5G CLARITY Final Newsletter

May 2023

Beyond 5G Multi-Tenant Private Networks Integrating Cellular, Wi-Fi, and LiFi, Powered by Artificial Intelligence and Intent Based Policy

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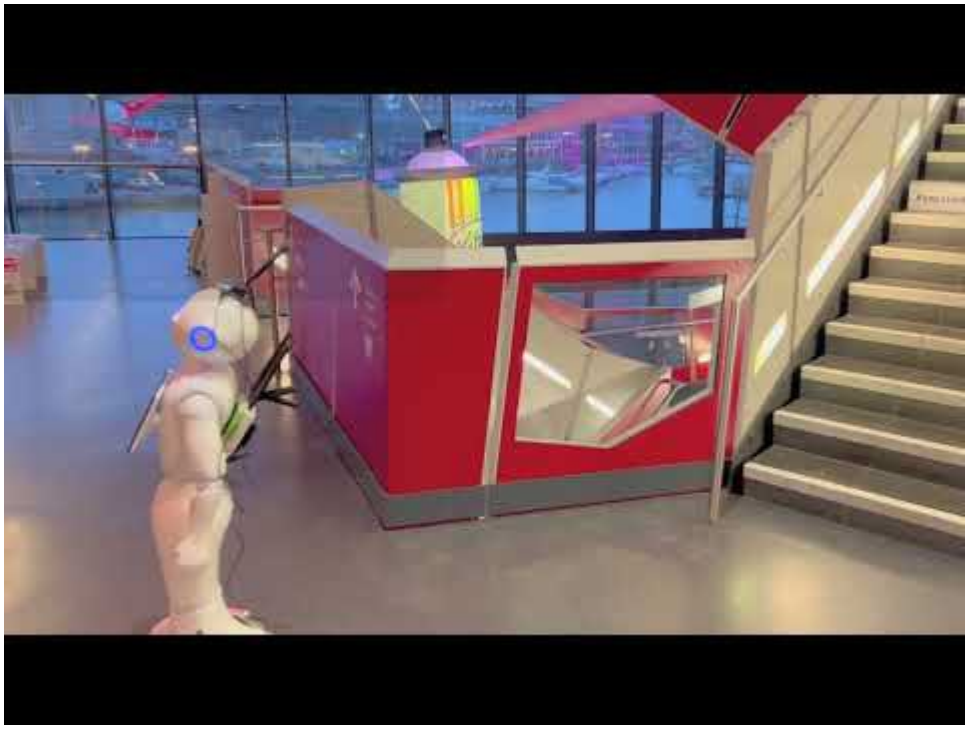
5G-CLARITY Industry 4.0 Pilot Demonstrations

5G-CLARITY Industry 4.0 Final Demonstrations at BOSCH factory plant, Aranjuez, Madrid, was performed to evaluate several key innovations of the project on 5G-CALRITY multi-connectivity framework and multi-technology positioning framework. Further results are presented in the final report, 5G-CLARITY D5.3.

https://www.youtube.com/watch?v=RdvwWX_1Luw

5G-CLARITY Smart Tourism Pilot Demonstrations

5G-CLARITY Smart Tourism Final Demonstration at MShed Museum in Bristol, UK, was performed, to evaluate the slice provisioning, and multi-connectivity and hand over performance proposed by 5G-CLARITY. Further details on the results are presented in the final report, 5G-CLARITY D5.3.



5G-CLARITY System Architecture – Final Report

The 5G-CLARITY architecture has evolved through extensive theoretical and experimental studies. It is proven that the 5G-CLARITY architecture can effectively address challenges as it provides the necessary tools to minimize service disruption time under mobility considerations, achieve tighter integration of the multi-WAT segment of 5G-CLARITY, optimally allocate compute and network resources under private/public mobile network deployments, effectively manage traffic and mobility in the multi-WAT segment of the 5G-CLARITY, and perform more accurate synchronization and localization using multi wireless access technologies.
For further details on final 5G-CLARITY architecture refer to D2.4:
https://www.5gclarity.com/wp-content/uploads/2023/03/5G-CLARITY-D24-Amended.pdf

5GCLARITY

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5G-CLARITY Deliverable D2.4

Final System Architecture and Its Evaluation

5G-CLARITY User and Control Plane Evaluation

5G-CLARITY *Network Function and Application Stratum* (refer to 5G-CLARITY D2.2) related components and solutions are evaluated. These include,

- The proposed framework on spectrum sharing framework using citizens broadband radio service (CBRS)
- Proposed multi-connectivity and 5G-CLARITY eAT3S frameworks
- Advanced resource management framework
- Multi-WAT based positioning framework
- 5G-CLARITY integrated 5GNR/WiFi/LiFi network performance

Further details on above and more related topics are available in 5G-CLARITY D3.3:
https://www.5gclarity.com/wp-content/uploads/2023/03/5G-CLARITY-D33-Amended.pdf

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5G-CLARITY Deliverable D3.3

Complete Design and Final Evaluation of the Coexistence, Multi-Connectivity, Resource Management, and Positioning Frameworks

