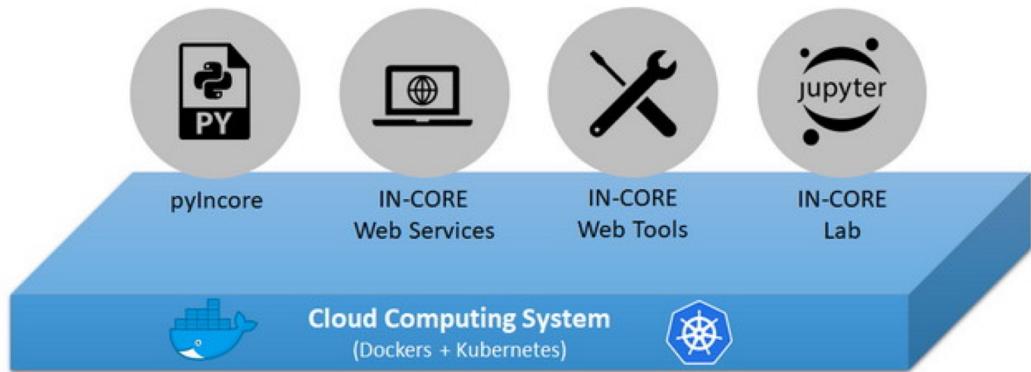


IN-CORE User Workshop

John W. van de Lindt
Co-Director, Center for Risk-Based Community Resilience Planning



AGENDA

Mountain Time	Join Zoom Meeting: https://zoom.us/j/95020363783?pwd=aUFFYU5FNmxVUGdwM3F0c1VuTGlyUT09 Meeting ID: 950 2036 3783 Passcode: 451704
11:00 – 11:35AM	Session 1: Overview of IN-CORE & User Workshop Objectives <ul style="list-style-type: none">• Welcome - John van de Lindt (5 min)• Scientific overview of IN-CORE - John van de Lindt (10 min)• Platform overview - Jong Lee (15 min)• Workshop Objectives - Jong Lee (5min)
11:35 – 11:50AM	BREAK and PREP <ul style="list-style-type: none">• Prepare their training environments (logging in and uploading files to incore-lab etc.)
11:50 AM – 12:50 PM	Session 2: Hazard (Earthquake, Tornado) <ul style="list-style-type: none">• Basics of IN-CORE modules (5 min)• Tornado (15 min)• Earthquake (15 min)• Hands-on exe - assignments (20 min)• Review answers (5 min)
12:50 – 12:55PM	BREAK

12:55 – 1:55PM	Session 3: Damage Analysis (Buildings and EPF) <ul style="list-style-type: none">• Fragility curve and Mapping (just presentation) - concept (5 min)• Inventory data (10 min)• Building damage analysis (10 min)• EPF damage analysis (5 min)• Hands-on exercise (25 min)• Review answers (5 min)
1:55 – 2:05PM	BREAK
2:05 – 2:45PM	Session 4: Visualization of Outputs <ul style="list-style-type: none">• Joining datasets (5 min)• Pyincore-viz (10 min)• Pandas (5 min)• Hands-on exe (15 min)• Review answers (5 min)
2:45 – 3:25PM	Session 5: Use Case - How to do research with IN-CORE <ul style="list-style-type: none">• Yousef Darestani - (15-minute presentation, 5 min Q&A)• Dylan Sanderson - (15-minute presentation, 5 min Q&A)
3:25 – 3:30PM	CLOSING and NEXT USER WORKSHOP

NIST-CoE Community Resilience Overview

- Improve the performance of built environment for natural hazards at the community scale
- Characterize interdependencies between social, economic, and physical systems
- Develop science-based tools that communities can use to assess/improve their resilience

First 5 years (2015-2020)

- ***Open-source inter-disciplinary computational environment (IN-CORE)*** to assess community resilience and support policies and decisions to advance community resilience goals.

Knowledge Creation

architecture and management tools that support IN-CORE.

- ***Comprehensive set of testbeds and hindcasts*** to validate IN-CORE.

