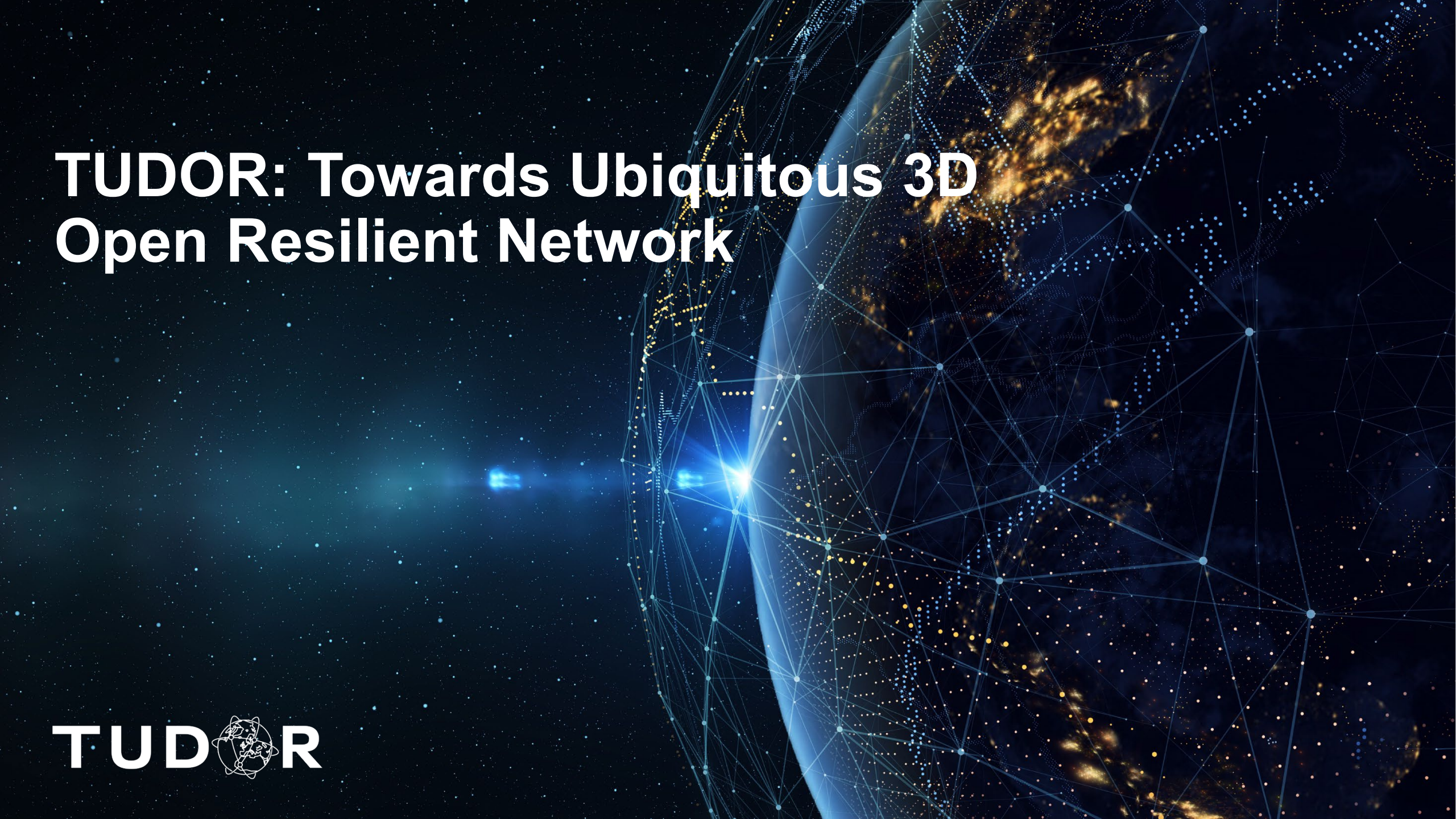
TUDOR: Towards Ubiquitous 3D Open Resilient Network

