



# Internet Protocol version 6 (IPv6) Transition

**Presented to the Federal IPv6 Inter-Agency Conference**

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# Agenda

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- Executive Sponsorship
- Stakeholder Partnerships and Communication
- Technical Solution
- Governance
- Education and Training
- Planning and Control

# Executive Sponsorship

*Executive leadership is the cornerstone to an effective IPv6 transition program*

**Chief Technology Officer**



**Designated Executive Program Sponsor**

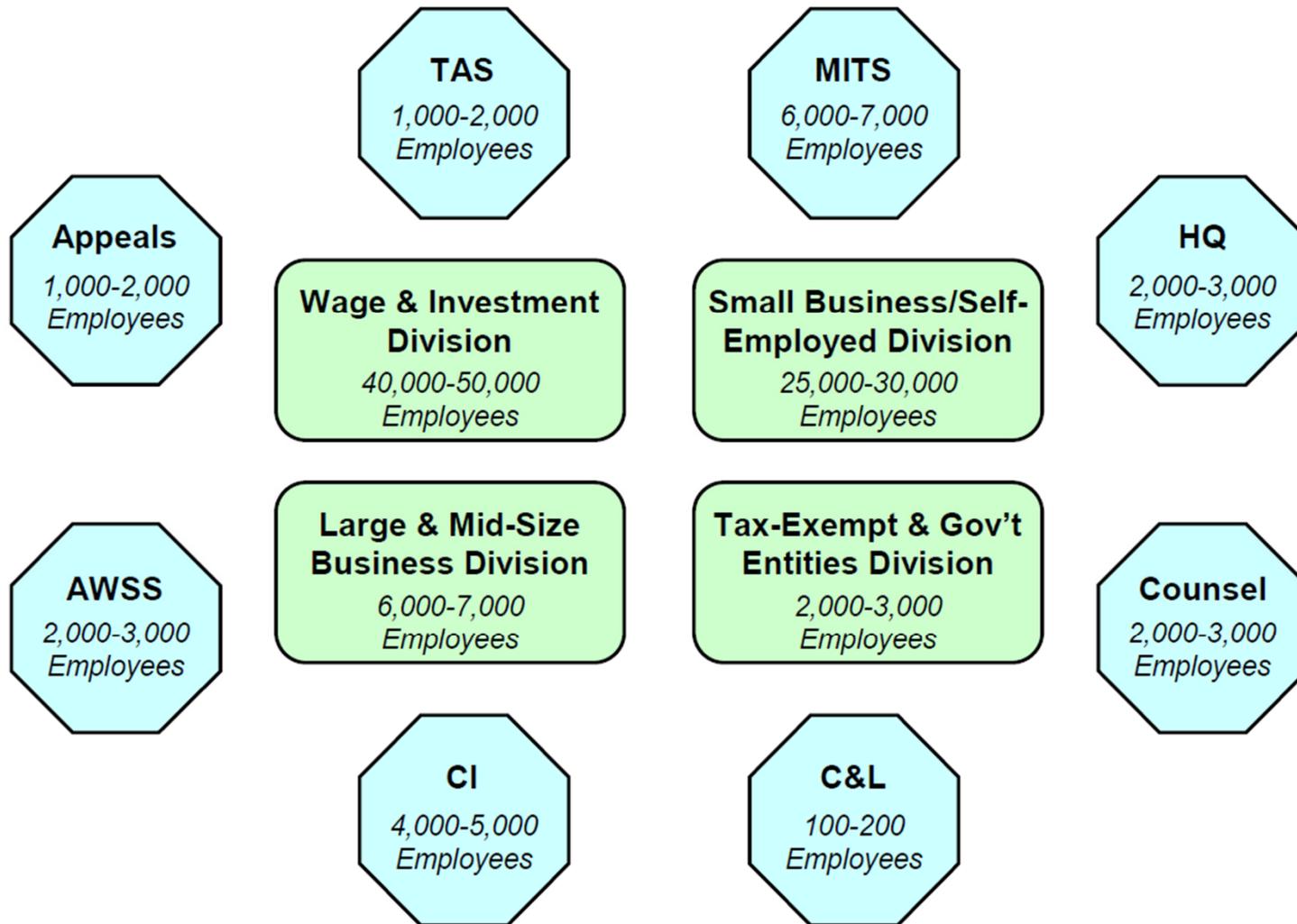


**Designated Program MITS Organizational Sponsor : Enterprise Networks**

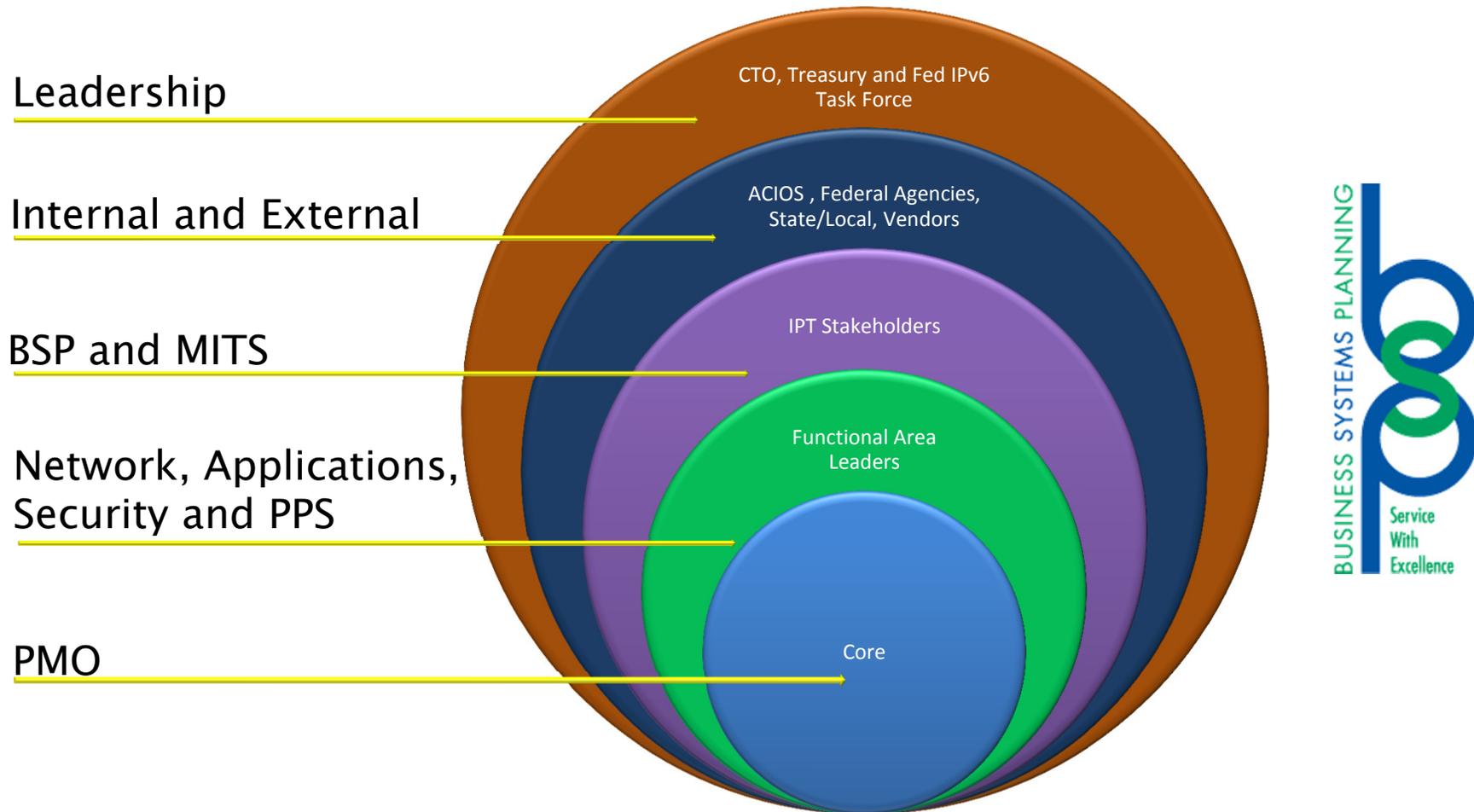


**MITS and Business Executives**

# IRS Scope and Size



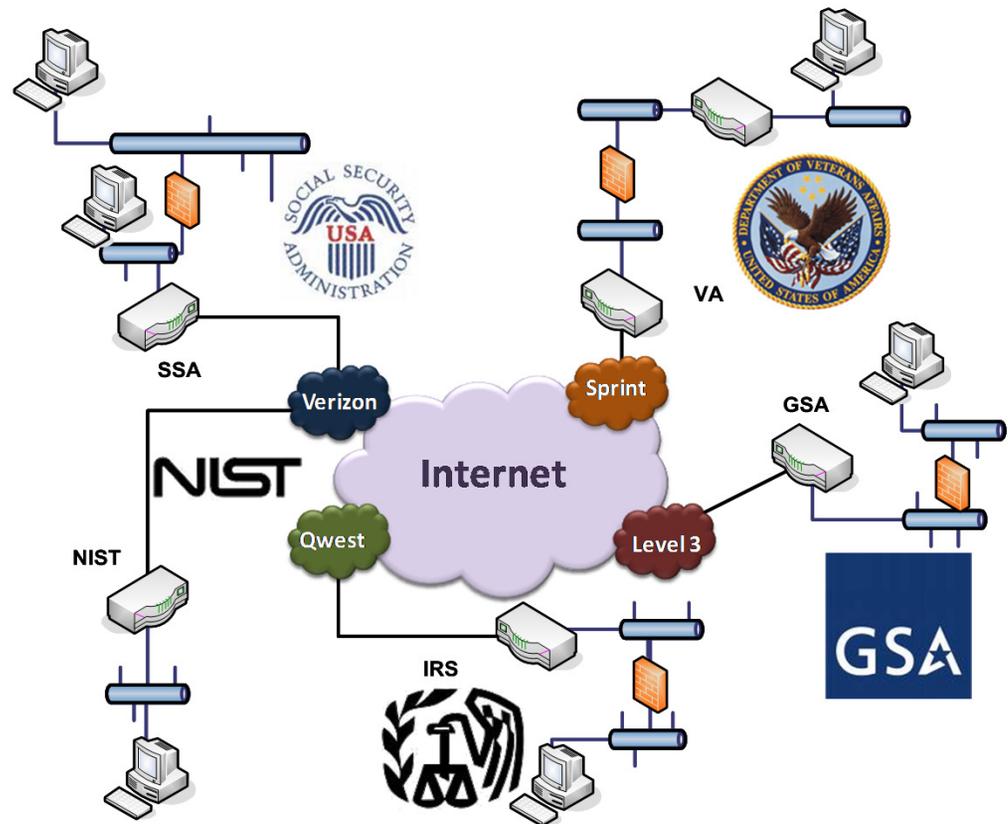
# Stakeholder Partnerships and Communication



“Your awareness facilitates success, your engagement ensures it.”

