

Verifiable Real-Time War-Gaming/Decision Support Tool

M. Siami, M. Sznaier, and M. Silevitch

ALERT COE

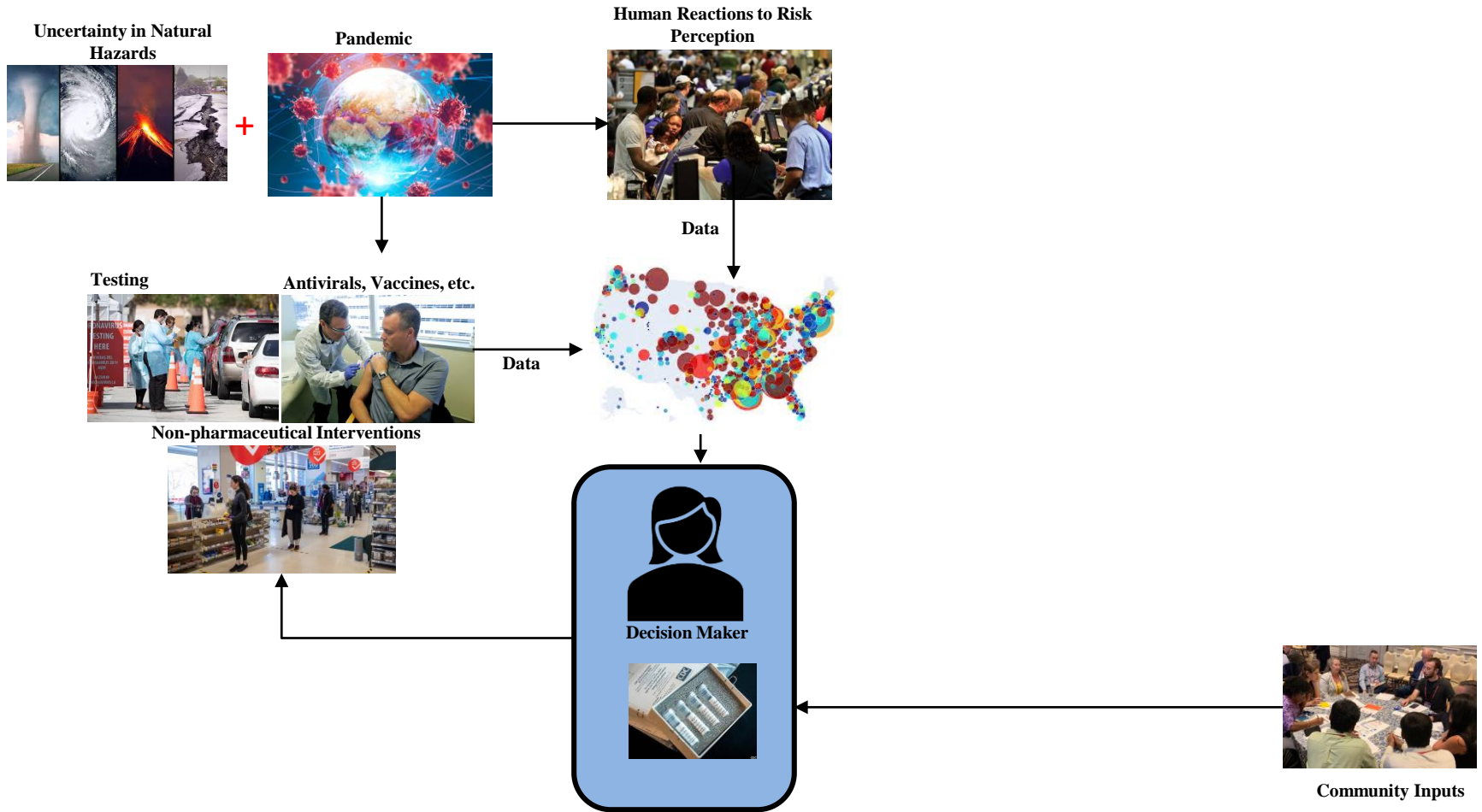
Asymmetric Game Theory:

A powerful framework in which to think about strategic interactions for defending against **dynamic, persistent and multi-pronged pandemic disasters**.

