

# Stakeholder Analysis Process Using Cognitive Mapping

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Brenda C. Lopez Villafranca - ITA  
PhD. Geilson Loureiro - INPE

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The **stakeholder needs**, most of the time are subjective, unclear, or even contradictory and must be translated into stakeholder requirements. The stakeholder requirements describe the problem supposed to be solved by the system of interest.

The **cognitive maps** aim to deal with subjective information and problem structuring, both capabilities needed by the **stakeholder analysis**.

## 2. Stakeholder Analysis

- A **Stakeholder** is any person or organization that affects or can be affected by the system of interest.
- The **Stakeholder Analysis** refers to the study of how the stakeholders understand a specific problem, their point of view about it and their relation to it.

## 2. Stakeholder Analysis

How to understand the **stakeholders' problem**:

- Understanding the way they perceive it;
- Understanding how they structure it; and
- Reaching the real needs.

It does not mean that it is the correct way to represent the problem or even, if it is the real problem that should be analyzed; but this information must be elicited to get any conclusion.

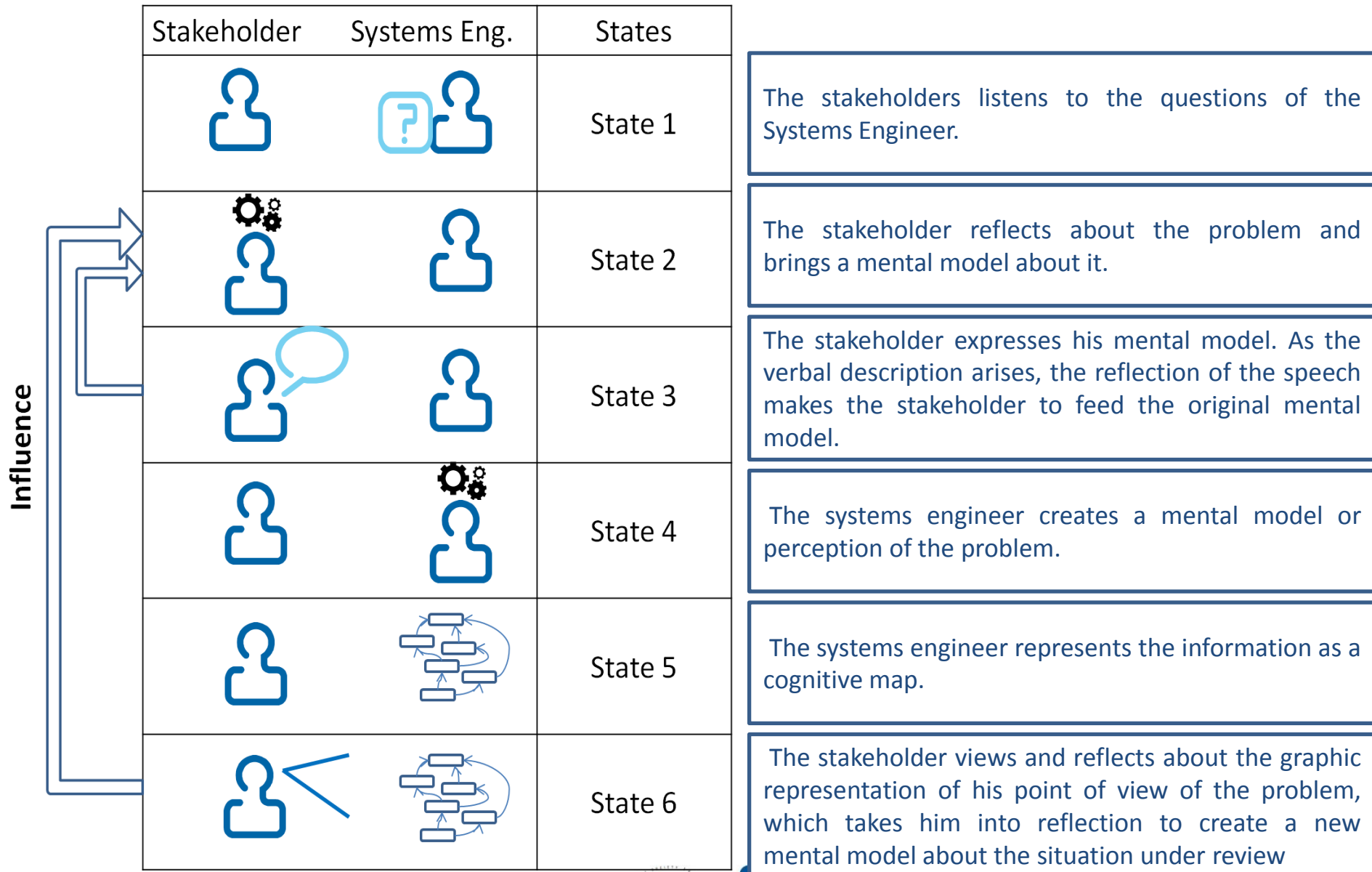
### 3. Cognitive Map

- Represents the mental model of an individual or group of individuals.
- Helps to structure complex situations with subjective information, and assumptions.
- Helps on the clarification of mental models and evokes reflection and analysis of the information exposed verbally, textually and graphically through the construction of the cognitive map process.

