Massachusetts Institute of Technology

IS&T Transformation Strategy: Enabling the 2020 Vision for IT@MIT

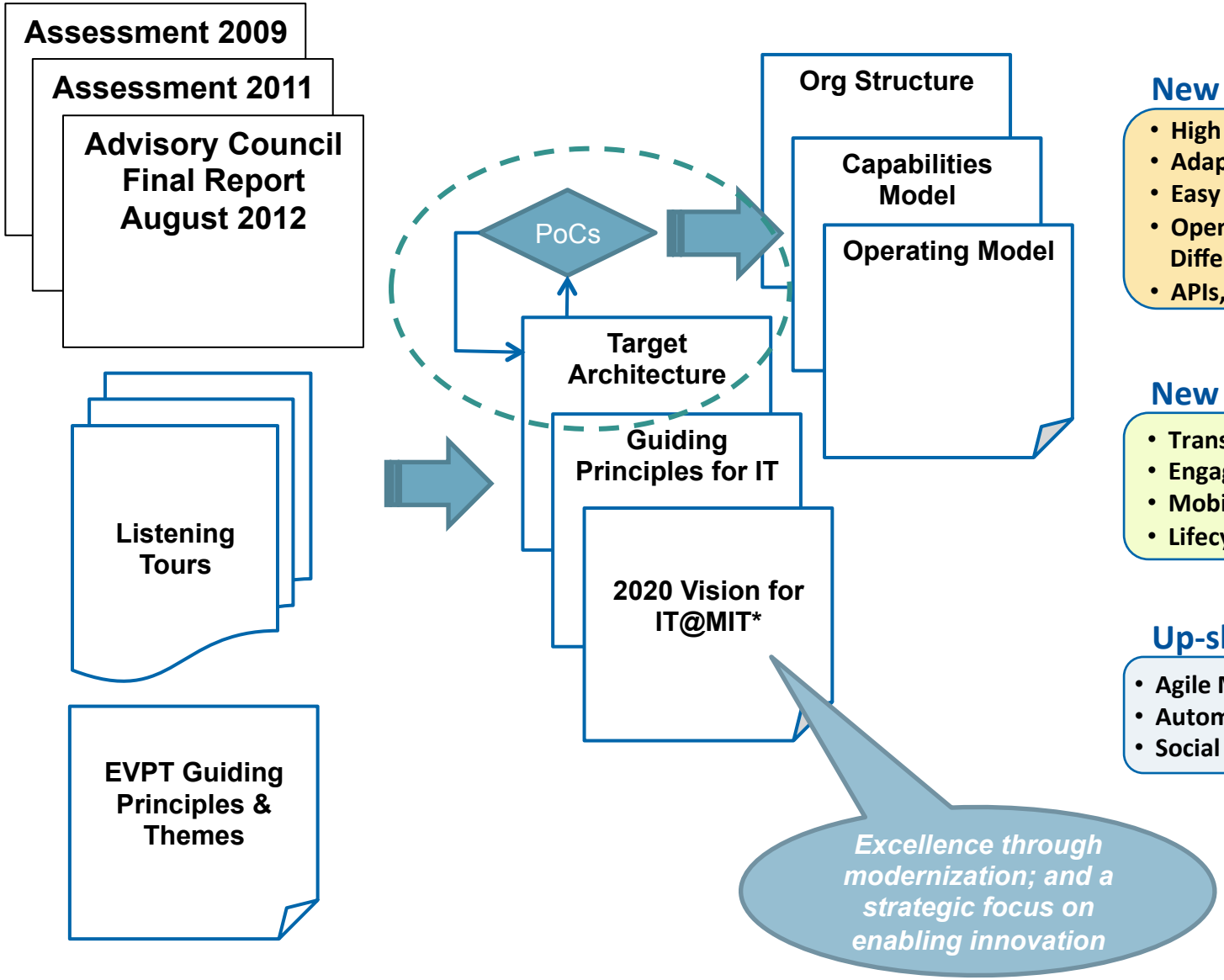
IT Leaders Meeting
February 26, 2015

Future of IT @MIT

Agenda

- Welcome
- Summary of PoCs
- What this is (and is not)
- Our enormous opportunity
- Transformation plan (agility-oriented structure, processes & infrastructure)
- Organizational agility
- Transitioning IS&T to the new structure – change management & timelines
- Considerations for DLC & admin unit IT service providers
- Questions

Assessment of the Institute's needs: Drove convergence on a vision, guiding principles, target architecture, new operating model, new capabilities model, & new org structure



New Infrastructure

- High Velocity Innovation
- Adaptable for Rapid Changes
- Easy Access to Data for Decision Making
- Open & Extendable Architecture to Meet Differentiated Needs
- APIs, Cloud & Integration Platforms

New Processes

- Transformative Digital Service Models
- Engaging User Experiences
- Mobile & Context Aware Approaches
- Lifecycle Portfolio Models

Up-skilled People

- Agile Methodologies
- Automated Deployment Methodologies
- Social Coding Methodologies

PoCs validated and calibrated the target architecture & new operating model

Infrastructure

- **High Velocity Innovation**
- **Adaptable for Rapid Changes**
- **Easy Access to Data for Decision Making**
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- **APIs, Cloud & Integration Platforms**

Processes

- **Transformative Digital Service Models**
- **Engaging User Experiences (UX)**
- **Mobile & Context Aware Approaches**
- **Software Development Lifecycle Model**

People

- **Agile Methodologies**
- **Automated Deployment Methodologies**
- **Social Coding Methodologies**

Example Proof-of-Concept Projects:

PoC	Participants	Components of New Model Tested	Assessment
Lab Admin App	RLE (Mark Mondol)	DLC independent use of an IS&T-provisioned model-driven software development kit (SDK) to rapidly develop an easily updateable cloud-based app	Validated target architecture, non-IS&T use of agile SDKs, & automated deployment
P-Card App	CSAIL (Karen Shirer)	IS&T use of a SDK to rapidly develop an easily updateable SAP-integrated app for a DLC w/o customizing SAP	Validated rapid dev & secure use of SAP APIs, engaging UX, & transformational digital service model
Compen-sation Analysis App	HR (Wayne Turner)	IS&T use of SDK to rapidly develop an easily updateable SAP- & Success Factors-integrated app for an Admin Unit w/o customizing SAP	Validated secure use of SDK with SaaS and SAP APIs via an integration platform architecture
Student Acct App	SFS (Mark Waters)	IS&T use of IS&T-provisioned APIs to rapidly add a modern cloud app (Nelnet) on top of MITSIS w/o customizing MITSIS	Validated rapid & secure use of API connectors into MITSIS
2.009 PM Platform	ME (Prof David Wallace)	Faculty use of an IS&T-provisioned API for a cloud service platform (Dropbox) to independently & rapidly extend functionality to meet differentiated needs	Validated rapid & secure non-IS&T use of API connectors to create new services
Beaver Dash App	MIT Student Team	Student use of IS&T-provisioned APIs to rapidly & securely create new services	Validated student use of APIs to create new services

