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Complex Adaptive System of Systems (CASoS) Engineering Initiative

http://www.sandia.gov/CasosEngineering/

Help from Hoarders: How Storage Can Dampen Perturbations in Critical Markets

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Sandia National Laboratories

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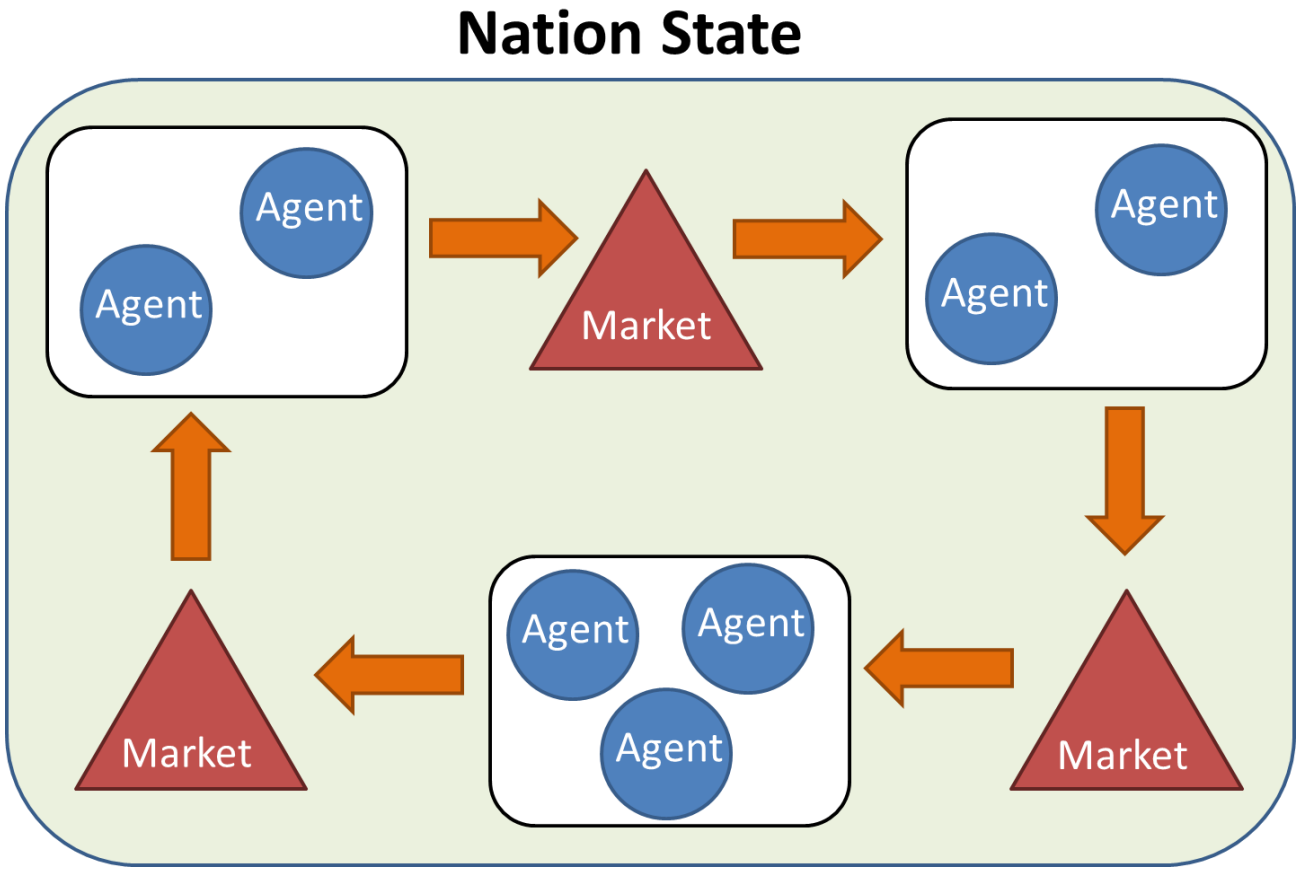
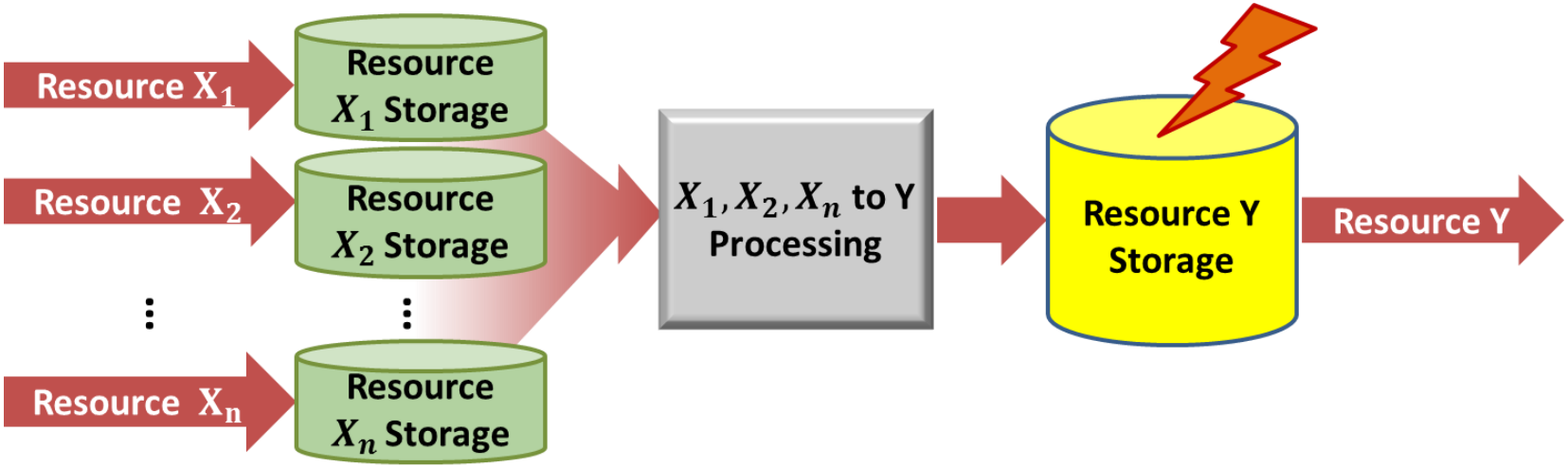
Resource Exchanges