## 4. Stakeholder Analysis Using Cognitive Maps

- The main purpose is to get to the root need through the continuous questioning to the stakeholder with generic *WH* questions, and specially the question *Why?*
- The process is iterative by nature
- Guide the thinking and reflection, changing several times the mental model of the stakeholder.

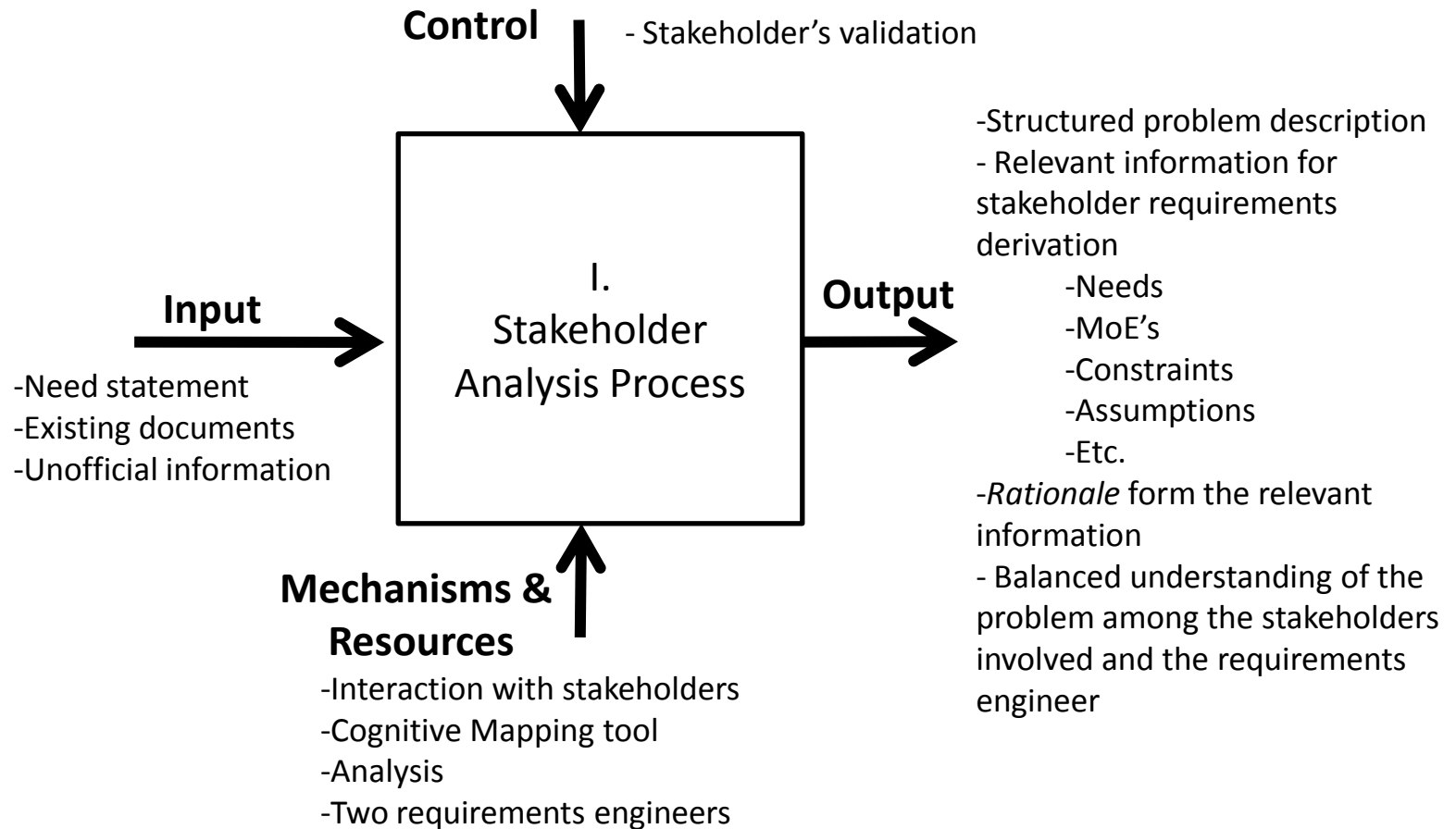
## 4. Stakeholder Analysis Using Cognitive Maps