Architecture & Operating Model Validated… Essential Capabilities Identified… Buy-in Demonstrated & Confirmed

Successfully demonstrated that the new model & architecture can unlock business value & enable innovation

BUILD Applications Better & Faster

- Reduce time-to-market
- Accelerate app development by 10x
- Significantly lower cost (approximately 25% of previous costs)

RESPOND Quickly to Changes & Opportunities

- Capitalize on new opportunities before they are gone
- Accommodate constant updates

ENABLE the DLCs & Admin Units to Accelerate Innovation

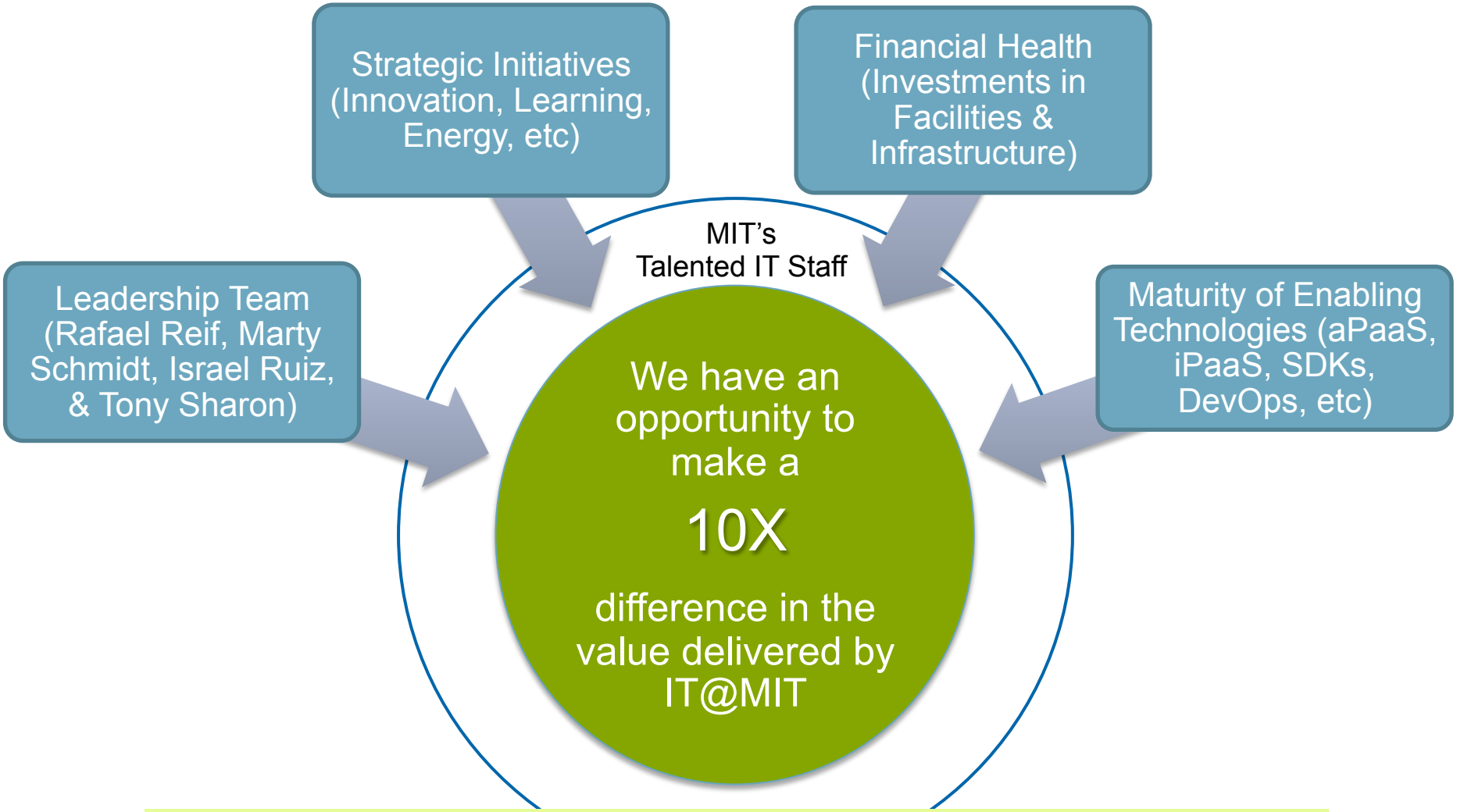
- Reduce project bottlenecks
- Open platforms to extension by others
- Enable units to move at their own pace

What this is (and is not): It's a refreshing departure from past experiences

- Transformation PoCs validated the target architecture & generated buy-in
  - Senior leaders & key stakeholders like what they saw – and have pledged their support
- Senior leaders understand that this is NOT a typical "reorg" – it's a transformation of IS&T – and it's an enabler for transforming IT@MIT
- It's also NOT about downsizing IS&T, layoffs, or budget reductions
  - Everyone is needed, and everyone will have opportunities to play important roles
- It's a strategic multi-dimensional transformation – a transformation involving urgently needed transitions to:
  - An agile-oriented structure;
  - Agility-oriented processes & methodologies;
  - Agility-oriented architectures, infrastructure & tools; and
  - Agility-oriented mindsets & behaviors

Simply put, it's about taking IT systems & services to the "next level" – a 10x leap forward in enabling the 2020 Vision for IT@MIT

