



## CAREER: Towards Reliable and Optimized Data-Driven Cyber-Physical Systems using Human-Centric Sensing (Award ID#: CNS-1845639)

PI: Dong Wang, University of Notre Dame

### Challenge:

- Data Reliability
- Crowd Rationality
- Closed-loop  
Crowdsensing based-CPS  
(C-CPS) Design

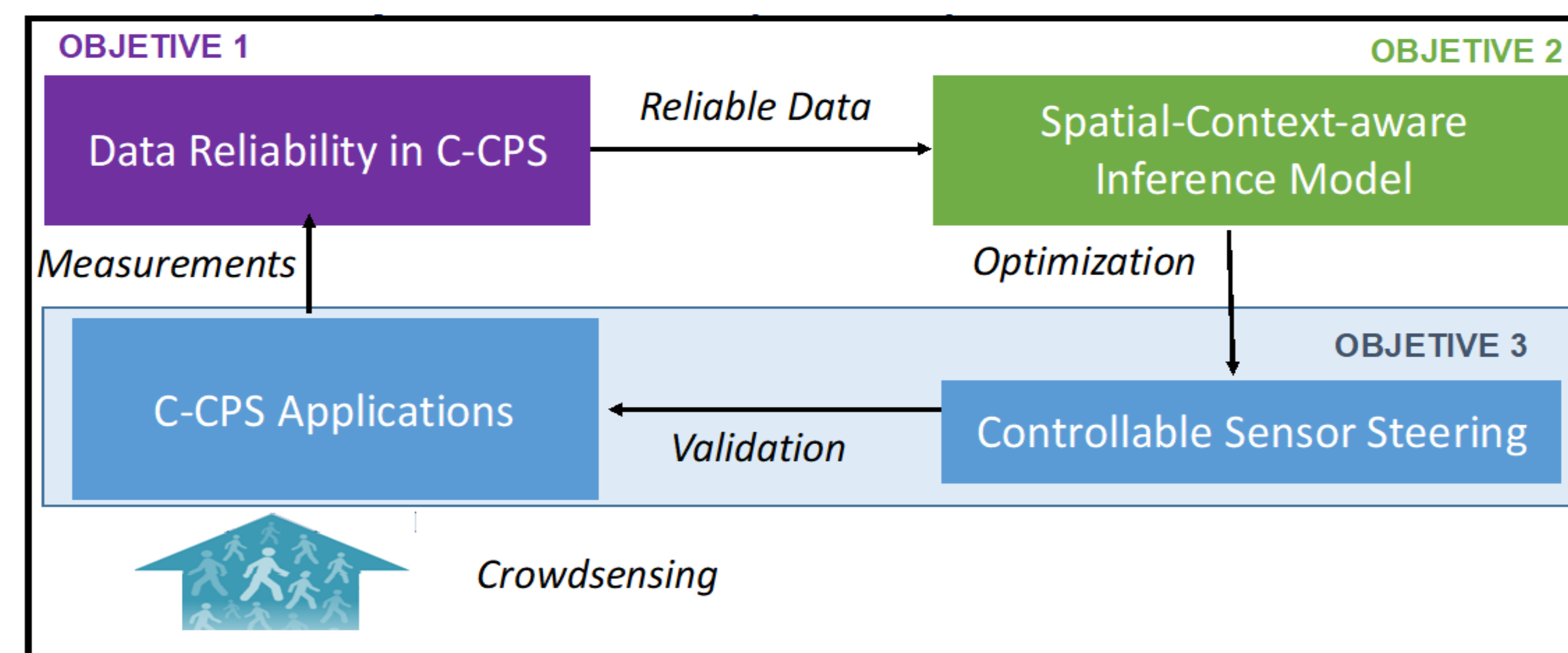
### Solution:

- Design a reliable crowd signal distillation module
- Create a novel drone task allocation module based on distilled crowd signals
- Build a closed-loop C-CPS system through a trustworthy source selection module

Award ID: CNS-1845639

Institution: University of Notre Dame

Contact: [dwang5@nd.edu](mailto:dwang5@nd.edu)



