

# The NeTS Program

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Computer and Network Systems

Computer & Information Science & Engineering

National Science Foundation

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Arlington, Virginia

# Context for NeTS

# NeTS Goals

**More Impact from Our Research**

**Better Service to Community**

**CISE Reorganization**

**New Program**

**Improved Practices**

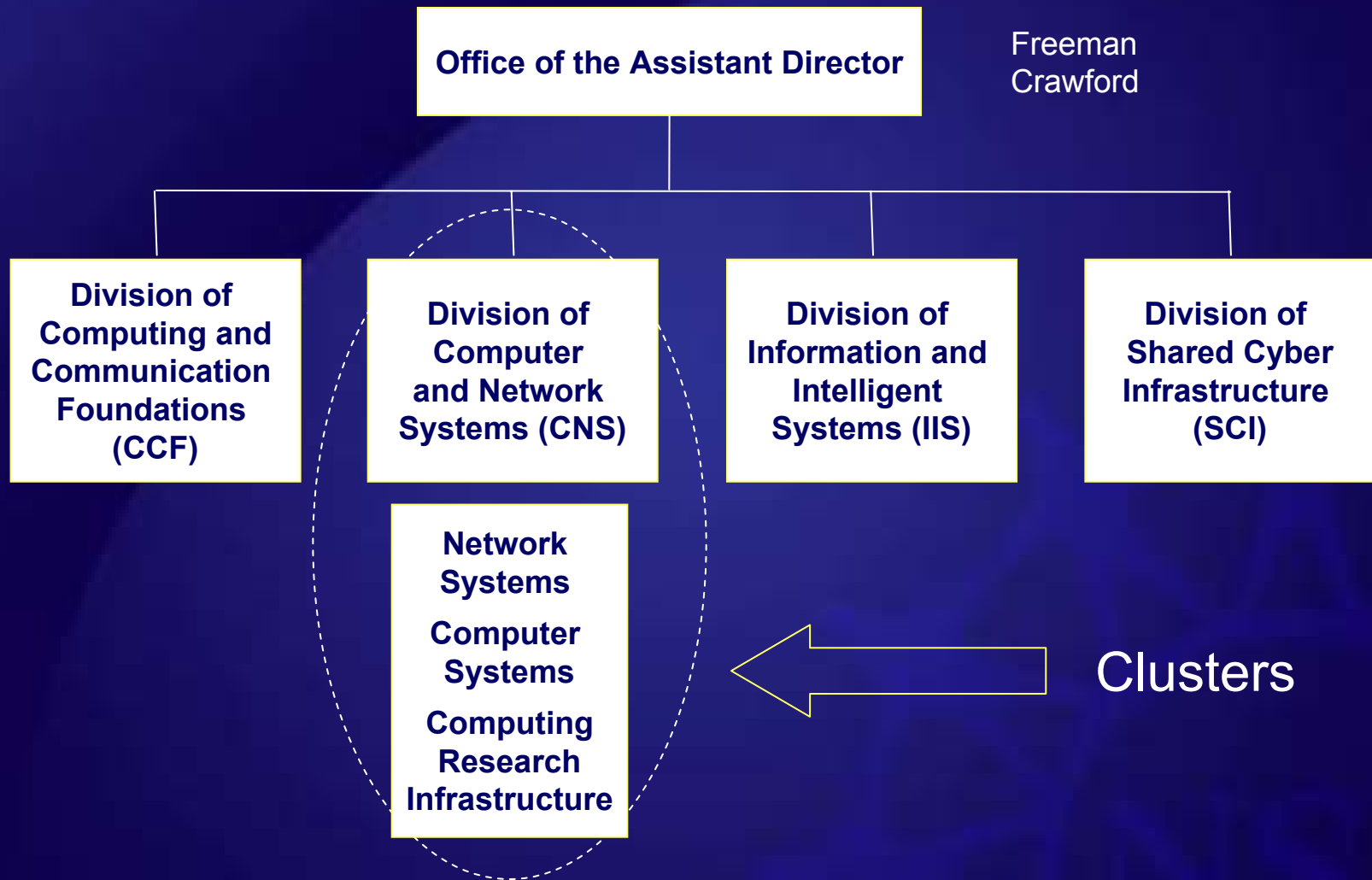
# CISE Reorganization Goals

- Realign divisions for coherence
- Cluster similar programs
  - Increase productivity and efficiency for investigators and program officers
  - Increase grant size and duration
  - Sharpen focus and increase agility
- Develop themes for cross-cutting initiatives
- Integrate education and research
- Broaden participation
- Build on success of ITR

# CISE Organization



# CISE Organization



# Network Systems Cluster

- People
  - Program Directors
    - Joe Evans, Admela Jukan, and Guru Parulkar
  - Others
    - Darleen Fisher, Ty Znati (part-time)
- Current activities
  - New **NeTS** program within the cluster
  - Networks Cluster Themes
    - Cyber Trust

