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## Guest Editorial: Special Issue on Frontiers in Trust Management

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# Guest Editorial: Special Issue on Frontiers in Trust Management\*

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Information and Communication Technologies (ICT) are becoming increasingly important in the way we organize our lives, our workplaces and our societies. ICT allows people and organisations, that have never interacted with each other in the past, to initiate new and mutually beneficial businesses across the world. This means that personal and business information is increasingly being communicated across interpersonal, inter-business and international borders. Keeping this information safe and protecting the fragile IT infrastructure from criminals is a growing problem in most societies. Unfortunately, traditional security technologies based on a strong perimeter defence work poorly in an inter-connected world that obeys Metcalfe's law which states that "the value of a network is proportional to the square of the number of connected users of the system", *i.e.*, where there is a strong incentive for interactions across the different borders. During the past decade, trust management has emerged as a promising solution to many challenges in networks and distributed systems as well as emerging problems in computer security and privacy.

This special issue on "Frontiers in Trust Management" attempts to highlight some of the latest research addressing those challenges. It collects a series of papers on trust management issues that extends papers and ideas presented at the Fifth IFIP WG 11.11 International Conference on Trust Management [5] or one of the affiliated workshops [2, 7, 4, 6, 1, 3] in Copenhagen, June 27 – July 1, 2011.

More specifically:

- The first paper, "Privacy-Preserving Cloud Database Querying" by Lu and Tsudik [5], examines the problem of data privacy in cloud computing. Cloud computing promises cheap and elastic storage services, but users have to hand over their data to third party storage providers, which raises obvious concerns about the confidentiality of data and ensuing privacy concerns. Lu and Tsudik propose a new approach to cloud storage, based on attribute-based encryption and the blind Boneh–Boyen weak signature scheme to ensure data privacy and fine-grained access control.
- The paper of Basu, Vaidya and Kikuchi [2], entitled "Efficient Privacy-Preserving Collaborative Filtering Based on the Weighted Slope One Predictor" examines the privacy of users in collaborative filtering (CF) systems. CF is an important technique used to classify information, e.g. the

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ratings provided by recommendation and reputation systems, where users provide feedback based on their personal experience. The accuracy of most CF systems increases with the availability of data, which raises privacy issues for the users who provide feedback. This paper introduces an efficient privacy-preserving collaborative filtering scheme based on the weighted Slope One predictor.

- Scipioni and Langheinrich's paper "Towards a New Privacy-Aware Location Sharing Platform" [7], examines a common problem in location based services, namely how users can share their location without compromising their privacy. This problem has increased dramatically since the introduction of GPS enabled smart-phones and similar devices and although users value these capabilities, they also express concern about the lack of control over location information. The paper presents a new architecture for location sharing patterns, where users can decide to share location information on a group basis.
- The paper of Kosa, EI-Khatib and Marsh [4], entitled "Measuring Privacy", proposes a mechanism for measuring privacy, defined by a model of the states of privacy based on the identifiability of an individual. Providing such a mechanism for measuring privacy is important for the ability to reason about people's privacy and compare different privacy-preserving technologies.
- Mazzara, Marraffa, Biselli and Chiarabini's paper on "The Polidoxa Shift: a New Approach to Social Networks" [6] presents a mechanism to enhance the quality of a search engine through the inclusion of trust metrics derived from social networks. The inclusion of information from social networks allows the system to identify users with similar tastes and interests, which is likely to improve the relevance of search engine results if this information is taken into account.
- Abdullah and van Moorsel's paper on "Uncertainty and Uncertainty Tolerance in Service Provisioning" [1] examines the problem of measuring and policing a service provider's compliance to a previously agreed service level agreement (SLA). The Internet only guarantees "best effort" delivery of packets, so providing service over the Internet is inherently uncertain. Providing ways to model and measure this uncertainty and communicate the uncertainties related to a particular service provider help users to make decisions when faced with an offer from a particular service provider.
- The final paper by Dwyer, Clark and Cofta [3] on "Reading Trust and Distrust in Shared Documents: Film Professionals Review Film Reviews" examines how professionals in a particular industry derive trust in information that they receive through industry publications. Identifying textual properties that engender trust in the reader is important for authors and publishers, but it is equally important for people who aim to produce automatic (content based) filtering systems for text.

We believe that the papers included in this special issue illustrate some of the important issues investigated at the frontiers of trust management research. They also provide an excellent illustration of the breadth and depth of the material presented at the Fifth IFIP WG 11.11 International Conference on Trust Management (IFIPTM) and the affiliated workshops (Primo 2011, TP-DIS'11 and INTRUSO 2011) in Copenhagen 2011. We are happy and privileged to have been offered the opportunity to guest-edit this special issue of *Journal of Internet Services and Information Security (JISIS)*.

With the Editor-in Chief, Dr. Ilsun You, we wish to extend our special thanks to all authors, reviewers and editorial members for their invaluable contributions, without which this special issue would not have been possible.

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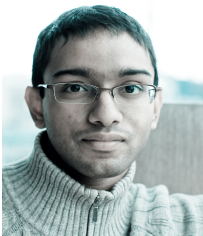
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**Clara Mancini** is a researcher in Human and nonhuman Animal Computer Interaction, at the Computing Department of The Open University. With a focus on requirements elicitation, design and evaluation, her research investigates how computing technology can afford, mediate and shape new models of intra- and inter-species communication and inter-activity, supporting novel forms of connectedness, learning and cooperation. Her work on privacy and pervasive technology has produced new methodologies for eliciting privacy requirements for pervasive systems and her findings have been repeatedly published in ACM venues such as CHI and UbiComp. Clara recently co-organised Primo 2011, the First International Workshop on Privacy Management in Mobile Applications. Contact her at *c.mancini@open.ac.uk*.