

18° WIRNP

Workshop RNP

15 | 16 MAIO

Belém | PA

FUTEBOL - Federated Union of Telecommunications Research Facilities for an EU-Brazil Open Laboratory

Cristiano Bonato Both



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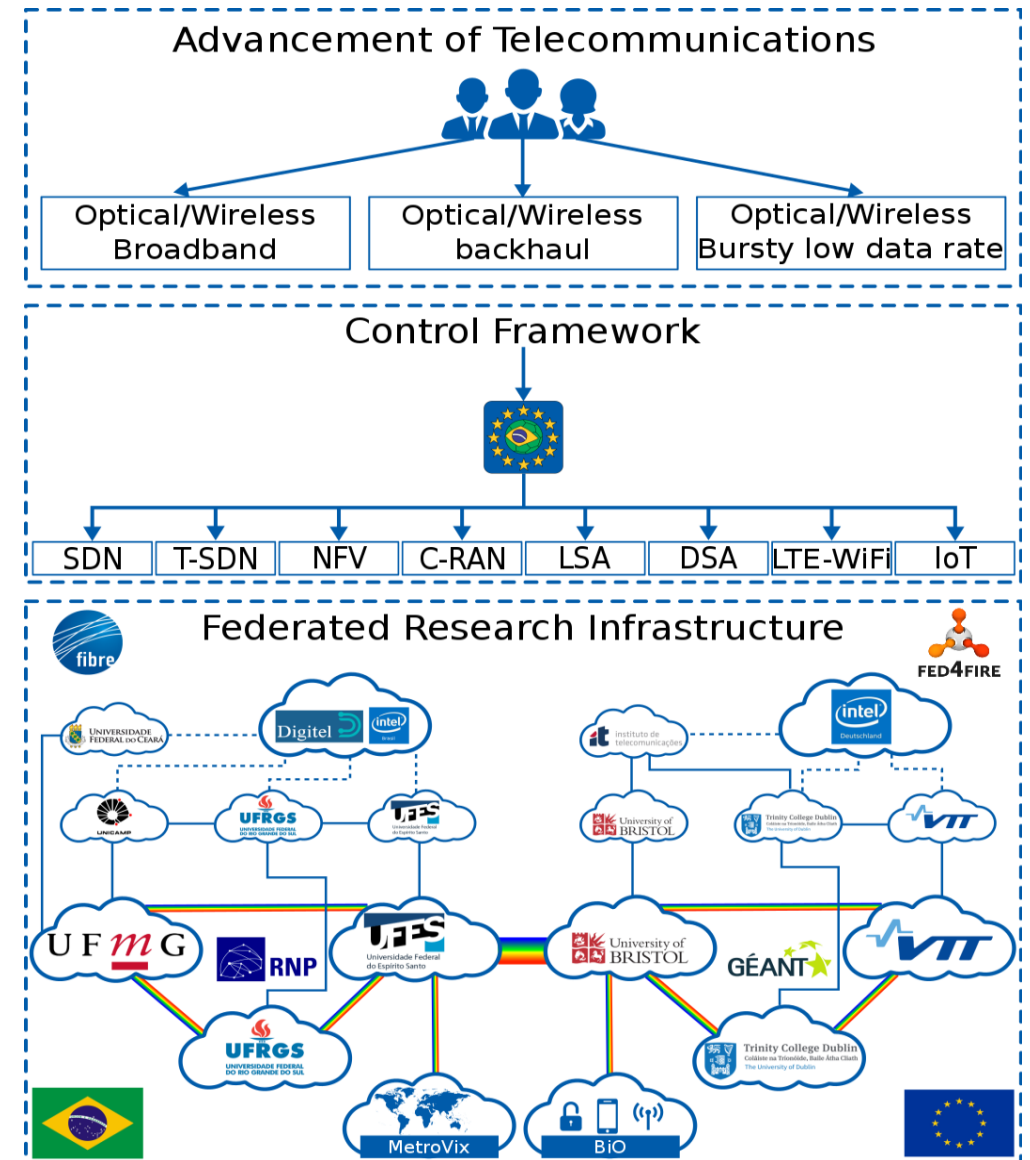


