

# Future of Nuclear Science and Engineering Education

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**Andy Klein**

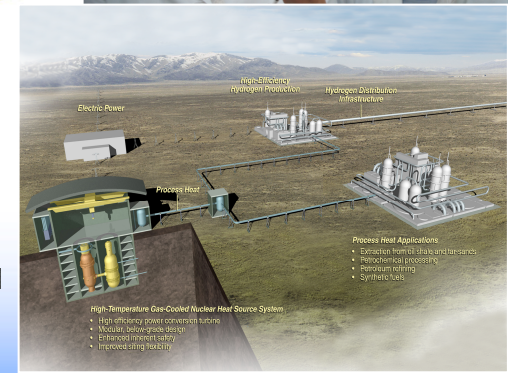
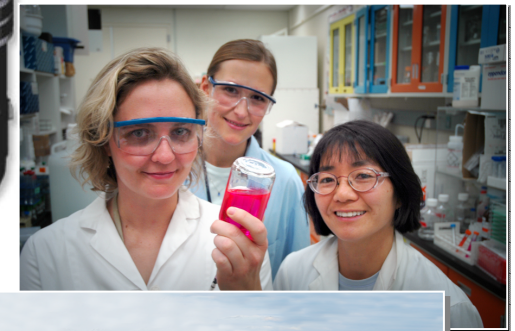
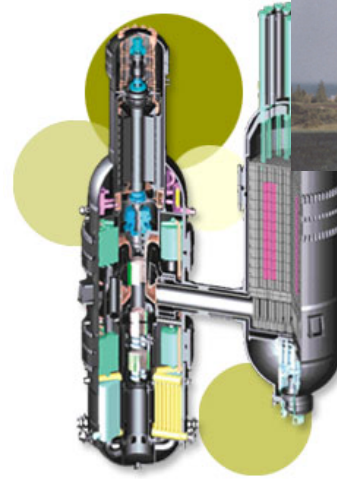
**Director of Educational Partnerships**

