

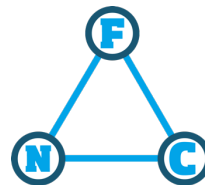

# Welcome to



**MobiSPC**

**MobiSPC 2018**

The 15th International Conference  
on Mobile Systems and  
Pervasive Computing



**FNC 2018**

The 13th International Conference  
on Future Networks and  
Communications



August 13 – 15, 2018  
Gran Canaria, Spain

With support of

University of Las Palmas de Gran Canaria, Spain  
Hasselt University, Belgium & Acadia University, Canada



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# FNC / MobiSPC

## SYMPOSIA AND WORKSHOPS

<b>MobiSPC</b>	The 15th International Conference on Mobile Systems and Pervasive Computing
<b>FNC</b>	The 13th International Conference on Future Networks and Communications
<b>BDNT</b>	The 2nd International Workshop on Big Data and Networks Technologies
<b>DPNoC</b>	The 5th International Workshop on the Design and Performance of Networks on Chip
<b>EICM</b>	The 5th International Symposium on Emerging Inter-networks, Communication and Mobility
<b>FIT</b>	The 4th International Workshop on the Future of the Internet of Things
<b>IoTAs</b>	International Workshop on IoT Approaches: for Distributed Computing, Communications and New Applications
<b>MOBITraffic</b>	International Workshop on Mobile Systems Applied to Traffic Management and Safety, Smart Vehicles and Smart Roads
<b>SEDIT</b>	International Workshop on Secure and Efficient Deployment of IoT
<b>SMSM</b>	International Workshop on Smart Manufacturing and Smart Mobility

# PROGRAM AT A GLANCE

## MobiSPC 2018, FNC 2018 and Workshops Program Time Slots

Timing	Sunday 12 August 2018			
16:00-18:00	Registration	Hall 11th floor		
		ROOM 1	ROOM 2	ROOM 3
		Cristina I	Cristina II	Cristina III

Timing	Monday 13 August 2018			
08:00-09:15	Registration	Hall 11th floor		
09:15-09:30	Opening Ceremony	ROOM 1		
09:30-10:30	Keynote Speaker I	Dr. Domingo Benitez		
10:30-10:55	Coffee Break	Coffee Room / Foyer		
11:00-12:30	Technical Sessions (1)	MobiSPC-S1	FNC-S1	EIGM/SEDIT
12:30-13:25	LUNCH	Gran Canaria lounge (P floor) or Canteras VI Hall		
13:30-15:00	Technical Sessions (2)	MobiSPC-S2	FNC-S2	BDNT-S1
15:00-15:25	Coffee Break	Coffee Room / Foyer		
15:30-17:00	Technical Sessions (3)	MobiSPC-S3	FNC-S3	BDNT-S2

Timing	Tuesday 14 August 2018			
09:30-10:30	Keynote Speaker II	ROOM 1 Dr. Jamal Bentahar		
10:30-10:55	Coffee Break	Coffee Room / Foyer		
11:00-12:30	Technical Sessions (4)	MobiSPC-S4	FNC-S4	FIT/IoTAs
12:30-13:25	LUNCH	Gran Canaria lounge (P floor) or Canteras VI Hall		
13:30-15:00	Technical Sessions (5)	MobiSPC-S5	FNC-S5	MOBITraffic-S1
15:00-15:25	Coffee Break	Coffee Room / Foyer		
15:30-17:00	Technical Sessions (6)	MobiSPC-S6	FNC-S6	MOBITraffic-S2
19:00-21:00	Banquet and Award Ceremony	Banquet ROOM		

Timing	Wednesday 15 August 2018			
08:30-10:00	Technical Sessions (7)	MobiSPC-S7		DPNoC/MoDaC/SMSM
		Coffee Room / Foyer		
	End of Event			

# KEYNOTE I

Embedded Processors for IoT Cities

**Dr. Domingo Benitez**

*SIANI institute, University of Las Palmas de Gran Canaria, Spain*

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## **Abstract:**

Many applications related to IoT cities such as building automation, traffic control, driver assistance, natural language translation, energy management, etc., are moving from servers to embedded computers while evolving at a rapid pace. The implementation of embedded applications for IoT cities is being facilitated by advances in processor architecture combined with available process technologies, enabling processors that offer very small size at performance levels that were unattainable a few years ago.