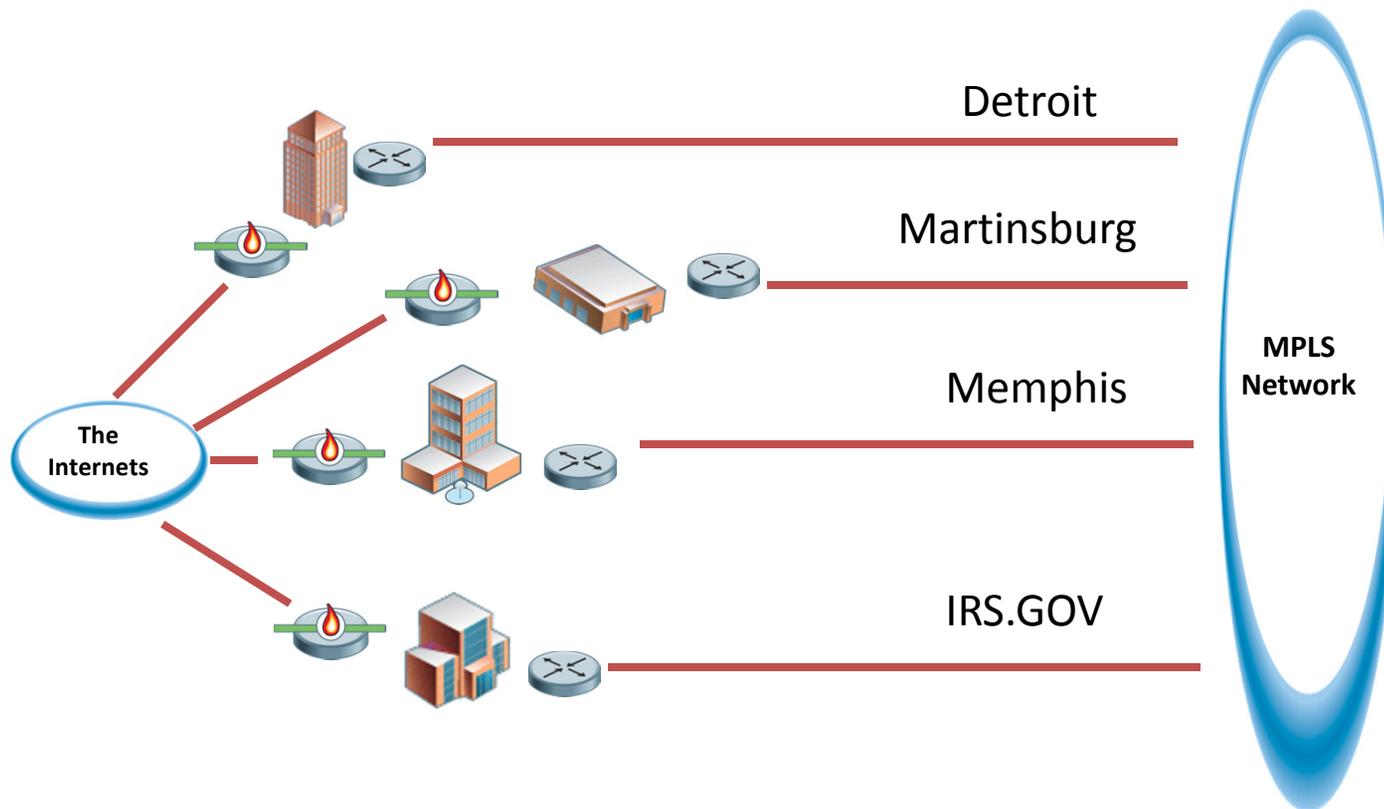
# Technical Solution

- OMB Memo, August 2005
  - Agencies: “backbone” using IPv6 by June 2008
  - NIST: develop standard for USGv6 compliance
- OMB Memo, September 2010
  - External servers: native IPv6 by September 2012
  - Internal applications that communicate with public servers and their supporting enterprise networks: native IPv6 by September 2014
  - FAR: Use USGv6 or get CIO waiver



# Technical Solution - Network

Network: All network and infrastructure (including platforms and the operating systems within)



# Technical Solution - Applications

Applications: COTS and GOTS, purchased and developed in house, and provided as a managed service from Portal and CDN vendors

