How to create an effective capabilities briefing

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Outline

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- Planning
- The Briefing
- How to create a capabilities briefing
- Example briefing
- Questions

Introduction

What is a capabilities briefing?

A brief presentation which outlines expertise, equipment, abilities and interests of an entity or organization.

Purpose

A capabilities briefing provides the presenter and the presenting organization an opportunity to make a case for benefiting prospective collaborators. They function to speak to the interests of prospective collaborators, and the presenter.

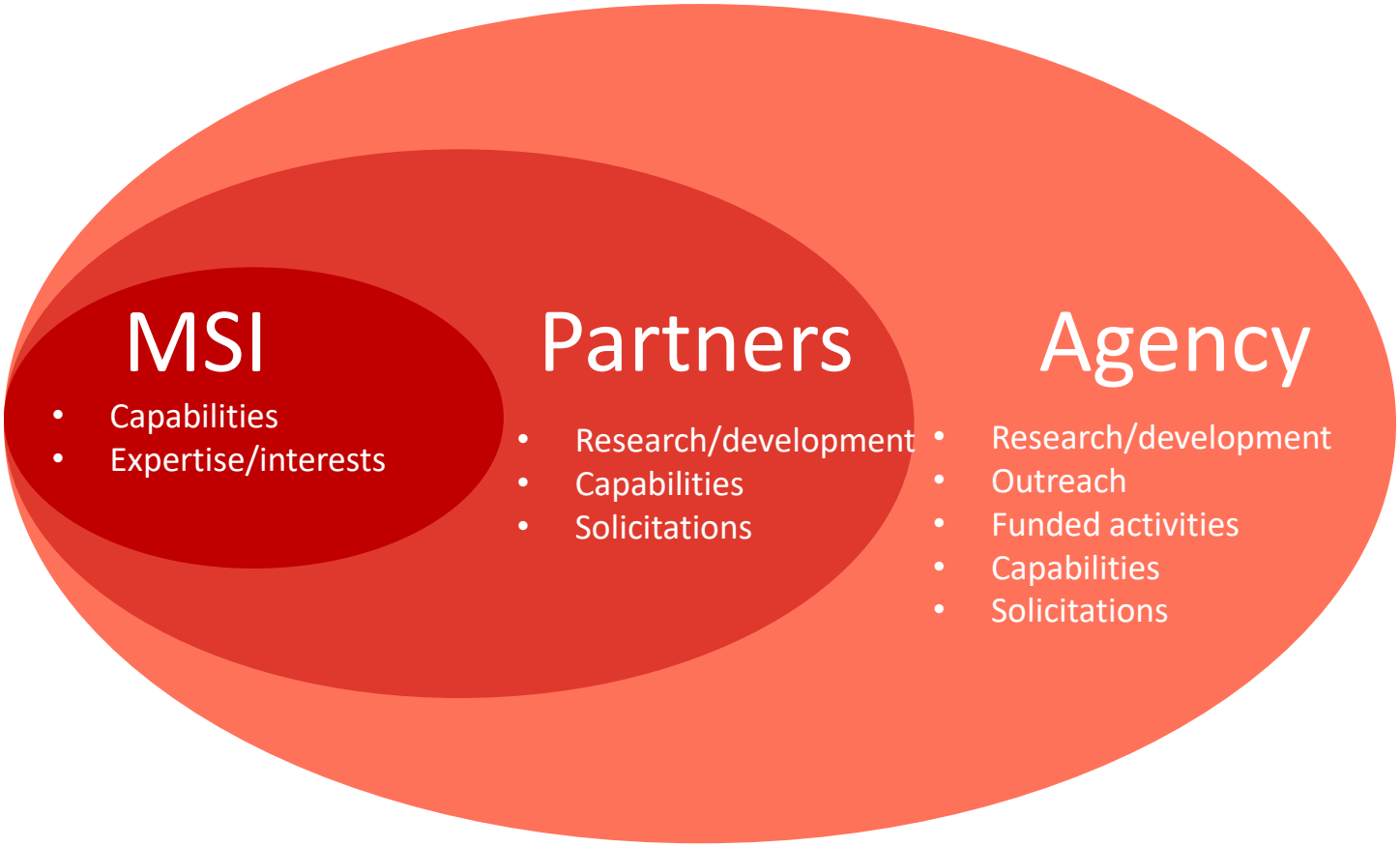
Who presents?

Researchers and organization leadership.

Planning

- **Prior to the capabilities briefing…**
  - Consult the forecast for the upcoming fiscal year.
  - Determine the interests of the prospective collaborators.
  - Contact leadership (typically MSI/Diversity University Program Management), and ask for clarification.
  - Consider the audience's background and expertise and tailor the briefing accordingly.
- **Capabilities and expertise**
  - Strategically select capabilities which supplement the capabilities of the prospective collaborators.
  - Consider related skill sets and past performance.
  - When lacking past performance in an area, discuss interests and similar experiences.

Planning


MSI
Capabilities
Expertise/interests
Partners
Research/development
Capabilities
Solicitations
Agency
Research/development
Outreach
Funded activities
Capabilities
Solicitations

The Briefing

- **General briefing**
  - Provides an overview of the organization's products, services and noteworthy equipment or techniques.
  - Typically broad.
  - Often on the order of 10 - 15 pages.