From high-performance to configurable embedded processors, some architectures have been proposed to improve the efficiency of emerging workloads of IoT applications. However, the performance and memory capacity of IoT systems need to increase even more while power consumption is significantly reduced. This is difficult to achieve because as both processor performance and memory size increase, so does power consumption. In a few years, as the technology matures, networkable products are expected to increase productivity, change how we access information and perform repetitive tasks, and profoundly change our IoT cities.

In this keynote, I will discuss the emerging trends driving the design of processors that will be embedded in IoT devices for future cities. Additionally, I will identify several challenges one may encounter when designing embedded processors for applications in the field of IoT cities.

## **About the Speaker:**

Prof. Benitez is full professor at the University of Las Palmas de Gran Canaria (Spain). He received his PhD in Computer Science in 1994, and his master and bachelor degrees in Physics in 1987 and 1985, respectively. His research interests focus currently on high performance computer architecture and technology. He has taught graduate and undergraduate courses on parallel computing, computer architecture, computer technology and smart buildings.

# KEYNOTE II

Cooperative and Non-Cooperative Games for Trusted and Secured Dynamic Multi-Cloud

**Dr. Jamal Bentahar**  
*Concordia University, Canada*

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## **Abstract:**

The few past years have witnessed a rapid expansion of cloud computing, making it the standard paradigm to get the needed infrastructure, platform, and software thanks to the flexible and rich concept of services computing. Multi-cloud and cloud federations have also gained an increasing interest thanks to the cooperative benefit they offer, which facilitates the discovery, composition, and resource scaling in large-scale services' markets. We have made key contributions towards forming these cooperative structures by gathering cloud services within virtual groups called communities of cloud services. The existing community formation models have several limits at the architectural, business and security levels preventing their adoption as industrial solution. From the architectural perspective, the existing community formation models rely on a centralized architecture that assumes perfect and complete information of the settings wherein a central entity is responsible for managing the community formation process. However, the fact that services are being hosted in different and geographically distributed cloud data centers requires a fully distributed community formation algorithm in distributed decision-making and dynamic settings under incomplete information where only partial information about the individual performance of cloud services within communities and about how they will behave within these communities is available. From the business perspective, the current models ignore the non-cooperative market reality of deployed and offered services. In fact, services are owned by cloud providers that differ in their business capabilities, which demotivates the participation of the well-positioned services in such a process unless they receive some privileges. From the security perspective, the current approaches rely on classic monitoring solutions that work for small settings, but unable to scale up when the number of services goes beyond a certain threshold. In this talk, I will present recent solutions to these problems and developments conducted in my research lab involving graduate students and collaborators. Cooperative and non-cooperative game theoretical models using Bayesian Stackelberg and hedonic coalitional games for dynamic and distributed formation of secured cloud communities against malicious services will be presented along with theoretical and simulation results using real datasets.

## **About the Speaker:**

Prof. Bentahar is a Full Professor at Concordia University, Concordia Institute for Information Systems Engineering. He obtained his Ph.D. in Computer Science and Software Engineering in 2005 from Laval University, Canada, his Master in the same discipline from Mohamed V University, Morocco in 2001, and his Bachelor in Software Engineering from National Institute of Statistics and Applied Economics, Morocco in 1998. From 2005 to 2006 he was Postdoctoral Fellow at Laval University, and then obtained the prestigious NSERC Postdoctoral Fellowship at Simon Fraser University, Canada. He joined Concordia University as Assistant Professor in 2006 and was promoted to the rank of Associate Professor in 2010 and to the rank of Full Professor in 2016. Dr. Bentahar has obtained many research grants of a total amount of \$2.9M and published more than 190 journal and conference papers. He is appointed as a co-chair of the NSERC's Computer Science Evaluation Group for a two-year term 2016-2018 and as member for a three-year term 2015-2018. He was Invited Professor at Imperial College London (2007), University of Namur (2009), Khalifa University (2012), and Toulouse 1 Capitole University (2015). He is in the editorial board of four journals, program chair of three conferences, and serves as program committee member for many leading conferences. His research interests are specification and verification of intelligent systems with applications in avionics, and game theory with applications in service and cloud computing.