Presented at the Fuel Cycle Information Exchange,  
Rockville, MD

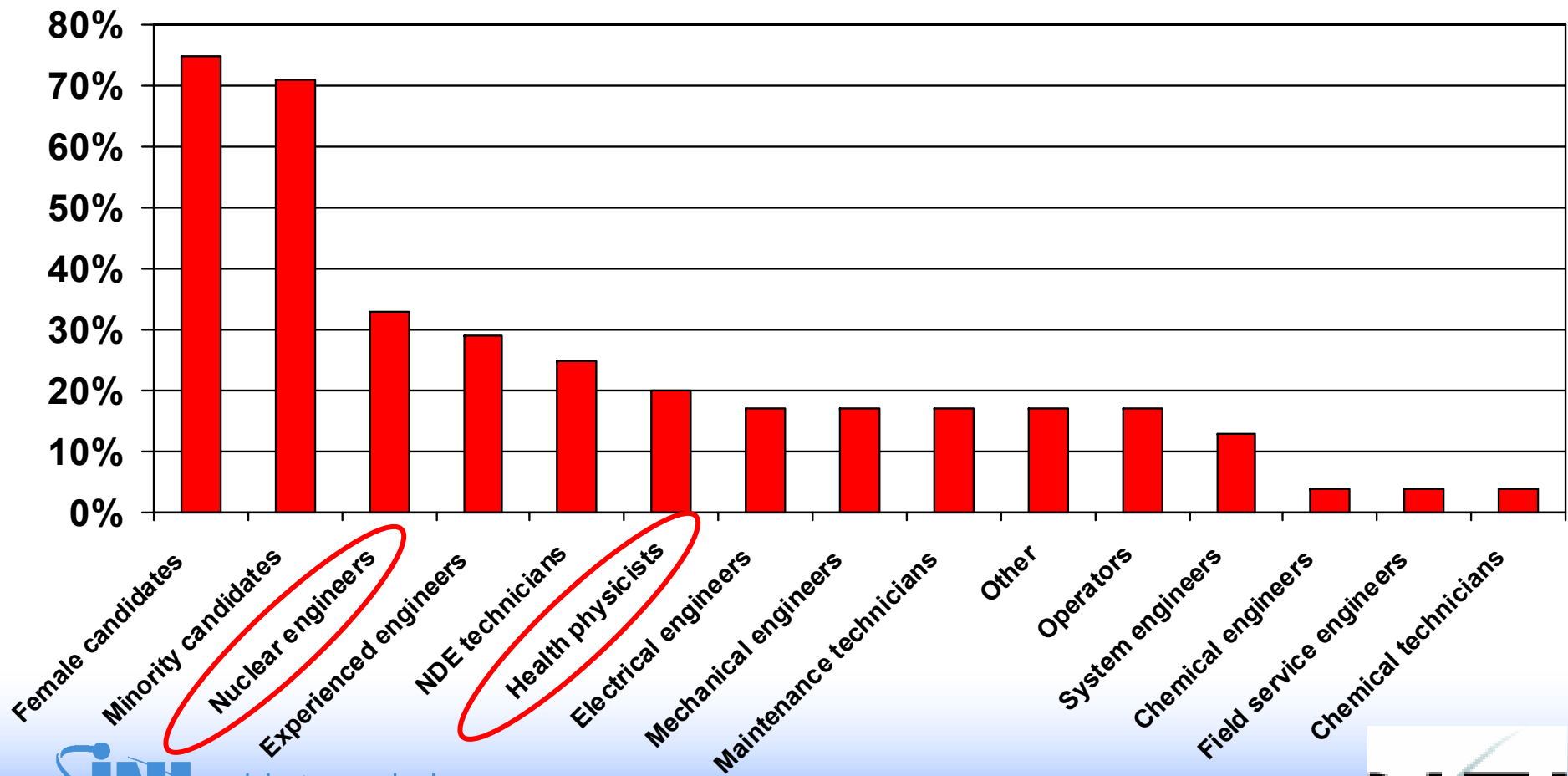
June 13, 2007

# The Nuclear Renaissance has begun & the signs are promising and exciting ...

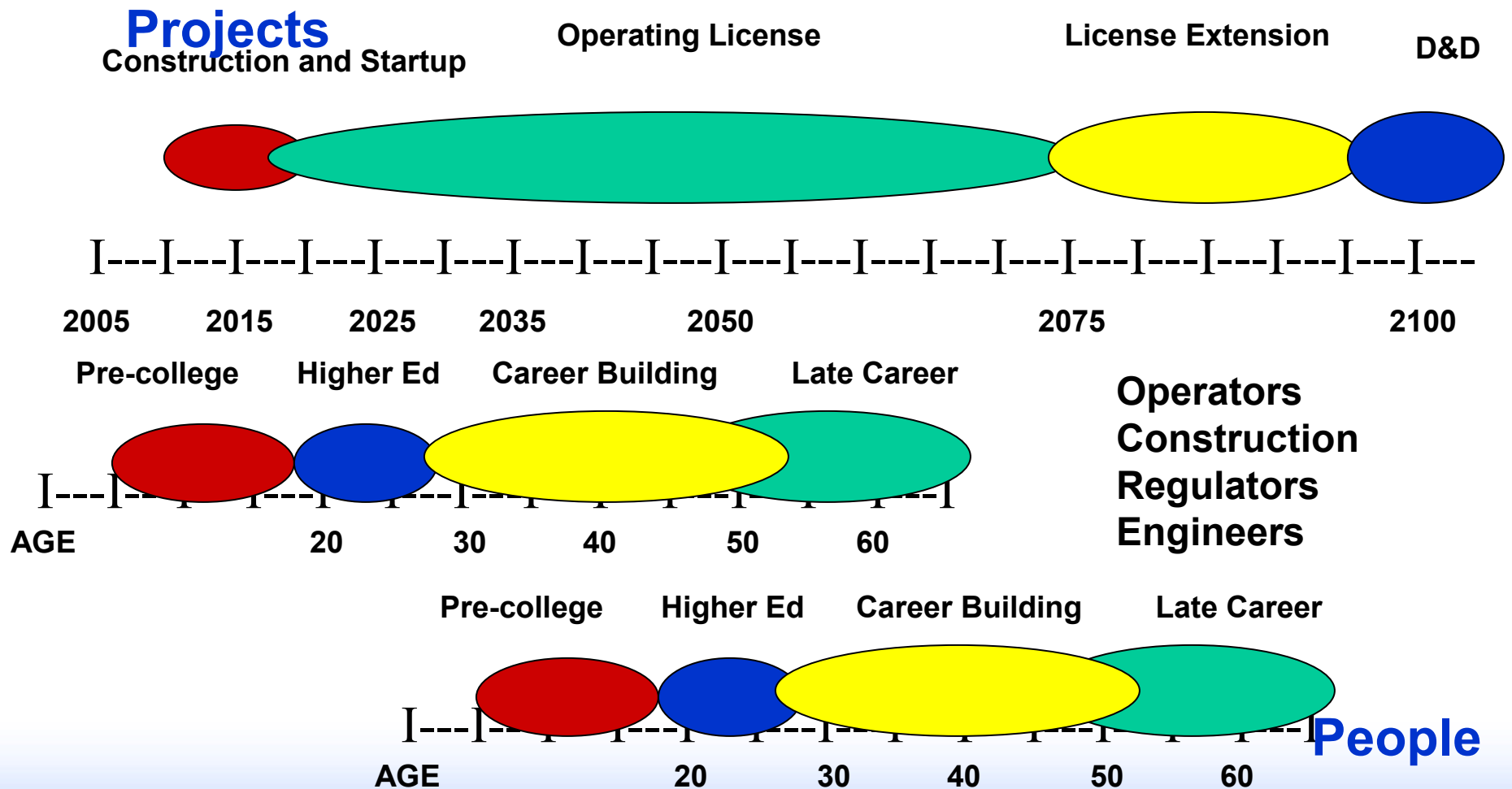
- Increased public understanding & acceptance of nuclear energy's role
- License extensions
- Enabling new reactor construction
- Exploring advanced reactor concepts and fuel cycles
- Growing enrollments in nuclear science and engineering at universities



