NASA RFI Town Meeting:
Kick-off of SATS Partnering Process

Prepared by

SATS Partnership Design Team
NASA Langley Research Center
November 14, 2000

Town Meeting Agenda

9:00 - 9:05	**Introductions and Kick-off of SATS Partnering Process**	**SATS Partnering Design Team**
9:05 - 9:10	**Welcome**	**Bob Pearce, HQ, Code R Strategy and Analysis Division**
9:10 - 9:25	**SATS Program**	**Mike Durham, LaRC SATS Program**
9:25 - 9:40	**Federal Government R&T Investment Strategies- A Paradigm Shift**	**Paul Masson, STARNet**
9:40 - 10:15	**Capabilities of SATS Partnering Interface**	**Mike Durham**
10:15 - 10:30	**Break**	**Mike Durham**
10:30 - 10:45	**Conditions for Partnering**	**Mike Durham**
10:45 - 11:00	**Next Steps in the Process**	**Mke Durham**
11:00 - 12:00	**Q&A**	**Paul Masson, Facilitator**

NASA GA Roadmap

Bob Pearce
Director, Strategy and Analysis Division
Code R, NASA HQ

"Vitalize the GA industry and airports, enabling 25% of communities to be served in 10 years & more than 90% in 25 years."

Funded | Unfunded

National General Aviation Roadmap

Vehicle & Infrastructure R&T: Revitalize General Aviation R&T — Establish Small Aircraft Transportation System

10,000 deliveries per year → 20,000 deliveries per year

Enable 25 % of Communities to be Served by SATS → > 90% of Communities Served by SATS

FY 1997 | FY2007 | FY 2017 | FY 2022

Vehicle Technologies:

AGATE

GAP

Objectives: First Generation ("Current Market") Vehicle Component Technologies:
- Affordable Engines, Avionics, Airframes, & Training
- Safety Through Situational Awareness & Crashworthiness
- Ease-of-use through PFD & MFD graphics

Objectives: Second Generation ("Latent Market") Vehicle Systems:
- Affordable, Certifiable Software
- Synthetic / Enhanced Vision with Simplified Controls & Training
- Automotive Synergies in Manufacturing
- Quiet, Non-Hydrocarbon Propulsion

SATS Vehicle Technologies R&T — I — II

Capstone I Integrated Systems Advanced Conc. Project

Capstone II Alternative Configurations Advanced Conc. Project

Objectives:
- **Accelerate** SATS Vehicle & Infrastructure Technologies
- **Demonstrate** progress in Ease-of-use, Affordability, Cert. Reforms
- **Mitigate** risks for further government, States, & industry investments

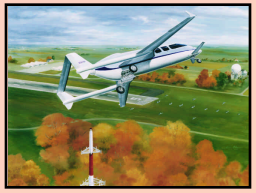
SATS Infrastructure Technologies:

AGATE Heli-STAR NASDIF

Objectives: First Generation Infrastructure Technologies:
- ADS-B
- WAAS / LAAS DGPS Approaches
- FIS, TIS, CIS Datalink

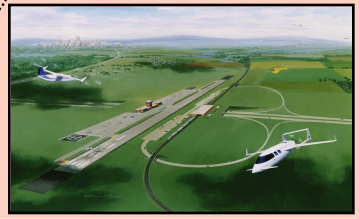
Objectives: Second Generation SATS Infrastructure
- Satellite-based CNS
- "Smart" SATS airports & heliports
- Free Flight in SATS infrastructure
- Seamless intermodal connectivity

Public Policy Supporting Infrastructure Deployment



SATS I: USIP States Transportation System Demonstration Projects

SATS II: Advanced USIP InterState System Concept Integration & Demonstration



Small Aircraft Transportation System (SATS) Vision and Goals

Mike Durham
SATS Deputy Program Manager
NASA LaRC

SMALL AIRCRAFT TRANSPORTATION SYSTEM

VISION

A safe travel alternative freeing people and products from transportation system delays, by creating access to more communities in less time

