

# Participatory Design Methods for C2 Systems

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**Dr. Janet E. Miller**  
**Cognitive Systems Engineer**  
**Human Effectiveness Directorate**  
**Air Force Research Laboratory**



# Framework



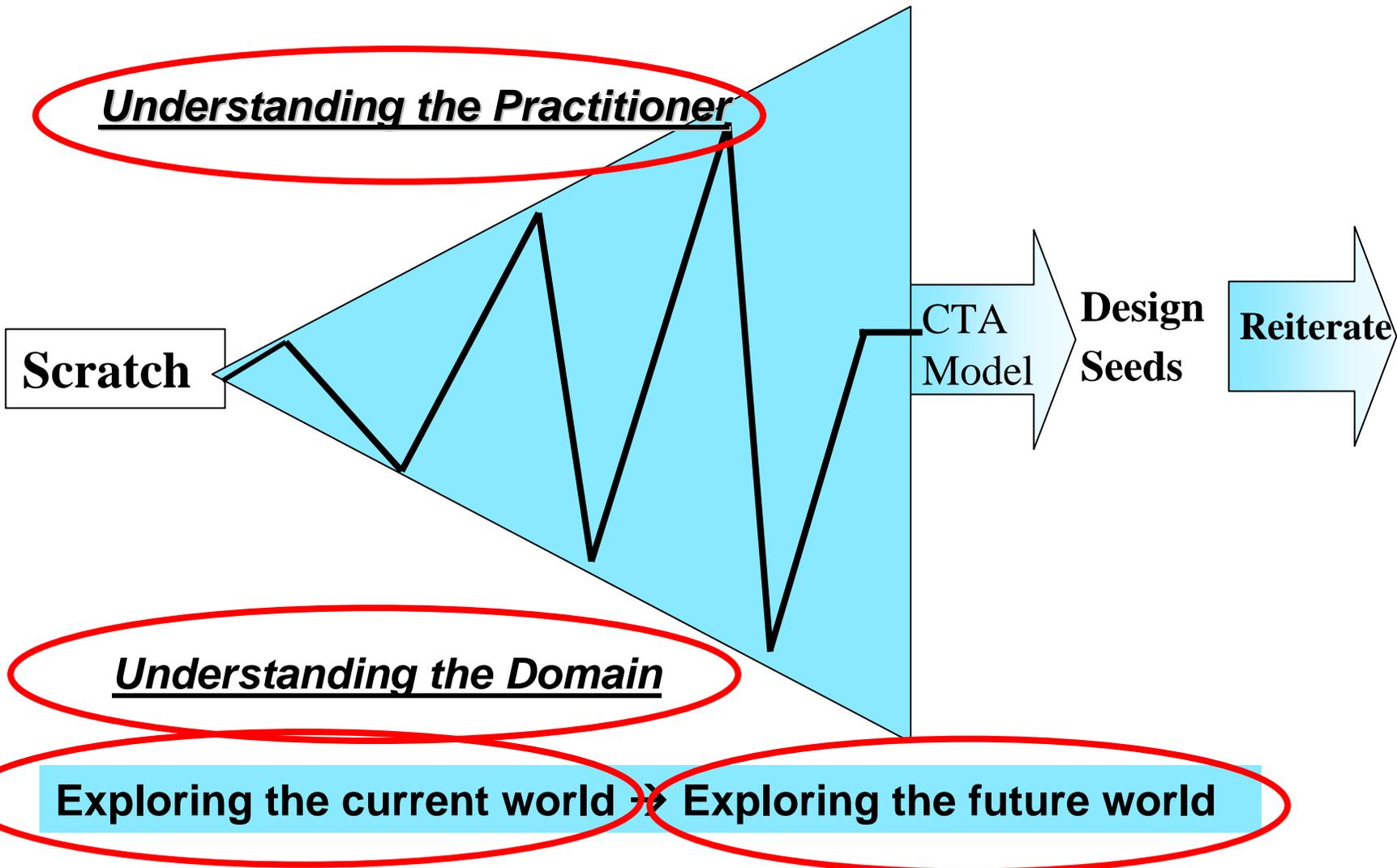
- **Engineers endeavor to develop useful, usable, understandable systems**
- **Users want useful, usable, understandable systems**

**What a match!!**

- **In-depth understanding of domain and practitioner is required for developing accurate, relevant training and support for net-centric environments**



# Gaining Understanding





# Participatory Design



- An established, diverse research and practice area which has a goal of engaging researchers, designers, developers, practitioners and end-users in all of the various activities leading to the successful development and implementation of systems.
- Umbrella methodology which includes studies, theories, conferences and practices



