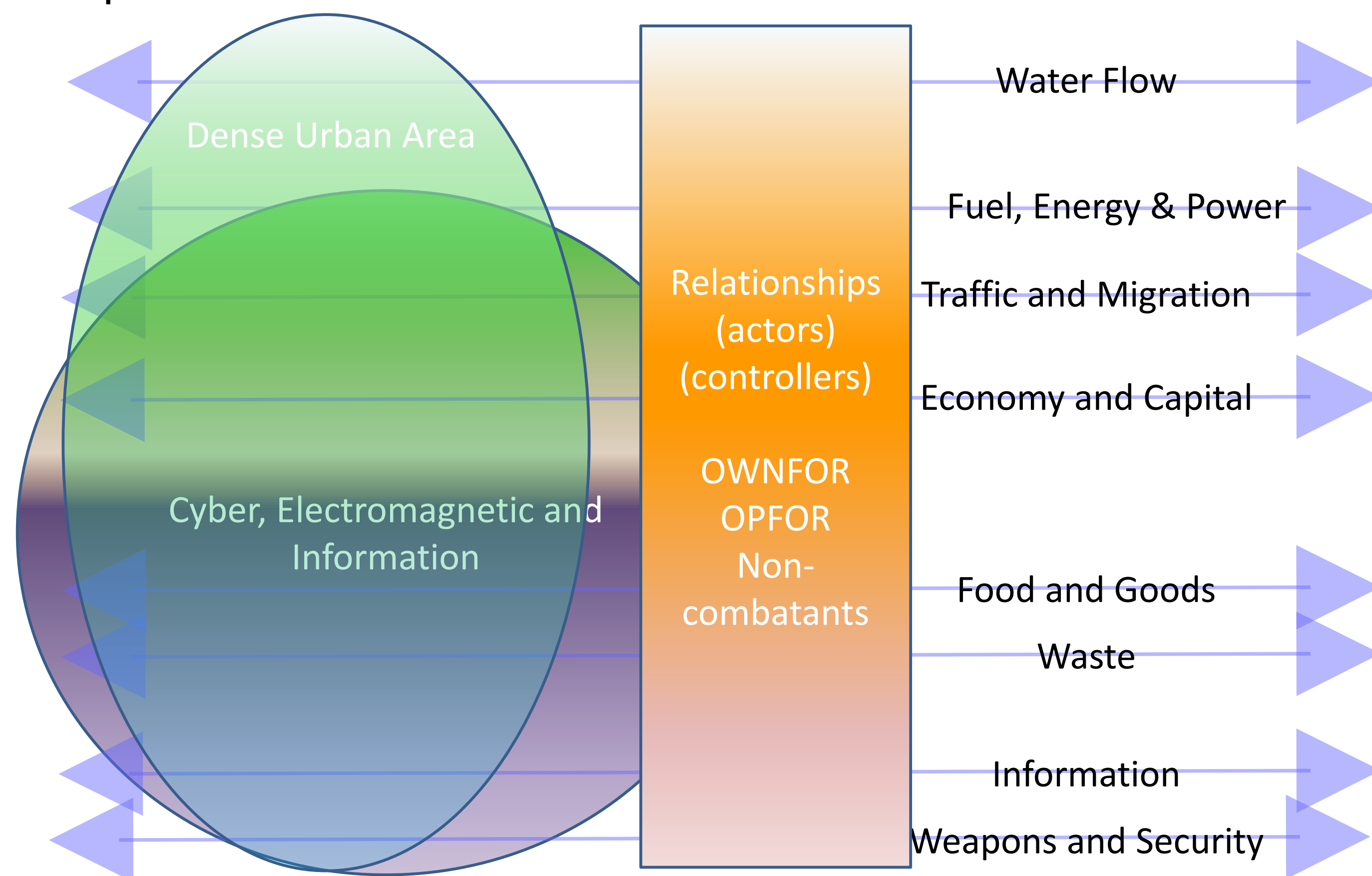


S&T Campaign: Assessment and Analysis
Science of Analysis and Assessment
Key Campaign Initiative

