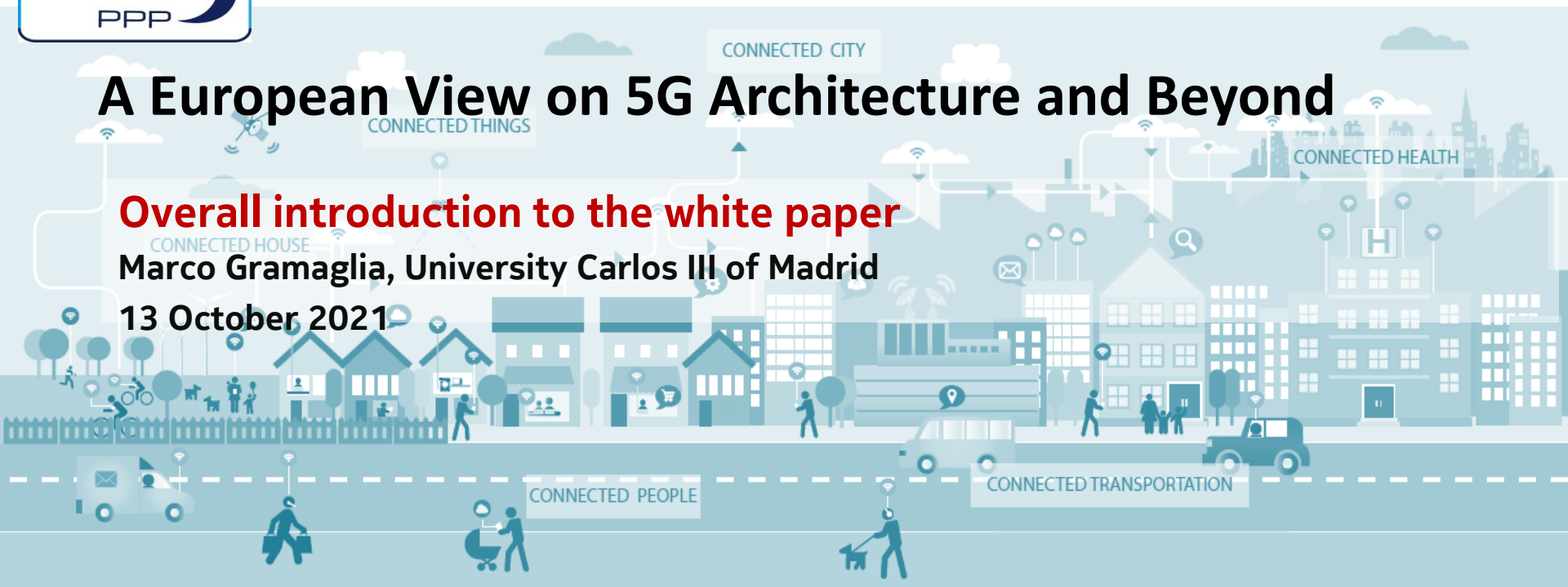


# A European View on 5G Architecture and Beyond

**Overall introduction to the white paper**

Marco Gramaglia, University Carlos III of Madrid

13 October 2021



# Architecture WG White Papers: a long journey



- Architecture is one of the Working Groups that populate the 5GPPP Initiative
- The Architecture WG periodically release White Papers that summarize the state-of-the-art architectural solutions stemming from the 5GPPP projects
- This is the fourth release of the White Paper
  - Available (with previous releases) at <https://5g-ppp.eu/white-papers/>



# 5GPPP Project contributors



**Phase 3, Part 1:  
Infrastructure**



**5GMOBIX**

**Phase 3, Part 2:  
Automotive**



**INSPIRE-5Gplus**



**Phase 3, Part 3: Advanced 5G  
validation trials across multiple  
vertical industries**

**Phase 3, Part 4: 5G Long Term  
Evolution**

# 5GPPP Project contributors (cont'd)



**Phase 3, Part 5: 5G Core  
Technologies innovation**



**Phase 3, Part 6: 5G  
innovations for  
verticals with third  
party services**



**Phase 3, Part 5: 5G for  
Connected and Automated  
Mobility (CAM)**



# 5GPPP Project contributors (cont'd)



The logo for 6G BRAINS, featuring a blue outline of a human head in profile facing right, with a network of nodes and lines inside the head. Below the head, the text '6G BRAINS' is written in blue.	The logo for AI@EDGE, featuring a pink hexagonal shape with a stylized brain inside. To the right of the hexagon, the text 'AI@EDGE' is written in pink.	The logo for DAEMON, featuring the word 'DAEMON' in black, with a yellow circle replacing the letter 'O'.
The logo for DEDICAT 6G, featuring a blue circular icon with a stylized head and antenna. To the right of the icon, the text 'DEDICAT 6G' is written in blue.	The logo for Hexa-X, featuring a colorful hexagonal shape with a stylized 'X' inside. Below the hexagon, the text 'Hexa-X' is written in black, with a small antenna icon to the right.	The logo for MARSAL, featuring a blue outline of a human head in profile facing right, with a network of nodes and lines inside the head. Below the head, the text 'MARSAL' is written in blue.
The logo for REINDEER, featuring a stylized reindeer head in black and yellow. To the right of the head, the text 'REINDEER' is written in black.	The logo for RISE-6G, featuring a stylized sun with rays in orange and yellow. Below the sun, the text 'RISE-6G' is written in orange and blue.	The logo for TeraFlow, featuring a stylized 'T' in blue with a network of nodes and lines. To the right of the 'T', the text 'TeraFlow' is written in blue.

**Phase 3, Part 6: Smart Connectivity beyond 5G**

# Structure of the white paper (and speakers)

- Overall architecture
  - Anastasius Gavras
- Radio and Edge architecture
  - Mir Ghoraishi
- Core and Transport architecture
  - Jesus Gutiérrez
- Automated Management & Orchestration Architecture
  - Xi Li
- Cross-Domain Aspects
  - Valerio Frasca
- Architecture instantiations and validations
  - Haeyoung Lee

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# Highlight #1: Verticals and Network

- Strong integration of verticals into the architecture, and discussion of the enabling technologies
- Integration of the vertical service network functions
  - Netapps
- Tight interaction between network and service providers
  - Service Layer
- Tailored instance of network slices
  - NPN

## Highlight #2: beyond 5G enablers



- Several beyond 5G concept, linked to a specific domain, have been discussed and analyzed
- Machine Learning and AI
  - Especially for resource orchestration
- Localization
- Broadcast and Multicast
- Novel radio access technologies
- Network softwarization



## Highlight #3: new applications and trials



- Customization of the network architecture towards a specific service
- Vertical specific extension, to support applications
- New use cases
  - Multimedia production
  - Drones integration
- Large scale instantiations and architectural validation



# Conclusion and Outlook

- The White Paper 4.0 reports about the current status of the architectural work made by 5GPPP project
- Several novel topics were addressed especially regarding the vertical integration and beyond 5G concepts
- After this release, the WG will work towards the next version of the White Paper, with a clear focus on 6G research topics



# The 5G Infrastructure Public-Private Partnership