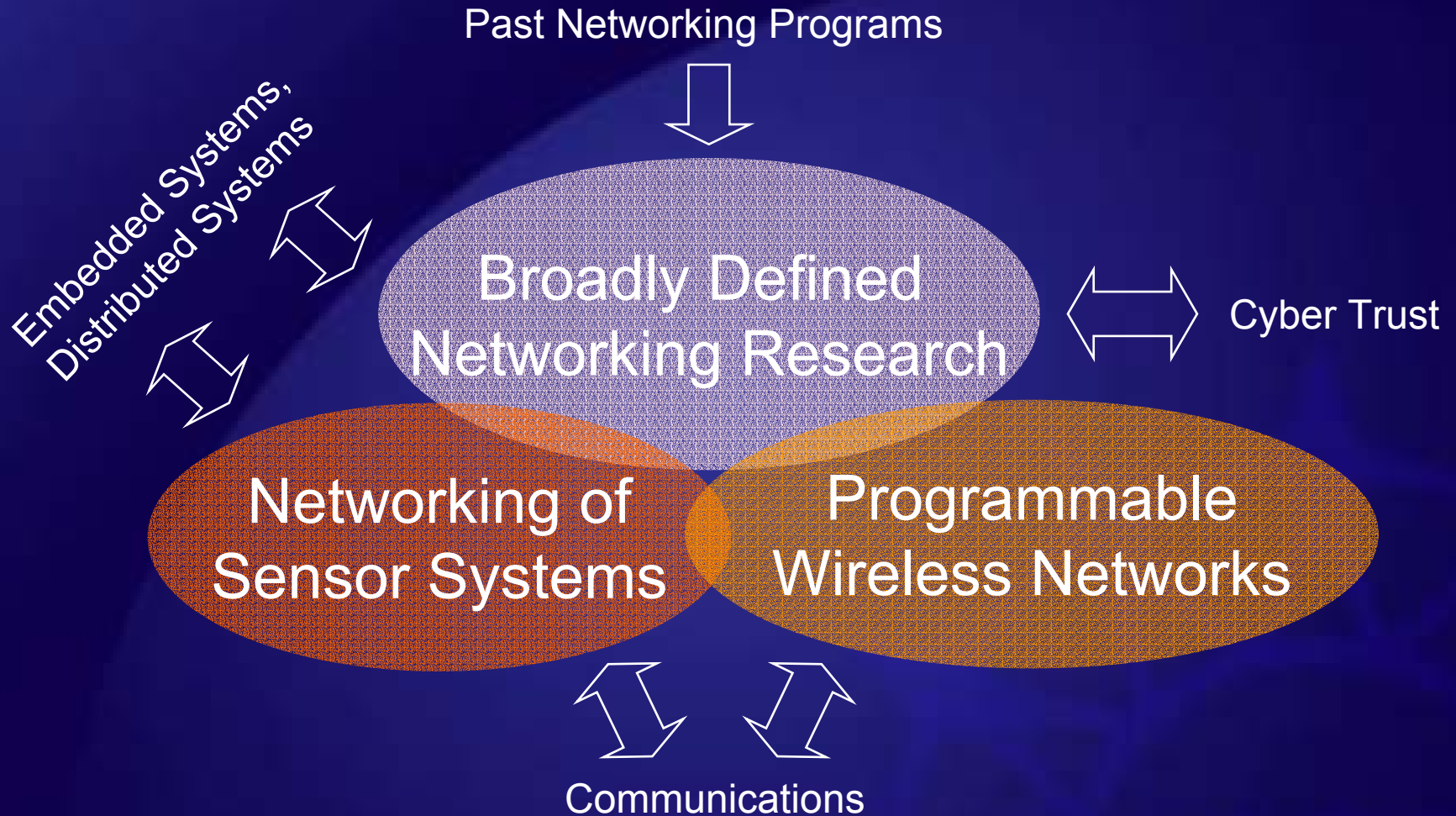
# NeTS Program



# NeTS Elements

- Three elements (this time)
  - Broadly Defined Networking Research
  - Focus Area 1: Programmable Wireless Networks
  - Focus Area 2: Networking of Sensor Systems
- A well-coordinated “realignment” of networking to
  - Sharpen focus and increase topical agility
  - Increase impact
  - Increase efficiency, e.g. grant size and duration
  - Improve service to investigator
  - Increase efficiency for program officers