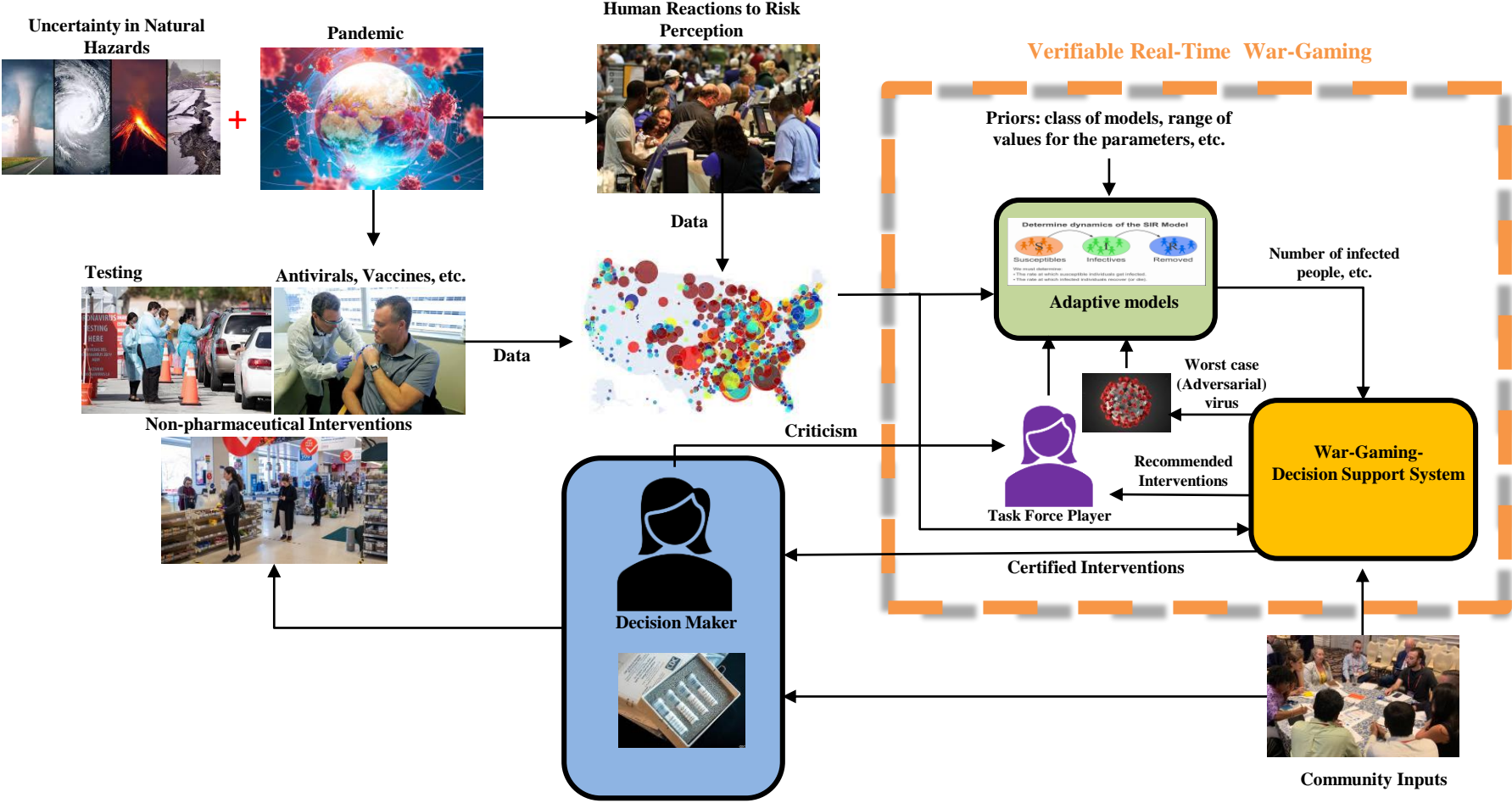
We propose to address the following barriers:

- Unlike complete information models of game theory:
 - the players in a dynamic interaction are unlikely to know their opponent's utility functions
 - players may not even know the full action space of their opponent (as games are played dynamically)
- Lack of a framework that allows for “on-the-fly” learning, control, and sensing in complex dynamical systems
- Lack of tools for provably correct inference in data-deluged scenarios
- Lack of a framework for resilient operation of communities defined by intricate, interconnected processes.

