

DR. CHINTAN VAISHNAV

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EDUCATION

Massachusetts Institute of Technology **Cambridge, MA** **09/05 – 10/09**

Ph. D. in Technology, Management, and Policy (or Engineering Systems)

Thesis: *The End of Core: Should Disruptive Innovation in Telecommunications Invoke Discontinuous Regulation*

Thesis Committee: Prof. Charles Fine (Chair), Dr. David Clark, Prof. John Stermann, and Prof. Kenneth Oye

Summary: This research analyzes how a telecommunications regulator can balance compliance with innovation as the Internet disrupts traditional communications technologies. We have developed a system-level dynamic feedback model of regulation, competition, and innovation in telecommunications. We propose a combination of policy levers that most effectively achieve the desired balance.

Massachusetts Institute of Technology **Cambridge, MA** **09/03 – 12/05**

Master of Science in Technology and Policy Program

Thesis: *Voice over Internet Protocol (VoIP): The Dynamics of Technology and Regulation*

Colorado State University **Fort Collins, CO** **08/94 – 12/96**

Master of Science in Electrical Engineering

Thesis: *Event Driven Simulation and Performance Evaluation of Robust Wavelength Division Multiplexed (WDM) Networks*

R.V.C.E, Bangalore University **Bangalore, India** **08/88 – 08/92**

Bachelor of Engineering in Electronics Engineering

Thesis: *A Local Area Network (LAN) using SDLC/HDLC Protocol Controllers and 8086 Microprocessor based Single Board Computers*

ACADEMIC RESEARCH

Post-doctoral Affiliate **10/09 – Present**

Computer Science and Artificial Intelligence Laboratory, MIT

Instituto Superior Tecnico (IST), Lisbon, Portugal

Researching contemporary issues at the intersection of innovation strategy and regulatory economics for the Internet from the perspective of dynamic complex system. Advising ANACOM, the Portuguese telecommunications regulator, on risks and opportunities around implementing universal service policies in the Internet age. The research team consists of faculty members from MIT, IST, and Carnegie Mellon University.

Working Paper: Broadband and Civic Engagement: We May Build It, But Will They Come?

NSF Graduate Interdisciplinary Research Fellowship**01/07 – 09/09****The Program on Emerging Technologies (PoET), Massachusetts Institute of Technology**

Participated in National Science Foundation's (NSF) The Program on Emerging Technologies (<http://poet.mit.edu>) that seeks to improve responses to emerging technologies by engaging early and explicitly with the pervasive uncertainty that is often under-recognized in technology assessment exercises. The group consisted of faculty and PhD student from engineering, political science, and technology history, and studied several emerging technologies using a rich mix of methods from all three disciplines.

Working Paper: *The Internet: A Case of How Government's Involvement and Exit Influences the Creation of Global Standards*

Graduate Research Assistant**08/03 – 12/06****Communications Futures Program (CFP), Massachusetts Institute of Technology**

Participated in creating a framework to understand value migration in voice, music and video communications value chains. Created a detailed models of value migration in industries surrounding Voice over Internet Protocol (VoIP) technology. The work was carried out as a part of the Value Chain Dynamics Working Group, Communications Futures Program, MIT (<http://cfp.mit.edu>). The research group consisted of researchers from MIT and industry partners worldwide.

Graduate Research Assistant**08/94 - 11/96****Dept. of Electrical and Computer Engineering, Colorado State University**

Developed an event driven simulator in C and C++ to conduct performance analysis of several medium access control (MAC) layer reservation-based protocols proposed for packet switched, circuit switched, and hybrid Wave Division Multiplexed (WDM) optical networks. Detailed simulation generated results for throughput and delay in WDM networks with various user configurable network parameters.

RESEARCH INTERSHIPS**Indian Institute of Management (IIM), Ahmadabad, India****Summer '05**

Worked as an independent researcher on a project jointly commissioned by the Government of India and Microsoft Research to understand the impact of information technology on the agricultural sector. Ethnography was the research method used.

Federal Communications Commission (FCC), Washington DC**Summer '04**

Participated in microeconomic modeling and merger analysis for AT&T-Cingular merger with the chief economist, Dr. Martin Perry. Carried out stakeholder analysis of public comments against the IP-Enabled Services proceeding.

Indian Space Research Organization, Bangalore, India**Fall '91-Spring '92**

Developed a token ring network using Intel 8086 microprocessor and compatible chipset.

