National Exercise Simulation Center (NESC) – Informative Briefing

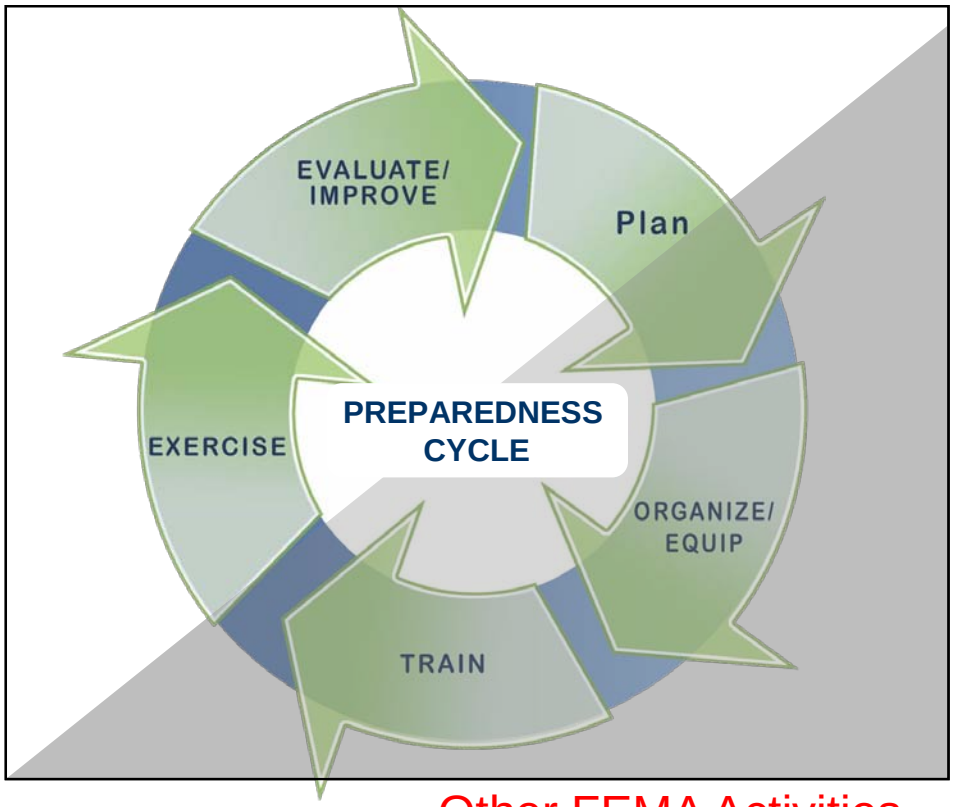
March 30, 2009

FEMA

NESC operations will integrate with the Preparedness Cycle

- Exercise
  - Computer-based Simulation
  - Human-based Simulation (SimCell)
- Evaluate/Improve
  - Control Cell
  - Quantitative Metrics Analysis integrated into AARs, IPs, CAPs
- Plan
  - Support of Exercise Design and Delivery

NESC



Other FEMA Activities

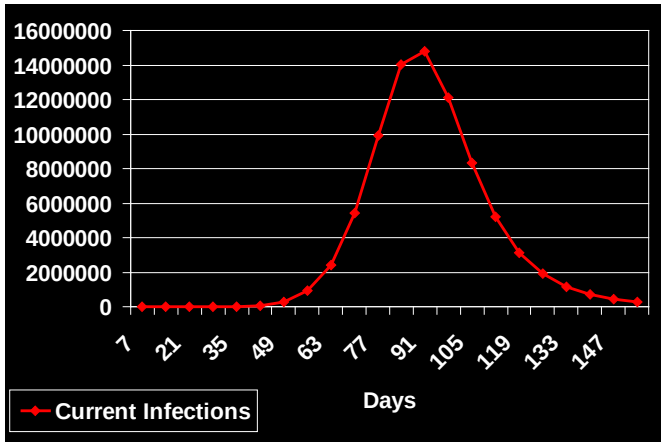
FEMA

NESC Core Capability (3rd Floor FEMA HQ)

