



NAC Institutional Committee

NAC Institutional Committee Meeting

March 16-17, 2016

Kathryn Schmoll
Chair



NASA IG Report

NASA's Top Management and Performance Challenges

NAC Institutional Committee

Identified in OIG report dated Nov 5, 2015

(edits are changes from the OIG report dated Nov 14, 2014)

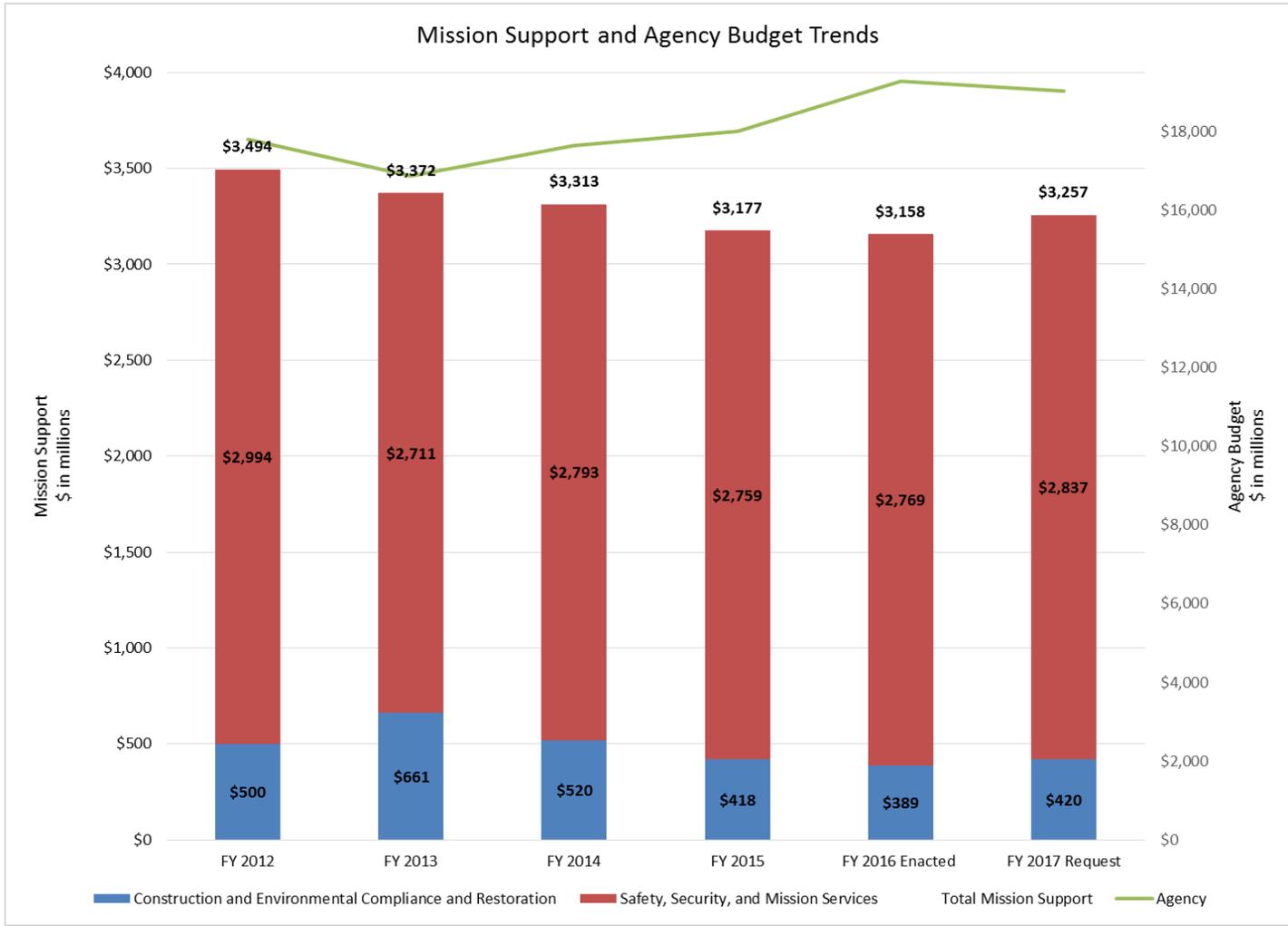
- ~~Managing NASA's Human Space Exploration Programs: International Space Station, Commercial Crew Transportation, and the Space Launch System~~
- Space Flight Operations in Low Earth Orbit: Managing the International Space Station and the Commercial Cargo and Crew Programs
- Positioning NASA for Deep Space Exploration: Developing the Space Launch System, Orion Capsule, and associated Ground Systems, and Mitigating Health and Performance Risks for Extended Human Missions
- Managing NASA's Science Portfolio
- Ensuring Continued Efficacy of the Space Communications Network
- Overhauling NASA's Information Technology Governance ~~Structure~~
- ~~Ensuring the Security of~~ Securing NASA's Information Technology Systems and Data
- Managing NASA's Infrastructure and Facilities
- Ensuring the Integrity of the Agency's Contracting and Grants Processes ~~and the Proper Use of Space Act Agreement~~

