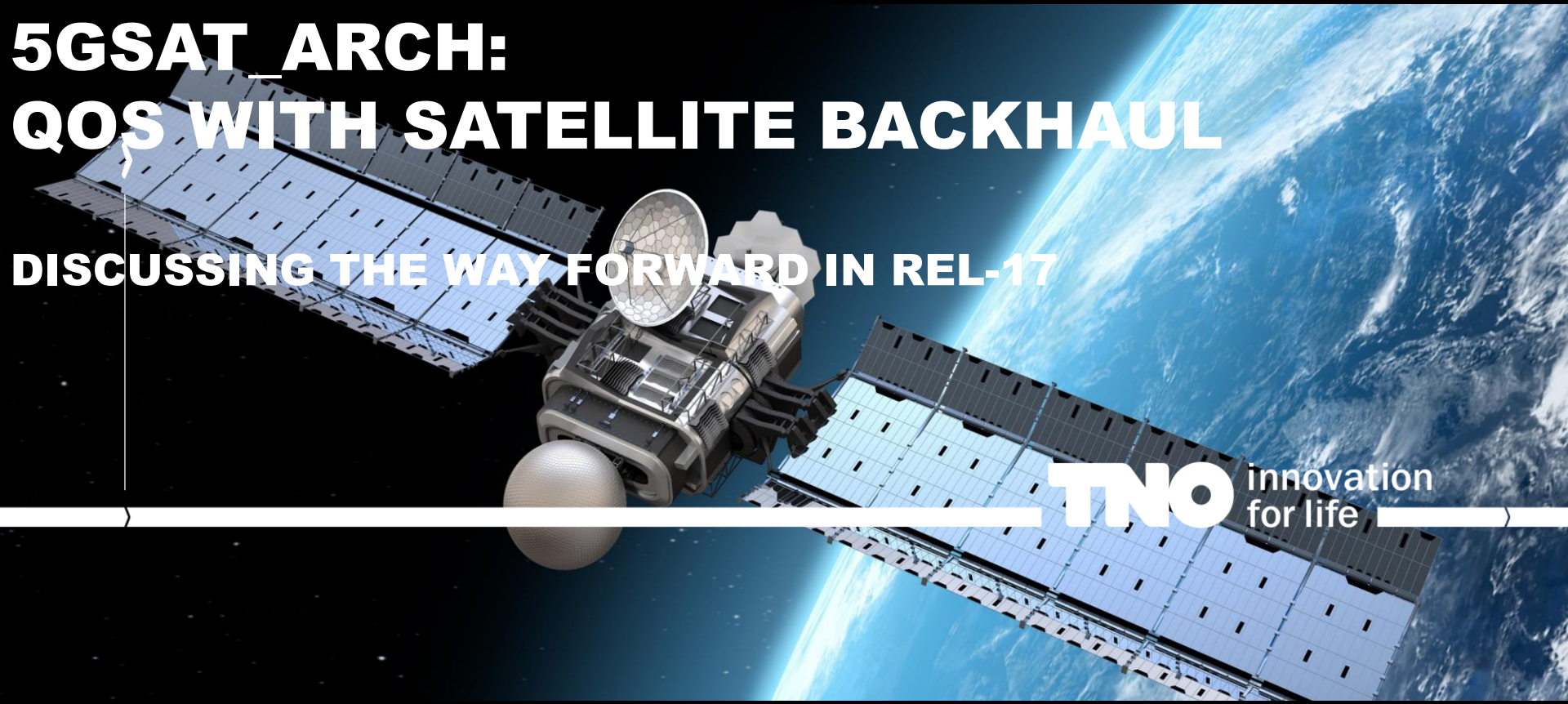
5GSAT_ARCH:
QOS WITH SATELLITE BACKHAUL

DISCUSSING THE WAY FORWARD IN REL-17



TNO innovation for life

relja.djapic@tno.nl, January 2021

5GSAT_ARCH: QOS WITH NTN BACKHAUL REL-17 WORKING HYPOTHESIS

TNO innovation for life

- **Goal:** Agree on basic/realistic 5GSAT_ARCH assumptions that facilitate development of a solution for *QoS with satellite backhaul* in Rel-17. (Further enhancements possible in the following Releases).
- ***QoS with satellite backhaul*: assumptions for Rel-17 5GSAT_ARCH (agreed):**
  1) Transparent satellite based 5G NTN ➔ no inter satellite links (ISLs)➔ No serial concatenation of satellite backhauling links
  2) RAN unaware of the backhauling properties (RAN does not provide *backhaul type* info)

- ***QoS with satellite backhaul:* Rel-17 hypothesis for discussion (proposal)**:
  1) Solutions should be backhauling link type agnostic (applicable to both terrestrial and NTN)
  2) Consider basic topologies: a) backhaul solely over a single satellite link (no ISLs, no CP and UP split over multiple parallel NTN links); b) allow for serial concatenation of a single satellite and an arbitrary number of terrestrial backhaul links.
  3) Dynamic backhaul latency handling due to sudden/large changes in backhaul latencies should be kept out of scope of Rel-17. (The characteristics of (satellite) backhaul links should remain within predicted boundaries such that the N3 tunnel remains unaffected.)

5GSAT_ARCH QOS WITH SATELLITE BACKHAUL: WAY FORWARD

TNO innovation for life

- **Conf-call participants are invited to propose their preferred way forward.**

- **Possible ways forward** (input for discussion)

1) Where ever possible exploit static CN PDBs (as already in the standard) to cover satellite backhaul cases.
2) Provision only the best effort QoS in case of long satellite backhaul latencies.
3) Exploit/adapt standardized dynamic CN PDB principle?

advantages: - allows dynamic distribution of PDB among CN and AN;

drawbacks: - what if backhaul latency is comparable/larger than PDB?
- could excessively reduce the AN PDB;
- CN PDB can be signaled only if smaller than the standardized value

4) Use dynamically assigned 5QIs instead of standardized 5QIs.