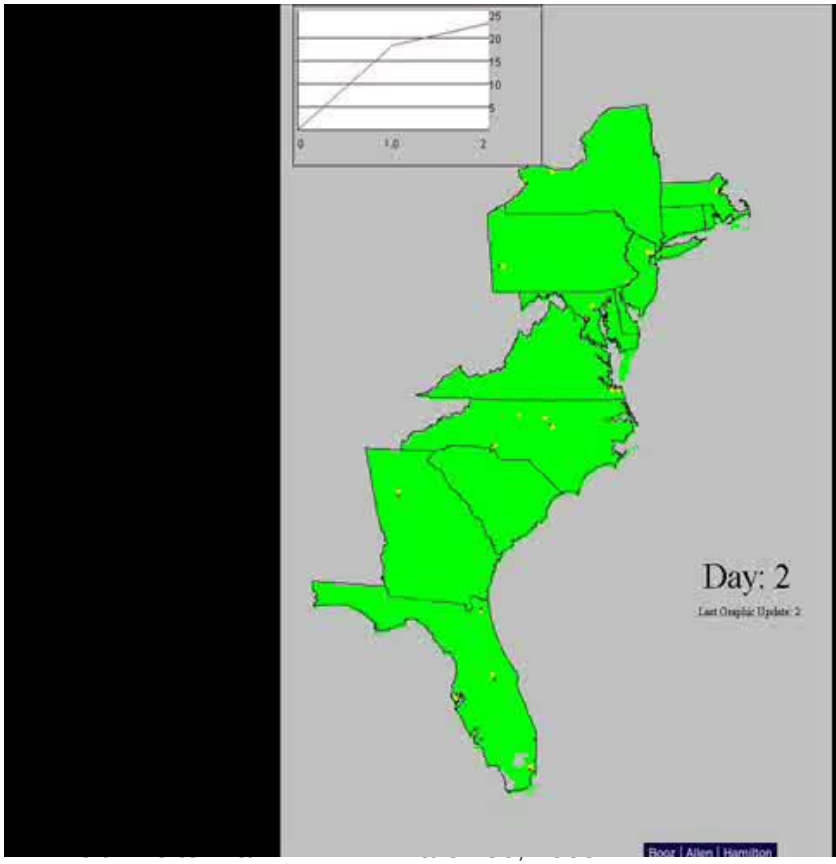
Current Operating Capabilities:

- Multiple linked display capability
- VTC, Teleconference
- 67 networked workstations with integrated phone
- iSave technology installed
- In-House dedicated secure communications
- Capability includes up to “secret” classification level

Benefits of Computer Simulation?