# NeTS Program Elements

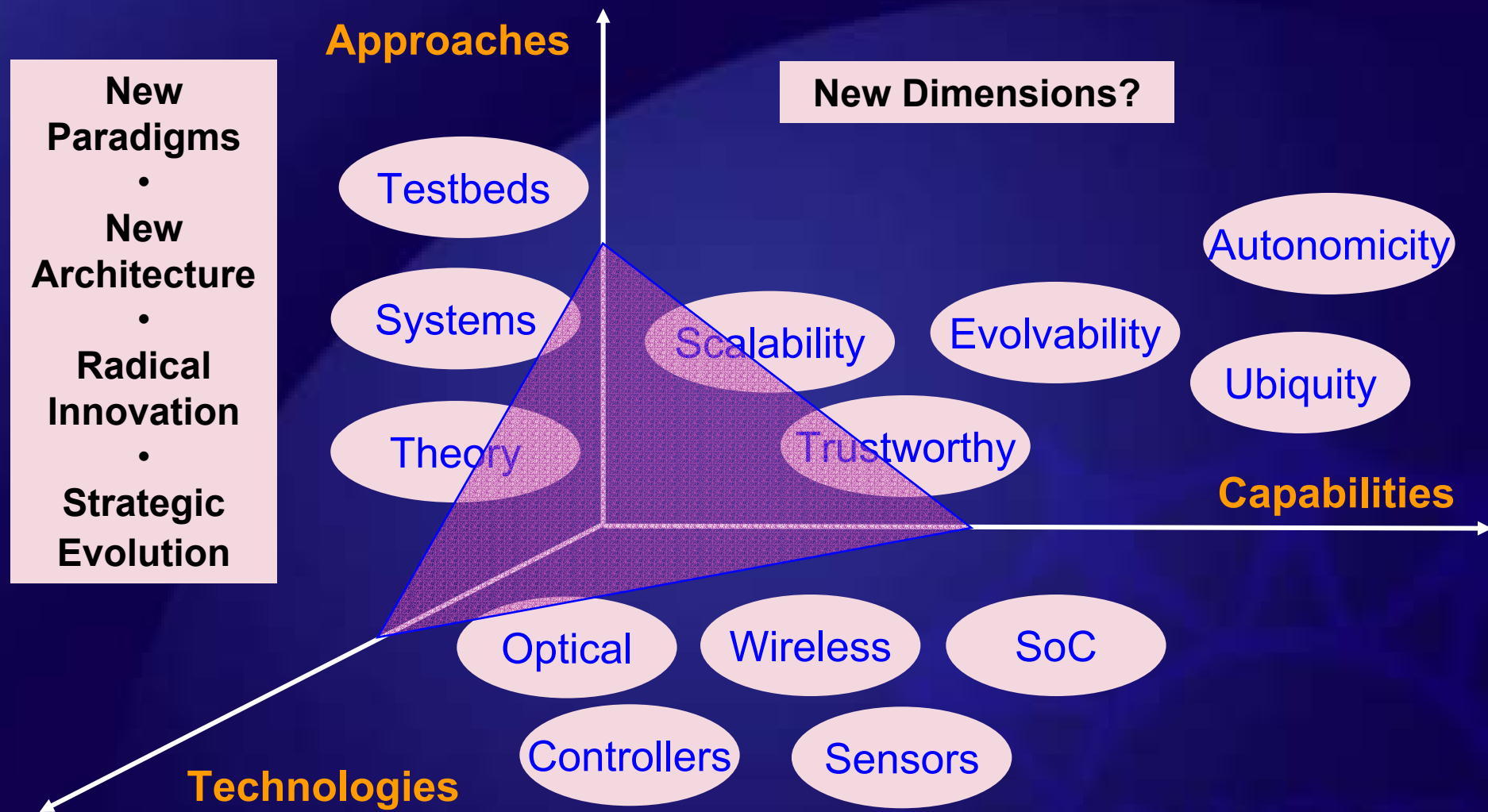


# **NeTS Broadly Defined Networking Research**

# Topics in Broadly Defined Area

- Network and Protocol Architectures
- Fundamental Understanding and Design
- Network Control and Management
- Innovative Networking Technologies
- Extensible Networks
- Strategic Research for the Internet

# Dimensions in NeTS

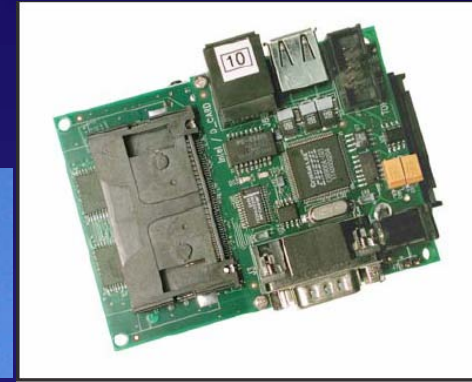
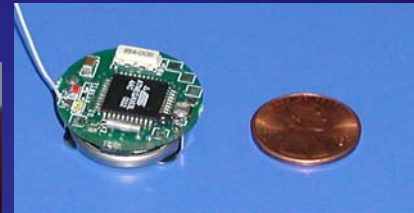
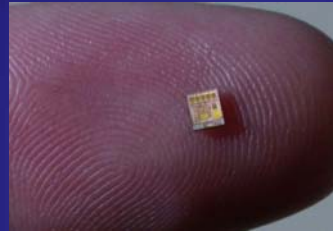


