

## **The End of Core:**

*Should disruptive innovation in telecom invoke discontinuous regulatory response?*

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### **Abstract**

In a highly abstracted conceptualization, both the public switched telephone network (PSTN) and the Internet consist of two components: the end-devices and the network that connects them. Traditional telecommunications regulation has assumed the presence of a network core that could be engineered to fulfill regulatory goals as well as a vertically-integrated industry structure that could meet regulatory obligations. In my dissertation, I propose to take the case of Voice over Internet Protocol (VoIP), the technology that enables voice communications over the Internet, and argue that disruptive trends in technology are eroding the control in the core that was traditionally possessed by network designers and owners. This eroding control in the core has the potential to render the current VoIP regulation inadequate and unsustainable, requiring that future regulatory response be discontinuous from that of the past. This study uses a system dynamics model to study the dynamic complexity surrounding the current VoIP regulation and to understand policy options for preventing undesirable outcomes. The model consists of four sectors: the consumer adoption sector for modeling demand, the industry structure sector for modeling supply, the regulatory compliance sector for modeling the level of compliance, and the innovation sector for modeling innovation trends.

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