# DETAILED PROGRAM

**Sunday, August 12, 2018**

**Registration 16:00-18:00**

**Room:** Hall 11th floor

**Monday, August 13, 2018**

**Registration 08:00 – 9:15 & 10:30 – 12:30**

**Room:** Hall 11th floor

**Opening 09:15 - 10:30**

Opening Ceremony

**Room:** Main Meeting Room

**Keynote I**

***Embedded Processors for IoT Cities***

Domingo Besnitez, SIANI institute, University of Las Palmas de Gran Canaria, Spain

**Session Chair:** Ansar-UI-Haque Yasar, Hasselt University, Belgium

**Room:** Room 1

**Coffee Break 10:30 - 10:55**

**Room:** Coffee Room / Foyer

**Technical Sessions (1) 11:00 - 12:30**

**MobiSPC Session S-1: Pervasive Computing**

**Session Chair:** Carmela Comito, CNR-ICAR, Italy

**Room:** Room 1

Security of LoRaWAN v1.1 in Backward Compatibility Scenarios

*Tahsin Civan Mert Dönmez and Ethiopia Nigussie*

A swift Cloud-Paillier scheme to protect sensitive data confidentiality in cloud computing

*Khalid El Makkaoui, Abdellah Ezzati and Abderrahim Beni-Hssane*

The hybrid neural model to strengthen the e-nose restricted in real complex conditions

*Slimane Ouhmad, Abderrahim Beni-Hssane and Abdelmajid Hajami*

**FNC Session S-1: SDNetworks & WSN**

**Session Chair:** Stéphane Galland, Université de Technologie de Belfort-Montbéliard, France

**Room:** Room 2

A PMIPv6-based User Mobility Pattern Scheme for SDN-defined Smart Factory Networking

*Daejun Ahn and Jongpil Jeong*

SMS: Smart Management Scheme via Software Defined Networks

*Ahmad Nahar Quttoum, Hassan AlSaraireh, Olbi Khadjiev, Marwa Alqudaimat*

Energy Efficient Clustering and Routing in a Wireless Sensor Networks

*Gowrishankar Subrahmanyam*

### **EICM/SEdit Workshop**

**Session Chair:** Khalil Drira, LAAS-CNRS, France

**Room:** Room 3

A novel approach for optimizing Governance, Risk management and Compliance for enterprise information security by Integrating DEMATEL method and Figure of Merit

*Ramalingam Dharmalingam and Arun Nagarle Shivashankarappa*

An Enhanced AODV Protocol for Avoiding Black Holes in MANET

*Qussai Yaseen and Monther Aldwairi*

AMSEP: Automated Multi-level Security Management for Multimedia Event Processing

*Hichem Ben Abdallah, Takoua Abdellatif and Faouzi Chekir*

Deep Learning with Dense Random Neural Network for Detecting Attacks against IoT-connected Home Environments

*Olivier Brun, Yonghua Yin, Erol Gelenbe*

### **Lunch Break**

**12:30 - 13:25**

**Room:** Gran Canaria lounge (P floor) or Canteras VI Hall

### **Technical Sessions (2)**

**13:30 - 15:00**

#### **MobiSPC Session S-2: Mobile Systems and Applications**

**Session Chair:** Rüdiger Pryss, Ulm University, Germany

**Room:** Room 1

A Critical Review of Holonic Multi Agent System in Traffic Modeling and Simulation

*Igor Tchappi Haman, Stéphane Galland, Vivient Corneille Kamla and Jean Claude Kamgang*

On Crossing-layer Binding Update Scheme in Hierarchical Mobile Networks

*Soonsung Hwang and Jongpil Jeong*

Performance evaluation utilizing mobility management method of cost-effective function delegation in MIPv6 network environment

*Jeonga Kim and Jongpil Jeong*

Towards a Real-time Occupancy Detection Approach For Smart Buildings

*Hamza El Khoukhi, Youssef Nait Malek, Anass Berouine, Mohamed Bakhouya, Driss Elouadghiri and Mohamed Essaïdi*

