



# Redefining Randomness

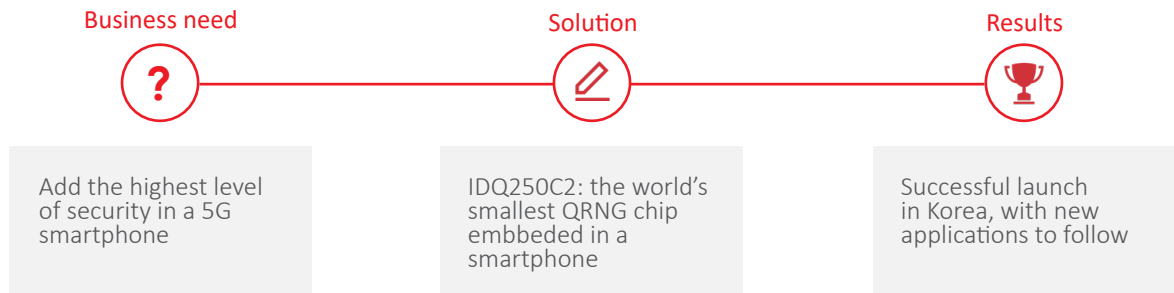
## Use Case: Mobile Phone

### Securing customers' most valuable information

#### The world's first QRNG-powered 5G smartphone



Customer: SK Telecom
Industry: Mobile Phone
Country: South Korea



#### Business need

Established in 1984, SK Telecom is the largest mobile operator in Korea with 30.16 million mobile subscribers including 22.57 million LTE subscribers. SK Telecom has led the advancement of mobile technologies not only leading innovation in the field of mobile network, but also providing IoT, media, home and platform services.

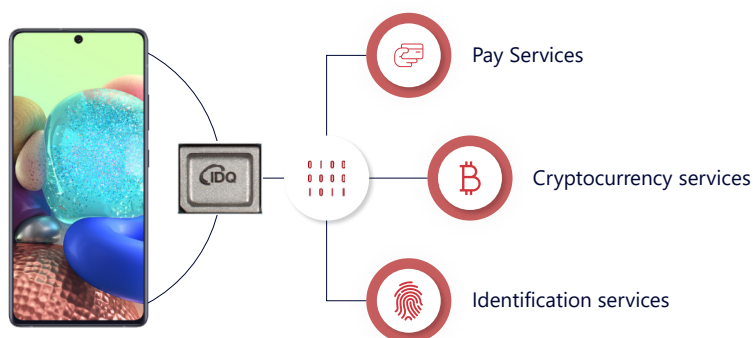
Convinced that quantum communications technologies will play a significant role in securing data and communications, both in backbone networks and at the edge, the company was looking for a solution to add the highest level of security in its new 5G smartphone. SKT wanted to offer differentiated security solutions to enable their mobile phone subscribers to use ICT services in a safe and secure manner in the hyper-connected era of 5G.

#### Solution

SKT's new 5G smartphone, the "Galaxy A Quantum" manufactured by Samsung is now equipped with the world's smallest QRNG chip measuring 2.5mm by 2.5mm produced by ID Quantique. Both companies joined forces in 2018 and have been collaborating to develop capabilities in quantum key distribution and quantum random number generators.

IDQ's Quantis QRNG chip physically integrates into the mobile phone with simple connections in a shielded package. The quantum output of the chip is used by service applications when selected by the mobile phone API. It allows smartphone holders to use selected services in the most safe and secure manner by generating true random numbers that cannot be hacked. Integrated with this quantum-enhanced cryptography, the Galaxy A Quantum allows customers to experience

strengthened security through two-factor authentication (2FA) for T-ID<sup>1</sup>; biometric authentication-based payment for SK Pay<sup>2</sup> app; and a blockchain-based mobile e-certification service named Initial.



Users of the Galaxy A Quantum will go through two-factor authentication (2FA) – i.e. ID login and quantum one-time password (OTP) authentication – when they log in with their T-IDs. By adding OTP authentication as an extra layer of protection, the new QRNG-powered smartphone ensures stronger protection for users’ online accounts.

2FA for T-ID is expected to be well utilized as T-ID login is applied to SK Telecom’s 28 services including 11st (online marketplace), T Map (mobile navigation), Wavve (OTT platform), Flo (music streaming), T Membership (subscriber membership) and Nugu (AI platform/speaker).

Customers can also experience strengthened security while making payments via the SK Pay app at offline affiliate stores such as convenience stores and restaurants. By choosing ‘SKT 5GX Quantum’ when storing their biometric authentication information in the SK Pay app, customers receive an alert that says “SK Pay is being protected by SKT 5GX Quantum” at the top of the screen, assuring that they are making payments in a safe and secure manner.

Moreover, with the application of quantum security, Initial offers a new level of security by creating an encrypted ‘quantum wallet’ when users store their personal certificates (e.g. pass, license, transcript, graduation certificate, insurance claim documents, etc.) in Initial. In September 2020, SK Telecom developed the “IIM Bank app” which was developed in conjunction with DGB Daegu Bank to allow customers to safely protect personal information when transferring money or when signing up and opening an account through ID authentication procedures.

## Results

The Galaxy A Quantum is being sold since May 2020 and is already a great success. Going forward, SK Telecom plans to expand the feature to the mobile apps of SK Pay affiliate stores.

With the aim to constantly develop and expand services based on quantum security, SK Telecom plans to open application programming interfaces (APIs) to developers through SK Open API Portal and support the development of relevant technologies to expand the ecosystem.



*ID Quantique succeeded in making the chipset in a size mountable for Galaxy A Quantum. It carries a significant meaning as it enables individual consumers to experience the benefits of quantum security technologies in their everyday lives.*

Woohyun Eom, SK Telecom

<sup>1</sup> T-ID is an integrated login ID that enables customers to use SK Telecom’s diverse services with a single ID.

<sup>2</sup> SK Pay is a simple payment service provided by 11st.