Making Technologies work in a community

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Engineering and Computer Science Signature Areas

Security

Intelligent Systems

Unmanned Systems

Energy Sources, Conversion, and Conservation

Health and Well Being

Sustainable Natural and Built Systems

Jetsons
- 1960's

Popular Science 1988
– Smart House

NSF
- 2009

SYRACUSE UNIVERSITY
ENGINEERING & COMPUTER SCIENCE

Technologies - where are we headed

150 Billion devices….

Operating room of the future

Google, Uber, ….

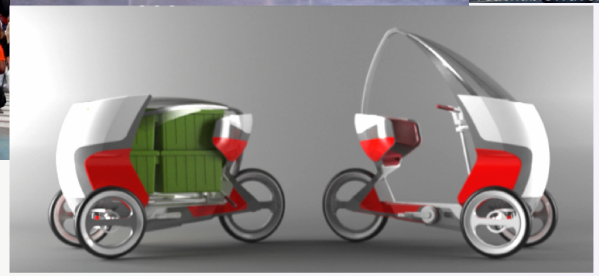
Smart Grids,

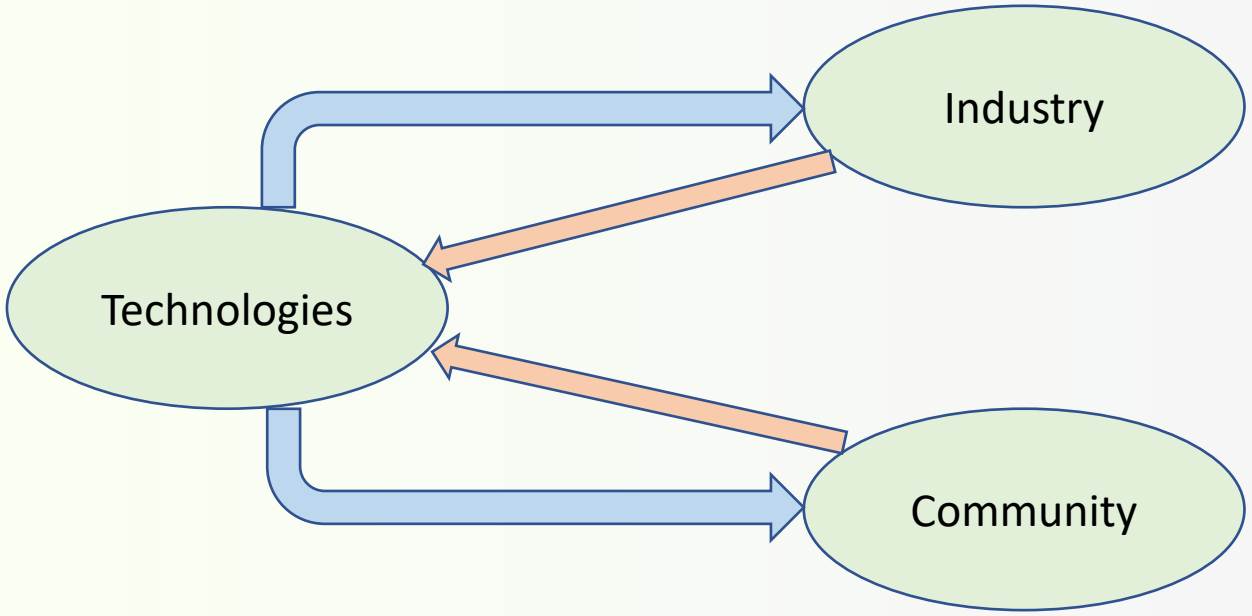
Big Data Analytics,

Cyber Manufacturing

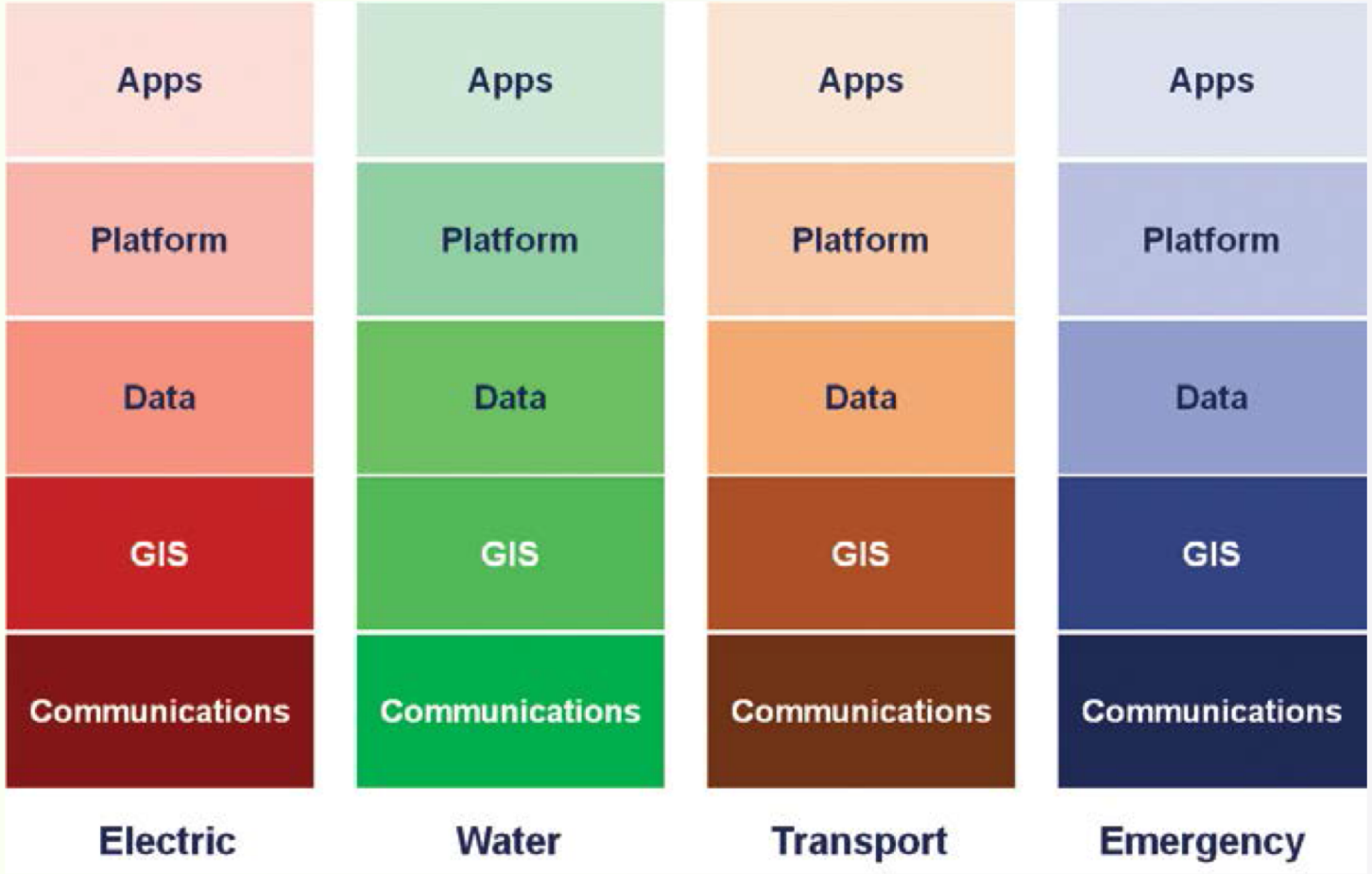
Delivery for Small Businesses in Manhattan

