ENI PoC #19: Space-Ground Cooperative Network Slicing Progress Update

Rapporteur: NDSC

China Telecom, Asiainfo, Huawei, CAICT, CNIT, CNR ISTI

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PoC Goals and PoC member task

Host/Team Leader: NDSC, 中国电信 CHINA TELECOM

Team members: cnit consorzio nazionale interuniversitario per le telecomunicazioni, HUAWEI, AsiaInfo 亚信科技, Consiglio Nazionale delle Ricerche, CAICT 中国信通院

- ✓ **PoC Project Goal #1: Network Slice Data Plane Adaptation Mapping. Demonstrate how to support identity resolution such as VLAN and IP address on the data plane, support precise identification and control for user services, and realize the slicing adaptation between mobile communication network and satellite network.**
- ✓ **PoC Project Goal #2: : Space-Ground Network Slice Cooperative Control. Demonstrate how to exchange the slicing control information with the control plane of ground mobile communication network and satellite network (5GC and SNOCC), optimize the global service quality of network slicing, and ensure the consistency and continuity of slicing service in space-ground cooperative network environment.**

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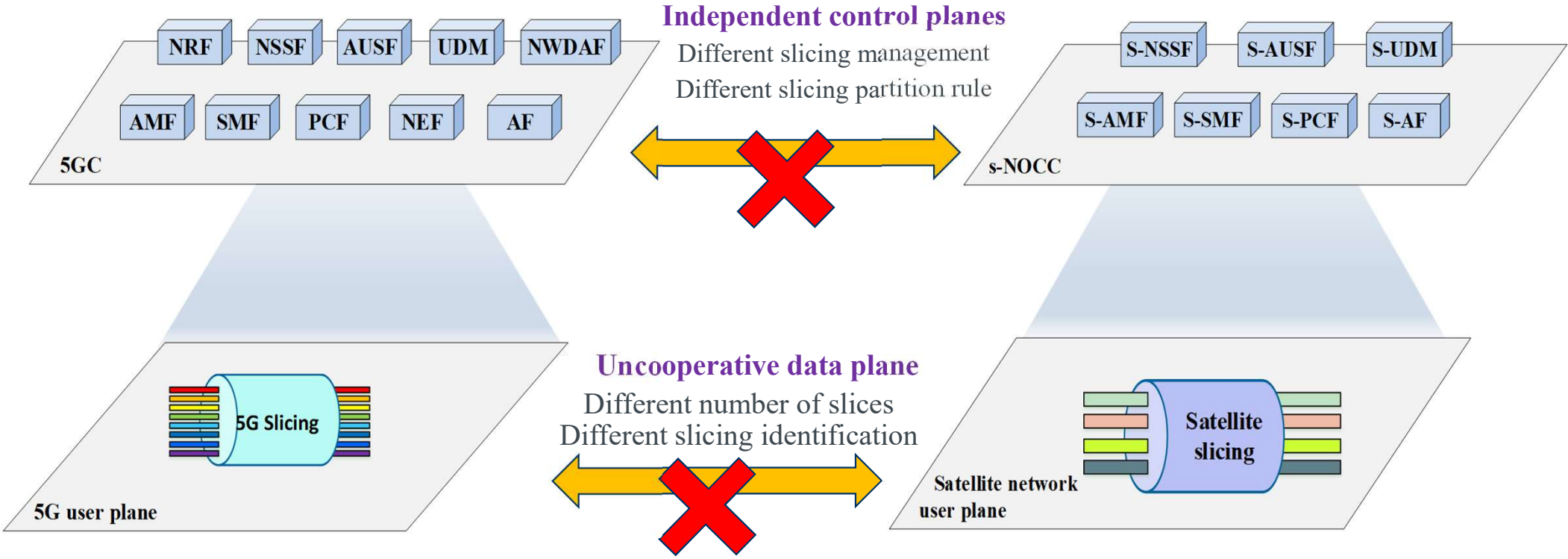
Core problem ：Difficulty to interconnect 5G network and satellite network slices



Core problem : Ground mobile communication network and space satellite network are different on service classification of network slicing, number of slices and slicing construction. As a result, the slices of the two networks cannot be directly interconnected.

