

# Value Focused Thinking: Guiding C2 System Interface Design

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# Agenda



- **Problem Statement**
- **Value-focused Thinking (VFT) Basics**
- **VFT Applied to Intel Analysts - Usability**
- **Application to C2 - Usefulness**



# Problem



- **Battlefield commanders are demanding**
  - **Right information at the right time in the right way.....**
- **Interfaces can be viewed as work aids**
  - **Users' critical functions must be addressed**
- **Developers always have resource constraints**
- **Need framework to guide development**



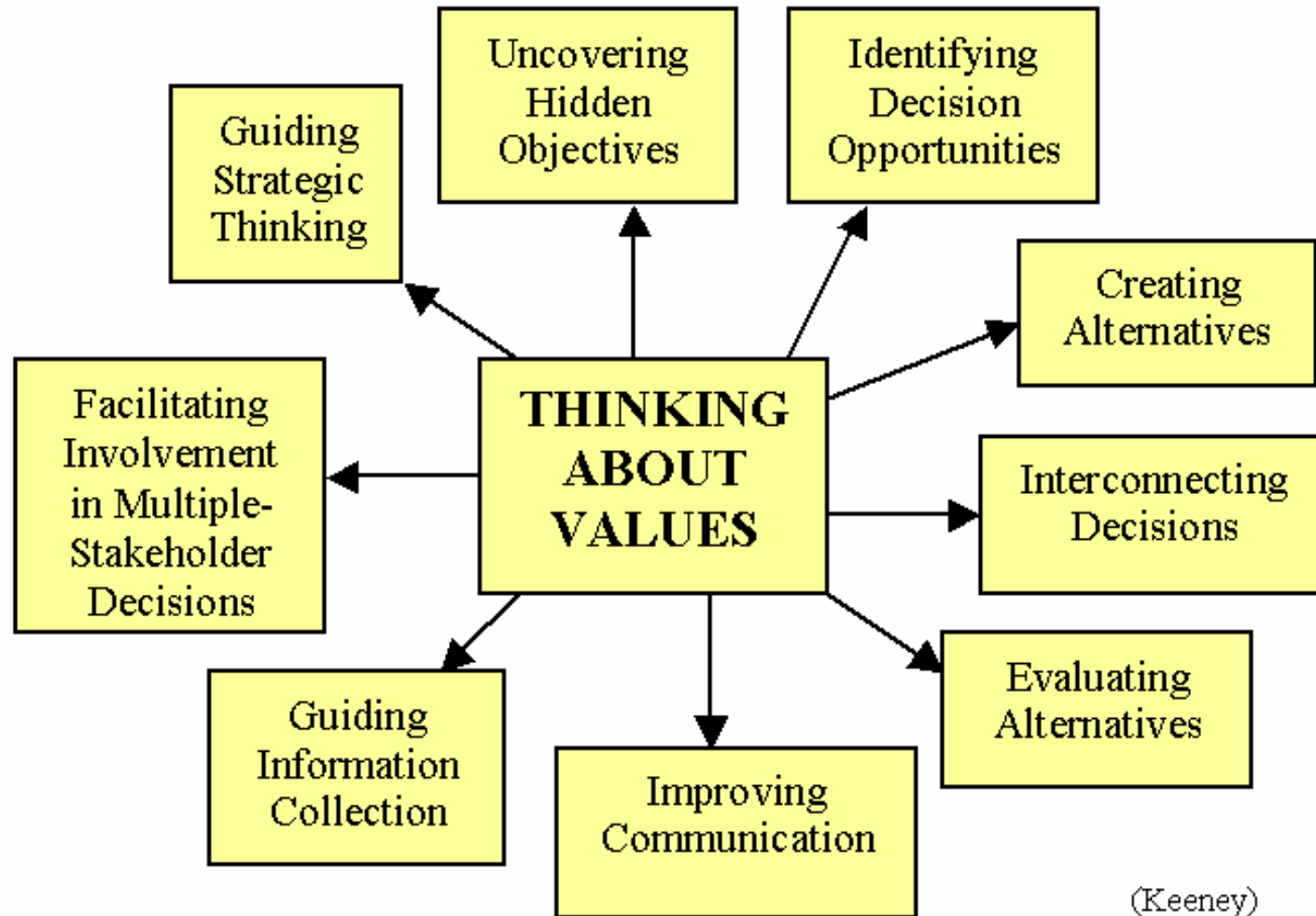
# VFT Basics



- **The VFT approach emphasizes values as the driving force behind decisions:**
  - **Evaluates how well alternatives achieve those values**
  - **Allows the incorporation of intangible concepts into the decision-making process**
  - **Provides a defensible process**
  - **Adds some objectivity to a generally subjective process**



