D6.6: PoC preliminary results analysis & recommendation document

Revision: v.1.0.F

Work package	WP 6
Task	Task 6.5
Due date	30/09/2025
Submission date	22/10/2025
Deliverable lead	German Aerospace Center (DLR)
Version	1.0.F
Authors	Tomaso de Cola (DLR) François Trarieux (TAS-F)
Reviewers	Nuria Trujillo (HSP)
Abstract	This deliverable provides a preliminary view on the scenarios and the test campaigns conducted to demonstrate the functionalities implemented in the PoC.
Keywords	PoC, NTN, 3GPP, TN, Physical architecture, test bench, scenario definition, performance evaluation

WWW.5G-STARDUST.EU

Co-funded by the European Union

Grant Agreement No.: 101096573
Call: HORIZON-JU-SNS-2022

Topic: HORIZON-JU-SNS-2022-STREAM-A-01-02
Type of action: HORIZON-JU-RIA

Document Revision History

Version	Date	Description of change	List of contributor(s)
V0.0	31/07/2025	ToC of the document.	DLR
V0.1	10/10/2025	Draft version for Q&A review	TAS-F
V0.2	16/10/2025	First Q&A review	HSP
V0.3	21/10/2025	Revised version from Q&A comments	TAS-F
V1.0.F	22/10/2025	Final version for EC portal submission	DLR

Co-funded by the European Union

DISCLAIMER

5G-STARDUST (*Satellite and Terrestrial Access for Distributed, Ubiquitous, and Smart Telecommunications*) project has received funding from the **Smart Networks and Services Joint Undertaking (SNS JU)** under the European Union's **Horizon Europe research and innovation programme** under Grant Agreement No 101096573.

This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI).

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

COPYRIGHT NOTICE

Project co-funded by the European Commission in the Horizon Europe Programme		
Nature of the deliverable:	**to specify R, DEM, DEC, DATA, DMP, ETHICS, SECURITY, OTHER***	
Dissemination Level		
PU	*Public, fully open, e.g. web (Deliverables flagged as public will be automatically published in CORDIS project's page)*	✓
SEN	*Sensitive, limited under the conditions of the Grant Agreement*	
Classified R-UE/ EU-R	*EU RESTRICTED under the Commission Decision No2015/ 444*	
Classified C-UE/ EU-C	*EU CONFIDENTIAL under the Commission Decision No2015/ 444*	
Classified S-UE/ EU-S	*EU SECRET under the Commission Decision No2015/ 444*	

* R: Document, report (excluding the periodic and final reports)

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

DATA: Data sets, microdata, etc.

DMP: Data management plan

ETHICS: Deliverables related to ethics issues.

SECURITY: Deliverables related to security issues

OTHER: Software, technical diagram, algorithms, models, etc.

EXECUTIVE SUMMARY

The present document addresses the preliminary steps towards the execution of the demonstration campaigns planned in 5G-STARDUST project, to prove the functional effectiveness of the design Proof-of-Concept (PoC).

As such, this deliverable review the final definition of the system and the reference scenarios, towards the preparation and organisation of the demonstration campaigns, whose actual execution and related performance analysis will be detailed in D6.7 (which is the completion of this intermediate deliverable).

In more detail, this document takes as reference the architectural configuration (splits) consolidated in the previous phase of the PoC development and review the main components in terms of SW and HW elements constituting the terrestrial and non-terrestrial paths involved in the end-to-end connectivity concept developed in the project. In particular, it is worth reminding that the target Technology Readiness Level (TRL) for the project is 4-5, so that key elements for the realisation of a fully integrated 5G-NTN system are here considered. In this respect, a key role is being played by the User Equipment (UE) and gNodeB (gNB) implementing the necessary NTN adaptations.

In turn, the reference scenarios as defined in D2.1 and further discussed in D6.1 are discussed with respect to residential broadband and in-flight internet connectivity, in terms of general description and the specific scenario implementation towards its demonstration. As a matter of fact, the in-flight connectivity scenario is going to be detailed in D6.7 as a consequence of the fact that the multi-connectivity option required to achieve this scenario is currently under integration, whereby it cannot be considered mature enough for discussion in the present document.

This being an intermediate version towards the final version D6.7, the details related to the actual demonstration campaign execution, the results collection as well as the performance analysis are not provided in this document and will be inserted in the final version D6.7. As such, the present document (D6.6) provides a preliminary view on the approach taken towards the demonstration of the residential broadband scenario, while the second scenario (in-flight internet connectivity) will be directly addressed in D6.7.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

AI	Artificial Intelligence
CU	Centralised Unit
DU	Distributed Unit
GTP	Generic Tunnelling Protocol
HW	Hardware
IAB	Integrated Access and Backhaul
IP	Internet Protocol
KPI	Key Performance Indicator
MC	Multi Connectivity
MEC	Multi-Access Edge Computing
ML	Multi Link
MP	Multi Path
MPL	Multi-Path Layer
MPQUIC	Multi-Path QUIC
MPTCP	Multi-Path Transmission Control Protocol
NGAP	NG Application Protocol
NTN	Non-Terrestrial Network
PCI	Peripheral Component Interconnect
PoC	Proof of Concept
PSA	PDU Session Anchor
RF	Radio Frequency
RU	Radio Unit
SCTP	Stream Control Transmission Protocol
SDR	Software Defined Radio
SLE	Satellite Link Emulator
SMA	Sub-Miniature version A
SU	Switching Unit

SW	Software
TCP	Transmission Control Protocol
TGA	Traffic Generator and Analyse
TN	Terrestrial Network
UE	User Equipment

1 INTRODUCTION

1.1 POC CONCEPT AND DEVELOPMENT PHASES

Deliverable D6.4 contains the definition of the PoC bench in the context of WP6 'Integration, testing, and validation' overall aimed at the definition and integration of the PoC according to the system architecture defined in WP3 (Architecture Design) and on the basis of the activities carried out within WP4 (Radio Technologies) and WP5 (Networking Operations), whose main outputs in the form of SW/HW pieces are then the object of the PoC integration. In turn, once the PoC will be fully integrated and operational, the corresponding demonstration campaigns will be carried out, whose results analysis is performed immediately afterwards. A dedicated study-logic illustrating such a process is shown in Figure 1.