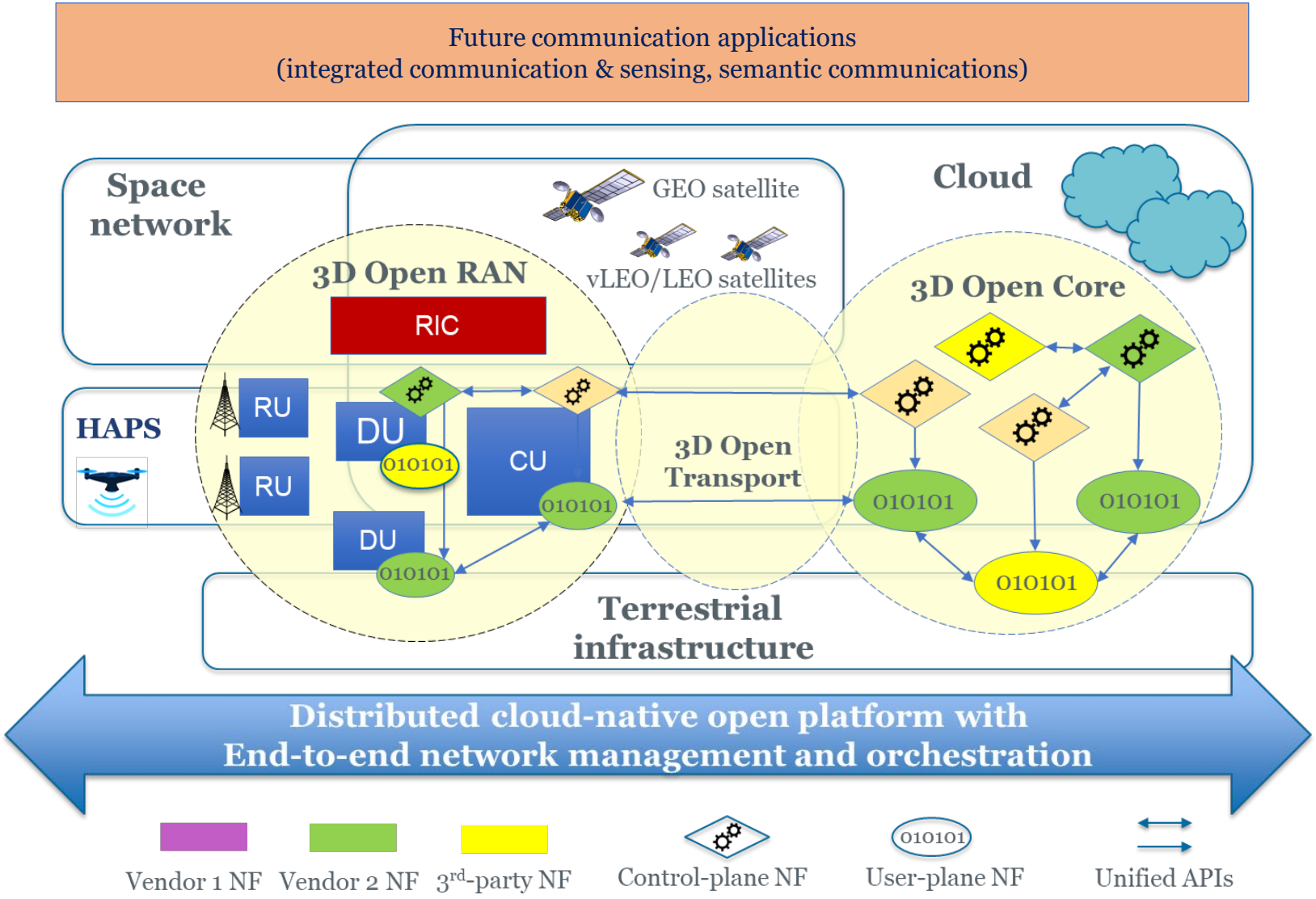


Project Objectives

- Realise open networking and capacity-assured universal connectivity through a **3D integration of terrestrial, airborne and space communication platform**
- Maximise **spectrum openness and RAN efficiency**
- Increase **automation and agility** in open network environments
- Enable **6G-era services** and deliver a step change in future network capabilities
- Exploit and promote **3D open networks research – Feasibility, Benefits, Performance and techno-economic analysis**