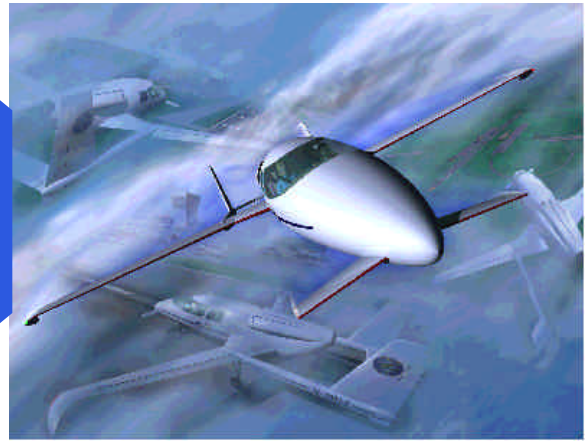
GOAL

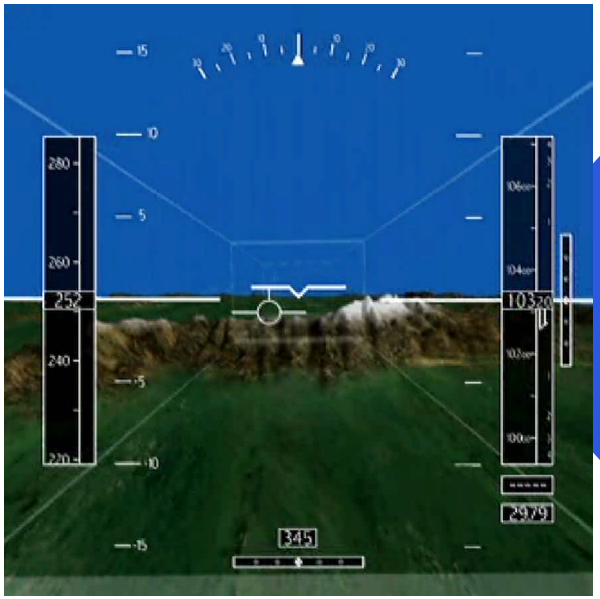
Reduce public travel times by half in ten years and two-thirds in 25 years at equivalent highway system costs, increasing mobility for all of the nation's communities through advanced on-demand air transportation

Proposed NASA Research Projects:

High-Density Operations

Prove that SATS airspace technologies enable safe operations in non-towered, non-radar airspace in near-all-weather conditions, including seamless, non-interfering interoperability at facilities in Class A and B airspace.





'Virtual VMC'

(Visual Meteorological Conditions)

Prove that SATS cockpit technologies enable the use of virtually all runways and helipads in the nation without requiring expansion of airport protection zones and land-use requirements.

Prove that single-crew operational safety and mission reliability can be improved to two-crew levels.

Potential Enabling Technologies

- **Enhanced Vision**
  - Sensor-based and database-generated depiction of terrain and obstacles in artificial or synthetic vision formats.
- **Highway-In-The-Sky Guidance**:
  - Graphically intuitive, perspective depiction of flightpath guidance, based on Highway in the Sky Phase II products of the AGATE Alliance; virtual skyways for enroute and terminal procedures.
- **Software-enabled Controls**:
  - Simplified flight controls and autopilot functions integrated with displays for reduced complexity of interactions between aircraft attitudes, power settings, and rates of motion; limitation of flightpath to constrain loss of control; increased compliance of flightpath to clearances and traffic separation requirements.

