simulity

SIMULITY PRODUCTS & SERVICES OVERVIEW

About Simulity

Simulity is an established software company specialising in embedded communications software and related server-based applications. We connect millions of devices every month across the globe and are at the forefront of enabling the Internet of Things. Our innovative and disruptive products have been designed with care to ensure the highest level of quality, extreme simplicity yet with no compromise on security, performance or flexibility.

www.simulity.com

Proud Members Of:

GSMA m2m alliance enabling digital transformation GLOBALPLATFORM® MEMBER IoT Security Foundation WE'RE CONNECTED LoRa Alliance Member

Embedded

Simulity embedded products are available in a number of manifestations, on various architectures from well known manufacturers. We are experts in the logistics and supply chain management for UICCs, with decades of experience supplying markets worldwide. We have a number of products to meet your needs, with tiny footprints that make economic sense.

We support all formats common to the UICC market. With the above, we are very flexible while providing tailored deliverables such as pluggable, packaging, artwork, engraving, scratch cards and more. Our products are produced in secure facilities that have been certified by the GSM Association Security Accreditation Scheme (GSMA SAS).

Core Products

Simba

Simba, a complete and mature product that has been natively developed for optimum performance and footprint. Simba is available on a number of chips, with flexible configuration and extensibility. Simba is tailored for low-end SIM and Universal SIM ((U)SIM) products for the most price-sensitive markets. This product is ideal to meet the requirements of mobile operators wanting to roll out cost-effective (U)SIM products with scoped value-added services. These products are still compliant with all relevant SIM and (U)SIM standards and can embed a wide range of applications, such as SimbaTalk, WIB or S@T browsers (see below for details).

Features at a glance:

- Smallest code size
- SIM, (U)SIM & RUIM
- Native Dynamic Toolkit via SimbaTalk, WIB and S@T

Javelin

Javelin builds on Simba, adding the support of both Java Card™ and GlobalPlatform. For interoperable application execution and downloading on our embedded platforms. Javelin brings more power to deployments. All functionalities, applications and configurations supported within Simba are also supported in Javelin retaining the key advantage of its code compactness making it available on chips originally designed for the low-cost native SIM products (e.g. with only 132KB of Flash memory). However, no compromises have been made on performance and security. Javelin is a multi-purpose system, extremely configurable, strongly robust (and field-proven with hundreds of millions of pieces deployed throughout the world to date).

Features at a glance:

- Smallest code size
- SIM, (U)SIM, (U)SIM LTE & CSIM
- Native Dynamic Toolkit via SimbaTalk, WIB and S@T
- Native & Java Card™ Dynamic Toolkit via SimbaTalk, WIB & S@T
- EAP Authentication
- BIP/CAT-TP (UDP)
- RAM over HTTPS (TCP)

Pegasus

Pegasus is Simulity's eUICC product, it builds on both Javelin and Simba and is designed according to the GSMA Remote Provisioning Architecture for Embedded UICC; Pegasus is the Simulity product manifestation of the eUICC. Pegasus is capable of securely storing many electrical profiles each within a separate Issuer Security Domain (ISD) structure for clear separation of data and roles.

Pegasus eUICC, when used in conjunction with a standardised remote provisioning server such as Pegasus Enterprise, allows for the eUICC ISD-R (Root) to be associated with an SM-SR (server side component for secure routing), and each profiles ISD-P (Profile) be associated with an SM-DP (server side component for data preparation). This ensures that stakeholders are independent and a security level of a standard SIM card is ascertained while greater flexibility is also achieved.

A Policy Rules Enforcer is used as an on-card system to ensure that policy rules dictating the routing (POL2) and profile life cycle (POL1) are honored. This means that the MNO can ensure that contractual agreements are maintained while device manufacturers of embedded eUICC are still capable of the flexibility required by the market.

The use of separate ISDs for separation of data and roles also introduces differing layers of cryptography to secure data between the ISD-P and SM-DP, and the ISD-R and SM-SR, respectively. This ensures that data from a given SM-DP or ISD-P cannot be snooped on by the facilitating ISD-R and SM-SR, a key point to ensure a high level of security within the system.

Core Embedded Applications

All embedded applications have been developed in-house by Simulity. They have been rigorously tested against interoperability and performance test-cases. Simulity have additionally tested all products in the market through usage. Standard applications are compliant to open industry specifications from bodies such as ISO, ETSI, 3GPP and GlobalPlatform.

