

# Trusted Connectivity Alliance -Technical Update

H1 2022



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## 01. About Trusted Connectivity Alliance

# Trusted Connectivity Alliance (TCA) is a global, non-profit industry association, working to enable trust in a connected future.





## 2. Message from the TCA Board of Directors

We are entering a new age of global connectivity.

Consumer devices are increasingly powerful. Enterprises are adapting to new ways of working. Self-driving cars have arrived. And a rapidly growing array of devices, low-cost sensors and systems are combining to form a vast industrial IoT ecosystem that is transforming supply chains, sectors such as utilities, healthcare, agriculture, and manufacturing, and approaches to sustainability.

Yet at the same time, the threat landscape is evolving rapidly with 2021 seeing a 125% increase in the number of cyberattacks globally. (Source: <u>Accenture</u>).

Put simply, this means that the need for truly trusted mobile connectivity has never been higher.

This is where TCA comes in. In 2022, TCA will remain focused on a number of key technical initiatives that enable stakeholders across connected industries to unlock the benefits of tamper resistant elements (TREs), including SIM, eSIM and integrated SIM. Key priorities include:

Driving eSIM interoperability and expanding eSIM benefits to emerging IoT market segments.

Enabling IoT security by leveraging TRE benefits.

Educating on practical deployment considerations for integrated SIM technologies.

Optimising 5G SIM technology for private networks, 5G network slicing use cases, and 5G device security.

These initiatives are driven by TCA's various working groups, which are responsible for anticipating market needs and developing associated, enabling specifications that leverage our members' unparalleled technical and industry expertise. Our working groups also engage and collaborate extensively with other associations and stakeholders to ensure that new use cases and business models can be simply and securely supported. This technical update marks the first of our quarterly reports providing insight into the activities of each working group and demonstrating how they are shaping the future of trusted connectivity.

#### On behalf of the TCA Board





# 3. TCA Working Group Updates and Roadmaps

#### Market Monitoring Expert Group

TCA's Market Monitoring Expert Group supports the collation and analysis of TCA member shipment data to provide industry-leading insight.

#### **Update and Roadmap**

Market monitoring data published by TCA in April revealed that global adoption of eSIM technology continued to build in 2021, with eSIM profile transactions rising by 54% as uptake of eSIM functionality increased across consumer, enterprise and machine-to-machine (M2M) verticals. eSIM shipment volumes collectively reported by TCA members also increased 9% year-on-year to reach 337 million units. This momentum is anticipated to continue, and TCA forecasts that the total available market for eSIMs will see double-digit growth in 2022.

TCA member data also showed substantial increases in 5G SIM shipments in 2021, building on advances made in 2020, which marked the first year of widespread 5G SIM deployments.

The market for traditional SIM form factors remains significant, but volumes have been affected by the ongoing global chip shortage. TCA estimates that the total available market for SIM was 4.35 billion units in 2021.

For further insights, watch <u>TCA's webinar</u> exploring key trends across the eSIM and 5G SIM market and download the <u>TCA's Industry Insights infographic.</u>

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By being TCA members, we can be part of an active forum dedicated to the connectivity ecosystem allowing us to exchange with a large number of stakeholders, see the trends, and exchange data on shipments and forecasts.

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#### eSIM Working Group



Chair: Denis Praca, Thales.

Chair (Test Group): Andras Talas, COMPRION.

The mission of the eSIM Working Group is to expand eSIM functionality and promote consistency across different use case implementations. It does this by enhancing the <u>TCA's eUICC Profile Package Technical</u> <u>Specification</u>, and associated test specification, to address industry feedback and support emerging trends.

Used in every eSIM deployed in the field, the eUICC Profile Package Specification standardises the format used for remote loading of subscriptions onto eSIMs across deployed devices. This enables mobile network operators (MNOs) to load interoperable connectivity profiles in an eSIM, regardless of the SIM vendor.

The group works in close collaboration with other key industry stakeholders, including GSMA's eSIM WGs 2&7, GlobalPlatform, 3GPP and ETSI.

#### **Technical Update and Roadmap**

The group has continued work to enhance the eUICC Profile Package Technical Specification and published Version 3.2 in May. This latest update includes support for GlobalPlatform's Secure Channel Protocol (SCP) '11' and Domain Name Server (DNS) Configuration to ensure proper onboarding, and will be referenced in GSMA's upcoming SGP.22 Version 3.0 specification. A supporting test specification – eUICC Profile Package Test Specification Version 3.2 – is also being developed and will published by TCA in Q2 / Q3.