## Success Story:

In accordance with IRS Publication 1346 titled “Electronic Return File Specifications and Record Layouts for Individual Income Tax Returns” for tax year 2011- One piece of defined required data is the IP address of the originating computer from which an online return was submitted.

Stipulated for online returns, the IP Address cannot contain an IPv6 address where any of its 8 parts is not a number from 0 to FFFF (hexadecimal) and there are not 7 colons.

# Technical Solution - Security

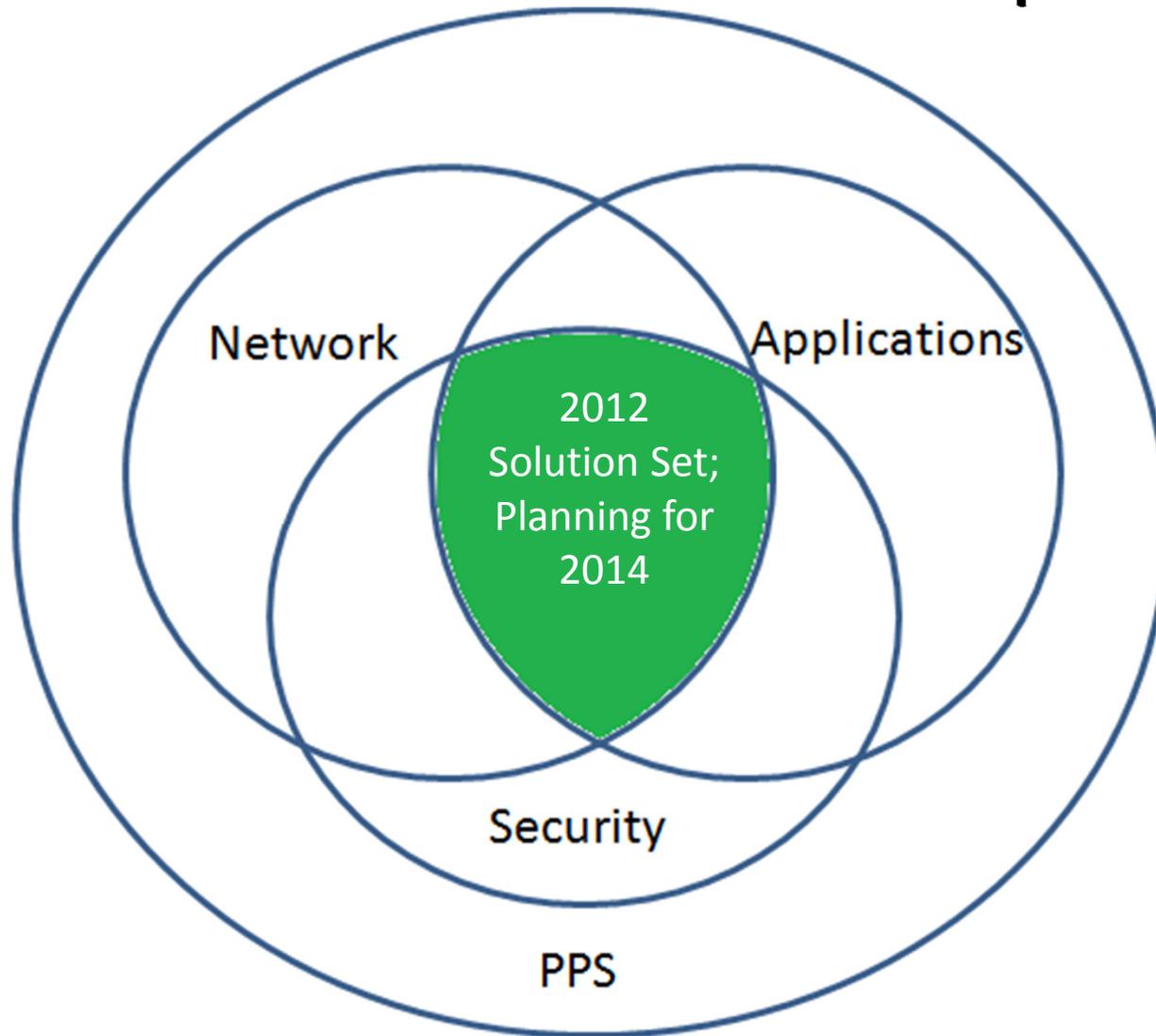
Security: All devices and applications, and the security engineering required for an integrated secure solution set