SIM & STK

The Subscriber Identity Module (SIM) and the SIM Toolkit (STK) applications provide the foundations for operational usage within GSM mobile networks, globally.

Our products embedding the SIM application are compatible with all SIM standards: GSM 11.11 (Rel. 99) and the corresponding evolution to 3GPP TS 51.011 (Rel. 5). Our products embedding the SIM Toolkit application are also compliant with all SIM Application Toolkit standards: GSM 11.14 (Rel. 99) and the corresponding evolution to 3GPP TS 51.014 (Rel. 5).

(U)SIM & CAT

The Universal Subscriber Identity Module ((U)SIM) and the Card Application Toolkit (CAT) applications are the natural industry evolution, based on agreed requirements from the telecommunications industry stakeholders.

Our products embedding the (U)SIM application are compatible with 3GPP TS 31.101 (Rel. 11) and 31.102 (Rel. 12), with additional support for more recent releases from the ETSI Card Platform such as ETSI TS 102.220 and ETSI TS 102.221 including the addition of administrative commands from ETSI TS 102.222.

ISIM

The IP Multimedia Services Identity Module (ISIM) application allows for parameters identifying and authenticating the subscriber to the IP Multimedia System (IMS) to be securely stored and configured. Among data present within ISIM is the IP Multimedia Private Identity (IMPI), home operator domain name and IP Multimedia Public Identities (IMPUs) along with long-term secrets used to authenticate and calculate cipher keys.

Our products embedding the ISIM application are compatible with 3GPP TS 31.103 (Rel. 13).

HPSIM

The Hosting Party Subscription Identity Module (HPSIM) application allows for parameters identifying and authenticating the subscriber to H(e)NB Hosting Party. It specifies the identification of the Hosting Party, the security mechanism (authentication based on EAP methods), the initial provisioning and the initialisation procedures.

Our products embedding the HPSIM application are compatible with 3GPP TS 31.104 (Rel. 13).

Value Added Service Applications

WIB

The Wireless Internet Browser (WIB) is a technology originally developed by SmartTrust to provide a browsing experience driven by the SIM. Historically a technology developed by MNO spin-off Sonera, today is a subsidiary of the German smart card vendor Giesecke & Devrient (G&D). Simulity as a vendor, has developed the WIB application in a native environment and has subsequently been accredited to provide cards equipped with the embedded WIB browser. The implementation has been certified and approved by SmartTrust.

Our products embedding the WIB application are compatible with the SmartTrust WIB 1.3 specifications.

SmartTrust in turn provide the delivery platform (server application and gateway) along with service and support to define the operator's dynamic SIM toolkit menu.

S@T

The SIM Alliance Toolkit (S@T) is a technology developed and standardised by the SIMalliance consortia. SIMalliance is concerned with the support of creation, deployment and management of secure telecommunication services. Simulity have developed both Native and Java Card™ implementations of the S@T browser on the SIM, allowing for an interoperable approach to the development of dynamic toolkit menus and services. Our implementations have been rigorously tested against open standards and matured through industry use.

Our products embedding the S@T application are compatible with the SIMalliance S@T v4.0.0 (Rel. 2009).

Simulity additionally have developed a SIMalliance encoder/decoder and gateway.

CallerXchange (OnePIN)

CallerXchange is a technology developed by OnePIN, a private company headquartered in the USA. CallerXchange is an application that transforms phone calls into social connections (prompting users to share their contact details after phone calls) and Simulity have developed a native implementation of the technology. Simulity have subsequently been accredited to provide (U)SIM cards equipped with the embedded CallerXchange applet, verified by OnePIN.

OnePIN in turn handle the promotion of the solution to MNO's worldwide.

LiveScreen (Celltick)

LiveScreen is a technology developed by Celltick, a private company headquartered in Israel. LiveScreen is an application using the cell broadcast technology to reach millions of users simultaneously with location-based promotions. Simulity have developed a native implementation of the technology. Simulity have subsequently been accredited to provide (U)SIM cards equipped with the embedded LiveScreen applet, verified by Celltick.

Celltick in turn provide push solutions based on SMS, USSD, WAP and voice and a GUI to manage marketing campaigns to subscribers.