#### **FNC Session S-2: Communication Networks**

**Session Chair:** 2. Ethiopia Nigussie, University of Turku, Finland

**Room:** Room 2

The Simulation Platform for the Optical Transmission System in Matlab Simulink

*Pavol Salik, Rastislav Roka and Gorazd Tomas*

Evaluation of a Compound Node Selection Function for a Greedy Routing in Urban Vehicular Ad Hoc Networks

*Chi Trung Ngo, Quy Lam Hoang and Hoon Oh*

Third-generation sequencing data analytics on mobile devices: cache oblivious and out-of-core approaches as a proof-of-concept

*Franco Milicchio, Marco Oliva, Christina Boucher and Mattia Proserpi*

#### **BDNT Workshop: Session 1**

**Session Chair:** Yousef Farhaoui, Moulay Ismail University, Morocco

**Room:** Room 3

Detection of DNS DDoS Attacks with Random Forest Algorithm on Spark

*Liguo Chen, Yuedong Zhang, Qi Zhao, Guanggang Geng and Zhiwei Yan*

Unpredictable cryptographic primitives for the Robust Wireless Network Security

*Younes Asimi, Ahmed Asimi, Azidine Guezzaz, Zakariae Tbatou and Yassine Sadqi*

Blind Maternal-Fetal ECG Separation Based on The Time-Scale Image TSI and SVD – ICA Methods

*Ziani Said*

IaaS cloud model security issues on behalf cloud provider and user security behaviors

*Chawki Elbalmany, Ahmed Asimi and Zakariae Tbatou*

### **Coffee Break**

**15:00 - 15:25**

**Room:** Coffee Room / Foyer



**Technical Sessions (3)****15:30 - 17:00****MobiSPC Session S-3: Internet of Things****Session Chair:** Ramalingam Dharmalingam, Majan University College, Oman**Room:** Room 1

Monitoring System Using Internet Of Things For Potential Landslides

*Meryem Elmoulat, Olivier Debauche, Saïd Mahmoudi, Lahsen Aït Brahim, Pierre Manneback and Lebeau Frédéric*  
Component and ICT Convergence Analysis Study for Smart Autonomous Ship based on Intelligence Information Technology*Ilkyun Im, Dongryeol Shin and Jongpil Jeong*

A proposal of low-cost and low-power embedded wireless image sensor node for IoT applications

*Marcel Tresanchez, Alex Pujol, Tomàs Pallejà, David Martínez, Eduard Clotet and Jordi Palacín***FNC Session S-3: Communication Networks****Session Chair:** Gowrishankar Subrahmanyam, B.M.S. College of Engineering, India**Room:** Room 2

Optimally Protecting Elections with Uncertainty about Voter Preferences

*Mingchu Li and Yuanpeng Cao*

Network State Conservation in Dynamic Spectrum Access: the IEEE 802.11 DCF Case

*Jun Peng*

A Recursive K-means towards trade-off between PLM Competences, Positions, and Offers

*Mourad Messaadia, Samir Ouchani and Anne Louis***BDNT Workshop: Session 2****Session Chair:** Yousef Farhaoui, Moulay Ismail University, Morocco**Room:** Room 3

Analysis of the allocation of classes, threads and CPU used in embedded systems for Java applications

*Laila Fal, Laila Moussaid and Hicham Medromi*

One query to retrieve XML and Relational Data

*Hassana Nassiri, Mustapha Machkour and Mohamed Hachimi*

Proposal of a Big data System based on Recommendation and Profiling techniques for an intelligent management of Moroccan tourism

*Oumayma Boulaalam, Badraddine Aghoutane, Driss El Ouadghiri, Aniss Moumen and Mahamed Laghdaf Cheikh Malainine*

Energy Efficiency: Improving the renewable energy penetration in a smart and green community