- SP 800-119: Guidelines for the Secure Deployment of IPv6
  - Published December 2010
  - IPv6 Protocols and Features
    - General Description
    - Differences from IPv4
    - Security Ramifications
    - Unknown Aspects
  - Recommends stages/activities for deployment
  - <http://csrc.nist.gov/publications/nistpubs/800-119/sp800-119.pdf>
- SP 500-267: USGv6 Product Profile
  - ✓ Includes “Network Protection Devices”
    - Firewalls or Intrusion Detection / Prevention devices that examine and selectively block or modify network traffic.

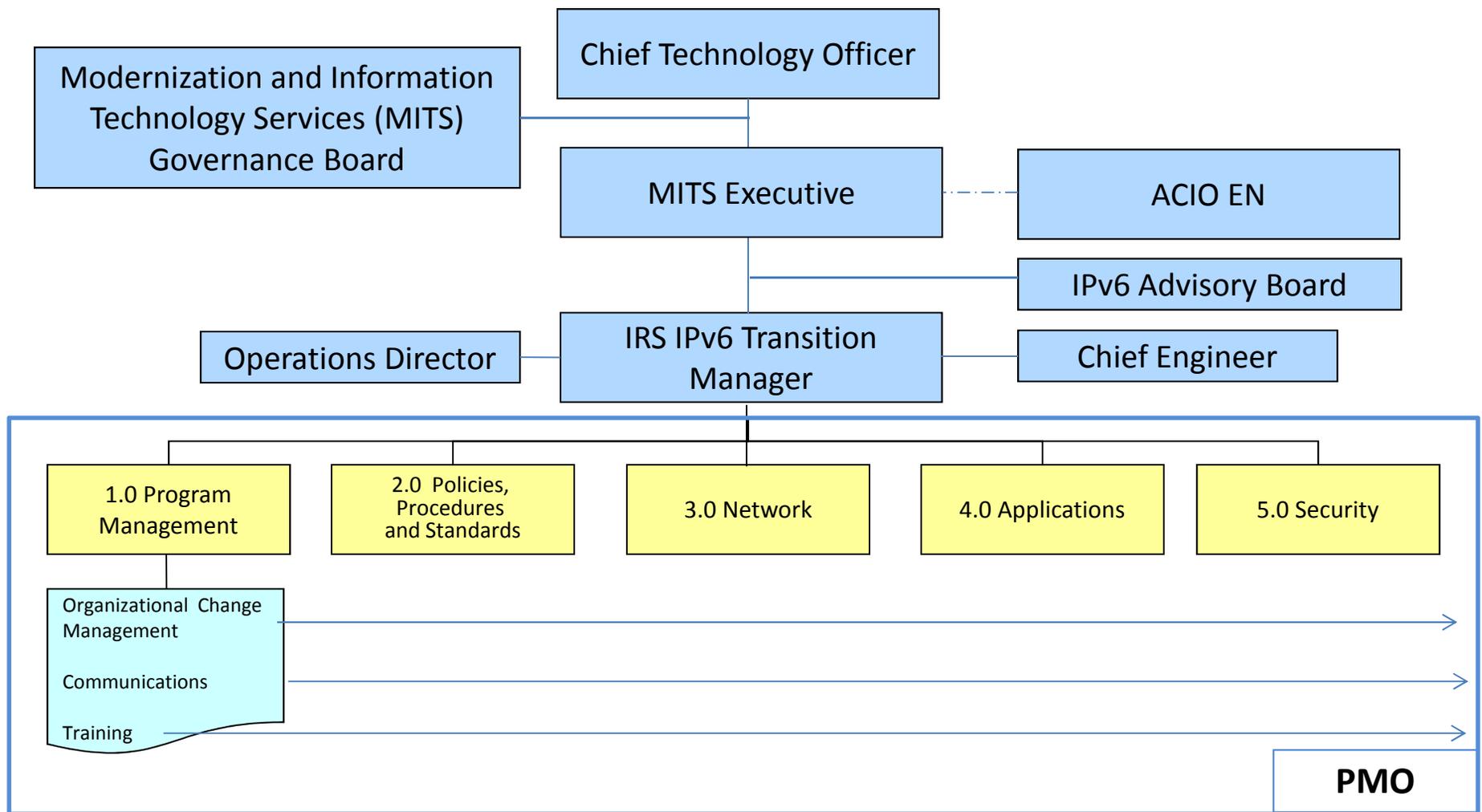
# Technical Solution - PPS

- Policies, Procedures and Standards (PPS): Establish changes in the following areas to establish governance policies and ensure the future IRS enterprise integrates IPv6 within every element.
  - ✓ Enterprise Architecture
  - ✓ Acquisition and Procurement
  - ✓ Security (SA&A, IRM)
  - ✓ CPIC
  - ✓ Enterprise Life Cycle (ELC)
  - ✓ ITIL

