NIST Strategic Planning VCAT Meeting

June 4, 2019

National Institute of Standards and Technology
U.S. Department of Commerce

Why a NIST Strategic Plan?

NIST

Technological Changes

New Business Models

Aging Infrastructure

Changing Expectations

Outdated Processes

Limited Resources

NIST Strategic Planning Steps

Pre-work

- Baldrige Organizational Profile
- Environmental Scan
- SWOT Analysis with Focus Groups

Identify Goals

- Using the pre-work and in consultation with the NIST Leadership Board, NIST Director identifies Strategic Plan Goals

Develop Objectives and Strategies with Broad Staff Input

- Input sought from public forums, internal and external sources, etc.

Final Plan

- Internal and external communications plan and documents developed
- Implementation plan for tracking and reporting progress, updating plan, etc.
- Integrated with strategic priorities and programmatic plans for LP, MR, IIS

Baseline Assessment -- Three Inputs

Environmental Scan

External Drivers and Trends

- Societal trends
- Investments and geopolitical issues
- Political landscape
- Technological and science environment

SWOT Analysis

Focus Groups Input

- Fellows
- Foundations of Leadership Program
- Operations Advisory Cmte
- Division Chiefs
- Boulder

Baldrige Organizational Profile

Systems Perspective

- Starting point for self-assessment
- Identify gaps in key information
- Focus on areas for improvement

Environmental Scan

Societal Implications:

- Changing demographics
- Eq(ual)ity
- Culture of divisiveness and distrust

Investment and Geopolitical Landscape:

- R&D investments
- Innovation policies
- S&T workforce
- Metrology and standards

Political and Policy Landscape:

- Divided Congress
- Campaign promises

S&T environment:

- Major technology drivers
  - security, energy, public health, smart cities, autonomous vehicles, human augmentation, 5G
- Cross-cutting emerging technologies
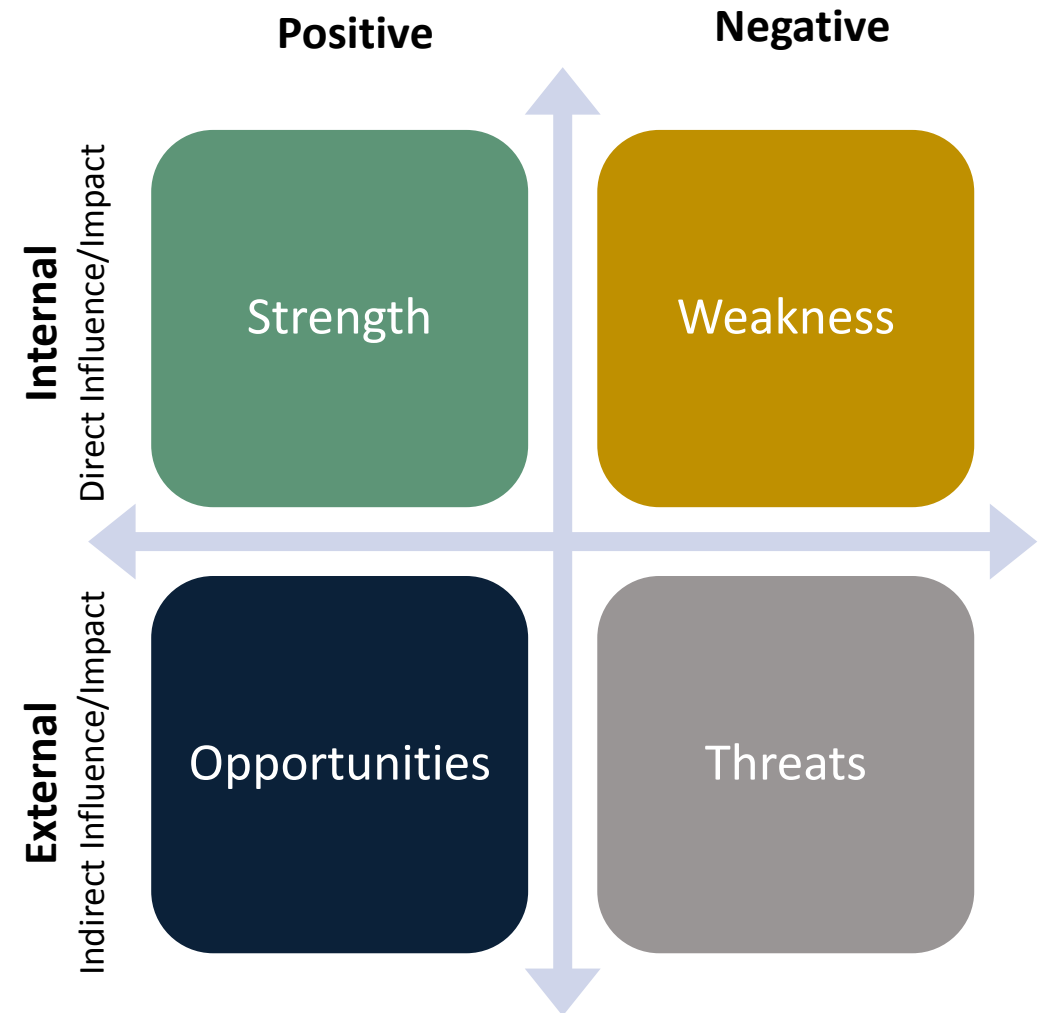 - artificial intelligence, quantum information science, internet of things, blockchain