# 2005 NEI Survey Findings: Top Recruiting Challenges



# Generation III+ Reactors - The First Ones

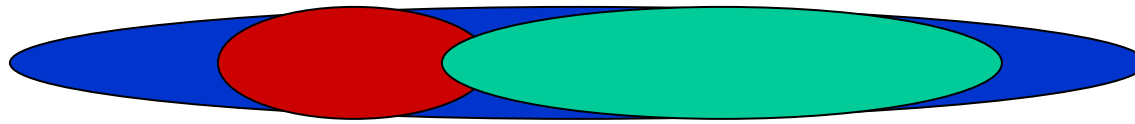




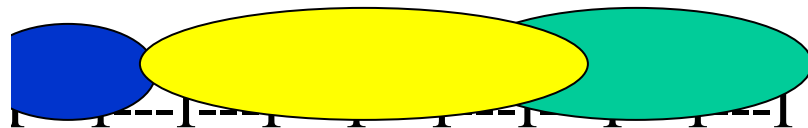
# GNEP - R&D and Early Facilities

## Projects

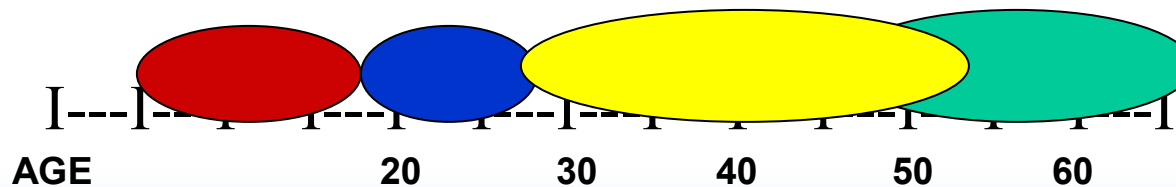
R&D      Construction      Operating Facilities