**NeTS Focus Area**

**Networking of Sensor Systems**

# Networking of Sensor Systems

## New Machines



## New Environments New Applications



## New Scale

**Billion to trillion devices!**

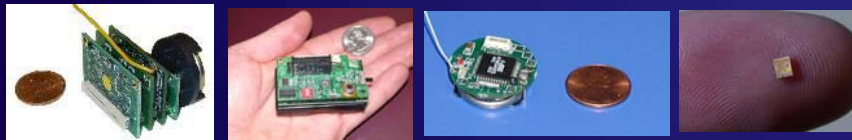
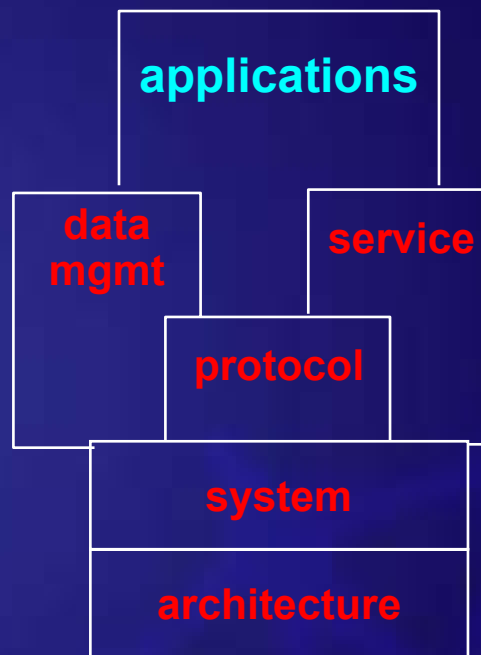