Looking ahead, a key focus is the development of Version 3.3 of the eUICC Profile Package Technical Specification. This version will define a minimum 'lightweight' profile to address the challenge of provisioning network-constrained devices, and will make it possible to provision a profile even when bandwidth is very limited. The aim is for the specification to be referenced in GSMA's planned SGP.32 eSIM for IoT Technical Specification, which is expected to be published in December.

#### Remote SIM Provisioning (RSP) for IoT Working Group



Chair: Saïd Gharout, Kigen

The IoT RSP Working Group was established with a specific mission to support the development of a scalable RSP model for the IoT. It acts as a liaison between GSMA and TCA to converge views and help guide the development of eSIM specifications to address key challenges presented by IoT use-cases, which include high deployment costs, low interoperability, the growth of network, and user-interface (UI) constrained as well as power/network constrained devices.

#### **Technical Update and Roadmap**

The group contributed extensively to GSMA's eSIM WG7 activities to shape the development of <u>GSMA's</u>. <u>SGP31 eSIM IoT Architecture and Requirements</u>. The document, which was published in April, specifies an architecture and requirements for remote provisioning of eUICCs in network constrained and/ or UI constrained IoT devices.

The group is now helping drive the development of the associated SGP.32 eSIM for IoT Technical Specification. This activity includes close coordination with TCA's eSIM WG on the eUICC Profile Package Technical Specification Version 3.3 to define a minimum profile.





#### **IoT Security Application Working Group**



Chair: Jean-Francois Gros, Thales

The role of the TCA's IoT Security Application Working Group is to extend the security capabilities of the SIM to overcome IoT market fragmentation. Key initiatives progressed by the group include IoT SAFE (IoT SIM Applet For Secure End-2-End Communication), launched in collaboration with GSMA, which specifies a common API to secure IoT data communications between device applications and the cloud.

#### IoT Security Applet **Working Group**



Chair: Tomasz Wozniak, IDEMIA

The IoT Security Applet Working Group was established in parallel to define test specifications for the IoT SAFE Applet to support market adoption and evolution of the IoT SAFE initiative. The group works in collaboration with the GSMA's IoT SAFE group to provide feedback and guidance on the test procedures required to support new and emerging use cases.

#### **Technical Update and Roadmap**

The IoT Security Applet Working Group is progressing work with GSMA on the IoT Security Applet Interface Test Specification, which aims to support and enhance the IoT SAFE Specifications for operators, device management platform providers and device manufacturers. The test specification addresses emerging use-cases, including Transport Layer Security (TLS) offloading and automated device onboarding. The aim is to publish the specification in Q3.

#### Secured Applications for Mobile (SAM) Working Group



Chair: Alejandro Pulido, Valid

The group is dedicated to guiding and supporting the development of GSMA's SAM Specifications – which address the convergence of eUICC and embedded Secure Element (SE) applications on the same hardware - to ensure the SAM framework will be open, interoperable, secure, and scalable.

#### **Technical Update and Roadmap**

As a first step, the Working Group is finalising a position paper that will provide an overview of SAM technology and its potential to increase the adoption of eSIM for various use-cases, including banking, payments, transport and ID. Following the publication of the paper, the group will explore opportunities for providing input to GSMA to support the development of Version 2.0 of the SAM Requirements Specification.



# Chair: Michele Scarlatella, Consultant

5G Working Group

TCA is committed to promoting the highest levels of security, privacy and functionality in 5G networks, and helping stakeholders across the mobile industry unlock the full potential of 5G as future use-cases and possibilities unfold.

To achieve this, the TCA has established a 5G Working Group to evolve and optimise 5G SIM technology to enhance 5G network services. A core objective for the group is enhancing the TCA 'Recommended 5G SIM' definition, which helps operators maximise their investments in core 5G network infrastructure by outlining the optimal technical features required by SIM technology for MNOs to leverage opportunities presented by 5G networks and address challenges posed by 5G migration.

#### **Technical Update and Roadmap**

In 2021, TCA enhanced its Recommended 5G SIM definition to respond to powerful new use cases introduced by 3GPP's Release 16 Specifications for 5G Phase 2. Key new SIM features included additional subscriber privacy protections, private network access across enterprises and industry verticals, and cellular vehicle-to-everything (V2X) communication.