Second 5 years (2020-2025)

- ***Measurement and decision science through IN-CORE***, including interdependencies, uncertainty, intermodal systems, and risk-informed decision support.

Knowledge Implementation

and validation, including integrated databases and longitudinal knowledge from field studies.

- ***Decision support and implementation*** of resilience science through ***technology transfer***.

NIST CoE Executive Team



John van de Lindt
Co-Director



Jong Lee
Task 1: Development of IN-CORE Platform
University of Illinois at Urbana Champaign



Dan Cox
Task 1: Development of IN-CORE Platform
Oregon State University



Shannon Van Zandt
Task 2: IN-CORE Outreach and Sustainability
Texas A & M University



Harvey Cutler
Task 3: Mitigation and Recovery
Colorado State University



Andre Barbosa
Task 4: Verification and Validation (V&V) of IN-CORE
Oregon State University

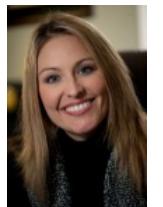


Jamie Padgett
Task 5: Modeling of Complex Systems
Rice University



Paolo Gardoni
Task 6: Modeling of Interdependencies and Propagation of Uncertainty
University of Illinois at Urbana Champaign

NIST CoE Faculty, Developers, & Staff



NIST Collaboration Team

Community Resilience



Applied Economics



Earthquake



Disaster Failure
Studies



Materials and Structural Systems

Structures



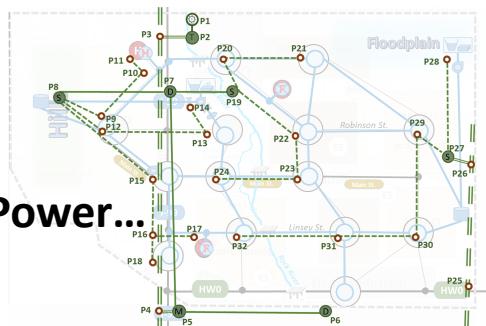
No pictured:
Christopher Segura

Begin by developing an integrated community model

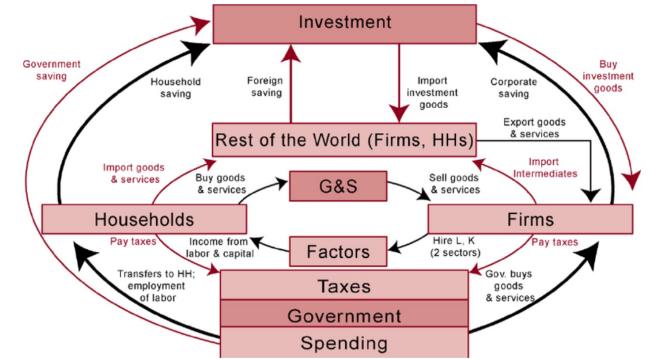
Buildings...



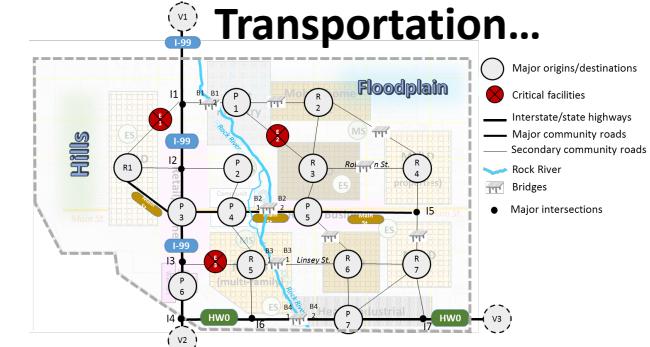
Power...