Outline

- Objectives
- FUTEBOL Experiments
- Impact
- Next Steps

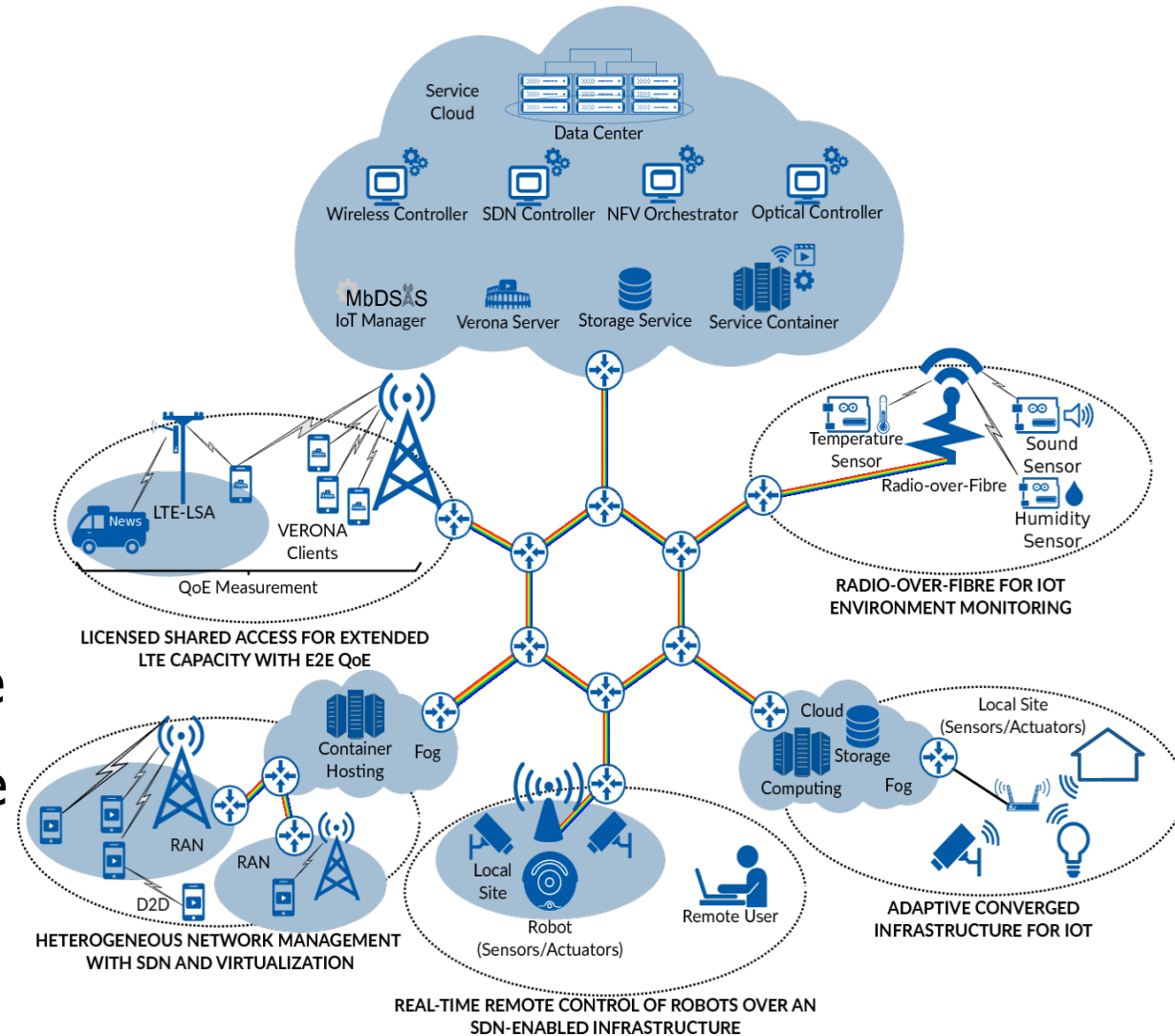
Objectives

- Deploy open optical/wireless testbeds in Europe and Brazil
- Develop and deploy a converged wireless/optical control framework
- Conduct industry-informed research using the testbeds
- Promote collaborative research and industrial/academic partnerships between Brazil and Europe
- Create education and outreach materials for a broad audience