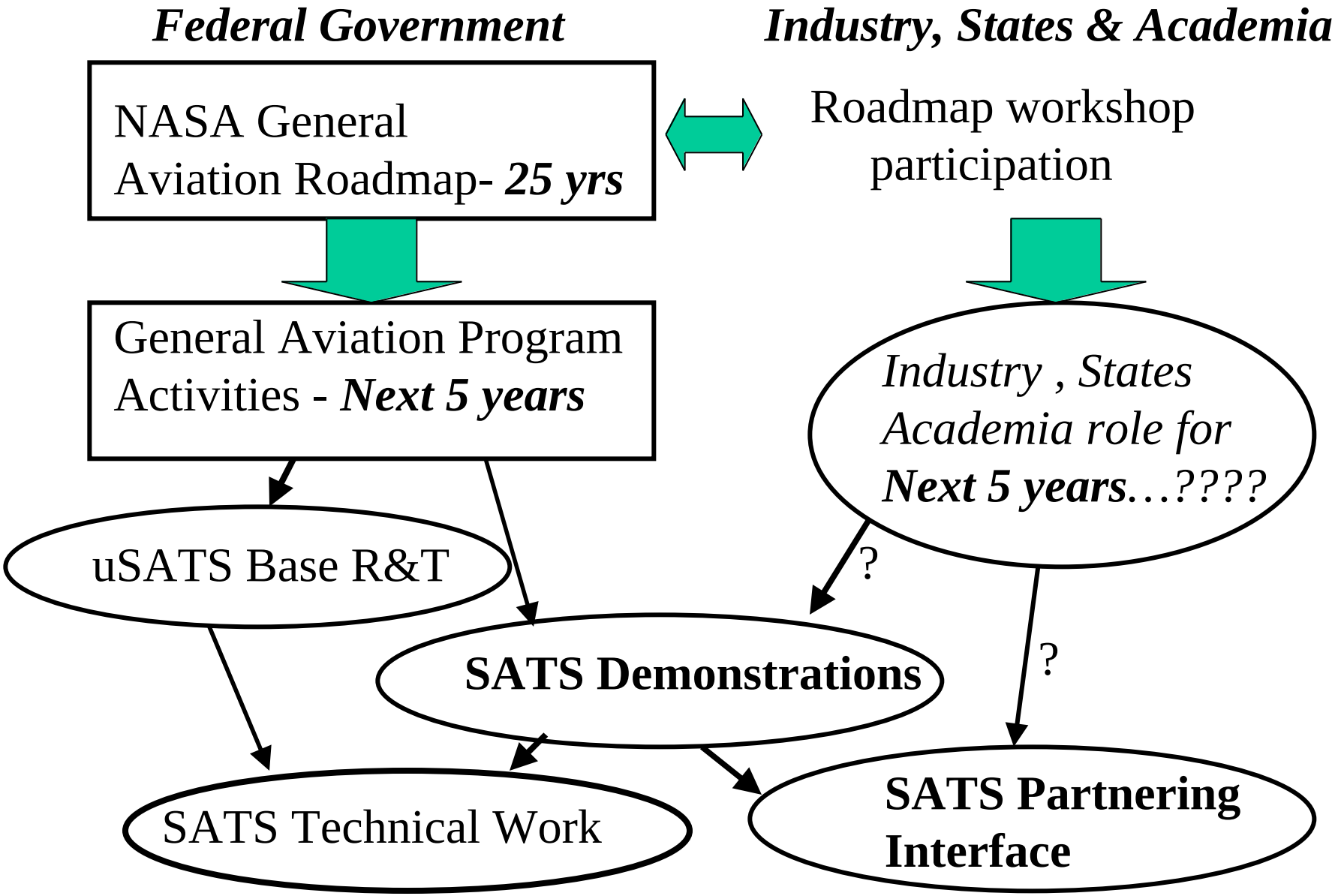
Potential Enabling Technologies

- **Emergency Autoland** :
  - Computer-based flight control system for fail-safe recovery of aircraft and occupants following pilot incapacitation or other emergency situations.
- **Airborne Internet**:
  - Open standards and protocols for a client-server network system architecture; functional allocations between clients and servers for all navigation, communications, and surveillance information necessary for aircraft operations including sequencing, separation, and conflict resolution.
- **Self Sequencing and Separation Algorithms**:
  - Algorithms that enable classless, self-organizing airspace operations by providing the software-based ability for collaborative decision making between vehicles (clients) for dynamic generation of flight path guidance.

Small Aircraft Transportation System

- **SATS is...**
  - Mobility and accessibility
  - Economic development for all communities
  - An affordable alternative to hublock & gridlock
  - An exportable transportation innovation
- **NASA in close coordination with the FAA will implement the SATS Demonstrations**
- **The SATS program will leverage state, local, and industry participation through a single public-private program interface.**

