



5GPPP 5G/B5G Architecture WG

Scope, Road So Far, & Way Forward

25 May 2023, 5GPPP to SNS JU: *Passing the Torch* Event

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Architecture WG Scope



- Architecture WG is one of the Working Groups as part of the 5GPPP Initiative
- Brings 5GPPP projects together to attain the European View on the Overall Architecture & the Network Domains
- Provides a consolidated view on the technical directions and concepts for the architecture design for 5G and beyond Networks
- Architecture WG periodically releases White Papers that summarize the state-of-the-art architectural solutions stemming from the 5GPPP projects

- *5GPPP Architecture White Paper issued in June 2016 (v1.0) & updated in January 2018 (v2.0) based on Phase I projects' results*
- *Release (v3.0) issued during the EuCNC 2019 based on Phase II & Phase III projects' results*
- *Release (v4.0) issued in October 2021 based on Phase III projects' results (ICT 17-20 Projects, ICT 41-42 projects, ICT 52- 53 projects) → 45 Projects have participated (max # of projects in the history of the WG)*



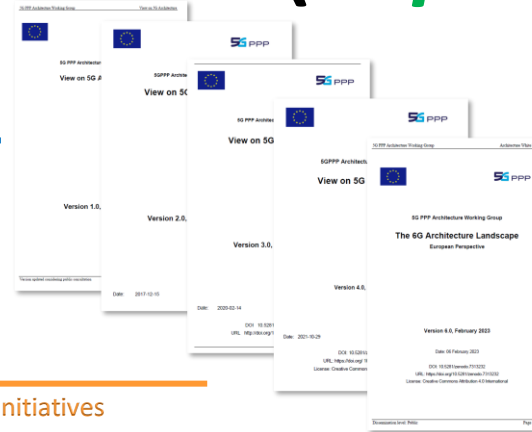
V6.0* Released for Public Consultation in Dec 2022 & Final Version in Feb 2023

- ✓ Sets the foundation of the 6G Architecture Design, e.g., based on inputs from ICT 52 projects.
- ✓ Concise Version, where the detailed version to be published as an open access book in June 2023.

*) Next version after v4.0 is deliberately put as v6.0 in relevance with 6G

Architecture WG: Road so Far (*Impact*)

- Five White Papers so far
- Wide Participation from 5GPPP



5GArch 2019:
International Workshop on 5G Architecture



Workshop on “Architectural Evolution Toward 6G Networks: A European View”



2nd Workshop 2022 “Architectural Evolution toward 6G Networks – 6GArch”

1 White Papers by Arch WG

2 5GPPP Collaboration

- Supporting other 5GPPP Initiatives
- White Papers & Dissemination thereof

3 WG Dissemination

- Workshops & Special Sessions
- Webinars

4 5GPPP Disseminations

- Webinars
- Bilateral Workshops, e.g., with Next GA

- Collaborative Platform
- Global Footprint
- Cross-5GPPP Dissemination & Exploitation



Architecture WG: Road so Far (*Recent Dissemination*)

White Paper v6.0

- *The 6G Architecture Landscape - European perspective*
- Focus on B5G/6G
- 5GPPP Projects with relevant focus (ICT 20 & ICT 52) as well as 5G projects with future looking innovations
- Public Consultation version released (Globecom 2022)
- Final version released in Feb 2023
- Rest of the chapters to be published in the 6G book
- F2F Meeting in Heidelberg 2022



Further Dissemination

- Globecom WS 2022 “Architectural Evolution toward 6G Networks – 6GArch,” successfully concluded



- Arch WG white paper v4.0 presentation at the Global 5G Event “5G Architectural Evolution: A European Perspective”

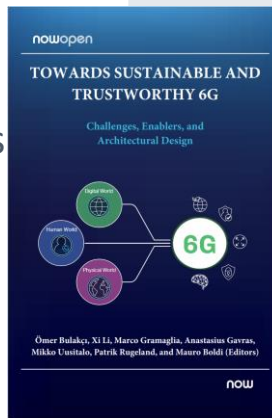


- IEEE ComMag based on white paper v4.0 and extensions for Network Applications
- NextGA-6G IA/IMT2030 PG Joint WSs for info exchange & future collaboration



6G Book

- Open Access
- Joint editorships with Hexa-X
- Prefaces by EC and 6G-IA
- Target completion in H1 2023, to be published in June along with EuCNC
- Chapters
 1. Introduction
 2. Architecture Landscape
 3. Towards Versatile Access Networks
 4. Towards Joint Communications and Sensing
 5. Towards Natively Intelligent Networks
 6. Towards Sustainable Networks
 7. Towards Continuously Programmable Networks
 8. Secure, Privacy-Preserving, & Trustworthy Networks
 9. 6G Outlook and Timeline