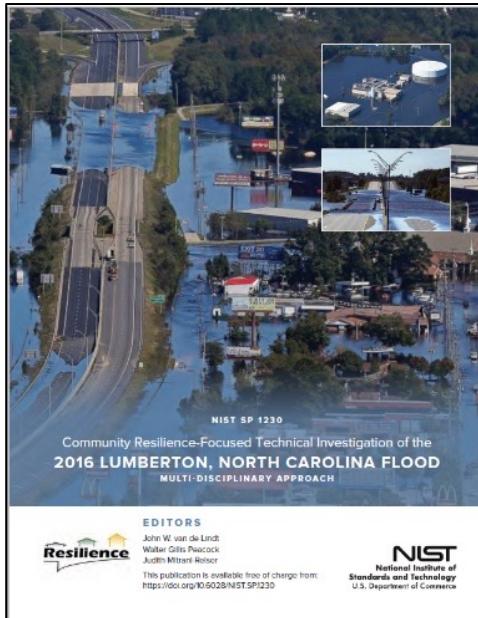
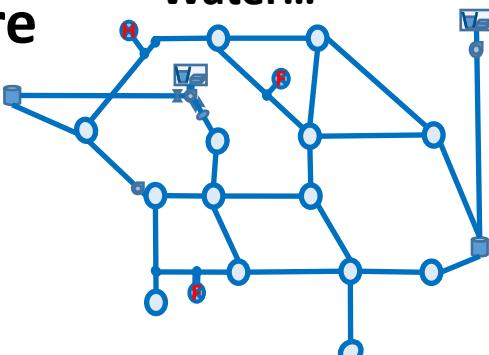
Economy



Physical infrastructure



Water...



Social (e.g . households, institutions)



Interdependent Networked-Community Resilience Modeling Environment

- Physical infrastructure
- Economic health
- Social services
- Information science



