

From Research to Standards

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Architecting
tomorrow

NOKIA

From Research to Standards

Innovate, invent, create and drive open end-to-end network technologies and systems



Technology Scouting

- Academic conferences
- University collaboration
- Guest lectures,
- Industrial workshops
- ...

Partnerships

- Research projects
- Industry-academia collaboration
- Prototype...

Internal Research

- Demos/PoC, ...
- Technology radar
- Industry and market trend

Systems Research

- Scouting industry needs
- Business case for excellence and expansion.
- Detailed research targeting standardization

Standardization

- SDOs
- Alliances
- Fora,
- Coalitions,
- Regulatory bodies
- ...

Standards must enable Business values and Societal values

TCO reduction, Performance & resiliency, Foster Monetization

Environmental sustainability, Security Privacy and trust, Digital Inclusion

3GPP SA2

Terms of Reference (SP-210166)

The 3GPP TSG SA WG2 (SA2) is responsible for the definition, evolution, and maintenance of the overall system architecture including the assignment of functions to particular subsystems (e.g. RAN, CN, Terminal, USIM, IMS) and associated high-level functional interactions.

- Architecture and concepts. Examples are (but not limited to):
 - Roaming and non-roaming architecture
 - Network Functions and entities
 - Reference points between network entities
 - Service-based architecture and communication framework
 - Data Storage Architecture

- Control and user plane protocol stacks
- System Procedures, examples are (but not limited to):
 - Network Access control
 - Registration and connection management
 - Mobility Management, Paging, UE reachability
 - Session Management
 - Exposure framework etc.

<https://www.3gpp.org/3gpp-groups/service-system-aspects-sa/sa-wg2>

Research to Standards

Research phase:

1. Assess and learn from existing systems, technology trends, new business needs and trends.
2. Break them down to relevant problems / key issues.
3. Investigate solutions for the identified problem statements.
4. Ensure that the solutions are technically accurate, consistent and feasible.

Standards phase:

1. Determine a plan to how progress new services and functionality in 3GPP, starting from SA1, where new service requirements are defined.
2. Follow through until the solution is adopted and/or relevant problem is solved in respective WGs in 3GPP.

Best practices example for Research to Standards phase

RRC INACTIVE state – 5G research phase to standards phase

Research Phase

<https://metis-ii.5g-ppp.eu/wp-content/uploads/publications/2016/2016-05-ICC-A-novel-state-model-for-5G-radio-access-networks.pdf>

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Standards Phase

3GPP SA2 5G Study phase: TR 23.799 Snippet

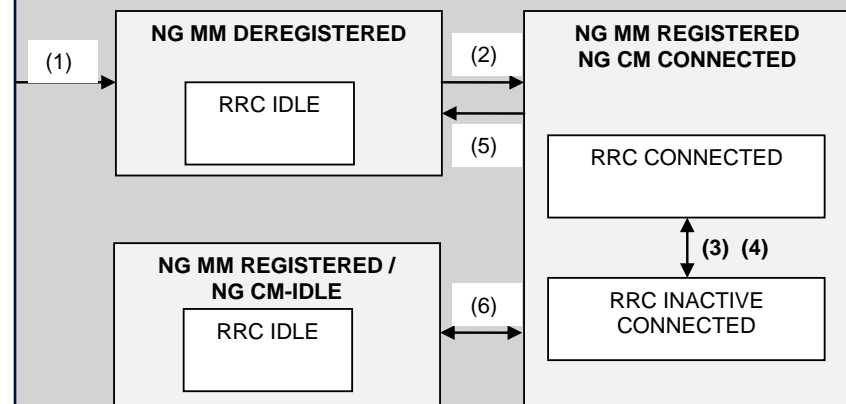


Figure 6.3.2.1-1: NG RRC/CM/MM with state transition illustrated

5G System Architecture TS 23.501 Snippet

5.3.3.2.5 CM-CONNECTED with RRC_INACTIVE state


RRC_INACTIVE state applies to NG-RAN. UE support for RRC_INACTIVE state is defined in TS 38.306 [69] for NR and TS 36.306 [70] for E-UTRA connected to 5GC.

The AMF shall provide assistance information to the NG-RAN, to assist the NG-RAN's decision whether the UE can be sent to RRC_INACTIVE state except due to some exceptional cases such as:


- PLMN (or AMF set) does not support RRC_INACTIVE;
- The UE needs to be kept in CM-CONNECTED State (e.g. for tracking).

Why Standards?

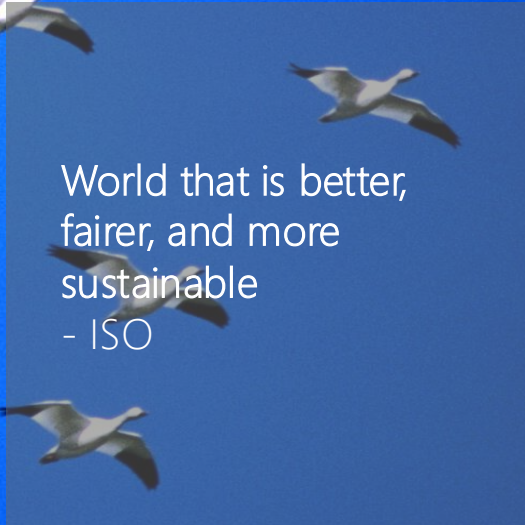
If you want to go fast, go alone; if you want to go far, go together!!!



Everyone should have access to clean energy, education and stay safe. First step is translating the #SDGs into real action with the help of International Standards.
- IEC



Will underpin the effort to build back better and help deliver our shared vision for a better world!
- ITU



World that is better, fairer, and more sustainable
- ISO

Standards is a “shared vision for a better world”

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