GPRA and the President's Management Agenda: Perspectives from NIST

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Federal Demonstration Partnership

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Overview

- NIST: basic roles
- Demands for performance evaluation
- NIST evaluation system
- Issues

National Institute of Standards and Technology

NIST strengthens the economy and improves the quality of life by working with industry to develop and apply technology, measurements, and standards

- 3000 employees
- $820 million annual budget
- 1600 guest researchers
- national measurement standards
- ATP -- $640 million current R&D partnerships with industry
- MEP – 400 centers nationwide to help small manufacturers
- Baldrige National Quality Award

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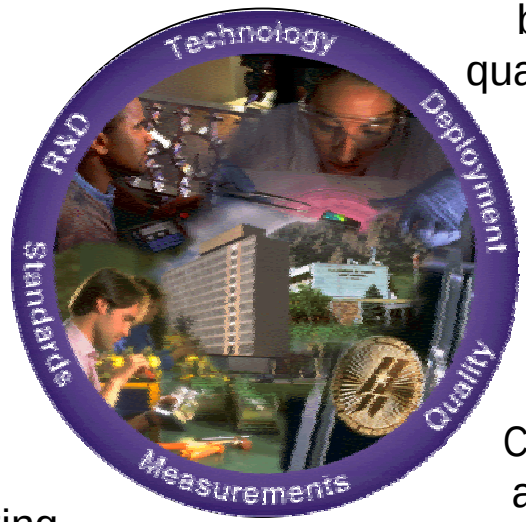
Technology Administration, U.S. Department of Commerce

NIST programs include

Measurements and Standards Laboratories

Nation's ultimate reference point for measurements, standards, and technology research to support industry, science, health, safety, and the environment.



Baldrige National Quality Program

Outreach program to promote business performance excellence and quality achievement by U.S. companies. Annual Baldrige awards in service, manufacturing, small business, education, and health care.

Manufacturing Extension Partnership

Nationwide network of locally managed extension centers offering technical assistance and best business practices to the Nation's 380,000 smaller manufacturers.

Advanced Technology Program

Co-funding partnership between NIST and private industry to accelerate the development of high-risk,enabling technologies with broad benefits for the entire economy and for society.

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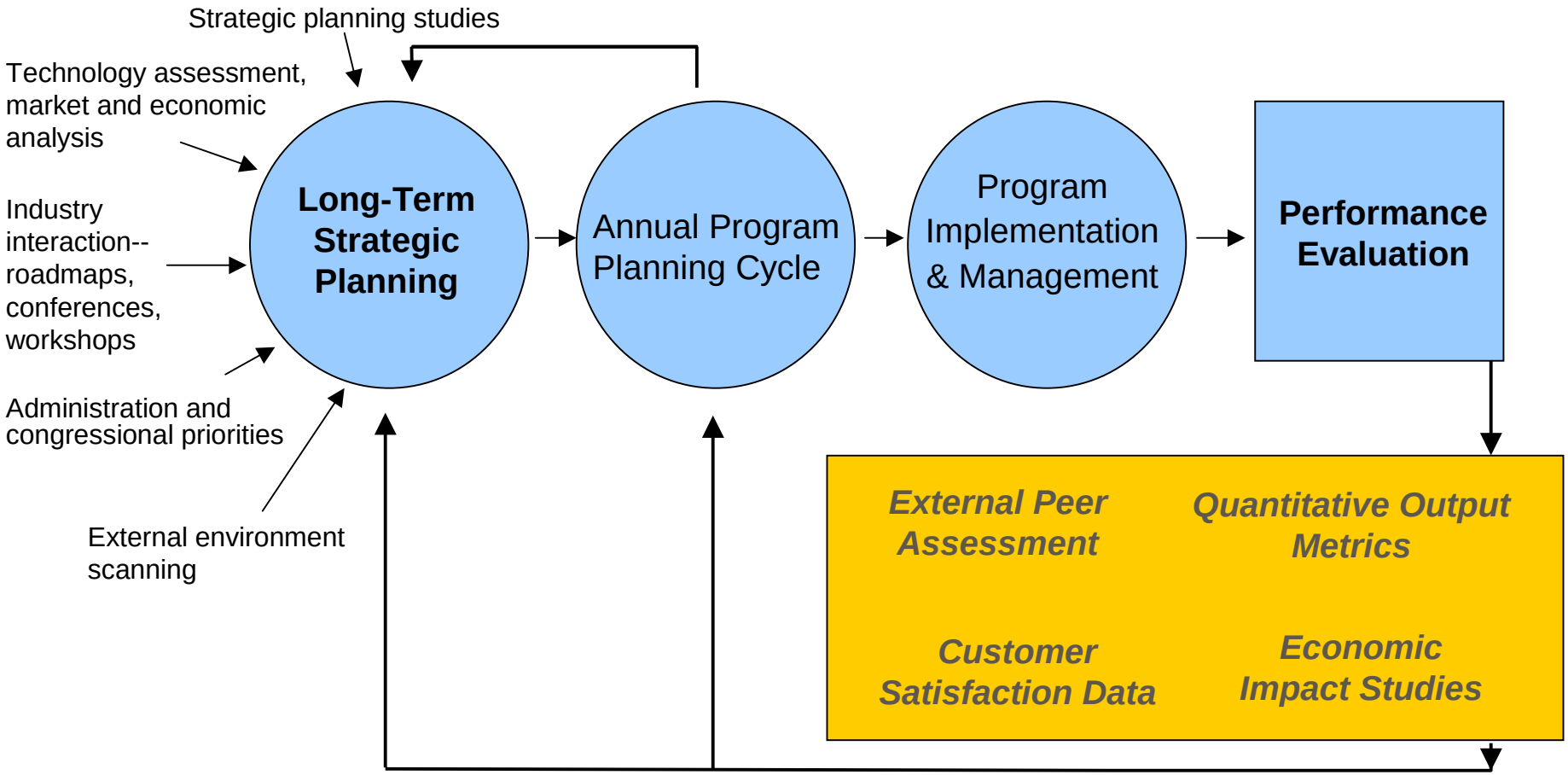
The demand for evaluation: business case