Last 4 out of 8 are Institutional Challenges



Mission Support Budget Trends

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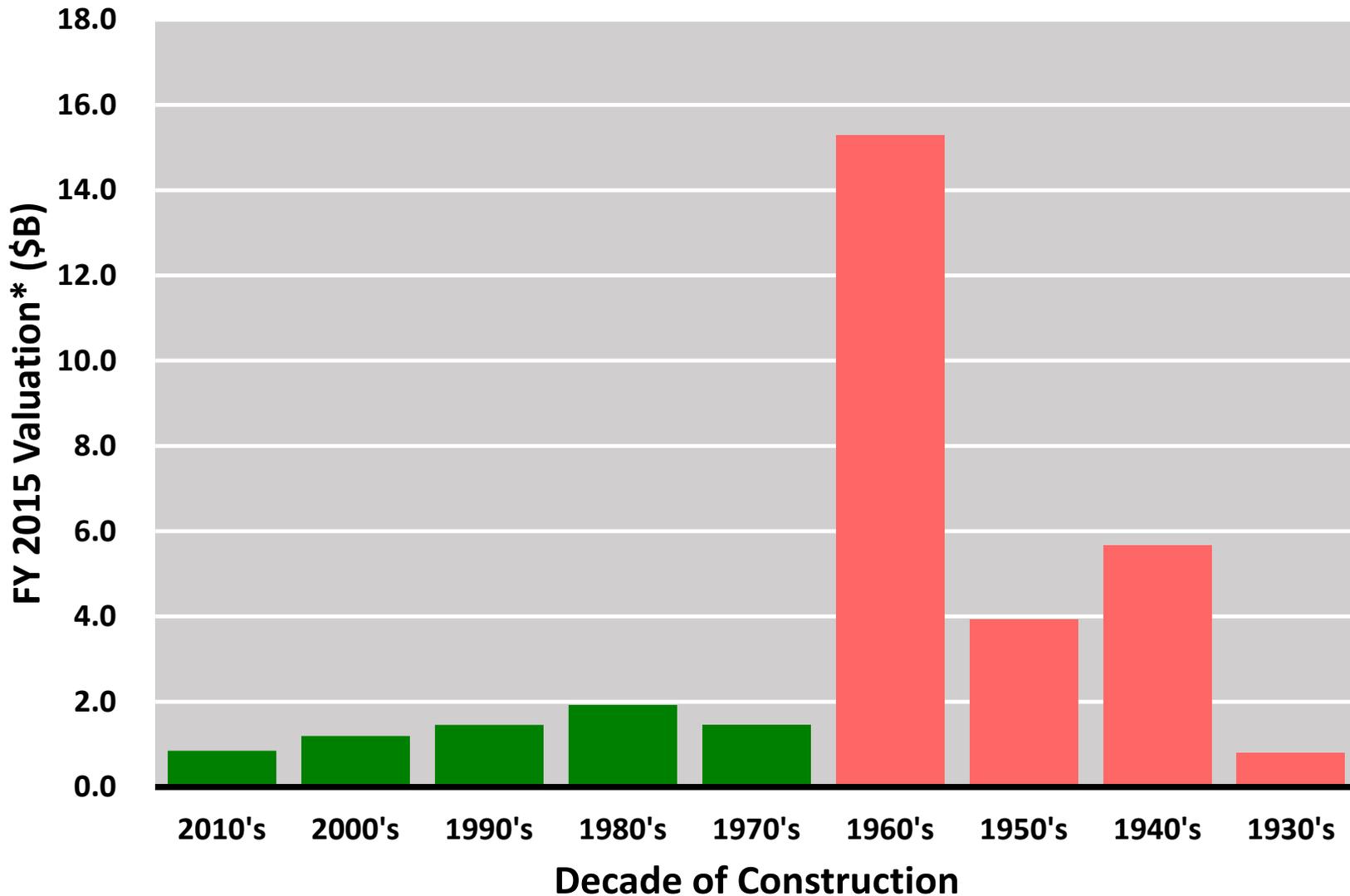




