

# INVITATION FOR BIDS FOR

# SOFTWARE DESIGN, DEVELOPMENT, REVAMP AND MAINTENANCE OF THE CORPORATE MOBILE APP.

AT

SRILANKAN AIRLINES

**REFERENCE NO: CPIT/ICB 11/2020** 

CHAIRMAN, ENTERPRISE PROCUREMENT COMMITTEE, SRILANKAN AIRLINES LIMITED, COMMERCIAL PROCUREMNT DEPARTMENT (IT PROCUREMENT), AIRLINE CENTRE, BANDARANAIKE INTERNATIONAL AIRPORT, KATUNAYAKE, SRI LANKA. Dear Sir/Madam,

IFB NO: CPIT/ICB 11/2020

# INVITATION FOR BIDS FOR SOFTWARE DESIGN, DEVELOPMENT, REVAMP AND MAINATATNCE OF THE CORPORATE MOBILE APP. AT SRILANKAN AIRLINES.

SriLankan Airlines hereby invites tenders for Software Design, Development, Revamp and Maintenance of the Corporate Mobile App. at SriLankan Airlines. The bid document is attached herewith.

**Bid** should be submitted in a **sealed envelope** with the IFB number clearly marked on the top left corner of each envelope addressed to **Senior Manager Commercial Procurement**, **SriLankan Airlines Limited**, **Airline Centre**, **Bandaranaike International Airport**, **Katunayake**, **Sri Lanka** by 11.00a.m. (Sri Lankan time: GMT +0530) on 03 November 2020.

The Bid Acknowledgement form attached to the document must be completed and returned by fax to +94 (0) 19733 5218 or e-mail to tharaka.hindurangalage@srilankan.com and sarath.jayathunga@srilankan.com

Any inquiry/clarification about the Tender should be e-mailed to <u>tharaka.hindurangalage@srilankan.com</u> and <u>sarath.jayathunga@srilankan.com</u> to reach on or before 12 October 2020.

**Bids** will be opened at 11.15 a.m. (Sri Lankan time: GMT +0530) on 03 November 2020 at SriLankan Airlines, Airline Centre, BIA, Katunayake, Sri Lanka. Kindly note that 01 representative per bidding company is permitted to be present at the tender opening. Please contact any of the above, well in advance for the arrangement of Security clearance.

Yours Faithfully,

Chairman of Enterprise Procurement Committee, Ministry of Tourism and Aviation, On behalf of SriLankan Airlines Limited

Section I. Instructions to Bidders (ITB)			
	A:General		
1. Scope of Bid	1.1 The Purchaser named in the Data Sheet invites you to submit bids for the supply of Service/solution as specified in Section III - Schedule of Requirements for use at SriLankan Airlines Ltd.		
	Upon receipt of this invitation you are requested to acknowledge the receipt of this invitation and your intention to submit a bid.		
	B:Contents of Documents		
2. Contents of Documents	<ul><li>2.1The documents consist of the Sections indicated below.</li><li>Section I. Instructions to Bidders</li></ul>		
	Section II. Data Sheet		
	Section III. Schedule of Requirements		
	Sections IV. Bids Submission Form		
	Section V. General Conditions		
	• Annexure A: Technical/General Specifications & Compliance form		
	Annexure B: Price schedule format		
	Annexure C: Bid Security Declaration Form		
	Annexure D: Performance Security Form		
	Annexure E: Clientele Information Form		
	Annexure F: Sample Contract Agreement		
	Annexure G: Bid Acknowledgement Form		
	Annexure H: Vendor Information Form		
	C: Preparation of Bids		
3.Documents Comprising your Bid	<ul> <li>3.1 The Bid should comprise the following mandatory documents:</li> <li>Sections IV - Bid Submission Form.</li> </ul>		
	• Annexure A : Technical/General Specifications & Compliance sheet		
	Annexure B : Price Schedule Form		
	Annexure C : Bid Security Declaration Form		
	Annexure E : Clientele Information Form		
	• Audited financial statements for the last 03 years (Clause 20)		

	Section I.	Instructions	to	Bidders	(ITB)
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4. Bid Submission Form and Technical/ General Specifications & Compliance form	<ul><li>4.1 The Bidder shall submit the Bids Submission Form using the form furnished in Section IV. This form must be completed without any alterations to its format, and no substitutes shall be accepted.</li><li>All blank spaces shall be filled in with the information requested.</li></ul>
5. Prices	5.1 Unless stated in Data Sheet, all items must be priced separately in the Price Schedule Form at Annexure B.
	5.2 The price to be quoted in the Bids Submission Form shall be the total price of the Bids.
	5.3 Prices quoted by the bidder shall be fixed during the period specified in ITB clause 8.1 and not subject to variation on any account. A Bid submitted with an adjustable price shall be treated as non-responsive and may be rejected.
6. Currency	6.1 The bidders shall quote in USD or Sri Lankan Rupees (LKR).
7.Documents to Establish the Conformity of the Services	7.1 The Bidder shall submit an <b>original</b> certificate from the proprietor to demonstrate that it has been duly authorized by the proprietor to supply this Service/solution in Sri Lanka.
8.Period of Validity of bids	8.1 Bids shall remain valid for a period of one hundred eighty (180) days after the bids submission deadline date. If the full validity period is not properly indicated, SriLankan airlines reserves the right to obtain re-confirmation from the bidder that the Bid is valid until the date specified above.
	8.2 In exceptional circumstances, prior to the expiration of the bid validity date, Sri Lankan Airlines may request bidders to extend the period of validity of their bids. The request and the responses shall be made in writing.
9.Bid Security Declaration	9.1 The bidder shall furnish as a part of its bid, a Bid-securing Declaration, using the Bid-securing Declaration form included in Annexure C (Mandatory).
	9.2 Any bid not accompanied by a substantially responsive Bid securing Declaration in accordance with 1TB Sub-clause 8.1, Shall be rejected by Sri Lankan Airlines as non-responsive.
	9.3 Bid Securing Declaration may be executed:
	<ul> <li>(a) If a Bidder withdraw its bids during the period of Bid validity specified by the Bidder on the Bid Submission from, except as provided in 1TB Sub-Clause 8.2 or</li> </ul>
	(b) If a Bidder does not agree to correctable of arithmetical errors in pursuant to 1TB Sub-Clause 15.3
	(c) If the successful Bidder fails to :
	i) Sign the contract in accordance security with 1TB Sub-Clause 23.3;
	(ii) Furnish a performance Security in accordance with 1TB Clause 24;

10.Format and Signing of Bids	10.1 The bids shall be typed or written in indelible ink and shall be signed by person duly authorized to sign on behalf of the Bidder. Please ensure a documents are duly signed and stamped in the given area when forwarding
D:	I Submission and Opening of Bids
D: 11. Submission of Bids	<ul> <li>Submission and Opening of Bids</li> <li>11.1 Bidders shall submit their bids by registered post, courier or by hand ir a sealed envelope.</li> <li>11.2 The sealed envelope shall bear the specific identification of this Bid exercise as indicated follows.</li> <li>"Provisioning for Software Design, Development, Revamp and Maintenance of the Corporate Mobile App. (CPIT/ICB 11/2020)"</li> <li>11.3 The bidder shall submit the proposals in the price schedule forms attached at Annexure B.</li> <li>11.4 Completed Technical (un-priced) and Financial proposal should be submitted in two separate sealed envelopes with the tender reference no. CPIT/ICB 11/2020 and the Bidding Company's name and the type of proposa (Technical or Financial) clearly marked on the top left corner of the envelope. Also a soft copy of the Technical proposal including all brochures &amp; supporting documents should be submitted in the form of a CD/DVD/Per Drive, along with the printed Technical proposal.</li> <li>11.5 If the Bidder wishes to hand deliver the Bids, please contact SriLankar Airlines personnel well in advance, for the arrangement of security clearance. Refer section II, Data Sheet, Clouse 16.2 for contact details. Please provide the following details of the participants for the Bid opening, through email: tharaka.hindurangalage@srilankan.com by 8.30a.m. on 07 November 2020 Sri Lankan time GMT +5:30 Time Zone) in order to organize the Security passes to enter SriLankan premises: <ol> <li>Company Name:</li> <li>Name/NIC No of the participants: (Maximum 01 participant)</li> <li>Driver's Name /NIC No (if any):</li> <li>Details of the vehicle (if any):</li> </ol> </li> <li>Details of Brand/Model, Serial number of any electronic equipment such as Laptops etc.</li> </ul>

12.Deadline for Submission of Bids	12.1Bids must be received by the Purchaser to the address set out in Section II, "Data Sheet", and no later than the date and time as specified in the Data Sheet.
13.Late Bids	13.1 The Purchaser shall reject any bids that arrives after the deadline for submission of bids in accordance with ITS Clause 11.1 above.
14.Opening of Bids	14.1 The Purchaser shall conduct the opening of quotation in the Presence of the Suppliers at the address, date and time specified in the Data Sheet.
	14.2 A representative of the bidders may be present and mark its attendance.
	14.3 Presence of the supplier, will not necessarily ensure the selection of the proposed goods.
E: E	valuation and Comparison of Bids
15.Non conformity- ties, Errors, and Omission	<ul> <li>15.1 Provided that a Bid is substantially responsive, SriLankan Airlines may waive any non-conformities or omission in the Bid that do not constitute a material deviation.</li> <li>15.2 Provided that a bid is substantially responsive, SriLankan Airlines may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities of omissions in the bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.</li> <li>15.3 Provided that the Bid is substantially responsive, SriLankan Airlines shall correct arithmetical errors on the following basis: <ul> <li>(a) If there is discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of SriLankan Airlines there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit shall be corrected.</li> <li>(b) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.</li> </ul> </li> <li>15.4 If the Bidder that submitted the lowest evaluated Bid does not accept the correction of errors, its Bid shall be dis qualified and its Bid-Securing Declaration shall be executed.</li> </ul>

16.Clarifications	<ul> <li>16.1 To assist in the examination, evaluation and comparison of the bids, the Purchaser may, at its discretion, ask any Bidder for a clarification of its bids. Any clarification submitted by a Bidder in respect to its bid which is not in response to a request by the Purchaser shall not be considered.</li> <li>16.2 The Purchaser's request for clarification and the response shall be in writing at SriLankan Airlines' address specified in the BDS.</li> </ul>
17.Responsiveness of Bids	17.1 The Purchaser will determine the responsiveness of the bids to the documents based on the contents of the bids received.
	17.2 If a bid is evaluated as not substantially responsive to the documents issued, it may be rejected by the Purchaser.

18.Evaluation	and	
Comparison	of	18.1 The following factors & methodology will be used for evaluation.
bids		
		Minimum Eligibility Criteria
		I. The Bidder should have at least 03 years of industrial experience in
		terms of provisioning of Mobile App. II. Currently providing Mobile App Solutions to airlines, preferably full-
		service carriers.
		III. Compliance with US DOT, GDPR, ISO/IEC 27001:2013, PCI DSS, Data
		retention policies and other applicable legislative and regulatory
		requirement. IV. Having skilled and experienced team for the all areas of the project
		with minimum 2 years' experience.
		V. The bidder should provide proof of financial and economic capacity a.
		Audited financial statements for the last 03 years (mandatory).
		Evaluation Criteria
		I. The Bidder's point-by-point compliance with general, technical &
		functional requirements under Point 6.3 in Annexure A of the RFP. It
		is essential that the Bidder clearly indicates any limitations and/or deviations.
		II. Experience in integrating mobile apps with external systems using
		webservices, APIs, and other latest technologies.
		III. Customer feedback on at least 03 existing projects of similar systems implemented during past 03 years.
		IV. Clientele of the solution provider in the field of Mobile App. And
		solutions deployed during past 03 years.
		V. Ability to take over the maintenance of the current mobile app as
		vI. Product demonstrations to verify specifications & performance
		VII. Technical competencies of the staff supporting the system
		VIII. Total final cost of the proposal inclusive of the Revamp
		IX. Credit terms specified in the price schedules at Annex B or better.
		Length of the credit granted, and payment terms will be considered as an evaluation factor.
		8

F	
19. Training and Development	The successful Vendor should provide all Training related to operating the System on Free of Charge basis.
20. Financial Capability	20.1 The bidder shall furnish documentary evidence that it meets the following financial requirements (s): Audited financial statements for the last 03 years (mandatory)
21. Purchaser's Right to Accept any Bids, and to Reject any or all Bids.	21.1 The Purchaser reserves the right to accept or reject any bids , and to annul the process and reject all bids at any time prior to acceptance, without thereby incurring any liability to bidders
	F: Award of Contract
22.Acceptance of the Bids	22.1 The Purchaser will accept the bids of the Bidder whose offer is not necessarily the lowest evaluated bid and is substantially responsive to the documents issued.
23.Notification of acceptance	23.1The Purchaser will notify the successful Bidder, in writing, that its bids has been accepted.
	23.2 Within seven (7) days after notification, the purchase shall complete the contract, and inform the successful bidder to sign it.
	23.3 Within seven (7) days of receipt of such information, the successful bidder shall sign the contract.
	23.4 The contract is extendable for a further 01 year period based on mutual agreement under the same terms & conditions and supplier performance.
24.Performance Security	24.1 Within fourteen (14) days of the receipt of notification of award from SriLankan Airlines, the successful Bidder, if required by SriLankan Airlines, may furnish the Performance Security amounting to a minimum amount of 10% of the agreement. SriLankan Airlines reserves the rights to request for higher valued Performance Security Form is included in Annex D.
	24.2 Failure of the successful Bidder to submit the above-mentioned Performance Security when requested or sign the Contract may continue sufficient grounds for the annulment of the award and execution of the Bid- Securing Declaration. In that event, SriLankan Airlines may award the Contract to the next lowest evaluated Bidder, whose offer is substantially responsive and is determined by SriLankan Airlines to be qualified to perform the Contract satisfactorily.