SWOT Analysis

A quick way to identify a snapshot of the current state of NIST

Who was invited?

PCO led seven sessions with:

- All Division Chiefs from the labs and programmatic OUs
- All Division Chiefs from MR and the Director's Office
- All Members of the Operations Advisory Committee
- Members of a recent FLP class
- All former rotators of the PCO (back to 2012)
- All NIST Fellows
- A sampling of Boulder staff that included Division Chiefs, Fellows, early career staff, administrators, and members of MR in Boulder

	Positive	**Negative**
Internal Direct Influence/Impact	Strength	Weakness
External Indirect Influence/Impact	Opportunities	Threats

Summary of SWOT

Strengths: NIST strengths seem to reflect NIST's reputation in general. The administrative and programmatic responses were very similar in this regard.

Weaknesses: At a high level there was a good deal of similarity on issues like the 'us versus them' mentality, critiques of operational processes, and challenges with communication.

Opportunities: Many of the opportunities revolve around collaboration, seemingly a direct response to the "silo" weakness.

Threats: Many of the threats can be attributed to the current political climate and budget challenges (funding, recruitment, perception, deprioritization).

Overall impressions -

- SWOT results reinforce many of our opinions about what makes NIST successful

- Biggest challenges lie in how NIST does its research and how we partner and deliver services

- Universal area of concern: NIST's organizational structure, including challenges with communication and leadership weaknesses

- This is a snapshot of perceptions to inform our planning discussions; not 100% representative of NIST staff

Baldrige Organizational Profile

Document Outline:

P.1. Organizational Description

- Organizational environment –
  - product offerings;
  - mission, vision, values;
  - workforce profile;
  - assets;
  - regulatory requirements

- Organizational relationships –
  - organization structure;
  - customers and stakeholders;
  - suppliers and partners

P.2. Organizational Situation

- Competitive environment –
  - competitive position;
  - competitiveness changes;
  - comparative data

- Strategic Context

- Performance Improvement System

BALDRIGE
(Im)Prove Your Performance™
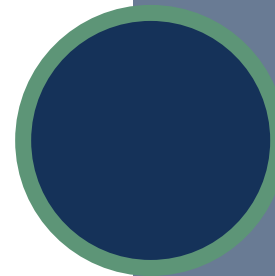
NIST Strategic Plan Goals

NIST

Position NIST to Advance U.S. Science and Innovation

**Maximize NIST's Stakeholder Impact through High-Value Service Delivery**

Create the Infrastructure for a 21st Century Research Institution

Build a One NIST Culture

NIST Leadership Board endorsed four Strategic Plan Goals that address the background data, issues and challenges identified in baseline assessment _(October 2018)_