# Benefits of VFT





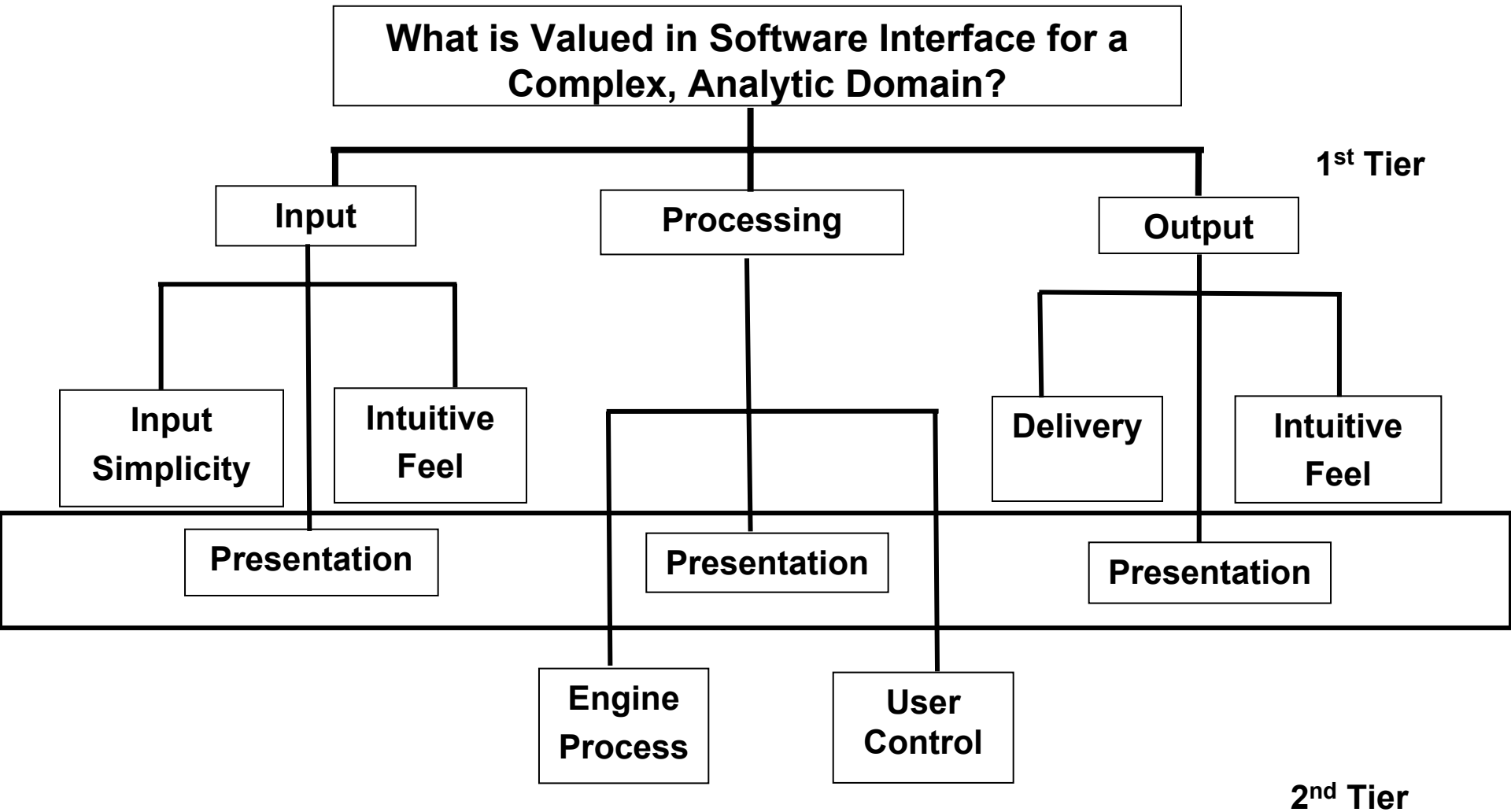
# 10 Steps



- 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**