SimbaTalk

SimbaTalk is a technology developed by Simulity. SimbaTalk is a native application which has a powerful and compact bytecode interpreter and generator allowing for the implementation of complex applications such as Multi-IMSI is to be developed remotely, and supplied to a native environment saving on memory footprints. The SimbaTalk application is complementary to our Software Development Kit (SDK) allowing for a graphical interface to be utilised to generate the XML descriptions of the menus. The resultant bytecode transformation of the XML can be securely and remotely loaded to the subscriber SIM via over-the-air (OTA) technologies.

Multi-IMSI

Multi-IMSI is a Java Card™ applet developed by Simulity. Multi-IMSI allows for the SIMs file system and configuration to be manipulated, according to a number of processes, conditions and rules. For example, the subscription settings may be altered based on location, over-the-air updates or user-defined control. Multi-IMSI is a popular and configurable application, which may be fine-grained and altered according to the specific needs of the customer.

IMEI Tracking

IMEI Tracking is a Java Card™ applet developed by Simulity. IMEI Tracking is used in place of device management systems, allowing for information about handsets to be tracked and maintained by the network operator. IMEI Tracking is particularly useful where expensive device tracking systems may be prohibitive to cost targets, and in order to prevent stolen handsets from operating on the mobile network.

Roaming Callback

Roaming Callback is a Java Card™ applet developed by Simulity. Roaming Callback allows for international calls to be setup with greater cost effectiveness to the subscriber, as a value added service. The Roaming Callback applet blocks an international call (while roaming) and subsequently sends a USSD code with both the dialed number and caller numbers to a server. The server then sets up the connection by calling both the subscriber and destination in a means to reduce costs by selecting more cost-effective calling routes.

Phonebook Backup

Phonebook Backup is a Java Card™ applet developed by Simulity. Phonebook Backup allows for the subscribers SIM Phonebook files to be backed up to a central server either on request, trigger or periodically. As well as backup, the subscriber's phonebook may be restored. As over-the-air security is applied to all data between the SIM card and the server, security and integrity is guaranteed. Phonebook Backup is an ideal value added service to add to a network operator's arsenal.

STK Menu Development

Custom STK menu development can be undertaken by Simulity as either bespoke Java Card™ applet development, S@T Markup Language 'decks' or SimbaTalk via our SimbaTalk SDK product.

Desktop Tools

Our desktop tools are built in-house alongside our products providing our customers with fine-grained control over the development, testing and qualification of products going to market.

ProfileEditor

Profile Editor is a multi-purpose tool designed for the creation, editing and configuration of the electrical profile. It also bears a multitude of other capabilities such as personalisation, image generation (snapshot of the UICC configuration), script execution (of an amalgamation of market scripting standards) and much more. Profile Editor has been developed alongside our embedded products and is an ideal candidate to fully utilise the features and applications provided by Simulity.

- Electrical Profile Definition
- Network and Security Configuration
- Installation of custom modules and Applets
- Use of Templates (strictly following ETSI specifications)
- APDU Script Execution
- Personalisation
- Image Generation
- Dynamic Data Management
- PDF Document Generation

Explorer

Explorer is a tool used to scan any network operator owned SIM or (U)SIM card*. The scanned file system is shown in an easy to understand user interface, and includes information such as access conditions, file sizes and file content. The explored file system can then be exported to Profile Editor saving time, potential mistakes and ultimately money in the development of an electrical profile for a new target.

**Explorer requires authentication information such as PIN and ADM codes to complete a full in-depth scan.*

- Template Scanning including customization (strictly following ETSI specifications)
- Smart Scanning (including in-depth scans…)
- File and Applet Management
- Security Code Management
- Export of File System to Profile Editor or Auditor

Interceptor

Interceptor is a product that allows for APDUs between the device and UICC to be captured, analysed and diagnosed to effectively troubleshoot issues. The Interceptor communicates to our in-house tracing device, which is equipped with a number of probes capable of placement into a wide range of devices.

- Custom hardware device with user-friendly UI
- Support for all types of UICC; SIM, (U)SIM, ISIM and form factors (2FF, 3FF, 4FF)
- Support for all access technologies; 2G, 3G & 4G LTE
- Detailed interpretation of APDU exchange for quick and efficient troubleshooting
- Filtering of operations to be traced (file-related commands, network-authentication related etc.)

Scriptrunner

Script Runner is a product that allows for the execution, verification and modification of APDU scripts. Scripts can be loaded into the tool, formatted and validated, and then executed onto the card. A full APDU log shows all interaction with the card. This allows the user to run APDU scripts written in various formats common to the telecommunications industry.

