2004

Pipeline Safety R&D at the Office of Pipeline Safety

Jeff Wiese
Office of Pipeline Safety

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Jeff Wiese

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Pipeline Safety R&D: Questions

- What are we trying to accomplish through the R&D program?
- What are the elements of our management approach? Goals?
- On what R&D topics are we focusing?
- How have we distributed resources to date?
- How will we know whether the program is succeeding?

What are We Trying to Accomplish Through the R&D Program?
Pipeline Safety R&D Mission

To sponsor research and development projects focused on *providing near-term solutions* that will increase the *safety*, *environmental friendliness*, *and reliability* of the Nation's pipeline transportation system

What are We Trying to Accomplish Through the R&D Program? Strategic Objectives

- Developing technology that supports the OPS regulatory mission;
- Focusing on near-term technology development needs and opportunities;
- Conducting an effective program of technology transfer and communication with stakeholders;
- Maximizing the return on the R&D investment by coordinating activities with other sources of R&D funding, including other federal agencies;
- Efficiently and effectively managing the R&D program.

What are the Elements & Goals of Our Management Approach?

	Management Elements	Management Goals
1.	Effective and Efficient Program Management	Efficient and effective management of the R&D program
2.	Coordination and Collaboration with Other Stakeholders	Stakeholders role: identify technology gaps and coordinate R&D activities
3.	Communication of R&D Program Activities, Results, and Impacts	Effective communication of program activities, results, and successes
4.	Technology Transfer and Application of Results	Effective and rapid deployment of technology from the R&D program

What are the Components of our Management Approach?

- Identification of R&D needs
- Integration with our regulatory mission
- Leveraging limited resources
- R&D project selection & procurement
- R&D project management
- Assessment of contribution (peer review)
- Technology transfer
- Measuring program effectiveness

R&D Topical Areas: Program Elements (1/2)

- Damage prevention
- Pipeline assessment and leak detection
- Defect characterization and mitigation
- Improved design, construction and materials

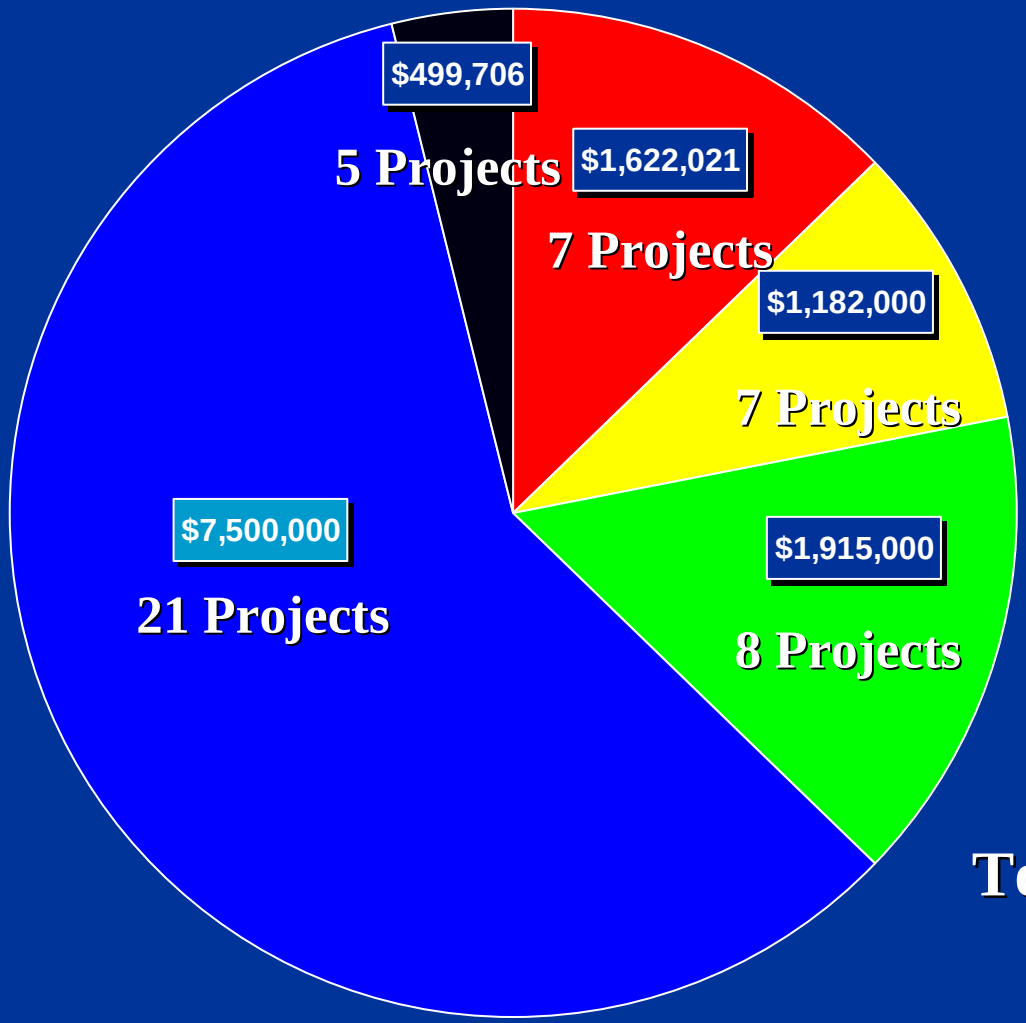
R&D Topical Areas: Program Elements (2/2)

