

# Distributed Networks

## Axis – ComEx

### DigiCosme Days



**Abdel Lisser**



**Aline Carneiro Viana**



## General guidelines

- Resource allocation in Mobile Edge Computing (MEC)
- Equilibrium and user-aware challenges in 5G/6G networks
- Distributed solutions for Tactile Internet



# Hot topics

## « 1. Address radio resource allocation under uncertainty with risk modeling and guaranteed Quality of Service »

- This will be achieved by mathematical models that describe the user demand and stochastic optimization models that deals with **uncertainty**.



# Hot topics

## « 1. Address radio resource allocation under uncertainty with risk modeling and guaranteed Quality of Service »

→ This will be achieved by mathematical models that describe the user demand and stochastic optimization models that deals with **uncertainty**.

## « 2. Explore synergies of stochastic games and Mobile Edge Computing (MEC) in case of incomplete information »

→ This includes the aspects of privacy compliance learning, cooperation, **uncertainty**, and social connections



# Hot topics

## « 1. Address radio resource allocation under uncertainty with risk modeling and guaranteed Quality of Service »

→ This will be achieved by mathematical models that describe the user demand and stochastic optimization models that deals with **uncertainty**.

## « 2. Explore synergies of stochastic games and Mobile Edge Computing (MEC) in case of incomplete information »

→ This includes the aspects of privacy compliance learning, cooperation, **uncertainty**, and social connections

## « 3. Analyze realistic scenarios where AI and MEC have positive synergies »

→ This includes: heterogeneous access, small cells, D2D communications, autonomous vehicles, vehicular networks, IoT, energy consumption, energy harvesting, and mobile social networks.



# Hot topics

## « 1. Address radio resource allocation under uncertainty with risk modeling and guaranteed Quality of Service »

→ This will be achieved by mathematical models that describe the user demand and stochastic optimization models that deals with **uncertainty**.

## « 2. Explore synergies of stochastic games and Mobile Edge Computing (MEC) in case of incomplete information »

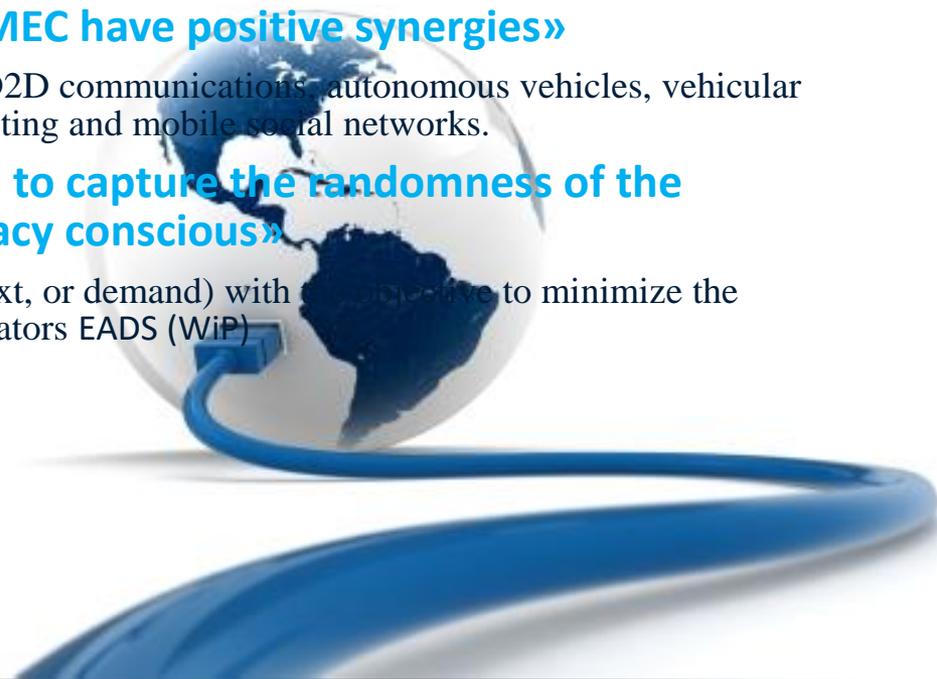
→ This includes the aspects of privacy compliance learning, cooperation, **uncertainty**, and social connections

## « 3. Analyze realistic scenarios where AI and MEC have positive synergies »

→ This includes: heterogeneous access, small cells, D2D communications, autonomous vehicles, vehicular networks, IoT, energy consumption, energy harvesting and mobile social networks.

## « 4. Explore distributional robust optimization to capture the randomness of the harvest energy in 5G networks, while privacy conscious »

→ To model the uncertainty (in users behavior, context, or demand) with the objective to minimize the expected total energy cost of mobile network operators EADS (WiP)



# Hot topics

## « 1. Address radio resource allocation under uncertainty with risk modeling and guaranteed Quality of Service »

→ This will be achieved by mathematical models that describe the user demand and stochastic optimization models that deals with **uncertainty**.

## « 2. Explore synergies of stochastic games and Mobile Edge Computing (MEC) in case of incomplete information »

→ This includes the aspects of privacy compliance learning, cooperation, **uncertainty**, and social connections

## « 3. Analyze realistic scenarios where AI and MEC have positive synergies »

→ This includes: heterogeneous access, small cells, D2D communications, autonomous vehicles, vehicular networks, IoT, energy consumption, energy harvesting, and mobile social networks.

## « 4. Explore distributional robust optimization to capture the randomness of the harvest energy in 5G networks, while privacy conscious »

→ To model the uncertainty (in users behavior, context, or demand) with the objective to minimize the expected total energy cost of mobile network operators EADS (WiP)

## « 5. Privacy-aware dynamic (re)configuration of slices »

→ End-to-end slicing, including radio interface; Scheduling and multiplexing of heterogeneous services on 5G and beyond networks; Mobile edge computing and fog computing for IoT services

# Hot topics

## « 1. Address radio resource allocation under uncertainty with risk modeling and guaranteed Quality of Service »

- ➔ This will be achieved by mathematical models that describe the user demand and stochastic optimization models that deals with **uncertainty**.

## « 2. Explore synergies of stochastic games and Mobile Edge Computing (MEC) in case of incomplete information »

- ➔ This includes the aspects of privacy compliance learning, cooperation, **uncertainty**, and social connections

## « 3. Analyse realistic scenarios where AI and MEC have positive synergies »

- ➔ This includes: heterogeneous access, small cells, D2D communications, autonomous vehicles, vehicular networks, IoT, energy consumption, energy harvesting, and mobile social networks.

## « 4. Explore distributionally robust optimization to capture the randomness of the harvest energy in 5G networks, while privacy conscious »

- ➔ To model the uncertainty (in users behavior, context, or demand) with the objective to minimize the expected total energy cost of mobile network operators EADS (WiP)

## « 5. Privacy-aware dynamic (re)configuration of slices »

- ➔ End-to-end slicing, including radio interface; Scheduling and multiplexing of heterogeneous services on 5G and beyond networks; Mobile edge computing and fog computing for IoT services

## « 6. Distributed solutions for 5G-Enable Tactile Internets »

- ➔ real time interaction systems; IoT; Industry 4.0; ultra reliable edge infrastructure; intelligent and mobility-aware edge computing

## Paris-Saclay interested parties

- INRIA
- CentraleSupélec - L2S
- CEA
- Telecom ParisTech
- Telecom SudParis
- UPSud - LRI
- ENSTA