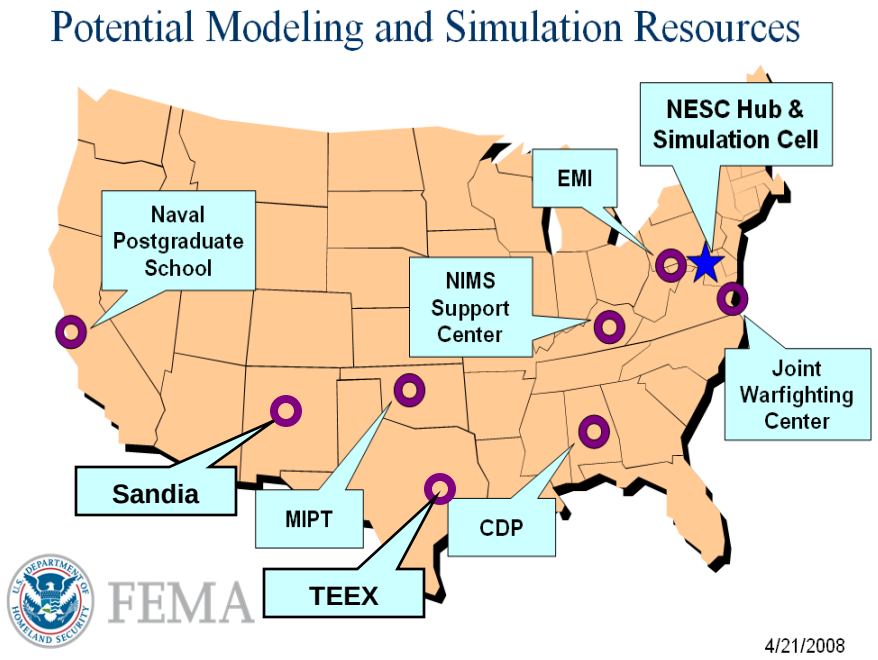
- **Multiple Outcomes -** Potential for efficient multiple dynamically derived outcomes
  - **X = f (1,2,3,4)**
- **Run, Re-run** – allows for dynamic changes to the outcomes, based on decisions made. Participants can explore alternative courses of action in real-time and react to and go beyond their initial decisions **(What ifs?)**
- **Timing of Decisions** – draws out collaborative opportunities and the appropriate timing for engagement in these opportunities
- **Culture Change** – expand the use of and acceptance of computer simulation as a valuable exercise aid across the community



FEMA

NESC Simulation Hub and Spokes

- The Simulation Hub portion of the NESC will be developed to provide connectivity to experimentation, modeling, and simulation capabilities distributed throughout the country
- An inventory of existing and developmental capabilities will be conducted to identify networked means of providing access for use during exercises, planning, and real-world response
- Support from the working group to identify additional tools, assets, and resources will enhance the available capabilities

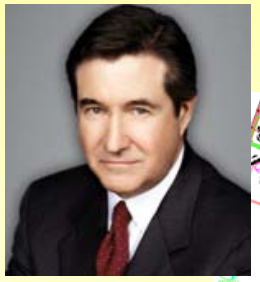


What types of simulation?

- The NESC is focused on utilizing decision support simulation to increase exercise realism and immersion in lifelike scenarios
  - Human Based Simulation (actors)
  - Computer Based Simulation

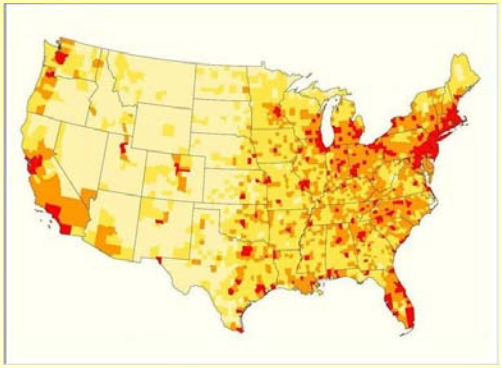
Human Based Simulation

- Virtual News Network (VNN)
- SIMCELL role players
- Actors, Make-up



Computer Based Simulation

- Virtual Worlds (Avatars)
- Plume Modeling
- Disease Propagation
- Agent Based Simulation



FEMA

M&S NESC Future Operating Model

Catalogue of Current Models and Simulations

1. Create and Maintain a catalogue of available Models and Simulations
2. Utilize a screening process for selection of simulation drivers
3. Categorize M&S through NESC Construct
4. Facilitate linkage to exercise planners through common platform