Mission Support Budget

Aging facility base drives operations, maintenance, and investment requirements

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* NASA tracks facilities valuation as Current Replacement Value (CRV), an inflation-adjusted measure of the total capital expenditures made over the life of an asset. Actual replacement costs can vary widely from CRV, but it is useful for comparing the value of large collections of facilities.



Key Drivers for

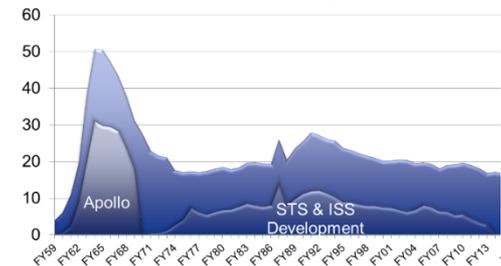
Business Services Assessments (BSA)

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- Rapidly Evolving Environment
 - When NASA was founded (1958) space operations were nearly all government funded; the current space market is only 25% government funded
 - Technology has revolutionized operations, automation, and collaboration
- Severely Constrained Budget
 - NASA's buying power is the lowest in its history at ~1/3 of the buying power during Apollo & not keeping pace with inflation
 - Significant financial challenges to deliver current mission objectives for exploration
- Ongoing Institutional Challenges
 - Most of mission support capabilities are below baseline service levels
 - Significant infrastructure challenges; over 83% of facilities beyond useful life and deferred maintenance at over \$2.5B



Space X Dragon



NASA Budget Trend (\$B)



KSC Vehicle Assembly Building



Business Services Assessment (BSA) Deep Dives – Current Status

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- **Completed BSA Deep Dives**
 - **IT**
 - » Decisions approved May 2015.
 - » Implementation Plan completed and approved by the Mission Support Council on March 31, 2016.
 - **Procurement**
 - » Decisions approved November 2015.
 - » Implementation Plan in Development. To be presented to the MSC in April 2016 for approval.
 - **Human Capital**
 - » Decisions approved February 2016.
 - » Implementation Plan in Development. To be presented to the MSC in June 2016 for approval.

- **In - Progress BSA Deep Dives**
 - **Budget Management**
 - » Assessment to be completed February 2016.
 - » Recommendations to be presented to the MSC in May 2016.
 - **Facilities**
 - » Assessment to be completed April 2016
 - » Recommendations to be presented to the MSC in August 2016.
 - **Education and Outreach**
 - » Assessment to be completed July 2016
 - » Recommendation to be presented to the MSC in Oct 2016.