Plan Structure

Goal

Objective

Strategy

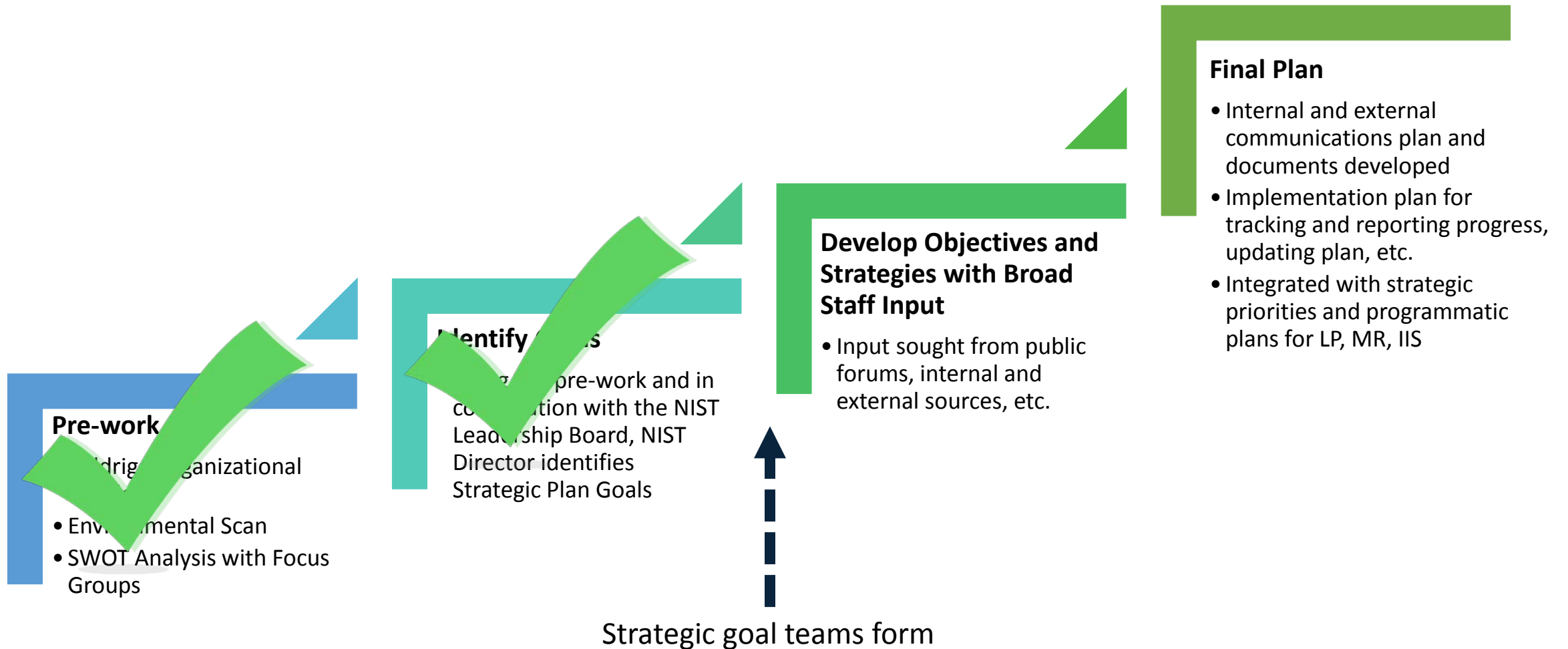Outcome-oriented long-term **goal** for major function of the agency
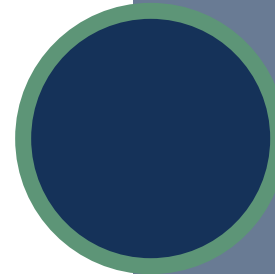
Objectives describe the outcome or impact NIST is trying to achieve
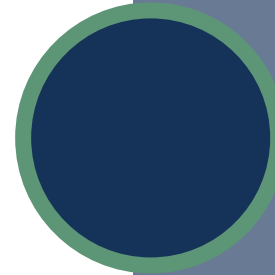
Strategies reflect the actions, processes changes, practices, that will be implemented to achieve objective

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Strategic goal teams form

Strategic Plan Goal Teams

NIST

Position NIST to Advance U.S. Science and Innovation *J. Olthoff, Sponsor*	Maximize NIST's Stakeholder Impact through High-Value Service Delivery *P. Singerman, Sponsor*	Create the Infrastructure for a 21st Century Research Institution *D. Brockett, Sponsor*	Build a One NIST Culture *K. Kimball, Sponsor*
Antonio Possolo	Brian Copello	Ari Feldman	Amber Hayes
David Hoogerheide	Dan Sawyer	Blair Heiserman	Chris Oates
Ed Garboczi	Ellen Ryan	Brian Burnham	Chris Szakal
Essex Brown	Gail Porter	Brian Kirby	Jose Colucci
Jeanita Pritchett	Heather Mayton	Brian Zimmerman	Kara Arnold
Jennifer Marshall	Henry Wixon	Dan Cipra	Kelly Welsh
Kelley Rogers	Jim Fowler	Gretchen Greene	Kirk Dohne
Mark Przybocki	Mary Ann Pacelli	Marlon Walker	Kristen Gilbert
Melissa Midzor	Melissa Schroeder	Susan Cantilli	Mary Clague
Paul Zielinski	Millie Glick	Walid Keyrouz	Michael Souryal
Sae Woo Nam	Steve Marquis	Laura Espinal (PCO)	Jason Boehm (PCO)
Ajit Jillavenkatesa (PCO)	Heather Evans (PCO)		

