

OPTIMIZATION OF TELECOMMUNICATION INFRASTRUCTURE

An ICIAM Industry Day

Organization: Martin Grötschel, Berlin, Germany

Distinguished speakers from industry and academia present a rich variety of optimization challenges in the telecommunication industry and how to address them using modern mathematics.

Topics

- ▶ Market: regulation and revenue optimization
- ▶ Low cost and high capacity networks
- ▶ Equipment and protocol design

Executive's Perspective



Hartmut Kremling

is the Chief Technology Officer of Vodafone D2 GmbH, Germany. He is among the most senior experts in the mobile communications business in the world. He was CEO of the Austrian mobile operator tele.ring and executive board member at the German fixed network operator Arcor.

Speakers



▶ Alejandro Jofré

is director at the Center of Mathematical Modeling, University of Chile. He has developed optimization/ economic equilibrium approaches to mobile telecom market regulation. Several National Regulation agencies around the world are using some of his models.



▶ Andreas Eisenblätter

is co-founder and managing director of atesio. The research spin-off specializes in network optimization using mathematical techniques. His work on GSM frequency planning received two international awards.



▶ Martine Labbé

is Professor at the Free University of Brussels and President of the European Operational Research Society. Her research focuses on OR techniques applied to transportation, location, and telecommunication.



▶ Holger Boche

is the Chair for Mobile Communications at TU Berlin, director at the Fraunhofer Heinrich-Hertz-Institute, and heads the German-Sino Lab for Mobile Communications. He earned several prizes, e.g., the Vodafone Innovation Award 2006.



▶ Iraj Saniee

is the head of Bell Labs' Complex Systems Analysis and Optimization Department. Architectures, design tools, and control mechanisms for emerging networks are at the center of his research.



▶ François Baccelli

heads the INRIA-ENS group on Network Theory and Communications, investigating models and control for communications networks. He works on performance evaluation, stochastic network calculus, point processes and stochastic geometry.



▶ Jörg Eberspächer

chairs the Institute for Communications Networks, TU Munich. He is investigating network architectures for high-speed and mobile communications. He also held various positions at Siemens prior to his academic career.



▶ Edoardo Amaldi

is Associate Professor of Operations Research at the Politecnico di Milano. He is interested in discrete optimization and in the design and analysis of algorithms with applications in telecommunications. He received a 2005 IBM Faculty Award.

Invited lectures aligned with the Telecom Day

8.45 **Éva Tardos**, Cornell University, USA
Network-formation games

9.45 **William R. Pulleyblank**, IBM, USA
Computing, business and applied mathematics – the next challenges

Éva Tardos and William Pulleyblank are ICIAM Invited Speakers. Their lectures are closely related to mathematical aspects of telecommunication and will provide an excellent start of the “telecom day”.

The program of this industry day is as follows:

11.15 **Economic aspects of telecommunication**

Alejandro Jofré, Centro de Modelamiento Matemático, Universidad de Chile, Santiago de Chile
Optimization/equilibrium problems coming from regulation processes in the mobile telecommunication industry

Martine Labbé, L'Université Libre de Bruxelles, Belgium
Joint design and pricing on a network

Iraj Saniee, Bell Laboratories, Alcatel-Lucent, USA
Network design with multi-period pricing: modeling and solution techniques with computations for the case of optical backbone networks

Jörg Eberspächer, TU München & Center for Digital Technology & Management, Germany
Planning of optical core networks

14.30 **Executive's perspective**

Hartmut Kremling, Vodafone D2, Germany
Future challenges in mobile telecommunication industry

15.45 **Wireless network design**

Andreas Eisenblätter, atesio, Germany
Optimization of 2G/3G radio networks

Holger Boche, TU Berlin, Heinrich-Hertz-Institut, Germany
Efficient multicarrier transmission, reflexive subspace of L^1 and Szemerédi's theorem on arithmetic progression

François Baccelli, INRIA & ENS, France
Geometric routing in mobile ad hoc networks

Edoardo Amaldi, DEI, Politecnico di Milano, Italy
Optimization models and methods for designing wireless local area networks