

University at Buffalo The State University of New York Industrial and Systems Engineering

Praxair Seminar Series



Supply Chain Networks Against Time: From Food to Pharma

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Dr. Anna Nagurney

Department of Operations and Information Management
Isenberg School of Management
University of Massachusetts

Abstract: Supply chains consist of networks of suppliers, manufacturers, transportation service providers, storage facilities and distributors, as well as retailers, and consumers. They may involve thousands of stakeholders from suppliers and manufacturers to hundreds of thousands of demand points. Supply chains, however, are not just about complex manufactured products such as airplanes, automobiles, or computers. While many of the products of supply chains are durable goods that can be shipped and stored for a prolonged period prior to use, others are perishable – from the food that we ingest, the medicines and vaccines that heal us and save lives, and, for the fashion-conscious – the clothes that we wear.

In this talk, I will overview our research that emphasizes multiple disciplines from engineering and operations research and management science to chemistry and physics, all with a unifying theme of supply chain networks, and associated perspectives, to model product deterioration over time and perishability. I will describe food supply chains, medical nuclear supply chains, electric power supply chains, and a case study in the pharmaceutical industry. I will also highlight recent results in supply chain quality competition.

Bio: Anna Nagurney is the John F. Smith Memorial Professor at the Isenberg School of Management at the University of Massachusetts Amherst and the Director of the Virtual Center for Supernetworks. She holds ScB, AB, ScM and PhD degrees from Brown University. She is the author of 11 books, and the new book, "Competing on Supply Chain Quality: A Network Economics Perspective," more than 175 refereed journal articles, and over 50 book chapters. She serves on the editorial boards of a dozen journals and two book series and is the editor of another book series. Professor Nagurney has been a Fulbrighter twice (in Austria and Italy), was a Visiting Professor at the University of Gothenburg in Sweden for the past 4 years, and was a Distinguished Guest Visiting Professor at the Royal Institute of Technology (KTH) in Stockholm. She will be a Visiting Fellow at All Souls College at Oxford University this year. Anna has held visiting appointments at MIT and at Brown University and was a Science Fellow at the Radcliffe Institute for Advanced Study at Harvard. She has been recognized for her research on networks with the Kempe prize from the University of Umea, the Faculty Award for Women from the NSF, the University Medal from the University of Catania in Italy, and was elected a Fellow of the Regional Science Association International as well as INFORMS, among other awards. Her research has garnered support from the AT&T Foundation, the Rockefeller Foundation, the Institute for International Education, and NSF. She has given plenary/keynote talks and tutorials on 5 continents.

Anna's research focuses on network systems from transportation and logistical ones, to financial, economic, social networks and their integration, along with the Internet. She studies and models complex behaviors on networks with a goal towards providing frameworks and tools for understanding their structure, performance, and resilience and has contributed also to the understanding of the Braess paradox in transportation networks and the Internet. She has also been researching sustainability and quality issues with applications ranging from pharmaceutical and blood supply chains to perishable food products and fast fashion to humanitarian logistics. She has advanced methodological tools used in game theory, network theory, equilibrium analysis, and dynamical systems.