1   **2**   **3**   **4**

NIST

Goal 1: Position NIST to Advance U.S. Science and Innovation

Increase agility, promote collaboration, maintain technical excellence to strategically advance emerging technologies and address national needs

Develop and leverage flexible approaches to attract, retain, retrain, and grow talent (both Feds and Associates) in critical areas and adapt to demographics and expectations of the changing workforce

Develop creative models that strategically expand our external engagement and impact, aligned with our mission to maximize the value of our technical program

Goal 2 -- Objectives

Goal 2: Maximize NIST's Stakeholder Impact through High-Value Service Delivery

Facilitate the transfer of NIST knowledge, inventions, and technologies from the laboratory to the marketplace

Provide high quality, integrated and modern service delivery models

Strategically communicate NIST's key messages so that stakeholders can readily identify and share NIST's priorities, capabilities, and value

Goal 3 -- Objectives

NIST

Goal 3: Create the Infrastructure for a 21st Century Research Institution

Develop and implement plans for major facility upgrades, including capabilities to rapidly address unexpected infrastructure needs while considering impact on service delivery and research

Upgrade NIST's IT infrastructure, develop a sustainable plan to support future growth

Adopt and transition to modern business systems and operational practices to improve transparency and agility in our research, service delivery, and business operations in uncertain times

Goal 4: Build a One NIST Culture

Develop and institutionalize strong leadership and management competencies to advance a One NIST culture

Create an engaged, agile, and inclusive NIST workforce that imbues NIST's core values and embraces a One NIST Culture
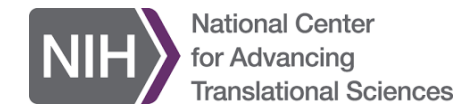
Strengthen NIST's workplace environment making NIST a welcoming institution that empowers its employees and rewards innovation

Attract, develop, and retain a diverse and inclusive workforce reflective of the Nation we serve

Example Strategy: Unify Messaging to Clearly Communicate to Stakeholders

Examples of a Branded House

Example Strategies to Provide Appropriate Facilities Infrastructure

- Plan for the cost of facility maintenance.

- Develop a sustained multi-year NIST campus and facility modernization program.

- Conduct a cost model study for facility occupancy.

- Develop an analytical framework for prioritizing investment for major infrastructure projects.