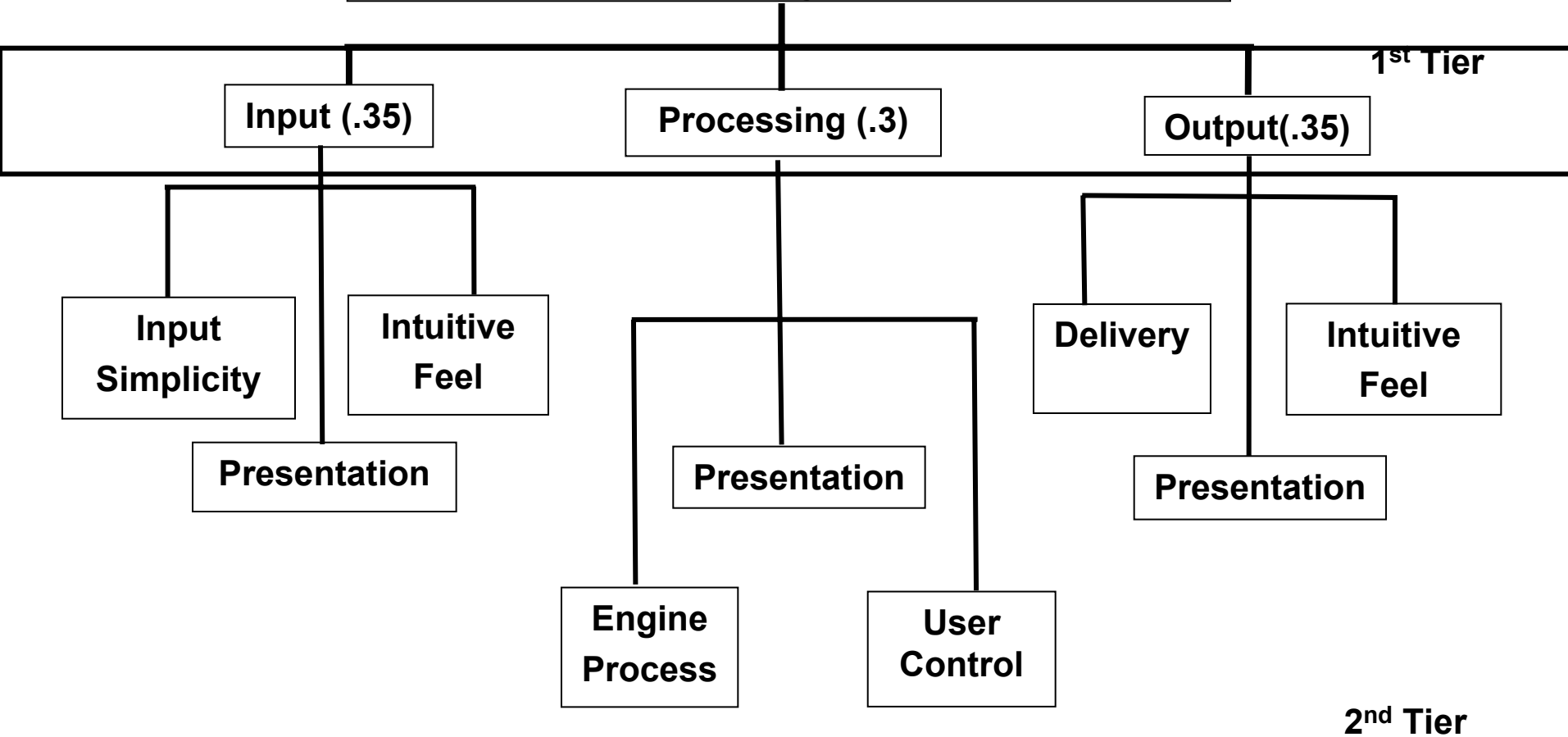
# VFT with Intel Analysts





# VFT with Intel Analysts

What is Valued in Software Interface for a Complex, Analytic Domain?







