

# Analytics for Cybersecurity of Smart Grid

## Identifying Risks and Assessing Vulnerabilities

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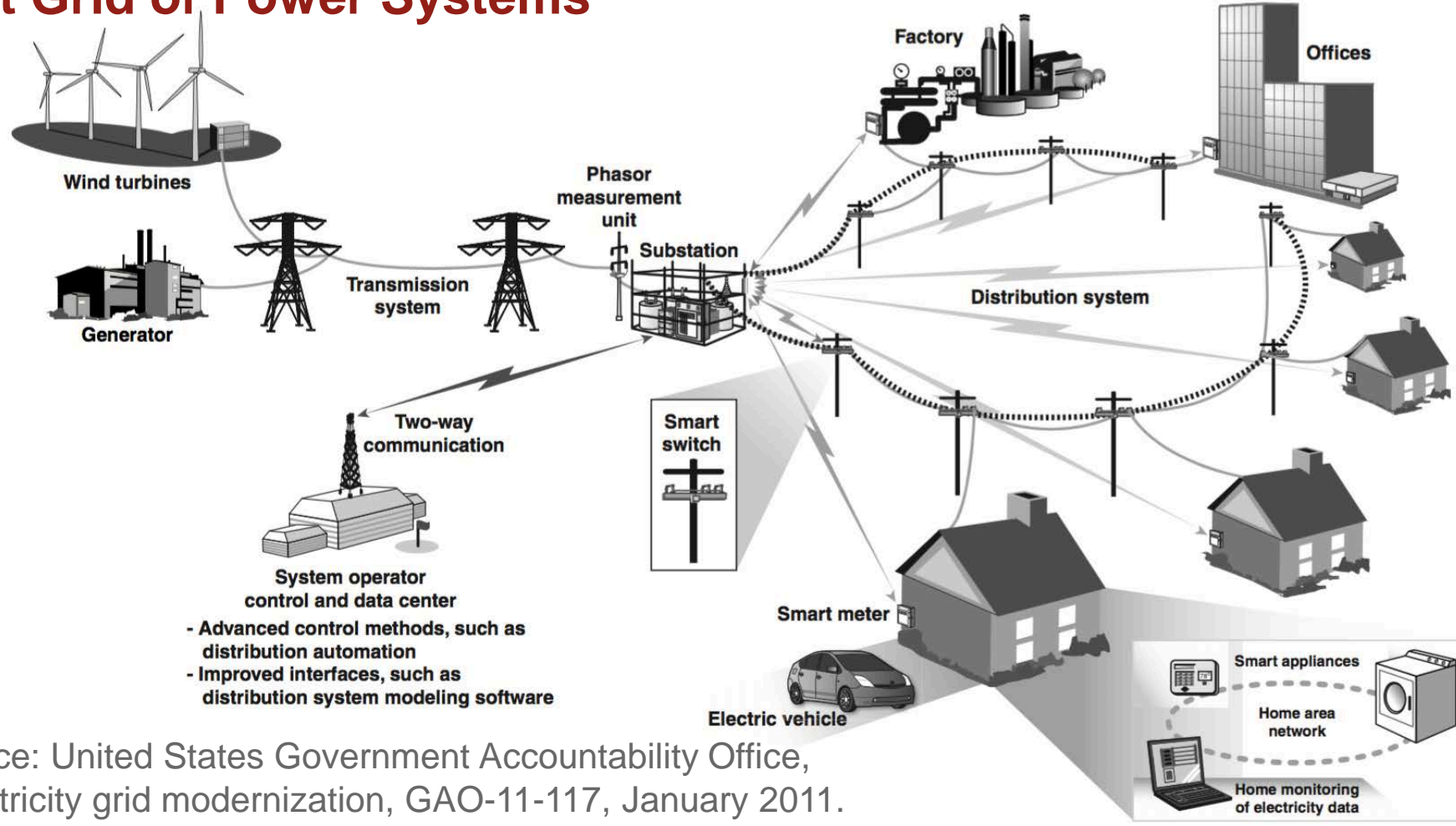
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### Context

#### Smart Grid of Power Systems



### Challenge

Guidelines and directives are presented in text form.