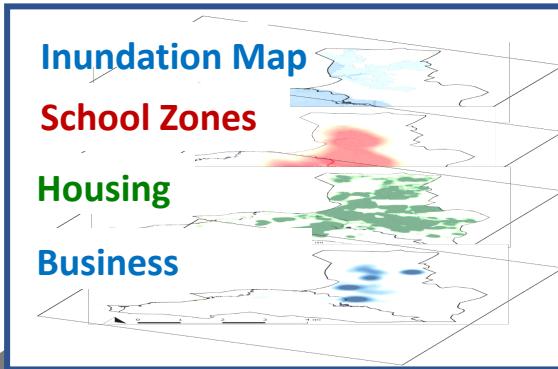
<https://incore.ncsa.illinois.edu>

<https://github.com/IN-CORE/>



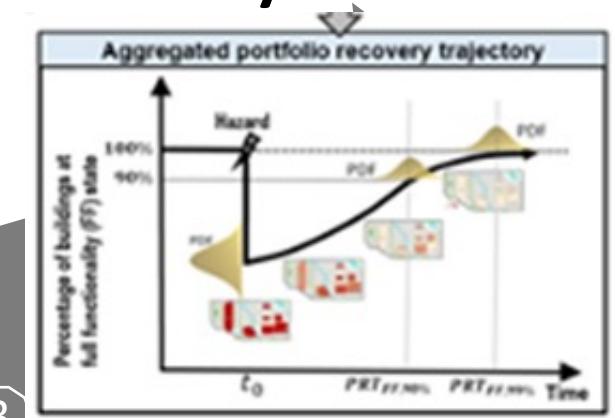
1

Damage and loss;
impacts of natural
hazards on
communities



