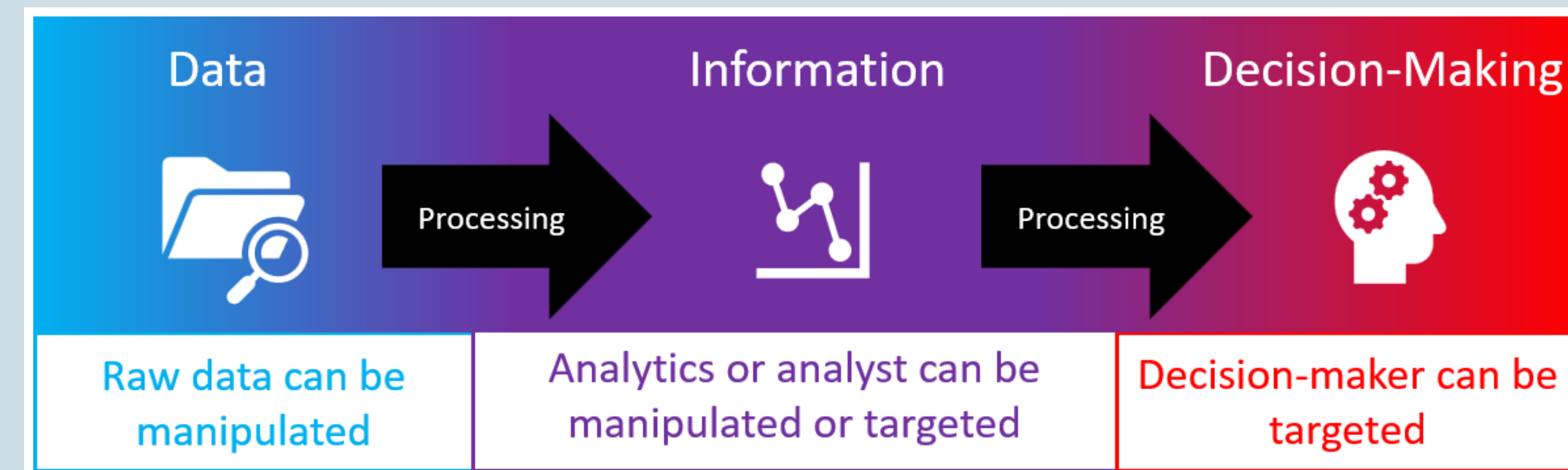# Sandia National Laboratories

Resilience to Disinformation: Quantify and Improve Organizational Security Postures

Sandia Team: Thushara Gunda, Sue Caskey, Steve Verzi, and Amanda Wachtel
UT-Austin Team: Sirkka Jarvenpaa, Ravi Srinivasan, and Alex Lui

Sandia Student Interns: Reagan Howell, Hugh Galloway, and Oscar Gonzalez
UT Student Interns: JP Akinyemi and Liz Wong

Motivation:

Data — Processing → Information — Processing → Decision-Making

Raw data can be manipulated | Analytics or analyst can be manipulated or targeted | Decision-maker can be targeted
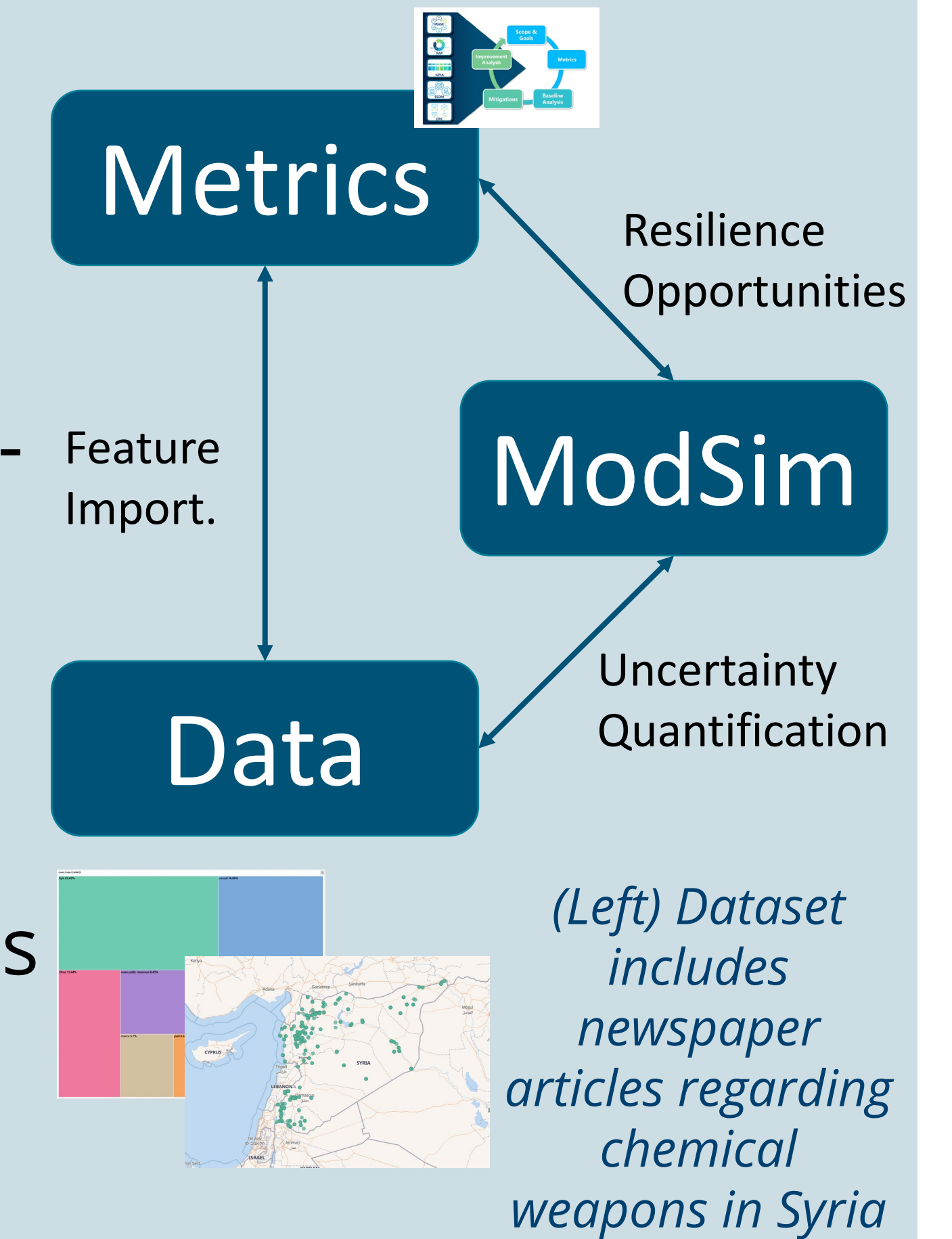
- Disinformation threatens verification and confidence of decisions, which occur across all Sandia missions (e.g., National and Global Security Programs)

- Disinformation impacts to organizations are overlooked in current quantitative assessments

