

Next Generation Nuclear Plant Expression of Interest

Information Meeting

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June 25, 2004



Presentation Outline

- ◆ **Meeting Basics**
- ◆ **Cooperative Agreement and the Role of the Project Integrator**
- ◆ **Major Near-Term Project Integrator Activities**
- ◆ **Next Generation Nuclear Plant (NGNP) Technology**
- ◆ **Role of Idaho National Laboratory (INL)**
- ◆ **Next Steps**



Purpose of Meeting

- ◆ **To obtain industry and stakeholder input to develop information and assist DOE's acquisition executive in determination of mission need and acquisition strategy for the Next Generation Nuclear Plant**
- ◆ **To promote full and complete understanding of the Department's conceptual strategy for the development and demonstration of the Next Generation Nuclear Plant**



Conduct of Meeting

- ◆ Oral comments/suggestions are invited during the presentation, and may be submitted in writing after the meeting
- ◆ Please write your questions on the provided cards; turn in your cards at the end of the meeting
- ◆ All questions will be answered in writing and posted on www.nuclear.gov and on www.id.doe.gov



Why A Cooperative Agreement?

- ◆ **DOE is not acquiring a facility for its own use; rather, DOE would provide financial assistance to accomplish a public purpose**
- ◆ **A cooperative agreement reflects the Department's desire for a substantial partnership with industry – with industry in a leadership role**
- ◆ **A cooperative agreement is flexible; it will evolve as the project evolves**
- ◆ **The proposed cooperative agreement:**
 - Provides for key decision points and off ramps
 - Allows for a private sector-driven approach with long-term commercial benefits
 - Establishes overall cost share requirements

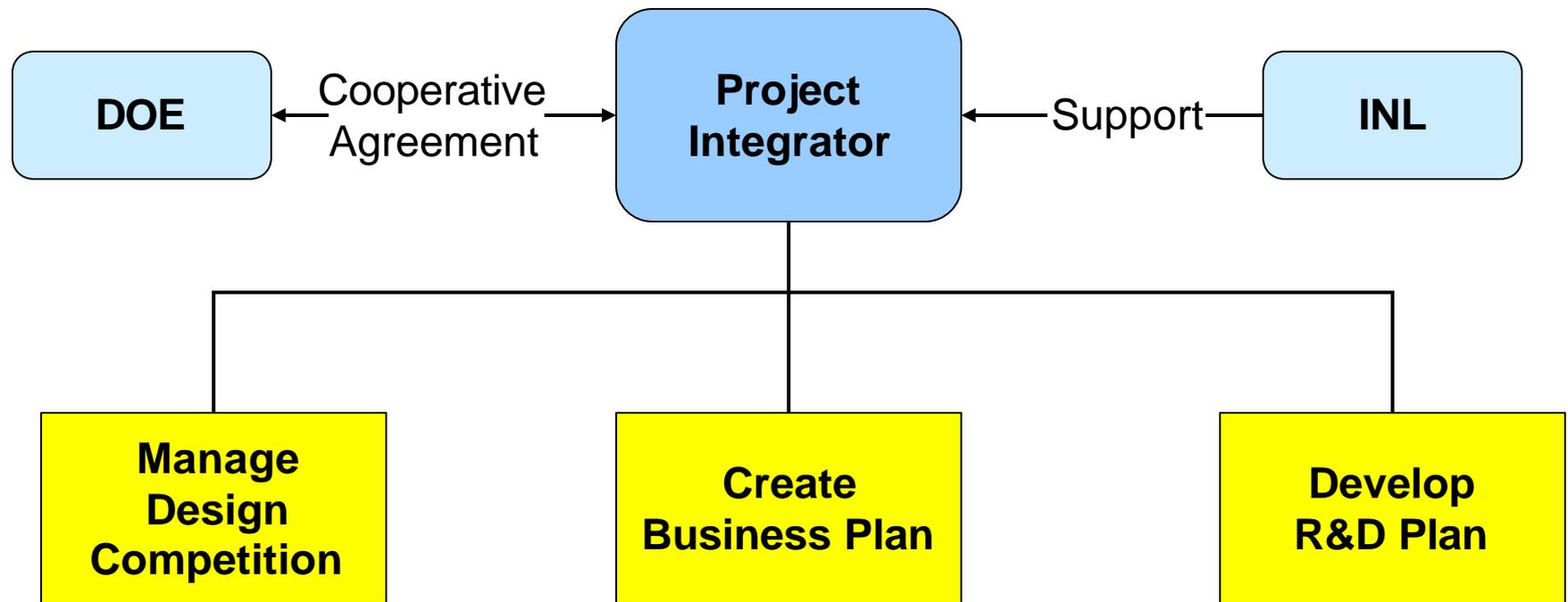


What Is The Project Integrator?

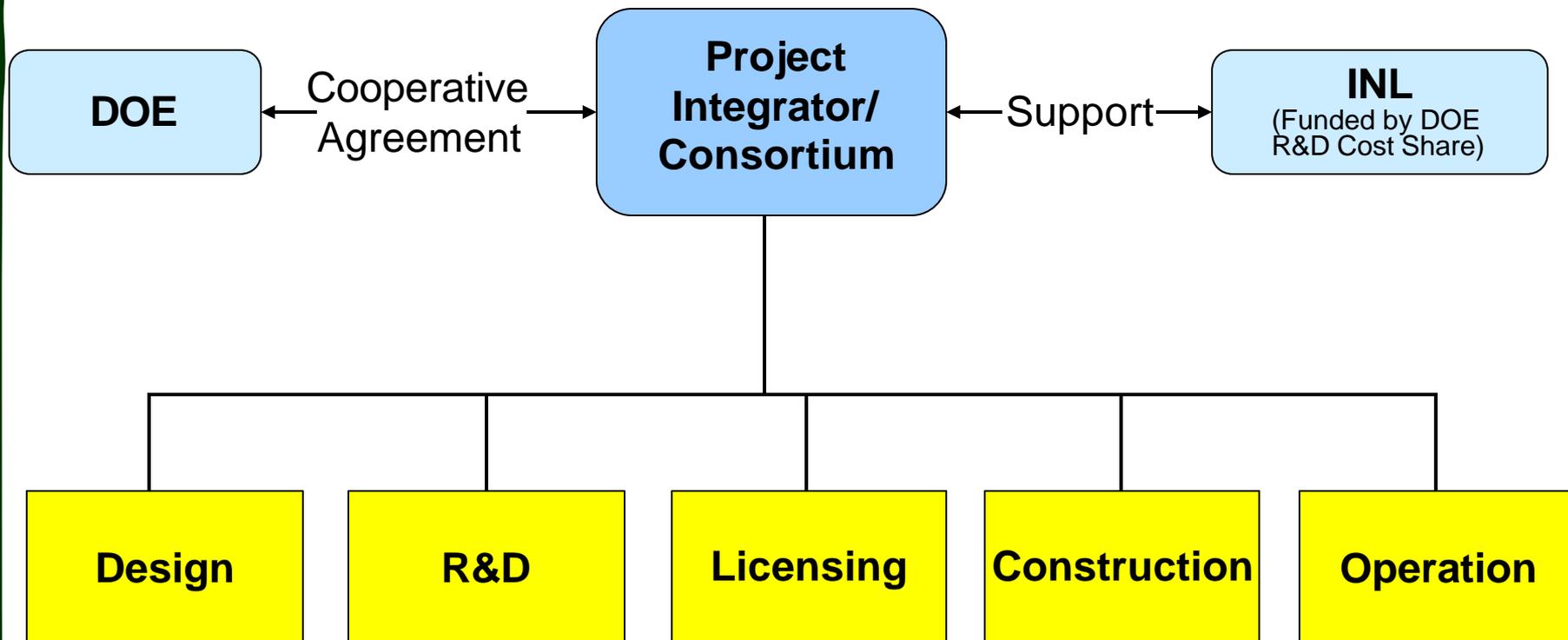
- ◆ **A U.S. Company**
- ◆ **Independent of financial or contractual ties to NGNP technology candidates**
- ◆ **Experienced in projects (especially nuclear projects) of similar size and complexity**
- ◆ **The Project Integrator will be responsible for:**
 - Implementing the NGNP Project
 - Forming the NGNP consortium
 - Directing all aspects of the design, development, construction and demonstration of the NGNP



How Does The Project Integrator Operate? *Before Business Plan Approval*



How Does The Project Integrator Operate? *After Business Plan Approval*



Who Can Be In The Consortium

- ◆ **Domestic and Foreign Companies, both public and private**
- ◆ **Foreign Government Research Institutes**
- ◆ **Domestic and Foreign Universities**



Major Project Integrator Activities (Near Term)



- ◆ **Manage Design Competition**
- ◆ **Create Business Plan**
- ◆ **Develop R&D Plan**



Major Project Integrator Activities (Near Term)

Manage Design Competition

- ◆ **Conduct a design competition among technology vendors and select two designs to be developed for further consideration**
- ◆ **Conduct a detailed technical and economic evaluation of competing reactor concepts**
- ◆ **Recommend a single integrated technical, cost and schedule baseline**
- ◆ **Complete Pre-Conceptual Design**



Major Project Integrator Activities (Near Term)

Create Business Plan

Complete a Business Plan that identifies:

- ◆ **Project management/execution plan**
- ◆ **Members of the consortium assembled to design, license, build and operate the NGNP**
- ◆ **Consortium arrangements**
- ◆ **Plan to interact with the Idaho National Laboratory**
- ◆ **Distribution of intellectual property rights**
- ◆ **Conceptual project cost and schedule estimate**



Major Project Integrator Activities (Near Term)

Develop Research and Development Plan

- ◆ **Based on the selected design, determine research and development requirements**
- ◆ **Working with the Idaho National Laboratory, establish a comprehensive R&D plan for meeting all design data needs**
- ◆ **Plan should target completion of NGNP startup before 2020**



Major Project Integrator/Consortium Activities

After Business Plan Approval

- ◆ **Design, develop, license, and construct the NGNP**
- ◆ **Own and operate the NGNP – DOE approach:**
 - Consortium initially would own the facility
 - Consortium would operate the facility under NRC license
 - DOE willing to accept ownership for the long term



DOE Role in Cooperative Agreement

◆ Decision Coordination and Approval

- Approve Business Plan
- Approve Consortium
- Approve Design Selection
- Approval of Initiation of Construction

◆ Project Management Monitoring

- Project Baseline
- Key Project Milestones
- Project Funding



NGNP Technology

Goals

- ◆ **Focus is on economic performance**
- ◆ **Ability to produce both electricity and hydrogen gas**

Type of Reactor

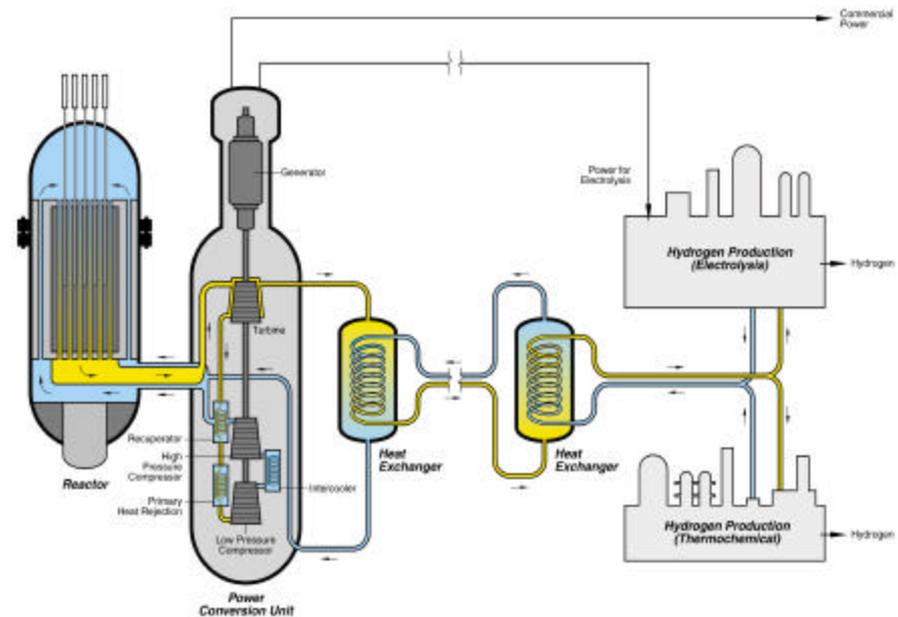
- ◆ **Current DOE R&D based on a very high temperature gas reactor concept as described in the Generation IV Roadmap**
- ◆ **DOE does not specify the type of reactor, granting maximum flexibility to the Project Integrator**



NGNP Base Concept

Attributes

- ◆ Helium coolant 1000°C outlet temp
- ◆ Modular 300-600 MWTh
- ◆ Prismatic or pebble bed core
- ◆ TRISO particle fuel
- ◆ Attractive safety aspects
- ◆ Helium Brayton cycle conversion with high efficiency
- ◆ Clean hydrogen production



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Role of the Idaho National Laboratory

- ◆ **INL is the Department's lead laboratory for nuclear energy technology development**
- ◆ **INL will play a central role in supporting the Project Integrator in technical and R&D areas**
- ◆ **INL-led R&D will be a major part of DOE's cost share**
- ◆ **INL will serve as coordinator of other DOE lab support**



Next Steps

- ◆ DOE must determine mission need and approve acquisition strategy
- ◆ DOE issues program announcement and offer of financial assistance
- ◆ Selection of Integrator
- ◆ Establish cooperative agreement
- ◆ Selection of technology
- ◆ R&D and Business Plans submitted by Project Integrator