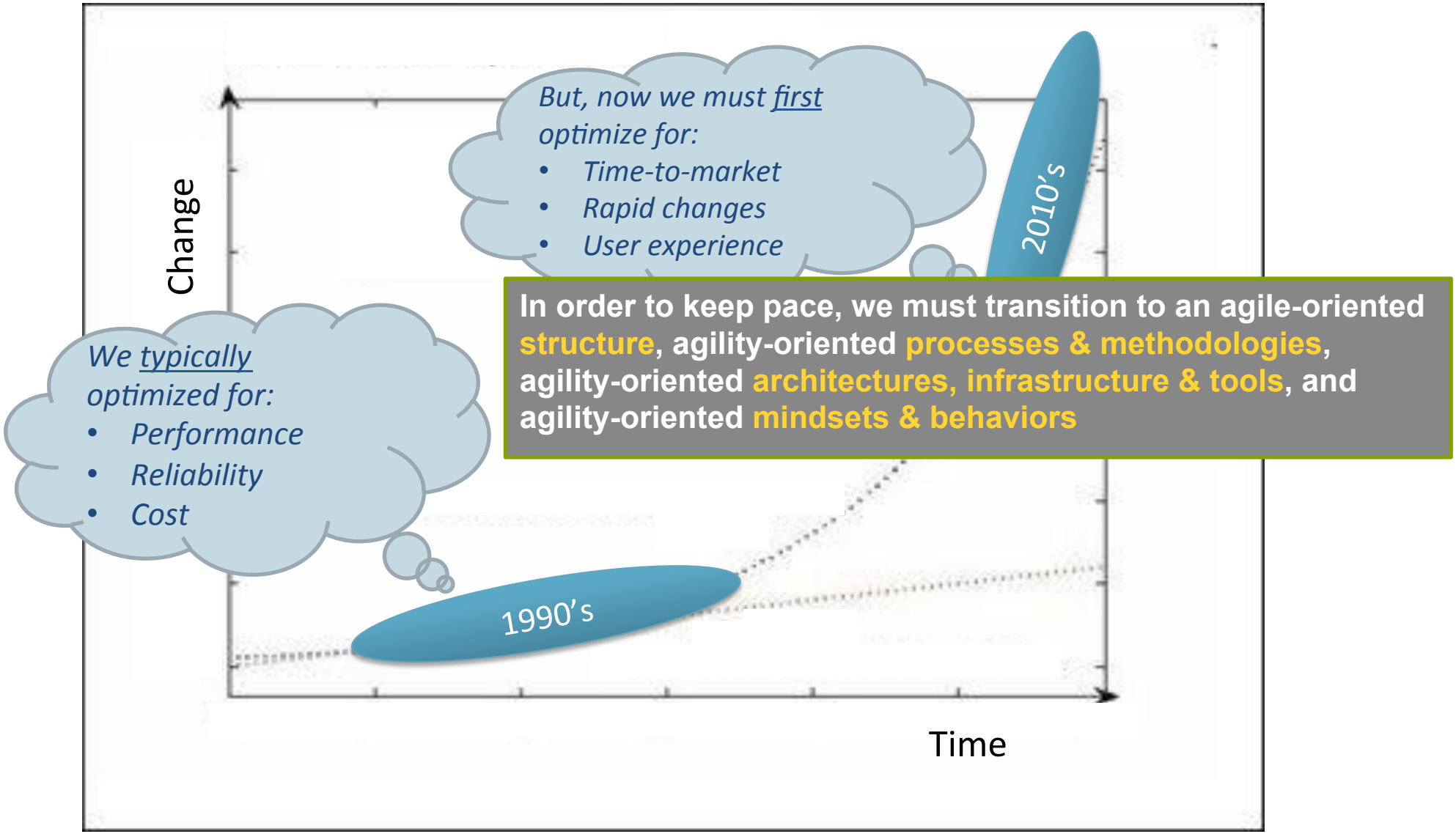
We are positioned well to seize this truly amazing opportunity



If we handle this right, we will be creating an entirely new agility-oriented operating model for IT@MIT – an innovation in the delivery of IT services for research institutions – and a transformation which everyone will be deeply proud to have been part of.

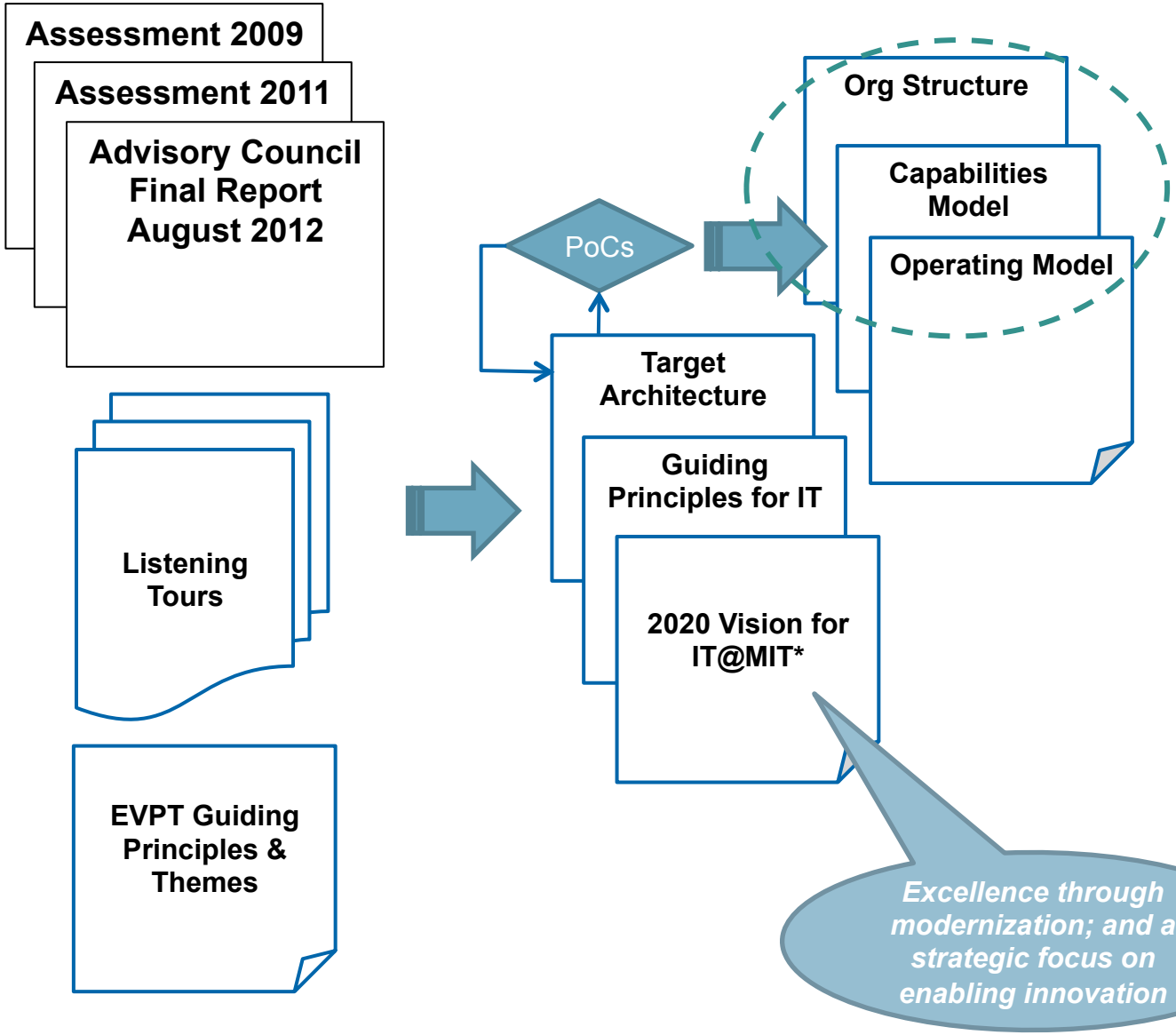
The IT Context has Changed

The pace of change seemed somewhat linear in the past – but its exponential nature is now clearly apparent