UN News — Syria: 'Identified gaps, inconsistencies' raise questions over elimination of chemical weapons
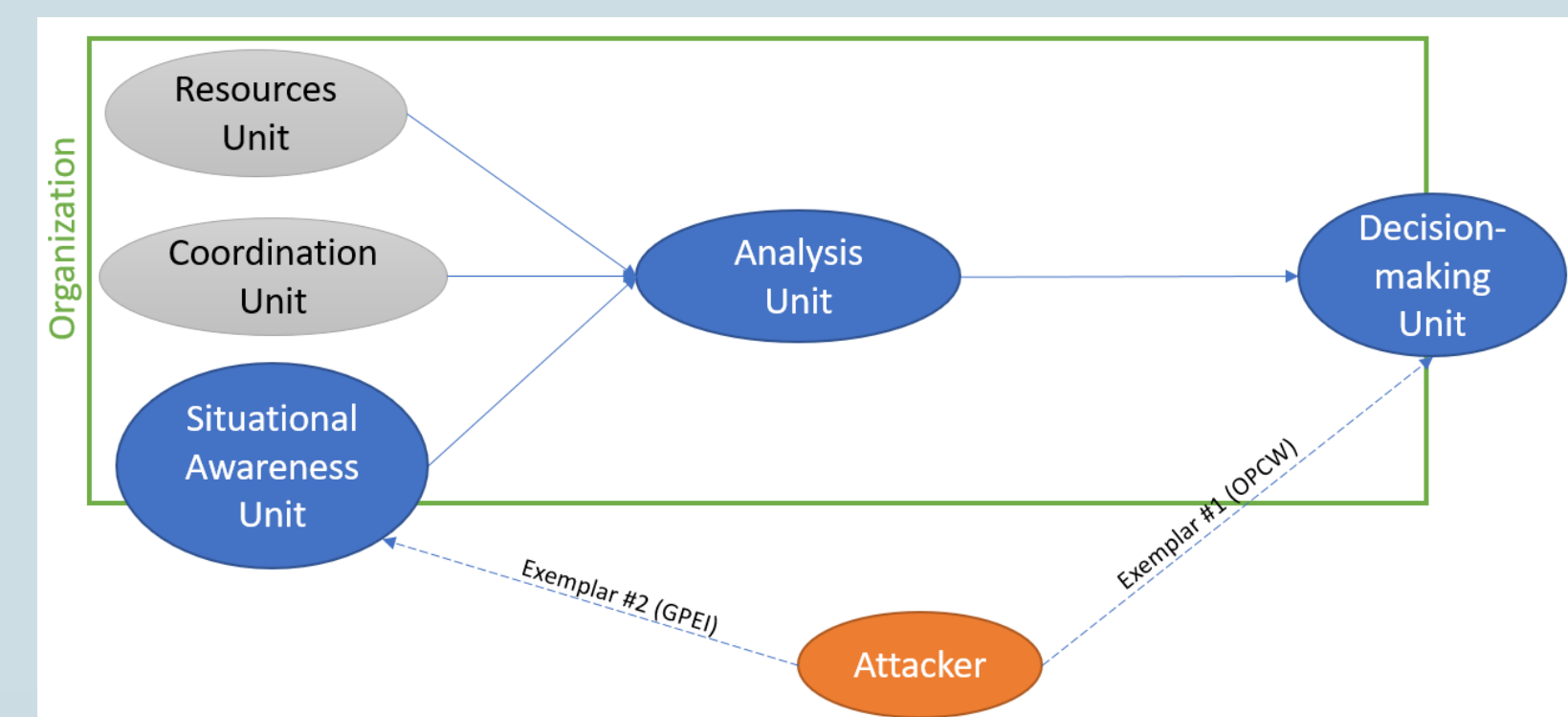
Technical Approach:

- Metrics sourced from multiple disciplines and theories

- Viable systems-informed agent-based modeling to test metrics

- Mixed methods (big data, UT-led human subjects experiments) to inform model design and scenario evaluations

- Uncertainty quantification for robust assessments

Metrics — Resilience Opportunities — ModSim — Uncertainty Quantification — Data — Feature Import.