- **Individual Briefing**
  - These briefings speak to an individual's expertise, services, past performance and/or interests.
  - Typically less than 5 pages in total.
  - See the following example(s).

Technical Capabilities

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Core Competencies of AAMU-RISE

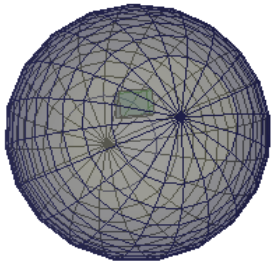
TECHNOLOGY DEVELOPMENT & TRANSFER:
Advanced and additive manufacturing, unmanned aircraft systems, Mach-5 wind tunnel, rating 1000 clean room, robotics, nanotechnology, microgravity research, renewable and green energy, sensors.

MATERIALS SCIENCE AND ENGINEERING:
Integrated circuit design and fabrication, crystal growth, large and small bandgap and piezoelectric materials, nonlinear optical materials.

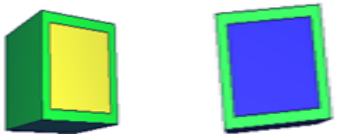
COMPUTER SCIENCE AND ANALYSIS:
Image and signal processing, real-time embedded systems, cyber security, neural networks, modeling and simulation in biometrics, computational electrodynamics, computational fluid dynamics, finite element analysis.

BIOLOGY AND AGRICULTURE:
Biotechnology and genetic engineering, biofuels, chemical sensors, environmental research, food microbiology, food biotechnology, nutritional biochemistry, food engineering.

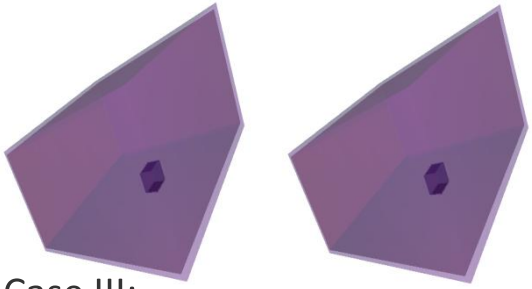
Modeling and Simulation



Case I: CZT block in a void.



Case II: CZT with Au contacts.



Case III: Addition of aluminum enclosure.

Case IV: Case III plus inclusions

MCNP and Geant4

Modeling radiation interactions and transport

- Uses: radiation damage, modeling detector response, effects of radiation exposure on systems (physical, biological, etc.).
- Can work in tandem with Garfield++ and Elmer to visualize electric fields/electron transport.

Stopping and Range of Ions in Matter (SRIM)

Simulates ion implantation and backscattering in different materials.

Matlab, Octave, Mathematica, etc.

Modeling and simulations of with examples such as: Iterative Non-equilibrium Green's functions, Finite Element Methods, numerical methods, solitons, etc.

Experimental Materials and Devices

Materials and Device Fabrication

Applications: radiation detector devices, electro-optics, nanotechnology, sensors

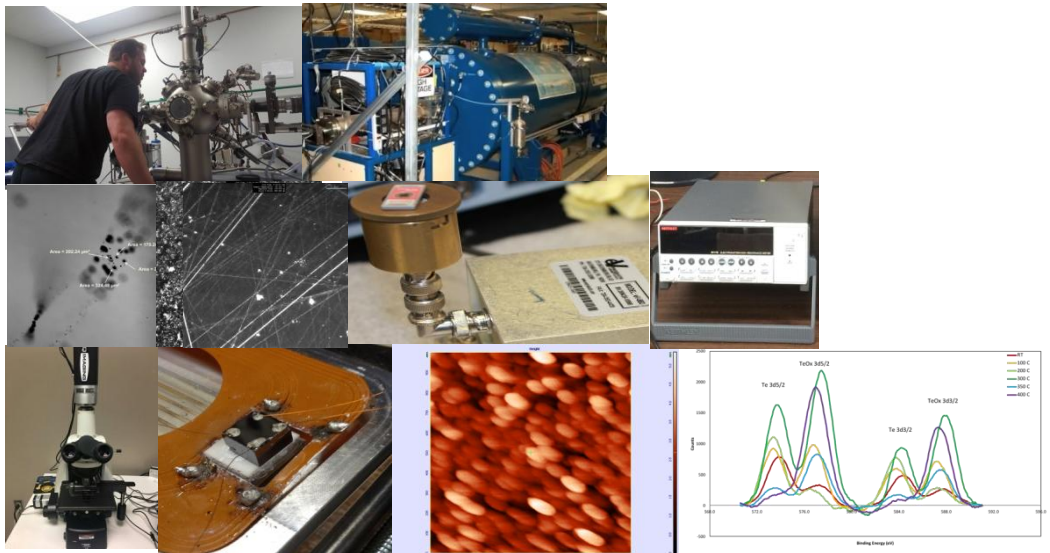
Sample and device preparation

- Molecular Beam Epitaxy (MBE)
- Magnetron sputtering
- Ion Beam Assisted Deposition (IBAD)
- Additive manufacturing
- Materials modification

Characterization, Testing and Analysis

Chemical composition, electrical properties, radiation, extreme environments.

- Spectroscopy (XPS, AES, Raman, UV-Vis-NIR)
- IV-CV testing
- Van der Pauw
- High temperature testing
- Microscopy (IR, Optical, SPM)



Questions