- What is the business case for funding or performing R&D?
  - Market failure assessment
  - Specification of market context and technology drivers
  - Specification and validation of impact pathways
  - Evaluation of alternative policy instruments and strategies

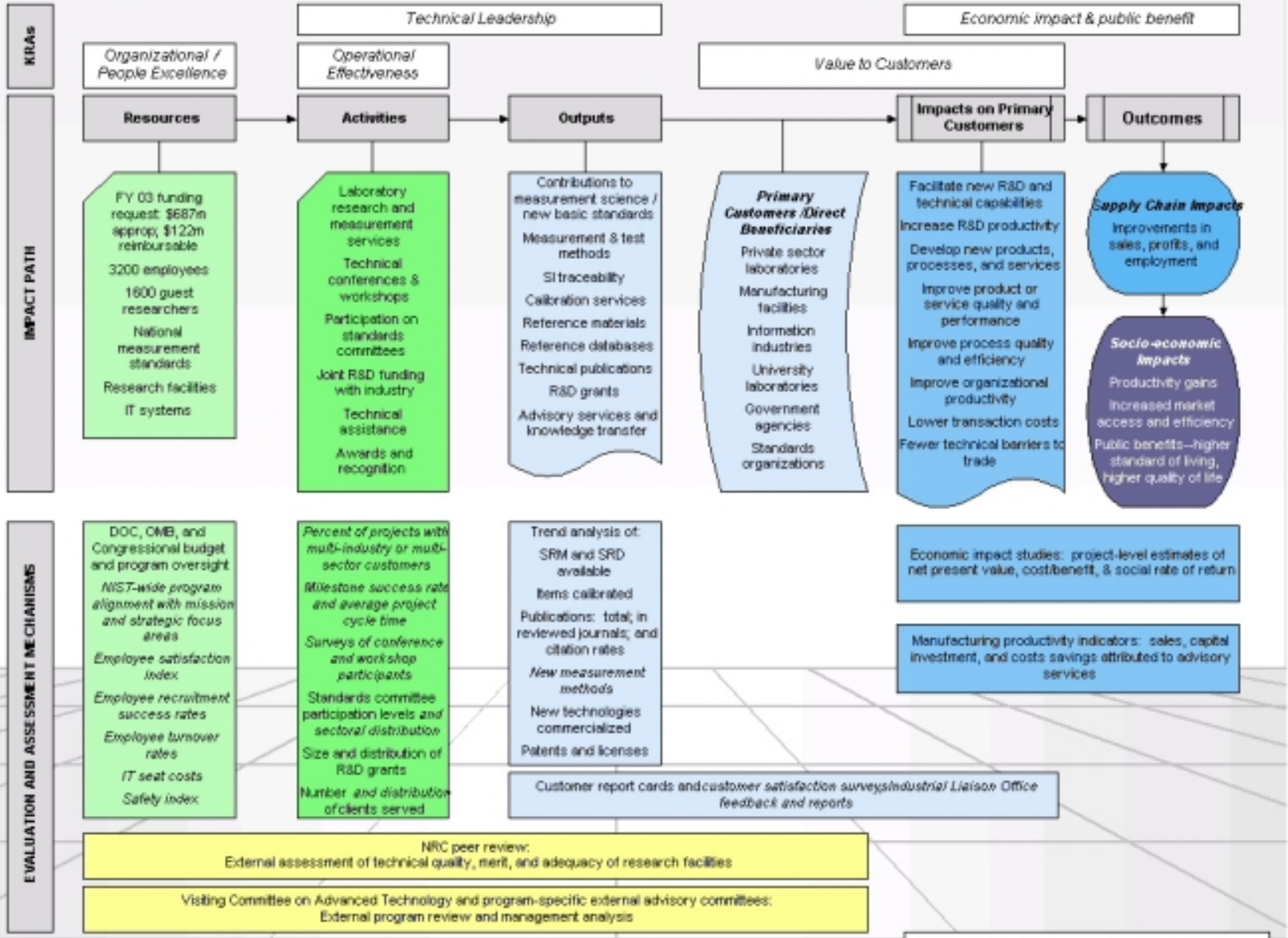
The demand for evaluation: results-based management