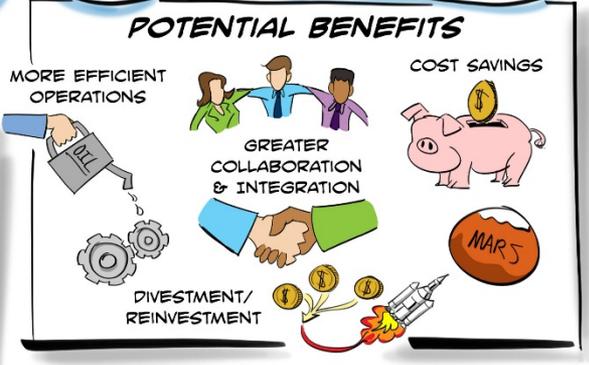
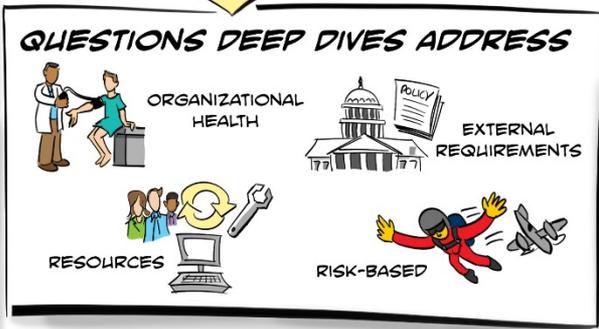
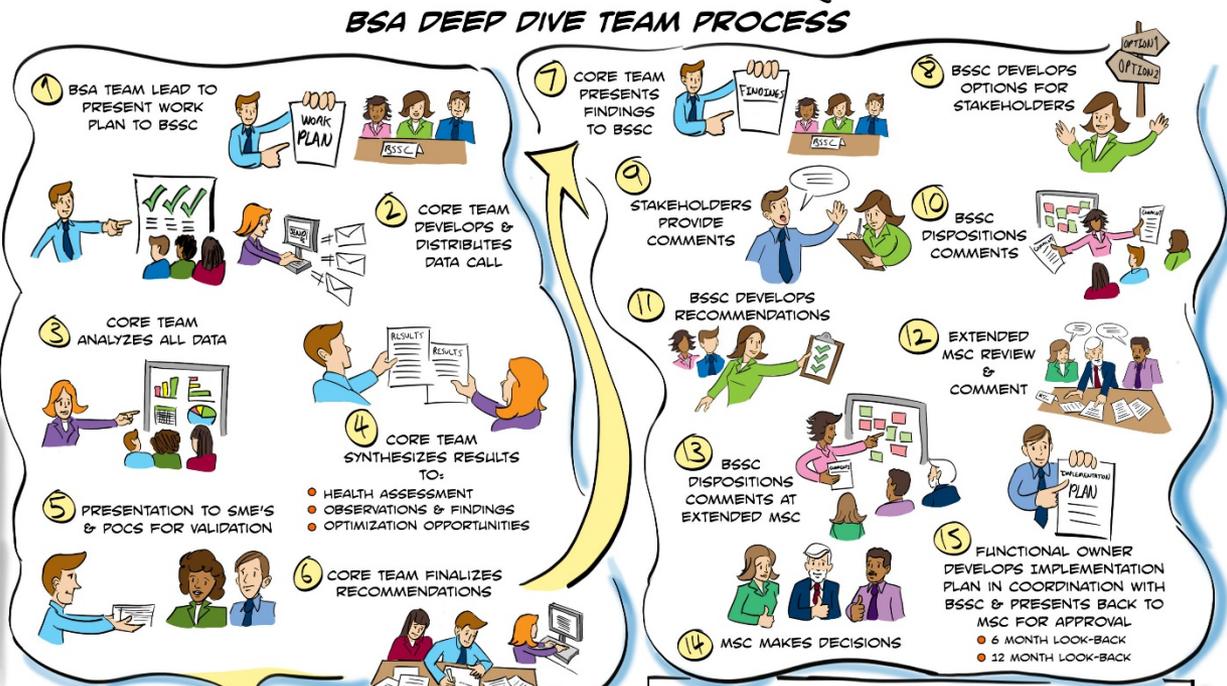
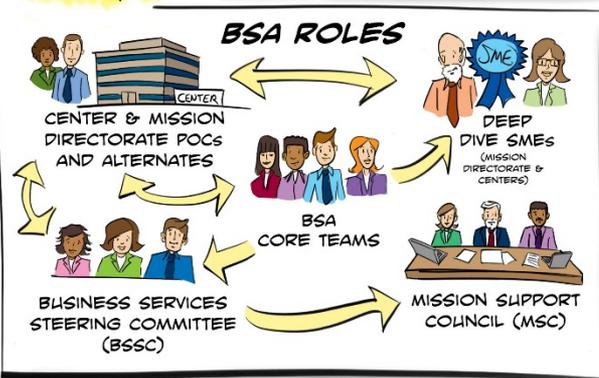
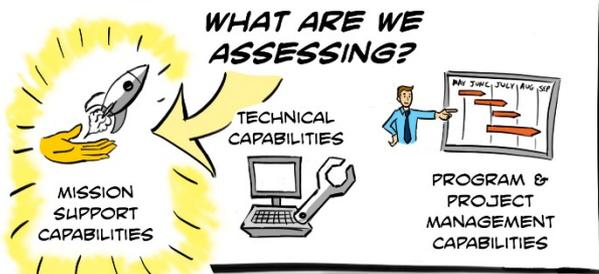
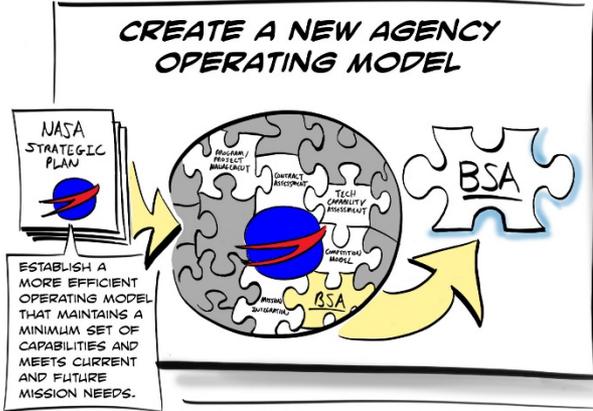
- **Future BSA Deep Dives**
 - **Technical Authority** (June 2016 thru Sept 2016)
 - **Physical Security** (Sept 2016 thru March 2017)
 - **Institutional Operational Safety** (Dec 2016 – April 2017)
 - **Logistics** (March 2017 – July 2017)