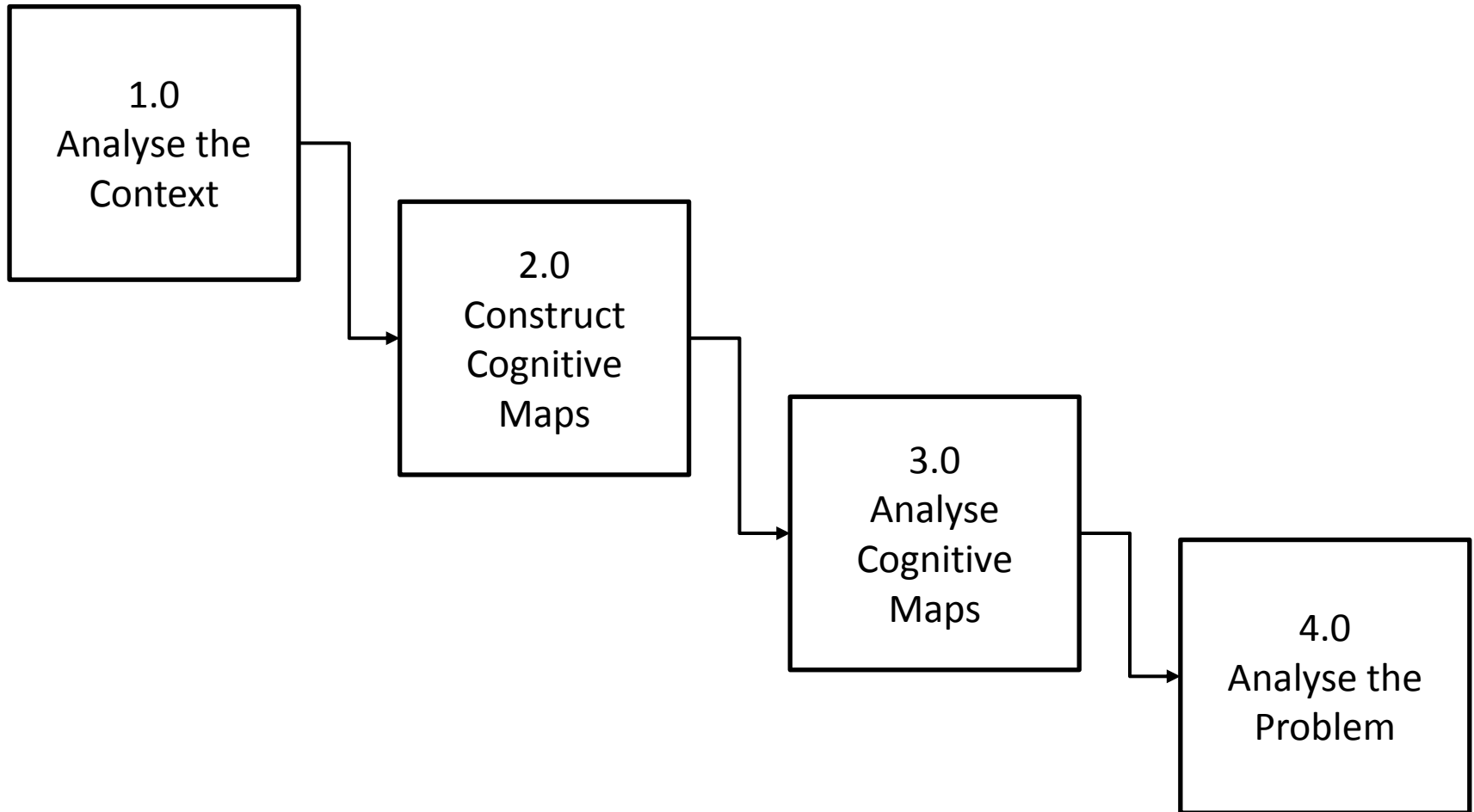


## 4. Stakeholder Analysis Using Cognitive Maps

### STAKEHOLDER ANALYSIS PROCESS- IDEF0

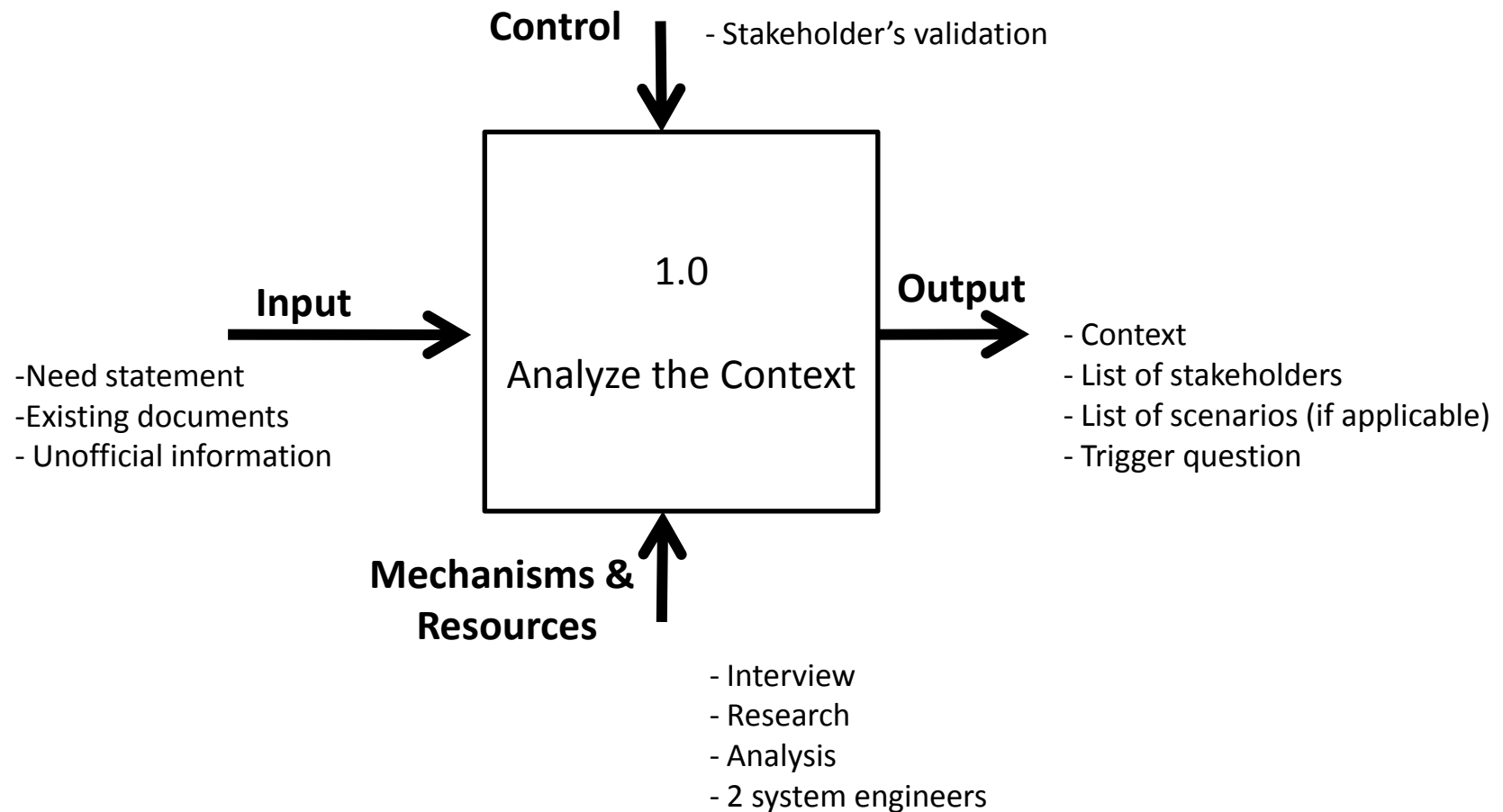


## 4. Stakeholder Analysis Using Cognitive Maps



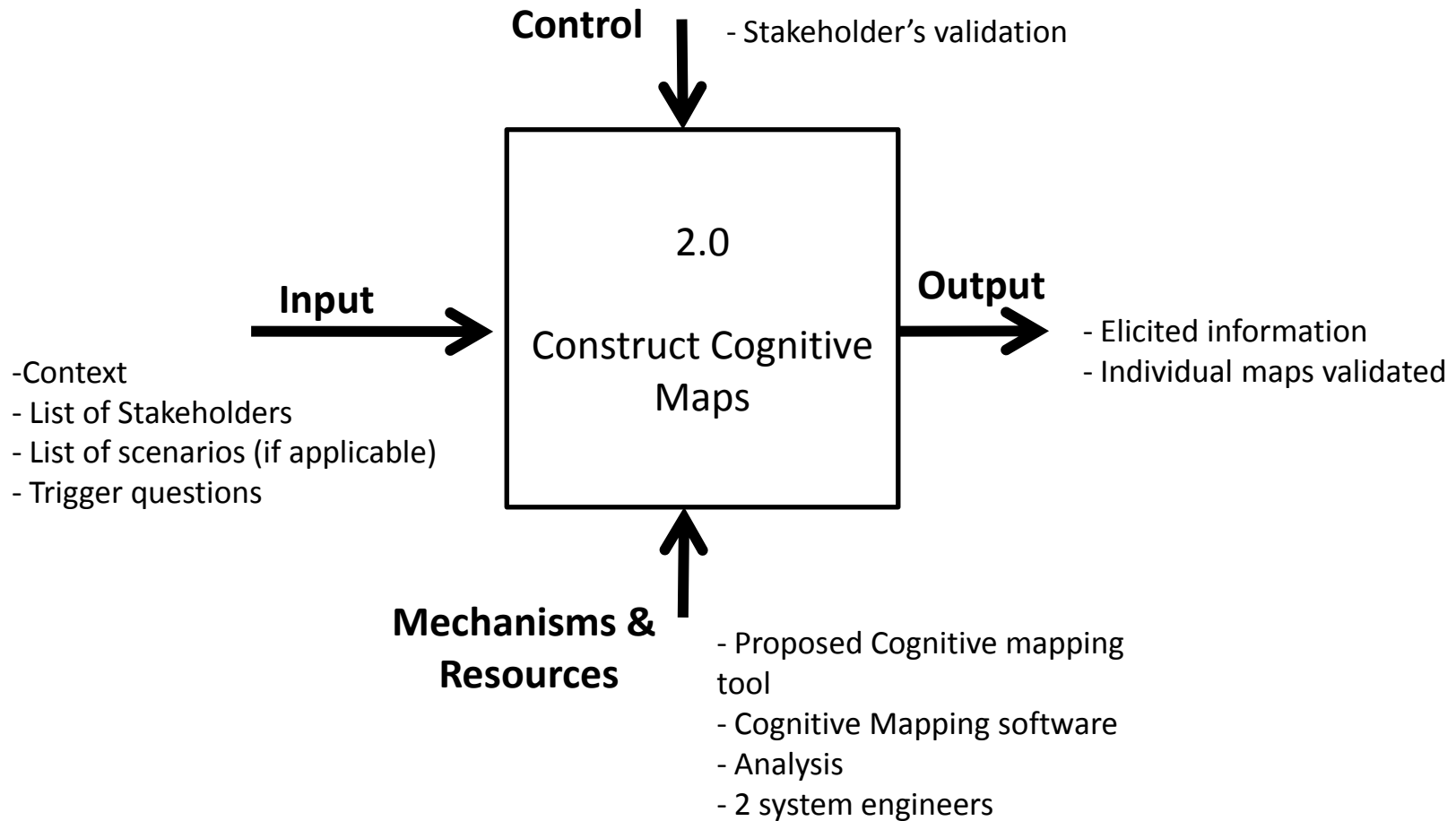
