



## **Embedded Network Services for 5G Experiences**

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## **Deliverable D7.3 (abstracted version)** **Integrated pilot and evaluation Report for Use Case 3**

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## **Executive Summary – Abstract**

The purpose of this Deliverable is about providing a detailed description of the integration, validation and demonstration activities carried out to adapt the 5G ESSENCE platform for the Next Generation of In-Flight Entertainment and Connectivity (NG-IFEC) Systems (i.e.; the third use case of the 5G ESSENCE project, UC3). The NG-IFEC system demonstrator relies upon the set of functionalities previously described in other Work Package 7 (WP7) deliverables ([1,2]). For that reason, the current document (D7.3) draws from these outcomes, providing a short overview of the services developed for this scenario, and moves forward by describing the final testbed architecture and network set-up and the playground where the different UC3 partners have both integrated and validated their implementations. The 5G testbed available at ZII premises makes use of the Airbus A320 mock-up to provide a realistic aircraft environment, providing the context to all the components participating in the respective pilot action.

Moreover, the D7.3 provides a detailed overview on “how the different services have been brought together to create a unified system” on top of which the WP7 demonstration has been performed, thus providing a relevant proof-of-concept to be considered, even beyond the scope of original 5G ESSENCE project, to develop the Next Generation of In-Flight Entertainment and Connectivity systems.

### **5G-PPP Disclaimer:**

This *Deliverable* has been prepared by the 5G Initiative, via an inter 5G-PPP project collaboration. As such, the contents represent the consensus achieved between the contributors to the report and do not claim to be the opinion of any specific participant organisation in the 5G-PPP initiative or any individual member organisation.

## Conclusions

This document (D7.3) is the closing deliverable related to the 5G ESSENCE Use Case3, which presented in detail the activities carried out within the Work Package 7 to provide a proof-of-concept of the adaptability of the 5G ESSENCE architecture to the next generation IFEC. Key and unique benefits from the shown NG-IFEC system are the combination of multi-tenant multi-RAT networks with a multi-tier cloud virtualized edge infrastructure, the possibility to enable multi-operator connectivity services and, through this innovative on-board set-up, the delivery of enhanced in-flight services, for both passengers and crew members.

The deliverable started with a quick summary of the technical enablers and functionalities (in other words the pillars) on which the WP7 demonstration is based (Section 2.1, including multi-tenancy, caching, video transcoding, efficient multicast, network slicing, co-existence of cSD-RAN controllers and the CESCO and Crew Panel) and continued with an overview of their implementation within the different partners environment (Section 2.2).

Section 3 and Section 4 contained a detailed explanation of how the different elements previously mentioned have been brought together and validated. For that reason, Section 3 starts with an overview of the final components composing the ZII testbed, updating the mapping to the high-level 5G ESSENCE system architecture provided in [1] and presenting some in-sights of how the set-up has been managed to ensure that all partners could share it without issues. This section continues with a description of the work that has been performed to integrate the previously mentioned functionalities in the testbed. Section 4 describes in detail the tests and validation processes carried out to ensure that the components providing from different partners interface properly between each other, so the final demonstration can take place. Both these sections are split following the same structure used in Section 2, ensuring that way that the reader can easily follow the various stages for each WP7 component.

Finally, Section 5 describes how the different elements are showcased together for the final demonstration, providing the IFEC background to the technical information earlier revealed and proving that combining the work performed throughout the life cycle of the this UC3, the 5G ESSENCE Consortium delivers a unique basis for the New Generation In-Flight Entertainment and Communications systems. This proof-of-concept has been recorded in a realistic aircraft environment (Airbus A320 Cabin Mock-Up at ZII) and has included some aeronautical certified components. The resulting video will be played during the 5G ESSENCE project final review.

[1] 5G ESSENCE, "Deliverable D7.1 ("Planning of demonstration and network services for Use Case 3")", 2018.