Planning Process

Assessment of the Institute's needs: Drove convergence on a vision, guiding principles, target architecture, new operating model, new capabilities model, & new org structure



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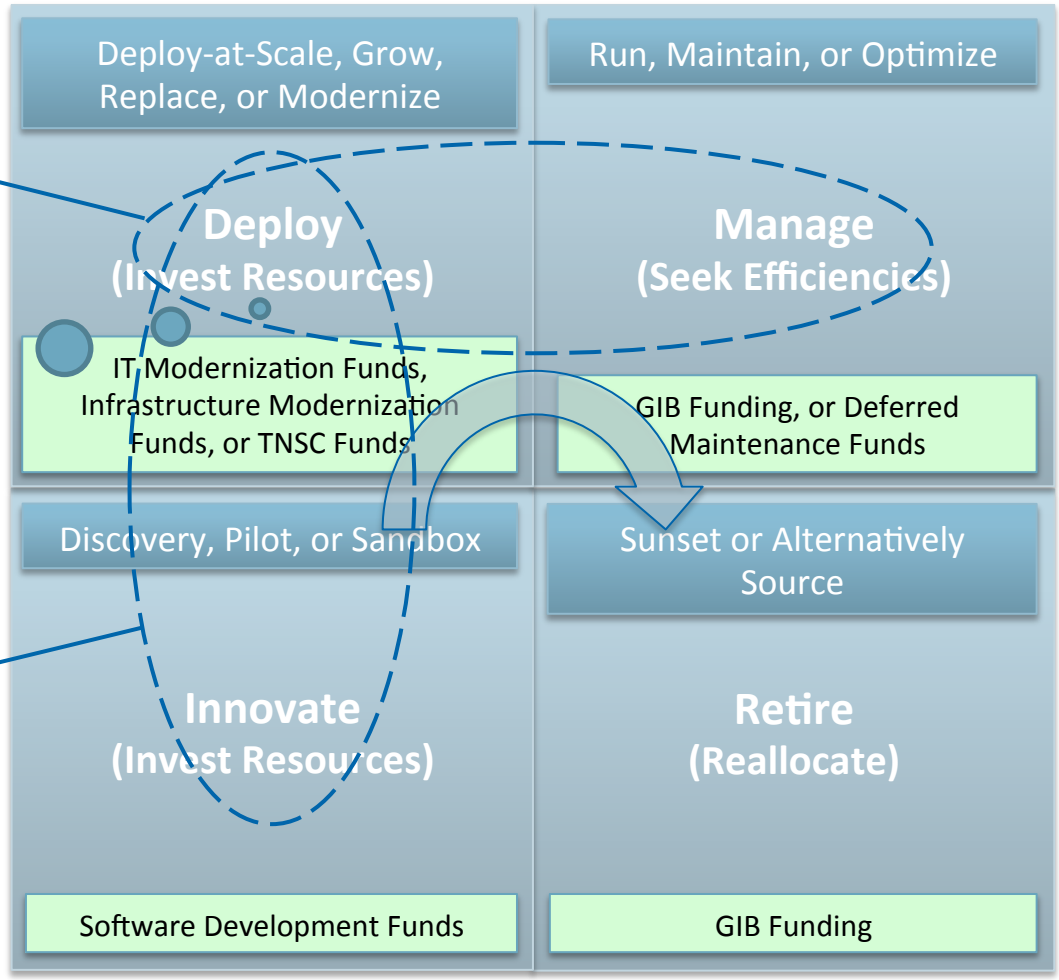
New Operating Model

New Operating Model

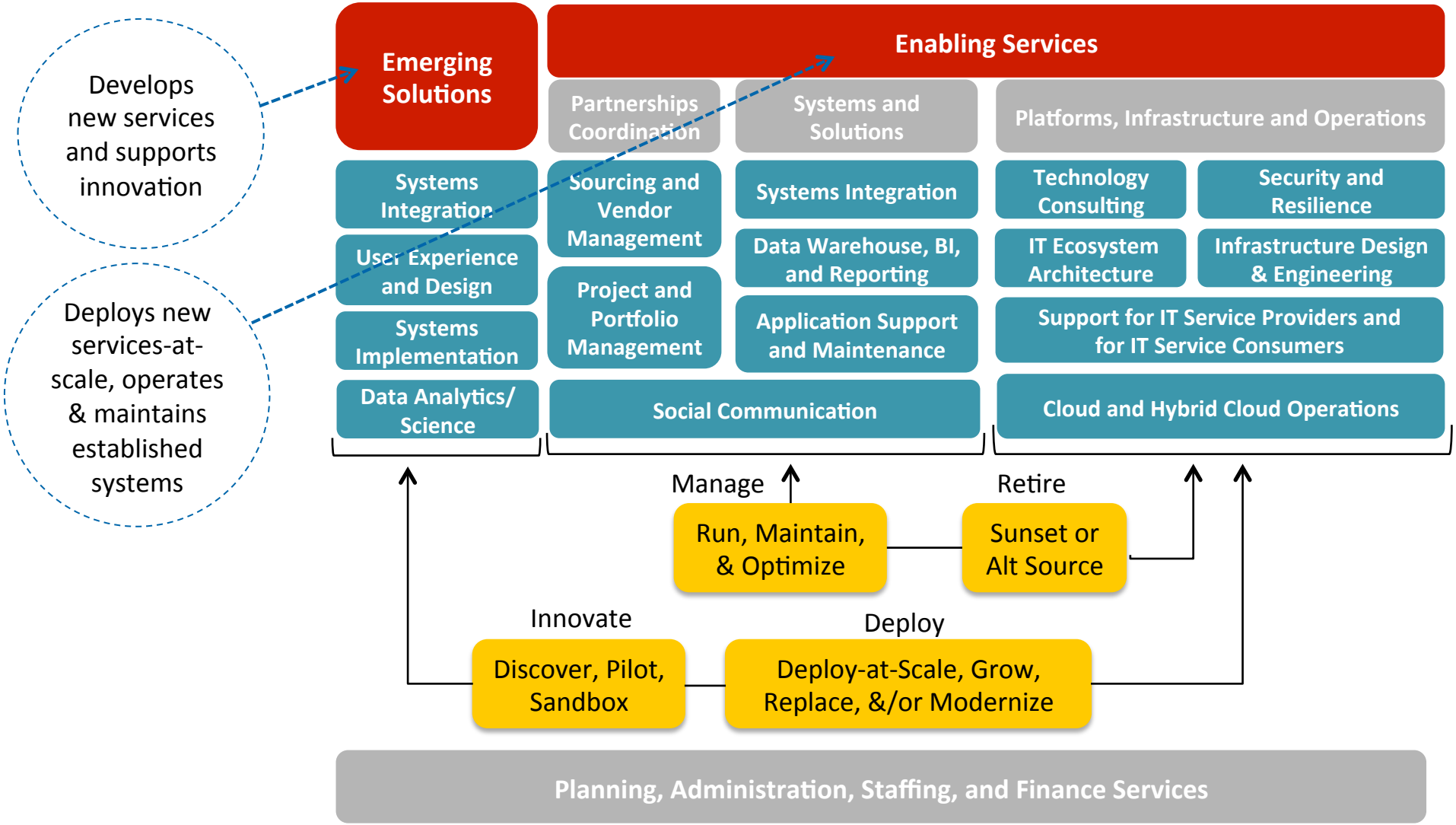
Enabling Services
- Cloud & API-centric Architectures
- Open & Extendable Platforms
- DevOps Culture
- Data & Code Repositories

