The Dynamics of Managing Undersea Cables Michael P. Sechrist, MPP; Chintan Vaishnav, PhD; Daniel Goldsmith, MBA

Massachusetts Institute of Technology

Workshop on

People, Power, and CyberPolitics

Explorations in Cyber

International Relations

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Problem

Start: May 2011

Can the Old Modes of Governance Meet the Internet Growth Doubles Yearly New Demands of the Internet?

Research Group: Cyber Security; Explorations in Cyber International Relations, MIT-Harvard

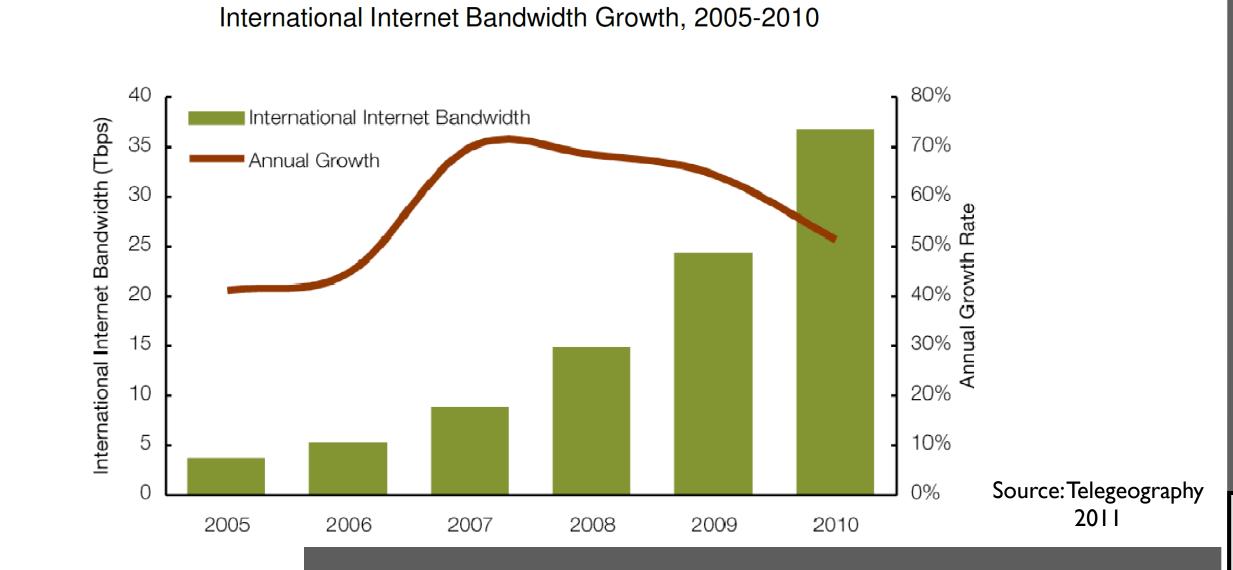
The exponential growth of the Internet may soon demand that undersea cable deployment happen as quickly as possible. Legacy institutional barriers may need to be streamlined to the point of near instantaneous approval. Staying ahead of the exponential Internet growth rate is key to implementing a resilient, redundant, accessible Internet in the U.S. and around the world.