- Difficult to aggregate and integrate across guidelines.
- User is passive reader, focuses on checklist.
- Even low hanging fruit may not be obvious.

Text form contains critical information not accessible by reading.

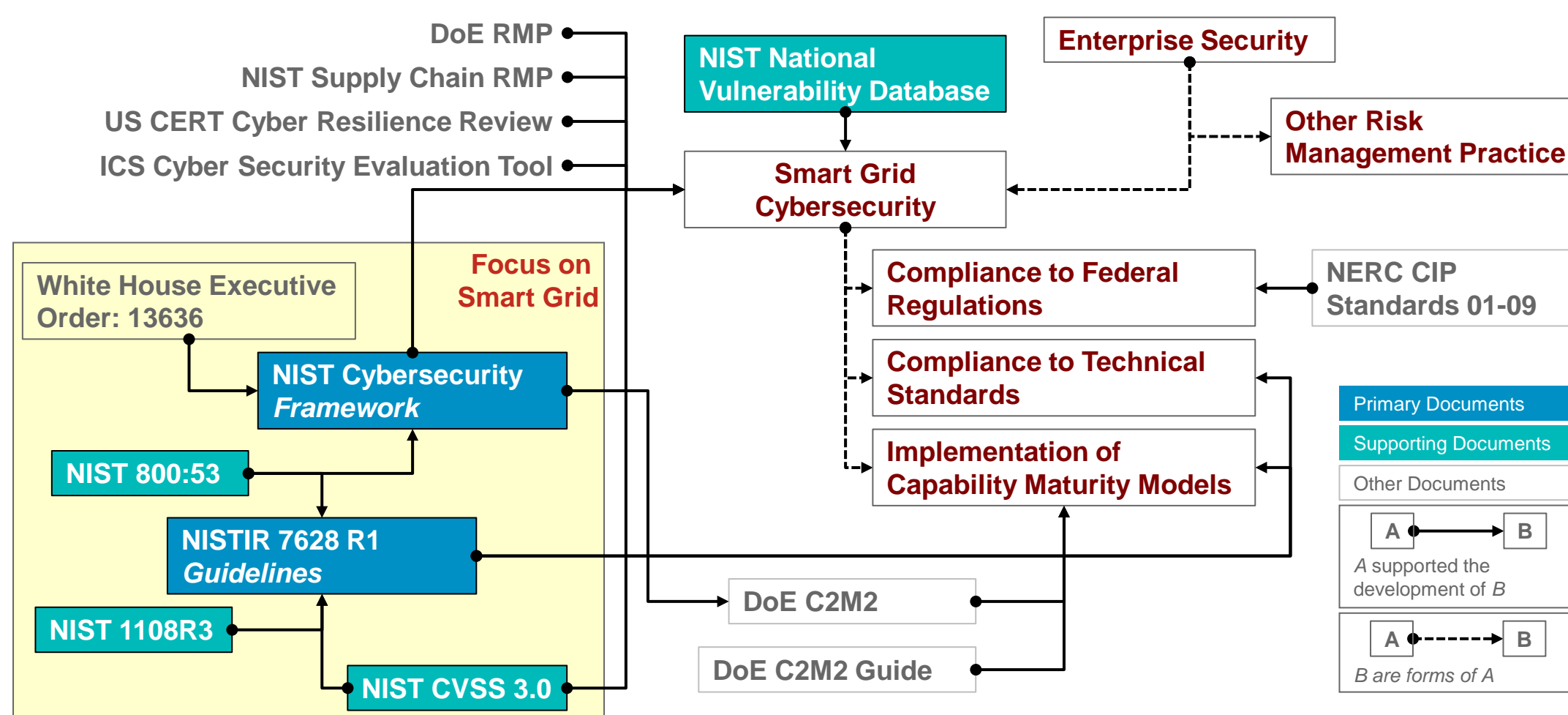
- Text impedes locating interactions, feedback, specialized views, etc..
- Important opportunities and potential benefits are "lost".
- Loss creates opportunity costs.