The group is now updating the Recommended 5G SIM definition, and associated collateral, to align with new features introduced by 3GPP Release 17 and explain the basis for the 5G security ecosystem. This includes how 5G SIM enhances security for MNO third-party verticals, and the benefits for new types of services, including IoT, industrial, automotive and satellite. The group plans to publish the documentation, and deliver a webinar, following the publication of 3GPP Release 17, which is expected in September 2022.

In parallel, the group is addressing the fast-growing Mobile Private Networks market. It has identified MNOs, network equipment providers, cloud providers, and Open-RAN equipment providers as key ecosystem players, and is examining how 5G SIM benefits can address their different requirements and deployment models. The group is planning to publish a paper outlining key considerations for the growing deployment of 5G private networks, with the possibility of delivering a webinar later in the year.

### Integrated SIM Working Group

Chair: Stephane Schirar, Thales

The Integrated SIM Working Group's objective is to promote consistency across integrated SIM technologies by providing an overview of the integrated SIM concept, identifying standardisation activity in progress, offering an impact analysis on the introduction of integrated SIM technology, and exploring opportunities and use cases that can be unlocked.

#### **Technical Update and Roadmap**

In 2021, the group published a paper stating that GSMA's integrated eUICC solution offers the most potential to meet increasing market demand for integrated SIM deployments and ensures that integrated SIM technologies have the same security and interoperability levels as their embedded and removable SIM counterparts.

In 2022, the group published a new paper -'Integrated SIM: A Practical Approach' - that builds on this advocacy for the GSMA's integrated eUICC initiative and provides more detail to help SIM vendors, SoC makers, mobile operators, device manufacturers, service providers and test tool developers deploy integrated SIM solutions. This detail includes a summary of architectural approaches to integrated SIM design that enable the delivery of advanced performance without compromising security, as well as an analysis of the subsequent impact of integration across the mobile ecosystem and associated value chains.

The paper also offers a comprehensive overview of the GSMA compliance process for integrated eUICC solutions, demonstrating the significant benefits unlocked by the synergies with the existing, proven eSIM technical infrastructure, along with a description of conformance testing requirements, and advocating standardisation for optimal security and interoperability benefits.

Alongside this effort, on Wednesday 13 July 2022 the group will deliver a webinar - Integrated SIM: An Evolution in Trusted Connectivity - to provide practical guidance and technical insight to support the increased development of integrated SIM solutions. Registration is open for all interested parties here.

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#### Interoperability Working Group

Chair: Amedeo Veneroso, ST

The Interoperability Working Group guides the future evolution of the SIM ecosystem through solutions that achieve interoperability among stakeholders. The group works to create, enhance and promote guidelines and software development tools that reduce complexity and maintain field-proven interoperability among different SIM implementations.

The group was originally established to focus on Java Card implementations, but the objectives of the group have expanded over the years to address the growing complexity of the mobile ecosystem and the need for seamless service delivery across multiple networks and devices.

#### **Technical Update and Roadmap**

The group is continuing work to update the TCALoader (formerly CAT Loader) to help mobile application developers further utilise SIM products. Released later this year, the new tool will include support for 3GPP Release 17 and additional enhancements to boost the deployment of value-added services on smart cards.

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### 4. Learn More and Get Involved

# For more information, all technical and educational resources are available for free download from the TCA website: www.trustedconnectivityalliance.org

You can also stay up to date by following TCA on Twitter, LinkedIn and YouTube.

For monthly updates, subscribe to the TCA newsletter.

TCA also encourages organisations to actively participate in developing, defining and influencing the future technologies, standards and services that will impact our industries and sectors.

To find out more about joining TCA, contact: info@trustedconnectivityalliance.org

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TCA is a well-established and renowned industry organisation bringing innovative and leading expertise to drive the sustained growth of a connected society. G+D is a founding member, and we are committed to supporting the association across all its different activities.

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As a founding member, IDEMIA has promoted and participated in TCA activities since day one. It gives us the opportunity to collaborate with likeminded individuals and companies to promote interoperability and standards and advocate the latest innovations and trends. In recent years, our membership and TCA's role has become increasingly important.

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Bodies such as TCA are an essential component, supporting collaboration and providing a dedicated forum for players to work together to develop specifications and provide the technical guidance to build confidence for the mobile ecosystem.



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