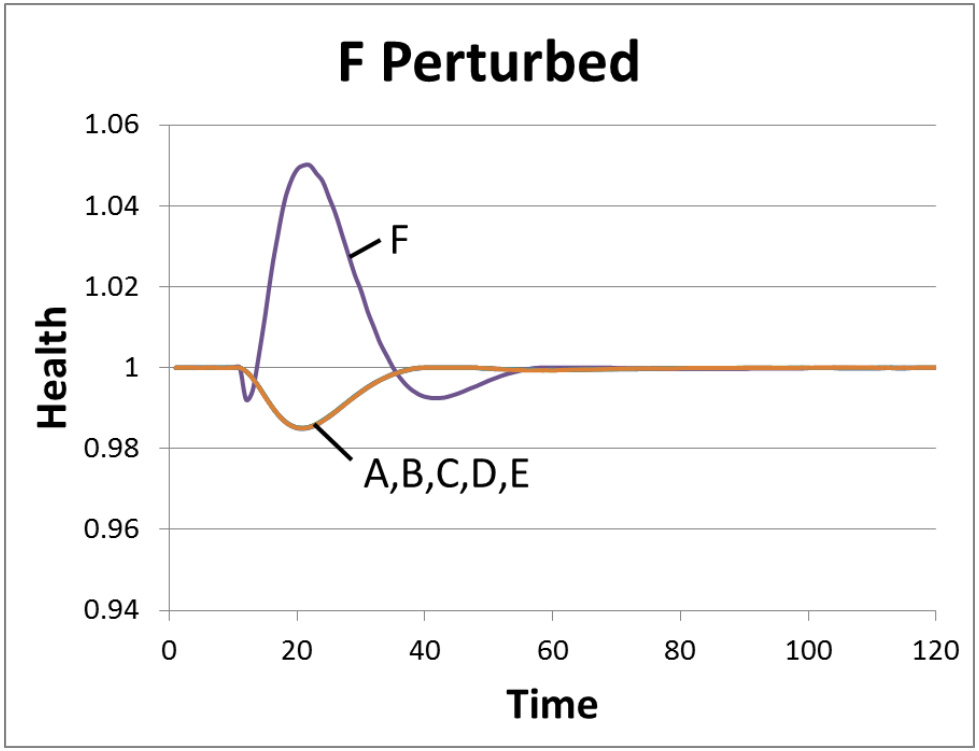
Model Structure

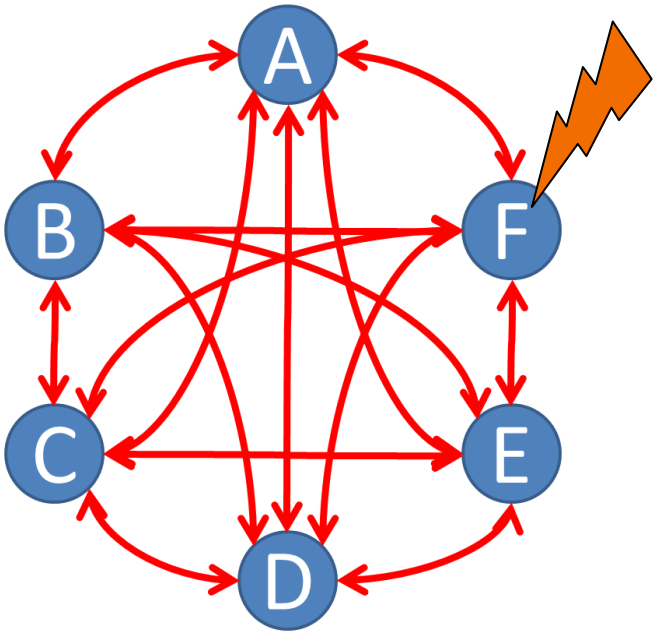


Resource Translation



Network Response

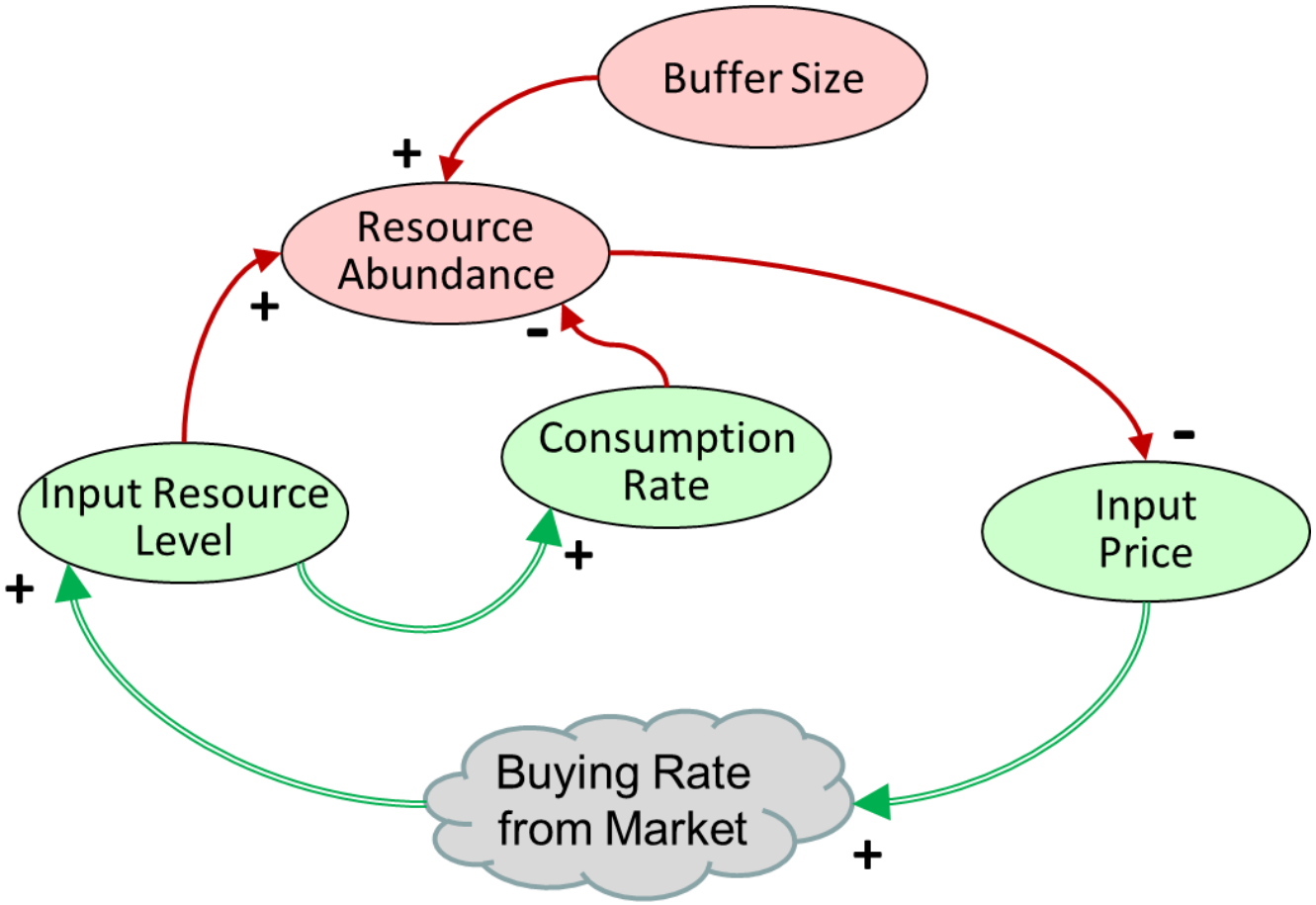




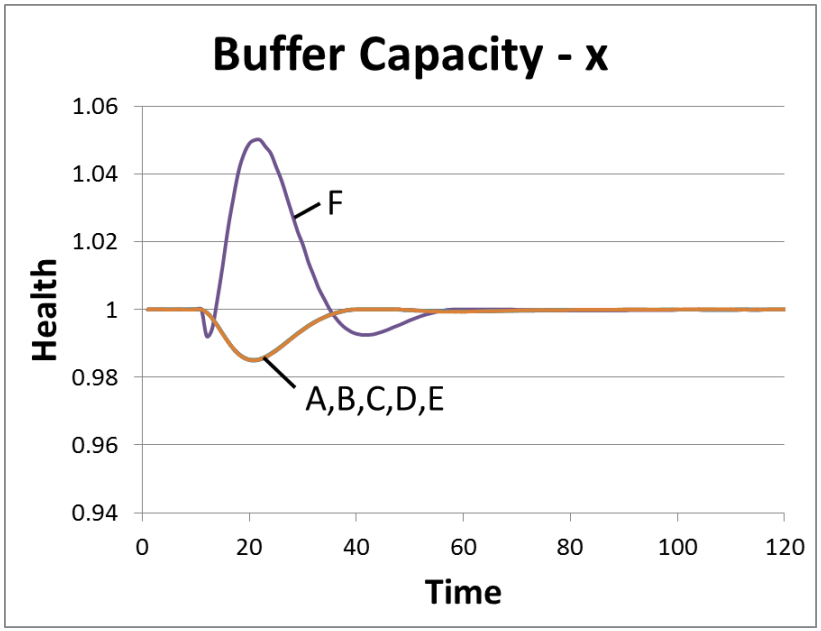
Monopoly Problem

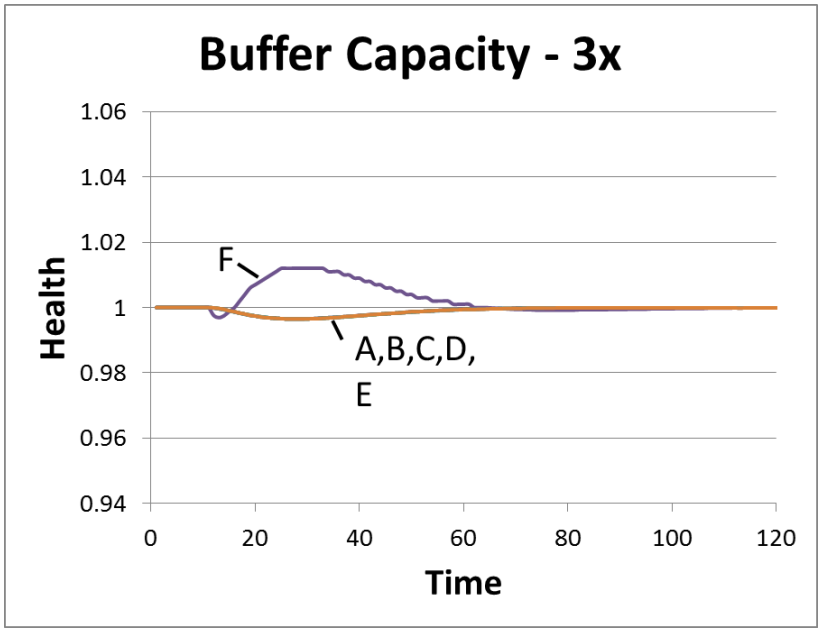