BSA Overview

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BUSINESS SERVICES ASSESSMENTS (BSA)





Business Services Assessment (BSA) Human Capital – Overall Health

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Area	Scope	Interview Responses		HC BSA Assessment		
		Center SMEs	MD SMEs	Capability	Effectiveness	Risk
Strategic Workforce Planning	Center/MD	Satisfactory (+)	Satisfactory	Satisfactory	Poor	High
	Agency	Satisfactory	Satisfactory			
Position Management	Center/MD	Satisfactory	Satisfactory (+)	Satisfactory	Satisfactory	Medium
	Agency	Satisfactory	Satisfactory			
Talent Acquisition	Center/MD	Satisfactory (+)	Good (-)	Satisfactory	Satisfactory	Medium
	Agency	Satisfactory (+)	Satisfactory (+)			
Matching Talent to Task	Center/MD	Satisfactory (+)	Good (-)	Satisfactory	Satisfactory	High
	Agency	Satisfactory (+)	Good			
Talent Development	Center/MD	Good	Satisfactory (+)	Good	Good	Low
	Agency	Good	Good (-)			
Talent Management	Center/MD	Good (-)	Good (-)	Good	Satisfactory	High
	Agency	Good (-)	Good (-)			
Executive Resources	Center/MD	Good	Good (-)	Poor	Satisfactory	High
	Agency	Good	Good (+)			



Business Services Assessment (BSA) Observations from Committee

- Overall BSA efforts to be commended.
- Great transparency in the BSA process. The recent deep dive teams took advantage of lessons learned from the early assessment teams.
- When determining what BSAs to perform and implement, NASA should consider OIG Report on Top Management challenges.
- Follow-thru is important. Important to track that these decisions actually get implemented and actions are accomplished.
- Essential to have senior management backing and engage where possible. The commitment at all levels and across all Centers is vital. Leadership should be mindful of BSA “process overload”.
- Institutional Committee endorses the Mission Support Council (MSC) approved Human Capital Deep Dive recommendations.



BSA - IT Implementation Plan Observations from Committee

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- IT Implementation Plan has been developed with extensive involvement from all stakeholders.
 - IT Implementation Plan is scheduled to go to the Mission Support Council (MSC) on 3/31/16 for approval.
- Seems well-defined but potentially resource intensive.
- Noteworthy progress in establishing a coherent plan with common nomenclature and framework.
- Structure will evolve with implementation.



NASA Cybersecurity Program Primary Compliance Drivers

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Federal mandates and compliance metrics from:

- U.S. Congress
 - Federal Information Management Act (FISMA) of 2002 as amended by the Federal Information Modernization Act of 2014
 - NASA Authorization Act of 2010, Section 1207
 - Commerce, Justice, Science, and Related Agencies Appropriations Bill, 2016
- Office of Management and Budget (OMB)
 - “Cybersecurity Sprint” – Enhancing and Strengthening the Federal Government’s Cybersecurity
 - M-16-03 – FY15-16 Guidance on Federal Information Security & Privacy Management Requirements
 - M-16-04 – Cybersecurity Strategy and Implementation Plan (CSIP) for the Federal Civilian Government
- Department of Homeland Security (DHS)
 - BOD-15-01 – Critical Vulnerability Mitigation Requirement for Federal Civilian Executive Branch Departments and Agencies’ Internet-Accessible Systems
- President’s Management Council (PMC)
 - PMC Agency Cybersecurity Quarterly Assessments
- National Institute for Standards and Technology (NIST)
 - NIST 800 Series Publications
 - NIST Cybersecurity Framework
- Cross-Agency Priority (CAP) Goal
 - FY15 Cybersecurity Priorities