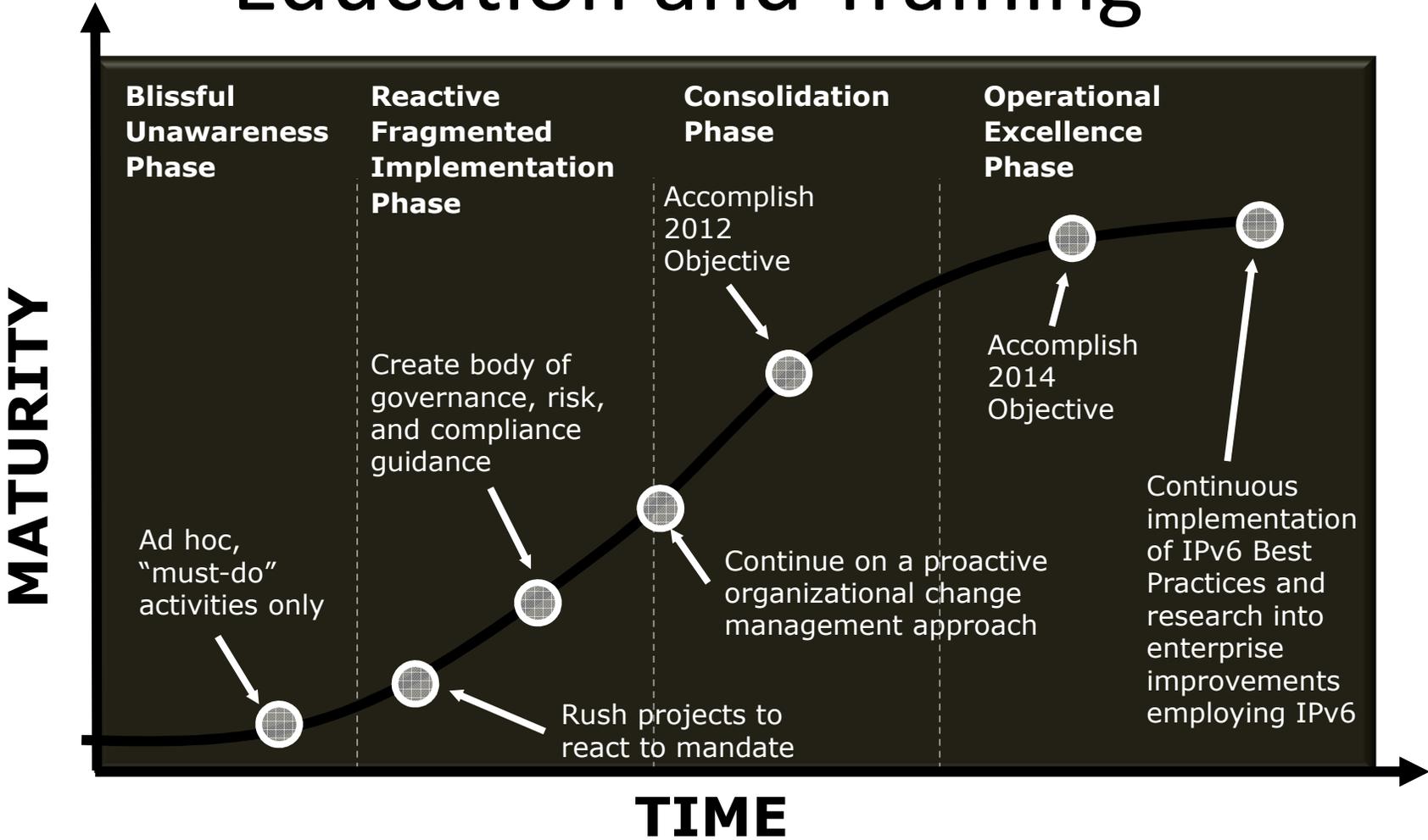
# Technical Solution Viewpoint



# IRS Governance Structure



# Education and Training



**Result of a successful training plan:  
Transition PMO staff from Tiger Team to Project Mentoring role**

# Education and Training

 **Internal Revenue Service**

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**Internal Revenue Service**

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**IPv6 Transition Program**

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**Training Plan (TP)**

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**Version 1.0**

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for

IRS Enterprise Networks  
December 30, 2011



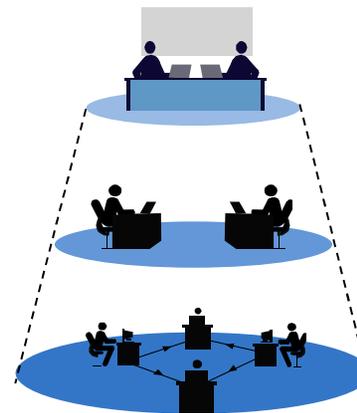
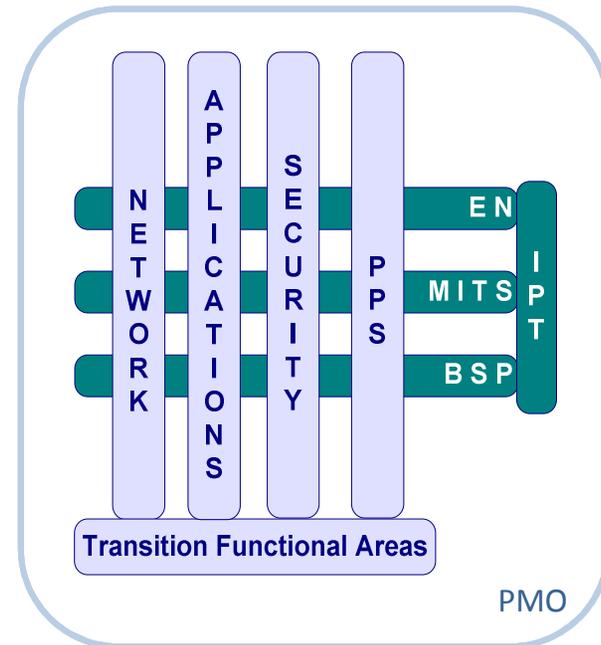
Topic	Levels of Engagement			Focus	Audience
	1	2	3		
Overview	x			Awareness	Executive, Master
Fundamentals, Design, and Deployment		x		Engineering	Master, Journeyman
Security Engineering			x	Engineering	Master, Journeyman
Application Developer			x	Engineering	Master, Journeyman
IT Acquisition		x		Operational	Master, Journeyman
Enterprise Architecture		x		Operational	Master, Journeyman
Service Desk (ITSM)		x	x	Operational	Journeyman, Apprentice
Change Management (ITSM)		x	x	Operational	Journeyman, Apprentice
Security Operations		x		Operational	Journeyman, Apprentice

A training “continuum” must be established for those personnel across the enterprise working in their respective functional areas who must know IPv6 at an apprentice, journeyman, and master level. The comparison is software engineering.