This is a real world problem

Feedback Diagram

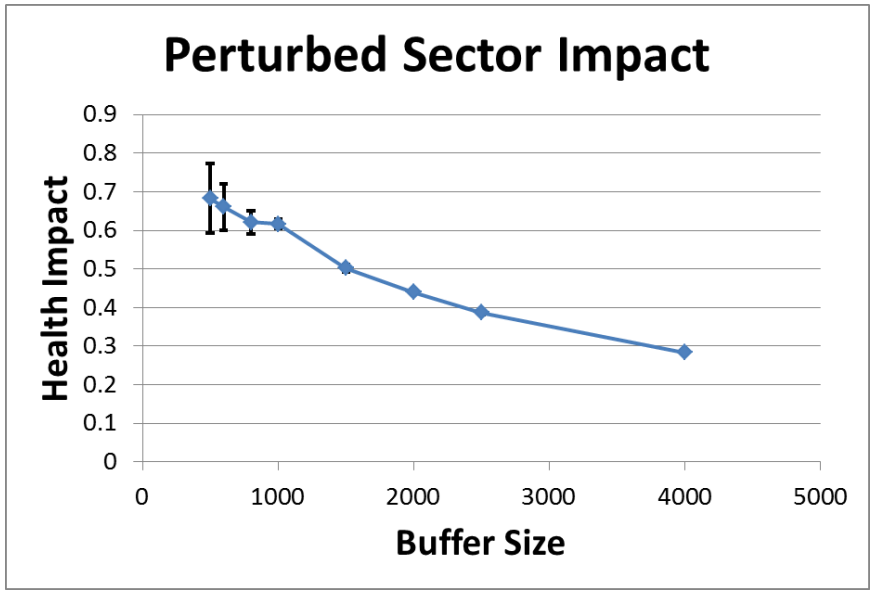


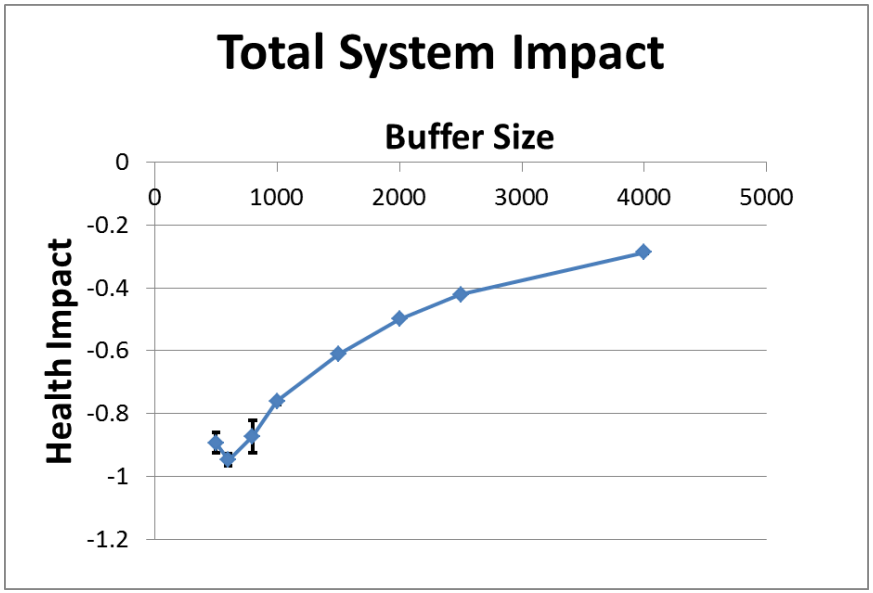
Changing Buffer Capacity



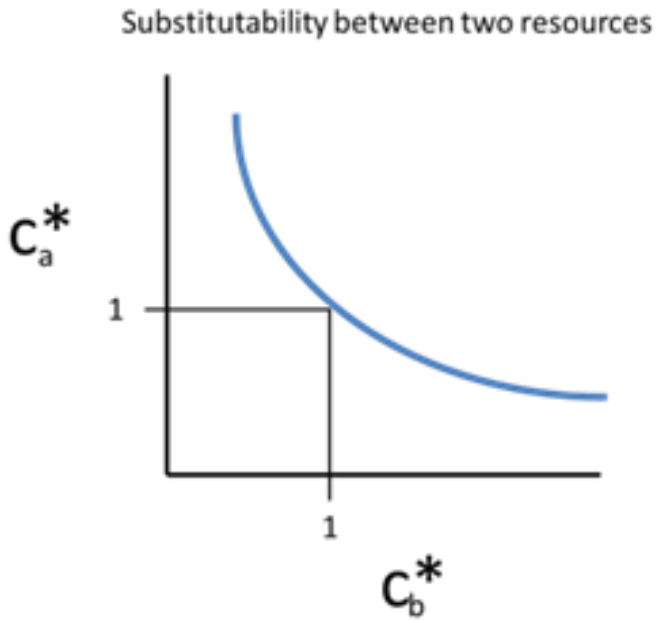


System Effects





Resource Substitution



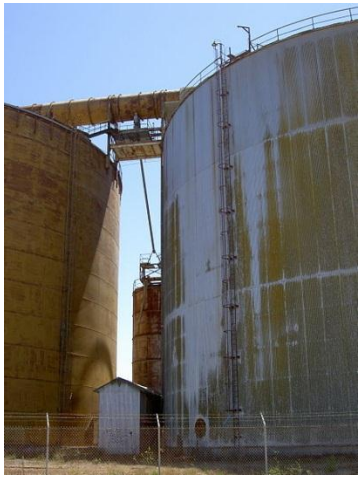
Strategic Reserves

CRIME

Sticky Situation: $30 Million in Maple Syrup Stolen from Canada's Strategic Syrup Reserve

By Samantha Grossman | Sept. 02, 2012 | 6

Limitations



- Decay costs
  - Milk, gasoline, computer chips
- Storage costs
  - Land, capital, maintenance
- Psychological level
  - Price spikes may be caused by panic, not actual shortages

Image credit: Dreamyshade

Implications

- Qualifies parts of the ‘Just in time’ movement
  - Strategic Reserves for critical resources
- Provides a modeling approach for case studies

Image credit: Bertel Schmitt

Questions?