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networks

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Universidad
Carlos III
de Madrid

Future Communications Lisbon

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Workshop summary and next steps

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IMDEA Networks and U. Carlos III

Chairman of Expert Advisory Group: Networld 2020

[**Developing the**
Science of Networks]

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Committees of this conference

- Technical Program Committee
 - Rui Aguiar, U. Aveiro and IT
 - Arturo Azcorra, IMDEA Networks and U. Carlos III
 - Roberto de Marca, National Council of Science and Technology of Brassil
 - Thyaga Nandagopal, NSF
 - Heinner Stüttgen, NEC Eurolabs
- Organizing Committe
 - Rui Aguiar, U. Aveiro and IT
 - Daniel Corujo, U. Aveiro and IT
 - Pedro Sebastiao, ISCTE

Supporting Institutions



Thanks to all participants

- Many thanks to top Keynote speakers!!
- Many thanks to all Panelists!!
- Many thanks to all attendees

Objectives of this Conference

- Explore the main lines of Future Research in Networking and Communications for the time frame 2021 to 2027
- Invite top world experts in the field
- Involve both academia and industry
- Program based on position papers, NOT existing research
- Program based on keynotes and pannels, devoting substantial time to open debate
- Visionary Report to be produced from the conference

Did we achieve the Objectives??

- Explore the main lines of Future Research in Networking and Communications for the time frame 2021 to 2027 😊
- Invite top world experts in the field 😊
- Involve both academia and industry 😊
- Program based on future research, NOT existing research 😞
- Program based on keynotes and pannels, devoting substantial time to open debate 😊
- Visionary Report to be produced from the conference: pending to do!

Topics Explored

1. Internet of NanoThings and Bio-NanoThings (K)
2. New systems and objects
3. Future network visions
4. The future of wireless and what it will enable (K)
5. Novel radio solutions
6. What will be the limits of control intelligence?
7. The global Internet of the future (K)
8. Networking, Security and Society
9. Operating networks and services

What are the key future research topics??

- If I knew, I would NOT tell you
- Technological revolutions enabled by:
 - New fundamental technologiesand/or
 - New areas of application

Lessons from the past

- Telephone -> Internet
 - Microprocessors
 - Computer communications
- Telephone -> Mobile Telephony
 - New radio technologies
 - Mobile telephony itself
- “Unlimited data”
 - Fiber optics and high-performance switches
- Mobile Telephony -> Mobile Internet
 - Smartphone
 - Long tail of applications

What could the future be in 2021-27?

- Mobile Internet -> Global Neural Network
 - Nano technology and 2D crystals: integrated circuits, switches, antennas, transceivers, memories, transducers, energy harvesting, ...
 - Hyperconvergence and IoT: Vertical applications, connected society, drones, wearables, long tail of professional applications

Intense research needed in

- New architectures for nano-networks
- Virtualized network control for increased flexibility and lower opex
- Radio technology (nano-enabled): ultra-massive MIMO, mmWave, VLC, ...
- Other fundamental technologies: optics, switching, satellite, drones, wearables, interfaces, ...

Next steps

- Write a public report on workshop results
 - Edited by workshop organizers with Support of all workshop participants
 - First version targetted for end of november
- Second eddition of this workshop in two years?
 - More time for dicussion
 - Four panelists at most?
 - Filter talks not on future research

Please criticize!!!!