### Section II: Data Sheet

ITS Clause Reference	
1.1	The Purchaser is: SriLankan Airlines Address: Commercial Procurement Department, SriLankan Airlines, Airline Centre, Bandaranayake International Airport, Katunayake
7.1	Proprietor's authorizations (or) Vendor commitment letter for 100% guaranteed product support is required.
9.1	Bid-securing Declaration, using the Bid-securing Declaration form included in Annexure D is required.
12.1	The address for submission of Bids is : Attention : Senaka De Soysa Address : Senior Manager Commercial Procurement Commercial Procurement Department, Airline Centre, Bandaranaike International Airport, Katunayake, Sri Lanka Telephone : +94 197732666
	Deadline for submission of bids is on or before 03 November 2020, 11.00 a.m. Sri Lankan time (GMT +5:30 Time Zone)
15.2	For <u>Clarification of bid purposes</u> only, SriLankan Airlines' address is: Attention: Tharaka Hindurangalage Address: SriLankan Airlines Limited, Commercial Procurement Department (IT), Airline Centre, Bandaranaike International Airport, Katunayake , Sri Lanka Telephone: +94 (0) 19733 21845/ +94 (0) 19733 2666 Facsimile number: +94(0) 197335218 Electronic mail address: <u>tharaka.hindurangalage@srilankan.com</u> <u>sarath.jayathunga@srilankan.com</u>
	If the Bidder wishes to hand deliver the Bid documents by hand, please provide details (Names/NIC no/passport no/vehicle number) of your representatives one day in advance to the Bid closing date, for the arrangement of security clearance.

# Section III - Schedule of Requirements

		CPIT/ICI	B 11/2020		
Line Item #	Description of Goods/service	Qty	Unit of Measure	Final Destination	Delivery Date
01	Software Design, Development, Revamp and Maintenance of the Corporate Mobile App. at SriLankan as stated in this document. The Solution should include product customization to meet business, regulatory and government requirement, integration with relevant IT systems - both airline and external systems which includes, third party software components, middleware support, Comprehensive backend infrastructure support with well established overall product support to meet the required Service Level Agreement on 24/7 support.	01	Each	IT Division of SriLankan Airlines	Based on the project implementation timelines

Software Design, Development, Revamp and Maintenance of the Corporate Mobile App. at SriLankan Airlines-CPIT/ICB 11/2020

### Section IV - Bid Submission Form

THIS IS A COMPULSORY FORM. NON-SUBMISSION OF DULY FILLED/SIGNED FORM SHALL RESULT IN REJECTING THE BID.

[The Bidder shall fill in this Form in accordance with the instructions indicated no alterations to its format shall be permitted and no substitutions will be accepted.]

Date:

To: SriLankan Airlines We, the undersigned, declare that:

- (a) We have read and have no reservations to the document issued;
- (b) We agree to supply conforming to the documents issued and in accordance with the Schedule of Requirements of the following Service/solution [insert a brief description of the System/solution];
- (c) The total price of our Bid without Tax, including any discounts offered for 01 year is: [insert the All-inclusive total project cost without Tax for 1 year in words and figures];
- Note: Please note that the prices indicated in this Bid submission form should be same as the All-inclusive total project cost for 1 year indicated in the below Price schedule forms referred as Annex B-I.
- (e) The total price of our Bid including Tax, and any discounts offered for 01 year is: [insert the All-inclusive total project cost with Tax for 1 year in words and figures];
- (f) Our bid shall be valid for the time specified in ITB Clause 8.1
- (g) We understand that our bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us.
- (h) We understand that you are not bound to accept the lowest evaluated bid or any other bids that you may receive.

Signed: [insert signature of the duly authorized person]

Name: [insert complete name of person signing the Bid Submission Form]

Date

### Section V - General Conditions

- I. Bidder" means the proprietor of the brand or an authorized distributor for the proprietor. In the event where the bidder is an authorized distributor, it is mandatory an Authorized Distributor Status letter from the Proprietor is submitted to SriLankan Airlines along with the bid to avoid rejection of the bid.
- II. If required, SriLankan Airlines requires to inspect the product at the evaluation stage by SriLankan Airlines' personnel (minimum 2 pax), same has to be arranged by the bidder at a client site to inspect the proposed product. All applicable expenses excluding airfare (airfare means- SriLankan Airlines' destinations only) shall be borne by the bidder.
- III. All on-site & off-site expenses including incidental expenses related to the project implementation, maintenance & support etc. within the 1 year contract period, including Airfare should be borne by the bidder.
- IV. If accepted, it is mandatory that the bidder signs the Contract Agreement Annexure F.
- V. In order to ensure continuity of supply of Service/solution to SriLankan Airlines in the event of a disruption to bidder's operations, please provide details of alternative arrangements available within the agreed cost and specifications of product.
- VI. If SriLankan Airlines find that the delivered service/solution does not comply with the Specifications stated in this Agreement, SriLankan Airlines in its discretion has the right to either reject or request modification to the service/solution to compliance with the Specifications. Modification will not affect the Warranty/ Service Levels provided hereunder. If the service/solution is rejected SriLankan Airlines shall recover any and all money paid and any service penalties incurred due to rejection of the system/solution.
- VII. Please state whether your company has appointed a local agent for SriLankan Airlines supply & delivery of Solution and services to be procured under this bid exercise. If so please submit a separate bidder information form including the information of local agent.
- VIII. Advance payment is not acceptable. 45 days credit from the date of commissioning and acceptance by UL is required.

ANNEXURE A - Technical/General Specifications & Compliance Sheet

Name of the Bidder Name of the Principal Name of the Manufacturer Brand	:
Model	:

# **1.** COMPANY BACKGROUND

SriLankan Airlines, member of **one**world Alliance, the National carrier of Sri Lanka, is an award-winning carrier with a firm reputation as a global leader in service, comfort, safety, reliability and punctuality. Launched in 1979, SriLankan is currently expanding and further diversifying its wide range of products and services to drive the country's on-going boom in tourism and economic development. The airline's hub is located at Bandaranaike International Airport in Colombo providing convenient connections to its global network (including codeshare partners) of 113 destinations in 51 countries.

# 2. PURPOSE

Purpose of this Request for Proposal (RFP) is to select a competent Service Provider who has proven experience and capability in providing Software Design, Development and Maintenance Services for SriLankan Airlines Corporate Mobile App to take it to the next level with enhanced usability, advanced technology and better user experience to serve the airline's increasingly tech savvy target audience by enabling them to have more control over their travel and a better flying experience.

# 3. SCOPE OF WORK

3.1 Service provider needs to Maintain the existing product and provide service support required by the business during agreed period.

The current mobile App provides greater convenience for passengers to travel on SriLankan Airlines. Services
provided through the mobile app are reservation & issuance of tickets, Check-in, Manage My Booking (servicing
the booking, adding ancillary services like pre-paid baggage, chargeable seat selection, and many other
services), Flight schedules and FlySmiLes account Management, redemption bookings. The Service Provider
need to manage the existing mobile App supporting for change requests and modifications.

3.2 Service Provider needs to propose a complete product revamp which will be deployed during the period of the agreement. Decision on the deployment of the product revamp will be at the sole discretion of SriLankan Airlines. The mobile app revamp needs to be live within 3 months from the date of SriLankan giving the go ahead. The new product revamp needs to include but not limit to the following features.

- Service provider shall focus on continuous enhancement of passenger travel experience and self-service.
- Service Provider shall develop the mobile app to be in par with the industry standards.

- Service provider shall enhance the user-friendliness/attractiveness (recent search history display, calendar option with multiple months, page loading images with promotions, no of viewers per particular route) of the existing mobile app by revamping the user interfaces and the flows
- Service provider shall enhance the existing mobile App by sending flight notification / alert, Boarding pass to passenger via SMS, push notifications or via any other social media like WhatsApp, or Viber.
- Enhance the current performance of the mobile app by reduced loading time and providing an uninterrupted booking flow

# 4. DETAILED SPECIFICATIONS

### 4.1 Functional Requirements

**Maintenance** 

- **4.1.1** Provide software Services including design, development, quality assurance, testing, deployment and App submission (for Apple AppStore, Google Play store and Huawei AppGallery).
- **4.1.2** Service provider has to maintain the existing mobile app for the duration of the agreement. The current features are detailed in Section 9.
- **4.1.3** In order to align with the industrial changes, service provider should define a development roadmap (quarterly) integrating features and components based on upcoming trends and technologies.
- **4.1.4** The mobile App needs to be maintained according to modern business demands. In order to accommodate business needs, any app changes requested by UL should be catered and Time & Effort to be agreed by both parties.
- 4.1.5 Provide customer profiling details readily available through the relevant app stores,
- **4.1.6** Should maintain version controlling throughout the app. Service Provider shall provide previous version of the app to SriLankan at each App submission.
- 4.1.7 Possible enhancements based on the mandatory and regulatory requirements need to be covered
- **4.1.8** Service provider should take the responsibility of the delivery of a new requirement and the possible integration with 3rd party systems as required by the business.
- 4.1.9 All new requirements need to be captured by the service provider with proper requirement sign off document. Prototype / wireframes need to be accepted by the user as appropriate Prior to app submission QA sign off shall be given by the service provider.

### **Performance**

- 4.1.10 Support other OS. Such as HarmonyOS (Huawei's new OS), Windows
- 4.1.11 The Mobile App features & functionalities to be maintained 24/7 basis.
- **4.1.12** All the incidents need to be handled as per the stipulated service level defined and agreed based on Software Maintenance Service agreement ensuring smooth uninterrupted App services to the passenger.
- 4.1.13 Service provider needs to maintain the App to support with the latest infrastructure updates and the operating system upgrades (covering both consumer end and infrastructure end).
- 4.1.14 Maintain the mobile app size at the optimum installed app size both in download and installed.
- 4.1.15 Star rating and feedback system for the applications for performance benchmarking
- **4.1.16** On a monthly basis to provide a checklist on the functionality of the app, this is to confirm if all the functionalities are in working condition.

### **Reporting / Analytics**

- 4.1.17 Periodic reviews on Mobile app KPIs e.g. usage, negative reviews, positive reviews, availability, functional issues and bugs,
- 4.1.18 Monitoring Dashboard real time updates (e.g. review, load speed,)
- 4.1.19 Incorporate analytics/ tracking mechanism like firebase and make reports/dashboard available to airlines in understanding the customer behaviour and propose improvements
- 4.1.20 Reporting structure which can generate consolidated reports with IBE reports (eg : A way of getting booking counts easily from all online channels in one place)
- **4.1.21** Provide a comprehensive reporting portal to generate customized reports including visits to booking page, payment page, ancillary, number of sales through mobile
- 4.1.22 Provide comprehensive customized audit logs for each transaction.
- 4.1.23 Provide data feed of KPIs for integrations internally.

### <u>Revamp</u>

4.1.24 The revamp should include but not limit to the features mentioned in Section10 by the service provider. The revamp should also include the current features made available through the existing mobile app which is detailed in Section 9. A comprehensive proposal needs to be submitted by the Service Provider for the revamp including the features that will be implemented. The Scope of the Revamp will be agreed between SriLankan and the Service Provider. the revamp / face lift of the App to be implemented within 03 months from the date of giving the go ahead for the revamp by SriLankan.

# 4.2 Technical Requirements

4.2.1 Infrastructure (Service)

SriLankan IT Systems is an ISO/IEC 27001:2018, ISO/IEC 20000:2011 & ISO 9001:2008 certified entity, proposed solution shall comply with the above certifications.

4.2.2 Listed below are the current major hardware/Software platforms used at SriLankan. It is essential that the proposed infrastructure solution (hosting solution) support to the existing platforms.

Server Hardware	HP (Rack Servers: DL360, DL370, DL380 Blades: BL460c G8 & G9, BL620c ) with Intel Xeon processors.
Operating Systems	Windows server 2008 to 2016 and above Linux (RH 5.2 to 7.2)
Virtualization	Hyper-V (win 2008 - 2016 and above) VMware (5.5 to 6.5 and above)
Storage	EMC XTREMIO EMC Unity
Database	MSSQL (2016 and above) Oracle (12c,19c)
Middleware Platform	IIS, WebLogic, JBoss, etc.
Renowned Applications	Microsoft applications (ex: SharePoint 2013, Exchange 2013 and above, etc.)

4.2.3 Separate isolate non-production environments shall be maintained for hosting, Development, Testing, Demo instances, as required by the systems.

4.2.4 Accessibility of data for report generation

Ability to provide easy access to real time and non-real time data sets through communication protocols such as HTTP, SOAP, REST, Web service.

### 4.3 Existing App Infrastructure Environment and Integrations

### 4.3.1 Software Platform

- Development IDE : Titanium Studio and Visual Studio 2010
- Frameworks :.NET Framework 4.0
- Mobile App technologies
- Middle Layer to Front End (Restful webservices)
- Middle Layer to Amadeus (SOAP webservices)
- Middle Layer NET Framework 4.0
- o Database MSSQL SQL 2016
- Front End Development Titanium (free version)

### 4.3.2 Integrations with the external systems and applications

### 4.3.2.1 Amadeus

• Integrated using 1A webservices through a SOAP, res services through a middle layer.

### 4.3.2.2 Frequent Flyer Program

• Integrated using CRIS webservices.

### 4.3.2.3 Payment Gateway

• The Payment gateway need to be integrated with a party defined by SriLankan.

# 4.4 Mandatory Service Level Requirements

### 4.4.1 Support Services

- 4.4.1.1 Telephone & Remote Support procedures for 24 hours per day / 7 days per week.
- **4.4.1.2** Service Provider MUST make at least ONE qualified personnel available to the SriLankan Airlines by telephone and email for the reporting and resolution of non-conformities or other issues, defects or problems. Dedicated telephone numbers and emails should be available for reporting issues.
- 4.4.1.3 All new releases of the system or modifications to be tested in the development environment before enabling to the users.
- **4.4.1.4** Standard Availability of service levels of the system to be 99.99%.
- **4.4.1.5** Availability is measured as a percentage of the total time over a set period less scheduled Downtime in that period expressed as a percentage of the total time in the period.
  - I. Availability = (Total Time in Period scheduled Downtime) X 100

### Total Time in Period

- II. Standard reports online & incident reports to be provided.
- III. More resilience in terms of a dedicated server and fallback solution is required to support the business operation and requirements
- IV. Service levels to be defined as Critical, High, Medium & Low and escalation procedures to be included as given below.