Architecture WG: Road so Far (*Lessons Learned*)

1

Awareness

Various Projects in different Calls: *Difficult to track*

WGs foster for cross-project collaboration

2

Consolidation

Challenging task to consolidate diverse set of topics

Initiate as early as possible to align and adapt subjects

3

Dissemination

White Papers have been very successful

Disseminate via international events & establish a series instead of single occurrences

4

Book

Has been very challenging considering new set of requirements and design concepts

Plan early enough, secure the budget, and streamline the efforts for Max impact, e.g., Arch WG & Hexa-X

5

Cross-WG Collaboration

Has been varying depending on the calls & timeline

Could be further strengthened

6

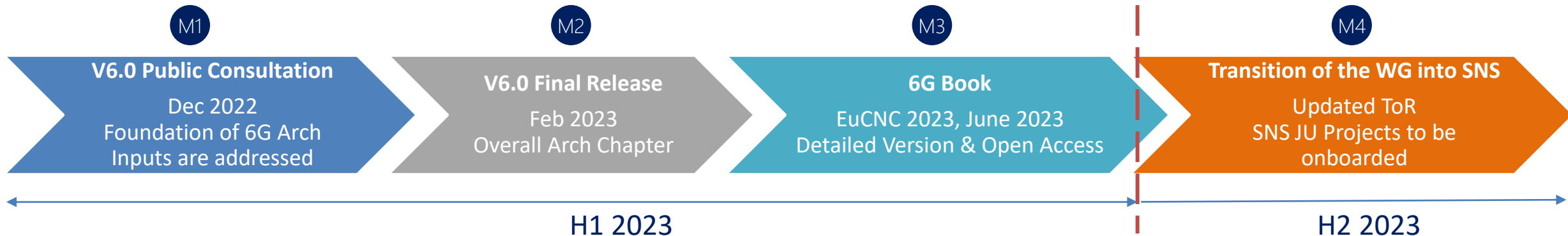
Global Footprint

Bilateral workshops via research for a have been very beneficial

Consider having 6G-IA members (non-voting) also at Programme Initiative WGs

Architecture WG: Way Forward

- Arch WG has been excelling at
 - bringing the projects together to attain the European View on the Overall Architecture & the Network Domains
 - providing a consolidated view on the technical directions and concepts for the architecture design for 5G & Beyond Networks
- Milestones:
 - ✓ **M1:** Various inputs have been received based on the Public Consultation version from Dec 2022 & being processed → the most # of inputs received in the history of the WG
 - ✓ **M2:** Final version to be released within Feb 2023 → Covers concise version of the white paper with focus on overall architecture for 6G landscape, including the current technology and society trends, and key architecture enablers
 - **M3:** Detailed version to be published as an open access book in June 2023 → Covers overall architecture as well as the detailed chapters focusing on various 6G architecture topics. Sets the architectural foundation.
 - **M4:** Transition the WG to the SNS JU framework, e.g., update the Terms of Reference (ToR), change the focus to SNS projects, and align the WG scope accordingly. Potential completion date ~ Sept 2023.



Thank you for your attention

For more information about 5G PPP activities please visit <https://5g-ppp.eu>

The white papers are available at <https://5g-ppp.eu/white-papers/>

The logo for 5G PPP ARCHWG is centered within a large, light beige brushstroke graphic. It features the text "5G PPP" in a bold, blue, sans-serif font, with the "5" and "G" connected. Below this, the text "ARCHWG" is written in a bold, black, sans-serif font.

5G PPP
ARCHWG

The logo for 6G SNS IA is located in the bottom right corner of the slide. It consists of the text "6G SNS IA" in a blue, sans-serif font, with "6G" and "SNS" on the top line and "IA" on the bottom line. The logo is partially enclosed by a light blue, hand-drawn style outline.

6G SNS
IA

Globecom 2022 WS: 6GArch



- **2nd Workshop on Architectural Evolution toward 6G Networks – 6GArch**

Topics of interest

The workshop invites technical papers on topics including, but not limited to:

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- Fundamentally new radio technology architectures
 - Terahertz and beyond frequencies and related channel models
 - Reconfigurable Intelligent Surfaces
 - Inherent AI-driven network governance
 - AI/ML empowered RAN Intelligent optimization
 - Dynamic dependability and high resilience
 - Time-sensitive wireless/mobile networks
 - High-resolution localization
 - E2E Network Slicing and Deep Slicing to support diverse verticals
 - Open Testbeds and facilities to assess new technology enablers.
 - Non-terrestrial and 3D networking
 - 6G architectural enablers addressing energy efficiency as a key metric
 - Industry landscape and Standardization efforts for intelligent and cloud-based RAN
 - Testbeds/Experimentation to validate or support the intelligent and cloud-based RAN
-