- Execution of APDU Scripts
- APDU Log
- Script Modification
- Execution of Highlighted Commands Only
- Script Open/Save
- Quick Format Script (line length, tabbing, etc.)

✓Auditor

Auditor is a product that allows the user to check that a given (U)SIM fully complies with a profile description, given as an input. Auditor runs a suite of fully automated electrical profile tests, and is a key tool to verify that (U)SIM cards are as expected prior to production. The tool provides an extensive report in both XML and Excel format allowing for complete review of an electrical profile before production, saving potential mistakes and time.

- Tests to ensure that files are present
- Tests to sanitize file access conditions & verification codes
- Tests to sanitize file content
- Tests to ensure memory is validated and good for use
- Tests to ensure endurance is valid for the cards lifecycle
- Tests to validate Remote Applet Management (RAM)
- Tests to validate Remote File Management (RFM)
- Tests to ensure security conditions are met (validate MSL's)
- Import file system from Profile Editor or Explorer

Enterprise

Simulity provide a number of enterprise grade products for subscriber management and remote provisioning.

Pegasus

As many machine-to-machine devices will be deeply embedded, inaccessible or difficult to reach, a new solution is required for the purpose of provisioning a subscription. Since 2011, there have been talks of an embedded SIM (or UICC) to accommodate the over-the-air provisioning of a subscription, with applications serving the purpose of electrical profile manipulation to leverage on the growing interest for Multi-IMSI solutions.

The requirement to define a mechanism for over-the-air remote provisioning of machine-to-machine devices with the necessary credentials to gain mobile network access was realised in December 2013, with the advent of the Embedded SIM Remote Provisioning Architecture being released by the GSM Association (GSMA).

The architecture stipulates that the same or similar authentication protocols as 'today' (at the time of writing, 2012) will be used. The MNO responds to requests to change subscription (contract) from one MNO A to a different MNO B, without having physical access to the Embedded UICC in the device in question.

A number of standardised SOAP contracts ensure that each independent server component can communicate (SM-SR/SM-DP), while the typical standardisation of secure channel protocols (SCP) ensure that eUICCs may communicate to server side components over-the-air.

A comprehensive testing and acceptance specification, agreed by consortia, has been agreed to ensure that interoperability will be realised with reduced friction for the benefit of the market. Simulity are committed to a flexible yet interoperable deliverable to ensure that our customers have the best system available for use.

Features at a glance:

- Profile Management, as mandated by the GSMA
- Standarized web services, with complementary extensions.
- High-availability deployment scenarios

Seqaura

To ensure that smart cards file systems, applications and configurations can be securely managed post-issuance, Seqaura has been developed to manage SIM, (U)SIM and (U)SIM LTE file systems using Remote File Management commands. Additionally, Remote Applet Management is supported. Seqaura can be operated via a user-friendly HTML5 user interface, to manage campaigns. Additionally, a comprehensive RESTFul API can be used for any custom development, or for scenarios and trigger based operations.

Seqaura is also a requirement within the remote provisioning architecture. As an over-the-air system is required for the management of the MNO-SD, and most notably, the Policy Rules to ensure that the MNO contract can be maintained within the eUICC by the Policy Rules Enforcer. Due to this, Seqaura is tightly integrated with Pegasus for an optimum user experience.

Seqaura also boasts a S@T gateway, encoder and decoder. This allows for decks to be remotely loaded for a dynamic STK experience, and for S@T Pull and Push scenarios. Dynamic toolkit allows for the end user to remotely call services while retaining the presentation qualities of GSM Phase 2+ SIM Toolkit applications. This is beneficial as end-to-end security can be applied to all messages / responses allowing for secure, yet feature rich applications to be realised. The dynamic toolkit is also beneficial for post-issuance deployments of dynamic services. While the markup language used by the dynamic toolkit is relatively simple, it is also extremely powerful. Complex services such as banking and Facebook have been implemented within the dynamic toolkit, bringing feature-rich value added services to subscribers with no internet connectivity.

Features at a glance:

- Immediate Action, Error Action Remote APDU Formats.
- File Management commands as described in ETSI TS 102.226
- Application Management commands as described in ETSI TS 102.226 and GPC_SPE_034.
- Comprehensive RESTFul API

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