Total Time in period

- Level 1- Critical Major system(s) down; no work-around exists. Business stopped.
- Level 2 High Major system(s) down; work-around exists. Business interrupted
- Level 3 Medium Partial failure affecting the use of the product.
- Level 4 Low Able to perform limited core business functions. On this occasion the remedy will be
  included in a Maintenance Release or amendment to the Source Code or next release of the Application
  Software as governed by the terms of the Agreement or SriLankan may order software upgrade as from
  time to time.

ا مربوا	Level Faulty severity level		Target	
Level	Taulty severity lever	time	resolution time	
1.	Critical	Immediate	2 hrs	
2.	High	30 minutes	4 hrs	
3.	Medium	4 hrs	24 hrs	
4.	Low	72 hrs	120 hrs	

c. Fault Escalation Procedures to be followed as given below

Severity Level	Service Provider-Escalation	Client Update		
Severity Lever	Problem Unresolved	Service Desk		
Critical	Support Engineer (3 hrs)	Every 1 hr		
High	Support Engineer (4 hrs)	Every 6 hrs or as		
		necessary		

Medium	None	Every 24 hrs or as
mediam	None	necessary
Low	None	3 days

d. Service Credit Scheme.

A comprehensive Service credit scheme to be proposed for not being able to meet each agreed SLAs

# 4.4.2 Monitored Support

- 4.4.2.1 Monitored support from 24 hours per day / 7 days per week
- **4.4.2.2** Following a system failure of Critical severity, an engineer will be notified via automated messaging to perform remote diagnostic immediately and commence resolution of the fault
- **4.4.2.3** Service Provider shall provide 24 hours per day / 7 days per week proactive Service monitoring mechanisms as applicable by the solution deployment option. The purpose of this is to make the users aware any detectable service degradation and outages in advance.
- 4.4.2.4 Annual and Monthly service level report to be sent along with incidents and reasons for any service level deviations against the agreed SLA. This report to be available to customer for the given month no later than the 10th business day of following month

# 4.4.3 Unplanned Outage

Service Provider shall contact SriLankan IT Service Desk and inform any emergency and unplanned service outages and incidents as per the pre-notification period.

### 4.4.4 Backup Procedures

- **4.4.4.1** Ensure an adequate backup schedule is maintained for the systems provided including a back-up of data every 24 hours and an offsite data transfer once a week for use in the event of disaster recovery.
- **4.4.4.2** Service Provider shall propose and maintain a suitable data and system backup mechanism as applicable to ensure a required data and system backups are maintained for the recovery of system in the incident of total or partial crash of the system within agreed time frame.

### 4.4.5 Performance

Service Provider shall maintain adequate system resources to give mutually agreed application response time and performance to end client all the time.

### 4.4.6 Resources Allocation

Preferred qualifications of the project implementation team (Please provide curriculum vitae (CVs)):

- **4.4.6.1** Service provider should be capable of allocating professional Software Engineers with expertise in mobile application development on following latest technologies and platforms but not limited to upon request for a specific time period.
  - Android
  - iOS
  - RESTful API
  - Hybrid app development in lonic
  - jQuery Mobile
  - Native React
  - Xamarin or any other latest frameworks
  - Objective C
  - Swift
  - Experiences in Google Play store and Apple Appstore
  - And other latest mobile App development related technologies
- 4.4.6.2 All staff assigned for this engagement shall have a minimum of 2 years of relevant work experience.
- **4.4.6.3** Service Provider shall send required staff resources to SriLankan Airlines premises in Katunayake, for project related work including but not limited to requirement gathering, UAT and status review meetings.

# 4.4.7 Data Protection

The Service Provider needs to have the following requirements satisfied;

- 4.4.7.1 In case a third party involved it should cover the all data confidentiality bound by the signed agreement
- **4.4.7.2** Compel to adhere to the data protection act governed by European Union, US law etc.

### 4.4.8 Project Management/Service Review

- 4.4.8.1 Participate for Project Review Committee meetings, Project management committee meetings as a member, and present the status of the project when necessary.
- **4.4.8.2** The Service Provider should coordinate with a relevant service provider to conduct system vulnerability assessment including the support and maintenance period.

### 5. CONTRACT TERMS AND CONDITIONS

### 5.1 Period of Contract

- 5.1.1 The contractual period will be for one (01) year. The contract is extendable for a further 01 year period based on mutual agreement unless terminated by either party giving sufficient notice. However, there is no binding on the SriLankan Airlines to necessarily extend the contract with the selected Service Provider.
- 5.1.2 Ownership of the source code of the product will lie with SriLankan Airlines and during the contract period service provider will get the access to the code for Development, Support and Maintenance.
- 5.1.3 In case, during reviews of the performance of the Mobile App by SriLankan Airlines before expiry of Contract, SriLankan Airlines decides to terminate the relationship on any count and may do so by giving a notice for a period of 6 months to the Service Provider. In this case, the Service Provider would need to ensure smooth transition to the new Service Provider and will be bound by the contract to stay at the same rates until SriLankan Airlines deems complete transition even if takes more than 12 months. In case the Service Provider decides to terminate the relationship with SriLankan Airlines, they must give a minimum notice for a period of 9 months to SriLankan Airlines.

Also, in both cases, the Service Provider shall be contractually bound to stay on at same rates until smooth transition to a new Service Provider is achieved. All other terms and conditions will be discussed in contract negotiation.

5.1.4 Service Provider needs to agree on chargeback condition on issues or bug identified which has a negative revenue impact (financial loss) to the company, SriLankan Airlines.

### 5.2 Invoicing and Payment Terms

Payment shall be made in Sri Lanka Rupees within fourth five (45) days of presentation of claim supported by a certificate from the Purchaser declaring that the product and services have been delivered and that all other contracted Services have been performed.

### 5.3 Operational Conditions

- 5.3.1 The Service Provider will comply with all applicable policies of SriLankan Airlines, including but not limited to SriLankan Airlines Privacy Policy, Information Security Policy.
- 5.3.2 Service Provider shall comply with ISO/IEC 27001:2013 and other applicable legislative and regulatory requirements.
- 5.3.3 Service Provider shall comply with SriLankan Airlines Information Security Policies and Procedures. A checklist to reflect these requirements are annexed herewith (Section 11).

### 6. RESPONSE TO THE RFP

### 6.1 Non-Disclosure Agreement (NDA)

- 6.1.1 All Service Providers are required to sign a Non-Disclosure Agreement (NDA) with SriLankan Airlines before commencement of the project
- 6.1.2 Service Providers should study and get clear understanding of functional and non-functional requirements, architecture of each process and overall system architecture.

### 6.2 Company Background

The proposal should be submitted strictly going by the numbering given and each point can be linked to any other document if required specifying the related number.

- 6.2.1 Provide the organization profile with financial performance, scale of the company etc.
- 6.2.2 Customer references
- 6.2.3 Relevant Experience Detailed list of similar Customer Mobile Application development in Airline industry, that the Vendor has completed successfully during the period of last three (03) years ending on the deadline of bid submission
- 6.2.4 Any value additions provided in the solution

### 6.3 Compliance to the Requirements

Mention the compliance and supporting information/document to the Functional, Technical and Service Level requirements specified in Section 4, 10 and 11 (Provided as separate Annexures I & II) grouping by each subsection. Follow the below format.

No.		Business Requirement	Complied/ Not Complied	Vendor's Offer (Briefly Describe)		
	4.1.1		1.1			
		4.	1.2			
	4.1	442	4.1.3.1			
4		4.1.3	4.1.3.2			
4		4.2.1	4.2.1.1			
	4.2		4.2.1.2			
			4.2.1.3			
		4.2.2				

### 7. RFP EVALUATION PROCESS

7.1 Responses from Vendors will be evaluated in 2 stages, sequentially, as below

Stage A - Technical Evaluation

### Stage B - Commercial Evaluation

The two-stage evaluation shall be done sequentially on a knock-out basis. This implies that those Vendors qualifying in Stage A will only be considered for Stage B. All deliberations and evaluations performed by SriLankan Airlines will be strictly confidential and will be maintained as property of SriLankan Airlines exclusively and will not be available for discussion to any Vendor.

### 8. COMMERCIALS

- 8.1 Bidder should submit Two Commercial Proposals for below business requirements separately based on the Price schedule format B attached.
  - Maintenance & Support for the current SiLankan Mobile App
  - Revamp of the Mobile App
- 8.2 The Proposal should also include the hosting options as follows
  - 8.2.1 Maintenance & Support for the current SriLankan Mobile App Supplier should provide the infrastructure requirements for the Local Installation Option and it should be compliant with the SriLankan infrastructure set up given in Technical Requirement.
  - 8.2.2 Revamp of the Mobile App Fully hosted solution to be provided for the revamped product. If proposed solution is on cloud environment, only industry leading brands should be proposed in the solution. Customer has the right to reject the proposals that includes brands which are not identified as "leaders" in relevant market segments by reputed independent research organizations.
- 8.3 Upgrades/New features/additional developments to be covered by Annual Maintenance Contract.
- 8.4 The service provider must include detailed schedule of any onsite work required for the entire implementation. For each onsite session indicate the approximate duration and the number of staff attending from service provider's end.
- 8.5 The proposal should clearly indicate the daily and monthly rates where applicable for on demand resources. If required in addition to the Software Engineer, QA Engineer, Business Analyst and Project Manager need to be assigned.
- 8.6 Man-hours to be allocated in the annual maintenance to accommodate simple process automations/ changes (new or existing) based on the business division requests. The changes to be treated as CR based on the complexity after an agreement with SriLankan Airlines.
- 8.7 The charges with regard to the labor, travel, per diem and accommodation to Service Provider's staff etc. shall be borne by the Service Provider during the period of maintenance and support
- 8.8 For any additional work in the future (CR) indicate the applicable man day rates for various categories of skills. If the service provider has different schemes or CRs other than the man day rate includes the same.
- 8.9 Service Provider should also suggest change request process to accommodate time critical changes based on the priority defined by Service Level Agreement. This should clearly define the per man-hour rates.

- 8.10 Other than indicated above if there is other item or services which will be cost to SriLankan during the contract period of one (01) year that must be included in the commercials as there will be no provision to include further costs once the bid is closed.
- 8.11 Clearly indicate all commercial including any integrations. Any open-ended commercials such as per actual man days etc. not acceptable as it will make the comparison of commercials between potential service providers difficult.
- 8.12 Commercials must cover all the areas and modules offered in the response bid.
- 8.13 The Service Provider must submit the commercial model (section 8) in a separate attachment and a document. Commercial should not be included in the bid response document.
- 8.14 Include the commercials as per the following guidelines.
- 8.15 As per the SriLankan procurement policies commercial negotiations are not possible, other than in a special circumstance which is subject to special approval. Therefore, the service provider is expected to provide the best and final offer assuming no commercial negotiations are possible. Carry out initial parameter settings, table settings for complete functionality of system as per business output of SriLankan.
- 8.16 Also all the costs and rates for all areas of the offered solution must be included in the commercial section as there is no possibility of including any of them later.
- 8.17 At the Bid opening time each service providers total cost must be available in a simple format for the bid opening committee. The service provider must compute the total cost for the one year. The total cost can be broken down to key major modules if necessary. 2 Separate Commercial Proposals should be submitted for Mobile App Maintenance & Support and the Mobile App Revamp.
- 8.18 Any cost incurred for the onsite presentations by the service provider during the proposal evaluation stage must be borne by the service provider.
- 8.19 Bid proposal and the commercials as in the separate attachment must be sent only to secured mailbox in as requested in Data sheet of the Bid document.
- 8.20 The electronic versions of the documents must be available at the time of Bid opening. Any bids sent in after the bid opening time will not be accepted.

### 9. FEATURES OF THE EXISTING MOBILE APP

### 9.1 Flights

- 9.1.1 Book a Flight
  - 9.1.1.1 Enabling passengers to search and select flight, could be one way, return or multicity. Codeshare
  - 9.1.1.2 The fare and the possible flight combinations are shown for passenger selection. The Fare is sown to passenger in point of origin currency.
  - 9.1.1.3 Enter passenger details to create the reservation, if it's a FlySmiLes member enter the membership number.
  - 9.1.1.4 Tickets can be purchased either fully in cash or in frequent flyer miles (redemption).
  - 9.1.1.5 Payment methods can be VISA, Master, Amex and PayLater.
  - 9.1.1.6 Once the reservation is made an email is sent to passenger with travel itinerary

### 9.1.2 Manage My Booking (MYB)

- 9.1.2.1 MYB could be accessed by the passenger to modify the booking by entering the PNR/ last name or Ticket number.
- 9.1.2.2 Passenger can view trip summary, Reservation Information, Preferences & Itinerary.
- 9.1.2.3 Passenger can include add-ons to his reservation. (such as Advance Seat Reservation, Seat Upgrade and Pre-paid Baggage)
- 9.1.2.4 Passengers are able to Share the trip via Facebook.
- 9.1.3 Check-In
  - 9.1.3.1 Passenger can Check-In into their flight and retrieve an e-boarding/digital boarding pass, as part of the Mobile Check-in option to the self-check-in through the mobile App itself.

### 9.1.4 Boarding Pass

- 9.1.4.1 This option allows the user to retrieve the flight boarding pass instantly. Once Check-In through the app is complete or if any previous boarding passes exist on the cache of the passenger's device, this option acts as a shortcut that will provide the user with direct access to the user's boarding pass without having the hassle to repeat the Check-In process.
- 9.1.5 Flight Schedule and Status
  - 9.1.5.1 Passenger can get the information on the Flight Schedule and the Flight Status of the requested SriLankan flights.

### 9.2 Frequent Flyer Loyalty Program (FlySmiLes)

FlySmiLes contains the functionality related to the SriLankan airlines' frequent flyer programme and it provides the access to members to use SriLankan Airlines frequent flyer program FlySmiLes related services via the mobile App.

