Blog Post 5: Decisions Under Pressure: The Role of DSS in Crises

During a major disaster, command centers are flooded with data: distress calls, sensor readings, weather updates, and social media reports. The sheer volume of information can be overwhelming, leading to "analysis paralysis" when swift action is needed most.

This is where **Decision Support Systems (DSS)** come into play.

A DSS doesn't replace human decision-makers; it empowers them. It filters vast amounts of unstructured data to provide clear, actionable insights.

Types of Decision Support

PANTHEON leverages modern DSS approaches which generally fall into two categories:

1. **Knowledge-based:** Systems that use pre-defined "IF-THEN" rules based on expert knowledge and established protocols.
2. **Non-knowledge based:** Advanced systems that use Artificial Intelligence and statistical pattern recognition to identify solutions that might not be immediately obvious to human operators.

Predicting the Domino Effect

One of PANTHEON’s most critical innovations is how it applies DSS to **Critical Infrastructure (CI)**. Disasters rarely affect just one system; a flooded substation can knock out power, which in turn might disable water pumps or communications networks.

PANTHEON’s DSS uses advanced **graph modeling** within its Smart City Digital Twin. This allows it to dynamically simulate these "cascading failures" over time. By understanding these interdependencies before they happen, decision-makers can prioritize saving the "node" that prevents the entire network from collapsing, rather than just reacting to the first problem they see.