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Research Objective

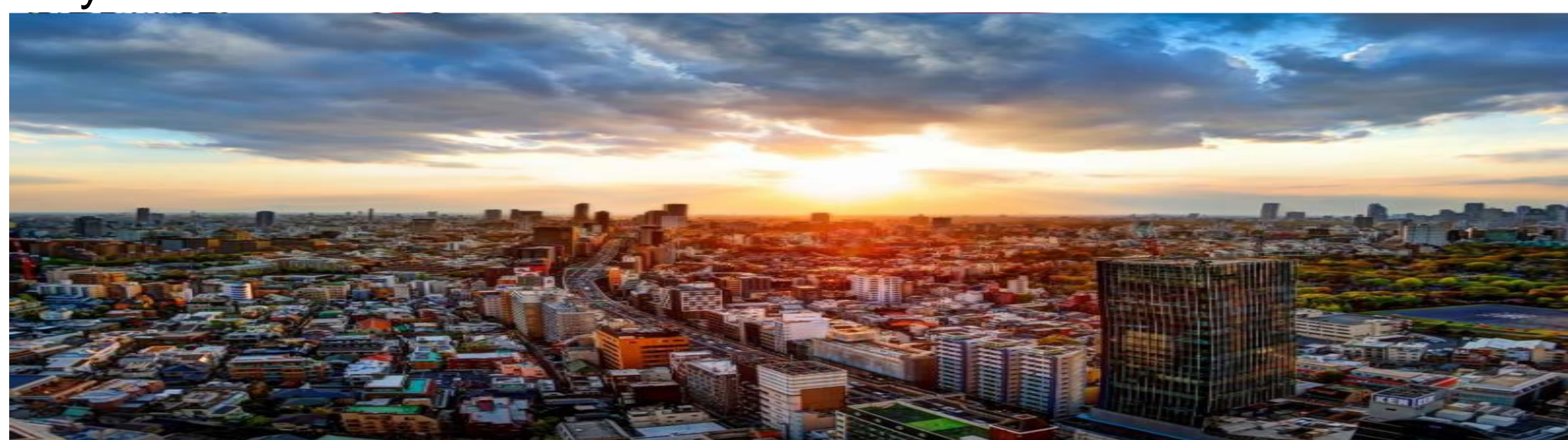
- Development of a dynamic, integrated analytical methodology for analysis and assessment of technologies, systems and human behavior in congested and contested environments in a dense urban context and globally.
- Current analytical tools do not address subterranean/ dense urban/ megacity environments' (SbT/DuE/MgC) effects on warfighting functions, and socio-cultural impacts on Soldiers, adversaries and non-combatants in these environments. Dense urban environments (DuEs) are not static, but dynamically evolving and complex. DuEs are environments that are characterized by "...complex interactions of agency, connectedness, and flow at an unprecedented scale between the environment, its population, and the forces operating within it." This effort is groundbreaking due to the complexity, interconnectedness, and emergent nature of this future Army operational environment.