Plans for Outreach

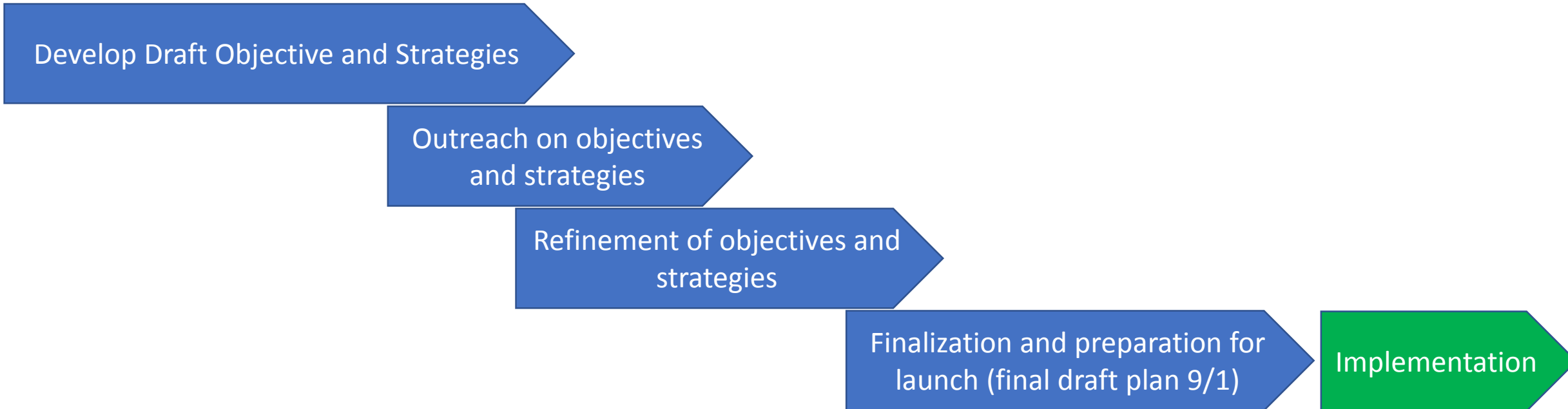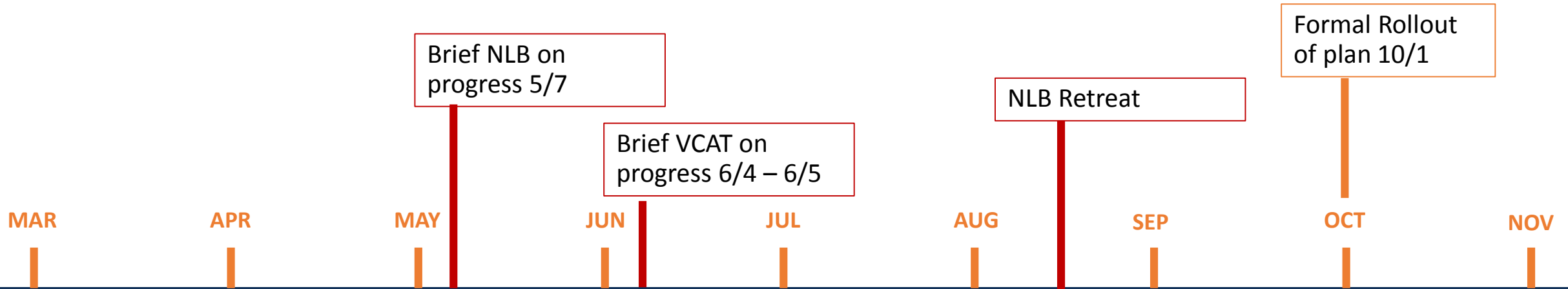Discussion sessions with staff for each Goal Area in Gaithersburg and Boulder

Opportunities for direct input on specific questions or issues using NIST intranet

Focus groups to test reception/feasibility of strategies with staff and those who would implement

World café style discussion on equity in career advancement, December 2018
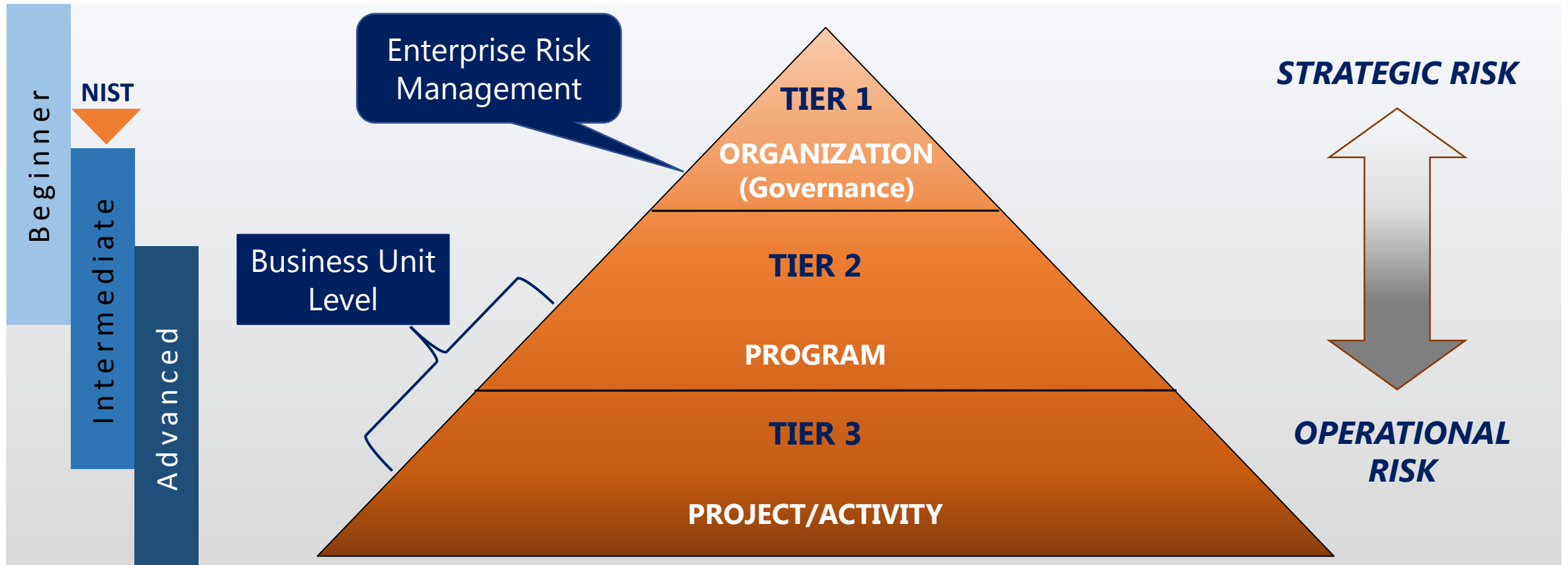
NIST Enterprise Risk Management (ERM)