- 9.2.1 Member can register to the SriLankan Airlines by using "Join Now" with email address and subsequently enter the mandatory details and become a member.
- 9.2.2 If the member forgot the membership number this has the function to send the membership no to the registered email

- 9.2.3 Similarly forgot password will be send to member
- 9.2.4 Change Password: The user can Change their FlySmiLes Password using this option
- 9.2.5 Member can view the profile and from there menu and from there he can change the profile details at convenience
- 9.2.6 It gives the opportunity to change, Email / residence address / Communication Preferences as per GDPR and Contact Numbers
- 9.2.7 Member can view his past statement details on a selected period
- 9.2.8 Member can view the benefits of the program and with oneworld alliance
- 9.2.9 Mileage calculator to view the Earn and redeem amounts across SriLankan and **one**world Airline partners destinations.
- 9.2.10 Digital card with QR code facility which can be use as form of identification for partners, Airport self-service kiosks, etc
- 9.2.11 Obtaining FlySmiLes vouchers for non-Airline partners by redeeming miles.
- 9.2.12 Issuance of the Lounge Vouchers to the members linked with co-branded Credit cards
- 9.2.13 Claiming of the missing miles by uploading relevant documents (boarding pass/ ticket)
- 9.2.14 FlySmiLes members can Issue redemption tickets by redeeming miles and for himself as well as his family and friends.
- 9.2.15 Existing sub modules related to FlySmiLes (Frequent Flyer Program) segment.
  - 9.2.15.1 Profile
  - 9.2.15.2 My Activities
  - 9.2.15.3 Lounge Vouchers exist for Amex /SCB
  - 9.2.15.4 Partner Vouchers
  - 9.2.15.5 Digital FFP Card
  - 9.2.15.6 Claim Missing Miles
  - 9.2.15.7 Mileage Calculator for Accruals and Redemption

### 9.3 Feedback

- 9.3.1 Allows user to provide feedback during every point of the journey with SriLankan Airlines. Feedback is gathered for the following main customer touch points:
  - 9.3.1.1 Pre-flight feedback: This would include questions regarding ticketing services, check-in, lounges etc. for SriLankan Airlines. This includes and not limited to facilities, staff, convenience and efficiency
  - 9.3.1.2 In-flight feedback: This would include questions regarding all in-flight facilities, staff services, in-flight entertainment etc.
  - 9.3.1.3 Post-flight feedback: This would include questions regarding the entire customer journey post-flight

### 9.4 FAQ (Frequently Asked Questions)

9.4.1 Provides facility for user to obtain information of SriLankan Airlines customer's most frequently asked questions. Questions are categorized into various sections (FlySmiLes, Booking Online, Cargo, Passenger Assistance, General) enabling the user to easily identify support/help content

### 9.5 Contact Us

9.5.1 Provide facility for users to view contact details of SriLankan Airlines, including address, telephone and e-mail details

### 9.6 Promotions

9.6.1 Passenger can obtain information related to ongoing special promotions by subscription, promos could be notified either through SMS or email.

### 9.7 Website (link)

9.7.1 A direct URL to switch www.srilankan.com corporate website.

### **10. NEW FEATURES TO BE INTEGRATED**

### 10.1 Book a Flight

- 10.1.1 Service Provider shall facilitate Introducing payment methods like on hold a booking for a fee feature and payments with multi-currency payment option with multiple payment gateways
- 10.1.2 Service provider shall integrate feature to allow passengers to buy tickets combining passenger's frequent flyer miles plus cash
- 10.1.3 Service provider shall add a feature to rate the booking experience at the end of booking flow
- 10.1.4 Service provider shall implement a mechanism to identify passengers who dropped in the middle of booking flow without complete the booking.
- 10.1.5 Service provider shall develop fare family concept and penalty charge display in mobile app booking flow
- 10.1.6 Service provider shall improve the fare family concept to branded fares based on the business requirement of moving the other online channels to branded fares
- 10.1.7 Service provider shall modify the mobile app booking flow with calendar display
- 10.1.8 Service provider shall modify the mobile app booking flow with lowest fare display prior flight selection
- 10.1.9 Service provider shall convert the mobile app booking flow very much equivalent to IBE/mobile web booking flows in order to provide a better user experience
- 10.1.10 Service provider shall enable the facility for customizable promotional banner display within the flow
- 10.1.11 Service Provider shall support ancillaries for e.g. travel insurance, Advanced Seat Reservation, hotel etc integration with current mobile app
- 10.1.12 The notifications such as ticket, boarding pass and flight delays to be notified through channels such as Whatsapp, Viber, Facebook
- 10.1.13 Information pages creation based on SriLankan Airlines requirements such as News Alerts/Travel Updates, Lounge details etc.
- 10.1.14 Passengers should be able to plan his/her upcoming travel and view previous trips
- 10.1.15 Passenger should be able to view the inflight entertainment options available
- 10.1.16 Service provider shall implement chatbot assistant through non-human interaction to assist passenger inquiries
- 10.1.17 Service Providers shall implement bag tracking solutions which help Passenger to find the bag location
- 10.1.18 Service provider shall provide the passenger visa requirement for the travel like a TIMATIC window)
- 10.1.19 Mobile app shall facilitate printing travel itinerary for VISA, as part of this scope.
- 10.1.20 Service provider shall implement a section to display map of the CMB airport and some other airports
- 10.1.21 Service Provider shall implement customized Notifications Request to the passengers to rate their customer post journey experience
- 10.2 Check-In and during the journey
  - 10.2.1 Service provider shall support integration of ancillary during check-in process. This includes both promoting and selling ancillary. For. E.g. the seat upgrade feature to promoted during the check-n window.

10.2.2 Mobile app shall facilitate geo fencing mechanism and identify the location of the passenger to push notifications on promotions and/or to get real-time feedback ratings of airline services.

### 10.3 Frequent Flyer Loyalty Program (FlySmiLes)

Service Provider shall implement following features under the FlySmiLes program with the existing features.

- 10.3.1 Dashboard to view account summary details and the relevant requirements to proceed to next levels of the program
- 10.3.2 Member Benefits to be displayed based on the respective tier (customization of the background and the view based on the respective tier)
- 10.3.3 Display partners Airlines and other details
- 10.3.4 Excess Baggage Vouchers for Co branded Members
- 10.3.5 Ancillary Product Redemptions (Extra Leg room/ Excess baggage/ Cake/ Gifts/ etc)
- 10.3.6 Lounge Vouchers features has to be extended to issue vouchers for other lounges while traveling
- 10.3.7 FlySmiLes members shall be able to Issue Tickets with the cash plus miles Form of payment
- 10.3.8 Digital Frequent Flyer Program (FFP) Card feature upgrade to Flip the card
- 10.3.9 Earn & Redeem
- 10.3.10 Purchase of Miles feature implement via integration of payment gateway and EMD
- 10.3.11 Transfer of Miles feature implement via integration of payment gateway and EMD
- 10.3.12 Send Promotions and Special offers to specific passengers
- 10.3.13 Detailed pages for Lounge Policy, Membership categories
- 10.3.14 Redemption of miles for duty free items
- 10.3.15 Promotions tab for showing ongoing promotions
- 10.3.16 Member guide upload in the mobile app to view and download

### 10.4 Oneworld alliance requirements

- 10.4.1 **One**world alliance requirement Mobile App shall support below given **one**world alliance compliance requirement by integrating with **one**world carrierconnect platform (middleware) to facilitate **one**word carrier partners.
- 10.4.2 Through Check-in facility Seamless check-in facility for entire interline journey. Reverse through check-in, based upon existing through check-in functionality, enables carrier to request a through check-in when it is not the initiating carrier.
- 10.4.3 Boarding pass Digital boarding passes upfront and all together. Allows a carrier to access the boarding pass data from its own host system after asking the initiating carrier's permission.
- 10.4.4 Baggage tracking Visibility and tracking of checked-in baggage. Shall support at least IATA Res
   753, by providing partner information regarding bag acceptance, loading, transfer and arrival (alignment with IATA Res 753)
- 10.4.5 Flight information Includes smart notifications and updates on flight changes and also passengers should be able to check the partner airline flights status.

# 11. IT SECURITY STANDARDS (SECTION 11)

Service Provider should comply with blew mentioned two IT security standard documents attached.

- 11.1 Extended Information Security Schedule Annexure I
- 11.2 Mobile Application Security Checklist Annexure II

# Revamp and Maintenance of the Corporate Mobile App. at SriLankan Airlines (CPIT/ICB 11/2020) Annexure B : Price Schedule Form

Name of the Manufacturer : .......

Line	Doccrintion of Colution	One-time	Cost per	Total cost	Domorfic
Item N°		cost	month	for 01 year	Relial KS
-	Maintenance & Support Cost for the present Mobile App. to				
<u>-</u>	meet the service levels stated in the Bid document.				
2.	Revamp of the present Mobile App.				
1 1	Cost for the Mobile App Revamp including the requirement				
7.1	specified in Section 10 of Annexure A				
ιι	Maintenance & support cost for the revamped product to meet	<u></u>			
7.7	the service levels stated in the Bid document.				
з.	Bundled Cost proposal for Revamp & Maintenance of the				
	Mobile App, if different from the total cost at 1 & 2				

Payment term: Quarterly in arrears with 45 days credit from the date of the receipt of the invoice.

Advance payment is <u>not</u> acceptable.

Note: Please submit your financial proposal on your Company Letter Head based on the above price format & complete all the required information. Please submit your Best and Final Offer (BAFO) for evaluation.

Bid Validity:	bank details : Head Office : H	Account Name :	Period of Agreement :years commencing from until	Price shall be fixed for the Term of the Agreement			Date :iinsert date]
---------------	--	----------------	--	--	--	--	---------------------

### ANNEXURE C : Bid Security Declaration form

# THIS IS A COMPULSORY FORM. NON-SUBMISSION OF DULY FILLED/SIGNED FORM SHALL RESULT IN REJECTING THE BID.

[The Bidder shall fill in this form in accordance with the instructions indicated in brackets]

Date: ------[insert date by bidder] \*Name of contract -- [insert name] \*Contract Identification No: ------[insert number] \*Invitation for Bid No.: ------ insert number]

To: SriLankan Airlines Limited.

We, the undersigned, declare that:

- 1. We understand that, according to instructions to bidders (hereinafter "the ITB"), bids must be supported by a bid-securing declaration;
- 2. We accept that we shall be suspended from being eligible for contract award in any contract where bids have being invited by SriLankan Airlines, for the period of time of one year starting on the latest date set for closing of bids of this bid, if we:
  - (a) withdraw our Bid during the period of bid validity period specified; or
  - (b) do not accept the correction of errors in accordance with the Instructions to Bidders of the Bidding Documents; or
  - (c) having been notified of the acceptance of our Bid by you, during the period of bid validity, (i) fail or refuse to execute the Contract Form, if required, or (ii) fail or refuse to furnish the performance security, in accordance with the ITB.
- 3. We understand this bid securing shall expire if we are not the successful bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder that the bidder was unsuccessful; or (ii) twenty-eight days after the expiration of our bid.
- 4. We understand that if we are a Joint Venture (JV), the Bid Securing Declaration must be in the Name of the JV that submits the bid. If the JV has not been legally constituted at the time of bidding, the Bid Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed [insert signature(s) of authorized representative] In the Capacity of [insert title] Name [insert printed or typed name] Duly authorized to sign the bid for and on behalf of [insert authorizing entity] Dated on [insert day] day of [insert month], [insert year]

### ANNEXURE D : Performance Security form

[The issuing agency, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]

-----[Issuing Agency's Name, and Address of Issuing Branch or Office]------

Beneficiary: SriLankan Airlines Limited, Airline Centre, Bandaranaike International Airport, Katunayake, Sri Lanka

Date: -----

PERFORMANCE GUARANTEE No: -----

We have been informed that ------[name of Bidder](hereinafter called "the Bidder") has entered into Contract No. ------[reference number of the contract] dated ------ with you, for the ------Supply of ------[name of contract and brief description] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

This guarantee shall expire, no later than the --- day of ----,20..[insert date,28 days beyond the scheduled completion date including the warranty period] and any demand for payment under it must be received by us at this office on or before that date.

[signature(s)]

### ANNEXURE E : Clientele Information Form

	Company Name	Company Representative's Contact Details (Please state name, official email address and telephone number)	System/ solution implemented	Implementation date	Present status
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
15					

Note: Please mention the users of the same service/solution proposed to SriLankan Airlines. In addition to above information please provide your clientele of other systems/solutions implemented.

#### ANNEXURE F - SAMPLE CONTRACT AGREEMENT

#### **AGREEMENT FOR PROVISION OF SERVICE/SOLUTION**

The Agreement for Provision of service/solution (hereinafter referred to as "Agreement") is made and entered into on this \_\_\_\_ day of \_\_\_\_\_

Between;

**SRILANKAN AIRLINES LIMITED** a company incorporated in Sri Lanka (Company Registration PB 67) and having its registered office at "Airline Centre", Bandaranaike International Airport, Katunayake, Sri Lanka, (hereinafter called and referred to as "**SriLankan Airlines**" which term or expression shall where the context so requires or admits mean and include the said **SriLankan Airlines Limited**, its successors, assignees and representatives) of the **One Part;** 

And

	a company in	ncorporated in	(C	ompan	y Registratio	on No.		) an	d ha	iving	, its
registered	office at			(	hereinafter	called	and	referred	to	as	the
"Contracto	or" which term	n or expression	shall where th	he cont	ext so requi	res or a	dmits	mean and	l incl	ude	the
said		_ its successors,	assignees an	d repre	sentatives)	of the <b>O</b>	Other	Part.			

**WHEREAS** SriLankan Airlines is desirous of procuring \_\_\_\_\_\_ (hereinafter referred to as "service/solution ") as per the specifications and estimated quantities provided in Schedules attached herewith to the Agreement.

