

## Foreword

### **New technologies in distributed systems**

This special issue of *Annals of telecommunications* has been prepared in the aftermath of the fifth NOTERE conference, which took place in Gatineau (Québec, Canada), at the Université du Québec en Outaouais from August 30th to September 1st, 2005.

The intent of NOTERE (Nouvelles Technologies de la Répartition) is to offer researchers and industry practitioners a primarily francophone forum to share their knowledge and viewpoints on techniques presently used or expected to be used in distributed systems. NOTERE was founded in 1997 in Pau, by the initiative of Omar Rafiq. The 2005 NOTERE had 23 papers from 5 different countries, 2 invited talks, and 4 tutorials. The conference is flourishing: a sixth NOTERE has been held in June 2006 in Toulouse, and a seventh NOTERE is planned for June 2007 in Marrakech.

After NOTERE 2005, an open call for journal papers on the theme of NOTERE was issued, and thirteen papers were submitted. As a result of the refereeing process, the following six papers were selected. Of these, three are extended and enhanced versions of papers presented at the conference: those by Ludovic Apvrille *et al.*, Hind Rakkay *et al.*, Emir Hammami *et al.*

Viet Dung Le, Gilbert Babin and Peter Kropf present BALLS, a structured peer-to-peer system whose topology was inspired by de Bruijn graphs. They describe the load balancing methods for BALLS and present a detailed analysis and evaluation, with comparison with other systems, of the effectiveness of these methods. They address both the consumption of bandwidth and the resources for object storage.

Kaouthar Sethom, Olfa Hamza, Hossam Afifi and Guy Pujolle propose a new solution for the selection of Internet gateways in ad hoc networks, with particular emphasis on wireless personal area networks. Their approach combines the use of Quality of Service criteria with a proactive routing protocol. Results from performance analysis of a prototype implementation of a dynamic gateway selection protocol support the validity of their solution.

Michel Barbeau and Jean-Marc Robert study the problem of detecting attacking base stations in a sample wireless network. Their approach is based on the fact that the presence of such stations is likely to cause inconsistencies in signal strength. They provide and analyze probabilistic algorithms for drawing conclusions from these inconsistencies, thus discovering the attackers.

Hind Rakkay and Hanifa Boucheneb propose to enrich the Colored Petri Net formalism for expressing security policies. The new formalism takes into consideration time constraints on information (availability) and information flow security requirements in a decentralized way.

Ludovic Apvrille, Pierre de Saqui-Sannes, Renaud Pacalet and Axelle Apvrille present a new environment for developing distributed systems based on the TURTLE UML profile. The paper puts the emphasis on the deployment over hardware execution nodes of TURTLE components. A Java code generator that outputs appropriate Java code for TURTLE deployment diagrams is also presented.

Emir Hammami and Thierry Villemur present a new architecture for the cooperative context-aware deployment of applications in sessions composed of several users using heterogeneous equipment. Their platform is based on a peer-to-peer infrastructure and handles both local and global contexts that constrain how users can join sessions. They provide the details of their deployment algorithm as well as the generic API and modules used in their architecture, whose use is illustrated in two application case studies.

## **For Gregor**

We dedicate this special issue to **Gregor von Bochmann** in the occasion of his 65th anniversary.

A review of the work of Gregor would be lengthy, and even so it could not be complete because of the many research directions pursued by him over his career. Such a review would also be unnecessary because the readers of this special issue will be familiar with his work. Briefly, Gregor has been one of the founders and main contributors of the research areas of protocol engineering, formal techniques for protocol specification, and protocol testing. He was the first to publish on formal verification and implementation of protocols and services, having published a paper on this subject in conference proceedings of 1975. The method he proposed was based on the modelling of protocols by state machines and is still prevalent today. He has also been supervisor or collaborator of many of the major researchers in the area. His publications display great depth and strength in many aspects of the area, from theoretical to applied.

With respect to the authors of this special issue, Gregor was thesis supervisor of Michel Barbeau, and coauthored papers with Pierre de Saqui-Sannes, who has been a postdoctoral fellow in his laboratory.

Gregor is from a Northern German background. He is proud of his homonymous great-grandfather who was from Estonia, a distinguished painter whose work he has extensively researched. He obtained a Doctoral degree in theoretical Physics at McGill after studies in experimental Physics at the University of Munich. After a career at the Université de Montréal, Département d'informatique et de recherche opérationnelle (DIRO), where he worked from 1972 to 1998, he took his current position at the University of Ottawa, School of Information Technology and Engineering (SITE). He has earned many distinctions, among which a honorific doctorate from the Joseph Fourier University in Grenoble. Everyone will be happy to hear that Gregor is as active as ever and is continuing as professor and as head of his

research group, as well as proficient amateur musician. May he have many more years of enjoyable and fruitful activity!

We would like to close with a thank-you note to the anonymous referees for their very careful reviewing of the papers, which led to many improvements, and to this journal for having accepted to host this special issue. In particular, Elie Najm looked after the final vetting of the papers before publication.

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