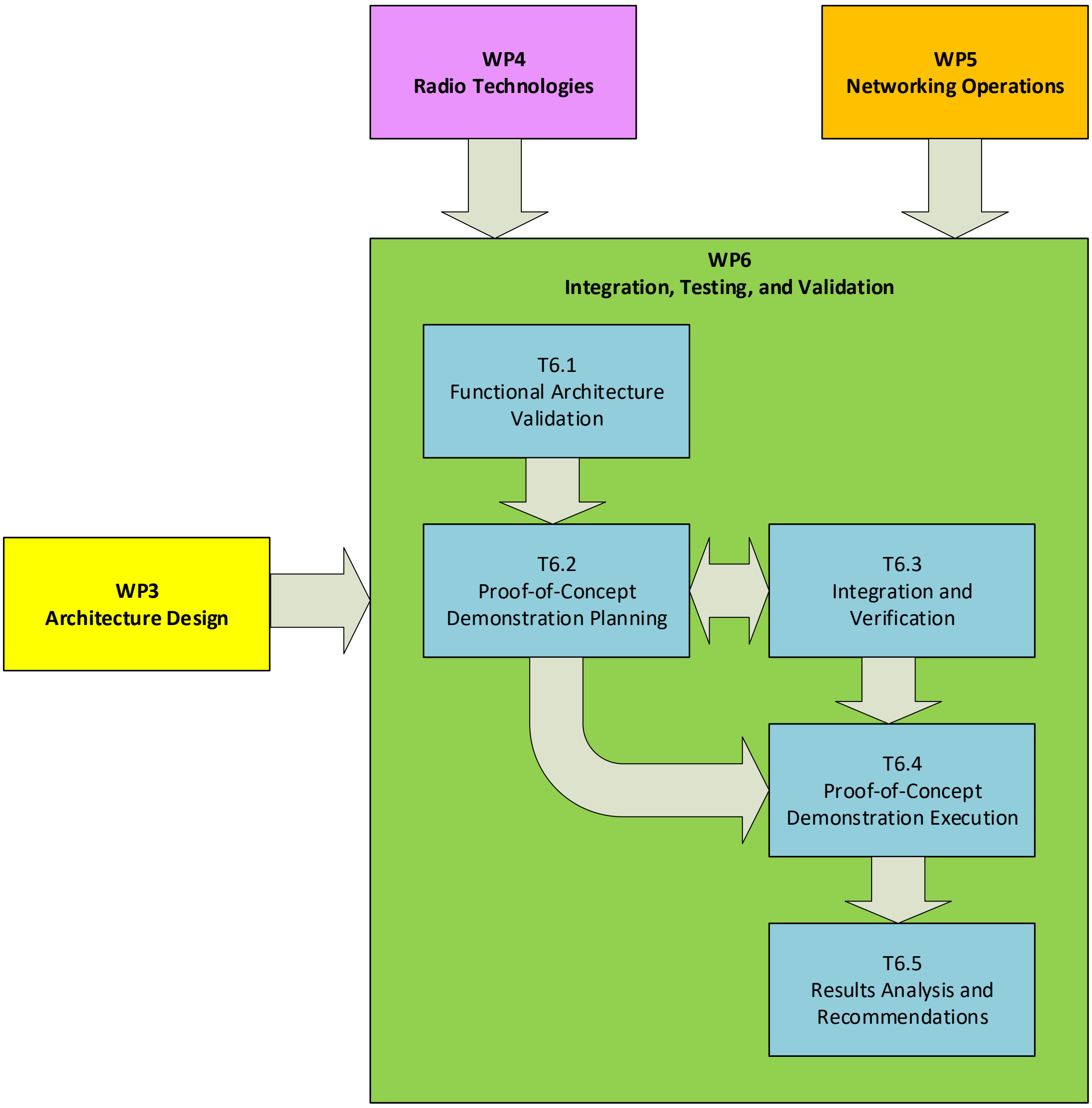


Figure 1 WP 6 interaction with development activities in 5G-STARDUST

From the above picture is therefore clear the role of this deliverable as output of Task 6.2 in providing the foundation of the PoC, as it elaborates physical architecture and overall component projection on the physical architecture of the PoC. As such, the main indications provided in this document will be later used to plan the actual demonstration and how the different building blocks here defined will be integrated and tested towards the full system verification. In this respect, obviously, a prerequisite for the definition of the functional architecture is the system design as developed in the course of WP3, so that in particular D3.2 [3] is the starting point for the definition of the PoC functional architecture.

In more detail, the discussions and findings summarised at the end of D3.2 [3] allowed to define the macro-architecture (see Figure 2) for the project PoCs so as to address both direct and indirect access, hence offering the possibility to address multiple scenarios.

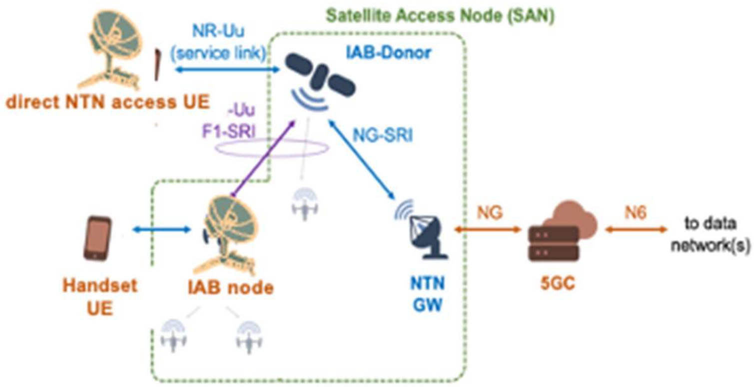


Figure 2 Macro-architecture of the NTN segment for the PoC (TN segment not shown here)

As a matter of fact, the access to the satellite in the indirect configuration will happen through a relay node, hence resembling that of IAB node functionality, although this is not exactly the approach taken in the project. The adopted methodology does not rely on IAB implementation (for which no NTN adaptations have been addressed so far in 3GPP), but on the contrary the idea is to take advantage of an intermediate node responsible for interacting with a UE and extending its connectivity so as to reach the gNB, which will be implemented (either fully or in distributed manner) in the space segment. Further to this, it is expected to have different classes of UE, able to achieve data connectivity in either FR1 or FR2 with different bandwidth availability. Last but not least, the satellite path is then complemented by a terrestrial counterpart in order to show the coexistence of different paths and demonstrate the added value of a unified network architecture, where both TN and NTN segments are available.

In general, the main objective of the PoCs will be that of proving the added value coming from integrated TN and NTN networks implementing a regenerative LEO satellite system. In that respect, first of all it is assumed to consider a transparent LEO setup as actual benchmark. Then in turn, some of the main functions to be considered for the demonstration to prove the value of integrating TN and NTN will be about:

1) Support of FR1 frequency band and some characteristics of the FR2 frequency band (100 MHz bandwidth).