- Systems for pipeline mapping and information management
- Enhanced operation controls and human factors management
- Risk management and communication
- Safety issues for emerging technologies

R&D Topical Areas: Program Elements & Goals

	Program Elements	Program Element Goals
1.	**Damage Prevention**	Reducing the number of incidents and accidents resulting from excavation damage and outside force
2.	**Pipeline Assessment & Leak Detection**	Identifying and locating critical pipeline defects using inline inspection, direct assessment and leak detection
3.	**Defect Characterization and Mitigation**	Improving the capability to characterize the severity of defects in pipeline systems and to mitigate them before they lead to incidents or accidents
4.	**Improved Design, Construction, & Materials**	Improving the integrity of pipeline facilities through enhanced materials, and techniques for design and construction
5.	**Systems for Pipeline Mapping and Information Management**	Enhancing the ability to prevent and respond to incidents and accidents through management of information related to pipeline location (mapping) and threats definition
6.	**Enhanced Operation Controls and Human Factors Management**	Improving the safety of pipeline operations through enhanced controls and human factors management
7.	**Risk Management & Communications**	Reducing the probability of incidents and accidents, and mitigating the consequences of hazards to pipelines
8.	**Safety Issues for Emerging Technologies**	Identifying and assessing emerging pipeline system technologies for opportunities to enhancing their safety

Element-Level Funding: BAAs & Small Business Innovation Research



- BAA #1 (March 2002)
- BAA #2 (June 2002)
- BAA #3 (Dec 2002)
- BAA #4 (Jan 2004)
- SBIRs (Phase I)

Total Projects Awarded Since March 2002

48

Total OPS Funding*

Approx. $12,518,727

Total Industry Co-Funding*

Approx. $18,068,475

* Final award amounts from BAA #4 have not yet been determined

Turning R&D Results into Impacts - Setting Goals

- OPS is using *"program logic modeling"* to define performance objectives for program elements and to begin the process of technology transfer.
- Components of a Program Logic Model
  - **Activities:** The projects being conducted in the R&D program
  - **Outputs:** The results anticipated at the conclusion of the projects.
  - **Customers Reached:** The stakeholders who are expected to use or benefit from the results.
  - **Short-Term Outcomes:** The beneficial effects of R&D project outputs that could occur within five years of completion of the work.
  - **Long-Term Impacts:** The longer-term consequences for the public of having conducted the R&D as related to the mission of OPS.