# VFT with Intel Analysts

What is Valued in Software Interface for a Complex, Analytic Domain?

1<sup>st</sup> Tier

Input (.35)

Processing (.3)

Output (.35)

Input  
Simplicity (.4)

Intuitive  
Feel (.4)

Presentation  
(.3)

Presentation  
(.3)

Engine  
Process (.25)

User Control  
(.45)

Delivery  
(.3)

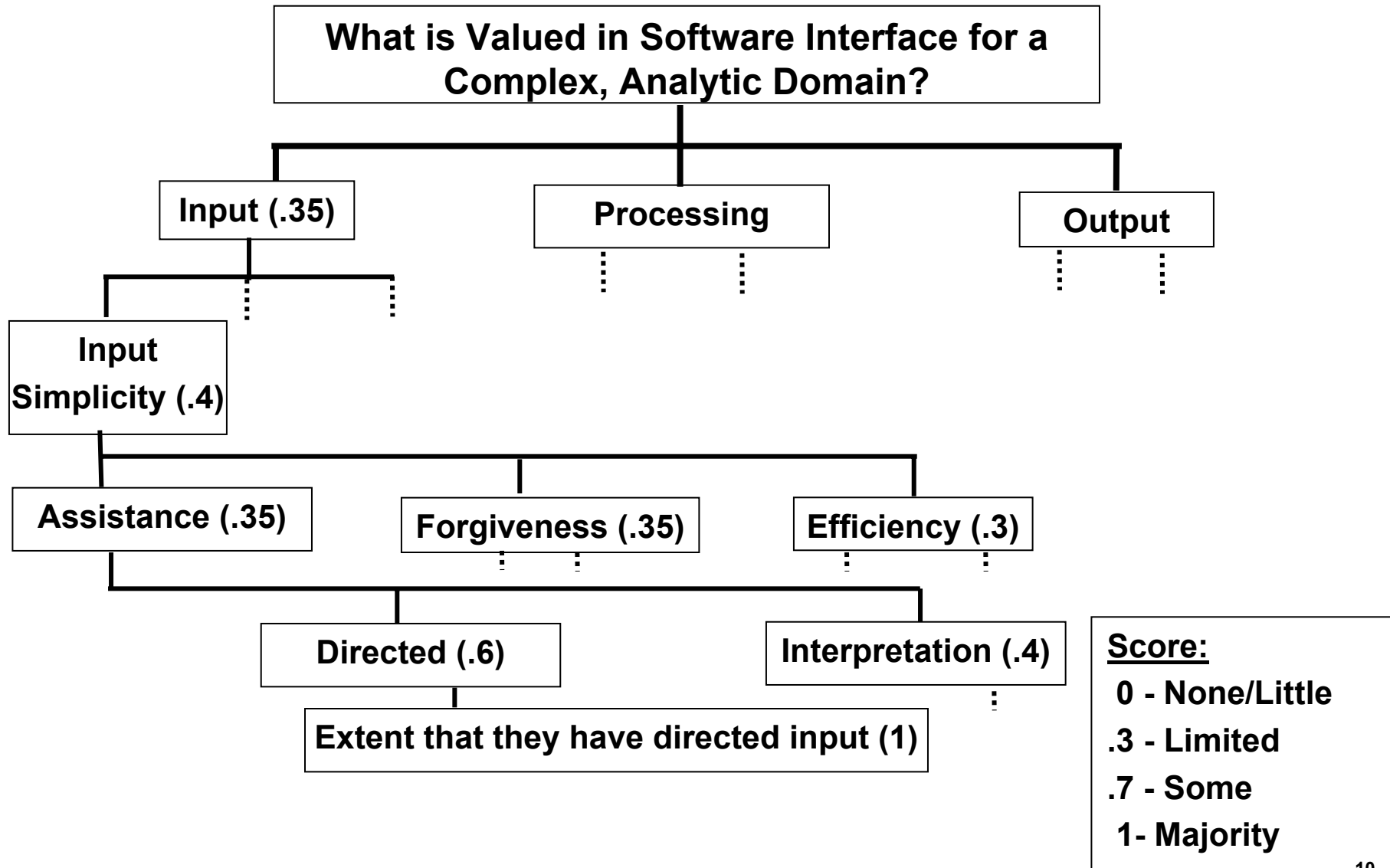
Intuitive  
Feel (.3)