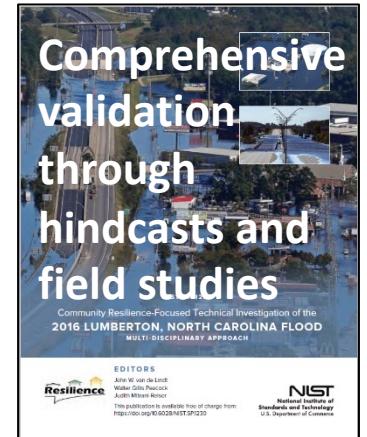
2

Interdisciplinary
recovery with fully
integrated supporting
databases



3

Alternative actions
to enhance community
resilience & inform planning

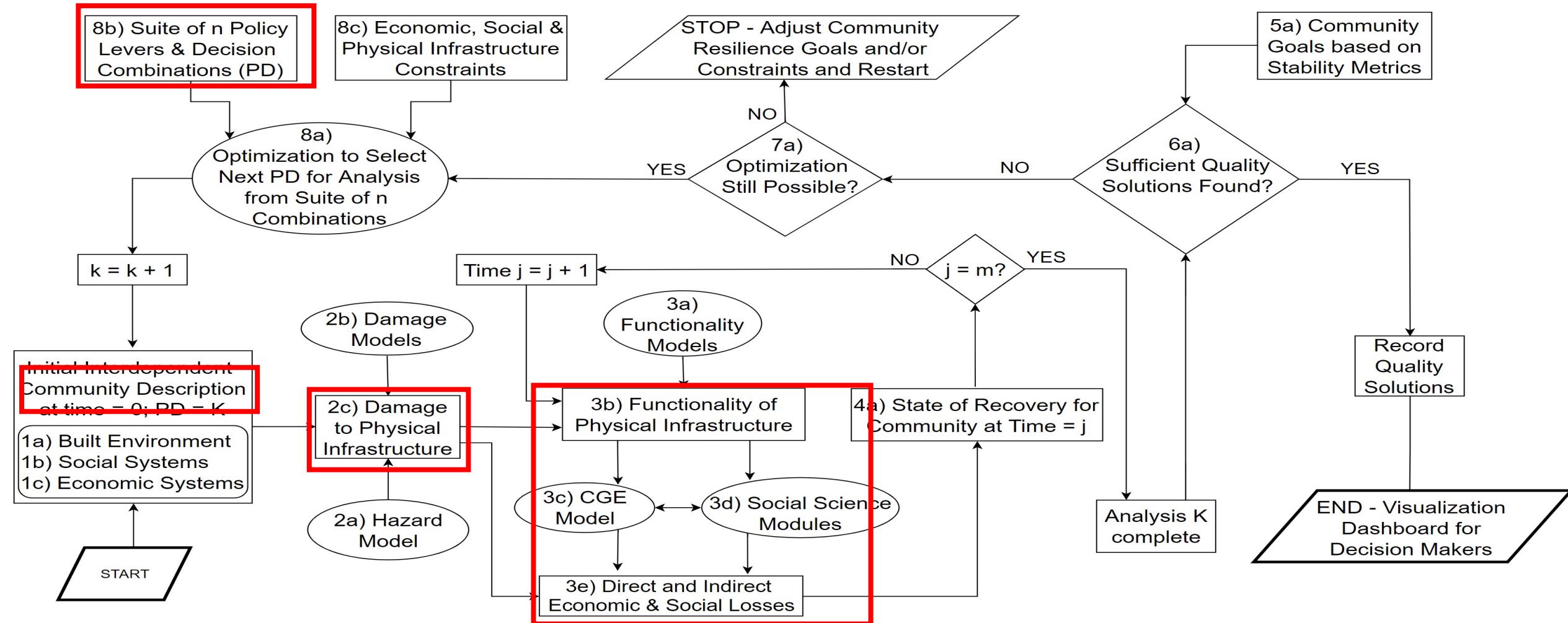