**WHEREAS** the Contractor is engaged in supply of \_\_\_\_\_\_ and desirous of supplying the Service/solution to SriLankan Airlines on a non-exclusive basis according to the specifications and estimated quantities mentioned herein and communicated by SriLankan Airlines from time to time in the future;

**WHEREAS** the Contractor has expressed its offer to provide SriLankan Airlines with the service/solution according to the terms and conditions provided herein and which offer has been accepted by SriLankan Airlines;

**WHEREAS** prior to the said offer and the execution of the Agreement, the Contractor has been apprised of the requirements and specification required by SriLankan Airlines for the supply and delivery of service/solution and to all other matters which might have influenced the Contractor in making its bids and has agreed to supply and deliver the Service/solution to SriLankan Airlines pursuant to the said requirements and specifications set forth in the Invitation for Bids document;

**WHEREAS** the Contractor has expressed its desire to provide SriLankan Airlines with Service/solution according to the terms and conditions provided herein.

#### IT IS HEREBY AGREED BY AND BETWEEN THE PARTIES AS FOLLOWS:

#### 1. OBLIGATIONS OF THE CONTRACTOR:

- 1.1 The Contractor shall:
  - 1.1.1 Deliver Service/solution as more fully described in the Schedule A in quantities ordered by SriLankan Airlines within the time frame as more fully described in Schedule A, to the locations more fully described in Schedule B hereto according to the specifications provided in Annex ...... (such schedules and annexes to be part and parcel of this Agreement) on non-exclusive basis on the terms and conditions set out herein.

- 1.1.2 Be deemed to have appraised itself fully of the provisions of this Agreement.
- 1.1.3 Ensure that Service/solution provided under this Agreement shall:
  - a) be in accordance with the specifications set out in Annex ....;
  - b) conform with any sample provided by the Contractor during the selection process or thereafter and approved by SriLankan Airlines;
  - c) be fit for the purposes envisaged under this Agreement and suitable for Airport Ground Operations;
- 1.1.4 Ensure that it has the necessary/required licenses, approvals and authorizations to provide Service/solution to SriLankan Airlines envisaged under this Agreement.
- 1.1.5 Deliver the Service/solution on CFR-CMB basis (defined as per INCOTERMS latest version) to the locations set out in Schedule B in quantities mentioned in Annex ...... The Contractor shall be responsible for providing all transportation necessary for the safe movement of Service/solution to the locations as specified in Schedule B of the Agreement.
- 1.1.6 At its own cost comply with all requirements of any Governmental or local Governmental regulations (particularly with those pertaining to Board of Investment of Sri Lanka, Customs in Sri Lanka or any other country, safety, health, labour, clearing and security) and shall indemnify and hold harmless SriLankan Airlines against any loss, damage or claim that may arise due to the non-compliance with any such regulations.
- 1.1.7 Invoice SriLankan Airlines for the Service/solution at the rates and in the manner specified and described herein (particularly as set out in Clause 3 and Schedule C).
- 1.1.8 Not assign, transfer or sublet its rights or obligations under this Agreement without the prior written approval of SriLankan Airlines. Provided that the Contractor shall not be relieved of responsibility under this Agreement for such portion of its obligations as are assigned, transferred or sublet.
- 1.1.9 Not at any time, during or after the term of this Agreement, divulge or allow to be divulged to any person any confidential information relating to the business and operations of SriLankan Airlines unless duly authorized in writing by SriLankan Airlines or required under any law.
- 1.1.10 Pay liquidated damages as stipulated in Schedule C if the Contractor fails to deliver the Service/solution on time or SriLankan Airlines rejects the Service/solution pursuant to Clause 2.6 hereof.
- 1.1.11 Subject to the terms and conditions of this Agreement, the Service/solution shall be delivered on CFR-CMB (INCOTERMS latest version) and the rights and obligations of the Parties and the transfer of risk and title shall be governed in terms of CFR-CMB (INCOTERMS latest version).
- 1.1.12 Arrange pre delivery inspection at manufacturing plant once the Service/solution are completely manufactured for minimum 2 personnel of SriLankan Airlines at contractors cost (expect air fare of SriLankan Airlines destinations) at the manufacturing location.
- 1.1.13 Provide all required and relevant testing facilities for pre delivery inspection for SriLankan Airlines personnel.
- 1.1.14 Make available all the required manuals specified under technical/general specifications should be available in English Language at pre delivery inspection.

- 1.2 In the event any of the Service/solution supplied or delivered pursuant to this Agreement are rejected by SriLankan Airlines, the Contractor shall take immediate steps, and not later than 15 working days from the rejected date to either replace the rejected Service/solution or make alternations necessary to meet the specifications, free of any costs to SriLankan Airlines.
- 1.3 In the event of any item of the Service/solution being damaged at any stage prior to the handing over of the Service/solution to nominated freight forwarder at the port of dispatch or if any item of the Service/solution are lost during transit from the Contractor's warehouse to the locations as set forth under Schedule B or if any item of the Service/solution are wrongly supplied, the Contractor shall replace the said damaged, lost or wrongfully supplied item of Service/solution with new ones and shall ensure that supply and delivery of same is affected speedily and no later than Four (04) weeks from the date of notification by SriLankan Airlines ("Replacement") at its own cost. SriLankan Airlines shall not be liable for any damage or deterioration caused or occurring to the wrongly supplied items under Clause 1.3 while in the custody of SriLankan Airlines. In the event the Contractor fails to provide any of the item of Service/solution within a reasonable period of time, SriLankan Airlines shall be at liberty to purchase such items of Service/solution from another source and the Contractor shall reimburse SriLankan Airlines' for any cost incurred in respect of same.
- 1.4 The contractor shall arrange commissioning of the Service/solution and training for relevant SriLankan Airlines staff once the Service/solution are received to SriLankan Airlines stores through a qualified representative engineer of the manufacturing company. All applicable expenses of commissioning and training must be borne by the contractor.
- 1.5 The contractor shall provide a comprehensive unconditional warranty of ... years from the date mentioned in the Commissioning and Acceptance Form in Annex .... for manufacturing defects of the Service/solution except ware and tare.
- 1.6 The contractor shall guarantee the spare parts availability of the purchased Service/solution for minimum 10 years irrespective of the validity period of this agreement.
- 1.7 The contractor shall handover all items/Service/solution specified in Schedule A without any cost to SriLankan Airlines.

### 2. <u>RIGHTS AND OBLIGATIONS OF SRILANKAN AIRLINES</u>:

- 2.1 SriLankan Airlines shall pay the Contractor for Service/solution provided at the rates and in the manner specified and described herein (particularly in Clause 3 and Schedule C hereto).For the avoidance of doubt, the adjustment/variation of the quantity of Service/solution provided under this Agreement shall still be provided by the Contractor in accordance to the same rates as specified under Schedule .....
- 2.2 SriLankan Airlines shall have the right to charge liquidated damages against the Contracto ras provided in Schedule C where the Contractor fails to deliver the Service/solution as required under this Agreement or any non-compliance or breach by the Contractor of any of its obligations under this Agreement.
- 2.3 Notwithstanding anything contained in this Agreement, SriLankan Airlines may at any time hire, purchase and/ or engage any other person(s)/contractor(s) to purchase Service/solution which are similar to the Service/solution contemplated in this Agreement and/or which SriLankan Airlines may deem in its opinion as specialized in nature.
- 2.4 Have the right to inspect and reject the Service/solution (or any part thereof) provided under this Agreement if in its opinion it decides that such Service/solution (or any part thereof) fail to meet the specifications required by SriLankan Airlines under this Agreement or is not of merchantable quality and unfit for the purposes intended. SriLankan Airlines right to inspect and where necessary, reject the Service/solution (or part thereof) after the Service/solution ' arrival or issuance of the Delivery

Note shall in no way be limited or waived by reason of the Service/solution having previously been inspected and passed by SriLankan Airlines or its representative prior to the Service/solution delivery.

- 2.5 When the Service/solution are received to SriLankan Airlines stores , SriLankan Airlines shall conduct a quality and quantity inspection of the same and shall accept the Service/solution at the locations once commissioning and training is completed and other required items/Service/solution specified in Schedule A are handed over by the contractor. If there is a discrepancy in quantity received and quantity indicated in invoice, UL will inform same to vendor within 5 working days of receipt of shipment to stores.
- 2.6 Upon the acceptance of the Service/solution by SriLankan Airlines, the Service/solution shall become and remain the property of SriLankan Airlines. Notwithstanding that title in whole or in part of the Service/solution may have passed to SriLankan Airlines pursuant to Clause 2.7, the Contractor shall remain and be responsible to SriLankan Airlines to make good any loss or damage to such Service/solution due to any act or negligence on the part of the Contractor or Contractor's Representatives; or arising from any incident whatsoever from the commencement of this Agreement until the Service/solution are handed over to SriLankan Airlines at the port of destination, Colombo and accepted by SriLankan Airlines.
- 2.7 Nothing in this Agreement shall prevent SriLankan Airlines from sourcing similar Service/solution or any other Service/solution or services from any third party on whatsoever basis during the period of the Agreement.
- 2.8 In the event SriLankan Airlines in its opinion decide that the Service/solution are not in accordance to the requirements and specifications set forth under this Agreement, SriLankan Airlines shall have the right to reject the Service/solution and:
  - (i) refrain from making any payments pursuant to such Order made in respect of such Service/solution ; and
  - (ii) either replace the rejected Service/solution with Service/solution meeting the specifications required under this Agreement free of any costs to SriLankan Airlines; or
  - (iii) obtain substitute Service/solution for the rejected Service/solution and the Contractor shall reimburse to SriLankan Airlines all costs incurred by SriLankan Airlines in respect of same.

#### 3. **INVOICING & PAYMENT**:

- 3.1 The Contractor shall provide the Service/solution at the rates assigned to each category as described in Schedule C hereto.
- 3.2 The Contractor shall not increase the rates, charges or any other prices set out in this Agreement during the period of this Agreement.
- 3.4 SriLankan Airlines shall inform any dispute on any invoice within 5 working days of receipt of the invoice from the Contractor and proceed to settle the undisputed amount within the payment period referred to in Clause ..... hereof. The Parties shall endeavor to resolve the dispute on the invoice amicably within 30 days of notification or any other period mutually agreed and where the Parties fail to resolve the dispute amicably, Parties shall resort to the dispute resolution mechanism provided in

this Agreement as a mean to resolve the dispute. If the dispute is resolved in the Contractor's favour, the amount payable to the Contractor shall be payable within fourteen (14) days of the resolution of the dispute.

- 3.5 SriLankan Airlines shall be entitled to withhold any payments due to the Contractor under this Agreement and any sums of money required to be withheld by SriLankan Airlines under any law or regulation for the time being in force and/or pursuant to this Agreement.
- 3.6 Payment shall be made in according to the payment details provided in Schedule C.
- 3.7 Invoices to be addressed to: Manager Financial Services, SriLankan Airlines Ltd, Airlines Centre, BIA, Katunayake, Sri Lanka and/or email to: zaroosha.farook@srilankan.com

#### 4. LIABILITY & INDEMNITY:

- 4.1 The Contractor shall indemnify and hold harmless SriLankan Airlines free and clear from and against any and all losses, costs, expenses, claims, damages and liabilities, to SriLankan Airlines, its officers, agents, employees, representatives or any third parties and/or any property, that may arise pursuant to this Agreement, in particular pursuant to (but not limited to) any:
  - a) Claim in respect of any workers of the Contractor under the Workman's Compensation laws or any other law;
  - b) Accident, injury or death caused to any person by negligence or willful misconduct of the Contractor, its servants, agents employees or representatives;
  - c) Acts of theft, pilferage, damage of property caused by the Contractor or its servants, agent s employees or representatives;
  - d) Any losses, damages, injuries, illness or death incurred due to manufacturing defects, nonperformance and or malfunction of the Service/solution procured under this agreement by SriLankan Airlines;
  - d) if the Service/solution provided to SriLankan Airlines are not suitable for the use intended and/or does not meet the specifications set out in this Agreement including alleged illness, injury, death or damage as a result of the use of any the Service/solution produced, packaged, stored or shipped by Contractor;
  - d) violation of any laws, regulations or intellectual property rights of any party;
  - e) breach of any obligations, representations, warranties or covenants in the Agreement by the Contractor;
- 4.2 SriLankan Airlines shall indemnify and hold harmless the Contractor free and clear from and against any and all losses, costs, expenses, claims, damages and liabilities that may arise pursuant to the death or injury of a worker of the Contractor or damage to the Contractor's (or its workers) property caused by SriLankan Airlines' negligence or wilful misconduct.

### 5. <u>INSURANCE</u>:

5.1 The Contractor shall, without prejudice to its obligations under Clause 5.1 and as a condition precedent to this Agreement, at its own cost secure policies of insurance as described below, acceptable to SriLankan Airlines which shall be kept current throughout the term of this Agreement. These insurances will include but not limited to;

- a) Workmen's Compensation Insurance or employer's liability insurance for all employees of the contractor or their representatives involved with performance of this contract. The policy shall include extensions for riot and terrorism.
- 5.2 Such insurances as aforementioned incorporate the following provisions in respect of liability assumed by the Contractor under this Agreement (unless otherwise specified by SriLankan Airlines):
  - a) Name SriLankan Airlines, its successors and assigns, directors, officers, servants, employees, agents and contractors as additional assureds.
  - b) A severability of interest clause, where the insurances (except with regard to the limits of liability) will operate in all respects as if there were a separate policy covering each assured.
  - c) Confirm that such insurances shall be primary without right of contribution from any other insurance carried by SriLankan Airlines.
  - d) Provide that the cover afforded to SriLankan Airlines shall not be invalidated by act or omission by the Contractor or by any other person and shall remain valid regardless of any breach or violation by the Contractor or any other person of any warranty, declaration or condition contained in such insurances.
  - e) The Insurer (of the insurances) will provide 15 days prior written notice to SriLankan Airlines of any material change of the insurances affected pursuant to this Clause.
- 5.3 The Contractor shall also within 15 days of the execution of this Agreement and at each consequent renewal (or renewal of insurances whichever shall occur first) produce an Insurance Policy/Certificate/Endorsement evidencing coverage as per the requirements of Clause 5.1.
- 5.4 In the event the Contractor defaults and/or fails to comply with any of its obligations under this Clause, SriLankan Airlines may (without prejudice to any other remedy available under this Agreement) pay any premiums that may remain due and unpaid provided that SriLankan Airlines shall be entitled to deduct or charge the Contractor any such amounts expended by it to pay such aforementioned unpaid premiums.
- 5.5 The insurance coverage required by Clause 5.1 and 5.2 shall at all times be valid and adequate to meet all the obligations set out above and any other obligations required by law. Failure to maintain insurance coverage to the required level will be considered by SriLankan Airlines as a fundamental breach of this Agreement.