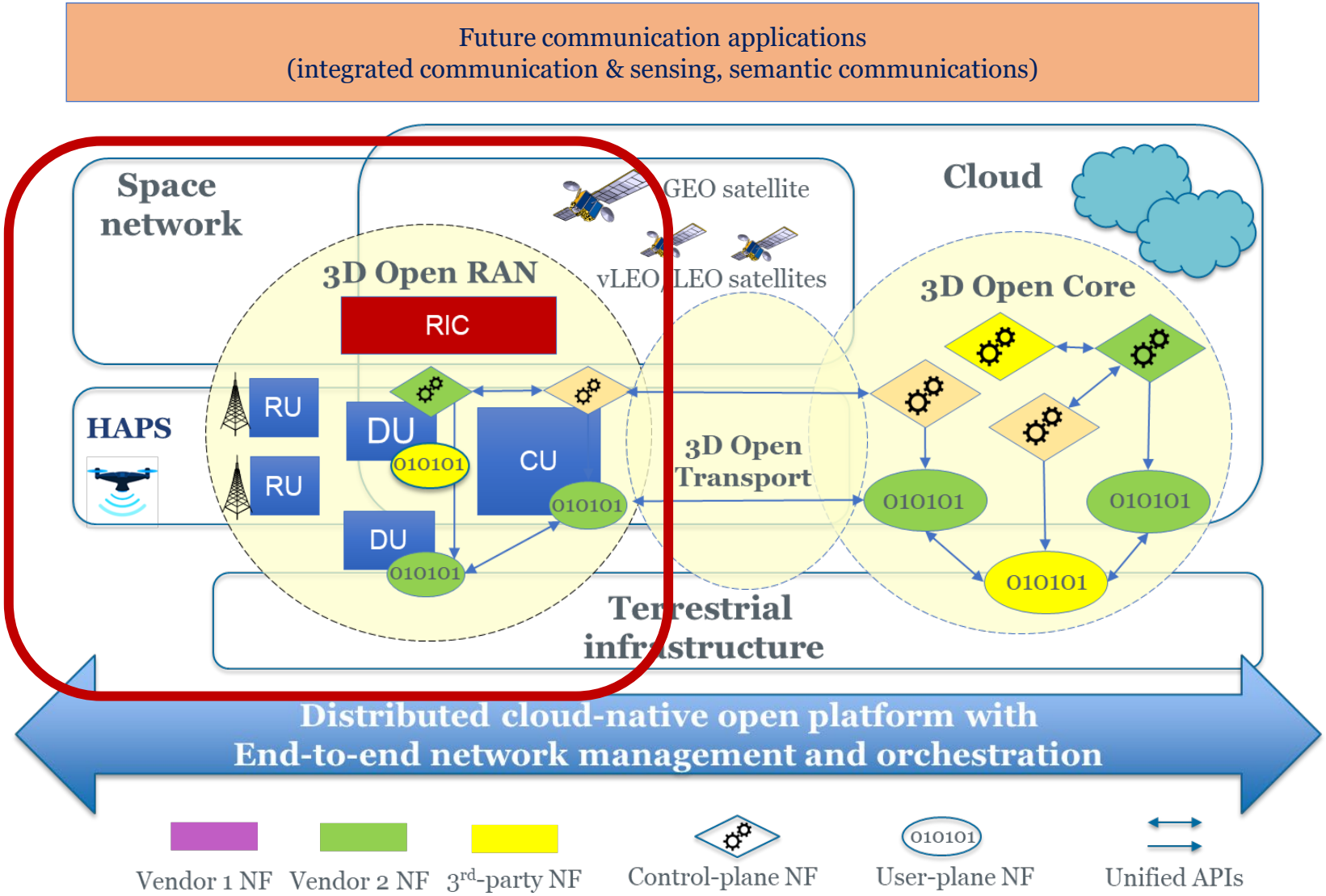
The TUDOR Consortium

TUDOR Technical Scope

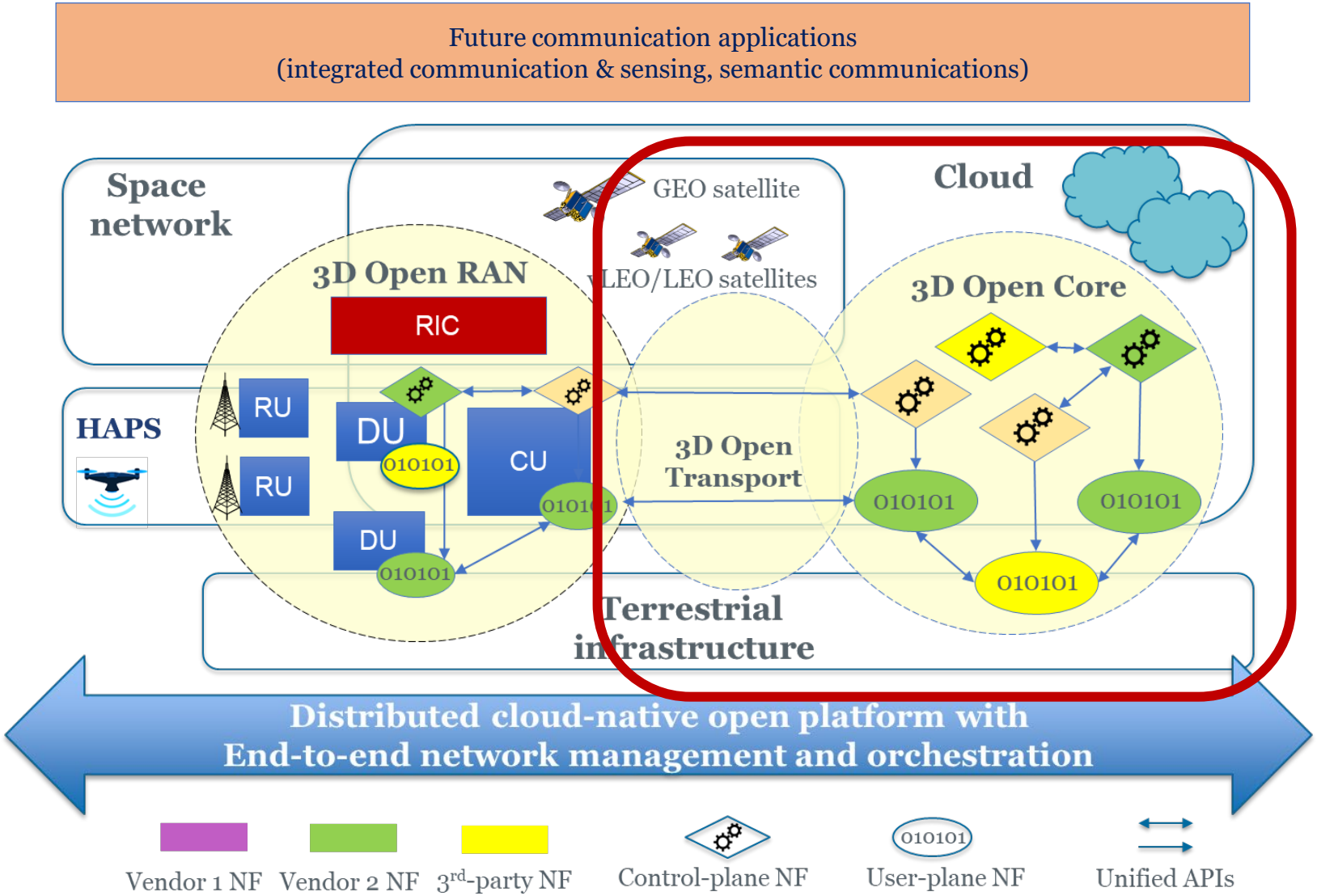


