

Guest Editorial

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The 28th International Symposium on Forecasting (ISF2008) was arranged in Nice, France on June 22–25, 2008. The motto for the conference was ‘Information Communication Technology Forecasting in a Digital World’. The chair for ISF2008, Mohsen Hamoudia from Orange-France Telecom, made a request to Telenor/*Telektronikk* to have a special issue on ‘Telecommunications Forecasting’, pretty much in line with the motto of the conference.

Telektronikk decided to support ISF2008. The contributors were asked to, if possible, present the paper at ISF2008 by submitting the traditional abstract via the ISF, and to submit an extended abstract for the journal issue. Mohsen Hamoudia has made a special address in this issue and we want to thank him for a nice and fruitful cooperation. Also, International Institute of Forecasters made the call for papers to *Telektronikk* available on their website.

A total of seven papers were received based on the described process. Then eight specific invitations were sent, which resulted in ten additional papers.

For our last forecasting issue of *Telektronikk* (no 4, 2004) the Nobel Prize winner in economics for 2003, Clive W.J. Granger was invited to write a paper on telecommunications forecasting. At ISF2008, the Nobel Prize winner in economics for 1990, Harry Markowitz, had a special invitation to present his important work on portfolio analysis. *Telektronikk* did not get a ‘fresh’ paper this time, but permission to reprint his pioneering paper ‘Portfolio selection’ from 1952.

The papers in this forecasting issue give an overview of different challenges in telecommunications forecasting.

The telecommunication area itself is large and complex. The area can roughly be divided into voice services and data services; TV, entertainment and communication services; fixed, nomadic and mobile services; and low and high capacity services, where the service quality or service level agreement is part of the service characteristics. The services use networks to establish the communication. Hence, important areas for the services are future evolution of subscription or access demand, traffic, average revenue per user (ARPU), operational network costs and costs of

different network components generated by the services.

There is a variety of different forecasting methods for both short-, medium- and long-term forecasting to be applied on the evolution of the different services.

Understanding and predicting the evolution of new technology is extremely important in demand modeling. New technologies generate new services and create substitutions between new, established and old services, which constitute important settings for the future service demand.

Earlier the incumbents controlled the telecommunications market. Now there are many competitors and the markets are much more dynamic. Hence, the forecasting models include more dimensions.

Today it is common for different actors to offer service bundles to capture additional market share. Especially fixed voice, mobile, broadband and broadcasting constitute the bundling alternatives. There are definite challenges in modelling the demand effect for different bundling alternatives, where quality and price of the services are important factors.

During the last few years mobile broadband has entered the market. The challenge is to identify how mobile broadband affects the demand of other services/technologies like the wireless technologies Wi-Fi, WiMAX, and the wireline technologies DSL, HFC (Cable modem) and FTTx (Fibre in the access network).

Business case analysis or techno-economic analysis for new and enhanced services uses forecasts of demand, ARPU and costs as input. More detailed forecasts of service demands, tariffs, investments and operational costs are crucial inputs to the analysis.

Another challenge is handling the uncertainties in the forecasts. Estimation of the uncertainties could be difficult, but it is possible to describe them by probability distributions and risk analysis in various business cases.

The forecasts are used for establishing short- and long-term strategies, for dimensioning and network planning, for establishing new technologies and new

services, for business case analysis, for service marketing, for next year's budget and long-term budget and budget control.

Teletronikk contains papers on known methods and also more theoretical papers.

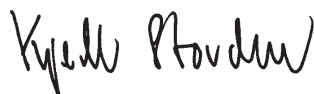
In this issue the papers are grouped into two sections dealing with telecommunications forecasting: *Broadband* and *Mobile and other services*. In addition there is a section on *Methodologies*, and finally a paper with practical advice on forecasting new adoptions.

Section one, *Broadband*, contains papers on demand of broadband services, technologies and deployment. The papers cover Western Europe, US, UK and OECD countries. The forecasting models used are econometric demand models. In addition there is a paper on convergence which really shows future challenges in the telecommunication area.

Section two, *Mobile and other services*, contains papers on mobile broadband, cellular mobile, mobile traffic, multiple services and ICT. The forecasting models used are diffusion models, linear regression models, three stage least square models and different multiple choice models.

Section three, *Methodologies*, starts with the reprint of the seminal paper 'Portfolio selection' by Harry Markowitz. The forecasting methods presented are conjoint analysis, diffusion models, and neural networks. In addition there are papers on methods for comparing forecast quality and risk analysis.

The journal ends with a paper giving practical advice on forecasting of adopting new technologies which indeed is a challenging field.



Kjell Stordahl obtained his MSc from the University of Oslo in 1972, and his PhD from the Norwegian University of Science and Technology, Trondheim, in 2006. He worked at the Research Department of Telenor for 15 years – seven years as manager of the teletraffic field. He was Chief Planning Manager in Telenor Networks from 1989 until 1996 and Manager of Market Analysis 1997–2002. Kjell Stordahl was appointed associated reporter and special reporter 1981–1988 in CCITT SGII for "Forecasting International Traffic". From 1985 to 1988 he participated in CCITT GAS 10 and developed a forecasting handbook. He has also worked for ITU's headquarters as a specialist on forecasting. From 1994 to 1997 he was on the Board of Telenor Consult AS. He was referee for Project Imagine 21 in the ESPRIT Programme 1999–2001. Kjell Stordahl was on the Technical Advisory Board of Virtual Photonics 2000–2002, and since 1992 he has participated in various projects funded by the European Commission: RACE/TITAN, ACTS/OPTIMUM and TERA, IST/TONIC and CELTIC/ECOSYS. He has published over 150 papers in international journals and conferences.

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Nils Kristian Elnegaard received his Master Degree in Electronics Engineering from the Technical University of Denmark in 1993. During the last eight years he has been working with techno-economic analyses in the area broadband access network rollout strategies. He has worked in a number of European research projects within ACTS, IST and EURESCOM dealing with techno-economic analyses of broadband rollouts. Mr. Elnegaard has published more than 50 papers in international journals and conferences in this field. His main research interests are new and emerging access technologies, rollout strategies and techno-economic risk analysis.

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