Karaman 2015



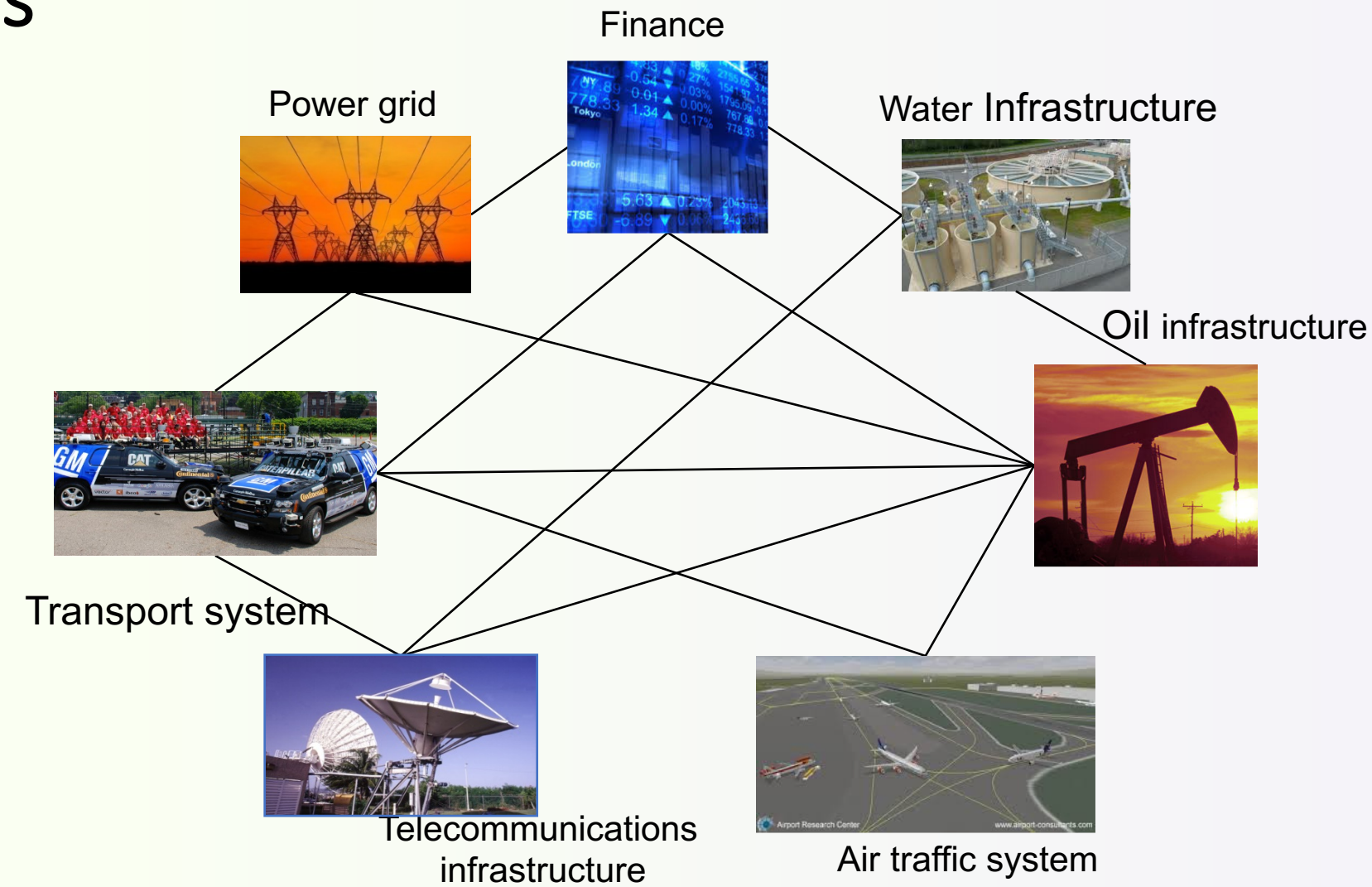

Industry
Technologies
Community

Interdependent Infrastructure Systems



Siloed infrastructures

Interdependent Infrastructure Systems



Interdependent Infrastructure Systems

- Failures can propagate from one system to the next due to interconnectivities