TUDOR Technical Scope

WP2: Integrated 3D RAN and Open Spectrum Architecture

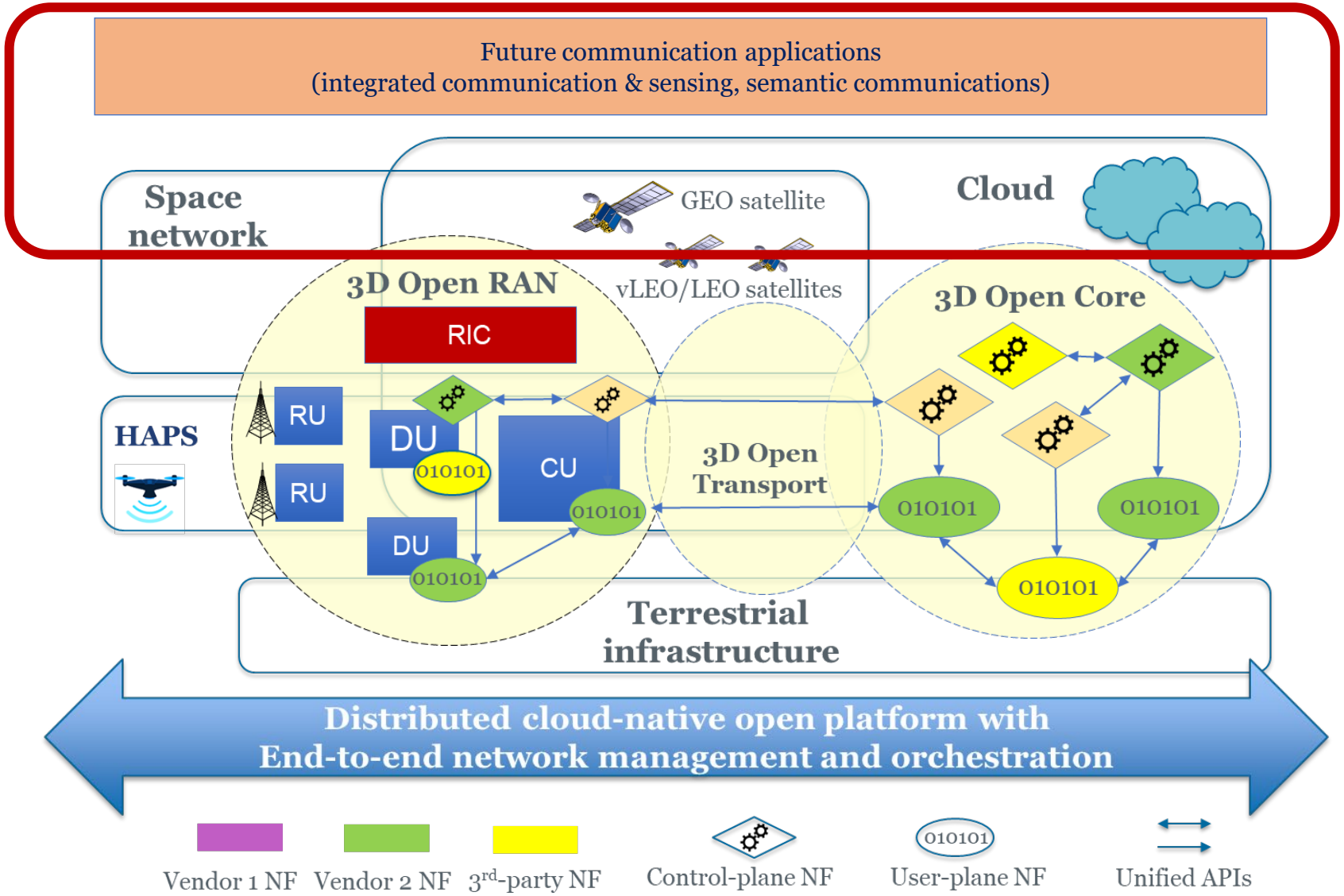