- NIST ERM Council established in 2013 by the NIST Director

- Following private sector, ERM has been identified as a best practice for federal government by the Office of Management and Budget (OMB)

- NIST is actively using ERM principles to address long-term, complex risks as well as near-term, high impact risks

- NIST leverages ERM as a platform to:
  - inform decision-making in areas related to management priorities
  - inform resource allocation
  - communicate NIST priorities to internal and external stakeholders
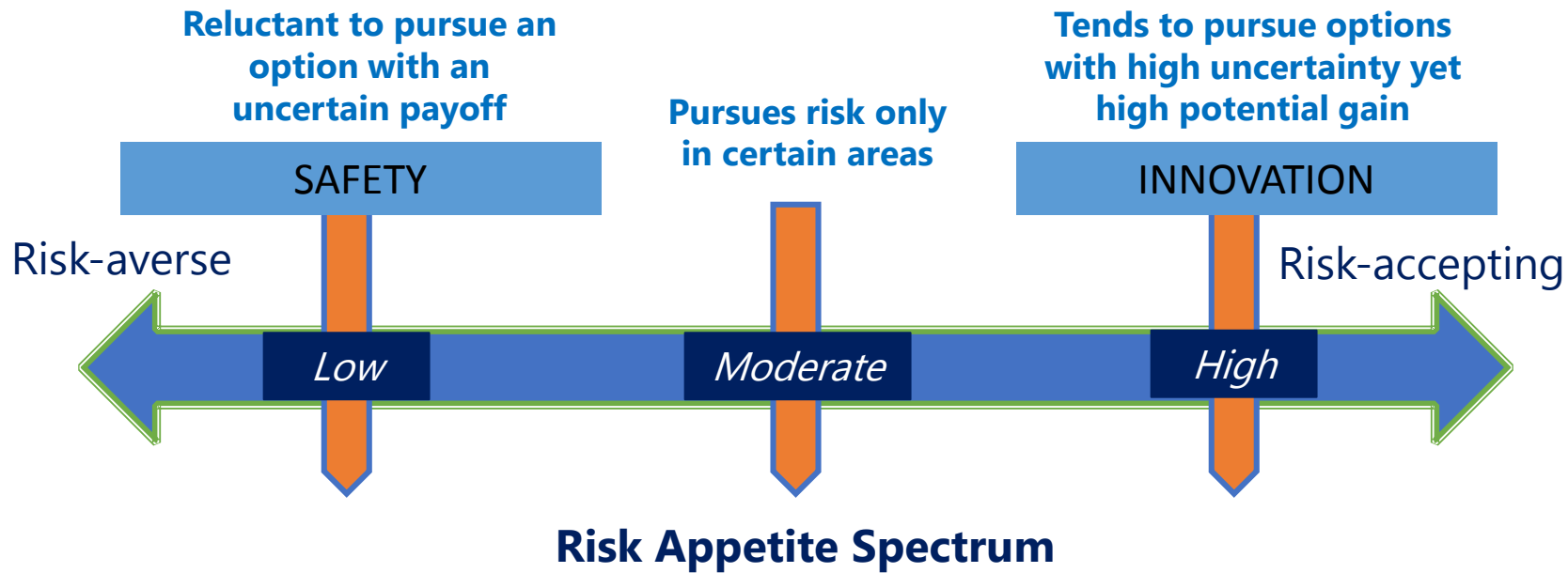 - influence change inside NIST

