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Paulo Ferreira • Pedro Alves

# Distributed Context-Aware Systems

 Springer

Paulo Ferreira  
INESC ID, Instituto  
Superior Técnico  
Universidade de Lisboa  
Lisboa, Portugal

Pedro Alves  
INESC ID, Instituto  
Superior Técnico  
Universidade de Lisboa  
Lisboa, Portugal

ISSN 2191-5768

ISBN 978-3-319-04881-9

DOI 10.1007/978-3-319-04882-6

Springer Cham Heidelberg New York Dordrecht London

ISSN 2191-5776 (electronic)

ISBN 978-3-319-04882-6 (eBook)

Library of Congress Control Number: 2014936980

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Printed on acid-free paper

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*To our families*



# Preface

We have been watching a tremendous growth of available personal sensing devices embedded in smartphones which include multiple sensors such as GPS, WiFi/3G, accelerometer, and light sensor and can run a variety of applications. Thus, using such sensors, we can collect a large amount of context information such as location, time, user's activity, etc.

The availability of users' context information, given the widespread usage of such devices with several context capture techniques at our disposal, makes possible the development of distributed context-aware systems. These support new applications and services and may enrich user-applications interactions.

Most well-known context-aware applications (e.g., social software) operate on a large scale, i.e., they involve a large number of users generating and consuming a huge number of messages carrying context information (e.g., location). In such distributed context-aware systems, we face a scalability problem of a large number of producers (sensors) transmitting information to a large number of consumers (client applications) in highly dynamic environments, with different computing capabilities, user mobility, and privacy issues.

This book addresses the above mentioned issues: scalability and privacy in distributed context-aware systems. It is organized in five chapters starting with an introduction to the theme raising the most important challenges. Then, Chap. 2 presents several important definitions (establishing a common ground for the following chapters) and a taxonomy. These are important to Chap. 3 which describes some of the most relevant distributed context-aware systems that can be classified according to the taxonomy. Privacy is addressed in Chap. 4. The book ends with Chap. 5 that presents some important conclusions.

The audience for this book is wide; researchers, students, and professionals interested in the areas addressed may find most relevant information regarding scalability and privacy in distributed context-aware systems.

Lisboa, Portugal  
Lisboa, Portugal  
October, 2013

Paulo Ferreira  
Pedro Alves





# Acknowledgments

This book would not be possible without the contribution of the institutions hosting the authors: the research institute *Instituto de Engenharia de Sistemas e Computadores Investigação e Desenvolvimento em Lisboa* (INESC ID) and the engineering school *Instituto Superior Técnico* (IST). Both institutions have provided the authors with the research and teaching environment so much needed for a fruitful scientific and technological interaction among students at different levels (Ph.D. and M.Sc.) as well as among students and professors. We express our gratitude to both INESC ID and IST, to all the Ph.D. and M.Sc. students who, by their enthusiastic and hard work, have helped to pave the way for this work, and also to our colleagues in the Distributed Systems Group at INESC ID.

Above all we want to thank our families, who supported and encouraged us in spite of all the time this book took us away from them. It was a long and difficult journey for them.



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# Acronyms

AP	Access point
CPU	Central processing unit
CSCW	Computer-supported cooperative work
GPRS	General packet radio service
GPS	Global positioning system
GSM	Global system for mobile communications
GUI	Graphical user interface
HTTP	Hypertext transfer protocol
HTTPS	Hypertext transfer protocol secure
IM	Instant messaging
IP	Internet protocol
IR	Infrared
IRC	Internet relay chat
PC	Personal computer
RFID	Radio frequency identification
RMI	Remote method invocation
SIP	Session initiation protocol
SMS	Short message service
TCP	Transport control protocol
UDP	User datagram protocol
XMPP	Extensible messaging and presence protocol
WiFi	Wireless fidelity (IEEE 802.11b wireless networking)