Email: resilience@colostate.edu <http://resilience.colostate.edu>

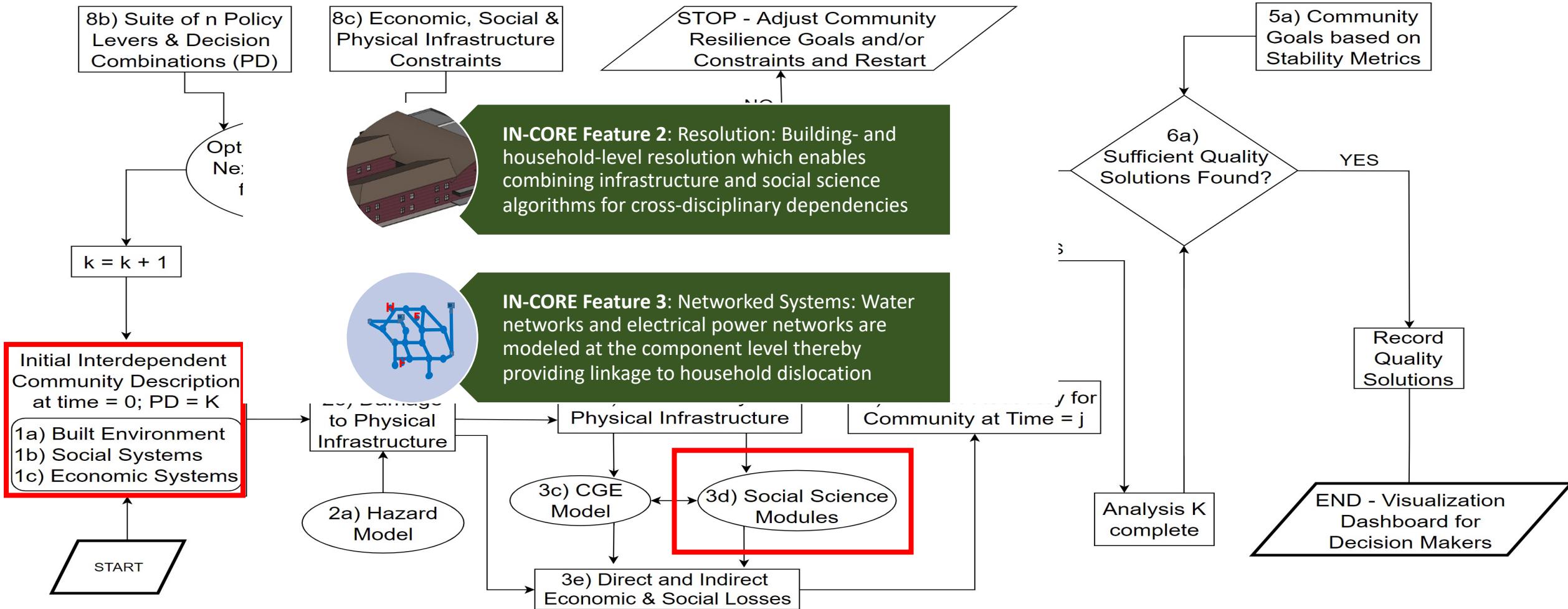


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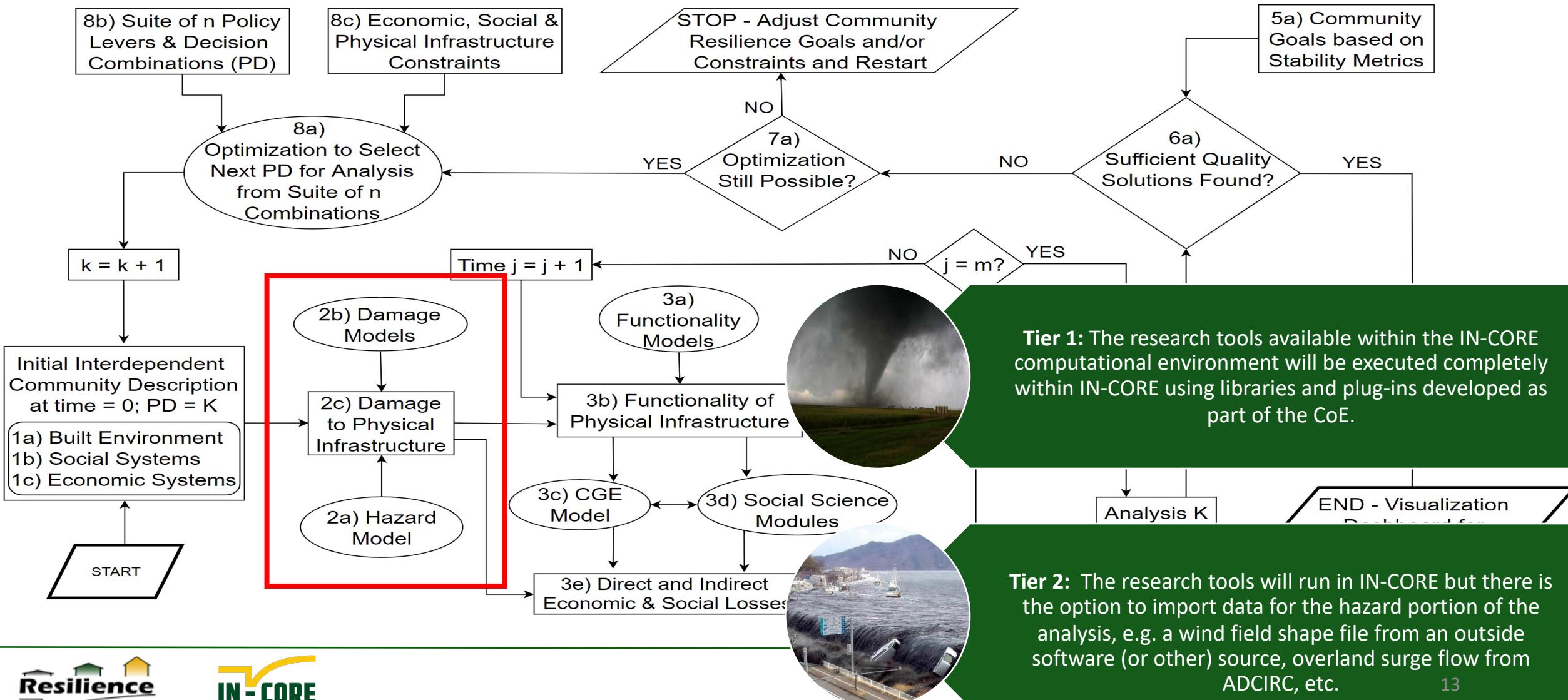
Modeling community resilience