Example of a Program Logic Model

- Goal: reduce incidents from outside force
- Activity: damage prevention & leak detection technology development and demonstration
- Output: new methods for locating pipe and detecting leaks
- Customer reached: pipeline operators, pipeline suppliers, suppliers of detection equipment
- Short-term outcomes: proof-of-concept for new technology, technology being deployed
- Long-term impacts: fewer incidents

Program Driver, Collaborators, and Controls

- Pipeline Safety Improvement Act (PSIA) of 2002 (driver)
- Joint Government/Industry R&D Forum, Interagency Coordination Meetings (collaboration)
- Blue Ribbon Panel, Pipeline Safety Advisor Committees, GAO, OMB (controls)

Defining Documentation

Interagency R&D Five-Year Program Plan for Pipeline Safety and Integrity (Complete)

OPS R&D Program Strategic Plan (Final Draft)

OPS R&D Program Performance Plan (Final Draft)

R&D Program MIS: Features & Benefits

- Paperless processing:
  - BAA through project selection
  - Overall reduction in time: solicitation to award
- Tracking & accountability features:
  - Linking project activities with financial requirements
  - Notification for approaching milestones
- Rapid query functions for information requests

OPS R&D Program Contacts

Jeff Wiese
Office of Pipeline Safety
(202) 366-2036
(202) 366-4566 (Fax)
Email jeff.wiese@rspa.dot.gov

Jim Merritt
Office of Pipeline Safety
(303) 683-3117
(303) 638-4758 (Cell)
(303) 346-9192 (Fax)
Email james.merritt@rspa.dot.gov

Robert Smith
Office of Pipeline Safety
(202) 366-3814
(202) 366-4566 (Fax)
Email robert.smith@rspa.dot.gov

Visit us at http://primis.rspa.dot.gov/rd

Backup Slides

Management Oversight Process

1. Identifying gaps and technology needs focusing on priority requirements.
2. Managing the individual projects effectively and efficiently to successful conclusion.
3. Planning and implementing specific steps for demonstrating newly-developed technologies and utilizing R&D results.
4. Coordinating activities with other federal or state agencies and industry organizations with guidance from stakeholder groups.
5. Widely communicating and disseminating the results of the R&D program.
6. Using expertise and tools of analysis to identify technology opportunities and synergies between programs.

Topics Covered in Defining Documentation

- Program Elements
- Program Goals
- Program Logic Models
- Performance Measures
- Peer Review Role & Approach
- Management Oversight Approach
- Approach: Collaboration, Coordination, Co-Fund
- R&D Results Dissemination
- Technology Demonstration & Transfer

Peer Review of Projects

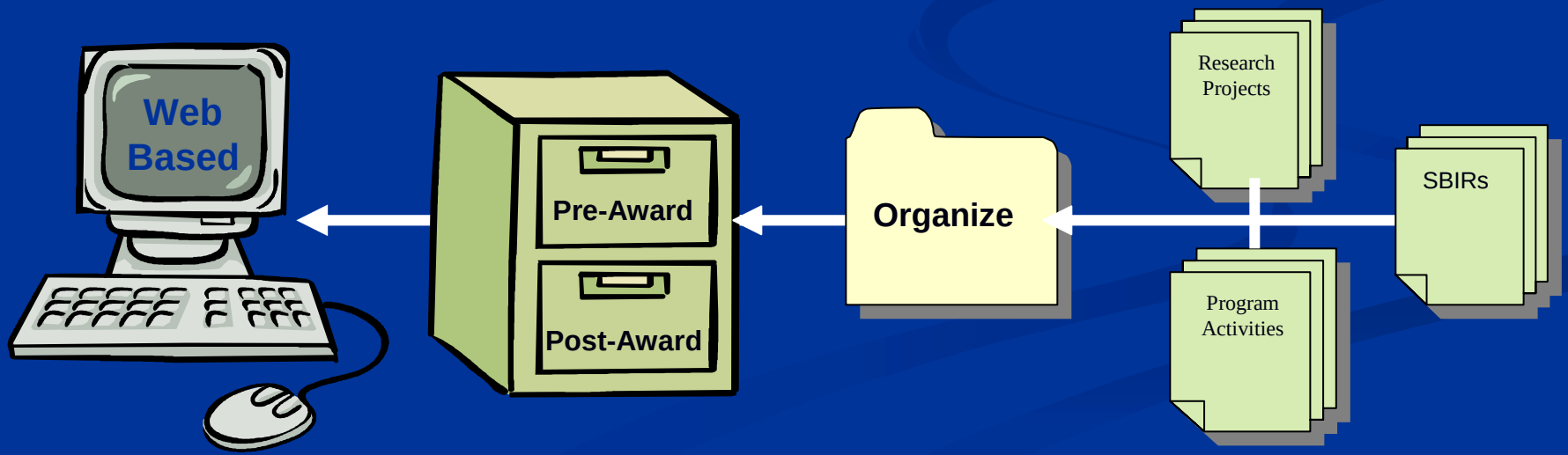
- Relevance of projects to the pipeline safety mission
- Soundness of the technical approach and design of the project
- Effectiveness and efficiency of project management
- Appropriateness of the plan for technology transfer
- Coordination of the project with related efforts
- Quality of the results