Presentation  
(.35)

2<sup>nd</sup> Tier



# VFT with Intel Analysts





# Application to C2



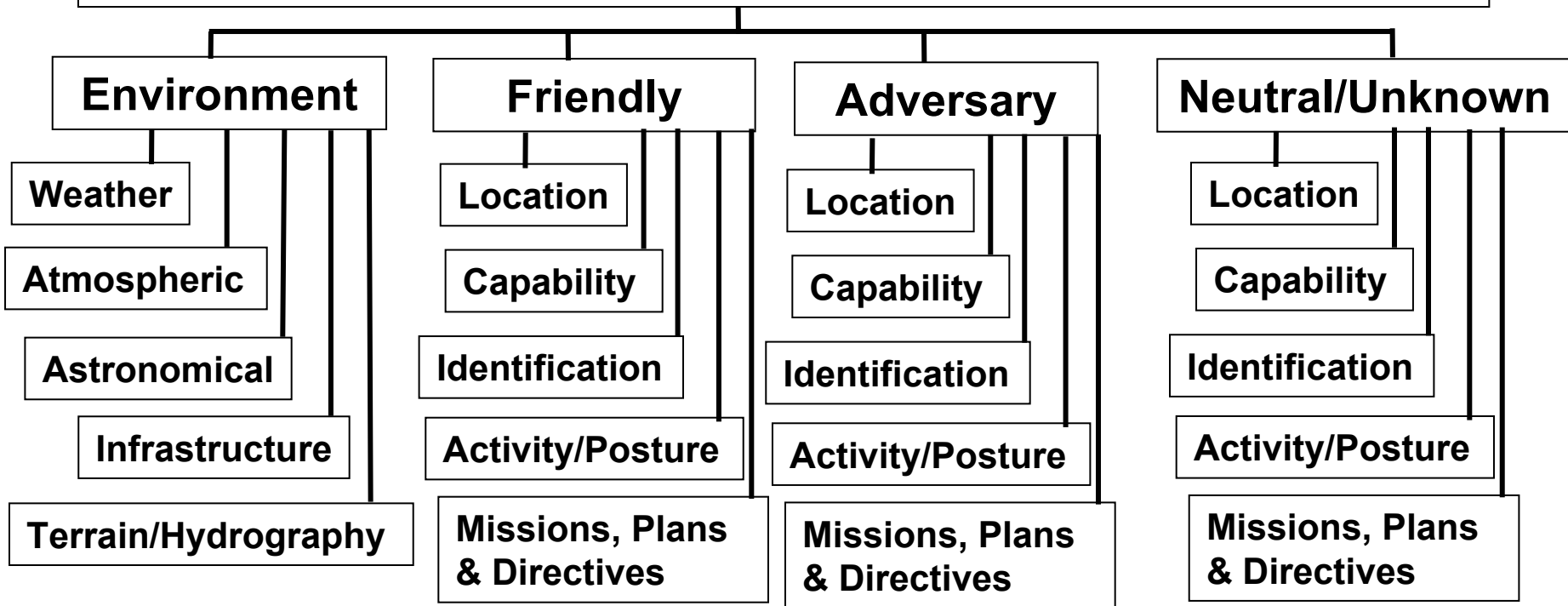
## What is important to represent to provide C2 Situational Awareness?

- **Past, current and potential future operational picture**
- **Campaign plan**
  - **Current plan**
  - **Status of plan**
  - **Issues -> Existing and anticipated**
- **Historical data**
  - **Lessons learned, previous campaign Commander's Intent, baseline or previous**
- **Military battlespace**
  - **Logistics, infrastructure, public affairs, comms, weather**
- **Relevant non-military battlespace**
  - **Political, economic, social, information**
- **Temporal, spatial, virtual data**



# Application to C2

What is important to represent to provide  
C2 Situational Awareness?