Agency, connectedness and flow of DuE

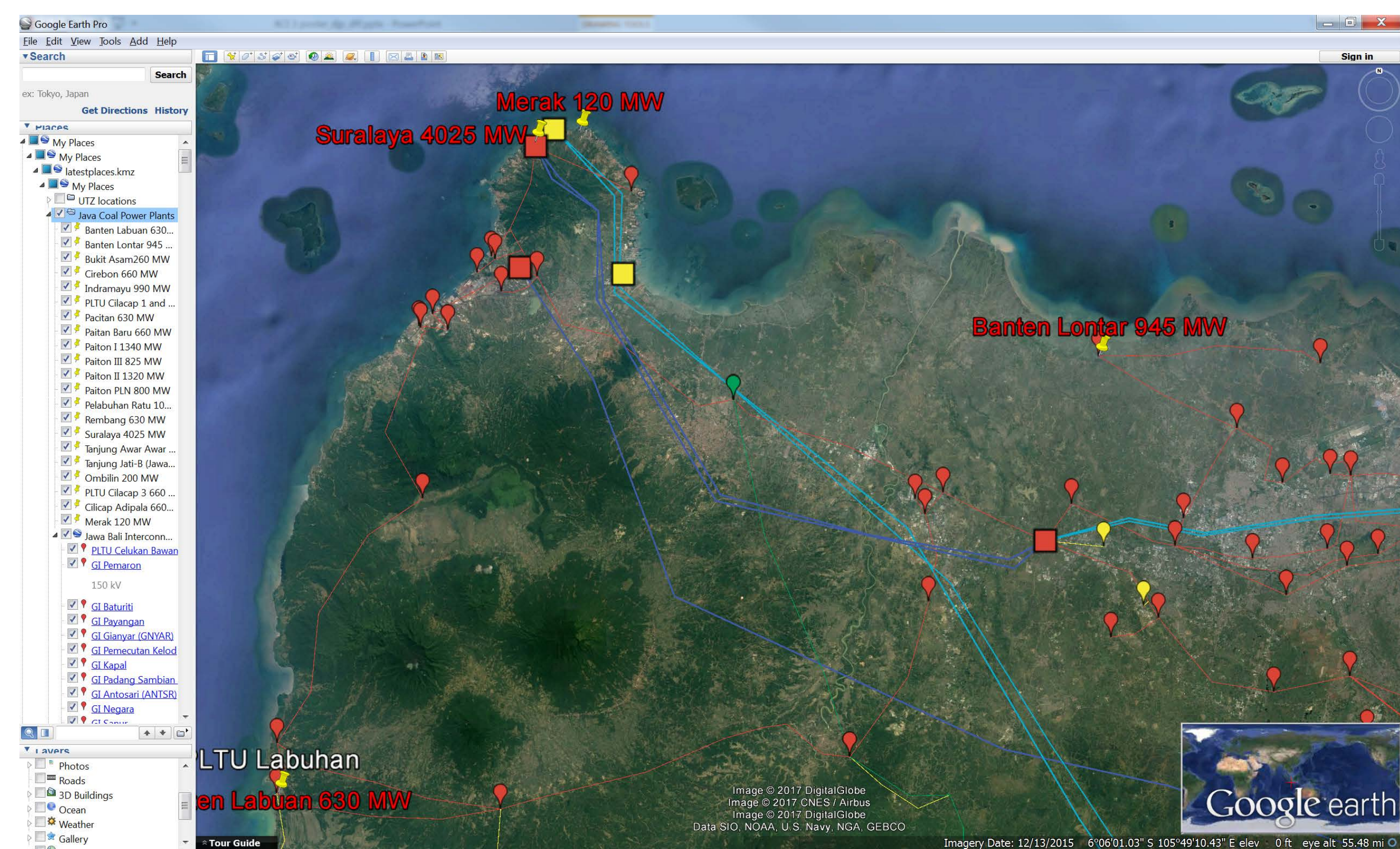
Challenges

- The Army does not fully understand the DuE operational environment, including prediction of human behavior, especially in the grey zone. One cannot assume that all variables are known.
- Evolving threats in the Cyber & Electromagnetic Activities (CEMA) domain and a high degree of interconnectedness. C&C OE will change how the Army fights.
- A significant lack of city or regional information organized through an analytical construct (methodologies) in such a way as to permit development of operational and mission variables, and perform true analysis and assessment of DuEs.



ARL Facilities and Capabilities Available to Support Collaborative Research

- Live Fire Test Range.
- Modular Effectiveness/Vulnerability Assessment/ Smart Target Model Generator.
- Failure Analysis Logic Tree Functional Characterization of City Infrastructure.
- Ballistics, Cyber, Electromagnetic Analysis, Vulnerability/Lethality Analysis.
- Information on the built environment and infrastructure help control the essential (shape the OE).
- Interconnectedness and CEMA information aids in the ability to identify and separate combatants from non-combatants and control the cyber threat.
- Information on flows aids discovery of causal relationships.



Functional City Representation

Complementary Expertise / Facilities / Capabilities Sought in Collaboration

- Socio-cultural and human behavior analyses.
- Visualization of flows and representation of large dense urban areas.
- Federated analytical toolset.
- CEMA analytical toolset.
- Continual refinement and expansion of dense urban/subterranean data sets.
- Development of DuE ontology, taxonomy, and metrics.
- Determination of densities (physical, population, cyber, information, signal).