Handoff to Enabling Services frees-up the Emerging Solutions team to focus on next round of innovation

Emerging Solutions
- Work with Innovation Teams
- Fast Track Agile Methodologies
- Focus on User Experiences
- Leverage Platforms

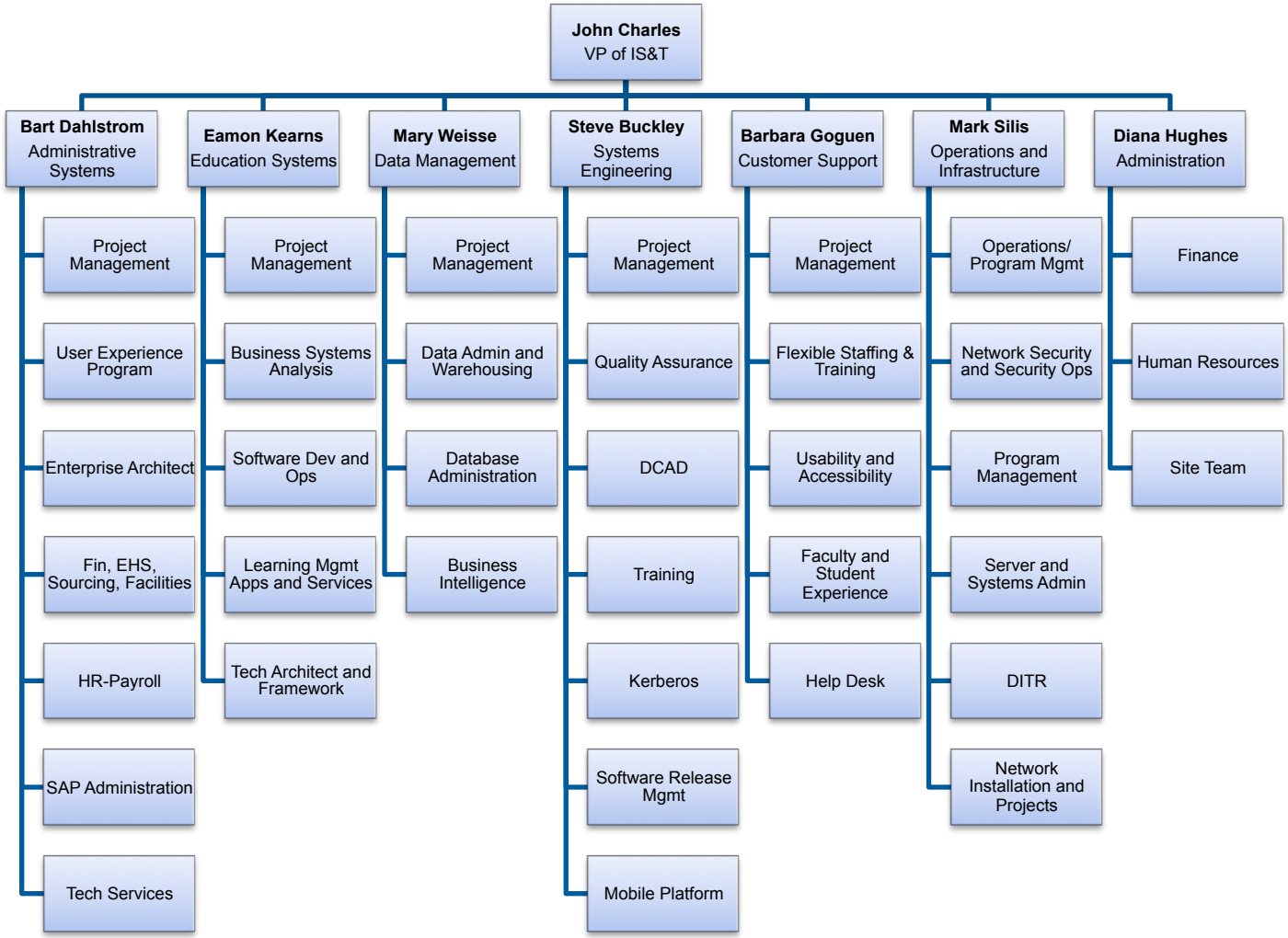


Required Capabilities for IS&T: Support the work of innovation teams, enable rapid deployment of new services, and drive operational excellence across all systems and services