NASA Cybersecurity Program

Cross Agency Priority (CAP) Goal for FY15 & FY16

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NASA CAP Goal performance over the past year has improved significantly

- Agency met all CAP goals in FY15 for CyberSprint
- FY16 goal of 85% PIV is currently at risk due to Mac implementation issues

Q FY	Trend	FY Measure Description	Status
FY16 Q2		Implement cross-agency priority cybersecurity capabilities. Includes FY16 target of 85% for non-privileged Personal Identification Verification (PIV) access.	<ul style="list-style-type: none"> • [Y] Contractor has slipped the schedule for Apple/Centrify desktop/laptop solution for PIV; full rollout targeted for completion in FY16 is now at risk. • Deployment of Windows 8 and Windows 10 machine-based PIV enforcement targeted for completion in Q3 FY16.
FY16 Q1		Implement cross-agency priority cybersecurity capabilities (FY16 target of 85% for non-privileged PIV access).	<ul style="list-style-type: none"> • Deployment of Windows 8 and Windows 10 machine-based PIV enforcement targeted for completion in Q2 FY16. • Apple/Centrify desktop/laptop solution for PIV expected in Q2 FY16 with full rollout targeted for completion by Q4 FY16.
FY15 Q4		Implement cross-agency priority cybersecurity capabilities.	<ul style="list-style-type: none"> • Significant progress. In coordination with the Cybersecurity 30-day Sprint activity, NASA strengthened 100% privileged access for NASA Consolidated Active Directory (NCAD) and 76.7% for desktop access. • Sent 52,114 phishing emails Agency-wide to NASA Centers, up from 9,000 during prior test. 8.6% of users proved vulnerable to the phishing exercise.
FY15 Q3		Implement cross-agency priority cybersecurity capabilities.	<ul style="list-style-type: none"> • [R] – Overall PIV Compliance is at 0%, below the 85% FISMA target for user-based enablement (UBE) PIV. OCIO is working to implement UBE PIV enterprise-wide and is collaborating with other agencies to drive Apple support for a UBE PIV solution. • [R] – 9,795 total phishing emails were sent to Centers, with users who opened phishing attachment increasing from 8.0% to 23.3%.



Cross Agency Priority (CAP) Goal NASA Performance & Plan

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SECTION 1. AGENCY PROGRESS						
NASA Internal Target Projections						
CAPABILITIES	CAP Goal Target	Q1FY16 Actual	Q2FY16 Plan	Q3FY16 Plan	Q4FY16 Plan	Q1FY17 Plan
Hardware Asset Management	95%	4%	15%	45%	65%	95%
Software Asset Management	95%	10%	90%	92%	100%	
Vulnerability & Weakness Management	95%	91%	95%			
Secure Configuration Management	95%	75%	90%	95%		
Unprivileged Network Users	85%	75%	75%	80%	85%	
Privileged Network Users	85%	100%				
Anti-Phishing Defense	90%	8%	70%	80%	90%	
Malware Defense	90%	20%	70%	80%	90%	
Blended Defense	90%	17%	70%	80%	90%	

- FY16 CAP Goals are calculated from FISMA metrics
- OCIO projected internal metric targets through Q1 FY17
 - Some CAP goals dates are directly from DHS CDM project plan



NASA Cybersecurity Program

Key Near-term Initiatives & Plans

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- Implement an IT Security Program Service Office to manage consolidated IT Security services (FY17 Quarter 1)
 - Recommended organization construct by BSA
 - Implement opportunities recommended by ZBR
- Implementing a Network Access Control (NAC) solution to provide an asset detection and notification capability. (FY17 Quarter 3)
- Implementing CDM Phase 1 tools which improve hardware asset management ability. (FY17 Quarter 1)
- Deploying NASA RISCs infrastructure to improve IT security and vulnerability management. (FY16 Quarter 3)
- Deploying the Microsoft Enhanced Mitigation Experience Toolkit (EMET) to help prevent software vulnerability exploitation. (FY16 Quarter 3)
- CDM Phase 1 tools will include an Application Whitelisting capability which improves software management. (FY16 Quarter 4)
- OMB M-15-13 implementation of HTTPS-Only to improve the security of NASA's web servers & web-based applications. (FY17 Quarter 1)
- Mobile Device Management service implementation for improving security of smart-phones and tablet devices. (FY17 Quarter 1)
- Implementing Endpoint Threat Detection & Response (ETDR) tool to detect and investigate suspicious activities. (FY16 Quarter 4)
- Enterprise Border Protection includes Agency-wide solutions for intrusion protection, endpoint protection, web application firewalls (http, https), TLS/SSL inspection, VPN, and web content firewalls. (FY16 Quarter 4)
- Fully deploy Intrusion Prevention System (IPS) capability. (FY16 Quarter 3)
 - 2 systems are deployed of 12 planned.
- Mitigating public-facing vulnerabilities from DHS scan results. (Ongoing (met goal))