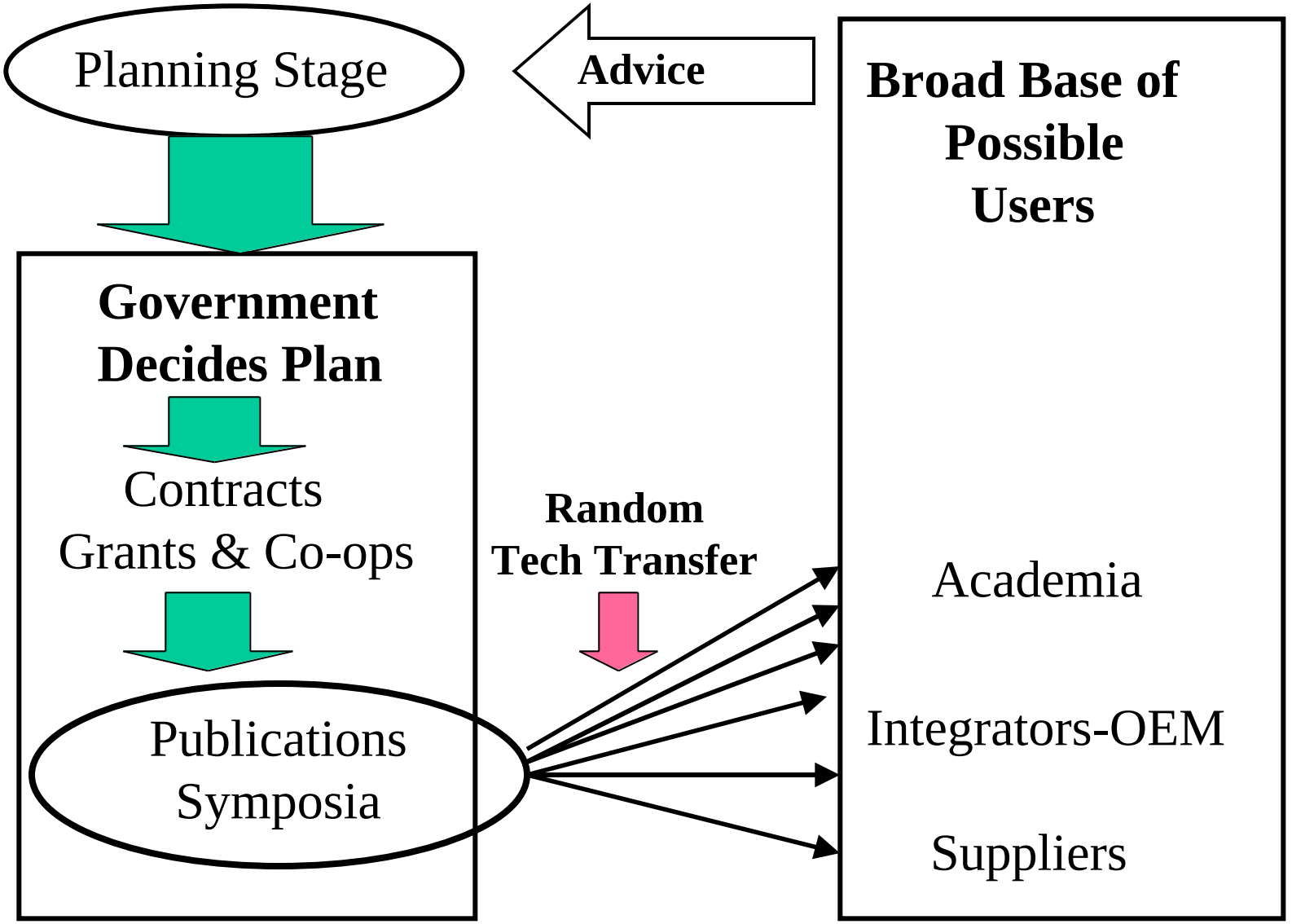
NASA's GA Approach



Federal Government R&T Investment Strategies: A Paradigm Shift

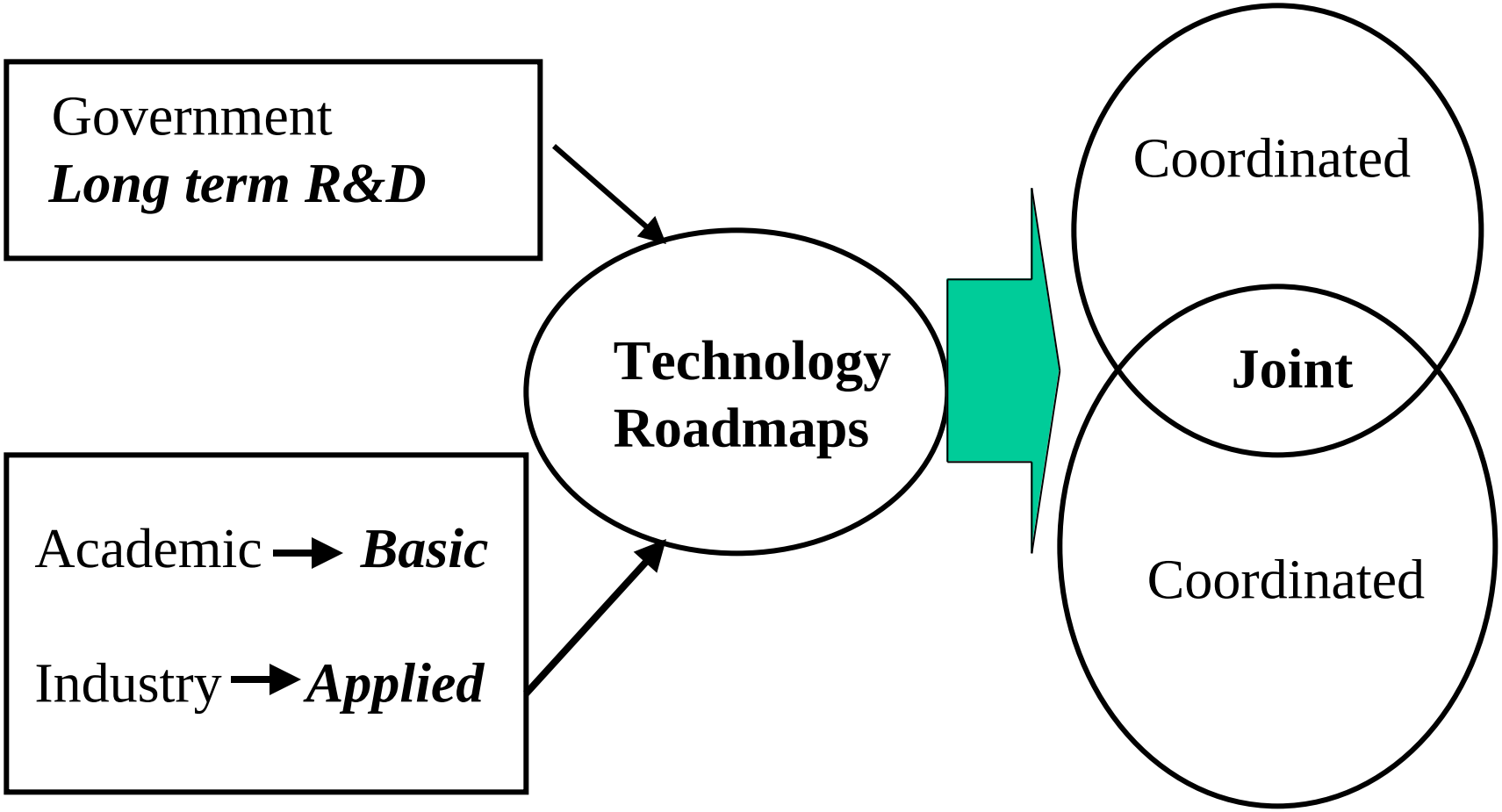
Paul Masson
STARNet

Previous Technology Investment Approach



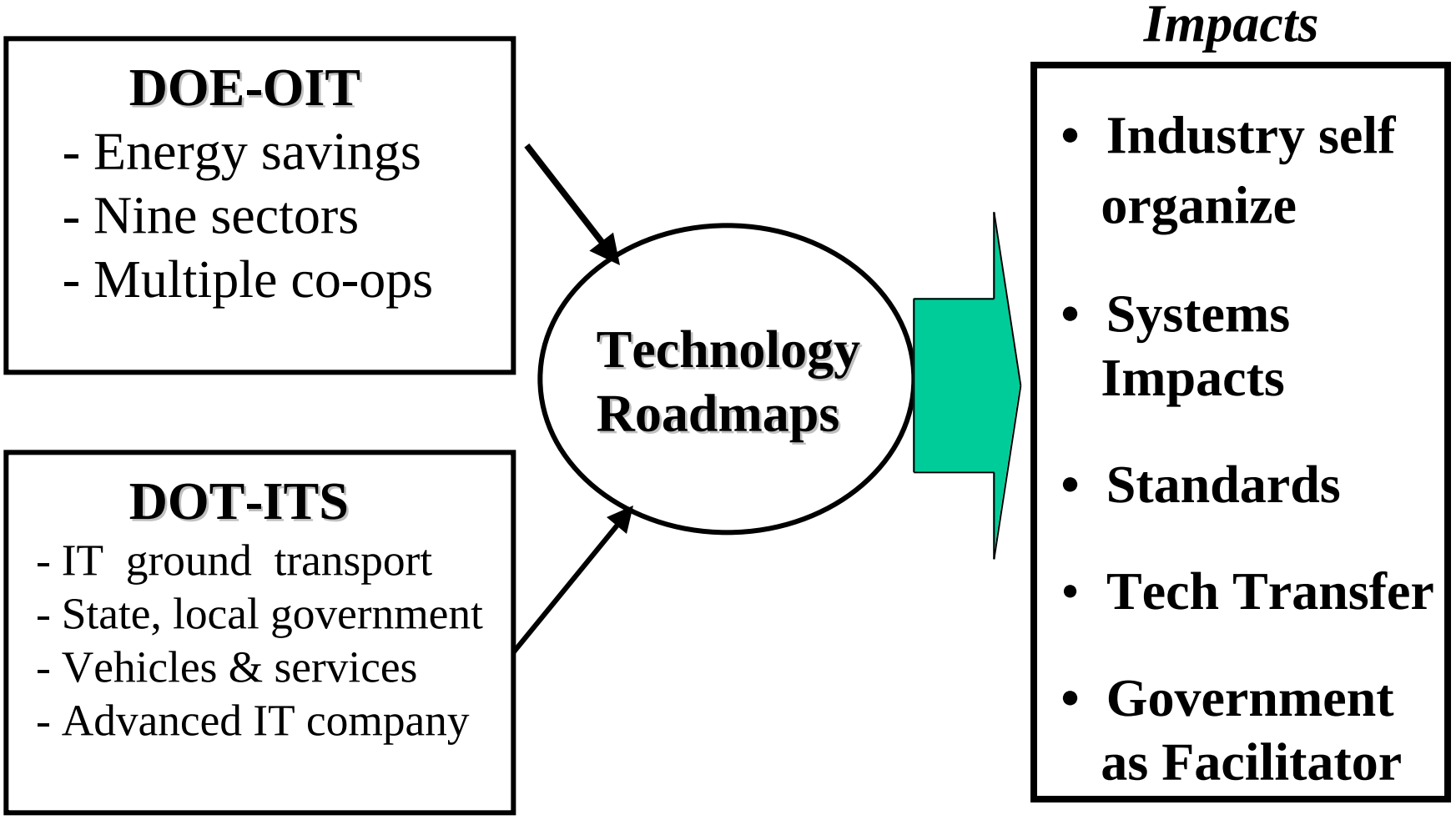
Current Technology Investment Approach

Government and broad based private sector group develop and coordinate investment in a long term technology...



Current Technology Investment Approach-Examples

Examples of such coordinated investments exist in transportation systems and energy savings technology alliances...



SATS Partnering RFI
Capabilities of the SATS Single Public-Private Program Interface

Mike Durham
SATS Deputy Program Manager
NASA LaRC

Objectives of the RFI

- NASA seeks **input** regarding the issues that need to be addressed in forming a **collaboration** between NASA and a **vertically integrated partner** who will be the **single public-private program interface (SPPPI)** to NASA in achieving the SATS Program's technology development, technology transfer and commercialization objectives.

- NASA seeks an **industry champion** to lead the **self-organization** of the **general aviation industry** manufacturers, suppliers, users, service providers, financial and insurance providers, and state and local airport authorities.