CORPORATE RESEARCH**Bell Labs, Lucent Technologies and Avaya Labs, Avaya Communication, Denver, CO****Member of Technical Staff****01/97 - 08/03**

Primary focus: Voice and Data Convergence. Design of highly reliable, secure and maintainable converged solutions for enterprise communications.

Next Generation Processor Complex Project**11/98 - 08/03**

Led a team of eight engineers to architect, design and develop fault tolerance engine, error and alarm collection and reporting, and SNMP based network management system with a user interface for Avaya's largest next generation enterprise communication server. The project brought 99.999% reliability, offered by traditional voice switches, to the new converged system. The project was multidisciplinary and involved Avaya's R&D teams worldwide. Work positioned Avaya as leader in converged voice communications market.

OverLAN Project**01/97 - 11/98**

Principal designer and software developer of fault tolerant architecture for TCP/IP based control connectivity. Project introduced TCP/IP based control connectivity for Lucent/Avaya's enterprise communication servers. There are over 10,000 installations of OverLAN in more than 90% of Fortune 500 companies.

TEACHING**Guest Lecturer****Spring '10****Carnegie Mellon University, Pittsburgh, PA**

Course: Telecommunications Management

Taught a section on contemporary challenges in telecommunications regulation to a graduate level class of Heinz College and Engineering and Public Policy students.

Visiting Professor**Fall '09****Instituto Superior Tecnico, Lisbon, Portugal**

Course: Contemporary Issues in Telecommunications Regulation

Designed and taught a section on dynamic issues in Internet regulation that introduced the use of system dynamics to model dynamic complexity in regulating disruptive technologies such as the Internet. My work complemented the existing material in a class that traditionally used classical microeconomics and econometrics to understand regulatory decisions.

Teaching Assistant**Massachusetts Institute of Technology**

Course: Science Technology and Public Policy, MIT (with Prof. Kenneth Oye) Fall '06

Course: System Dynamics, MIT (with Prof. John Sterman) Fall '05, Spring '06

Adjunct Faculty**Fall '98****Dept. of Electrical and Computer Engineering, Colorado State University**

Designed and taught a graduate level course in Advanced Computer Networks.

SOCIAL ENTREPRENEURSHIP**Smsvani****Present**

Smsvani is an sms2web message board for micro-philanthropy. It enables broadcasting local needs (via sms) to a global audience (over the Internet), and donating small amounts to remote communities to fulfill such needs.

SensorMail**Present**

SensorMail is committed to developing an innovative platform for diagnosing medical

conditions using paper-based biosensors to enable prompt treatment and harnessing the potential of the postal system to report.

UNIVERSITY SERVICE

Graduate Resident Tutor

Fall '05 – Spring '10

Baker House, Massachusetts Institute of Technology

Served as a live-in mentor in an MIT undergraduate dormitory, Baker House, to support MIT undergraduates as their first point of contact for academic and other campus life needs.

Student Leadership

Executive Committee Member, MIT Heritage Arts Society (MITHAS)	Fall '04 - Fall '07
Executive, Indian Student Association, MIT (called Sangam)	Fall '04 - Spring '06
President, Indian Student Association, Colorado State University	Fall '95 - Spring '96

AWARDS

NSF Integrative Graduate Education and Research Traineeship	01/07 – 06/09
FCT, Portugal (Portuguese equivalent of NSF), Research Fellowship	10/09 – Present
CFP, MIT, Graduate Research Fellowship	08/03 – 12/06