Disaster Damage Assessment



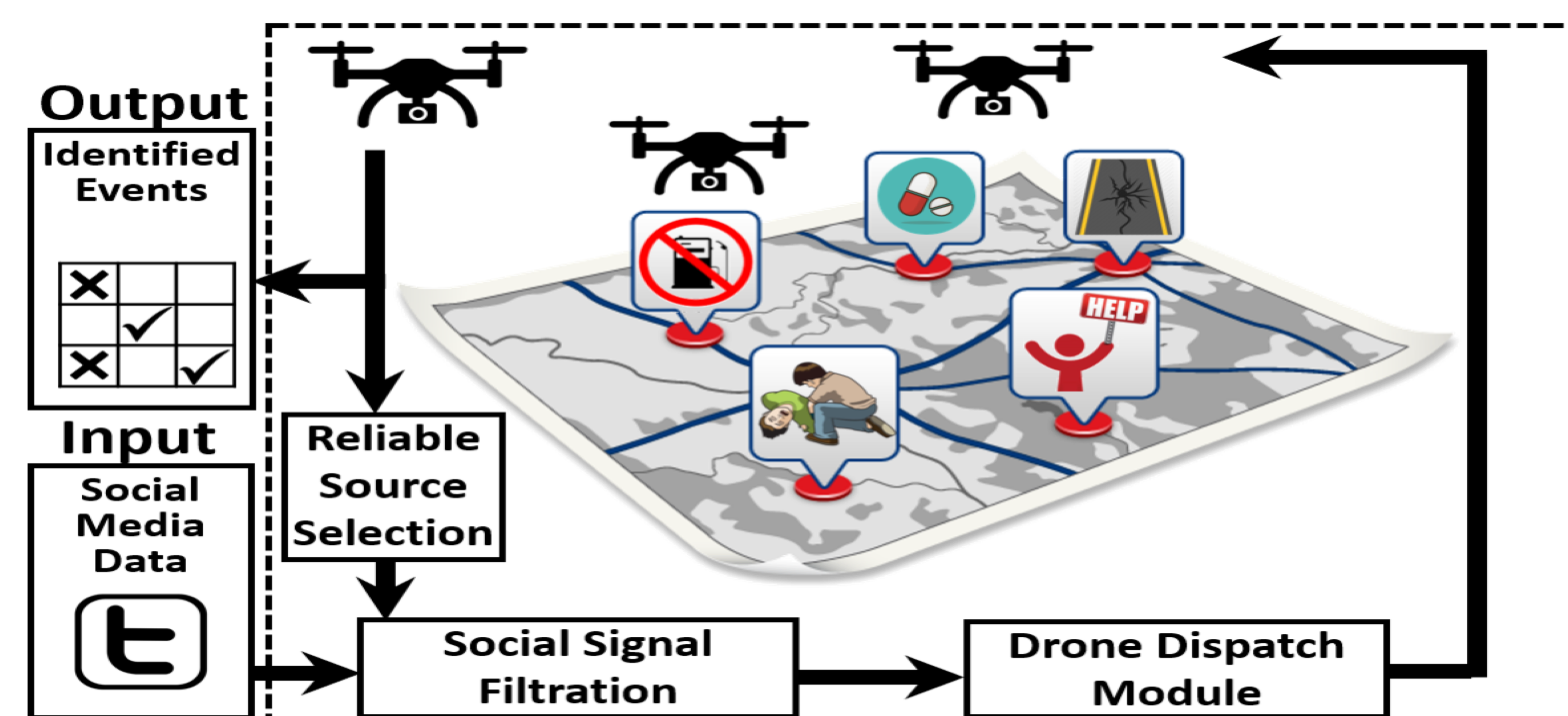
Smart Water Sensing



Intelligent Transportation



The project aims to design a reliable and controllable crowdsensing-based CPS (C-CPS)



Social-Drone is a prototype of C-CPS developed by the team and the work is published in Infocom 2020 .

### Scientific Impact:

- The current C-CPS framework has been studied in a disaster assessment application
- It can be further generalized and applied to other C-CPS domains (e.g., crowdsensing based anomaly detection, intelligent transportation, smart urban sensing)

### Broader Impact:

- Contribute to a powerful C-CPS paradigm that can transform many aspects of our society (e.g., disaster response, environment, transportation).
- Develop a new course “Human-Cyber-Physical Systems”
- Organize SocialSens Workshop in CISE Communities