TUDOR Technical Scope



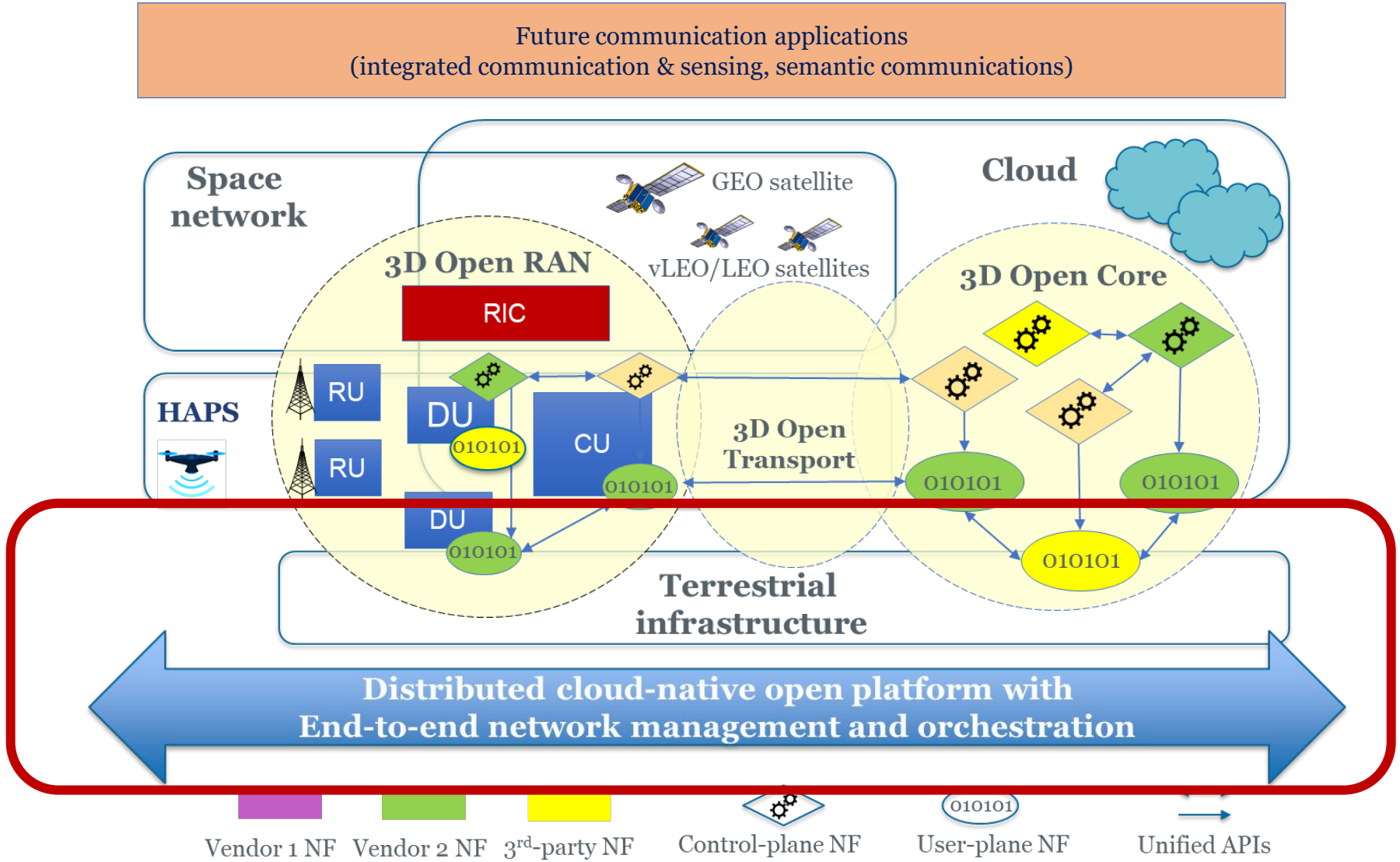
WP3: Distributed Cloud Native Architecture for 3D Network