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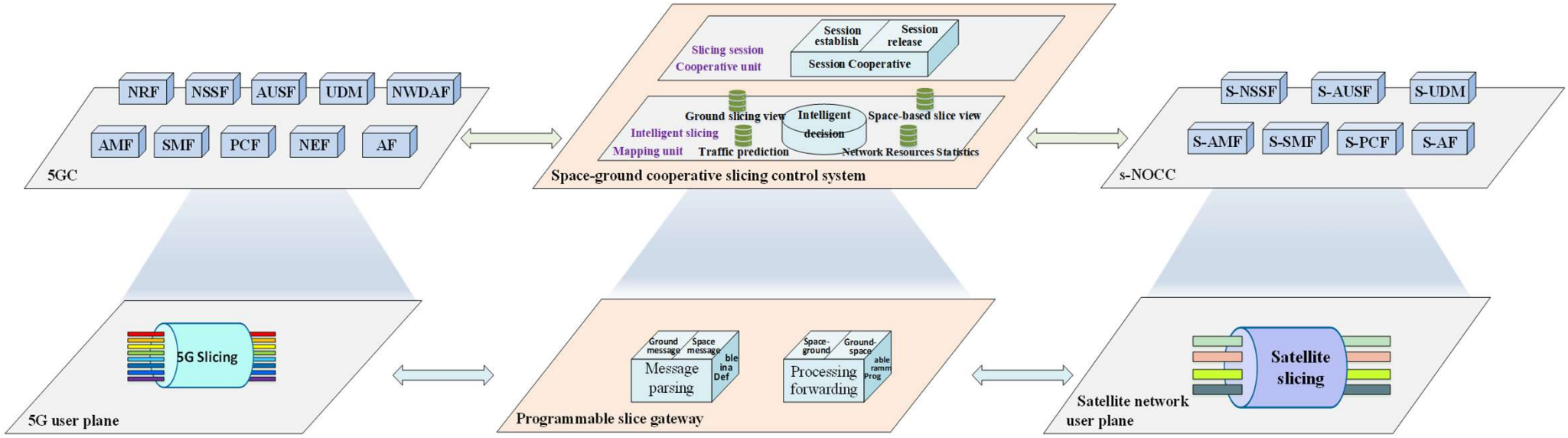
Innovation 1: Architecture of Space-Ground Cooperative Network Slicing



A programmable slicing gateway and a space-ground cooperative slicing control system can be deployed between the ground mobile communication network and the satellite network. On the data plane, it uses definable message parsing and forwarding capabilities to accurately identify and control slicing services, and realize heterogeneous network slicing adaptation. On the control plane, it collaboratively opens the slicing session channel in space-ground cooperative network, and intelligently generates the slicing mapping strategy, to improve the end-to-end slicing service quality of space-ground cooperative network.

