

# Tutorial 3

## Database Replication and Clustering

**Rui Oliveira**

Dep. Informática/CCTC, Universidade do Minho  
rco@di.uminho.pt

**Luís Rodrigues**

IST/INESC-ID  
ler@ist.utl.pt

**José Pereira**

Dep. Informática/CCTC, Universidade do Minho  
jop@di.uminho.pt

Database replication and clustering are increasingly widespread solutions to scalability and high availability challenges in current information systems. The tutorial offers a complete overview of these techniques, from theory to practice. It starts by making an overview of the main challenges involved and the algorithms and engineering techniques to address them. Then, it provides an in depth description of the architecture of a modern open-source database replication system and a hands-on guide to its deployment. Therefore, the tutorial aims both at database management system and middleware developers, as well as those making use of database technology in planning and deploying large scale applications.

### About the speakers

**Rui Oliveira** graduated (1991) in Electrotechnic and Computers Engineering by Universidade do Porto, has a Master (1994) in Computer Science from the Universidade do Minho and a PhD (2000) from the Swiss Federal Institute of Technology in Lausanne. He is associate Professor in Computer Science at Universidade do Minho, teaching dependable distributed systems to Masters and Doctoral Programmes. He currently leads the Computer Science and Technology Center of Universidade do Minho. Rui Oliveira is the Project Manager of the GORDA project an european research project devoted to consistent database replication systems. His current research interests include fault-tolerant and large scale distributed systems, distributed data management and peer-to-peer computing. He is a member of ACM and IEEE.

**Luís Rodrigues** graduated (1986), has a Master (1991) and a PhD (1996) in Electrotechnic and Computers Engineering, by the Instituto Superior Técnico da Universidade Técnica Lisboa (IST). He obtained the "Agregação" in Informatics (2003)

by the Universidade de Lisboa. He is full Professor at Departamento de Engenharia Informática, of Instituto Superior Técnico da Universidade Técnica Lisboa (IST) and a senior researcher and Distributed Systems Group of INESC-ID. Previously he was at the Faculdade de Ciências da Universidade de Lisboa where he was a founding member of the LASIGE laboratory and leader of the Distributed Algorithms and Network Protocols group. His current research interests include fault-tolerant and real-time distributed systems, group membership and communication, replicated data management, publish-subscribe systems, peer-to-peer computing and mobile computing. He has more than 100 publications in these areas. He is co-author of two textbooks on distributed computing. He is a member of the Ordem dos Engenheiros, ACM, and IEEE.

**José Pereira** graduated (1995) and has a Master (1998), and a PhD (2002) from the Universidade do Minho. He is an assistant Professor in Computer Science at Universidade do Minho, teaching distributed systems foundations, transactional systems, and data replication topics to Masters and Doctoral Programmes. He is currently the Technical Manager of the GORDA – Open Replication of Database european research project. His current research interests include dependable distributed systems, namely, on database replication and large scale group communication.