- What is the evidence of results-based management?
  - Use of evaluation within program / project structure and management
  - Use of evaluation to assure quality and technical merit
  - Linkages to customers / users
  - Retrospective impact evaluation and incorporation of lessons learned

Planning and evaluation system



NIST Logic Model: Impact Path, Key Result Areas, and Evaluation Mechanisms



Strengths & weaknesses of measurement methods

	Scope & Purpose	Strengths	Limitations
Peer Review	Assess technical quality within operating units. Provides essential data for quality control, laboratory management & planning.	Broad and detailed review by external technical experts. Balanced panels; expertise matches each operating unit. NRC independence, high technical capability, and internal quality controls.	Intrinsic features of peer review: panel judgments are not quantifiable; observations and findings are highly contextual and detailed; assessments are not comparable (e.g. no cumulative performance ranking).
Quanti-tative Output Metrics	Diverse output indicators for key functions. Important to track for internal management & resource planning.	Direct counts of activities and outputs generate highly reliable quantitative data. Robust data collection systems. Data are cumulative and allow trend analysis.	Provide no information on quality or impact; trends require contextual interpretation; indicators not uniformly relevant to all OUs; indicators as a set are not a comprehensive output meaasure.
Impact Studies of Research Outcomes	Assess down-stream impacts of research projects & infratechnologies. Provides data for evaluating research outcomes & long-term planning.	Provides quantitative and qualitative data re. outcomes. Provides data on impacts over long time periods and across layers of the supply chain affected by NIST. Highly qualified economists and technical specialists conduct detailed analyses using well-developed research methods.	Studies are intermittent and results are not cumulative; elements of user population often are too diffuse to measure; uneven availability and quality of industry data; methodological problems specific to each measure; outcomes are specific to each project (limited comparability); studies are expensive.

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Primary uses of economic studies at NIST

- Planning: Assess technical infrastructure needs
  - Supply chain structure and dynamics
  - Industrial technology trends
  - Technical and economic dimensions of technology infrastructure
- Evaluation: Microeconomic impact studies provide quantitative and qualitative estimates of long-term outcomes from individual projects
  - NIST impact pathways
  - Impact and cost data

Evaluating impact: Key issues

- Scope of measurable impact
  - Structure of impact pathway within and across supply chains
  - Causal complexity and attribution challenges
  - Boundaries of quantitative and qualitative assessment
- Data access, quality, and reliability
- Time frames

Reporting results: key issues

- Mission requires complex evaluation system
- No “vital few” quantitative measures
- Performance data not synchronized with budget cycle
- Measurement complexity combined with small size lead to communication challenges

Stakeholder investment criteria: Key issues

- Increasing need for planning studies to support needs assessments and to develop and evaluate business cases
  - Requires better linkages to retrospective studies to validate prospective impact pathways
  - Requires rapid, high quality analysis of supply chain structure and technology assessment
- Improved documentation of market failures
  - Requires better theoretical and empirical understanding of innovation and market failures
  - Requires better national data on innovation
  - Requires better evaluation of major innovation policy instruments