2) End-to-end connectivity through a unified radio interface

3) Multi-link/path achievement towards effective utilisation of the available TN/NTN resources

The demonstration of the FR2 capacities will not be performed on the PoC but with theoretical demonstration. This demonstration is in line with the objective 4 where the measurable results can be performed either by on laboratory test beds and numerical simulation.

To this end, the overall PoC picture will address network disaggregation by considering different functional splitting models aimed at showing performance fluctuations and corresponding configuration adjustment.

Last but not the least, the final version of the demonstrator will be plugging real user applications in order to have impactful demonstrations of the added value of the 5G-STARDUST concept by achieving a close-to-real setup (though still up to max. TRL 5).

1.2 TRL REVIEW

On the basis of the first iteration presented at the end of D3.2 [3], a successive refinement has been conducted to identify the macro-blocks necessary for the definition of the PoC, which are further summarised in Table 1, here below:

Table 1 PoC Macro-blocks and related TRL progression

Technology	Initial TRL	Estimated TRL	Support (full/partial)[1]	Notes
Regenerative payload	2	4	full	Key demonstration objective of the project, also in relation to embark a gNB in space with all necessary functions from physical layer up to PDCP
Unified UE interface	2	4/5	full	Key demonstration objective of the project, with respect to proving the benefits of integrating a UE into TN/NTN segments interchangeably.
ML supported TN/NTN MC on higher layers	2	4	partial	Multi-connectivity supported in terms of multi-path protocols and related integration between core network, RAN, and UEs
AI data driven networking solutions for MC (management)	2	4	partial	Multi-connectivity management carried out in static manner, since AI would not bring much benefit in a PoC of limited size (i.e. few UEs)
AI data driven networking solutions for MC (slicing)	2	4	partial	Network slicing supported in the sense of differentiating QoS classes, through static classes separation.
MEC platform for NTN nodes	2	4	TBC[2]	-
RAN softwarization	2	4	full	Pretty much oriented to the achievement of gNB in space, either in the form of full gNB in

[1] In the case of partial support, not all functionalities as planned within 3GPP will be part of the PoC. Detailed description will be provided in the technical specification, object of D6.2 and D6.3.

[2] WP5 will come up with a dedicated testbed to show the potentials of a MEC agent in space. Its actual integration in the WP6-developed PoC is a nice-to-have feature, but not strictly fundamental to reach the objectives of the project. Such an opportunity will be better assessed in the next phases of WP6, while planning the integration of PoC and the related demonstration execution.

Technology	Initial TRL	Estimated TRL	Support (full/partial)[1]	Notes
				space or in distribute manner (i.e. function CU/DU splitting)
Core Network Functionality	**4**	**5**	**full**	The core network was tested already with gNBs placed at large distance, however not with gNBs at continuous variable delays. However, we do not expect to be a major issue

1.3 OBJECTIVE AND ORGANISATION OF THE DOCUMENT

The document is organised in five main parts[3]:

- Section 2: it recaps the essentials of the PoC and the related components based on the consolidated configurations detailed in D6.4 [1];
- Section 3: it reviews the scenarios definitions and illustrates the necessary elements for the final implementation and demonstration;
- Section 4: it addresses the demonstration campaign execution in terms of planning, realisation and final collection of performance results.
- Section 5: it draws the main recommendations and elaborates on the main lessons learnt on the basis of the recorded performance.
- Section 6: it finally sums up the main conclusions and outlooks possible future evolution of the PoC.

[3] As mentioned in the executive summary, this is the intermediate version of the demonstration campaigns reporting while the final version will be part of D6.7. As such some of the sections provided here are incomplete or left blank in view of the final version D6.7 expected for the end of December 2025.

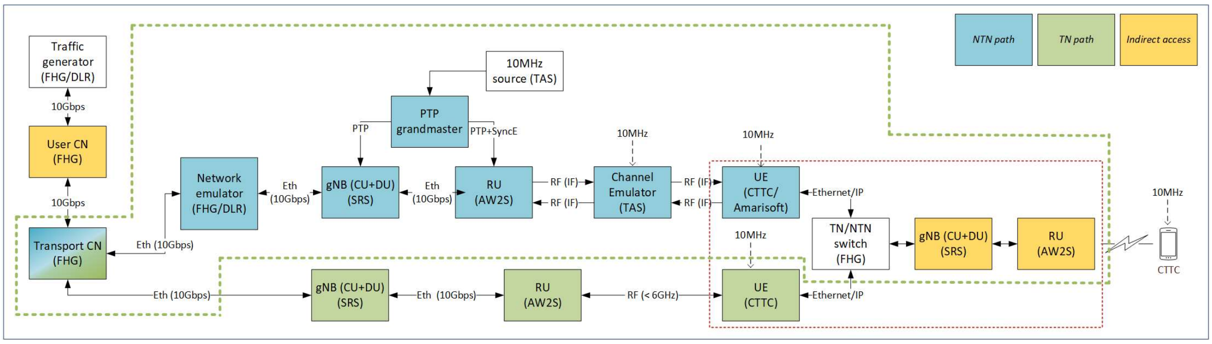
2 RECAP ON THE BENCH

2.1 ARCHITECTURE CONFIGURATIONS

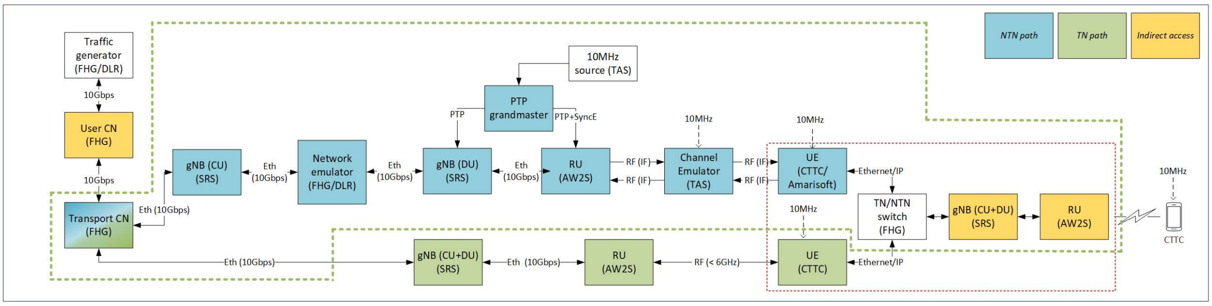
The PoC bench will be able to demonstrate the Use Cases identified in the D2.1 [1] in line with the different splitting defined in the D6.1 [5] PoC functional architecture document.