FUTEBOL Experiments

- LSA for extended LTE capacity with E2E QoE
- Heterogeneous network management with SDN and virtualization
- Real-time remote control of robots over an SDN infrastructure
- Adaptive converged infrastructure for IoT
- RoF for IoT environment monitoring

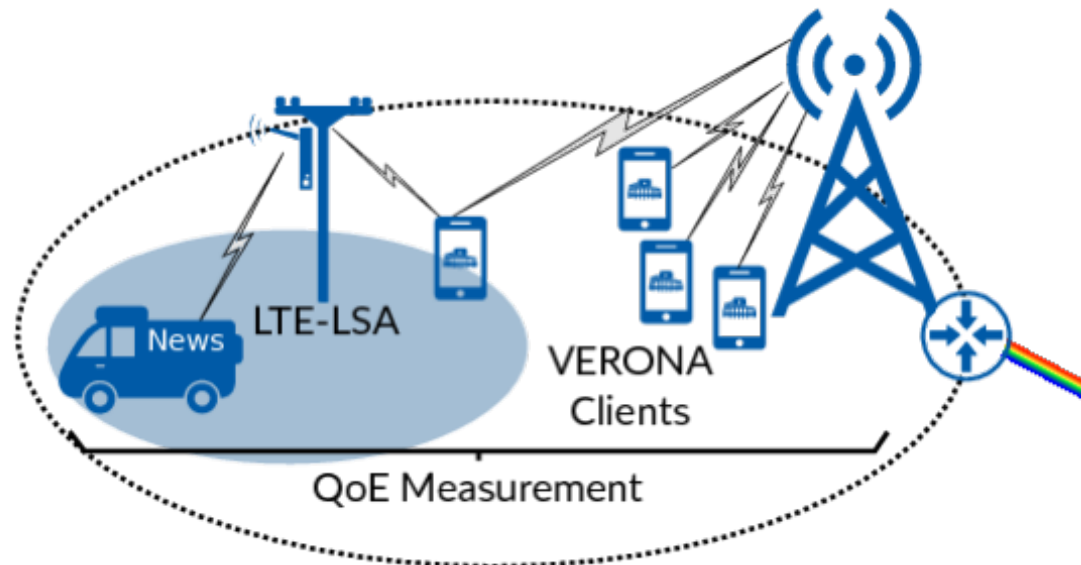


Use Case 1:

The impact of broadband wireless on optical infrastructure

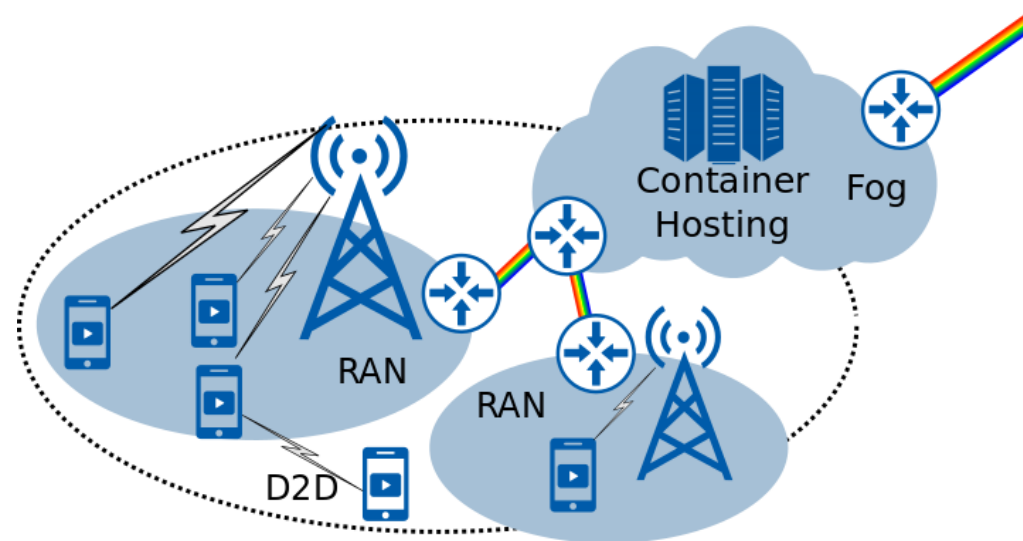
Experiment:

- What is the impact of spectrum sharing using LSA on the QoE of LTE users, considering end-to-end connectivity?
- What requirements do next-generation wireless services bring to the optical access, in terms of capacity, tolerable latency, and reliability?
- What are the candidate bands for LSA in Brazil? What are the incumbents and the protection requirements?



Use Case 2:***The design of optical backhaul for next-generation wireless*****Experiment:**

- Can we change the functional split dynamically, between fronthaul and backhaul, to trade-off wireless efficiency for fiber efficiency?
- Can we define a common control plane to control a flexible network with optical and wireless elements?
- Can we migrate the application servers closer to the user based on customer's load?

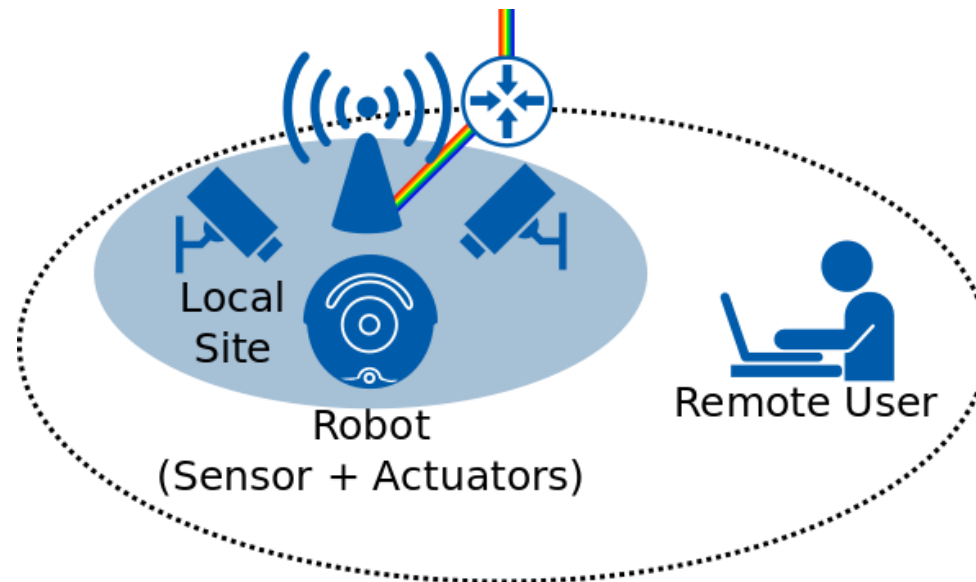


Use Case 2:

The design of optical backhaul for next-generation wireless

Experiment:

- Presently, what are the latency bottlenecks in the cloud-fiber-wireless paradigm?
- What are the potential and limitations of SDN-oriented techniques to substantially reduce packet/handoff latencies in the optical/wireless integration?
- How can the integration of SDN and NFV be used to improve orchestration for latency-bounded applications running remotely?