RECENT TALKS

1. July 1, 2010, London Business School, UK, "Innovation and Industry Dynamics: Endogenizing Entry, Architecture, Price, and Quality to Assess Disruptive Opportunities and Defenses."
2. June 30, 2010, Computer Laboratory, Cambridge, UK. "Contemporary Challenges in Telecommunications Regulation."
3. June 28, 2010, Cambridge University, UK, "From Herding Sheep to Herding Cats: Balancing Regulation and Innovation in the Modular Age of the Internet."
4. October 30, 2009, PhD Defense, MIT, "The End of Core: Should Disruptive Innovation in Telecommunications Invoke Discontinuous Regulation?"
5. October 24, 2008, Communications Futures Program, MIT, Cambridge, MA, USA, "Who Will Profit from Social TV Service?: Insights and Queries From A Technology Disruption Model"
6. July 23, 2008, International Conference of System Dynamics Society, Athens, Greece, "Does Technology Disruption Always Mean Industry Disruption?" (Presented in the plenary session)
7. March 20, 2008, Communications Futures Program, MIT, Cambridge, MA, USA, "System Dynamics in Value Chain Dynamics Toolkit"
8. January 16, 2008, The Ministry of Internal Affairs and Communications, Tokyo, Japan, "Regulating VoIP – A discussion"
9. December 10, 2007, Federal Communications Commission (FCC), Washington, DC, USA, "The End of Core: should disruptive innovation in telecom invoke discontinuous regulatory response?"
10. July 25, 2007, Oxford Internet Institute Summer Doctoral Program (OIISDP), Berkman Center for Internet and Society, Harvard University, Cambridge, MA, USA, "The End of Core: should disruptive innovation in telecom invoke discontinuous regulatory response?- A Doctoral Research Proposal"
11. June 26, 2007, Technology, Management and Policy Graduate Consortium (TMPGC).

TMPGC 2007 Carnegie Mellon University, Pittsburgh, PA, USA, "The End of Core: should disruptive innovation in telecom invoke discontinuous regulatory response?" (**Won the best presentation honor**)

SELECTED PUBLICATIONS

Technology and Policy

1. *Forthcoming*, Chintan Vaishnav, "From Herding Sheep to Herding Cats: Balancing Regulation and Innovation in the Modular Age of the Internet", Technology Policy Research Conference, Arlington, VA, 2010.
2. *Forthcoming*, Chintan Vaishnav, 'Broadband and Civic Engagement: We May Build It, But Will They Come?' International Conference of System Dynamics Society, Seoul, S. Korea, 2010.
3. Chintan Vaishnav, 'The End of Core: Should Disruptive Innovation in Telecom Invoke Discontinuous Regulation' PhD Dissertation, Engineering Systems Division (ESD), MIT, 2010.
4. Chintan Vaishnav and Charles. H. Fine, 'A dynamic assessment of VoIP innovation, adoption and their interaction with CALEA regulation,' Technology Policy Research Conference, Arlington, VA, 2006.
5. Chintan Vaishnav, 'Voice over Internet Protocol (VoIP): The Dynamics of Technology and Regulation' Technology and Policy Program. Cambridge, Massachusetts Institute of Technology: 166, 2005.

Technology Strategy

6. Chintan Vaishnav, 'Does Technology Disruption Always Mean Industry Disruption?,' International Conference of System Dynamics Society, Athens, Greece, 2008.
7. Chintan Vaishnav, A. Khakifirooz, et al., 'Punishing by Reward: When Your Performance Bell-curve Stops Working For You,' International Conference of System Dynamics Society, Nijmegen, The Netherlands, 2006.

Technology and Socioeconomic Development

8. Chintan Vaishnav, 'Information Flows in the Traditional Knowledge and the Grassroots Innovations Value Chains for Agriculture - A Report from Gujarat,' submitted to Government of India, 2005.

Technology (Computer Networks)

9. S. A. Abd-Elmalak, C. Vaishnav and A. P. Jayasumana, 'Performance of Robust WDM Fast Circuit-Switched Networks with Token Passing in Control Channel,' International Journal of Communication Systems, Vol. 15, pp 239-255, 2002.
10. Chintan Vaishnav, Matt Nieberger, A. P. Jayasumana, and Jon Sauer, 'Design and Performance of a Robust WDM Network,' presented at SPIE's International Symposium on Optical Science, Engineering, and Instrumentation 1996, Aug. 4-9, 1996.
11. Tarek El-bawab, Chintan Vaishnav, Anura P. Jayasumana, Henryk Temkin, Jon R. Sauer, and Heinz A. Willebrand, 'Medium Access Control Protocols for Robust Wavelength Division Multiplexed (WDM) Local Area Networks,' Proc. International Communications Conference (ICC)'96, v. 2, pp 1099-1106, June 23-27, 1996.

REFERENCES

- 1 **Prof. Charles Fine**
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- 2 **Dr. David D. Clark**
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Web: http://en.wikipedia.org/wiki/David_D._Clark
- 3 **Prof. John Sterman**
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- 4 **Prof. Kenneth Oye**
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- 5 **Dr. Mark Bykowsky**
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- 6 **Dr. Martin Perry**
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If necessary, I am happy to furnish references for work experience and education prior to MIT