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| ITU logo | INTERNATIONAL TELECOMMUNICATION UNION  **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2017-2020 | | **Focus Group on Quantum Information**  **Technology for Networks** | |
| **QIT4N-I-xxx** | |
| **WG(s):** | | 1 | E-meeting, 9 – 20 August, 2021 | |
| **INPUT DOCUMENT** | | | | |
| **Source:** | | Insert source(s) | | |
| **Title:** | | Network aspects of QIT use case: Insert title of use case | | |
| **Purpose:** | | Discussion | | |
| **Contact:** | | Insert contact name Insert organization Insert country | | Tel: +xx E-mail: a@b.com |

Once the relevant highlighted sections are filled in, submit your use case to [tsbfgqit4n@itu.int](mailto:tsbfgqit4n@itu.int) .

Scope

Use cases on network aspects of quantum information technology (QIT) are invited under the following three categories:

* **QIT use cases based on quantum information network (QIN):**

QIT use cases that depend on QIN for realizing their function could be included, as for example but not exclusive to distributed quantum computing, distributed quantum sensing, quantum clock network, etc.

* **QIT use cases beneficial for classic network:**

QIT use cases that can provide additional functionality, new characteristic, or improved performance for classic ICT network could be included, as for example but not exclusive to QRNG, quantum time synchronization, quantum cryptography beyond QKD, etc.

* **QIT use cases where the network plays an intrinsic role for the QIT application:**

QIT use cases in which the QIT application is significantly defined or enhanced by the functionality provided by a QIN and/or a classical network and is beyond simple remote access of a QIT application via a classical network. Examples may include but are not limited to synchronization of quantum clocks, distributed QRNG beacons for smart contracting, etc.

**NOTE:** A QIN could be defined as any network that incorporates quantum communication technologies for the purpose of transporting quantum states.

Network aspects of QIT use case template

The use cases describe quantum technology applications used by individual, commercial, organisational or other end users.

Some notes on how to complete the form:

* Follow the guidelines and the scope
* The use case shall be described from the perspective of an end user
* The text shall be suited for end users with only marginal technical background knowledge in QIT and QINs;
* End users should be able to understand if that use case solves their problem.

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| --- | --- |
| **Content of this template:** | {use case name /Application field} |
| **Submitted by:** | {name/organisation of contributor} |
| **Date of submission:** | {date of initial submission} |
| **Problem statement:** | {describe the problem from an end user perspective} |
| **Target end users:** | {identification of end users, e.g. individual end users, organisations, administrations, companies} |
| **Application description:** | {Summary description of the use case background, application scenario and field, etc.} |
| **Motivation/Advancement:** | {describe the limitations and problems of current technical solution, why to use quantum technology, technical advantage and benefits} |
| **Technical solution:** | {provide a high-level description and a functional architecture of the quantum technology based solution} |
| **Application prospects:** | {by assessing the general cost structure, the size of the potential market, and the existence of alternative solutions (only non-quantum) that solve the same problem} |