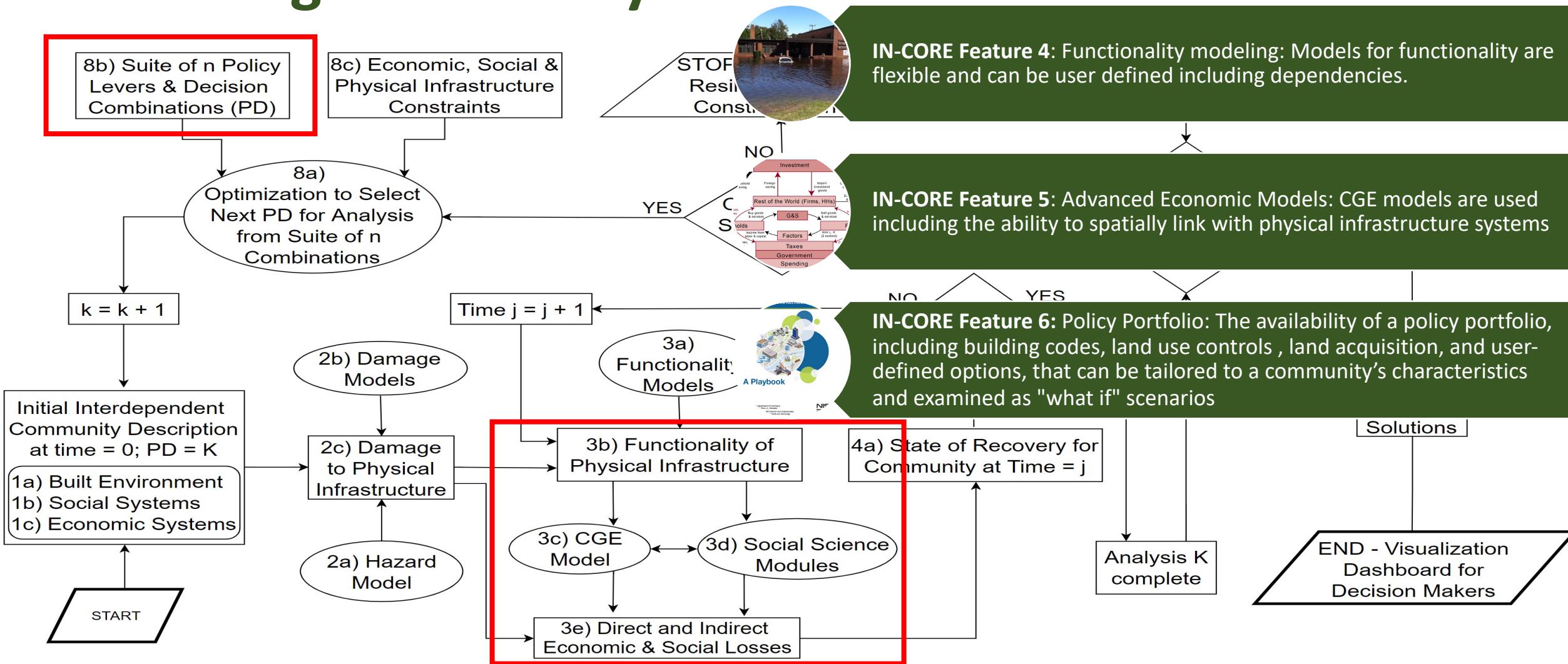
Modeling community resilience



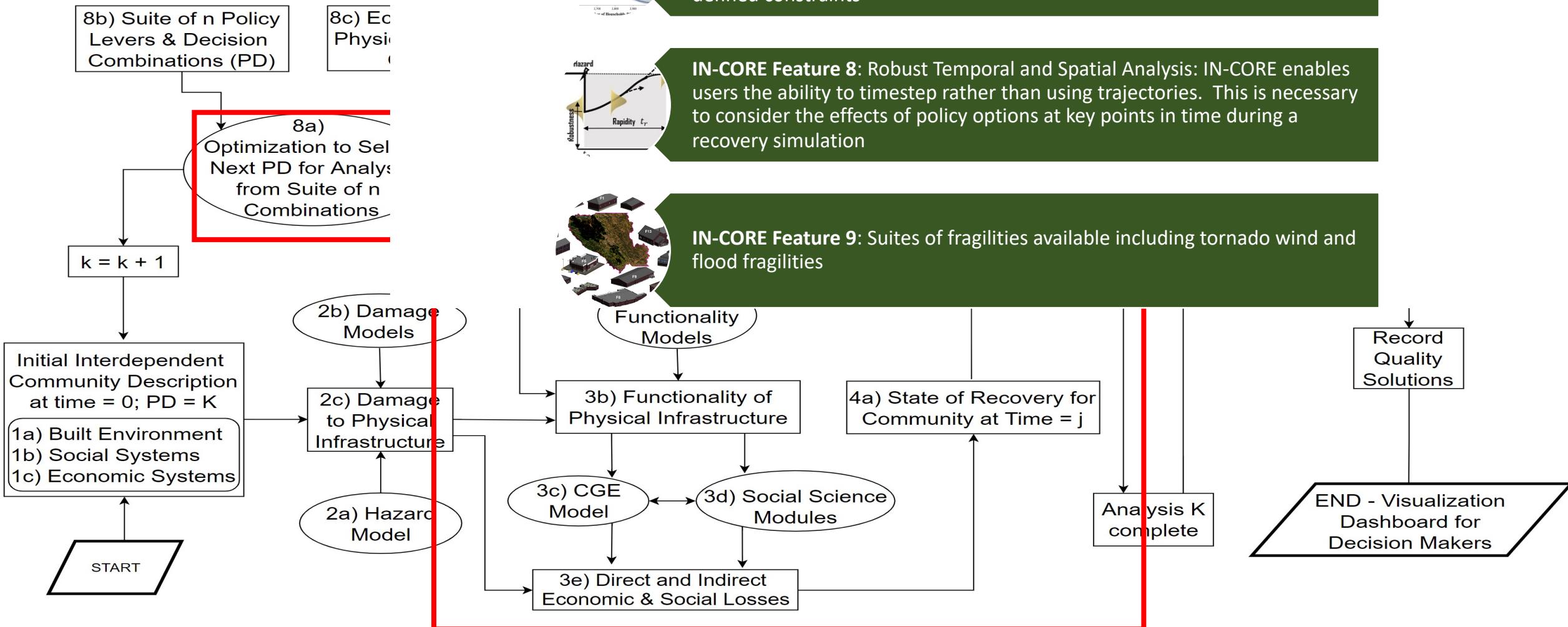
Modeling community resilience



Modeling community resilience

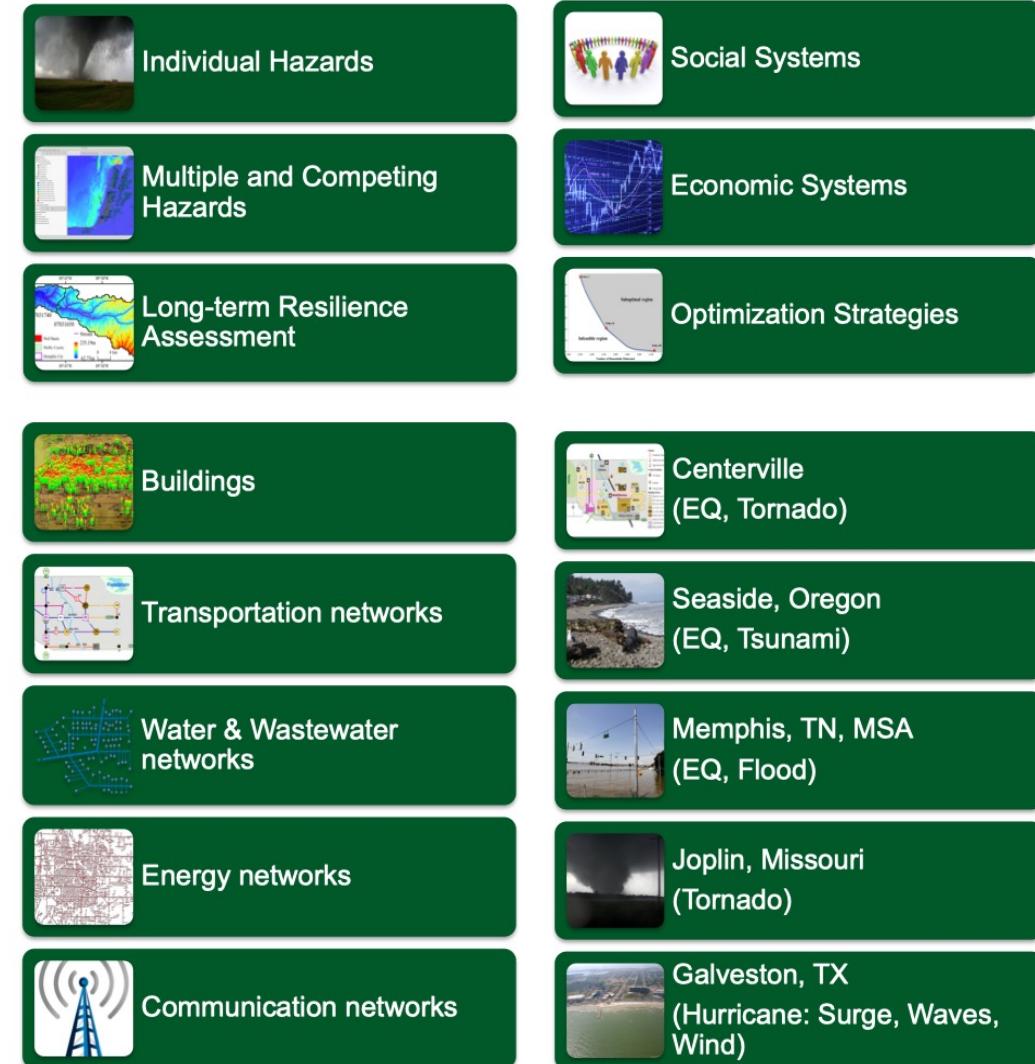


Modeling co



Modeling community resilience: components

- Measurement science is implemented on a platform called Interdependent Networked Community Resilience Modeling Environment (IN-CORE)
- It incorporates a risk-informed approach to decision-making that enables quantitative comparisons of alternative resilience strategies.
- On the platform, users can run scientific analyses that model the impact of natural hazards and study their impact on communities to improve resilience.



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Center for Risk-Based Community Resilience Planning
A NIST-funded Center of Excellence

Colorado
State
University

Enjoy the workshop!

Email: jwv@enr.colostate.edu

Twitter: [@commresilience](https://twitter.com/commresilience)