#### 6. <u>NON-COMPLIANCE</u>:

- 6.1 In the event of the non-compliance or breach by the Contractor of any of its obligations contained in this Agreement, SriLankan Airlines may at its discretion, without prejudice to any of its rights under this Agreement:
  - a) Terminate this Agreement as per Clause 7 below:
  - b) Charge the Contractor liquidated damages at the rate specified in Schedule C of the estimated amount of the monies payable for the relevant Service/solution for the relevant period of non-compliance or breach; and/or

c) Obtain the Service/solution from another contractor provided however, that in the event any money is expended by SriLankan Airlines on account of the Contractor's non-compliance or breach of its duties, such said expenditure shall be re-charged to the Contractor.

The Contractor shall in the aforementioned instances make good the irregularity, breach and/or lapse as soon as possible to the satisfaction of SriLankan Airlines and shall reimburse SriLankan Airlines any expenses incurred by it in such said instances.

#### 7. <u>TERM & TERMINATION</u>:

- 7.1 This Agreement shall be valid for a period of \_\_\_ years commencing from \_\_\_\_ until\_\_\_\_ unless terminated earlier and shall automatically stand terminated upon the expiry of the Agreement. Notwithstanding the above, the Parties may extend the Term of this Agreement upon the expiry of the Term for a further period of 1 year by written mutual agreement on the same terms and conditions of this Agreement; provided however that such extension shall be subject to the Contractor's satisfactory performance of the Agreement decided at the sole discretion of SriLankan Airlines.
- 7.2 Notwithstanding Clause 7.1, SriLankan Airlines may terminate this Agreement at any time, without assigning any reasons whatsoever, by giving the Contractor 90 days' written notice of termination without any liability to pay compensation and such termination shall take effect on the expiry of the said 90 days' notice period.
- 7.3 SriLankan Airlines may terminate this Agreement forthwith in writing in the event the Contractor does not:
  - a) provide the Service/solution at the time, manner and/or to the specifications/ quality required by SriLankan Airlines pursuant to this Agreement;
  - b) comply with the requirements and/or notices of SriLankan Airlines; and/or
  - c) Perform, fails or is failing in the performance of any of its obligations under this Agreement.
- 7.4 Subject to Clause 7.3 hereof, either party shall have the right to terminate this Agreement forthwith at any time by giving written notice to the other upon the happening of any of the following events:
  - a) if the other party is in breach of any of the terms or conditions of this Agreement and fails to rectify same within 30 days of the written notice of the breach to the defaulting party or immediately if the breach is incapable of remedy;
  - b) if the other party enters into liquidation whether compulsory or voluntary (otherwise than for the purpose of amalgamation or reconstruction) or compounds with or enters into a scheme of arrangement for the benefit of its creditors or has a receiver appointed of all or any part of its assets or takes or suffers any similar action in consequence of debt; and/or
  - d) if the other party shall cease substantially to carry on trade or shall threaten to cease substantially to carry on trade.
  - e) Disruption to the performance of the Agreement for a period of more than 60 days due to force majeure event.

- 7.5 Expiration or termination of this Agreement pursuant to the provisions of this Clause shall be without prejudice to the accrued rights and liabilities of either party.
- 7.6 On termination of this Agreement the Contractor shall only be entitled to receive the payment of monies (less any monies as SriLankan Airlines is entitled to deduct/set-off under this Agreement) for Service/solution duly provided in accordance with the terms of this Agreement. The Contractor shall not be entitled to any further costs, remuneration consequential or special damages, loss of profits or revenue claimed to have been suffered by the Contractor (including its agents, employees and representatives) as a result of this Agreement.
- 7.7 In the event SriLankan Airlines terminates this Agreement in whole or in part, pursuant to 7.3 a), b) or c) of the Agreement, SriLankan Airlines may procure upon such terms and in such manner as it deems appropriate, Service/solution, as the case may be, similar to those undelivered under the Agreement, and the Contractor shall be liable to SriLankan Airlines for any excess costs for such similar Service/solution procured by SriLankan Airlines. However, the Contractor shall continue performance of the Agreement to the extent not terminated herein.

#### 8. BANK GUARANTEE:

- 8.1 Upon the execution of this Agreement, the Contractor shall furnish SriLankan Airlines a bank guarantee for the sum as set forth under Clause 2.1 of Schedule C, as an irrevocable and unconditional bank guarantee drawable on demand in Sri Lanka from a bank acceptable to SriLankan Airlines, in a form and substance satisfactory to SriLankan Airlines as security for the due and proper performance by the Contractor of its obligations under this Agreement. All applicable bank charges (including any charges at the time of encashment) on such bank guarantee shall be borne by the Contractor). The said bank guarantee shall remain in force for the duration of this Agreement and 90 days thereafter.
- 8.2 The proceeds of the Bank Guarantee shall be payable to SriLankan Airlines as compensation for any loss resulting from the Contractor's failure to complete its obligations under the Agreement.
- 8.3 The Bank Guarantee will be discharged by SriLankan Airlines and returned to the Contractor within 90 days of the expiry of this Agreement or within 90 days following the date of completion of Contractor's obligations under the Agreement, whichever is later, less monies due to SriLankan Airlines and/or as SriLankan Airlines is entitled to deduct/set-off under this Agreement.
- 8.4 In the event, that the Contractor fails to pay any monies due to SriLankan Airlines (or any part thereof) as and when the same become payable under this Agreement, SriLankan Airlines shall be entitled to adjust or deduct any monies due to SriLankan Airlines from the Bank Guarantee accordingly. In the event of an adjustment or deduction of the Bank Guarantee by SriLankan Airlines against any sums due from the Contractor, the Contractor shall immediately submit to SriLankan Airlines the amount adjusted or deducted by SriLankan Airlines and restore the Bank Guarantee to its original amount.
- 8.5 SriLankan Airlines shall not make any payments under this Agreement to the Contractor until SriLankan Airlines has received the Bank Guarantee as stipulated under Clause 8 hereof.
- 8.6 SriLankan Airlines' rights with respect to the Bank Guarantee shall be in addition to any other rights or remedies available to SriLankan Airlines.

#### 9. <u>GOVERNING LAW</u>:

9.1 This Agreement shall be governed by the laws of Sri Lanka and subject to the jurisdiction of the courts in Sri Lanka.

#### 10. FORCE MAJEURE:

- 10.1 In the event that either party shall be wholly or partly unable to carry out its obligations under this Agreement by reasons or causes beyond its control, including by way of illustration Acts of God or the public enemy, fire, floods, explosions, epidemics, insurrection, riots or other civil commotion, war, Government order or by any other cause (excluding, however, strikes, lockouts or other labour troubles), which it could not be reasonably be expected to foresee or avoid, then the performance of its obligations in so far as they are affected by such cause shall be excused during the continuance of any inability so caused. Such cause(s) shall however as far as possible be remedied by the affected party with all reasonable despatch.
- 10.2 Notwithstanding the above each party shall give the other as soon as possible notice of the occurrence or imminent occurrence of an event as indicated above and where such notice is given verbally it shall be followed immediately in writing.
- 10.3 In the event the force majeure event relates to delivery of Service/solution by the Contractor, unless otherwise directed by SriLankan Airlines in writing, the Contractor shall continue to perform its obligations under the Agreement as far as is reasonable and practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event. In case of delays in the completion of delivery in accordance to the time schedule as specified in the respective Purchase Order(s) due to any of the force majeure event mentioned above, the time schedule for the delivery of Service/solution shall be extended accordingly.

#### 11. <u>GENERAL</u>:

- 11.1 This Agreement shall constitute the entire agreement and understanding of the parties and shall supersede all prior agreements, whether written or oral between the parties hereto concerning the subject matter hereof.
- 11.2 In the event of a conflict between this Agreement and its Schedules, the Schedules shall take precedence over this Agreement in respect of the subject matter thereof. In the event of a discrepancy between Purchase Order and the Agreement, the Purchase Order will take precedence over this Agreement in respect of the subject matter thereof.
- 11.3 In the event that either party shall be rendered wholly or partly unable to carry out its obligations under this Agreement as a result of strikes, lockouts and labour troubles, then such party so incapacitated shall compensate such other for damage and/or loss suffered by such other as a result of such strike, lockout or labour trouble.
- 11.4 At all times the Contractor (together with its workers) will be deemed to be an independent contractor and shall not under any circumstances be considered an employee, representative or agent of SriLankan Airlines.
- 11.5 The right and remedies of SriLankan Airlines against the Contractor for the breach of any condition and for obligations undertaken by the Contractor under this Agreement shall not be prejudiced or deemed to be waived by reason of any indulgence or forbearance of SriLankan Airlines.
- 11.6 Nothing in this Agreement shall prevent SriLankan Airlines from availing itself of any remedies provided under the general law in addition to the remedies stipulated in this Agreement.

- 11.7 Except to the extent as amended under the Purchase Order(s), this Agreement shall not be varied or modified otherwise than by an instrument in writing of even date herewith or subsequent hereto executed by or on behalf of SriLankan Airlines and the Contractor by its duly authorised representatives.
- 11.8 If any provision of this Agreement should become or be adjudged invalid or unenforceable for any reason whatsoever, such invalidity or unenforceability shall not affect any other part of this Agreement and all other provisions shall remain valid and in full force and effect.
- 11.9 The titles to the clauses in the Agreement are for convenience of reference only and do not form part of this Agreement and shall not in any way affect the interpretation thereof.
- 11.10 SriLankan Airlines does not grant the Contractor any right, title or interest in any of its designs, labels, know-how, trade names, trademarks, service marks, logos and other distinctive brand features or business identifiers, logo, copyright or any other intellectual property rights of SriLankan Airlines ("Intellectual Property Rights") except as expressly authorized in writing by SriLankan Airlines and the Contractor shall not have any right, title or interest in the said Intellectual Property Rights of SriLankan Airlines Airlines other than the right to use it for purposes of this Agreement for the Term hereof only with the express written consent of the SriLankan Airlines.
- 11.11 The Contractor shall not issue any press release or other public announcement related to this Agreement, written or oral, without the prior written consent of SriLankan Airlines, except as required by law or a court order. For avoidance of any doubt, the Contractor shall not make, give or issue any press release or other press activity involving or referring to SriLankan Airlines or any of its affiliates or their services or operations, without SriLankan Airlines prior written approval.
- 11.12 The Contractor expressly assures and warrants that it has all the necessary approvals, authorizations and licenses to enter into this Agreement and to provide the Service/solution envisaged under this Agreement.
- 11.13 Any notice or other communication required or authorized by this Agreement to be served or given by either party to the other shall be deemed to have been duly served or given if in writing and
  - (a) left at or sent by prepaid registered post to the last known place of business of that; or
  - (b) sent by fax or e-mail to such place of business and confirmed by prepaid registered post, similarly addressed, within 24 hours of the despatch of such fax or e-mail.

In the case of SriLankan Airlines to – SriLankan Airlines Limited Bandaranaike International Airport, Katunayake Sri Lanka Fax : E-mail: Attention:

In the case of the Contractor to –

**IN WITNESS WHEREOF** the parties hereto have caused their authorized signatories to place their hands hereunto and to one other of the same tenor on the date first referred to above in:

For and on behalf of **SRILANKAN AIRLINES LIMITED** 

For and on behalf of

Name: Designation: Name: Designation:

Witness:

Name: Designation: Witness:

Name: Designation:

## ANNEXTURE G : Bid Acknowledgement Form

## **IMPORTANT**

All Bidders should confirm the intention to submit a Bid by forwarding the duly

completed Bid Acknowledgement form given below, 07 working days prior to the

Bid closing date.

### **RECEIPT OF THE BID DOCUMENTS**

Receipt of your Bid invitation document no. CPIT/ICB 11/2020 is hereby acknowledged

You may expect to receive our proposal on or before.....