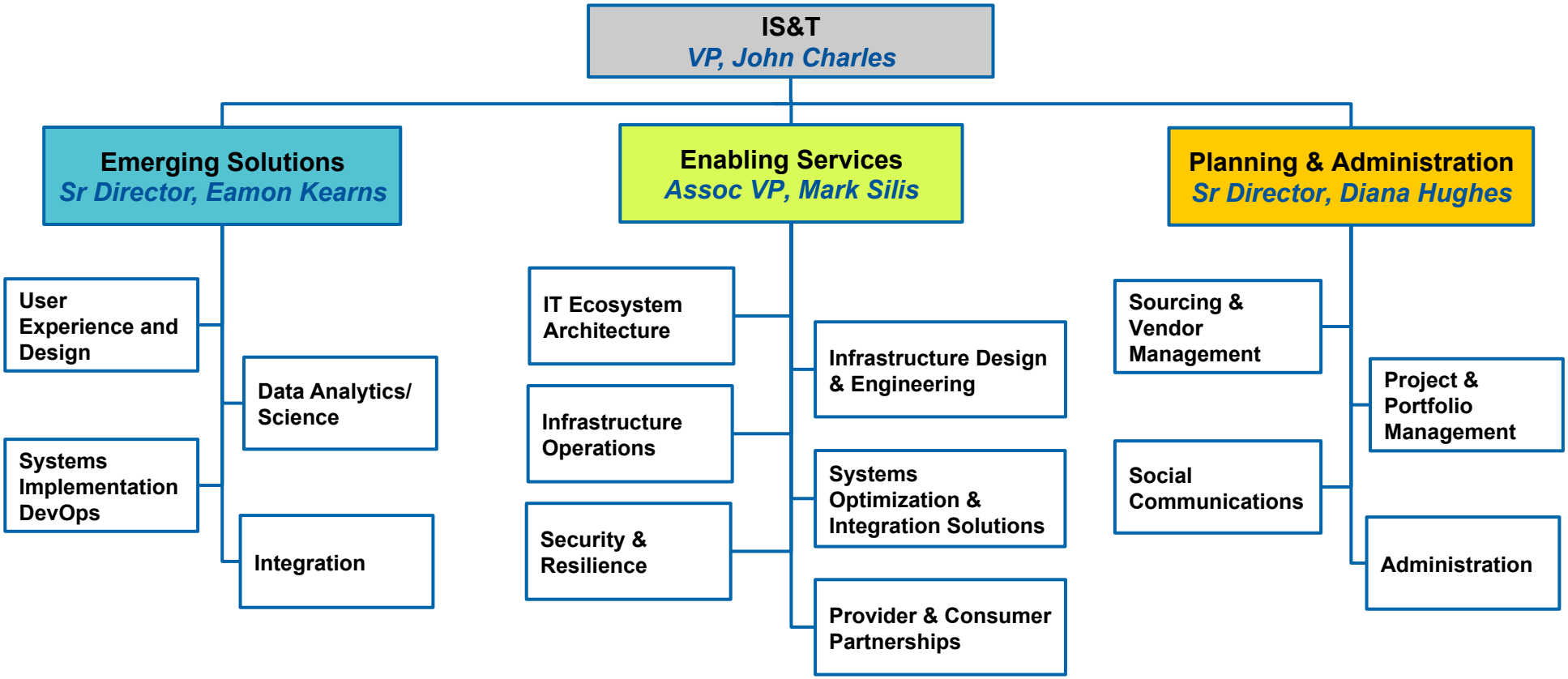


Transforming IS&T Team Structures

Current IS&T Organization: Divided into 7 groups with 37 teams



New IS&T Organization Structure: Consolidated into 3 “capability” groupings with 14 teams



Agility-Oriented Operating Model: Designed for speed – strategic urgency

Emerging Solutions	**Mission** - Collaboration with innovation teams to create new services	*Rapid iterative-experimentation is a built-in principle, along with agile methodologies & platform-thinking*
Enabling Services	**Mission** - Rapid deployment of new services, operational excellence, and enabling & nurturing the IT@MIT ecosystem	*Platform-thinking is a built-in principle, along with DevOps, agile methodologies, open & extendable API-centric architectures*
Planning & Administration	**Mission** - Project & portfolio management support, vendor management, staffing & financial planning	*Fostering agility-oriented approaches, programs & practices is a built-in principle*

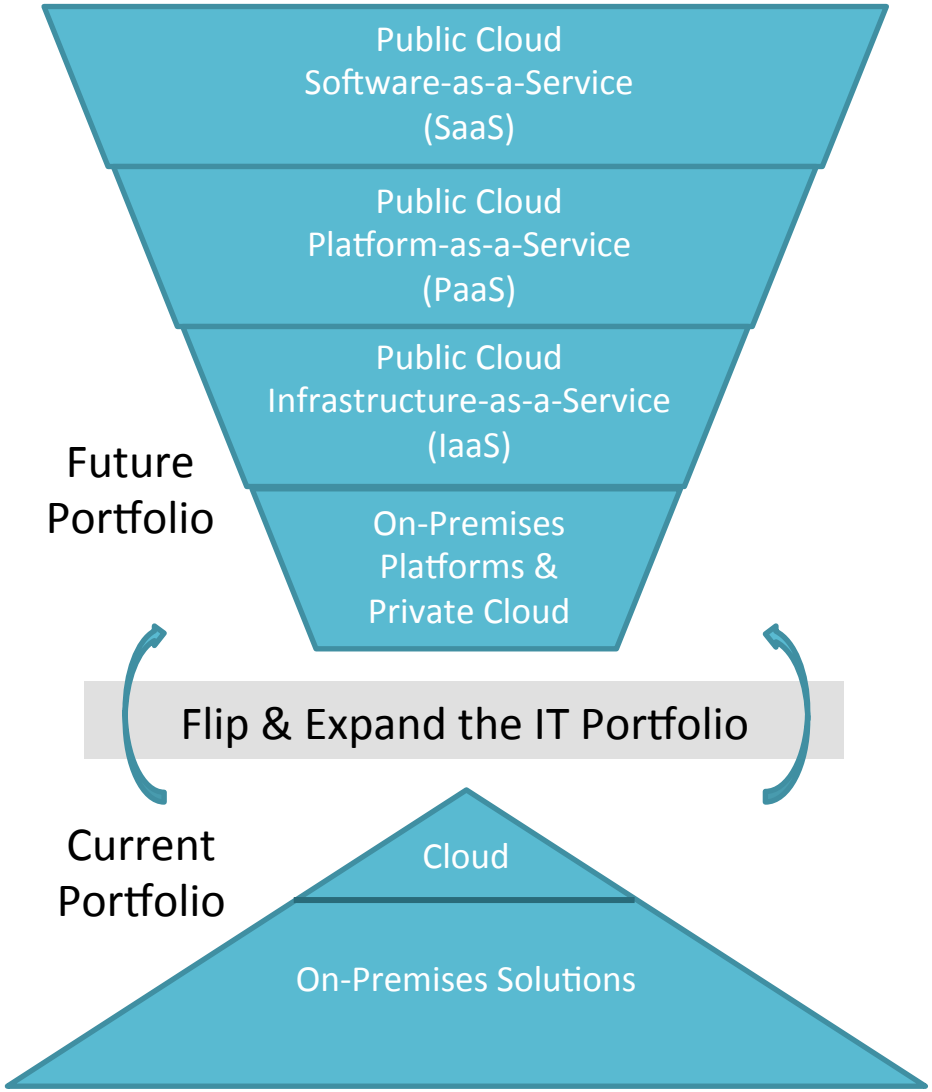
“Bridging” Strategy for Managing Risks & Workloads