R&D Program Efficiency Measures

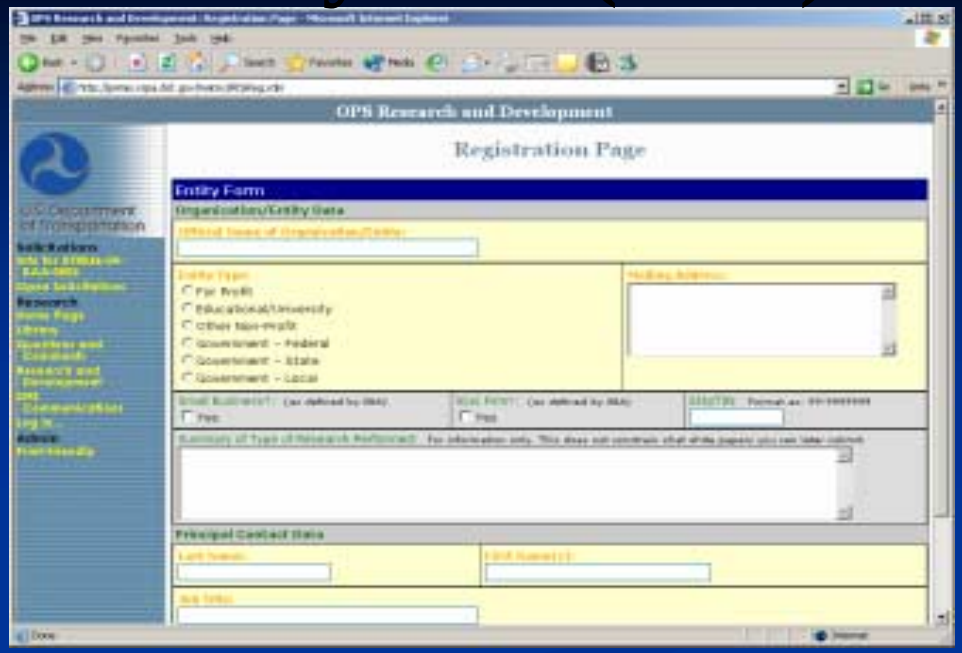
1. Percent of OPS R&D projects satisfying project performance objectives
2. Ratio of OPS R&D funding to number of OPS R&D staff participation (FTE)
3. Fraction of OPS R&D funding to total R&D funding on OPS projects
4. Percent of R&D projects competitively funded
5. Percent of OPS R&D funding that is one year or less in duration
6. Percent of OPS R&D funding that is one to two years in duration
7. Percent of OPS R&D funding that is greater than two years in duration