TUDOR Technical Scope



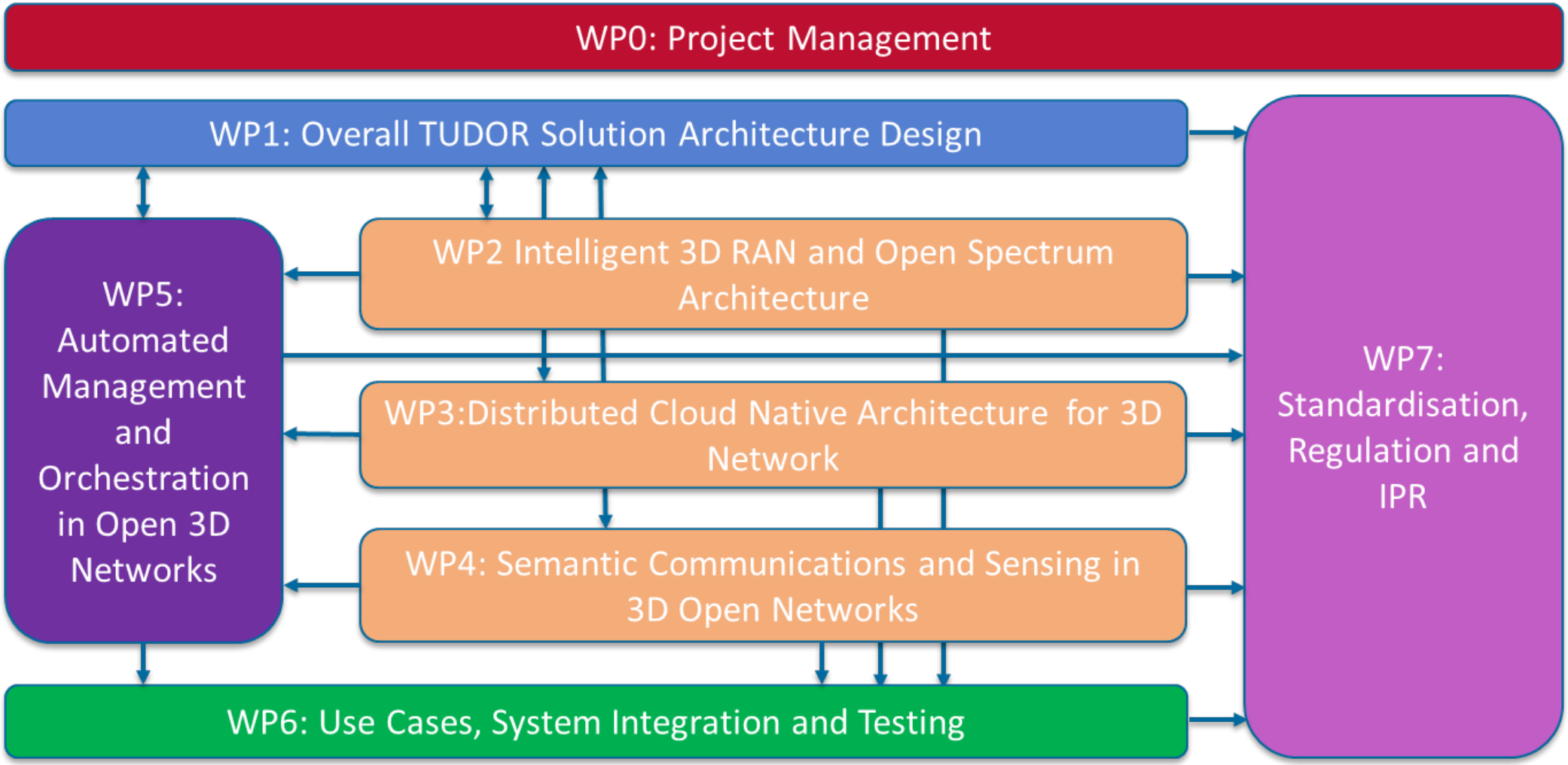
WP4: Semantic Communications and Sensing in Open 3D Network