The different splits [4]are reminded here after:

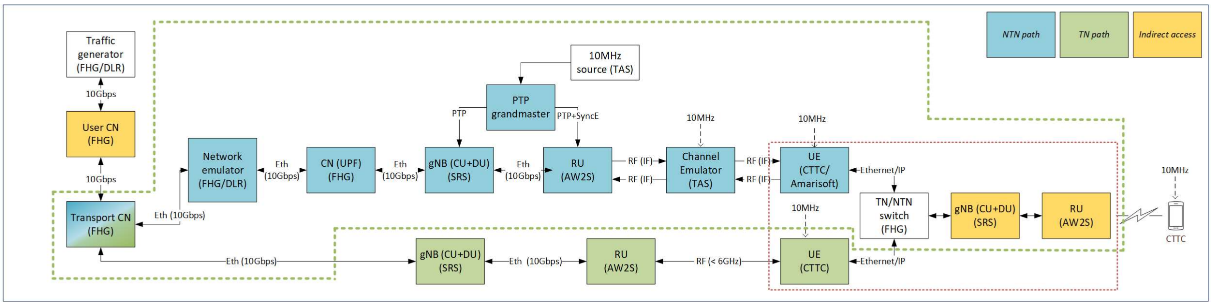
- Split #1 -Full GNB On Board:



- Split #2 - CU/DU splitting



- Split #3 - Full gNB on board with 5GC functions



The defined splits introduce certain constraints on the design and the logical architecture. The three splits imposed to separate the gNB in a minimum of two logical partition, one for the CU,

---

[4] Please note that „splits“ are to be intended as different architecture configurations rather than the corresponding 3GPP or ORAN functional splits

Co-funded by the European Union

one for DU/RU, and to separate the Core Network in two logical partitions (one for the UPF function, one for the rest of the Core Network).

Considering the feeder link for the NTN, the technology usually used for the link is well known and presents no major point to be de-risked, based on this assumption, only time delay is taken into account for the feeder link. The PoC will use an Ethernet link to simulate the feeder RF link, limited currently to the traffic delay (propagation time) without other type of interferences (weather, location discrepancies …).

Considering the NTN “user” link, the complexity and specificity of the RF parts (OFDM wave form, Doppler effects, losses …), the satellite to user link will be emulated with a two-way RF satellite link emulator connected through RF wire (coaxial).

For the TN link, the connection will be also performed with coaxial wires despite over the air link. The aim of the demonstrator is not to validate the already well-established capabilities of the Terrestrial Network (TN) but ensure that the commutation between the TN and the NTN is feasible.

The link between the final end user device and the IAB node functionality is performed by wire. This link is well known and only the access principle will be demonstrated.

2.2 MAIN COMPONENTS

The TN and NTN network is based on the following equipment:

- One server for the “Core Networks”. It will host the following functionalities:
    - Traffic Generator
    - 5G Core Network system
    - 5G Core Network TN/NTN without NTN UPF functions
    - 5G Core Network NTN UPF functions
    - Feeder link channel Network Emulator (in case of split #3)
- One server for gNB TN/NTN. It will host the following functionalities:
    - DU NTN
    - CU NTN
    - DU TN
    - CU TN
    - Feeder link channel Network Emulator (in case of splits #1 & #2)
- Final UE server
- One IAB server. It will host the following functionalities:

  - gNB (CU+DU systems) final end user UE bridge
  - IAB switching function
- The RU modules to perform the conversion from the frames issued of the DU to generate the RF signal and its reverse link:
  - RU NTN
  - RU TN
  - RU IAB/NTN
  - RU IAB/TN
  - RU final end user UE bridge
  - RU final end user UE
- The Satellite Link Emulator.
- The Ethernet switch with the capacity of a 10 Gbit/s network and RJ-45/SFP+ cables to ensure the data transfers between each server.

3 SCENARIO DEFINITION

3.1 OVERVIEW

The selected scenarios deployment on following PoC architecture in Figure 1 aims to demonstrate by functional testing and related KPIs results collecting of some 5G End-to-End connectivity carried out over a unified radio interface across an effective coexistence of TN/NTN backhaul segment resources integration.

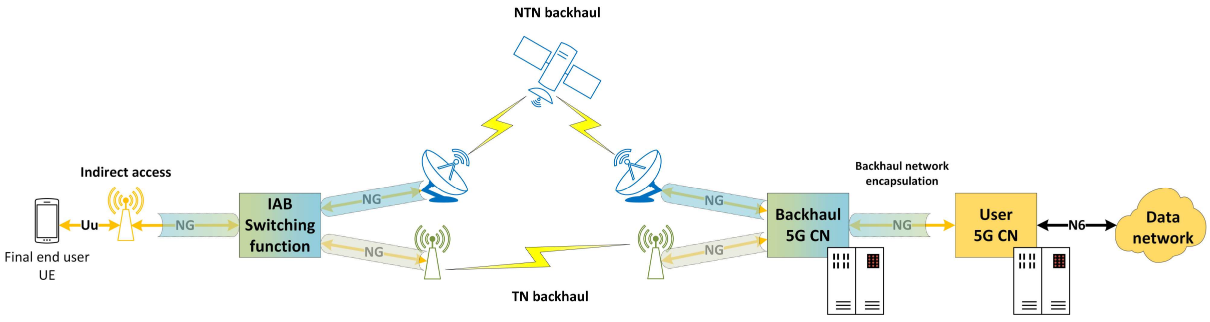


Figure 3: PoC macro architecture

Regenerative LEO payload NTN baseline is considered for all scenarios which induces performing all the tests as to characterize on-ground/board functional disaggregation from the split configurations (section 2.1) managed at bench software re-programmability.

Application of scenario is also performed within the related overall context frame:

- Unique NTN LEO satellite quasi-earth fixed cell:
  - No NTN LEO satellite handover Feeder/User access link to manage.
  - Transmission signal characteristics related to the same trajectory profile ~300s loop – 20°/90°EL visibility.
- Unique TN cell:
  - The Final end user UE positioning is considered as a static parameter.
- Multiple generic user data packet traffic flows instantiation sized in consistency of link capacity to support KPIs measurement.
- End-user application services plugging are showcase purposes oriented:
  - Local implementation: video diffusion, file transfer.
  - External internet access from Final end user UE through user CN: Web browsing, streaming …

Main intent follows over the related bench set-up is to reflect how this infrastructure concept is experienced at Final end user level.