*Abdelwahab Haddaoui and Laila Moussaid***End of Monday Technical Sessions**

**Tuesday, August 14, 2018**

**Keynote II 09:30 - 10:30**

***Cooperative and Non-Cooperative Games for Trusted and Secured Dynamic Multi-Cloud***

Jamal Bentahar, Concordia University, Canada

**Session Chair:** Stéphane Galland, Université de Technologie de Belfort-Montbéliard, France

**Room:** Room 1

**Coffee Break 10:30 - 10:55**

**Room:** Coffee Room / Foyer

**Technical Sessions (4) 11:00 - 12:30**

**MobiSPC Session S-4: Mobile Data Management**

**Session Chair:** Jamal Bentahar, Concordia University, Canada

**Room:** Room 1

Towards Incentive Management Mechanisms in the Context of Crowdsensing Technologies based on TrackYourTinnitus Insights

*Kushal Agrawal, Muntazir Mehdi, Manfred Reichert, Franz Hauck, Winfried Schlee, Thomas Probst and Rüdiger Pryss*

Context Data Categories and Privacy Model for Mobile Data Collection Apps

*Felix Beierle, Vinh Thuy Tran, Mathias Allemand, Patrick Neff, Winfried Schlee, Thomas Probst, Rüdiger Pryss and Johannes Zimmermann*

Performance Analysis of Microcell-Macrocell Handover Queueing in Multi-layer Mobile Systems

*Changyong Um and Jongpil Jeong*

**FNC Session S-4: Security**

**Session Chair:** Ahmad Nahar Quttoum, The Hashemite University, Jordan

**Room:** Room 2

Security of Join Procedure and its Delegation in LoRaWAN v1.1

*Tahsin Civan Mert Dönmez and Ethiopia Nigussie*

A Game-theoretic Approach for Channel Security Against Active Time-Varying attacks Based on Artificial Noise.

*Ling Chen, Mingchu Li, Ling Qin and Yingmo Jie*

Optimal Resource Allocation in Cyber-Security: A Game Theoretic Approach

*Abderrehmane Sokri*

**FIT/IoTAs Workshops**

**Session Chair:** Juan Corchado and Javier Prieto, University of Salamanca, Spain

**Room:** Room 3

A Qualitative Evaluation of IPv6 for the Industrial Internet of Things

*Benjamin Feldner and Paula Herber*

Fine-grained Access Control Framework for Igor, a Unified Access Solution to The Internet of Things

*Pauline Sia Wen Shieng, Jack Jansen and Steven Pemberton*

How blockchain improves the agriculture supply chain: case study alimentary supply chain via blockchain

*Roberto Casado-Vara, Javier Prieto, Fernando de la Prieta, Juan Corchado*

Multi Criteria Decision Making (MCDM) based Spectrum Moderator for Fog-Assisted Internet of Things

*Subha P Eswaran, Sridhar Sripurushottama and Manoj Jain*

**Lunch Break 12:30 - 13:25**

**Room:** Gran Canaria lounge (P floor) or Canteras VI Hall

**Technical Sessions (5)****13:30 - 15:00****MobiSPC Session S-5: Enabling Technologies and Emerging Topics I****Session Chair:** Abdellah Ezzati, FST, University Hassan 1, Morocco**Room:** Room 1

Towards Distributed Containerized Serverless Architecture in Multi Cloud Environments

*Boubaker Soltani, Afifa Ghenai and Nadia Zeghib*

A Smart Mobile Assessment Tool for Collecting Data in Large-Scale Educational Studies

*Kevin Andrews, Michael Zimoch, Manfred Reichert, Miles Tallon, Ulrich Frick and Rüdiger Pryss*

Human Mobility Prediction Through Twitter

*Carmela Comito***FNC Session S-5: Web / Cloud Applications****Session Chair:** 3. Hoon Oh, University of Ulsan, Korea**Room:** Room 2

Clustering analysis of online discussion participants

*Peter Krammer, Marcel Kvassay, Ján Mojžiš, Ivana Budinská, Ladislav Hluchý and Marek Jurkovič*

Fuzzy Cross Language Plagiarism Detection (Arabic-English) using WordNet in a big data environment

*Mohammed Erritali and Hanane Ezzikouri***MOBITraffic Workshop: Session 1****Session Chair:** Vittorio Astarita, University of Calabria, Italy**Room:** Room 3

Mobile Systems applied to Traffic Management and Safety: a state of the art

*Vittorio Astarita, Demetrio C. Festa and Vincenzo Giofrè*

Low-cost smartphone-based speed surveying methods in proximity to traffic calming devices