Evaluation of 5G-CLARITY E2E Infrastructure and Service Slices

Private-public network integration is one of the main distinguished features of the 5G-CLARITY system. This feature represents the ability to make 5G-CLARITY components interwork with MNO's managed capabilities seamlessly. Enablers such as the Mediation Function and Service Delivery Models play a crucial role in realising such capabilities. The final solution design of the Mediation Function is showcased in a use-case based approach highlighting the applicability in a private-public network environment. Service Delivery Models are analysed in two scenarios, these are NFVI as a Service and Slice as a Service.
The final implementation of the 5G-CLARITY Service and Slice Provisioning System with an experimental demonstration of intent-driven Slice as a Service capabilities are performed and the reports are publicly available. 5G-CLARITY D4.3 reports the final results that includes the following:

- The implementation and integration of the data management and processing subsystems are validated through a Proof-of-Concept experimental scenario.
- The self-learning ML algorithms are validated through execution in several scenarios, providing a variety of network functionalities to the system.
- An integrated experiment including the above items, showcasing the coordination of ML models within the AI Engine, fed by data accessible through the Data Lake and the results exposed through communication with the Intent Engine.

For further details on above and more related topics, please refer to 5G-CLARITY D4.3:
https://www.5gclarity.com/wp-content/uploads/2023/03/5G-CLARITY-D43-Amended.pdf

5G-CLARITY News

Deliverables

The project deliverables are all publicly available from the project's webpage at:
https://www.5gclarity.com/index.php/deliverables/

Specially, he project's final deliverable on use case demonstrations and evaluations, 5G-CLARITY D5.3 can be downloaded at: https://www.5gclarity.com/wp-content/uploads/2023/05/5G-CLARITY-D53.pdf

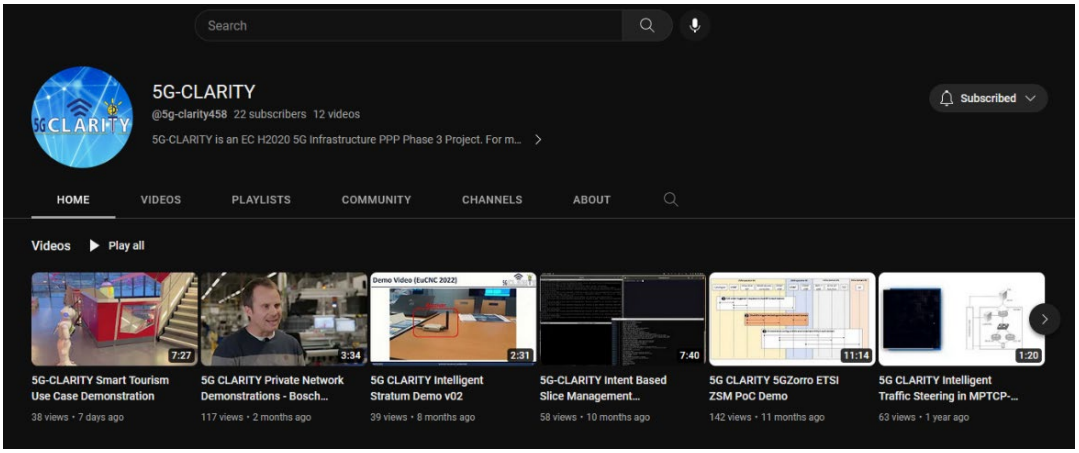
Publications

The updated list of all accepted publications can be found on the project webpage, in the Publications part: https://www.5gclarity.com/index.php/publications/

Talks and Presentations

Find more on project presentations in 'Talks and Panels' section of the webpage:
https://www.5gclarity.com/index.php/talks-and-panels/

YouTube Channel



5G-CLARITY YouTube channel is hosting several technical videos on the project's technical innovations and demonstrations. Subscribe to the channel to updated on the new videos:
https://www.youtube.com/@5g-clarity458

Contributions to Standardization

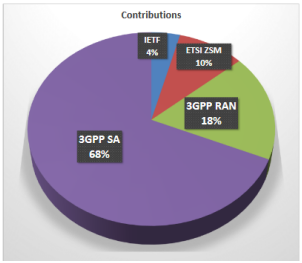
5G-CLARITY has created outstanding impacts to the standardisations, with a total of 72 contributions. The project was invited to the ETSI Research Conference in February 2023 to present its success story.

5G-CLARITY Standardization Contributions

Further analysis on topics of contributions and the SDPs

Contributed SDOs

- **64** 3GPP Rel-16/17/18 Contributions
- **5** ETSI Contributions
- **3** IETF contributions



Contributions' Technical Topics	
Primary (80% Contributions)	Secondary (20% contributions)
• **Non-Public Networks**: M&O • **B5G Personal Networks** • **AI assisted RAN** • **eMBB+URLLC industrial** services in B5G • **Network analytics** and **enhanced ATSSS**	• **Capability exposure** to 3rd parties • **Non-Public Networks**: CP, UP • **Edge computing on industry 4.0** environments • **Intent-based** management • **Autonomic monitoring** agents

	Contribution Category	No of Contributions
A	Requirements/use case	38
B	New concept proposed in 5G-CLARITY that is adopted by SDO	2
C	Concept already discussed by SDO is aligned with 5G-CLARITY and we propose incremental extension	33

Further details on 5G-CLARITY standardisation contributions:
https://docbox.etsi.org/Workshop/2023/02_ETSIRESEARCHCONF/SESSION09_RESEARCH_INTO_STDS/PROJECT_5G-CLARITY.pdf

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