"Bridging" Strategy

Risk Descriptions	Mitigation Strategy
Capability Risks • Competency gaps • Capacity shortfalls • Velocity challenges	• Provide flexible & comprehensive training and professional development activities • Recruit appropriately skilled & experienced talent to fill staff vacancies • Use consultants (& temp help) to fill near-term competency & capacity shortfalls
Operational Risks • Service interruptions • Conflicts with previous commitments • Persistent use of aging & duplicative infrastructure	• Staff-up to backfill staff for transformation tasks while pressing forward with approved roadmaps and steady-state operations • Leverage ITGC processes to affect retirement of legacy infrastructure

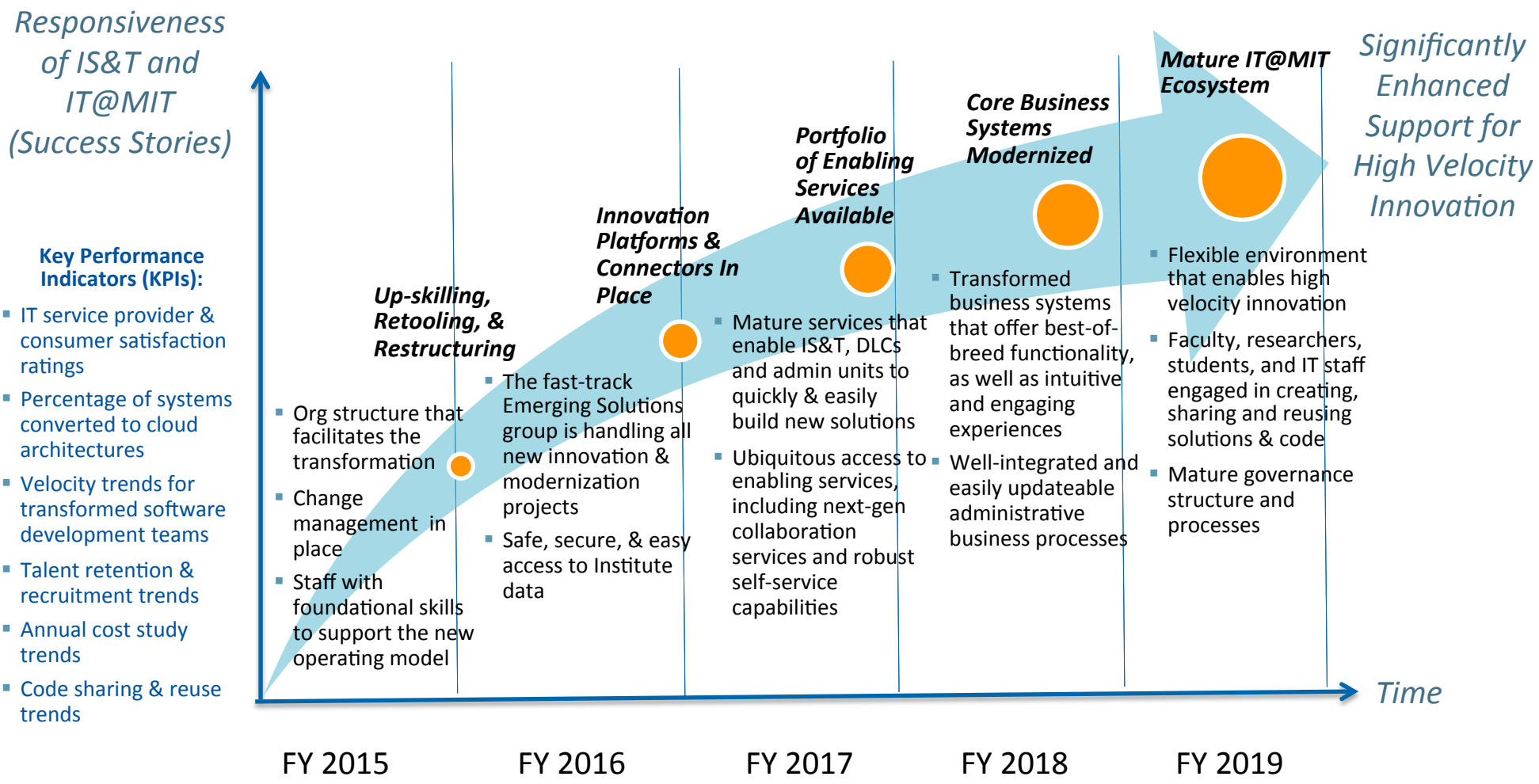
Transformation Roadmap

Transitioning to the Target Architecture



- Cloud services should be the first option for new services and for replacing legacy services
- When evaluating solutions, favor those that can be run on cloud infrastructure
- Select services that run as high up the stack as possible – selecting SaaS over PaaS, and PaaS over IaaS
- Give strong preference to services with robust sets of application programming interfaces (APIs)
- Develop and apply rigorous data classification and security safeguards
- Give strong preference to services that embrace the use of "***anti-fragility***" resiliency tools

Transformation Milestones



Importance of Organizational Agility

Fostering agility-oriented mindsets & behaviors

We need each individual to fully embrace the Vision, Guiding Principles, and KPIs – thereby aligning everyone's efforts along the same vector of thrust – and making it safe and powerfully productive & rewarding for each individual to:

Be Proactive

- **Initiate** – Actively search for opportunities to contribute to organizational success and take the lead in pursuing those that appear promising
- **Improvise** – Devise and implement new and creative approaches to pursuing opportunities and dealing with challenges

Be Adaptive

- **Assume multiple roles** – Perform in multiple capacities across levels, projects, and organizational boundaries (often simultaneously)
- **Redeploy rapidly** – Move quickly from role to role
- **Spontaneously collaborate** – Engage often and easily with others with a singular focus on task accomplishment

Grow & Share

- **Learn** – Continuously pursue the attainment of proficiency in multiple competency areas (eschewing overspecialization and complacency)
- **Educate** – Actively participate in the sharing of information and knowledge throughout IS&T, as well as with our partners and collaborators