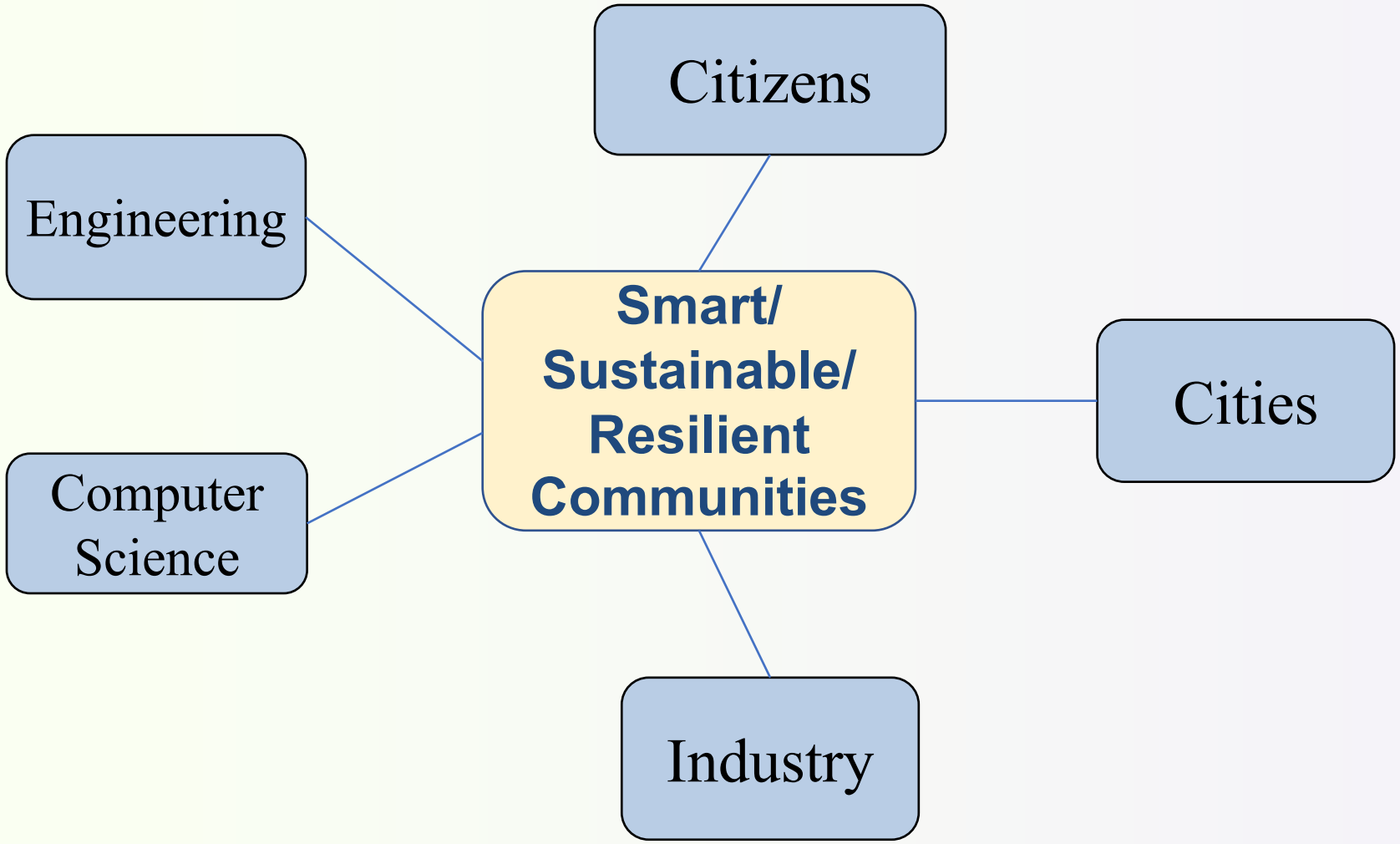
  Direct interdependency: In a hazard event, emergency services (response/repair) required for restoration of critical services (power/transportation/healthcare…), and critical services enable emergency response/repair activities