3.2 SCENARIO #1 RESIDENTIAL BROADBAND

3.2.1 General Description

The Residential Broadband scenario relied on the macro reference architecture from **Error! Reference source not found.** where an IAB node is able to establish connectivity between an end user UE of a local TN segment (indirect access) and a 5G Core Network by a dual 5G TN/NTN backhaul transport segment in a consecutive way to convey steered traffic accordingly.

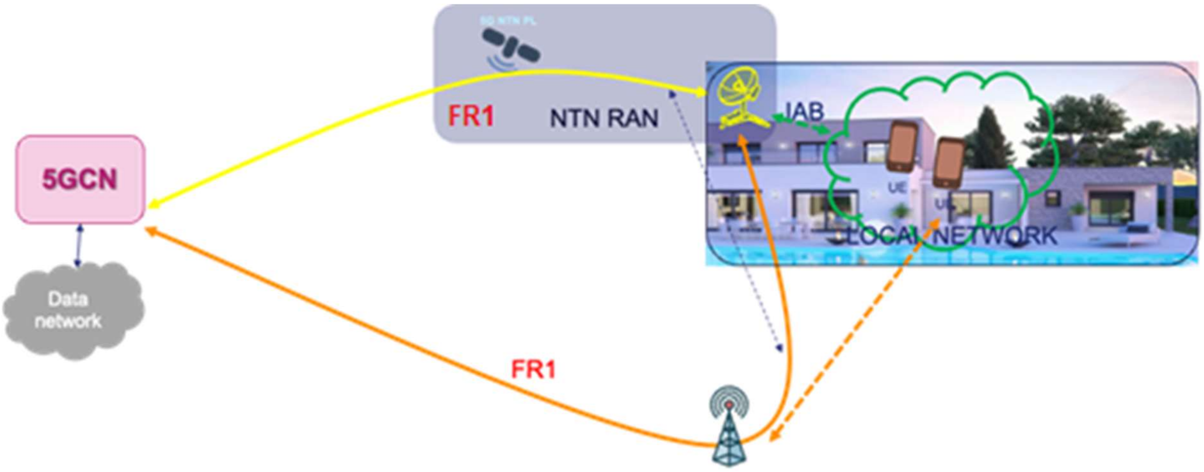


Figure 4: PoC#1 - Residential Broadband scenario reference architecture

It is then applied to the *PoC#1.1 - energy saving* and *PoC#1.2 – sparsely populated area* application uses cases:

- *PoC#1.1 – Energy saving*:

The NTN backhaul resource is exploited at night to reduce the energy consumption of the terrestrial counterpart.

Day connectivity is completely provided to UEs through the terrestrial infrastructure and at night the TN backhaul path is then switched off to support connectivity by NTN backhaul path.

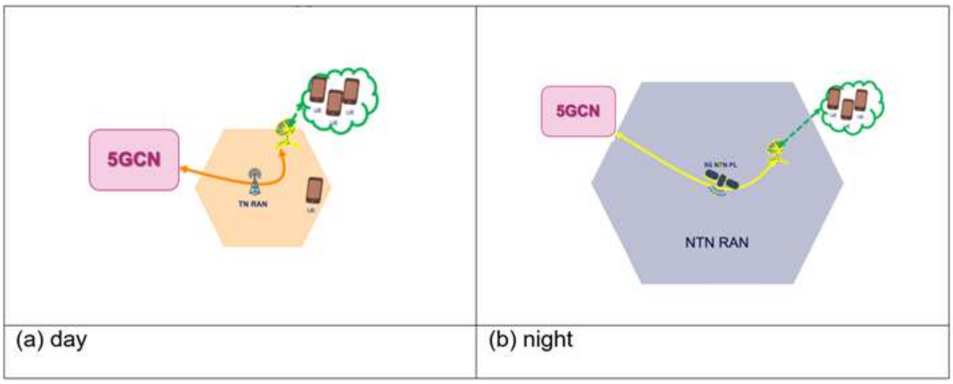


Figure 5: PoC#1.1 – Energy saving

Main outcome is to demonstrate a preset triggering exclusive 5G TN/NTN backhaul paths handover (full hard) through the global E2E network user connectivity and data traffic.

- *PoC#2.1 – Large sparsely populated area*

The NTN backhaul resource is exploited to provide connectivity over large areas with a limited population density where a terrestrial infrastructure might not be available.

Large and sparsely populated areas in which the NTN and TN backhaul resources can complement each other.

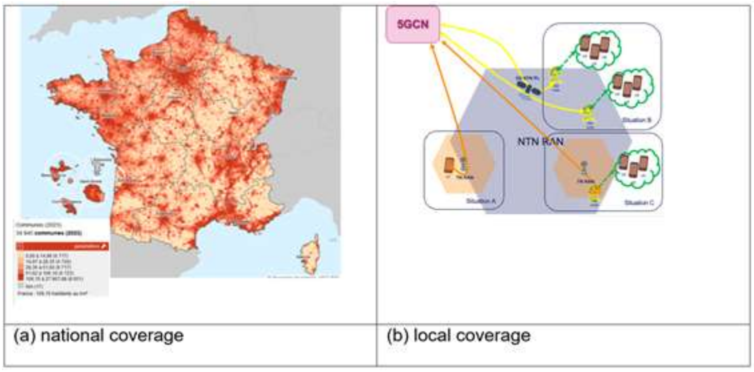


Figure 6: PoC#2.1 – Large sparsely populated area

Main outcome is to demonstrate an automatic triggering exclusive 5G TN/NTN backhaul paths handover (full hard) through the global E2E network user connectivity and data traffic.