	We do not intend to bid because
Signed	:
Title	:
Compan	ıy :
Date	:

## ANNEXTURE H - Vendor Information Form

Sectior	A - Basic information of the vendor		
1.	Registered Name of the Vendor :		
2.	Date of Incorporation:		
3.	Country of Incorporation:		
4.	Nature of business :	5. Company type :	
6.	Telephone & Fax numbers :	7. E-mail address :	
8.	Tel: Fax: Registered address :		
9.	Other contact details (if any) :		
Section	n B - Details of Directors, Shareholders	and related parties	

1. Name(s) of Directors	
2. Name(s) of Shareholders	
<ol> <li>If the Shareholders are incorporated entities, please state the shareholders of such entities</li> </ol>	
<ol> <li>If the Shareholders are equity funds, please state the owners of such funds</li> </ol>	
5. Name (s) of Directors of Parent/Subsidiary who are also Directors of SriLankan Airlines	
6. Name(s) of Directors of Parent/Subsidiary who are also Employees of SriLankan Airlines	
7. Names of Close Family Members who are either Directors/Employees of SriLankan Airlines	

\*Please note that the copies of passports and proof of residence of the above mentioned Shareholders / Directors / Owners of funds shall be submitted by the vendor upon the request of SriLankan Airlines. Details of vendor's authorized signatory: Name: Designation: Date: Signature & Company Rubber Stamp:

n C -Business verification : Duly signed an rted by the following documents Tick the appropriate boxes	nd st	amped copy of above document to be
A copy of the Certificate of Incorporation certified by the Company Secretary of the vendor Company		A copy of Form 15 (Sri Lankan Companies) certified by the Company Secretary or a letter from the Company Secretary confirming the shareholding.
A copy of Form 20 (Sri Lankan Companies) certified by the Company Secretary or a letter from the		For Partnerships, list of partners confirmed by one of the partners, preferably by the most senior partner.
Company Secretary confirming the directors		Audited financial statements of the vendor Company for the last three years
For partnerships and sole proprietorships, certificate of business registration		Others (specify)

hereafter refered to as the Third Party Organisation/Cloud Service Provider

	Extended Information Security Schedule for service providers ,contractors and other interested 3rd parties							
#	Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks	
	General							
	Access control (access to buildings/areas) Technical and/or organizational procedures shall be in place for access control and, in particular, for the identification of authorized persons							
1.2	Access controls Procedures shall be available with regard to user identification and authentication, both technical (password/password security) and organizational (master user data)							
	Access privilege controls (the prevention of prohibited activities that exceed the granted user rights within an IT system). Authorization model and access rights to meet requirements shall be available; with monitoring and logging of the same							
1.4	Transfer controls (for all aspects of the transfer of personally-identifiable data: electronic transmission, data transport, conveyance checks) shall be available							
1.5	Input controls (audit trail, documentation on data administration and maintenance) Procedures that support a historical audit of when data was entered, modified or removed (deleted), and by whom shall be available.							
	Contract controls (assurance of policy-compliant processing of contractual data) Procedures (technical/organizational) shall be available defining the responsibilities of contractor and client.							
1.7	Availability controls (data shall be protected against accidental deletion or loss) Procedures for data archiving (physical/logical) shall be available							
1.8	Controls for separation of duties (datasets that are created for different purposes shall also be processed separately). Procedures shall be available to support the separate processing (storage, modification, deletion, transmission) of datasets that serve different contractual purposes.							
1.9	Availability of standard 'data processing validation controls. E.g.: error handling and reporting, exception reports							
1.1	Availability of standard 'data input validation controls. E.g.: duplicate checks, field validations							
1.11	Availability of an 'approval workflow' for key system level critical transactions							
	Data migration between old systems to new system with data cleansing							
	Availability of comprehensive application manuals							
	Test environment availability Provision for an Escrow agreement in the event the Service Provider is unable to support the application							
1.16	Provide In-house Application hosting information requirements					1	1	
	Vendor shall provide accurate KPI's and Service level monitoring dashboard							
2	Privacy Policies							
	The Third Party Organization shall comply with the obligations under the EU General Data Protection Regulation (GDPR) in relation to any Personal Data of customers, employees, and Board of Directors of SriLankan Airlines (hereafter refered to as "Peronal Data").							
2.2	The Third Party Organization shall process any Personal Data solely for the purposes identified by the relevant Agreement.							

Annexure I

#	Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
2.3	The Third Party Organization shall have in place appropriate technical and organisational						
	measures to ensure a level of security commensurate with the risks associated with the						
	Processing of Personal Data, such measures shall be appropriate in particular to protect						
	against accidental or unlawful destruction, loss, alteration or unauthorised disclosure of or						
	access to Personal Data.						
	These measures shall take into account and be appropriate to the state of the art, nature,						
	scope, context and purposes of Processing of personal data and prevent unauthorised or						
	unlawful Processing or accidental loss, destruction or damage to Personal Data.						
	For the avoidance of doubt in the event of a dispute between the Third Party Organization						
	and SriLankan, SriLankan shall decide whether the Third Party Organization has put in place						
	appropriate technical and organisational measures in accordance with this Clause 11.						
	appropriate technical and organisational measures in accordance with this clause 11.						
2.4	The Third Party Organization shall will notify SriLankan promptly and without undue delay						
	and in any event within 24 hours of becoming aware of any breach of security leading to the	1					
	accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to						
	Personal Data ("Personal Data Breach") of the existence, nature and scale of the Personal						
	Data Breach and shall comply with its obligations under the EU GDPR in respect of the						
	Personal Data Breach; and co-operate with SriLankan to make any reasonable changes to its						
	processes or procedures to prevent a reoccurrence of the Personal Data Breach.						
2.5	The Third Party Organization shall not engage any third parties or non-employees to process						
	Personal Data unless SriLankan has expressly consented in writing in advance to the use of						
	such third parties. The Third Party Organization shall ensure that any person acting under its						
	authority in relation to the Personal Data, including a Data Processor, is obligated to Process						
	the Personal Data only on the instructions of SriLankan and have in place appropriate						
	technical and organisational measures to ensure a level of security commensurate with the						
	risks associated with the Processing.						
2.6	The Third Party Organization shall use reasonable endeavours to provide such assistance as						
	SriLankan reasonably requires in relation to satisfying any legitimate requests received from						
	Data Subjects in relation to the Personal Data.						
2.7							
	The Third Party Organization shall keep a record of any Processing of Personal Data it carries						
	out, including:						
	9.7.1 the purposes of the processing;						
	9.7.2 a description of the categories of data subjects and of the categories of Personal Data;						
	9.7.3 the categories of recipients to whom the Personal Data have been or will be disclosed;	1					
	and	1					
	9.7.4 each transfer of Personal Data and, where relevant, the documentation of suitable						
	safeguard.						
2.8	The Third Party Organization shall take steps to ensure that, from and including 25 May 2018, their Processing of any Personal Data is compliant with the GDPR.						
20	Provide details of the exact technical and organizational measures which ensure your		+		1	1	
2.9	compliance with GDPR for all personal data that you hold.						
2.1	Are all staff fully trained in GDPR and other relevant data protection legislation? Please	1					
	provide evidence of training content and attendance.						
2.11	Provide details of the appropriate measures the vendor has implemented to secure its		ł			1	
	systems and data against internal and external threats and risks; and the process you take to						
	continuously review and revise those measures to address ongoing threats and risks.						
2.12	Describe schedule for reviewing and updating your policies for processing data on behalf of						
	your data controllers.						
2.13	Where does your organization store the digital personal information you are managing on						
	our behalf? If stored with a third-party sub processor, please identify them and where data is						
	stored.						
2.14	What processes and methods are you using to properly anonymize and encrypt personal						
1	data?	1					

#	Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
2.15	Please describe your processes for detecting and communicating data breaches.						
	What tools are in place to manage the identification, tracking, and destruction of personal data associated with an individual?						
2.17	Provide detail information what happens to the data at the end of the contract period? Please provide information						
2.18	Service Provider responsibilities with regards to 'segregation of duties'						
	Requirement for Back-up/ disaster recovery and IT Service continuity where systems are hosted outside UL						
3	Security Governance						
	Third Party Organization shall designate named individual or a team with overall						
3.2	Third Party Organization shall have management-approved Information Security policies and						
	The Solution and the Third Party Organisation is compliant for ISO/IEC 27001:2013						
	Third Party Organization shall continually improve the suitability, adequacy and effectiveness of Information Security in accordance with applicable external standards, regulations and SriLankan requirements.						
4	Security Risk and Compliance						
	Third Party Organization shall perform Information Security risk assessments on periodic basis and maintain a register of security risks related to the provision of its services to SriLankan and to processing of SriLankan information and/or information systems.						
4.1.a.	The risk register shall be maintained to show the nature, extent of and progress made in mitigating the identified risks.						
4.2	Third Party Organization shall conduct periodic compliance reviews against management- approved Information Security policies.						
4.3	Third Party Organization shall notify SriLankan where sub-contractor is engaged to provide services and shall ensure that sub- contractor also abides by this policy.						
4.4	Third Party Organization shall abide by the contractual agreements put in place with respect to SriLankan requirements which includes but not limited to code ownership and intellectual property rights.						
4.5	Third Party Organization shall facilitate and participate in periodic Information Security reviews which will be carried out by SriLankan or on behalf of SriLankan. Information Security reviews may also be conducted under the following conditions:						
4.5.a	Security incident/breach						
	Major change in information systems used to provide services to SriLankan						
	Third Party Organization shall provide periodic reports on risk and compliance management as applicable to services provided to SriLankan.						
	Third Party Users shall comply with all applicable SriLankan corporate and Information Security policies, standards and procedures.						
	Vendor shall follow SriLankan Airlines Incident reporting, handling and response procedures.						
	Personnel and Physical Security						
	Third Party Organization shall conduct adequate back-ground verification checks of their staff involved in SriLankan Airlines engagement						
	Third Party Organisation shall proactively inform SriLankan Airlines if screening has not been completed or if the results give cause for doubt or concern						
5.2	All employees in the Third Party Organization shall sign a Non-Disclosure Agreement.						
	Third Party Organization shall ensure that all employees complete mandatory Information Security awareness course periodically covering topics like password and user account security, information protection and handling, issues of confidentiality and company security standards.						

#	Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
5.4	Third Party Users shall sign a Non-Disclosure Agreement before gaining access to SriLankan information and information systems.						
5.5	Third Party Organization shall maintain a formal employee separation process which includes but not limited to revocation of access, return of assets, exit interview.						
5.6	Third Party Organization shall implement all applicable physical and environmental security controls to provide adequate protection to SriLankan information & information systems.						
6	Security in Applications, Systems and Networks						
6.1	Third Party Organization shall design, implement and operate a Layered Security model to provide adequate and effective protection for SriLankan information and information systems. This shall be a combination of preventative, detective and reactive controls and must apply to development, test, pre-production and production environments.						
6.2	Third Party Organization shall ensure that SriLankan information and/or information systems are physically or logically segregated from other customers.						
6.3	Third Party Organization shall design, implement and operate suitable controls to ensure continuity of services in accordance with system uptime and performance requirements, Recovery Time Objective and Recover Point Objective.						
6.4	Third Party Organization shall maintain an established process to provision, review access rights of, de-provision user and service accounts. Periodic access review reports shall be submitted to SriLankan.						
6.5	Third Party Organization shall implement and operate robust network, system and application access controls to authenticate, authorize and log all access attempts pertaining to SriLankan information and information systems. This applies to access attempts made by users, services and devices.						
6.6	Third Party Organization shall not process or store SriLankan information on end user systems like laptops, desktops, mobile devices, etc. Where this is a legitimate requirement, adequate security controls including but not limited to encryption, access control, Mobile Device Management shall be implemented and operated.						
6.7	Third Party Organisation should periodically deliver an independent report on the effectiveness of information security controls and agreement on timely correction of relevant issues raised in the report to SriLankan Airlines, on request						
	Third Party Organization shall conduct annual vulnerability assessments and/or penetration tests on applications, systems and networks that transmit, process or store SriLankan information. Reports shall be shared with relevant stakeholders in SriLankan. Third Party Organization shall apply security patches in mutually agreed timeline without any cost escalation.						
6.9	SriLankan Airlines may perform Vulnerability Scans at least annually and findings will be notified to Third Party Organization. If any vulnerability is found, Third Party Organization shall agree to apply security patches in mutually agreed timeline without any cost escalation.						
6.10	Third Party Organisation should provide to SriLankan Airlines on request, the status of the closure of high vulnerabilities						
6.11	During the year , Third Party Organisation shall conduct information security reviews of its sub contractors and its own suppliers engaged in services/products delivered to SriLankan during the year						
6.12	Third Party Organisation shall conduct BCP testing on SriLankan Related systems/services during the year						
7	Security in System Delivery Lifecycle						

#	Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
7.1	Third Party Organization shall have an established Software/Systems delivery Lifecycle						
	process embedding adequate security at all stages, including but not limited to secure by						
	design, secure by default and security in deployment in accordance with the applicable						
	external standards, regulations and SriLankan requirements.						
7.2	Third Party Organization shall conduct security code reviews for all versions of the						
	application prior to release. Reports shall be shared with relevant stakeholders in SriLankan.						
7.3	Third Party shall ensure that access to program source code is restricted and strictly						
	controlled.						
8	Data Security						
8.1	Third Party Organization shall design, implement and operate adequate security controls to						
	protect confidentiality, integrity and availability of SriLankan data and/or information in		1				
	accordance with the classification levels.		1				
	Security controls for adequate protection shall include but not limited to access control,						
	cryptography, data backups, Data Loss Prevention, Digital Rights Management, Anti-						
8.1.4	Malware.		1				
8.2	Third Party Organization shall only transmit, process or store SriLankan data and/or						
	information in accordance with the contract requirements.						
8.3	Third Party Organization shall retain SriLankan data and/or information based on SriLankan						
	data retention policy which is 12 years as per Right To Information Act.						
8.4	Third Party Organization shall have an established data and media disposal processes						
	incorporating suitable security requirements aligned with relevant industry accepted						
	standards or regulations. SriLankan data shall be suitably disposed of under the following						
	conditions:						
	Contract expiry						
	Equipment / media retirement or maintenance						
8.5	Third Party Users shall not process or store SriLankan data and/or information on non						
	SriLankan devices. Where there is a legitimate business requirement to do so, approvals						
	must be taken from SriLankan Information Security team.						
9	Authentication & Password Compliance						
9.1	Role Based Access & Workflow Approvals (Segregation of Duties)						
	Active Directory (AD) Integrated (If <b>Yes</b> , please proceed to A-7)						
	Password age – 60 Days						
9.4	Minimum password length – 8 Characters						
	Password change at initial login						
9.6	Password Complexity						
9.6.1	At least one 'UPPERCASE' character						
	At least one 'lowercase' character						
9.6.3	Mixture of numbers and/or symbols						
	Account Lockout						
	Lockout after 5 unsuccessful attempts						
	30 minutes lockout duration		ļ				
	Password History – 8 Passwords					ļ	
	Availability of multiple-factor authentication		l				
	Transfers authentication information through secure protocols					ļ	
9.6.10	Ability to display the time and date of last successful login, and any failed login attempts to		1				
	user						
9.7	Third Party Organisation shall support integration of solution with Microsoft Identity		1				
	Manager for Identity & Access Management						
10	Backups						
10.1	Scheduled configuration backups						
	Scheduled data backups						
10.3	Backup retention period - 12 years for all SriLankan/service related data						