TUDOR Technical Scope

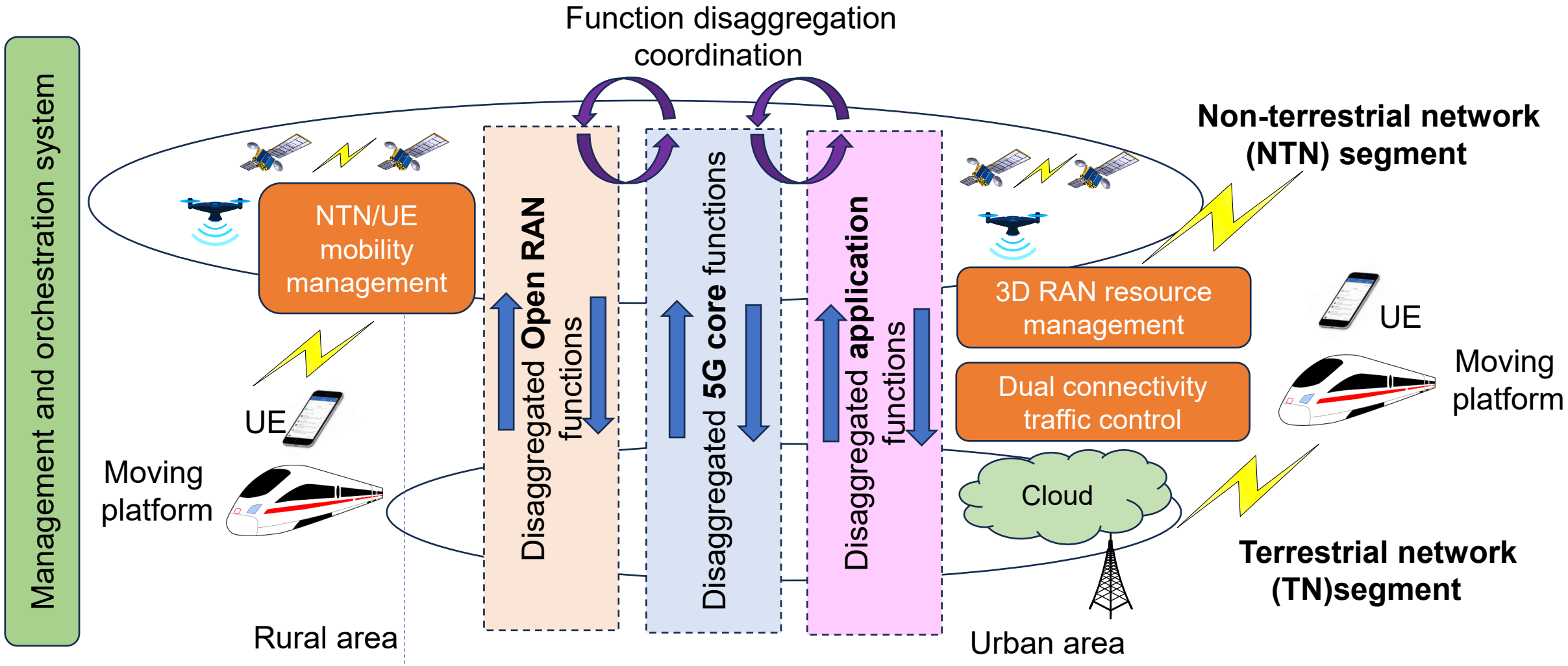


WP5: Automated Management and Orchestration in Open 3D Networks

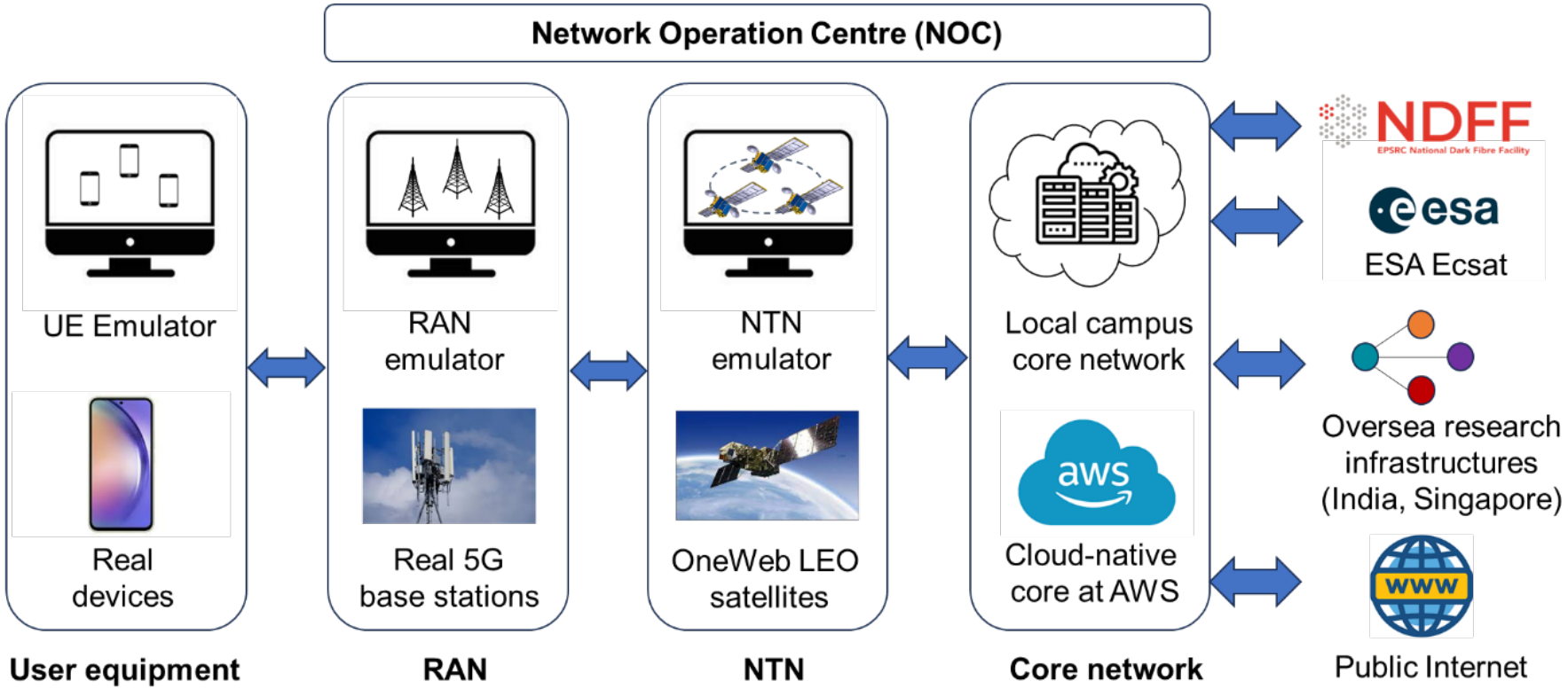
TUDOR Work Package Organisation



High-Level TUDOR Architecture



Integrated TUDOR Testing Environment



- **UE**: Real devices, UE emulators
- **Terrestrial access Network:** 5G base stations, RAN emulators
- **NTN:** Commercial network emulator (with embedded VM based network functions)
- **Core network**: The independently developed 5G (and beyond) core network platform at University of Surrey

TUDOR Use Cases

USE CASES	TUDOR EVALUATION REQUIREMENTS			
	Flexible **Network function disaggregation** in open network environments	Seamless **NTN network integration** (satellites and UAVs)	Distributed **Cloud-Native supporting** network environments	End to end **Security**
3D network for supporting railway communication services		x		x
Emergency Services supported by the 3D Open Network	x	x	x	x
Cloud Native support for Personalised Video Delivery	x		x	x
Flexible Coverage Extension with interconnected Terrestrial-UAV platform	x	x		x

Contribution to Standardisations

- Co-founder (via Interdigital) of **ETSI Industry Specification Group (ISG) on Integrated Sensing and Communications (ISAC)** https://www.etsi.org/committee/2295-isac
- Other potential SDOs to contribute:

3GPP A GLOBAL INITIATIVE — NTN for 6G, ISAC, NF disaggregation, 6G security and many more

O-RAN ALLIANCE — RIC use cases and RAN function disaggregation in NTN

tmforum and CAMARA THE TELCO GLOBAL API ALLIANCE — Open service platform and APIs

Thank You

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