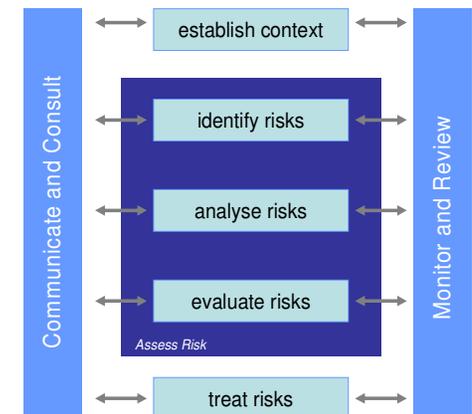
# Planning and Control – IPT/PMO

## Organization -

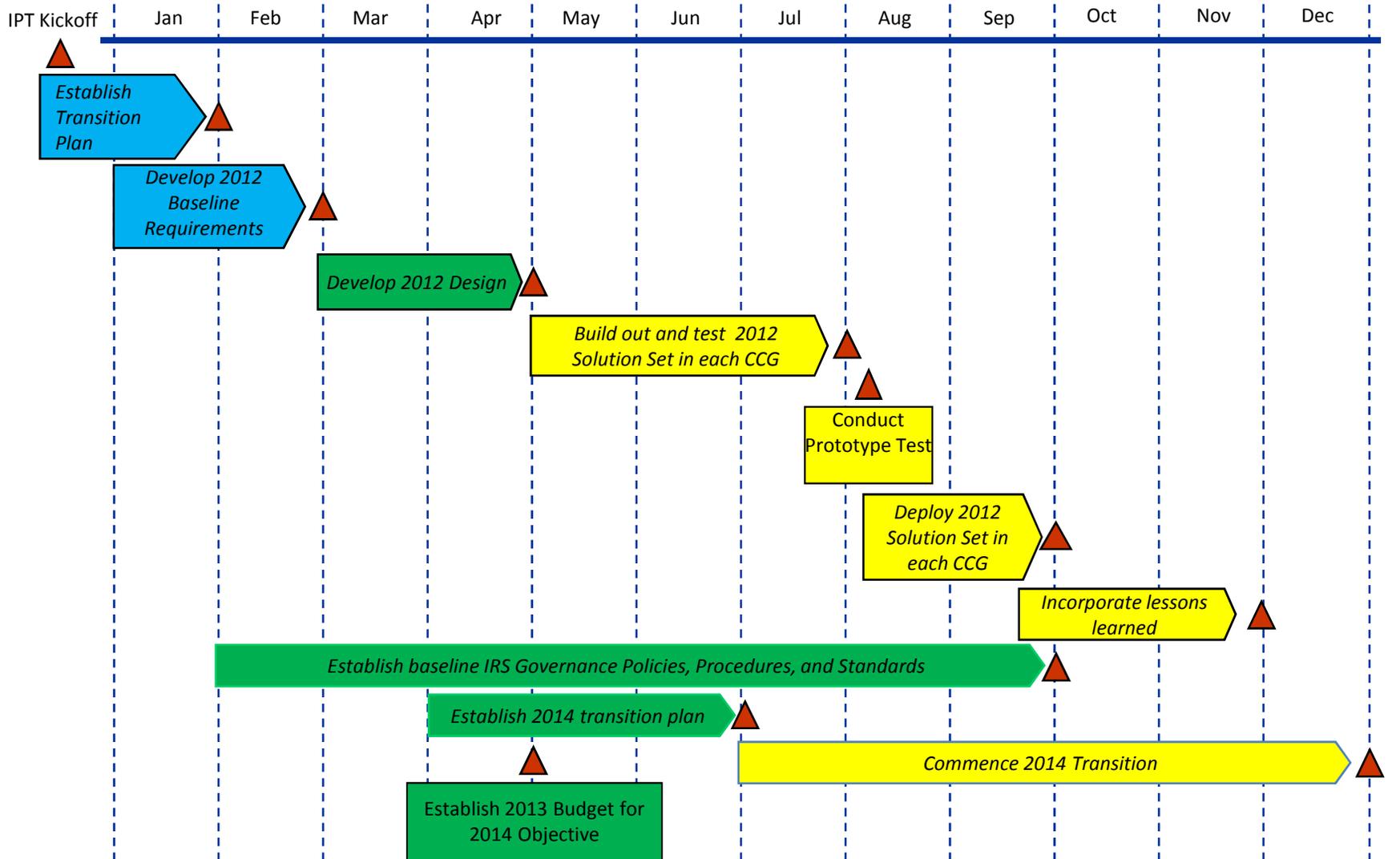
- IPT with supporting PMO
- Stakeholder engagement across ACIO and Business Owner organizations
- Functional Focus
- Planning and Control Elements
  - Transition Master Plan
  - Risk Management
  - Communications Plan
    - Training Plan
  - Integrated Master Schedule
  - IRS ELC Required Artifacts
- Collaboration Portal



Communications



# Planning and Control - Schedule



Blue = Completed, Green = in progress, Yellow = to be started, Red = Delayed, Triangle = Milestone

# Lessons Learned

## Key Points

- Communicate early and often
- Communicate some more!
- Leverage experience from other agencies – Outreach
- Engage the Federal IPv6 Task Force
- Participate in technical IPv6 forums
- Enable vendor relationships
- Establish an integrated project team
- Facilitate Federal IPv6 community relationships