Opportunity costs impact the enterprise.

- Impact managers, security experts, and policy analysts who deal with text
- Undermine the full value effectiveness of guidelines and directives.
- Impede realization of full realization of expected benefits.

### Solution Strategy: Analytical Methods to Identify, Assess, Quantity & Mitigate Cybersecurity Risks.

#### Leverage Text Guidelines for Smart Grid Cybersecurity



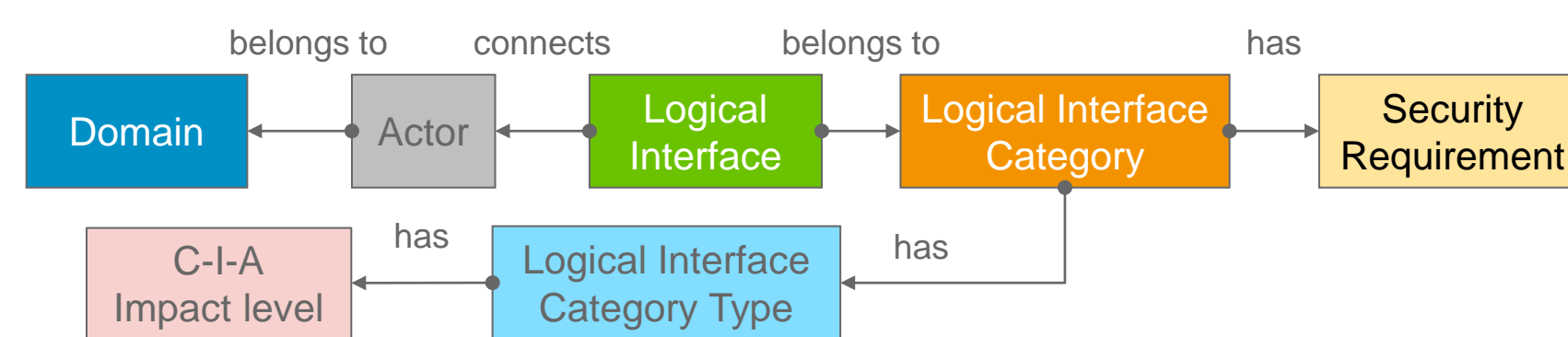
### Analytics for Smart Grid Cybersecurity

- A Linked NIST Data for Smart Grid** Identify essential system elements designed to fulfil intended functions of a Smart Grid and create a linked database.
- B Design Structure Matrix & Exploratory Tools** Construct Design Structure Matrix (DSM) based on essential elements of Smart Grid and its Cybersecurity.
- C Network Views & Analytical Tools** Create network view from reference model to examine dependencies among system elements, to examine implications of guidelines for Smart Grid and Cybersecurity.
- D Risk Identification Assessment, Quantification & Mitigation\*** Utilize exploratory tools, databases and network views to situate vulnerabilities of system elements and analyse system-wide impacts on the smart grid using network views.