# Method 1: Elicitation by Critiquing (EBC)



**Novice**

**Performing**

**Actual/Simulated  
Task**

**Process of Novice Performing Domain Task**

**CTA  
Investigator**

**Watches**

**Expert  
as Evaluator**

**Commenting on**

**Novice Performance**



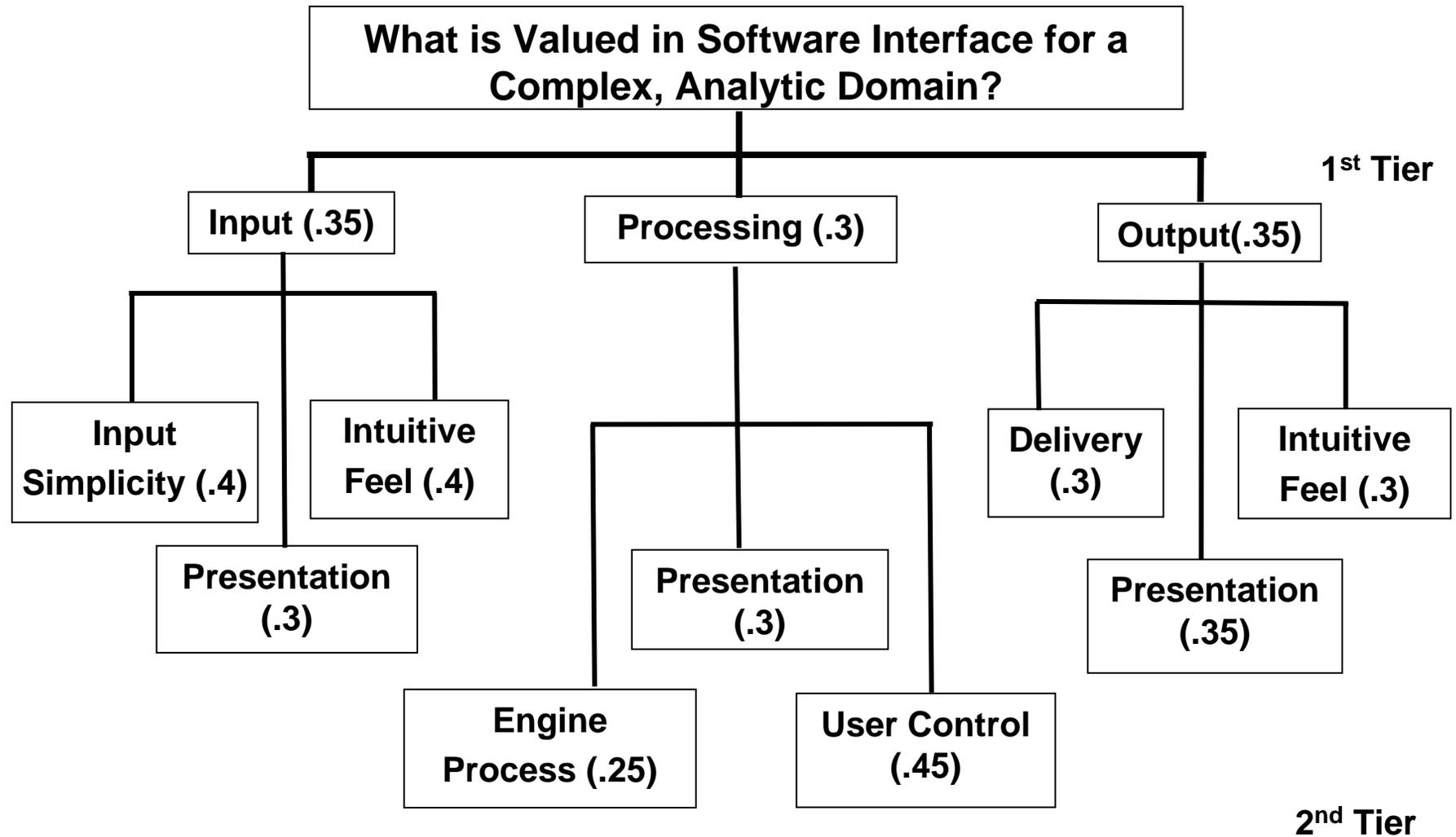
# Discussion of EBC



- **Remember: Any method shapes the conditions of observation.**
- **Relationship to C2**
  - **Can be used in conjunction with Modeling & Simulation**
  - **Provides strong cue to focus**
  - **Participatory role**