3.2.2 Sequence of Actions

The residential broadband scenarios *PoC#1.1 – Energy saving* and *PoC#2.1 – Large sparsely populated area* are played on PoC bench according to the next flowchart structure:

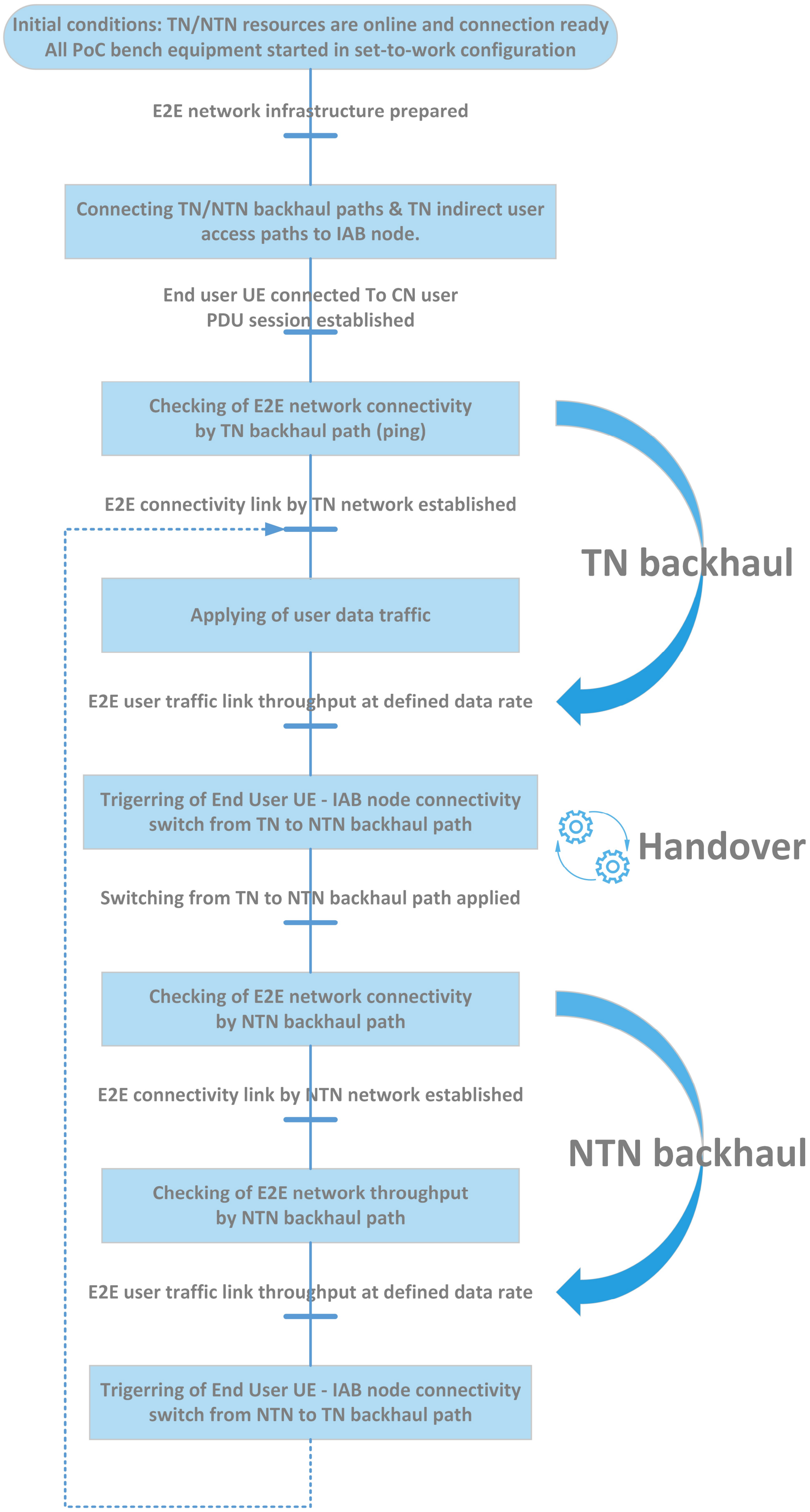
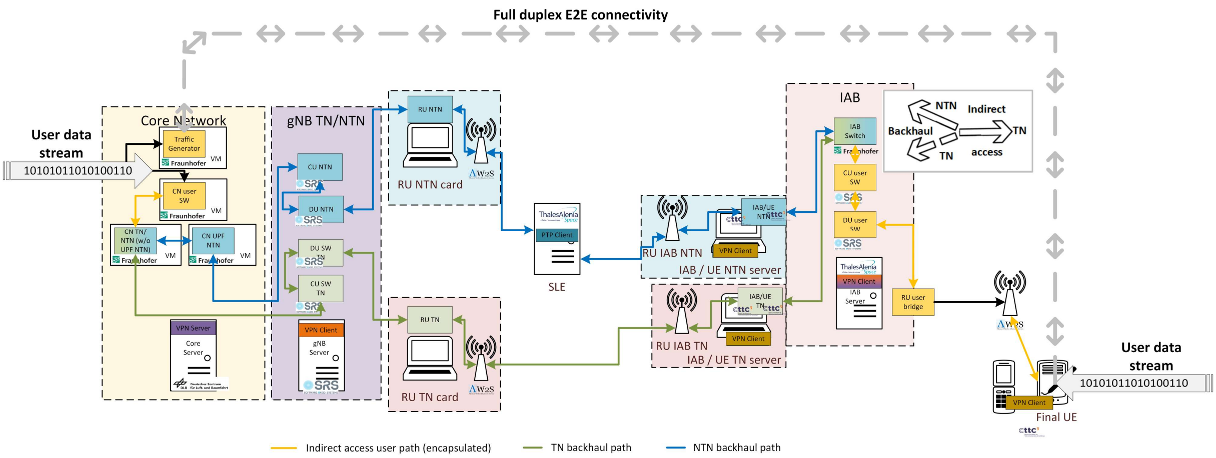


Figure 7: Residential broadband scenario flowchart.

It has to be executed again across the three on-board/ground functional split configurations:

3.2.3 Scenario Implementation

The following diagram representation recalls details how each PoC bench components are involved in the data flow at a functional-physical architecture level (split#1 – full gNB on-board) with also the related test interfaces to consider for both *PoC#1.1 – energy saving* and *PoC#2.1 – Large sparsely populated area* scenario application:



As to cover an E2E network scope the applicable testing is performed at edges components of user encapsulated link – indirect access path level with a full duplex connectivity checking between CN user and Final end user UE and some user data traffic injection over different kind of streams (TCP + UDP).

Then TN/NTN backhaul user data traffic flow steering is managed by a manual triggered script at IAB node level that sets a pre-defined commutation sequence:

- Nominal transport resource to transport user encapsulated data is on TN backhaul path which is connected by the IAB node with Indirect access user path of end user UE.
- Initial step is blocking the on-going traffic flow as to initiate a failover from established connectivity of Indirect access user path with TN backhaul to NTN counterpart.
- Proper set-up change is verified by latency magnitude as part of connectivity checking.

A very similar principle is considered for *PoC#2.1 – Large sparsely populated area* with the main difference consisting in an automatic triggered traffic flow steering from a TN path connectivity disabling from some path fading introduction.

Alternate testing can be run at other components level to support global PoC bench operating. The detailed tests procedures are further transcribed in the D6.5 document [7].