Higher Ed      Career Building      Late Career

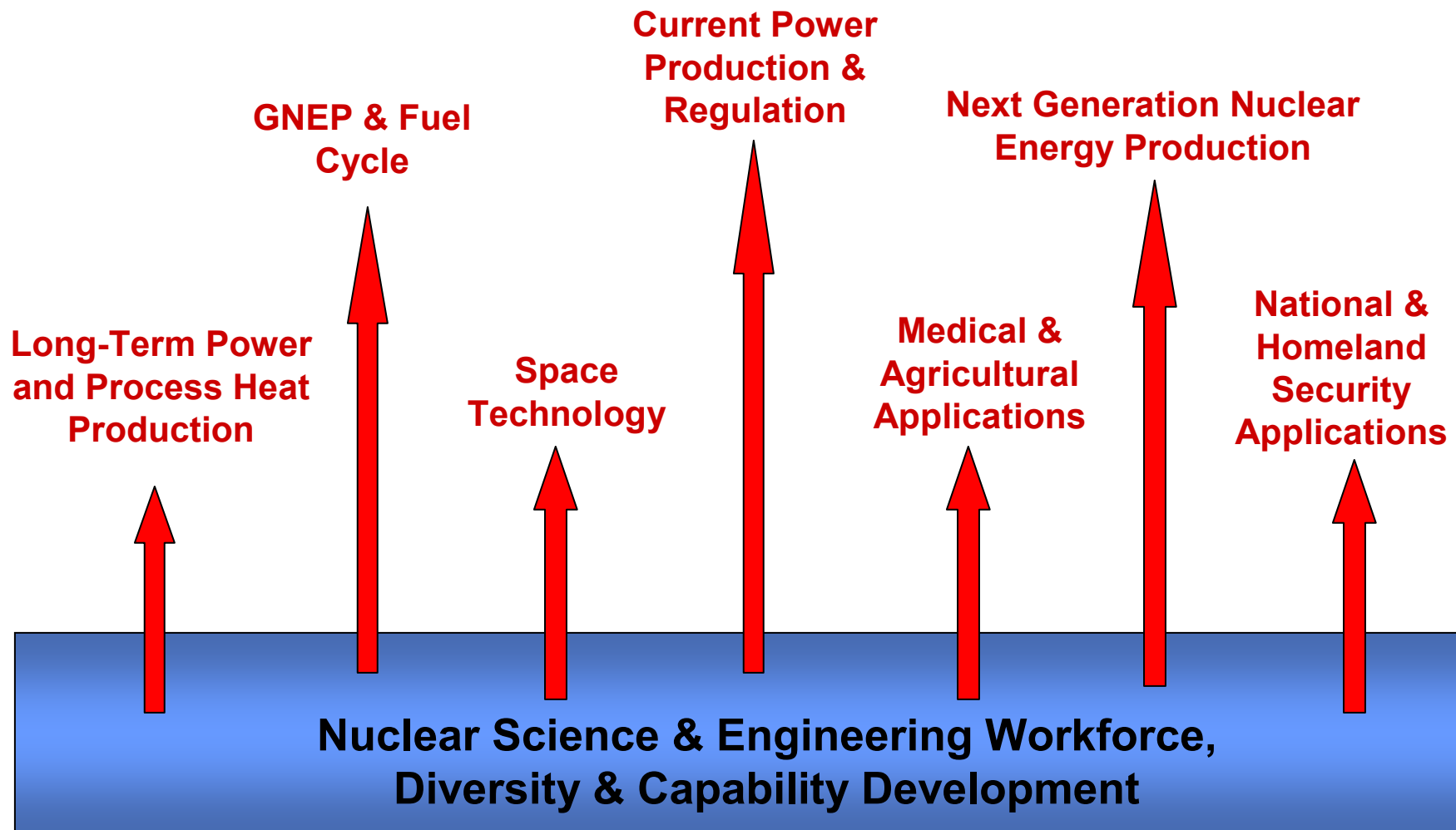


Pre-college      Higher Ed      Career Building      Late Career

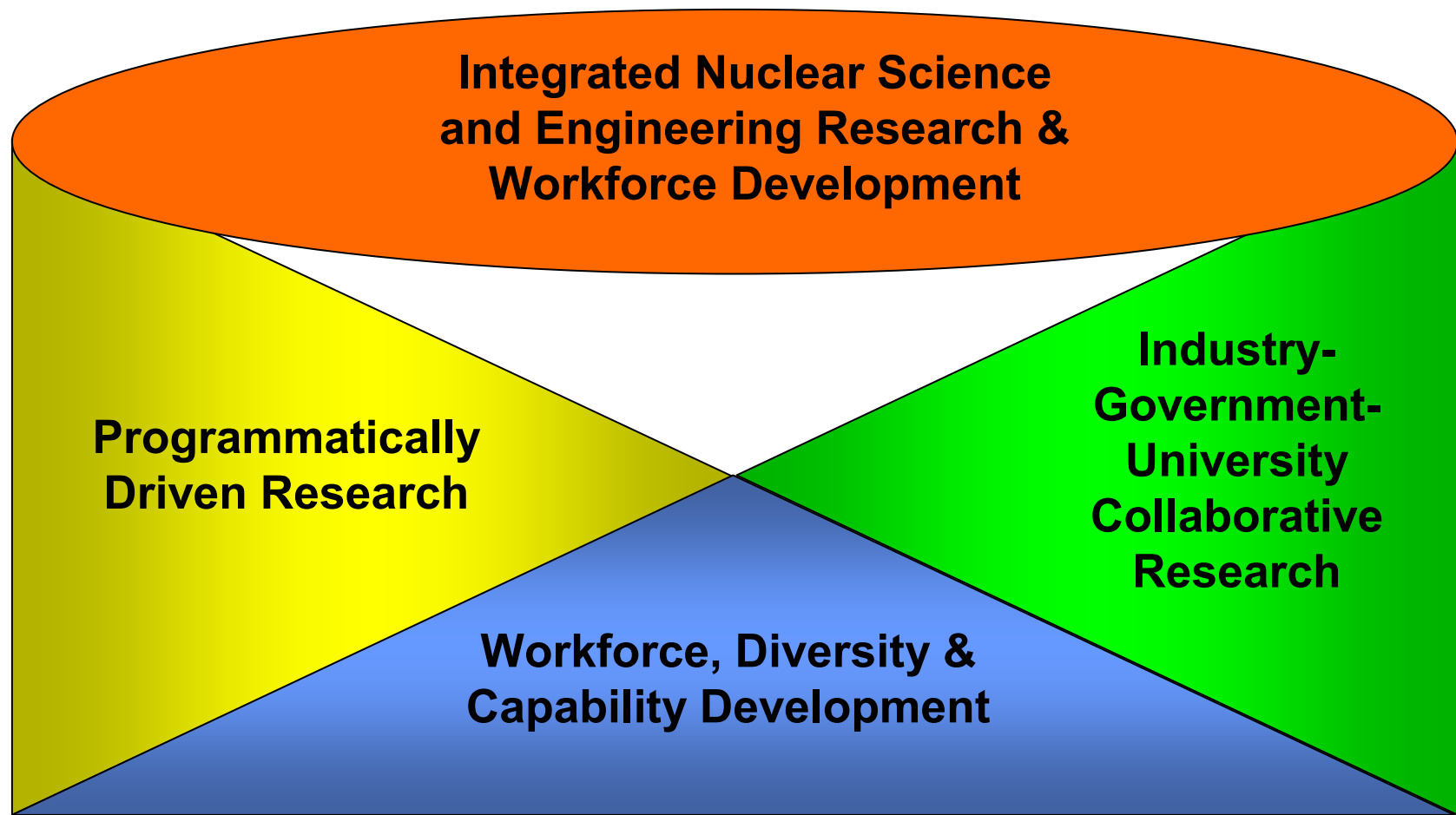


Researchers  
Operators  
Builders  
Scientists

People



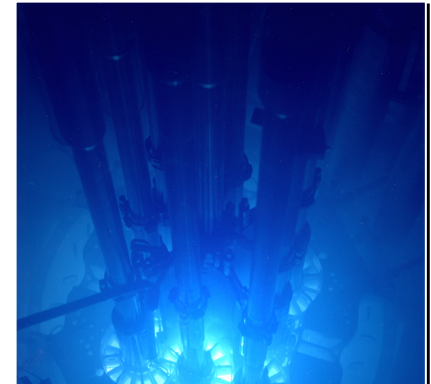
**Competing, or Cooperating Interests?**



**Need for an Integrated Nuclear Science & Engineering  
Research & Workforce Development Program**

# Elements of a Workforce, Diversity & Capability Development Pipeline Program

- **Pre-college Education**
  - Instructional Material & Curricula
  - National NS&E Teacher Resource Center
- **Informal and Public Education**
  - Science Centers & Museums
  - Traveling Exhibits and Demonstrations
- **University Education & Research**
  - Recruiting – Scholarships, Fellowships, Research Assistants & Diversity
  - Undergraduate – Educational Materials
  - MS & PhD – Research, Research & Research
  - Capabilities and Infrastructure – Unique Facilities & Equipment