# The Technology Gap

Monitoring & Managing Spaces and Things



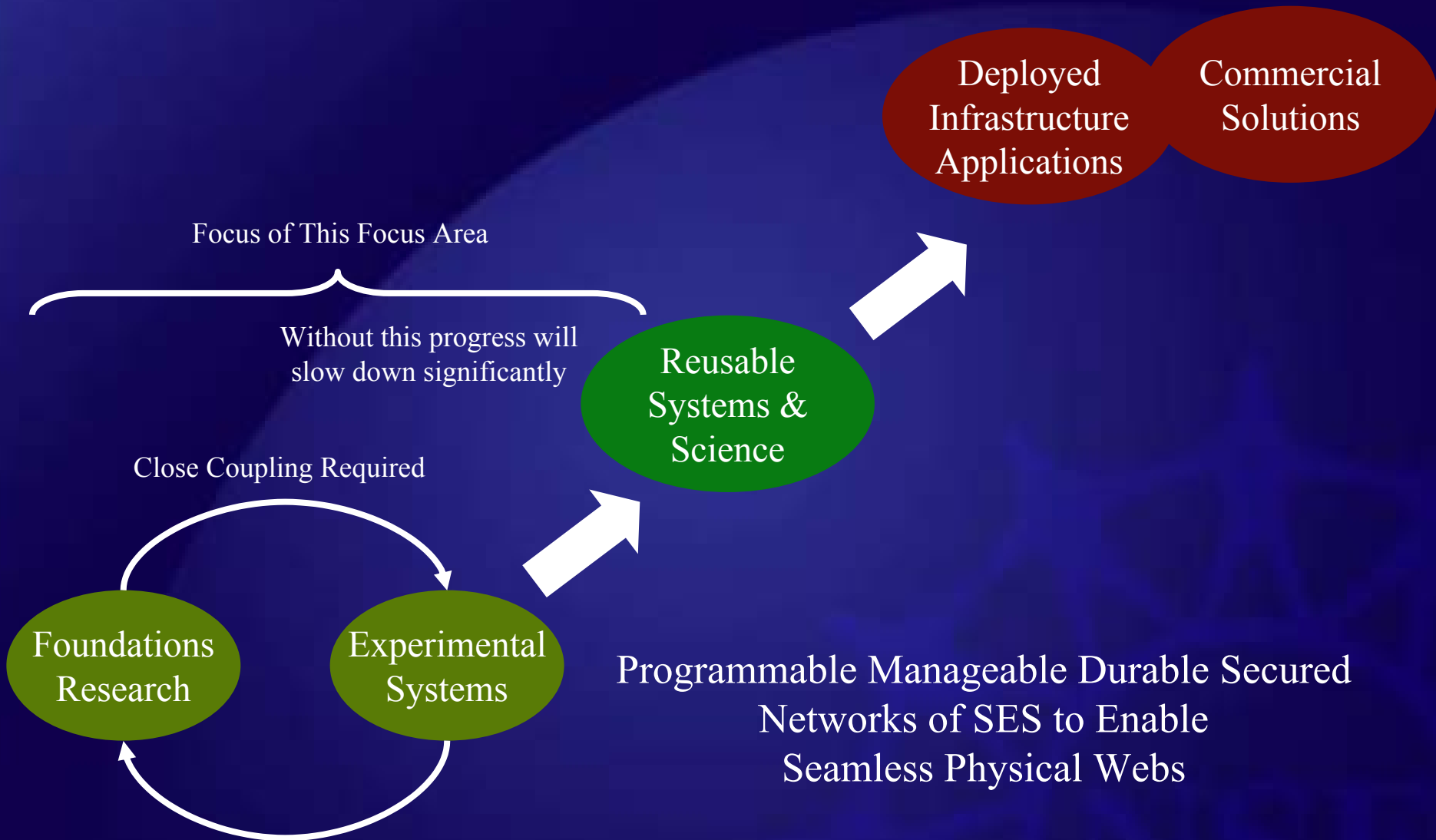
Networking of SES



**Miniature, low-power connections to the physical world**



# NoSS Approach



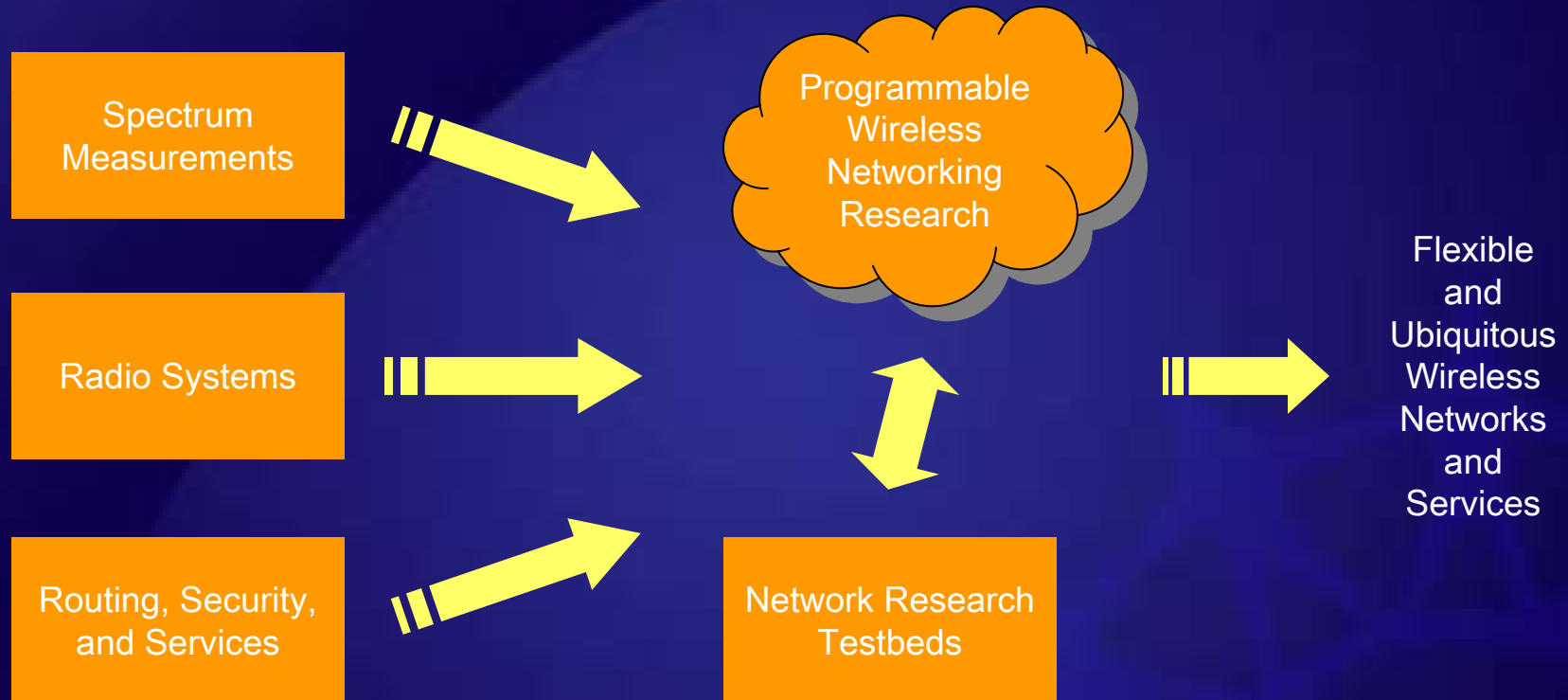
# Expected Results

- Foundations research
  - Theoretical, algorithms and systems
- Systems
  - Several platforms; OS and protocols stacks; networked programming environments
- Many local testbeds with applications
- Education and training
  - Graduate/undergraduate courses with experimental projects
  - Many graduate students with hands-on experience
- Identifiable distinct community
  - Members coming from sensors, embedded hardware, OS, networking, middleware, applications

**NeTS Focus Area**

**Programmable Wireless Networks**

# NSF Wireless Networking Efforts



# Programmable Wireless Networking Research Areas

- Dynamic spectrum management architectures and techniques
- Topology discovery and optimization, and network self-configuration
- Interaction between routing, topology, and administration/management
- Programmable radios for the community

**More On**

**Programmable Wireless Networks**

**A Bit Later...**

# NeTS Logistics

# Classes of Proposals

- Individual investigator and small group awards – up to three years and average about \$150,000 per investigator per year