3.3 SCENARIO #2 IN-FLIGHT INTERNET CONNECTIVITY

3.3.1 General Description

< This section will be completed in Deliverable D6.7, upon consolidation of the specific scenario #2 implementation>

3.3.2 Sequence of Actions

< This section will be completed in Deliverable D6.7, upon consolidation of the specific scenario #2 implementation >

3.3.3 Scenario Implementation

< This section will be completed in Deliverable D6.7, upon consolidation of the specific scenario #2 implementation >

4 DEMONSTRATION CAMPAIGNS

4.1 SCENARIO #1 RESIDENTIAL BROADBAND

4.1.1 Demonstration KPIs

The applicable KPIs selection associated to the PoC and categorized according User Applications and Service Continuity families has been done in D6.1 [5] document with items classification as required (R) or optional (O).

Related description according to bench context deployment is next provided:

- User Application Capabilities:

    - KPI_1.1 User experienced data rate (R):

      The PoC E2E network throughput (goodput) effectively received (DL) or transmitted (UL) at final end user UE level which corresponds to the amount of data (packets) correctly received (greater than or equal to the minimum targeted data rate) within a certain time window (lasting as long as a reasonable communication session in the context of the investigated scenario), with sufficient sampling granularity (instantaneous or average).

    - KPI_1.2 End-to-end Latency (R):

      As per 3GPP TS 22.261 definition: The E2E one way time that it takes to transfer a given piece of information over the Encapsulated User network, measured at the communication interface, from the moment it is transmitted by the source to the moment it is successfully received at the destination (CN User – Final End User UE).

    - KPI_1.3 User service packet error rate (R):

      Refers to the amount of E2E network packets which have not been successfully delivered between CN User – Final End user UE (in consistency with communication session context) divided by the total number of sent packets.

- Service continuity

  This KPIs family refers to the capture of the related events at network layer switching various phases defined in time, as illustrated in the following Figure:

  - t0: Start of measurements (passive monitoring);
  - t1: Event E, which implies to trigger a switch from one backhaul path to another.
  - t2: Start of the network layer switching.
  - t3: End of the network layer switching, IP connectivity and traffic established at the CN user – Final end user UE level.
  - t4: End of measurements.

In this timeline there are three main phases to consider and assess through next KPIs:

PHASE 1 - Preparation of the network layer switching (Pre-switching):

- KPI_2.1 Phase 1 duration (O):

  Time between event (connectivity loss at IAB - End User gNB level) and the network layer switching decision at IAB level.

PHASE 2 - Network layer switching execution (In-switching):

- KPI_2.3 Phase 2 duration (O):

  Phase 2 duration (O): Time between switching decision and service available (connectivity and traffic established at Final end user UE).

PHASE 3 - Network Layer switching continuity (Post-switching):

- KPI_2.5 Switching success rate (O)

  Average user experienced throughput at Final end user UE (i.e. KPI_1.1) since service available post network layer switching divided by average experienced data rate prior event.

- KPI_2.6 Number of drop calls (R)

  User throughput failure ratio, defined as the percentage of user experienced data rate packet delivery error despite a successful switching from a network perspective.

The KPIs probing across PoC bench data-flow (split#1 – Full gNB on-board) is mapped in Figure 8 along with the related means identified to accordingly cover the scenario measurements:

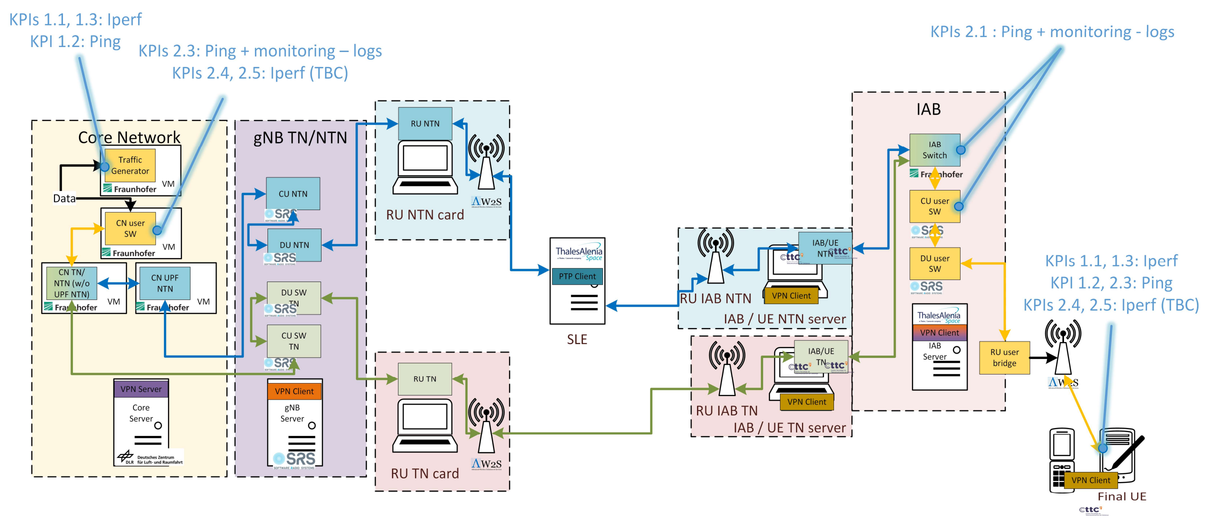


Figure 8 Maps of PoC bench KPIs probing (split#1 - Full gNB on-board).

Network *ping* utility is used for KPI_1.2, KPI_2.1 and KPI_2.3 related to latency and connectivity characteristics with the following settings:

- Continuous running from Final end user UE to User CN:
  - 5 ms interval (tbc)
  - Timestamping
  - File logging

Network performance *Iperf* software tool is selected for KPI_1.1, KPI_1.3, KPI_2.4 and KPI_2.5 related to throughput characteristics with following settings:

- Forward link from CN user (client) to Final end user UE (server) and Return link from Final end user UE (client) to CN user (server):
  - UDP / TCP
    - Nominal link integrity data rate
    - 1s interval reporting
    - 300s maximum duration
    - Timestamping
    - File logging

More specifics tuning parameters like buffer length, socket length and Maximum Segment Size will be further indicated in the D6.5 document.

Proper components logs can also complement KPIs collection with some resources usage monitoring while the several scenario validation tests based on *ps*/*top* commands.

4.1.2 Testing Campaign Definition and Planning

The test content activities of the scenario demonstration have been arranged aiming for an optimization of bench functional split configuration change occurrences and a proper characterization of data flow commutating by incremental traffic streams combination.