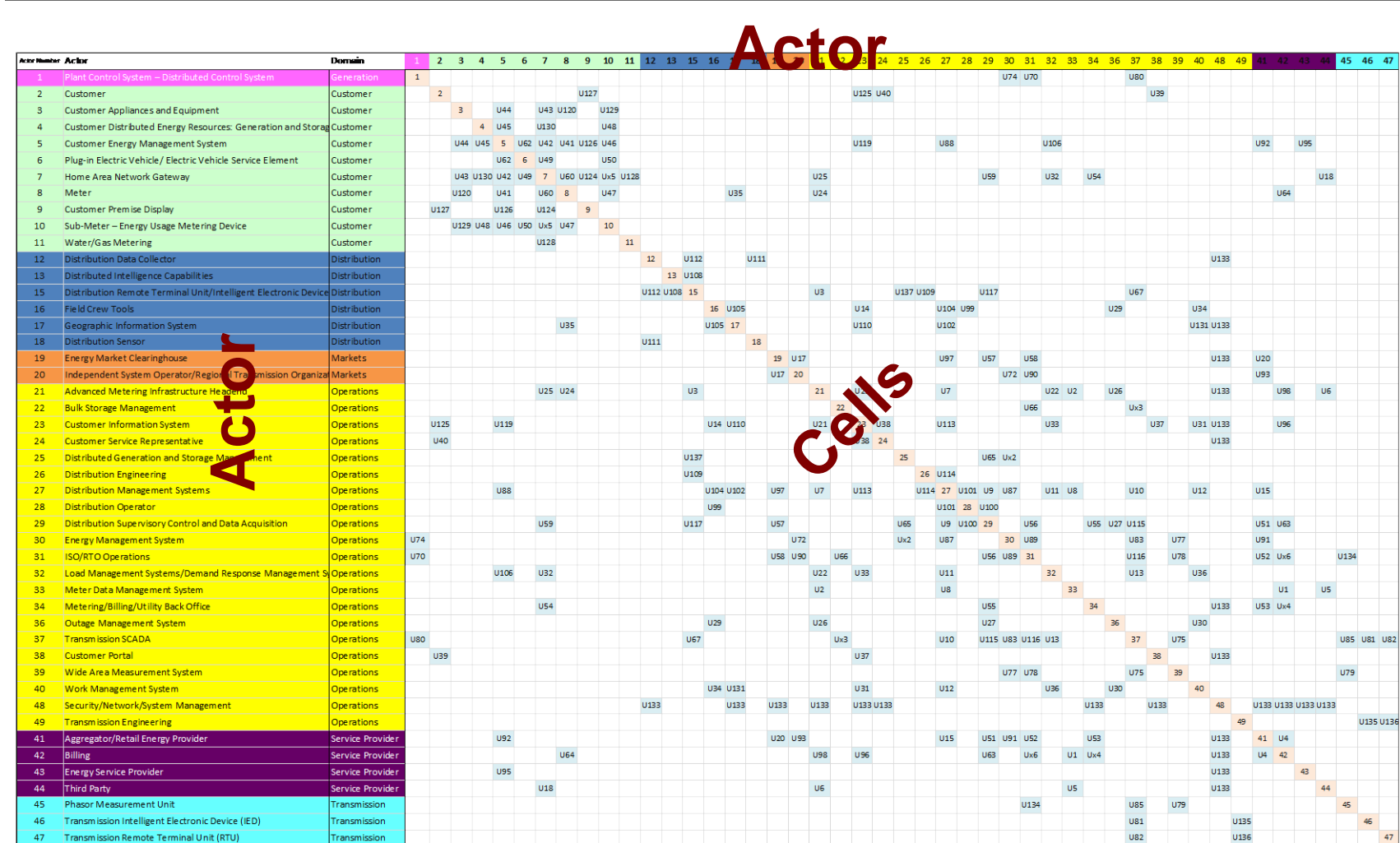
\* Not included in this poster.

### Linked NIST Data for Smart Grid

Key elements of linked data.