Screening Process

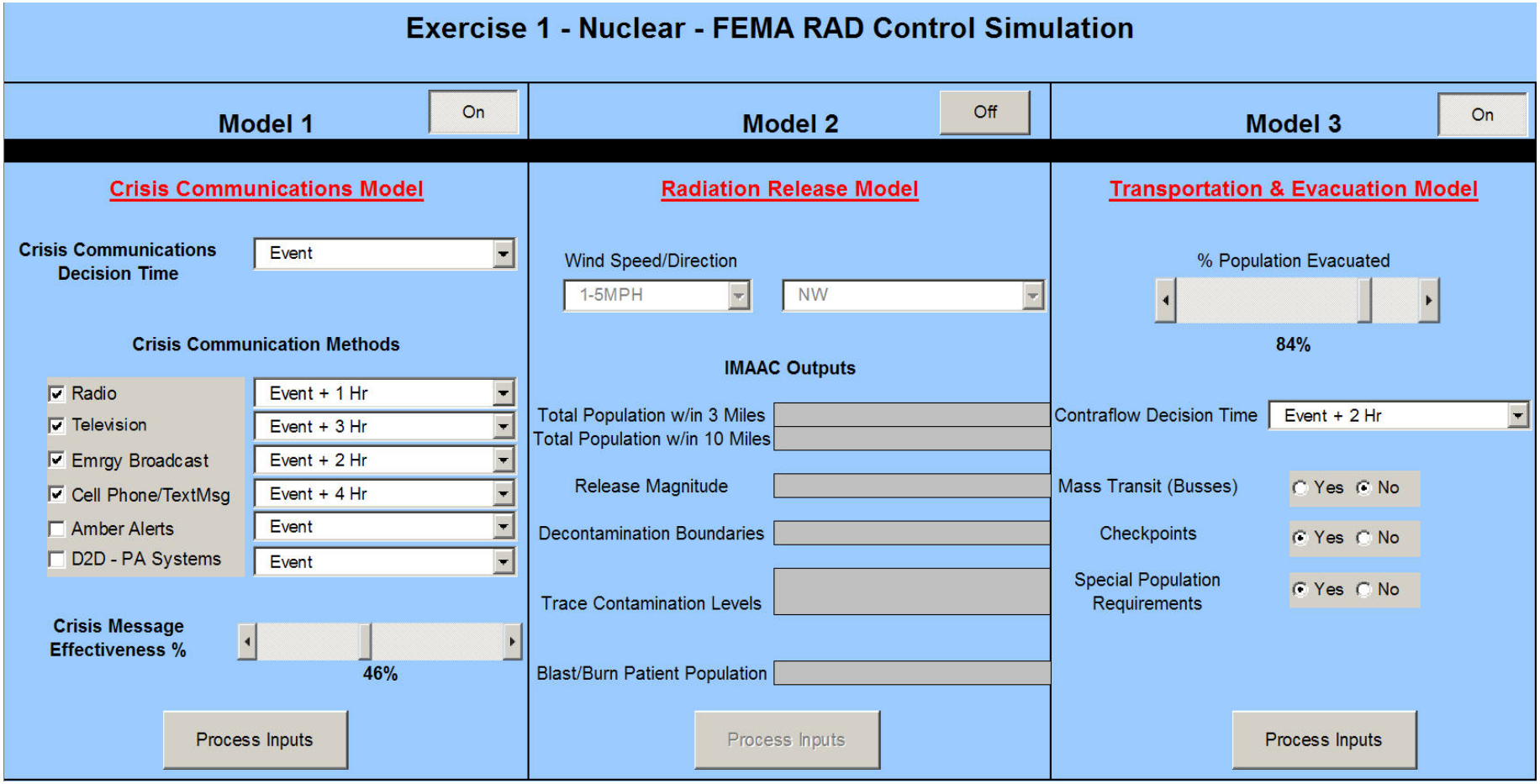
- Citizen Evacuation and Shelter-In-Place
- Communications
- Community Preparedness and Participation
- Critical Infrastructure Protection
- Critical Resource Logistics and Distribution
- Economic and Community Recovery
- Emergency Operations Center Management
- Emergency Public Information and Warning
- Environmental Health
- Epidemiological Investigation Surveillance and Investigation
- Explosive Device Response Operations
- Fatality Management
- Firefighting Operations and Support
- Food and Agriculture Safety and Defense
- Information Gathering and Recognition of Indicators and Warnings
- Intelligence Analysis and Production
- Intelligence/Information Sharing and Dissemination
- Isolation and Quarantine
- Law Enforcement Investigation and Operations
- Mass Care (Sheltering, Feeding, and Related Services)
- Mass Prophylaxis
- Medical Supplies Management and Distribution
- Medical Surge