Transitioning to the New Structure – Change Management & Timelines

Key transition activities underway

- Developed new & revised position descriptions with industry leading titles
- Realigned staff within the new consolidated team structures
- Created a change management team to assist with the transition
- Heavily focused on communications to keep everyone informed
- Preparing for transition of roles & responsibilities – targeting a 30-day transition window
- Identifying and planning training & professional development activities
- Planning recruitment of additional staff where we have key vacancies

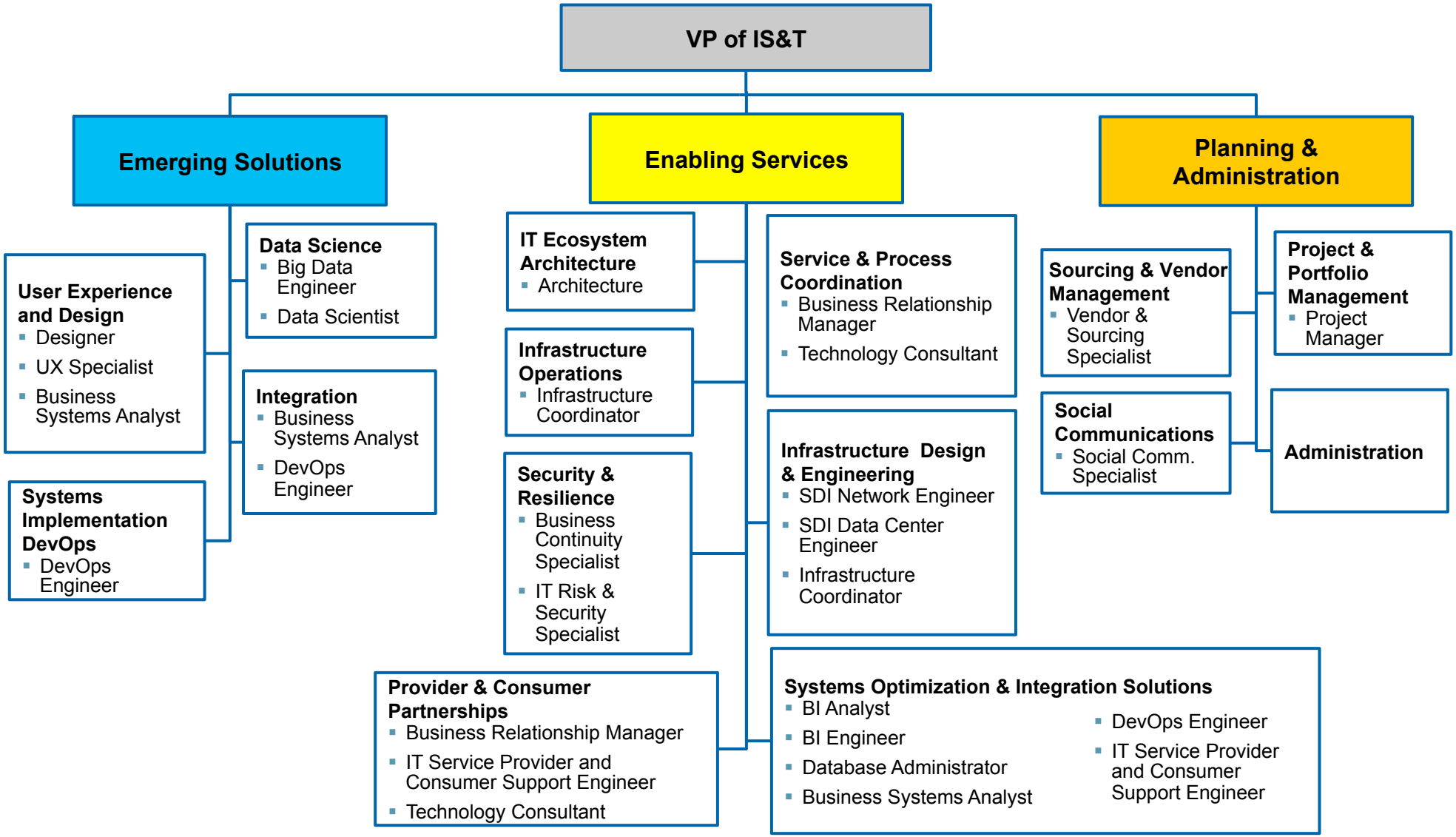
Some New Positions

Emerging Solutions
Big Data Engineer
Business Systems Analyst
Data Scientist
DevOps Engineer
Designer
UX Specialist

Enabling Services	
IT Service Provider and Consumer Support Engineer	SDI Data Center Engineer
BI Analyst	SDI Network Engineer
BI Engineer	Technology Consultant
Business Continuity Specialist	Database Administrator
Business Relationship Manager	DevOps Engineer
Business Systems Analyst	Architecture
IT Risk & Security Specialist	Infrastructure Coordinator

Planning & Administration
Project Manager
Social Communications Specialist
Vendor and Sourcing Specialist

Alignment of New Positions



30-Day Transition Window

High Level Timeline

Week of Feb 9	Week of Feb 16	Week of Feb 23	Week of March 2	Week of March 9	Week of March 16
• All Hands meeting • Individual meetings	• Team meetings • Group meetings – Enabling, Emerging, Planning & Admin • Transition period starts February 19 • Org chart available	**Transfer of Responsibilities**			• Transition period ends March 19 • Go-live with organization 1.0
		Ramp up New Responsibilities			
		Identify Learning and Development Opportunities			

Ongoing communication and collaboration with IS&T staff

Change Management Team Support and Outreach

Some considerations for DLCs & admin units

- **Who owns this plan?** The vision, guiding principles, target architecture, & new operating model have been accepted by the EVPT, and are owned by the IT Governance Committee
- **When can DLC & admin unit IT service providers get involved?** DLC & admin unit IT service providers are welcome to opt-in at anytime – and are welcome to take full advantage of IS&T scheduled (and funded) opportunities for formal training
- **Will DLCs & admin units have access to the new tools & platforms?** IS&T is attempting to license each new tool and platform for Institute-wide use – enabling access by individual students, faculty members, researchers, and staff
- **How could this new architecture (and the shift to agile & devops) create multiple wins for DLC & admin unit IT teams?**
  - The new platform-based API-centric architecture will make it possible for DLC & admin unit IT teams to reduce their platform & infrastructure layer KLTO workloads & costs – enabling them to align more of their efforts & resources with higher-value tasks
  - IS&T's transformed focus on collaborating in agile ways with innovation teams across the Institute will make it possible for DLC & admin unit IT teams to more easily tap into a wider array of resources as they strive to meet the differentiated needs of their constituencies

Questions?