NASA Cybersecurity Program Committee Recommendation

The Committee reaffirms that the Agency should continue vigilance and focus on cybersecurity.

The Committee is concerned that they have not seen an integrated Agency-wide high-level cybersecurity strategy to help prioritize the risk. The Agency would benefit from formalizing an IT Security Risk Management Framework and Cybersecurity Strategy to more effectively deploy scarce resources.

The Institutional Committee recommends that the schedule to develop an IT Security Risk Management structure be accelerated from its current schedule completion date of 12/31/17 to an earlier date. This is required to enable informed decisions on investments and planned actions.



Back-up



BSA Work Plan

How Functional Areas Were Chosen

- This BSA work plan was established by the BSA Steering Committee (BSSC) with input from the Center POCs (Associate Center Directors (ADs) and the HQ Functional Leaders.
- All areas recommended for assessment have high impact potential and demonstrated Leadership commitment.
- The ADs established criteria and evaluated each Business Service Area against this criteria.
 - If there is no NASA defined current or future need or mandate/directive for a business service, consider divestment and/or reinvestment of resources.
 - If there is *sufficient* capability external to NASA and the service is not inherently governmental, consider divestment and external sourcing.
 - If there is *unnecessary duplication* or *excess capacity* for a business service across centers, consider divesting, reducing, standardizing and/or resizing the activities for centers participating in this business service.
 - Agency approach will be applied even when a business service capability is funded and managed predominantly by one Mission Directorate or Center.
 - If a business services capability is predominantly WYE, consider whether it should be resident within NASA or if the acquisition model should change, which would include a consideration of strategic insourcing and outsourcing.
 - While dispositioning a business service capability decision, it may be necessary to consider new, modify, or request a waiver from existing policy.
 - If there is a gap or a new emerging business service capability that is deemed core to the current or future mission, the Agency will apply savings from divestments to these strategic solution/capability areas where possible.
- Deep Dive areas were then prioritized and categorized to be initiated in FY2015, FY2016 or in the out-years.
- Additionally, some Business Services areas were not recommended for deep dives based on the criteria.



Business Services Assessment (BSA) Human Capital – Positive Progress

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- Centers are trying to assess what is needed for the future for their Center
- NASA Brand attracts a large volume of applicants
- Agency managers rated hiring practices as satisfactory to good
- Centers using many creative and diverse recruiting activities
- NASA “brand” continues to attract excellent early career employees
- Agency Investing considerable resources in development and training programs for leaders/managers and receiving positive feedback on programs
- NASA has some of the best training and development programs in the Federal Government
- Organizational Development is viewed as positive and critically needed to effect the changes and transitions facing NASA; organizational development expertise is in high demand by managers across NASA
- There is general recognition for the need to increase cross-center collaboration and enable capability management, resulting in improvements in Agency workforce utilization
- A-SIP established policy wherein major mission needs can be brought to the attention of the CD/MD Forum and assigned as a formal action, demonstrating commitment to the project(s).

Agency Decisions on Human Capital BSA - February 2016

Based on BSA recommendations, the NASA Mission Support Council made the following decisions

1. Establishing a Strategic Workforce Planning process and capability that works collaboratively with Missions/Centers.
2. Implementing innovative approaches to enhance recruiting as an Agency and improving awareness of NASA-wide job opportunities outside the Agency.
3. Centralizing transactional operations for classification and staffing and conducting an evaluation of executive resources to determine the best way to manage.
4. Implementing an Agency-wide program to expose early career hires to work across NASA during their first 2 years of employment.
5. Developing and implementing a more structured approach for communicating, identifying and filling supervisory or team lead positions.
6. Conducting zero-based reviews of Agency-wide training and Organizational Development and recommending go-forward approaches.
7. Providing strong and effective support structures for employees working cross-organizational and cross-center.