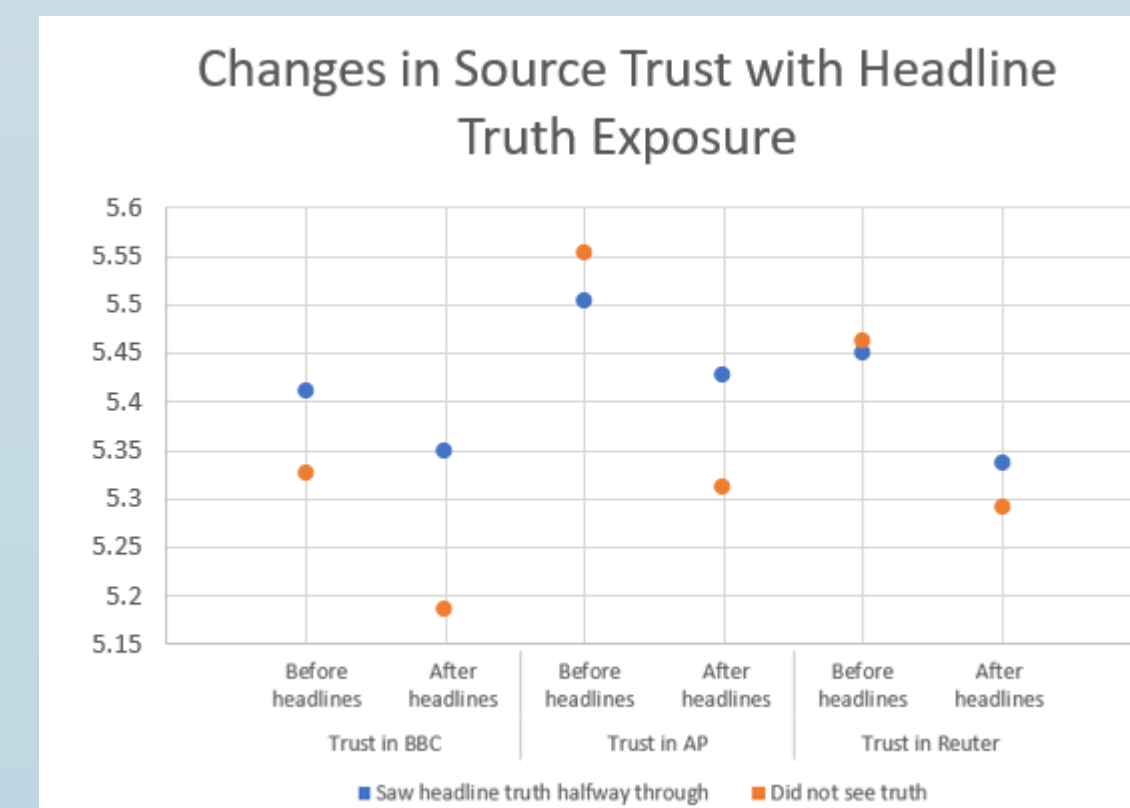*(Left) Dataset includes newspaper articles regarding chemical weapons in Syria*

Results Summary

- Identified initial set of metrics (mathematical formulations in progress)

- Designed organizational model

- Developed new capability for leveraging global-wide news coverage to evaluate situational awareness

(Top). ModSim will explore attacks to multiple org. units.

Changes in Source Trust with Headline Truth Exposure

(Left). Human subject exp. indicate relative increases in source trust when true headlines are revealed

Impacts & Successes to date

- Early lessons learned of interest to National Security Council

- Conference sessions organized at INFORMS (2021)

- Conference papers on resilience metrics and organizational design for ModSim currently under review

- Strengthened relationships with key collaborators across academic institutions

"Resilience to Disinformation in Organizational Systems: Exploring A Viable Systems Model Approach." Caskey, S. T. Gunda, A. Wachtel, and S. Verzi. Currently in review at HICSS - Special Topics in Organizational Systems and Technology.

"Application of Resilience Theory to Organizations Subject to Disinformation Campaigns." Wachtel, A. S. Caskey, T. Gunda, and E. Kistin Keller. Currently in review at Resilience Week 2022.

Project Size/Scope: LDRD Funding, Year 1 of 3, 1.2 FTEs/yr + Academic Alliance

TEXAS McCombs — The University of Texas at Austin — McCombs School of Business

APPLIED RESEARCH LABORATORIES — The University of Texas at Austin

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