Integration of ERM at NIST

Risk Appetite

NIST

NIST is actively discussing risk appetite in context of operations

Reluctant to pursue an option with an uncertain payoff

Pursues risk only in certain areas

Tends to pursue options with high uncertainty yet high potential gain

SAFETY

INNOVATION

Risk-averse

Risk-accepting

Low

Moderate

High

Risk Appetite Spectrum

FUNCTION

Acceptable Risk

Organizational Risk Appetite

Actual

Gap

Operational Risk Tolerance

Laws & Regulations

Questions for the VCAT

1. Have we identified the right areas of focus? Are there other issues that NIST should consider?

2. Given a desire for maximum impact, what are the areas you would prioritize?

3. What methods have been useful in driving cultural change at your organizations?

4. What pitfalls should NIST consider with respect to implementation?

Questions

Goal 1 Example Draft Potential Strategies

NIST

Strategy 1.1 a: Expand the IMS program to greater incentivize cross-OU collaborations

Strategy 1.1 b: Utilize SERI funds exclusively to support orchestrated cross OU research projects in areas of critical emerging technologies

Strategy 1.2 a: Provide a stronger and more vocal narrative about why NIST is a great place to work, including the intangibles such as the sense of a strong "NIST community"

Strategy 1.2 b: Create and advance new "reward" opportunities such as sabbaticals, joint appointments, research "grants", etc.

Strategy 1.3 a: Create an improved social media presence and messaging

Strategy 1.3b: Streamline processes for establishing and supporting collaborative partnerships with academia and industry such as university-anchored Centers of Excellence and Federally Funded R&D Centers (FFRDCs)

Goal 2 Example Draft Potential Strategies

NIST

2.1 Expand programs that work - Share success stories about what is working, from the NIST scientist/engineer perspective

2.1 Create incentives for and reward staff that work on technology transfer.

2.1 Expand the infrastructure from the NIST on a Chip pilot for other NIST laboratory programs to use.

2.2 Expand what is working and increase internal awareness about what resources are available to staff to deliver our products and services.

2.2 Improve customer awareness about how to Work with NIST.

2.2 Use data to drive decisions about the services NIST provides.

2.3 Develop a marketing and engagement strategy for NIST to guide all parts of the organization.

2.3 Streamline the public face of NIST (on website, etc.)

2.3 Ensure communications experts across NIST are coordinated and in-line with up to date priorities and messaging strategies.

Goal 3 Example Draft Potential Strategies

NIST

Strategy 3.1 a: Build in the cost of facility upkeep and growth into new construction.

Strategy 3.1 b: Develop a risk-based roadmap to prioritize investments in infrastructure projects.

Strategy 3.1 d: Conduct a cost model study for facility occupancy

Strategy 3.2 a: Consolidate basic communications infrastructure.

Strategy 3.2 b: Development of research computing resources and competencies.

Strategy 3.2 c: Modernize NIST-wide desktop support program.

Strategy 3.2 d: Build in the cost of IT infrastructure upkeep and growth into new construction

Strategy 3.2 e: IT master plan.

Strategy 3.3 a: Business system evaluation tool.

Strategy 3.3 b: Establishment of a discretionary funded program.

Strategy 3.3 c: Implement business system review.

Strategy 3.3 d: Standard business workflows.

Goal 4 Example Draft Potential Strategies

Strategy 4.1 a: Expansion of the NIST Leadership and Management Programs.

Strategy 4.1 b: Development/Implementation of a Leadership Competencies Model.

Strategy 4.1 c: Supervisor Performance Plan Review/Restructuring.

Strategy 4.2a: Increase institutional support and standardize methods for the attraction, recruitment, and hiring of new talent.

Strategy 4.2b: Reform NIST promotion and recognition policies to create standardized practices across the agency and promote the NIST Core Values.

Strategy 4.2c: Clarify the role of and better integrate the non-Federal portion of NIST's workforce.

Strategy 4.2d: Expansion and development of formal sabbatical, rotational and detail opportunities at important career milestones.

Strategy 4.3a: Establish *OneNIST Service* where all employees engage in OneNIST-building activities.

Strategy 4.3b: Establish a NIST Ombudsman.

Strategy 4.3c: Create the Principles of Community for NIST.

Strategy 4.3d: Engage and empower the workforce in a way that facilitates and encourages innovation.