*Nicola Berloco, Pasquale Colonna, Paolo Intini, Giuseppe Masi and Vittorio Ranieri*

Automatic data collection for detecting travel behaviour: the IPET platform

*Francesco Piras, Eleonora Sottile, Daniele Calli, Italo Meloni***Coffee Break****15:00 - 15:25****Room:** Coffee Room / Foyer**Technical Sessions****15:30 - 17:00****MobiSPC Session S-6: Enabling Technologies and Emerging Topics II****Session Chair:** Jongpil Jeong, Sungkyunkwan University, South Korea**Room:** Room 1

Trust-based Context-aware Authentication System for Ubiquitous Systems

*Malika Yaici, Anis Oussayah and Mohamed Ahmed Takerrabet*

Towards a Beacon-based Situational Prioritization Framework for Process-Aware Information Systems

*Michael Stach, Tim Mohring, Rüdiger Pryss and Manfred Reichert*

An Agent-based Approach for Dynamic Big Data Processing in a Smart City Environment

*Zakarya Elagoune, Ramdane Maamri and Imane Boussebough***FNC Session S-6: Future Systems & Applications****Session Chair:** Abderrahmane Sokri, Defence Research and Development Canada, Canada**Room:** Room 2

A Per-Face Popularity Scheme to Increase Cache Robustness in Information-Centric Networks

*John Baugh and Jinhua Guo*

Towards a New approach for automating the simulation of QoS mechanisms in a smart digital environment

*Ayoub Bahnasse, Abdelmajid Badri, Mohamed Talea, Fatima Ezzahraa Louhab and Khat Azeddine*

Agent execution platform dedicated to C-ITS

*Chadha Zrari, Flavien Balbo and Khaled Ghedira*

**MOBITraffic Workshop: Session 2****Session Chair:** Vittorio Astarita, University of Calabria, Italy**Room:** Room 3

The use of Smartphones to assess the Feasibility of a Cooperative Intelligent Transportation Safety System based on Surrogate Measures of Safety

*Vittorio Astarita, Demetrio C. Festa, Vincenzo P. Giofrè and Giuseppe Guido*

Mobile for emergencies M4EM: a cooperative software tool for emergency management operations

*Vittorio Astarita, Demetrio C. Festa, Vincenzo Giofrè and Giulio Stefano*

Definition of an On-Board Comfort Index (BUS) for bus public transport

*Vincenzo Barone, Demetrio Carmine Festa, Domenico Walter Edvige Mongelli and Antonio Tassitani*

**End of Tuesday Technical Sessions****Banquet and Award Ceremony 19:30-22:00**

Banquet Room

**Wednesday, August 15, 2018**

**Technical Sessions**

**08:30 – 10:00**

**MobiSPC Session S-7: Systems Applications**

**Session Chair:** Ansar-Ul-Haque Yasar, Hasselt University, Belgium

**Room:** Room 1

Building an Anomaly Detection Engine (ADE) for IoT Smart Applications

*Nawaz Mohamudally and Mahejabeen Peermamode-Mohaboob*

Model-Based Runtime Monitoring of Smart City Systems

*Koray Incki, Ismail Ari*

Artificial Neural Network Model to relate Organization Characteristics and Construction Project Delivery Methods

*Uneb Gazder, Elhadi Shakshuki, Ansar-Ul-Haque Yasar and Muhammad Adnan*

**DPNoC/MoDaC/SMSM Workshops**

**Session Chair:** Rüdiger Pryss, Ulm University, Germany

**Room:** Room 3

PentaNoc: A New Scalable and self-similar NoC Architecture

*Ahlem Boudellioua, and Nasser Alzeidi*

Referenceable mobile crowdsensing architecture: A healthcare use-case

*Muntazir Mehdi, Guido Muehlmeier, Kushal Agrawal, Ruediger Pryss, Manfred Reichert, Winfried Schlee and Franz J. Hauck*

Design and Implementation of Monitoring System Architecture for Smart Bicycle Platform

*YeongKyun Lee, Jongpil Jeong*

**END of Event**