# INL has a Central Role in Revitalizing Nuclear Science and Engineering Education and Training

**Integral part of BEA proposal, contract, and critical success attribute**

**Create a Hub-Node network with five national and three Idaho universities**

**Increased university engagement INL research and free flow of researchers**

**University research and education programs aligned with INL mission**

**Build Center for Advanced Energy Studies (CAES) by 2008**

**Build INL role in training nuclear workforce**

**Catalyze modern educational materials**

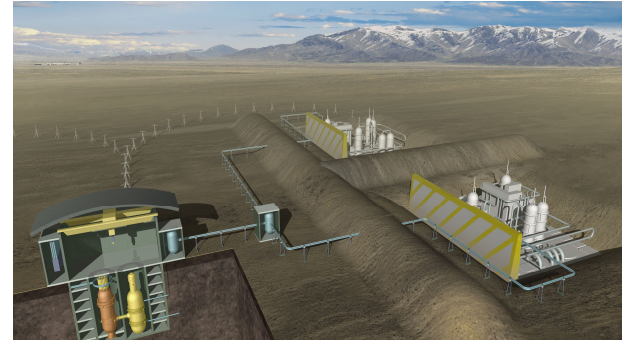
**National University Consortium**



**Idaho University Consortium**



# Future of NS&E Education



- Indeed **bright**, but
- We will need **many, many people** with diverse backgrounds and interests
- We must have a long-term, sustainable plan on how and **where these people will come from** and how we are going to recruit & retain them
- We must have a continuous, deep and full **pipe-line** of highly educated and trained people
- We must sustain, and financially support, the **educational and training infrastructure**