## 4.1 Analyze the Context

### STAKEHOLDER ANALYSIS PROCESS- IDEF0



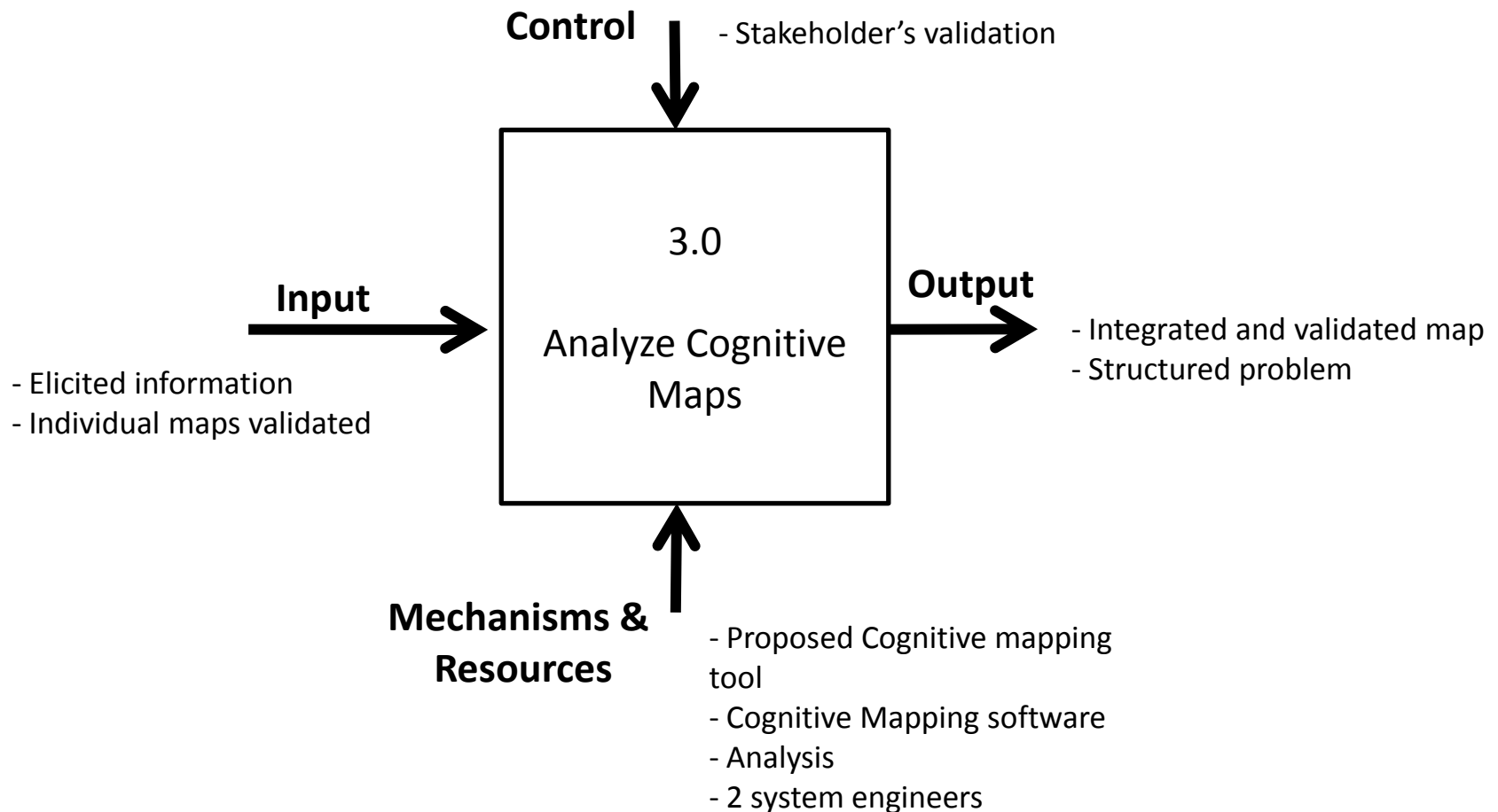
## 4.2 Construct Cognitive Maps

### STAKEHOLDER ANALYSIS PROCESS- IDEF0

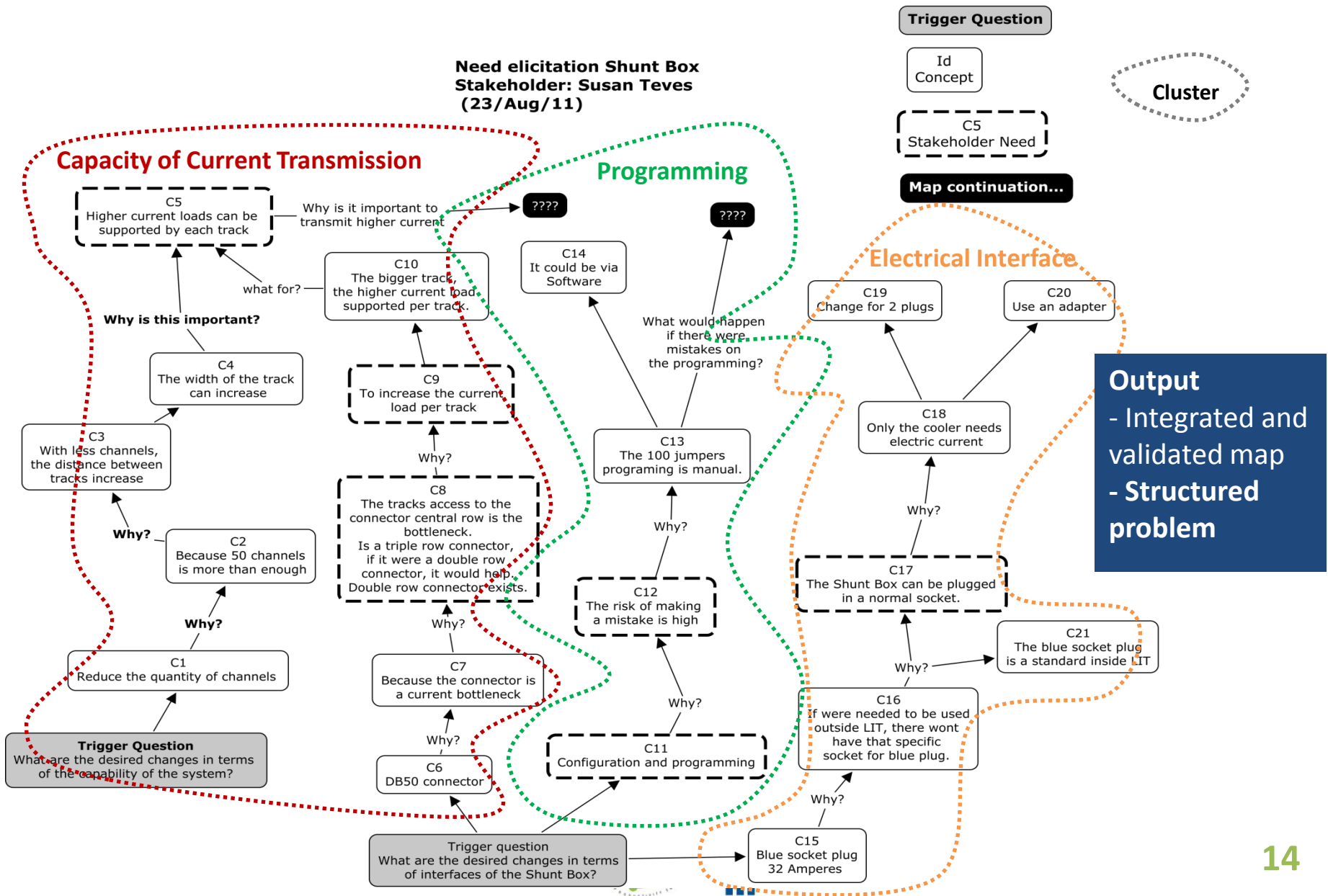