Alternative branches: PMESII

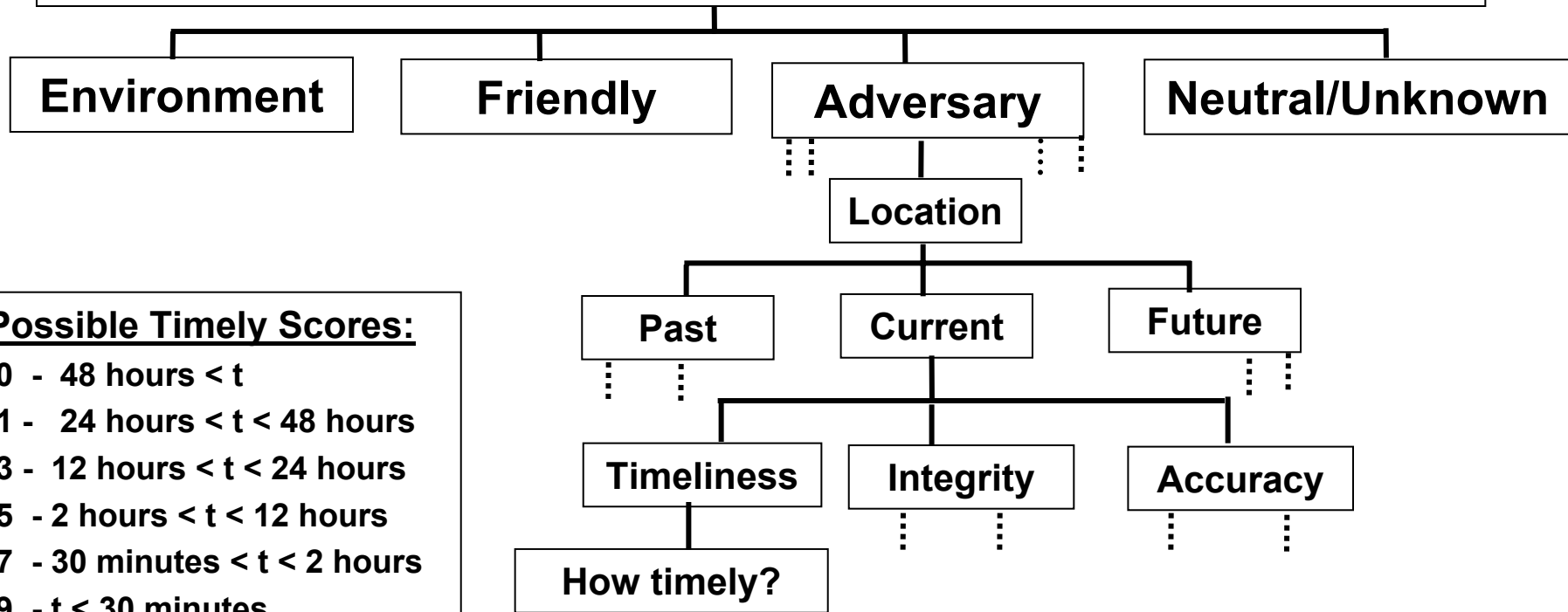
(Political, Military Economic, Social, Information, Infrastructure



# Application to C2



What is important to represent to provide C2 Situational Awareness?



**Possible Timely Scores:**

- 0 - 48 hours < t
- .1 - 24 hours < t < 48 hours
- .3 - 12 hours < t < 24 hours
- .5 - 2 hours < t < 12 hours
- .7 - 30 minutes < t < 2 hours
- .9 - t < 30 minutes
- 1 - Real Time



# Discussion



- **Usability**
  - The interface capability VFT hierarchy valuable for usability
  - Can be vetted through lower-end users
- **Usefulness**
  - Needs to be vetted through decision makers
  - Challenge: Merging all relevant input
  - The final C2 VFT Hierarchy will be extensive
  - Complementary to other knowledge elicitation methods