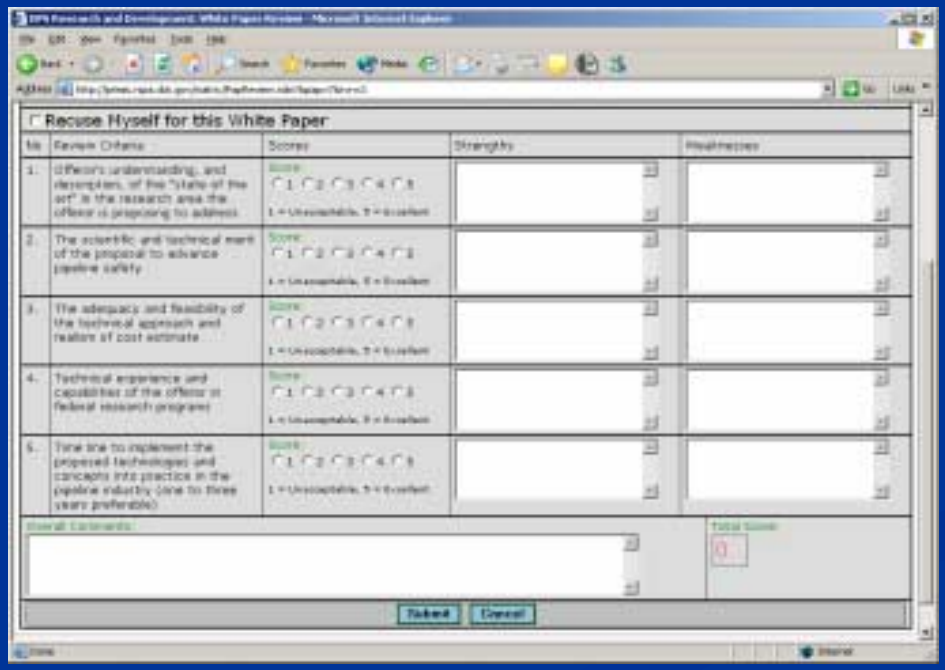
Office of Pipeline Safety Research & Development Program's

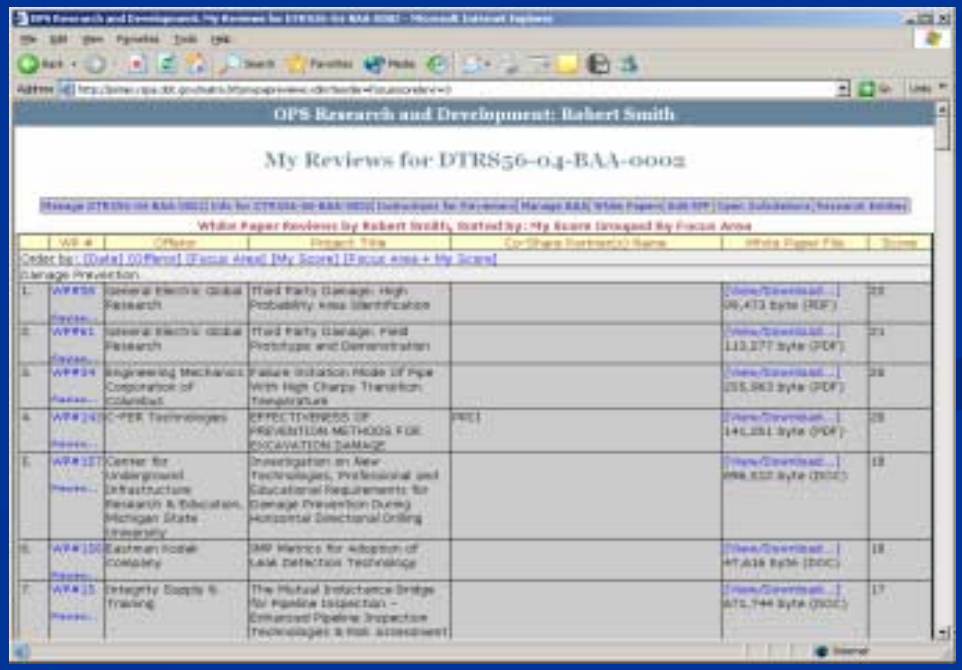
Management & Information System (MIS)



Management Information System (MIS)







OPS R&D Website

http://primis.rspa.dot.gov/rd