  Socio-technical indirect interdependency: Electric power loss → water treatment failure → contaminated drinking water →human illness → employees cannot work → fuel not delivered to power plants → further power disruption

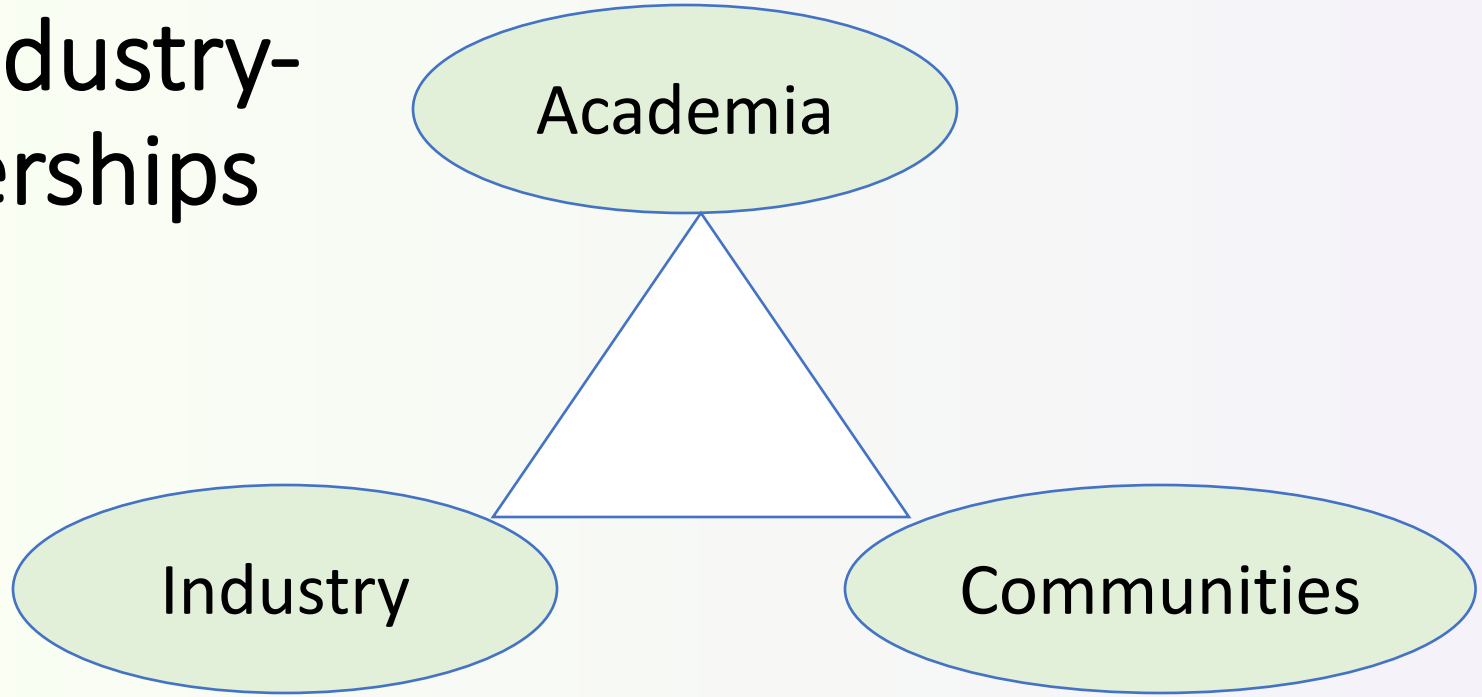
Making technologies work in a community

- Smart and Connected Communities
  - Better decision making
    - Individuals
    - Class of citizens (e.g., bicyclists)
    - City Planners
    - First responders
  - Improved quality of living
- Human-Technology Frontier

Multidisciplinary, Multi-stakeholder Research Agenda



Academia-Industry-Cities partnerships



Syracuse University
Infrastructure Institute