Related approach is more formally described from the Figure 9 following workflow:

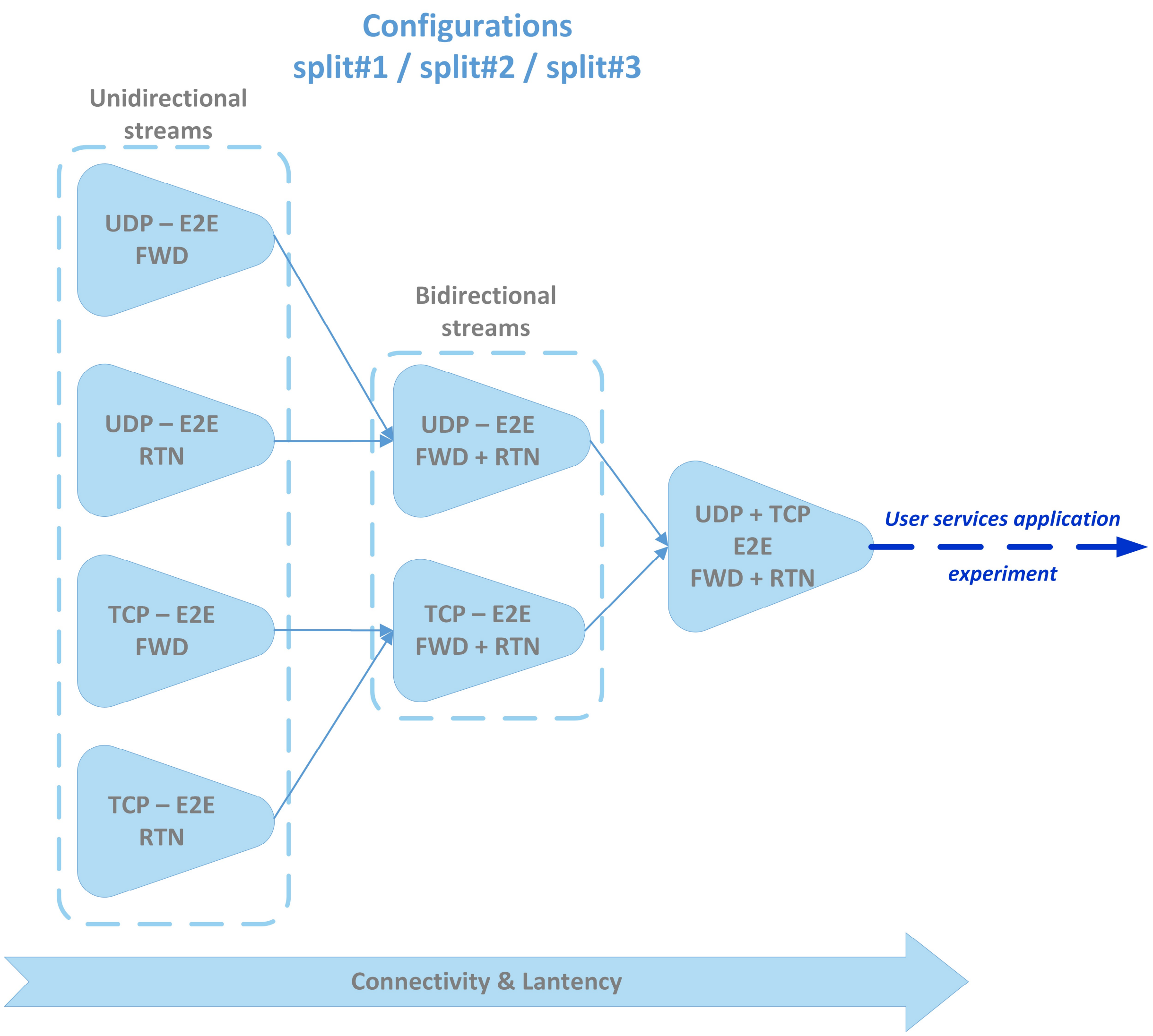


Figure 9: Demonstration scenario testing activities principle workflow

It is then intended after completion to run some user application services as to perform some higher layer experiment on PoC bench.

4.1.3 Demonstration execution

< This section will be completed in Deliverable D6.7, upon finalisation of the demonstration campaigns and the collection of the related performance results.>

4.1.4 Performance results

< This section will be completed in Deliverable D6.7, upon finalisation of the demonstration campaigns and the collection of the related performance results.>

4.2 SCENARIO #2 IN-FLIGHT INTERNET CONNECTIVITY

4.2.1 Demonstration KPIs

< This section will be completed in Deliverable D6.7, upon finalisation of the demonstration campaigns and the collection of the related performance results.>

4.2.2 Testing Campaign Definition and Planning

< This section will be completed in Deliverable D6.7, upon finalisation of the demonstration campaigns and the collection of the related performance results.>

4.2.3 Demonstration execution

< This section will be completed in Deliverable D6.7, upon finalisation of the demonstration campaigns and the collection of the related performance results.>

4.2.4 Performance results

< This section will be completed in Deliverable D6.7, upon finalisation of the demonstration campaigns and the collection of the related performance results.>

5 MAIN LESSONS LEARNT AND FINAL RECOMMENDATIONS

5.1 SCENARIO #1 RESIDENTIAL BROADBAND

< This section will be completed in Deliverable D6.7, on the basis of the obtained performance results and the conducted analysis.>

5.2 SCENARIO #2 IN-FLIGHT INTERNET CONNECTIVITY

< This section will be completed in Deliverable D6.7, on the basis of the obtained performance results and the conducted analysis.>

6 CONCLUSIONS

6.1 FINAL REMARKS

< This section will be completed in Deliverable D6.7>

6.2 NEXT STEPS

The D6.7 [8] document will complementally address the remaining scope about *PoC#2 – Air traffic* scenario demonstration structure which is under consolidation as to then provide along with *PoC#1 – Residential broadband* scenario some global outcomes of tests activities.

6.3 POSSIBLE FUTURE POC EVOLUTION

< This section will be completed in Deliverable D6.7.>

REFERENCES

[1] D6.4: PoC design document

[2] D2.1: Scenarios, use cases and services.

[3] D3.2: End to end ground and space integrated architecture

[4] D4.6: Final report on AI-based radio resource management, RAN Softwarisation and onboard processing

[5] D6.1: PoC functional architecture document

[6] D6.2: PoC preliminary design document

[7] D6.5: PoC integration and validation test results

[8] D6.7: Results analysis & recommendation

Co-funded by the European Union