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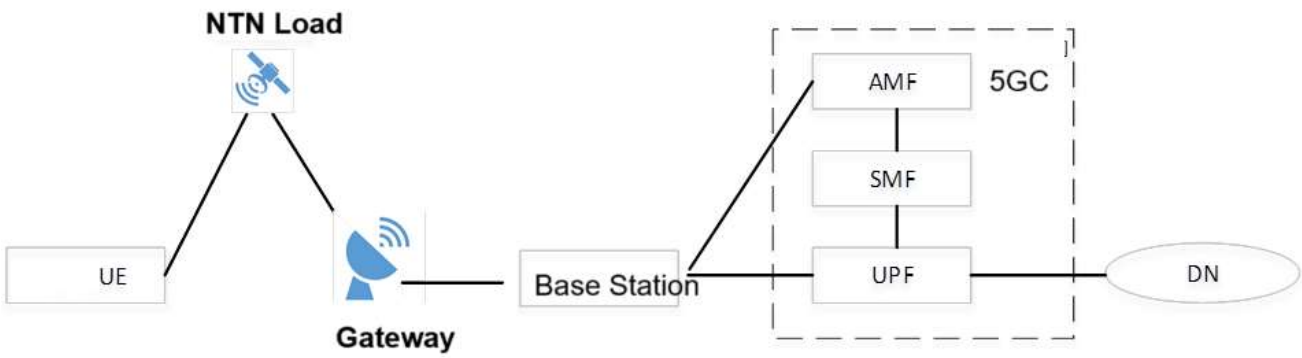
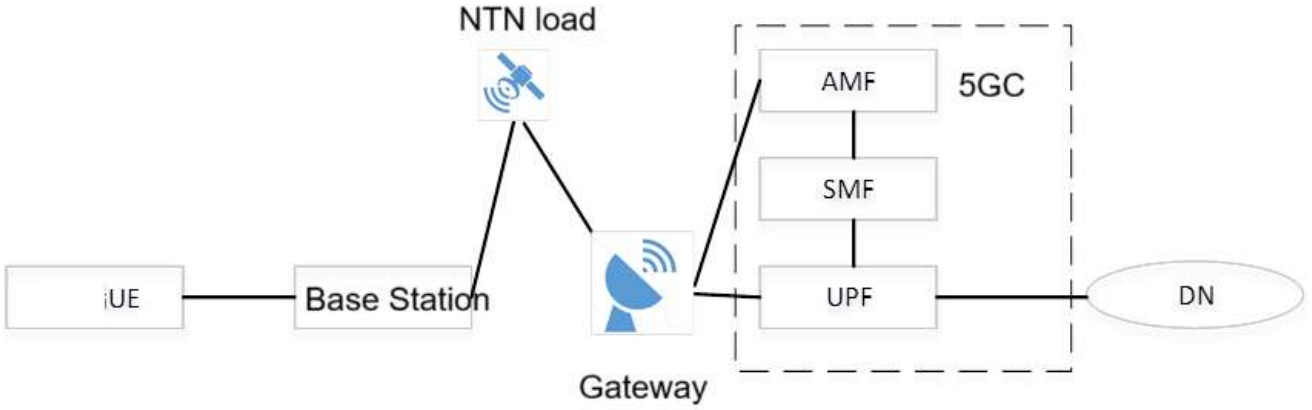
In satellite access, from the perspective of network elements, it includes terminal UE, NTN payload, information customs station, 5G core network, etc., and from the link point of view, it includes the service link between the terminal and the NTN payload, and the feed link between the NTN payload and the information customs station



Satellite backhaul is used between the core and terrestrial access networks to provide transmission to N1/N2/N3 reference points. The satellite system transparently carries the communication payload of the 3GPP reference point.



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PoC Milestones and Current Progress

PoC Milestone	Stages/Milestone description	Target Date	Additional Info
P.S	PoC project submission	09/2023	Presentation during #ENI 27
P.TP.1	PoC Test Plan 1	12/2023	Initial testbed up and running
P.D1	PoC Demo 1	12/2023	Webinar demo at the ENI#28 plenary meeting
P.D2	PoC Demo 2	06/2024	Demo at shanghai MWC2024
P.D3	PoC Demo 3	TBD	Demo at Intel AI summit
P.C1	PoC Expected Contribution 1	05/2024	Contributions to ENI use case
P.C2	PoC Expected Contribution 2	07/2024	Contributions to ENI requirement
P.C3	PoC Expected Contribution 4	07/2024	Contributions to ENI terminology
P.R	PoC Report	09/2024	PoC-Project-End Feedback
P.E	PoC Project End	12/2024	Presented to ISG ENI for information