- Large group awards – up to four years and request up to \$1,000,000 per year
- Facilities awards – up to three years and average about \$500,000 per year
- Workshops, planning grants, exploratory grants, etc. – contact Program Director



# Submitting Proposals

- Select and indicate the correct element
  - Networking Research = NR
  - Programmable Wireless Networking = ProWiN
  - Networking of Sensor Systems = NOSS
  - Note: we may still decide to move proposals to another program
- Contact the corresponding Program Director if you have any questions
- Check the submission deadline
- Only submit proposal once – we will take care of proposals that need to be considered by multiple areas or programs

# Special Considerations for NeTS

- Eligibility
  - An individual may appear as PI, Co-PI, Senior Personnel, or Consultant on no more than 2 (**Two**) proposals
- Choosing among opportunities
  - Broad Area will cover a wide range of research
  - Focus Areas will build large bases for each corresponding research focus and also enable cross-disciplinary research activities
- We will actively support novel educational activities in networking-related fields

# Help from the Community

- Send your best ideas to NSF
  - Consistent with focus & goals of the program
  - We want high risk / high reward proposals
- Suggest and encourage good panelists who can do justice to the proposals and our focus
- Volunteer to be a reviewer and panelist

# Contacts & Further Information

[www.cise.nsf.gov](http://www.cise.nsf.gov)

**Admela Jukan**  
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Broadly Defined  
Networking Research

Networking of  
Sensor Systems

Programmable  
Wireless Networks

[www.cise.nsf.gov/noss/](http://www.cise.nsf.gov/noss/)

**Guru Parulkar** ([gparulka@nsf.gov](mailto:gparulka@nsf.gov))

[www.cise.nsf.gov/prowin/](http://www.cise.nsf.gov/prowin/)

**Joseph Evans** ([jbevans@nsf.gov](mailto:jbevans@nsf.gov))

# NeTS Opportunities

- Now is a time of excitement for networks and networking systems
  - CISE reorganization has resulted in more sustained support of networking research
- Networking cluster is committed to
  - “Making a difference”
  - Serving research community and supporting visionary and far-reaching research

**And Now, More on  
Programmable Wireless Networking...**

# The NeTS Program