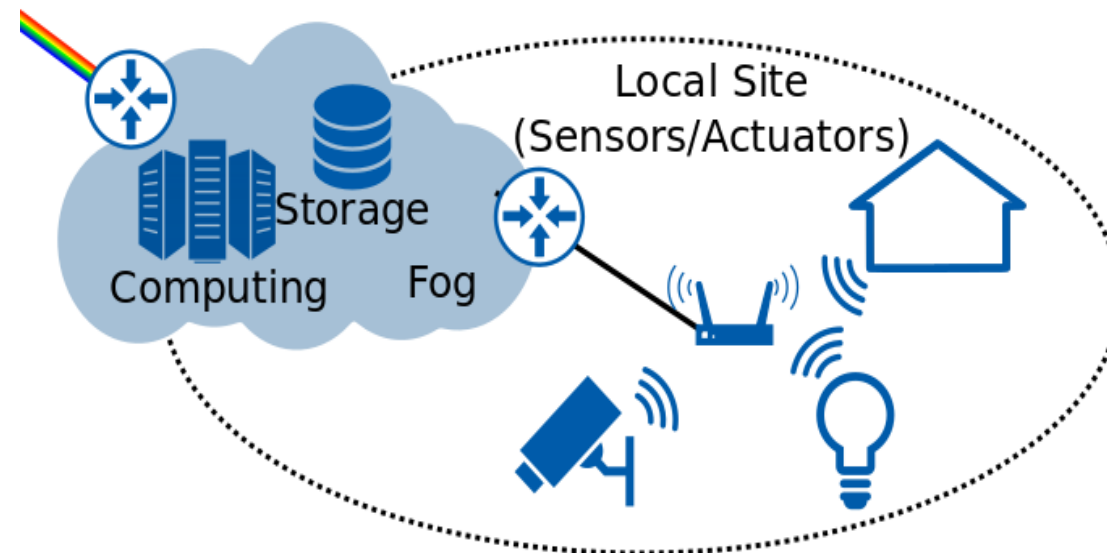


Use Case 3:

The interplay between bursty, low data rate wireless and optical network architectures

Experiment:

- How do the latency constraints of wireless/optical network impact IoT services?
- How can fog and cloud computing support IoT services in a converged wireless/optical network?

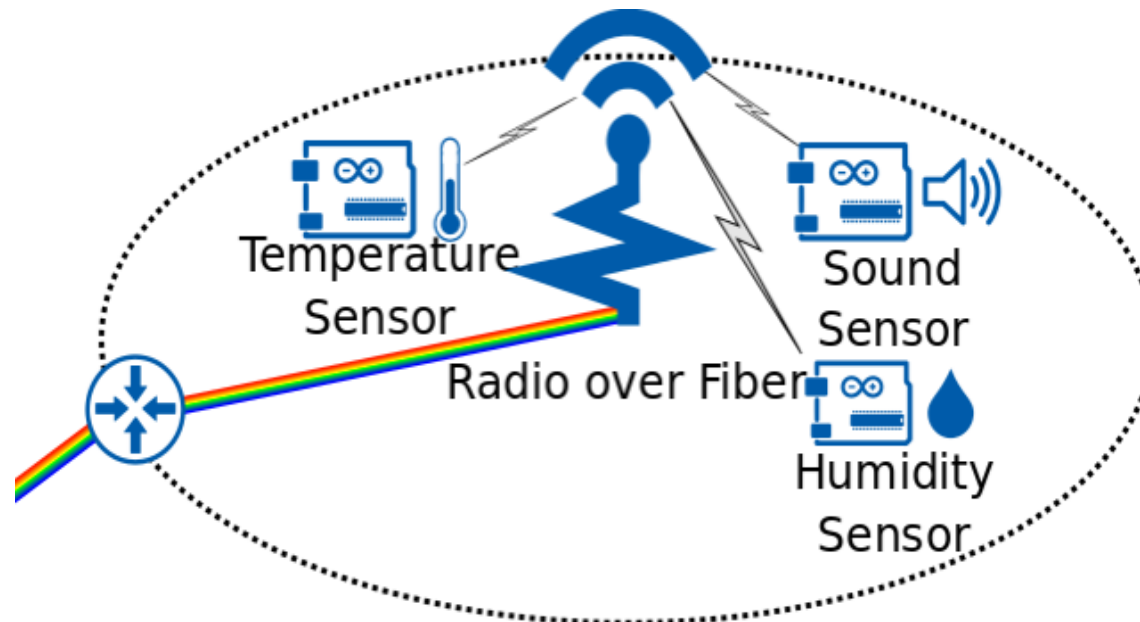


Use Case 3:

The interplay between bursty, low data rate wireless and optical network architectures

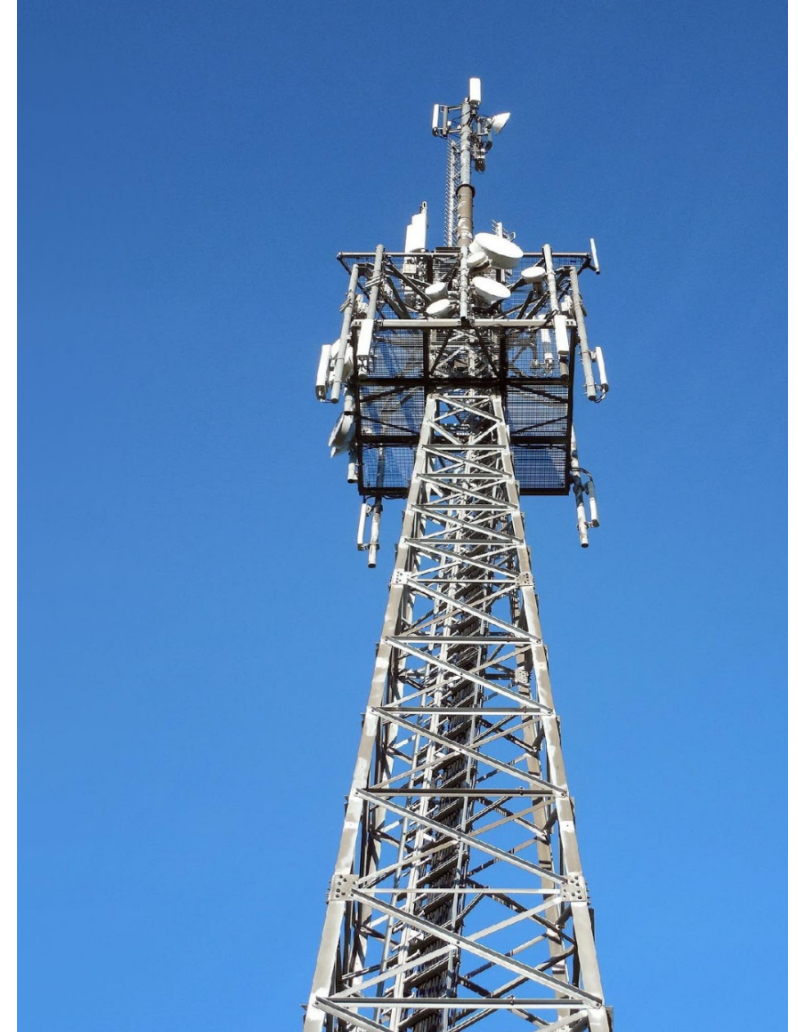
Experiment:

- How to design a communication infrastructure based on RoF to support the communication among diverse IoT devices?
- How does the latency introduced by the optical fiber impact the operation of IoT?



Impact

- Advance research and innovation on integrated optical/wireless telecommunications
- Enable and promote research on end-to-end connectivity by considering integrated optical/wireless technologies
- Directly advance telecommunications by federating testbeds, building a control framework for converged optical/wireless experimentation and performing advanced research



Next Steps

- Complete the deployment and configuration of the testbeds
- Complete the implementation of the use cases
- Implement the optical/wireless convergence control framework



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Obrigado!

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