Construct for the Exercise Requirement

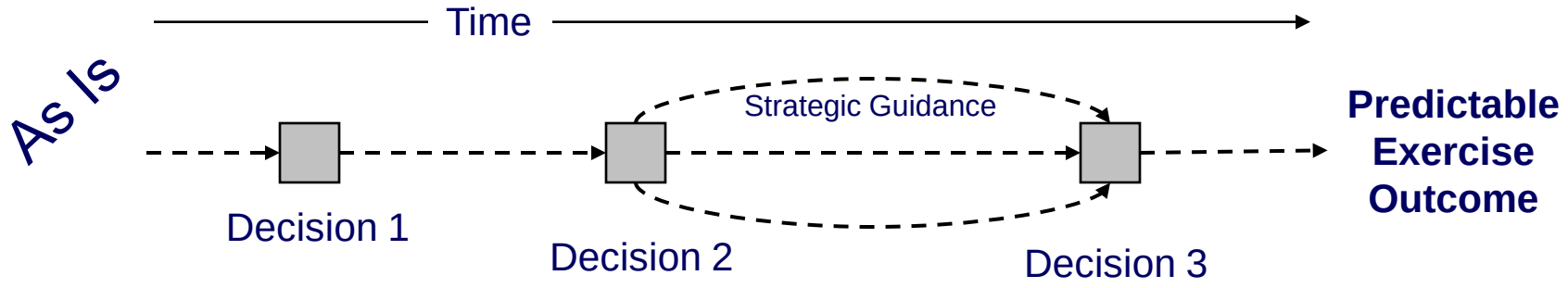
Common Platform

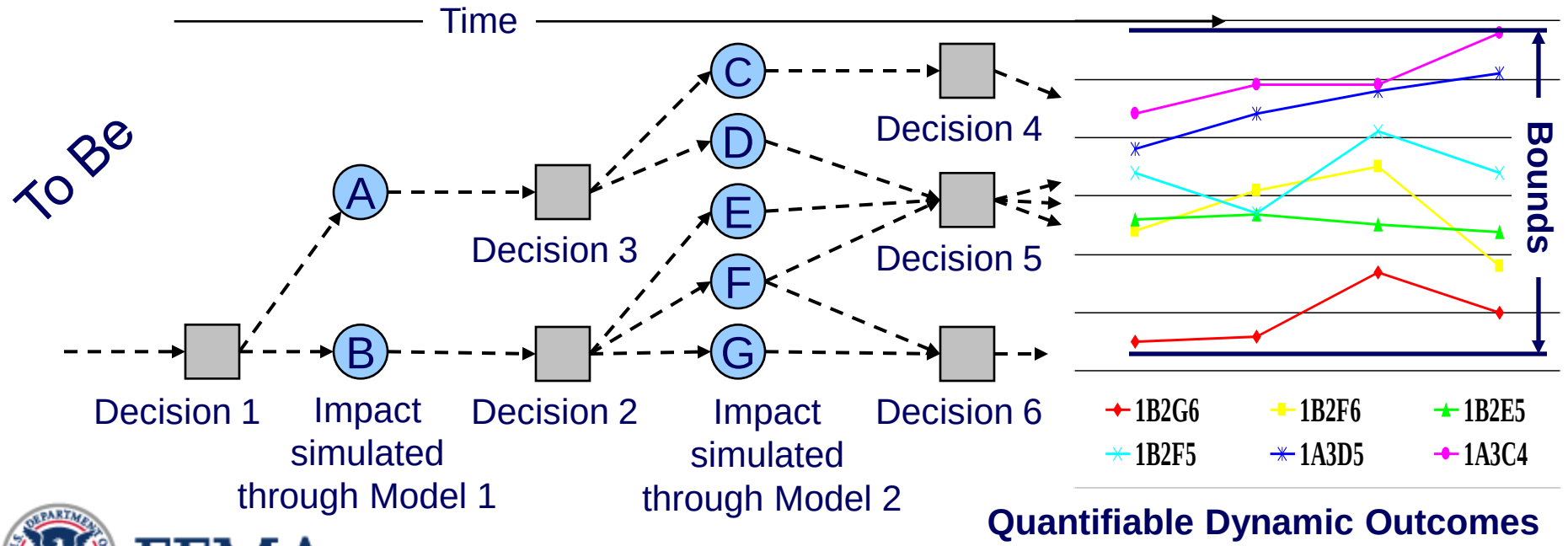
FEMA

DHS Future Simulation User Input Interface (REPP/NRC example)



Comparison of Exercise Outcomes



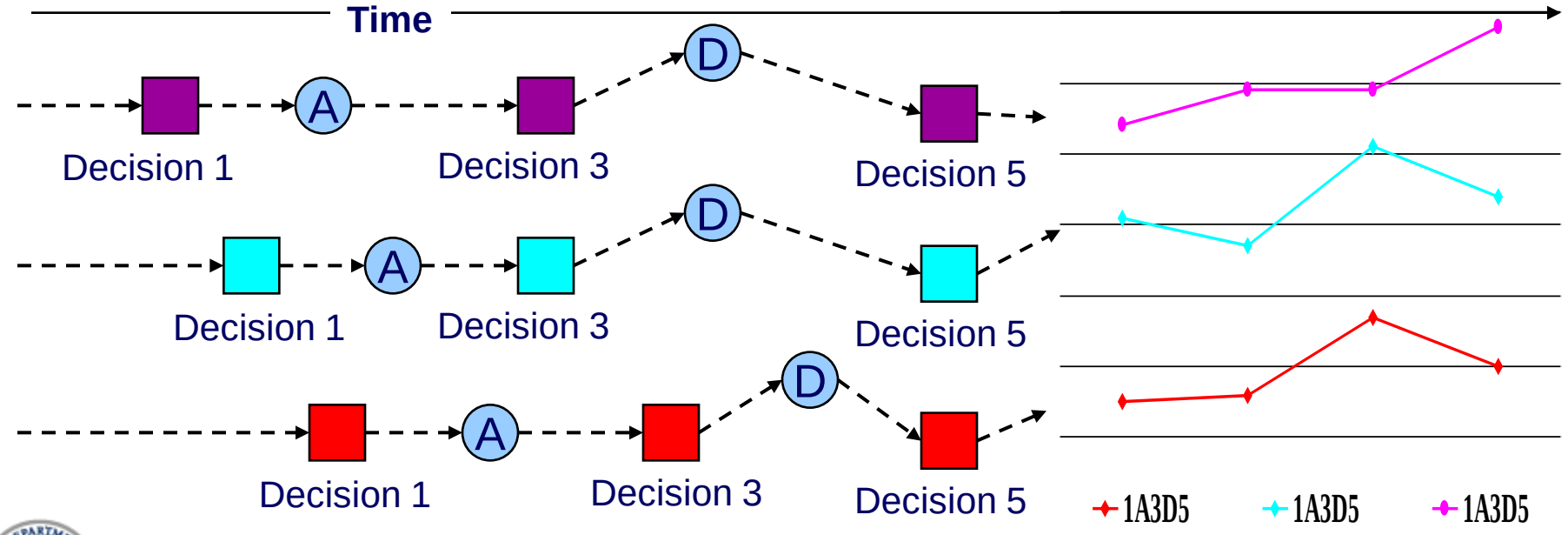


Quantifiable Dynamic Outcomes

FEMA

Impact of Time on Decisions (in simulation)

- Within a given situation, the timing of a decision can have as much impact on the outcome as the actual decision itself
- Simulation allows for a more realistic timing component to be added it was previously unavailable



FEMA

Hurricane User Interface

Questions?

FEMA