Important dates for workshop paper submissions

Deadline for paper submission: July 15, 2022

Acceptance Notification: September 15, 2022

Camera-Ready Submission: October 7, 2022

More information

<https://globecom2022.ieee-globecom.org/workshop/ws21-2nd-workshop-architectural-evolution-toward-6g-networks-6garch>

Technical Programme Committee

<https://globecom2022.ieee-globecom.org/workshop/ws21-2nd-workshop-architectural-evolution-toward-6g-networks-6garch/committees>

5GPPP Architecture WG Latest Participants (1/3)

- 5GPPP Architecture WG re-started the work in Oct 2020 with the inclusion of 5GPPP Projects (ICT 17-20 Projects, ICT 41-42 projects, ICT 52- 53 projects)

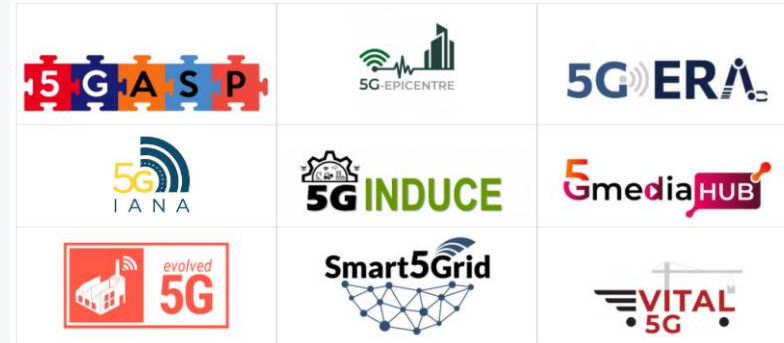
<p>5G PPP Phase 3, Part 1: Infrastructure Projects</p>	<ul style="list-style-type: none"> 5G-PPP ICT-17-2018 call Implementing and testing advanced 5G infrastructures in Europe 	
<p>5G PPP Phase 3, Part 2: Automotive Projects</p>	<ul style="list-style-type: none"> 5G-PPP ICT-18-2018 call Implementing and testing advanced cross-border 5G infrastructures in Europe 	
<p>5G PPP Phase 3, Part 3: Advanced 5G validation trials across multiple vertical industries</p>	<ul style="list-style-type: none"> 5G-PPP ICT-19-2019 call Get the European 5G Vision of "5G empowering vertical industries" closer to deployment. 	

5GPPP Architecture WG Latest Participants (2/3)

- 5GPPP Architecture WG re-started the work in Oct 2020 with the inclusion of 5GPPP Projects (ICT 17-20 Projects, ICT 41-42 projects, ICT 52- 53 projects)

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

- 5G-PPP ICT-41-2020 call
- Verticals with 3rd party services



5G PPP Phase 3, Part 5: 5G Core Technologies innovation and 5G for Connected and Automated Mobility (CAM)

- 5G-PPP ICT-42-2020 call (5G Core Technologies innovation)
- 5G-PPP ICT-53-2020 call (5G for CAM)



5GPPP Architecture WG Latest Participants (3/3)

- 5GPPP Architecture WG re-started the work in Oct 2020 with the inclusion of 5GPPP Projects (ICT 17-20 Projects, ICT 41-42 projects, ICT 52- 53 projects)

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

- 5G-PPP ICT-20-2019 call
- Longer Term Vision
- Realization of pervasive mobile virtual services



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

- 5G-PPP ICT-52-2020 call
- Smart Connectivity beyond 5G
- Foundation of B5G/6G System
- System Flagship Project & Complementary smaller and more focused projects



White Papers & Events

5G PPP Architecture Working Group

View on 5G Architecture

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5GPPP Architect
View on 5G

5G PPP Architecture Working Group

Architecture White Paper

5GPPP Architect
View on 5G

5G PPP Architecture Working Group

Architecture White Paper

Version 1.0,

Version 2.0,

Version 3.0,

Version 4.0,

Date: 2017-12-15

Date: 2020-02-14

DOI: 10.5281/
URL: <http://doi.org/1>

Date: 2021-10-29

DOI: 10.5281/2
URL: <https://doi.org/11>
License: Creative Common

Version 6.0, February 2023

Date: 06 February 2023

DOI: 10.5281/zenodo.7313232
URL: <https://doi.org/10.5281/zenodo.7313232>
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Dissemination level: Public

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EUCNC 2019
June 18-21

European Conference on Networks and Communications | Valencia, Spain

5GArch 2019:

International Workshop on 5G Architecture



Workshop on "ARCHITECTURAL EVOLUTION TOWARD 6G NETWORKS: A EUROPEAN VIEW"