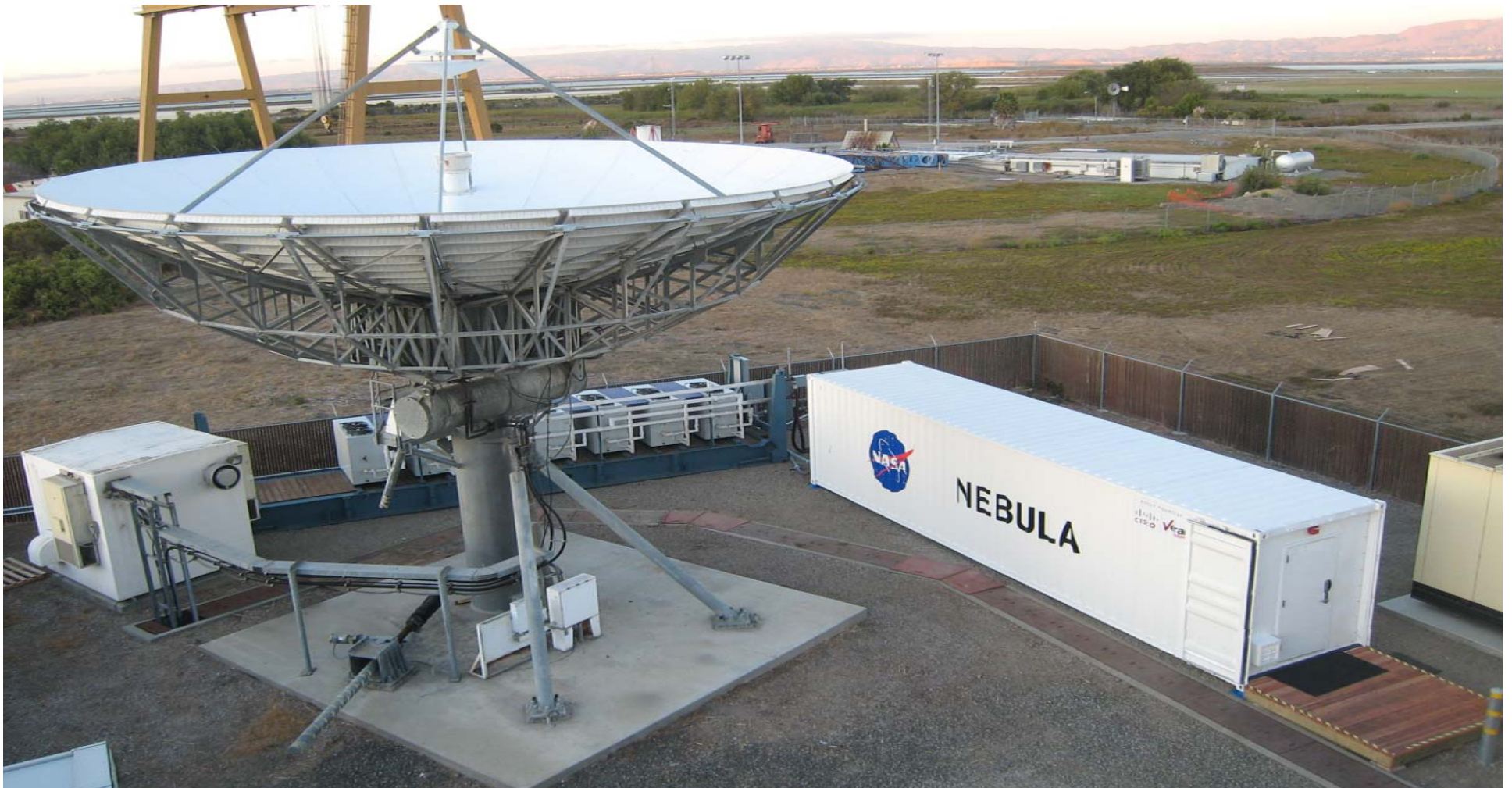


Federal Cloud Platform

- Federal agencies have similar needs
- Common set of languages, tools, software & services allows us to avoid re-inventing the wheel
- Standards mitigate vendor lock-in
- Improves cohesion of citizen experience
- Easy collaboration and communication between agencies and with private institutions



NASA Nebula





NASA's Data Sharing Challenges

- NASA has a long history of publishing data
- Massive data sets
- Unique formats
- Difficulty sharing data without granting access to internal networks
- Open Government Directive





NASA's IT Challenges

- Large-scale infrastructure requirements
- Too much money is spent on infrastructure
- Fluctuating needs:
 - Missions Completely Succeed (Rovers)
 - Missions do not succeed (Orbiting Carbon Observatory)
 - Politics impact Missions (Triana)
- Missions are focused on the Mission
- Scientists are focused on the Science

Questions