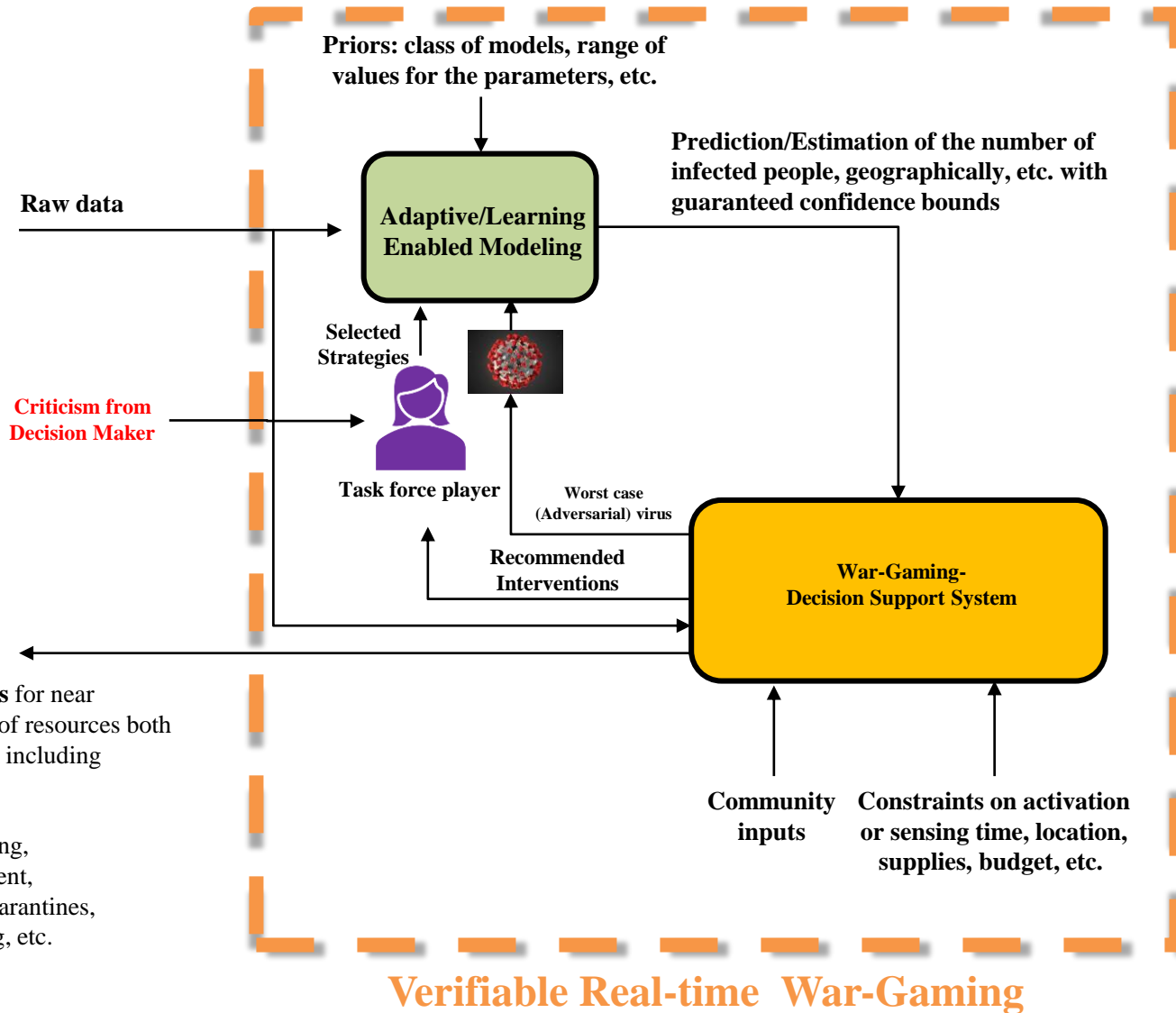
Non-Ideal Decision Making in A Pandemic



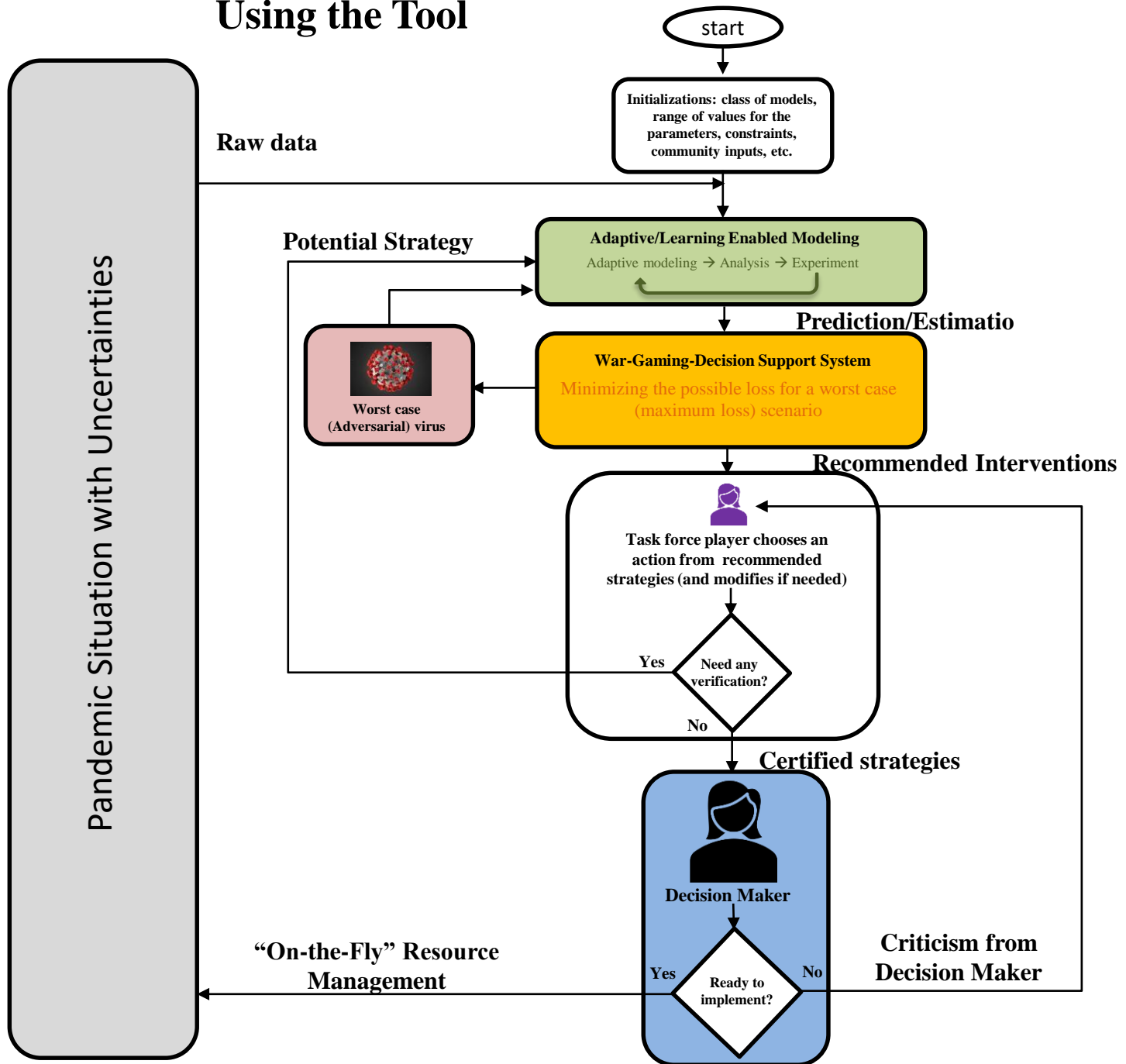
A War-Gaming/Decision Support Tool



A War-Gaming/Decision Support Tool

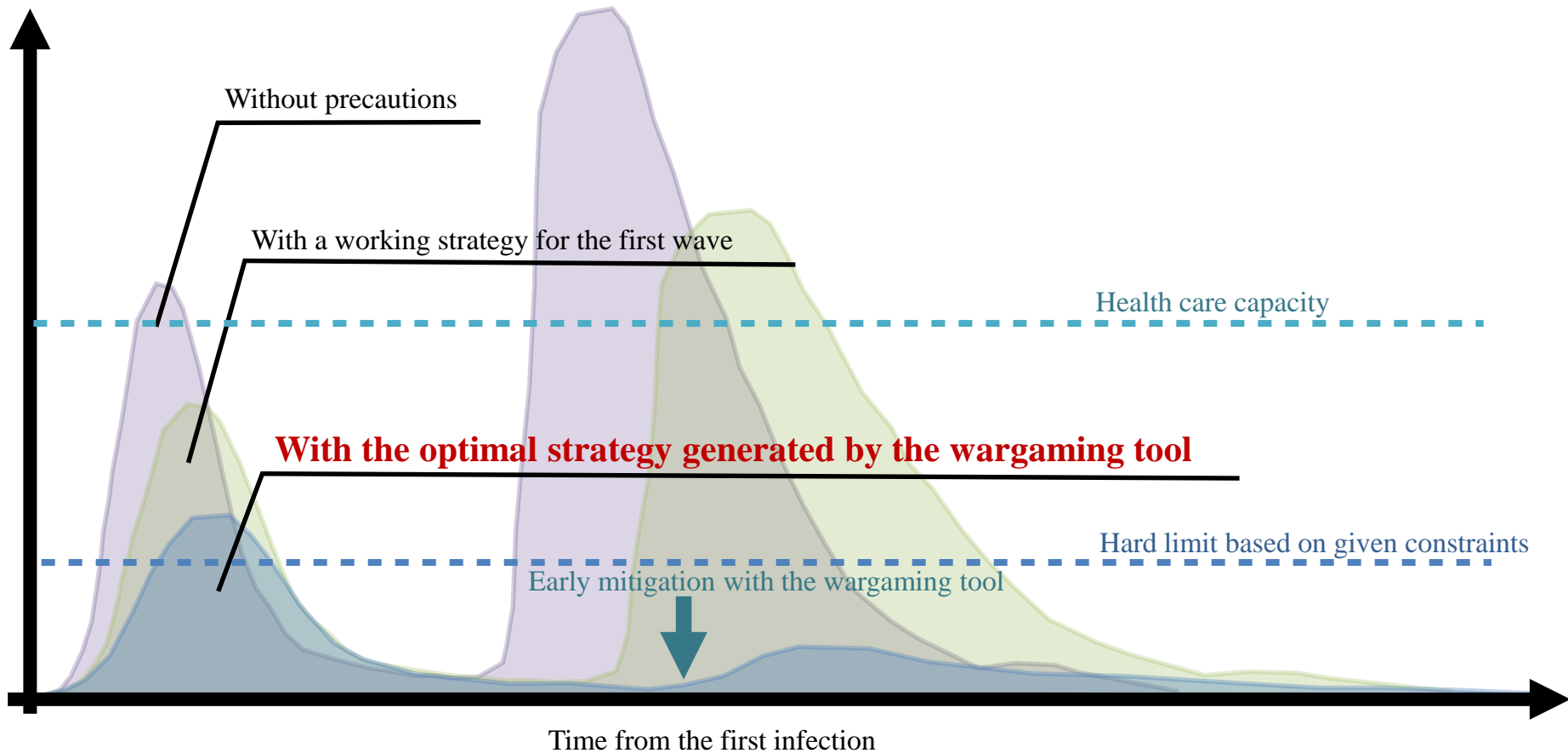


Using the Tool



Verifiable Real-Time War-Gaming and Hard Limits

Number of infected people



A pandemic can come in a single wave or several waves separated by several months or years, and future waves may be more severe than the initial one. Flattening the growth curve of the pandemic by making **optimal use of resources** it is expected that the proposed tool will save thousands of lives.

Budget Estimate

The budget estimate for initial proof of concept is approximately \$ 100 K to support two Ph.D. students. Anticipated Period of Performance is 1 Year.

Tasks: Analysis and synthesis of the proposed modules:

Task 1:

**Adaptive/Learning
Enabled Modeling**

This task will be led by PI Sznaier.

Task 2:

**War-Gaming-
Decision Support System**

This task will be led by PI Siami.