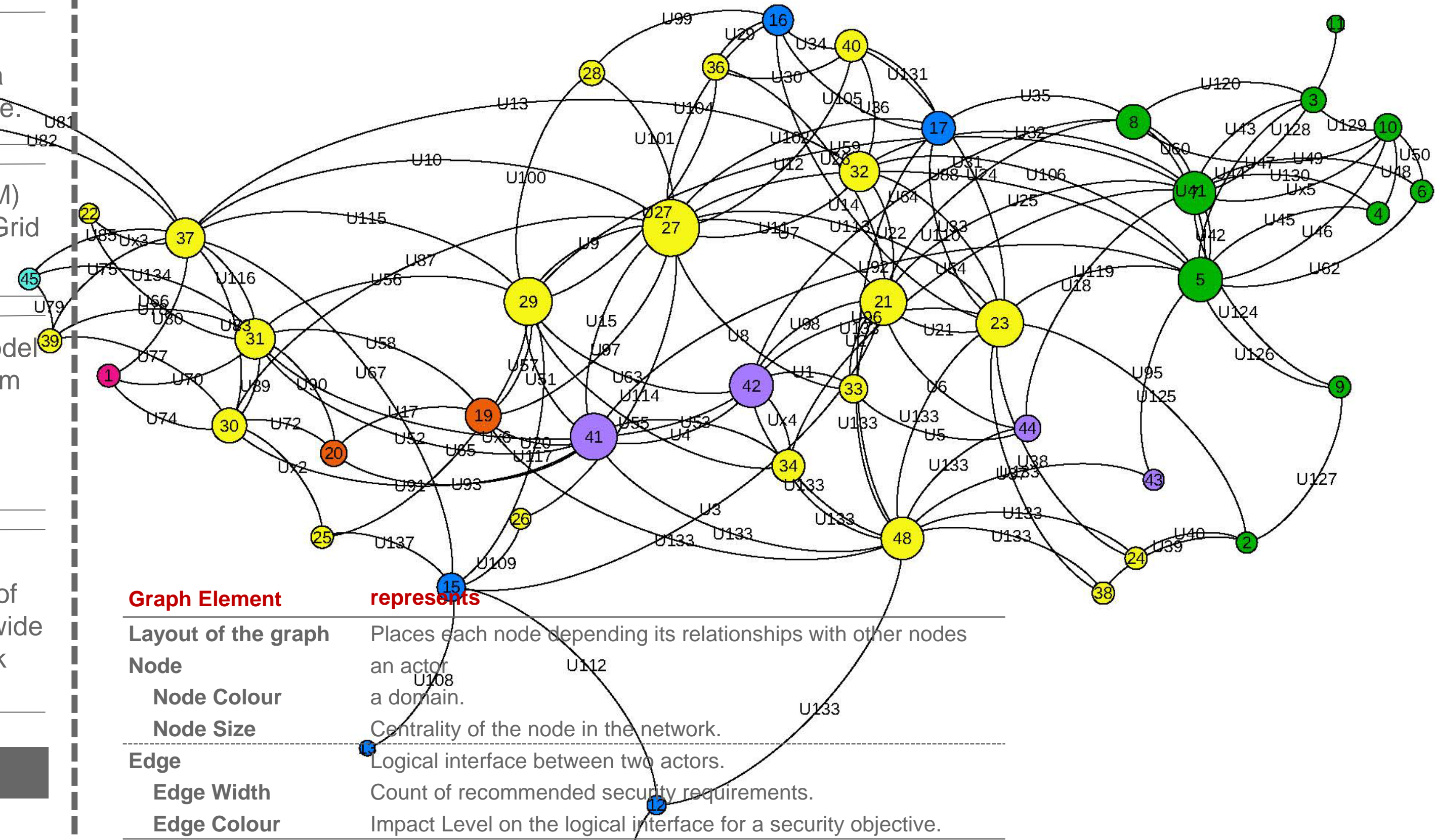
### Design Structure Matrix of NIST Guidelines



Cells contain the following information based on four set of information provided in NISTIR- 7628 on:

- Logical Interface between any two actors
- Logical Interface Categories based on Interface attributes.
- Impact Level of Logical Interface for three Security Objectives.
- Count of Security Requirements applicable for each Logical Interface.

### Network View of NIST Guidelines from DSM



### Focus on Risk Identification and Assessment

Below is a view of the NIST security objectives and Impact levels presented in terms of network representation. This is a disaggregated perspective that shows the differences among security objectives and impact levels.