## 4.3 Analyze Cognitive Maps

### STAKEHOLDER ANALYSIS PROCESS- IDEF0

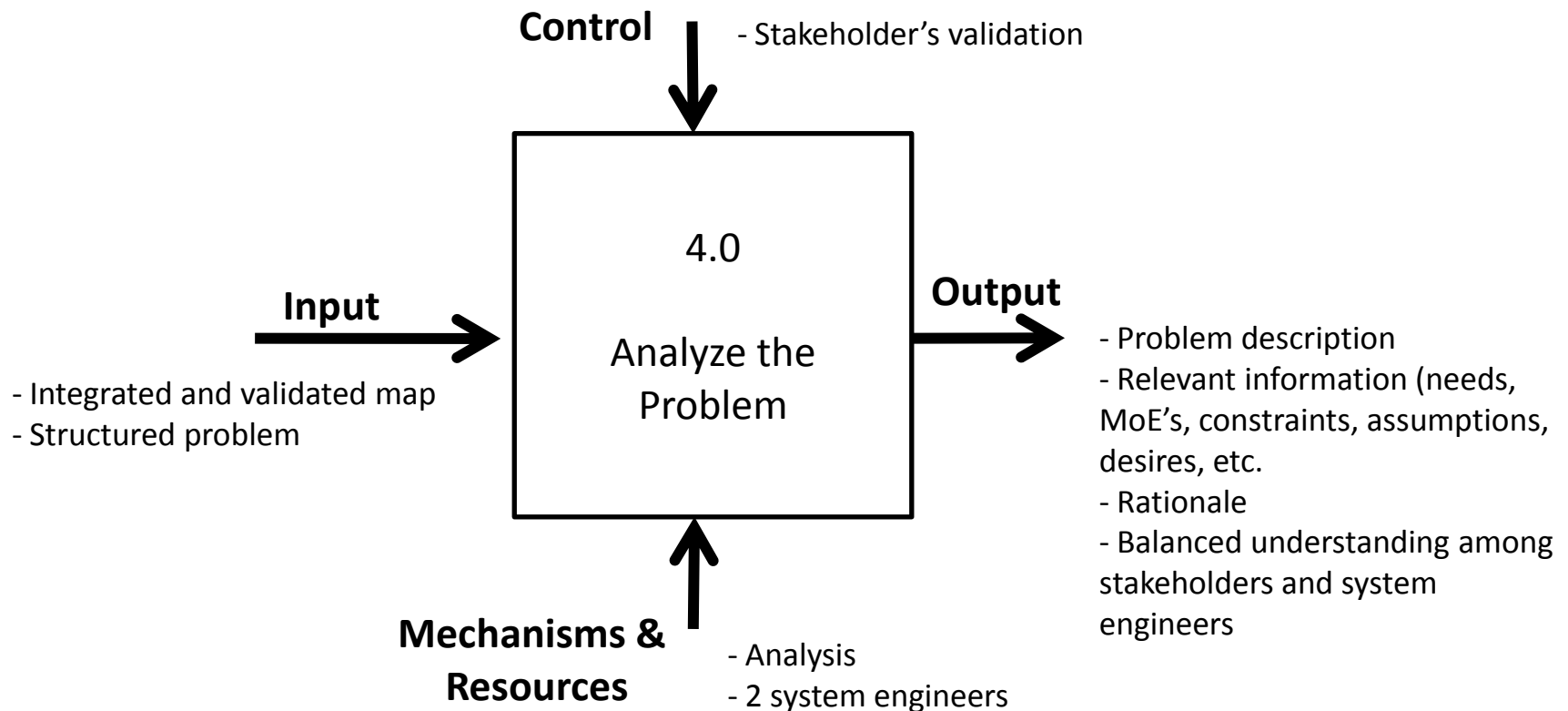


## 4.3 Analyze Cognitive Maps

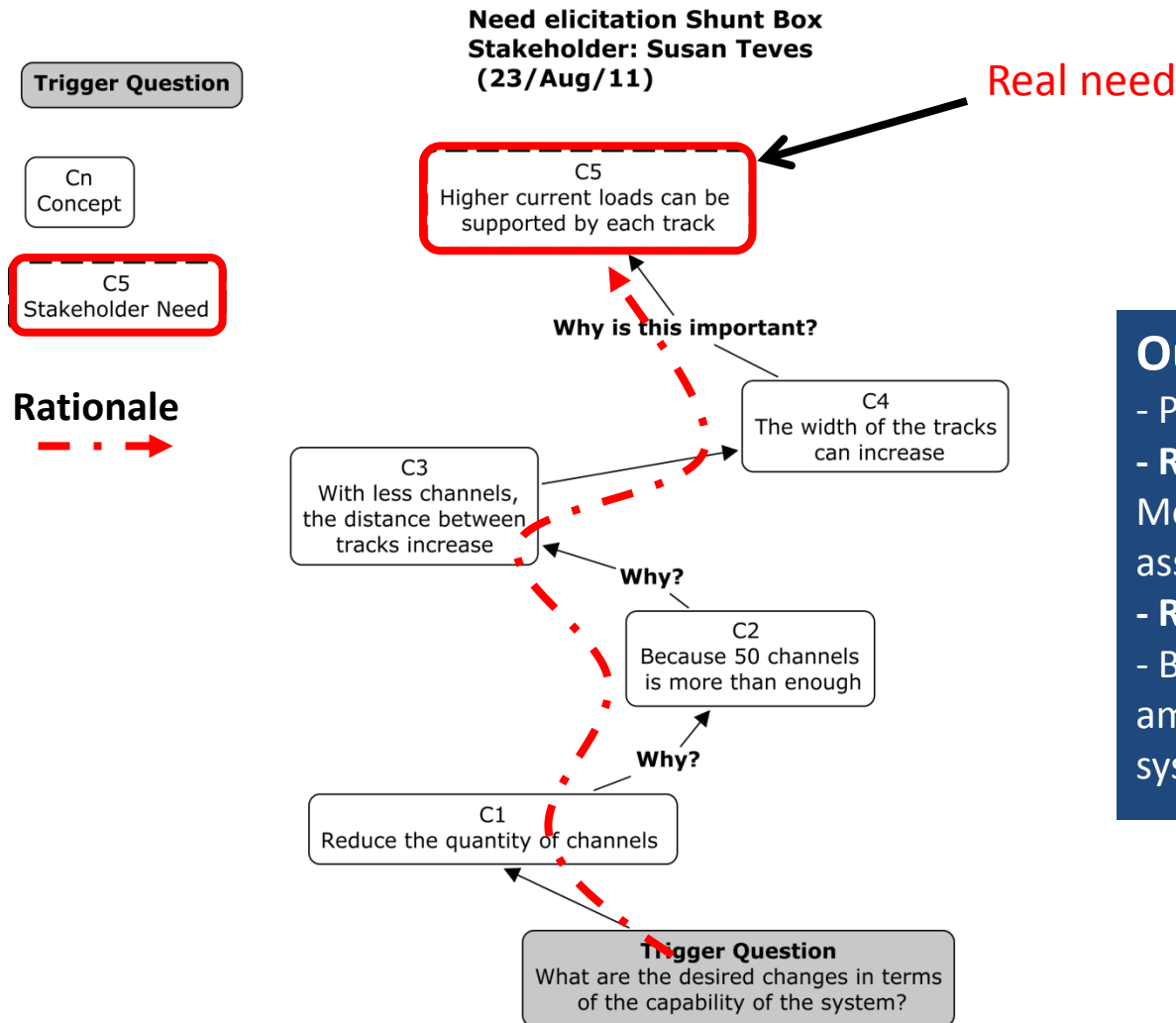


## 4.4 Analyze the problem

### STAKEHOLDER ANALYSIS PROCESS- IDEF0



## 4.4 Analyze the problem



### Output

- Problem description
- **Relevant information** (needs, MoE's, constraints, assumptions, desires, etc.)
- **Rationale**
- Balanced understanding among stakeholders and system engineers



## 5. Advantages and Disadvantages

### Advantages

- Knowledge generation
- Leveled knowledge
- Exhaustiveness
- Rationale capture

### Disadvantages

- Trigger questions
- Several maps to integrate
- Lack of elicitation completeness

The advantages proposed are worth enough to consider the cognitive mapping technique as part of the stakeholder analysis process.

The critical issues to obtain a succeeded analysis are:

- the complete involvement of the stakeholders.
- the previous contextualization on the problem for the systems engineer.

# Acknowledgements:

