THOUGHTS ON "STRUCTURED METHODOLOGY"
FOR TPA TECHNOLOGY

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A "STRUCTURED" METHODOLOGY/APPROACH WILL BE USED FOR PLANNING TECHNOLOGY

INCENTIVES

• TO ENCOURAGE CREATIVE THINKING ABOUT VARIOUS R&D PATHWAYS (ALTERNATIVES) TO ACCOMPLISH OBJECTIVES

• TO ENCOURAGE UNCOVERING AND UNDERSTANDING KEY ASSUMPTIONS, DECISION POINTS AND LIKELY OUTCOME (CONSEQUENCES) OF VARIOUS ALTERNATIVES

• TO PROVIDE A "COMMON SCALE" FOR COMPARING:

  - VARIOUS ALTERNATIVES

  - RELATIVE "WORTH" OF MAJOR FACILITIES, EXPERIMENTS (FOR EACH COMPONENT, AMONG DIFFERENT COMPONENTS?)
THE "STRUCTURED" PLANNING PROCESS SHOULD POSSESS CERTAIN DESIRABLE CHARACTERISTICS:

- **Systemmatic and logical**
- **Defensible**
- **Explainable**
- **Quantifies the value of program elements vs. objectives**
- **Quantifies subjective judgments (e.g., cost, time, technical uncertainty)**
- **Facilitates creation of consensus**
- **Allows for changes in policy and new innovations**
WHAT METHOD?

- No ideal method exists

- We need to evolve a method

- It is very desirable to have the same methodology for all subsystems
  - This may be difficult to achieve
  - Should we allow different methods for different subsystems?
  - What is most important is that the "decision method" for each component be clear and defensible.
SUGGESTED EXAMPLE

METHOD A

- A method is being evolved and tested based on:

a) "FINESSE"-type process for developing alternative pathways

b) "Analytic - Decision Making" process for comparing alternative pathways

- The method requires:

  - Substantial information (effort)
  - Difficult part: Developing alternative pathways
  - Being clear about the specifics of the decision problem (What is it one is trying to decide on?)
FINESSE PROCESS For Experiment Planning

- Characterize Issues
  - Quantify Experimental Needs
    - Evaluate & Define Facilities
      - Existing
      - New
    - Develop, Compare Pathways
  - Technical Plan

Experience from Other Technologies
Programmatic Guidance

conceptual designs
GENERAL PROCEDURE OF
"DECISION ANALYSIS" APPROACH

1. Define and structure the decision problem.

2. Specify objectives and attributes:
   a. Overall objectives from MFPP;
   b. Develop measurable (sub)objectives for each technology component;
   c. Develop attributes (evaluation scales).

3. Determine preferences (values) of decision makers.

4. Generate alternatives.

5. Assess the possible consequences of each alternative (degree to which alternatives meet objectives).

6. Evaluate and compare alternatives (based on degree of meeting objectives and preferences for objectives).
PRESENTATIONS AND DISCUSSIONS

Peerenboom (15 m)  Key Elements of Analytic Decision Making

Tillack (20 m)  Detailed and Complete Example (focus on method, do not argue specific numbers for now)

Berwald (20 m)  Generalization of Methodology

Group Discussion (30 m)

Group Recommendation (30 m)