Definitions

Vertically Integrated Collaborative Partner :

An organization, working ***with*** NASA, whose membership includes:

- general aviation vehicle manufactures
- major general aviation system and component supplier
- general aviation airport operators
- general aviation service providers
- trainers
- academia
- business and personal user communities
- general aviation service providers
- financial investors
- insurance underwriters

Definitions

Single Public Private Interface:

As NASA's single business collaborative partner represent their membership in the coordination, technology demonstration and implementation of the SATS Program as well as be responsible for partnership administration and non-Federal technical task management.

Engage state and local aviation authorities coordinating SATS program tests at various locations.

SPPPI Roles and Responsibilities

- Technology Development and Testing:
  - Commit to undertake selected technology development, testing and integration tasks.
  - Participate in strategic technical direction and subsequent technology selections.

- Project Management:
  - Act as project manager for technology development, testing and integration tasks as agreed to with the federal government partners.
  - Act as the single programmatic interface to the federal government for project management and resource tracking and reporting of its members.

SPPPI Roles and Responsibilities

- Financial Management:
  - Create and maintain financial management system with records sufficient to comply with Defense Contract Audit Agency (DCAA) audit procedures.
  - Collect and distribute financial progress reports on a monthly, quarterly, and annual basis.

- Intellectual Property Asset Management:
  - Control and disseminate intellectual property (IP) reports and track use among SATS partners.
  - Manage and maintain copyright license agreements, data rights and other intellectual property assets of its members.

SPPPI Roles and Responsibilities

- Technical Support for Local, State, & Federal Transportation Analysis:
  - Provide technical data and knowledge in response to partners' needs.
  - Address requests from the FAA, airport authorities and others in the planning and studies of transportation systems.

- Liaison for Certification and Standards:
  - Provide assistance and technical expertise for certification and standard issues for presentation to the FAA and/or various standard-setting bodies.

SPPPI Roles and Responsibilities

- Public Education and Media Relations:
  - In cooperation with NASA, the FAA and other partners, develop strategic and tactical plans for public outreach and education on SATS related activities including but not limited to state fairs, exhibition, public and NASA television programming, newsletters, and web site.
  - Provide multi-media services as required.

- Member Services:
  - Provide member communication, member outreach, membership records, and business support as appropriate.

SPPPI Roles and Responsibilities

- Internal Alliance Education and Facilitation:
  - Remain current and provide education to members on alliances and partnerships.
  - Participate in externally sponsored alliance forums to develop and internalize best practices.
  - Assist membership in collaboration and alliance building, and internal dispute resolution.

- Technology Transfer:
  - Develop and implement technology transfer mechanisms that maximize commercialization of the SATS Program results to the private sector.

BREAK: 15 minutes

SATS Partnering RFI
Conditions for Partnering

Mike Durham
SATS Deputy Program Manager
NASA LaRC

Conditions for Partnering

- **Cost Sharing:**
  - A target cost sharing goal of 50/50 (includes both technical and business costs).
  - Includes both in-kind and resource matching.
  - Some types of public-private partnering vehicles require at least a 50/50 cost share. (See agreements resource list)

- **No Lobbying:**
  - May not advocate with government appropriated funds.
  - May not represent or advocate in the government's name.

- **No Interlocking Boards:**
  - Board members must represent the interest of the interface organization, i.e., of all the entity's membership.
  - The existing Board of any one member or combination of members should not become the Board for the new interface.

Conditions for Partnering

- **Location on or near NASA LaRC, co-located with NASA program and research operations:**

  - Co-location of the SATS program management and research operations office consisting of NASA, FAA, the SPPPI, and as appropriate, the SPPPI's members.
  - Co-location includes the single interface's technical and business operations.

- **Ability to receive research funding from state and other governmental authorities.**

Proposed Timeline

Next Steps

November 14, 2000	RFI First Town Meeting
December 4, 2000	Final date for Faxed Questions to be addressed by NASA (757-864-8864)
December 6, 2000	RFI Second Town Meeting At LaRC (Facilitated Dialogue)
December 8, 2000	RFI Response Date
Jan - April, 2001	Selection of Partnering Mechanism (Jan-Feb) Draft of Partnering Solicitation (Feb) Request for Comments on Solicitation (March)
April, 2001	SATS Single Public Private Interface- Solicitation process begins
August, 2001	SATS Single Public-Private Interface in place

Question and Answer Session

Paul Masson, Facilitator
STARNet