# Method 2: Value Elicitation





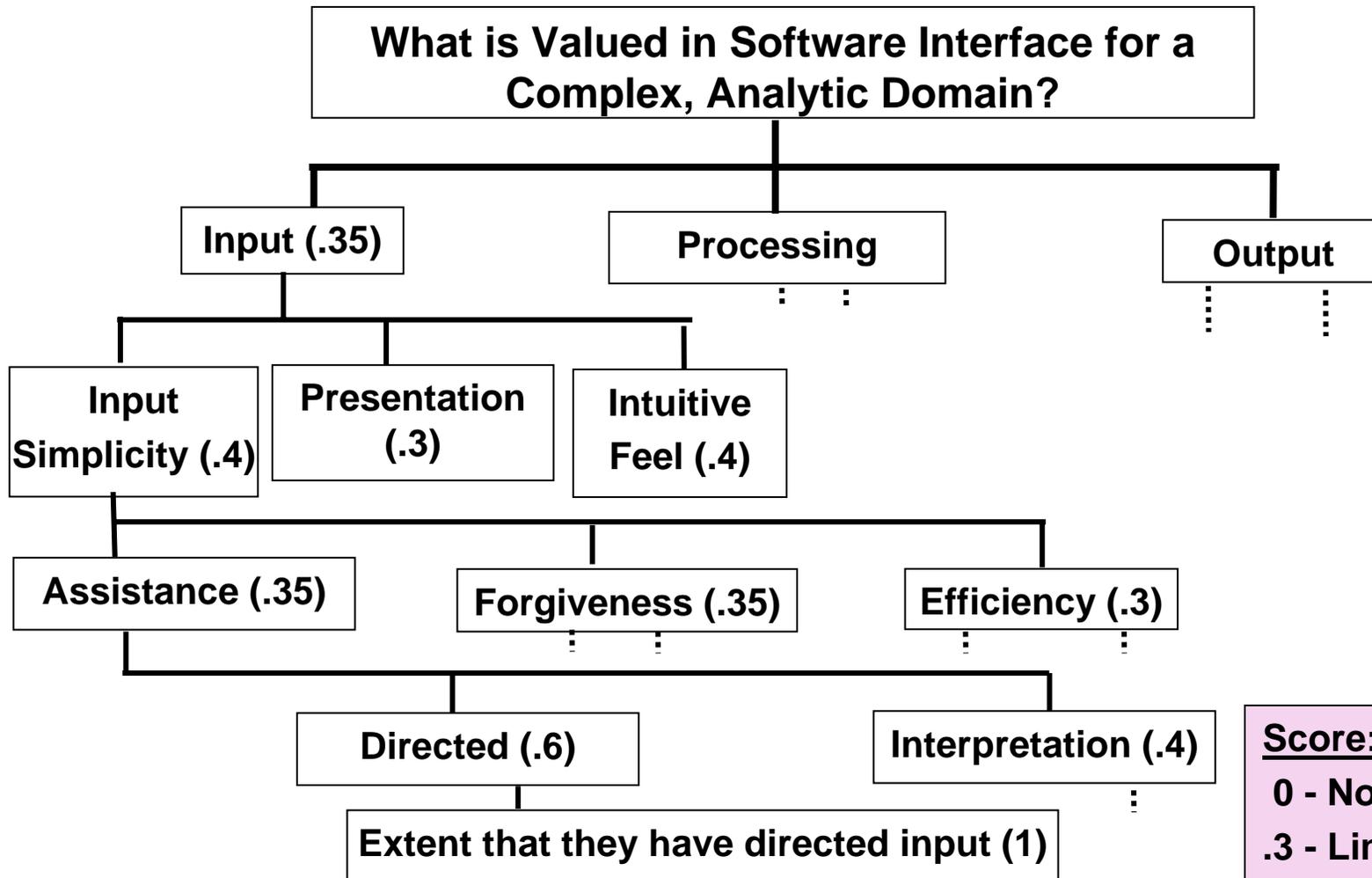
# 10 Steps



- 1. Define Problem**
- 2. Build Hierarchy**
- 3. Identify Evaluation Measures**
- 4. Establish Evaluation Functions**
- 5. Weighting**
- 6. Choose Alternatives to Evaluate**
- 7. Score Alternatives**
- 8. Deterministic Analysis**
- 9. Sensitivity Analysis**
- 10. Analyze Conclusions**



# VFT with Intel Analysts



**Score:**  
0 - None/Little  
.3 - Limited  
.7 - Some  
1 - Majority



# Discussion on Value Elicitation



- **Elicits from Practitioner**
- **Uncovers Hidden Objectives**
- **Improving Communication**
- **Guides Information Collection**
- **Facilitates Involvement in Multiple Stakeholder Decisions**
- **Guides Strategic Thinking**



# Conclusion



- **Desired goal: Implemented C2, net-centric systems that address real needs**
- **Participatory Design (PD): Involves stakeholders**
  - **Outcome: Acceptance when implemented**
- **EBC and Value Elicitation methods support PD**
- **Future Research: Applying Participatory Design Methods to Future-Focused Systems**