Methods

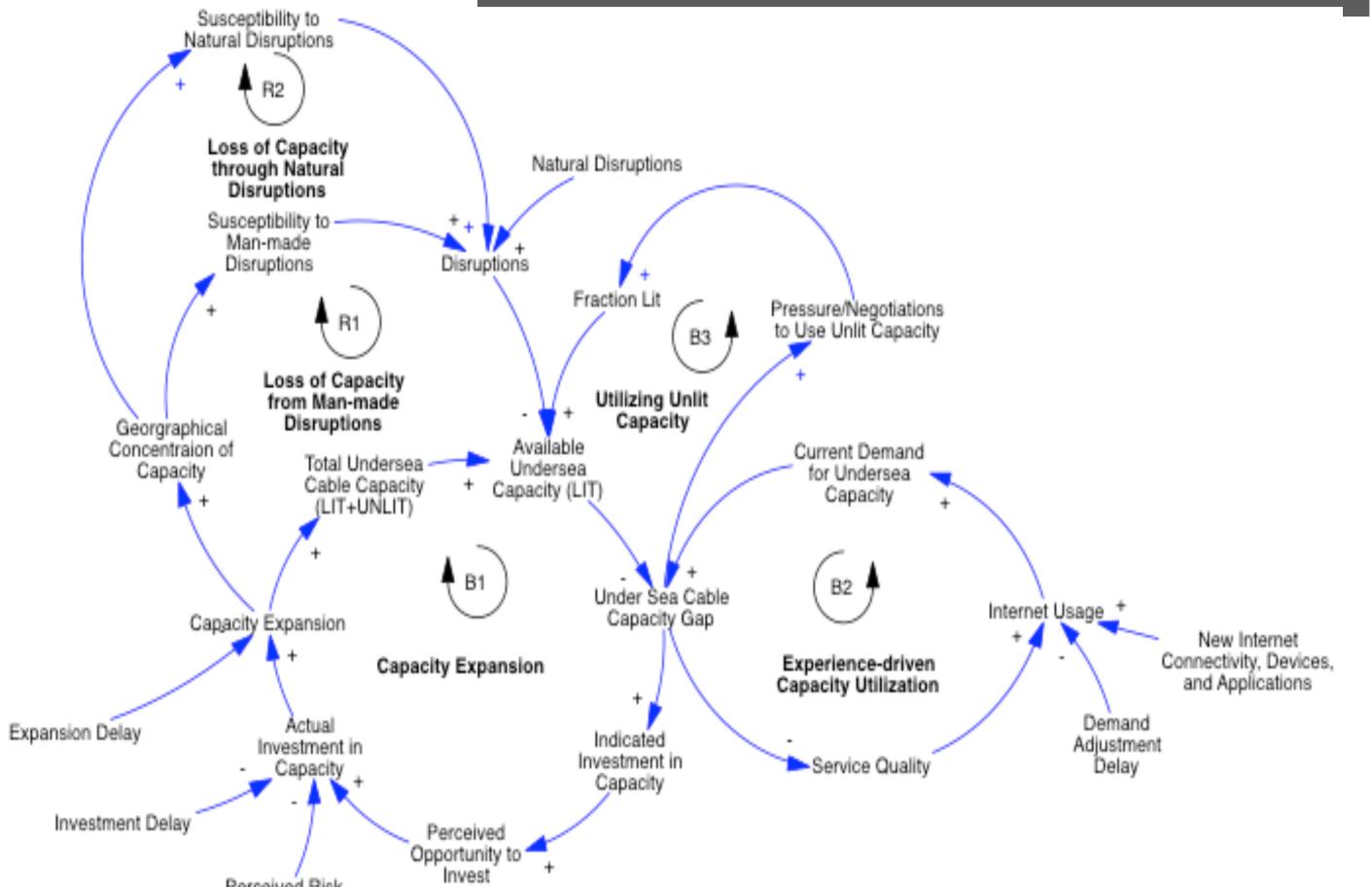
System Qualitative & Quantitative Dynamics Modeling

- Use a system dynamics model to identify and analyze the causal structures responsible for the above problem.
- Use emerging literature to refine the feedback structure in both dissident and state high-level cyber activity (message amplification, appeasement, coordination of anti-regime activity, force & violence, contact).
- Perform policy analysis of the model to propose solutions.

The Research



High-Level Causal Loop Diagram



Preliminary Results

With an Internet growing by a factor of 1000 over the next 20 years, the physical layer of the Internet needs to grow and expand; the current open-ended, ill-defined and opaque cable permitting processes, in the form of Team Telecom in the United States and other agencies in other states around the world, adds unnecessary risk to making this Internet growth a reality.

Remaining Research

- Test basic model structure against various cable deployments and outages to ensure model captures important cyber dynamics
- Model U.S. and international governance structures for cable permitting and deployment; add this research to system dynamics model

Thank You!

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