



SISCOM: Smart Services for Information Systems and Communication Networks

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The SISCOM (Smart Services for Information Systems and Communication Networks) research group focuses on technologies that make it possible to provide intelligent services for information services and communication networks. We teach and do research in topics related to privacy, performance evaluation of networks, wireless adhoc and mesh networks, design of routing protocols, among others. Our research activities are funded by public research projects granted by the Spanish Government and the European Commission.

Keywords- Communication networks, security and privacy of the information

I. INTRODUCTION

The SISCOM (Smart Services for Information Systems and Communication Networks) research group [1] focuses on technologies that make it possible to provide intelligent services for information services and communication networks. More specifically, the interests of the group are mainly focused on two areas:

1. Communication networks: We work mostly on wireless networks, either with infrastructure or adhoc and mesh. With the aim of improving their performance, telematics engineering techniques are used. Also, routing protocols are designed and evaluated to guarantee the quality of service required to support intelligent services.

2. Security and privacy of the information: We work on the development of information protection techniques, especially on anonymization of databases to protect users' privacy when these data are being analysed by third parties. These techniques allow us to protect communications and personal information in data analysis processes.

Application examples: Anonymization of medical databases, protection of user privacy in Web browsing, electronic voting, communication in wireless networks with/without infrastructure (vehicular networks, mesh networks, mobile adhoc networks), design of efficient routing protocols for wireless infrastructureless networks, personal networks, machine learning algorithms

(autonomous vehicles, routing protocols, quality of service).

Social impact: Health sector, administration, electric operators, smart grid, telecommunications service operators, smart city services, electrical vehicle, autonomous vehicle.

II. RESEARCH PROJECTS

A. The UPC team has a deep expertise in data privacy, covering areas such as design of privacy mechanisms and metrics, anonymization algorithms and differential privacy. The members have participated in several national and European projects, and carried out contracts with companies such as NEC Labs and Microsoft. The team has a large experience in the field of multihop wireless networks, including congestion control mechanisms for smart grid neighborhood area networks, some of them based on machine learning techniques. Also, the team has a long experience on the design of QoS-aware multimetric routing protocols for vehicular networks in urban scenarios, some of them using ML-based models.

We also highlight our most recent projects:

MAGOS (2018-2020): Secure sMArt Grid using Open Source Intelligence. TEC2017-84197-C4-1/2/3-R

INRISCO (2015-2019): INcident monitoRing In Smart COmmunities. TEC2014-54335-C4-1/2/3/4-R.

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- [1] Grupo de Investigación "Smart Services for Information Systems and Communication Networks (SISCOM)", <https://siscom.upc.edu>