#	Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
10.4	7 days for daily backups, 30 days for weekly backups, 12 years for monthly backups. On special requests retention periods are set as required						
11	Audit & Event Logs (for all user activities, including administrative and privileged user activities, and system configuration changes)						
	Application Audit Logs (including transaction logs)						
	Database Level Audit Logs						
	Application & Database Level Audit Logs should be available at least for 5 years (including transaction logs)						
	OS Level Audit Logs						
11.6	Event Logs (including successful/unsuccessful login attempts) Integration with McAfee Enterprise Security Manager for log correlation and management (recommended log format: syslog)						
	Restricted access to Fault/Event Logs						
	B Fault logs retention period – 5 years minimum						
	Audit logs retention period – 5 yeas minimum						
	Restricted access to Audit Logs						
	Mechanisms for transaction and audit log management and report generation Audit logs should be displayed at front end for authorized accounts						
11.14	Audit logs should be displayed at front end for authorized accounts		-			+	
12	Encryption						
12.1	256 bit key encryption for data at rest and in transit.						
12.2	Application services support enabling a public-key infrastructure (public key cryptography and digital signatures)						
12.3	Remote diagnostic and configuration port should be protected.						
12.4	Symmetric Key Encryption hard coded to the source code; key to be generated dynamically by SriLankan.						
12.5	Web applications enabled with TLS 1.2 certificates						
12.6	Restricted access to program source code. **						
13	Data Validation						
13.1	Input & Output Data Validation						
14	Connectivity and Access Control						
	Web applications enabled with current TLS version certificates						
	Remote diagnostic and configuration port should be protected.						
14.3	Ability to configure inactive Sessions timeout (for Application, Database, OS, Console)						
14.4	Ability to configure a Log-on banner						
15	Dependent Systems and Services (if yes, please provide information on systems/services/ports in remarks)						
15.1	Solution necessitates dependent systems & services						
	Incident Management						
16.1	Third Party Organisation shall inform SriLankan Airlines about any incidents related to information security as soon as an incident occurs						
	Third Party Organisation shall inform about the workarounds and rectifications taken to address the incidents						
16.3	Third Party Organisation shall provid audit trails and records of information security events, operational problems, failures, tracing of faults and disruptions related to the service delivered						

#	Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
17	Service Continuity						
17.1	Availability - 99.95%						
	Recovery Time Objective - 1 hour						
	Recovery Point Objective - 1 hour		-				
17.4	Third Party Organisation agrees to setup a local office or a competent local service provider to assist SriLankan Airlines in support queries or incidents.						
18	Right to Audit & Monitor						
18.1	Third Party Organisation agrees that performance of the Services will be subject to monitoring by SriLankan Airlines.						
18.2	Third Party Organisation agrees to keep accurate and complete records and accounts pertaining to the performance of the Services. Upon no less than seven (7) days' written notice, and no more than once per calendar year, SriLankan Airlines may audit, or nominate a reputable firm to audit, records relating to performance of Third Party Organisation/service provider under the Service Level Agreement, during the agreement period and for a period of three (03) months thereafter.						
	If Third Party Organisation obtains third party services by means of outsourcing or sub- contract, Third Party Organisation is required to ensure such activities maintain applicable records to reflect the services agreement with SriLankan Airlines and will be subject to audit/monitor as set forth in 18.1 to 18.3 above.						
18.4	Right to audit requirement and requesting a SAAS 70 or any other document which can be provide the independent assurance regarding the vender IT system/ infrastructure						
	Licensing Requirements						
19.1	Does the solution necessitate additional licenses for third party components/services? (If Yes, please provide information in remarks)						
19.2	If solution necessitates additional licenses for third party components/services, please state if such licenses are included in the proposed solution? (If No, please provide details of additional licenses required from SriLankan Airlines)						
19.3	provide User license information and cost and how the vender would provide user licenses based on the future requirements						
20	Legislative, Standards & Regulatory Compliance						
20.1	Third Party Organisation agrees to sign a Reciprocal Non Disclosure Agreement with SriLankan Airlines						
20.2	Information shared or services obtained as part of SriLankan Airlines engagement with Third Party Organisation will be governed by requirements set forth in ISO/IEC 27001:2013 Information Security Management System (ISMS) and subjected to signing this policy which will become an integral part of the Service Agreement(s).						
20.3	Third Party Organisation shall agree to adhere to SriLankan Airlines Information Security Policy						
	Service Level Agreement						
	Signed Service Level Agreement including, and not limited to,						
	Reflect Service Continuity objectives set forth above 17.1 to 17.3						
	Defined Response Times and Resolution Times based on defined priorities Periodic service review meetings between SriLankan Airlines and the Third Party						
	Organisation Escalation Criteria for Incident Management to ensure performance of services under the						
	Service Level Agreement						
	Information about the licensing arrangements (for dependents systems/services), code ownership and intellectual property rights related to the Third Party Organisation's products/ services						
21.1.6	Service Credits for failing to meet performance of services under the Service Level Agreement						

# Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
21.1.7 Third Party Organisation should submit service reports at a defined frequency						
21.1.8 Liabilities in the form of compensation or penalty can be sought from the supplier if the						
supplier is found, either intentionally or negligently, to have a caused a security breach, damage or injury						
Cloud Computing Security Standard						
22 Evaluation of Third Party Organization/ Cloud Service Provider (CSP)						
22.1 SriLankan may perform periodic assessment of the Cloud Security Provider's security posture where necessary.						
22.2 Third Party Organization/ Cloud Security Provider (CSP) hosting SriLankan data shall maintain a certification in good standing against an approved Information Assurance Framework. The certification by an independent and recognized third-party may be required to get a reasonable assurance that security controls are planned and properly implemented.						
23 Protection of SriLankan Data in Cloud Environment						
23.1 Third Party Organization/CSP must operate a Layered Security model at the perimeter, core network, systems, application and data layers to adequately protect SriLankan data.						
23.2 SriLankan data and application environment must be segregated from other entities' environments.						
23.3 SriLankan data must be adequately protected in accordance with the classification levels of the data sets as per Annexure A.						
24 Compliance and Audit in Cloud Environment						
24.1 Third Party Organization/CSP must demonstrate compliance against SriLankan Extended Information Security policy, relevant contractual requirements and applicable external standards and regulations.						
24.2 SriLankan shall conduct security reviews where necessary on the cloud environment on an ongoing basis to verify compliance.						
US DOT Compliance						
25 Customer facing web interfaces shall designed/deployed according to US DOT Compliance requirements						

\_\_\_\_\_Third Party Organization Name\_\_\_\_\_\_

By: Name: Title: Date: By: Name:

Title:

Date:

Annexure A - Information Classification Matrix

Classification Level: Public

Classification Criteria: Making the information public cannot harm Sri Lankan Airlines in any way Access Restriction: Information is available to the public

Policy statements/ Compliance requirements for Third Party Organizations	Deployed technical controls	Deployed procedural controls	Overall compliance (Yes/No/ Not Applicable)	Reasons for Not Applicability	Compensating controls	Remarks
 Clearification Laurah Internal						

#### Classification Level: Internal use

Classification Criteria: Unauthorized access to information may cause minor damage and/or inconvenience to Sri Lankan Airlines Access Restriction: Information is available to all employees and selected third parties

#### Classification Level: Restricted

Classification Criteria: Unauthorized access to information may considerably damage the business and/or Sri Lankan Airlines' reputation Access Restriction: Information is available only to a specific group of employees and authorized third parties

#### Classification Level: Confidential

Classification Criteria: Unauthorized access to information may cause catastrophic (irreparable) damage to business and/or to Sri Lankan Airlines' reputation Access Restriction: Information is available only to individuals in Sri Lankan Airlines

# OWASP Mobile Application Security Checklist



Based on the OWASP Mobile Application Security Verification Standard

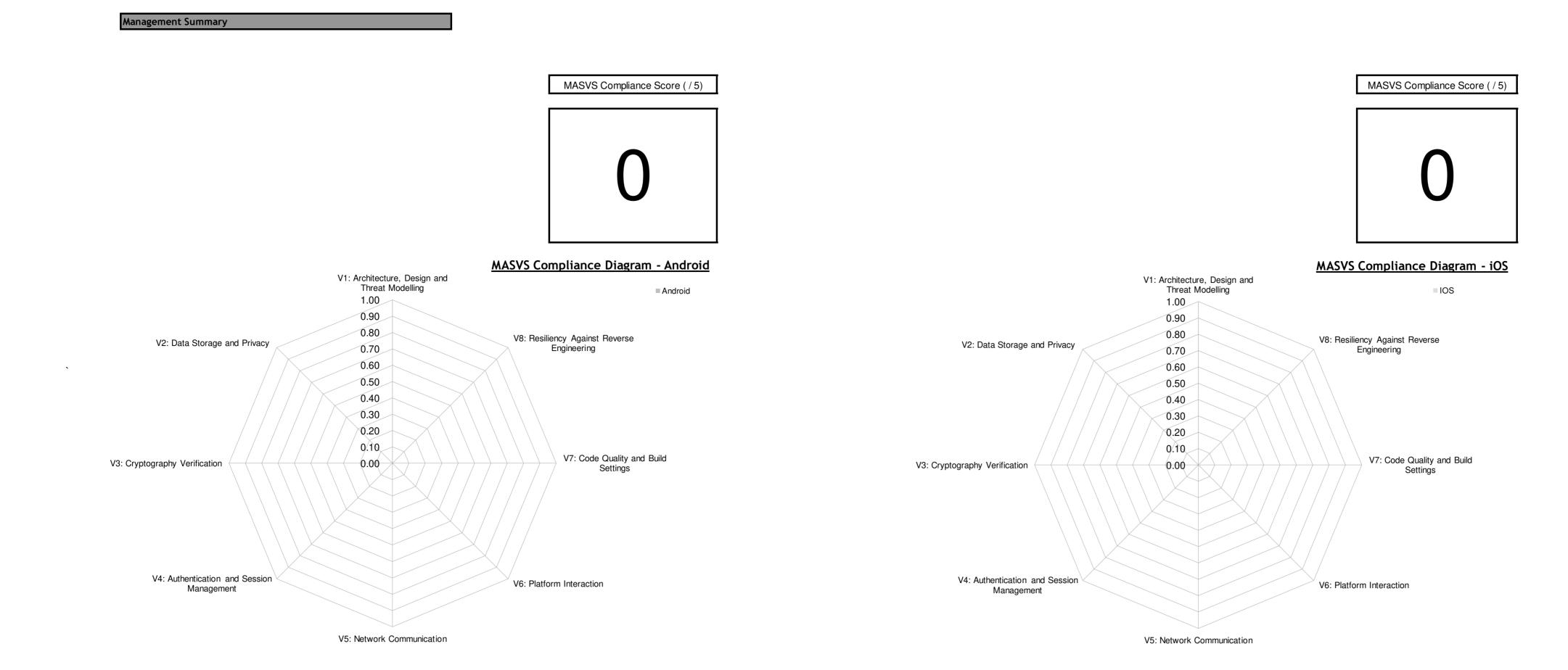
General Testing Information							
MASVS VERSION 1.2							
Online version of the MASVS:	https://github.com/OWASP/owasp-masvs/blob/1.2/Document/						
MSTG Version:	1.2						
Online version of the MSTG: https://github.com/OWASP/owasp-mstg/blob/1.2/Document/							
The two rows above are used to construct the base for all hyperlinks in the Android and iOS checklists. Adjust to your specific use case to update all hyperlinks to a specific version of the MSTG							
Client Name:							
Test Location:							
Start Date:							
Closing Date:							
Name of Tester:							
Testing Scope	All available functions within the App <appname>.</appname>						
Verification Level	After consultation with <customer> it was decided that only Level 1 requrirements are applicable to <appname>.</appname></customer>						

Testing information Android	esting information Android						
Application Name:							
Google Play Store Link							
Filename							
Version							
SHA256 Hash of APK (Can be obtained by using shasum, openssl or sha256sum)							

Testing information iOS	
Application Name:	
App Store Link	
Filename	
Version	
SHA256 Hash of IPA (Can be obtained by using shasum, openssl or sha256sum)	

Client Representatives and Contact Information						
Name:						
Org:						
Title: Phone:						
E-mail:						

Name:	
Org:	
Title:	
Phone:	
E-mail:	



	<u>Android</u>				iC	<u>OS</u>			
	Р	F	NA	%	Р	F	NA	%	
V1: Architecture, Design and Threat Modelling	0	0	0	0.00 %	0	0	0	0.00 %	
V2: Data Storage and Privacy	0	0	0	0.00 %	0	0	0	0.00 %	
V3: Cryptography Verification	0	0	0	0.00 %	0	0	0	0.00 %	
V4: Authentication and Session Management	0	0	0	0.00 %	0	0	0	0.00 %	
V5: Network Communication	0	0	0	0.00 %	0	0	0	0.00 %	
V6: Platform Interaction	0	0	0	0.00 %	0	0	0	0.00 %	
V7: Code Quality and Build Settings	0	0	0	0.00 %	0	0	0	0.00 %	
V8: Resiliency Against Reverse Engineering	0	0	0	0.00 %	0	0	0	0.00 %	

V1	Detailed Verification Requirement	Level1 Level2 Stat	tus Testing Procedure			Comment
1.1 MSTG-ARCH-1	Architecture, design and threat modelling All app components are identified and known to be needed.			Testing for income Configuration of Instant April (NASTO ADOLL 1, NASTO ADOLL 7)		
1.2 MSTG-ARCH-1	Security controls are never enforced only on the client side, but on the respective remote endpoints.	$\checkmark$ $\checkmark$	Architectural Information Injection Flaws (MSTG-ARCH-2 and MSTG-PLATFORM-2)	<u>Testing for insecure Configuration of Instant Apps (MSTG-ARCH-1, MSTG-ARCH-7)</u> Verifying that Appropriate Authentication is in Place (MSTG-ARCH-2 and MSTG-AUTH-1)		
1.3 MSTG-ARCH-3	A high-level architecture for the mobile app and all connected remote services has been defined and security has been	<b>√</b> √	Architectural Information			
	addressed in that architecture. Data considered sensitive in the context of the mobile app is clearly identified.		Identificing Consitius Data			
1.4 MSTG-ARCH-4			Identifying Sensitive Data Environmental Information			
1.6 MSTG-ARCH-6	A threat model for the mobile app and the associated remote services has been produced that identifies potential threats	$\checkmark$	Mapping the Application			
	and countermeasures.					
1.7 MSTG-ARCH-7 1.8 MSTG-ARCH-8	, , , , , , , , , , , , , , , , , , , ,	$\checkmark$	Testing for insecure Configuration of Instant Apps (MSTG-ARCH-1, MSTG-ARCH-7)	Principles of Testing	Penetration Testing (a.k.a. Pentesting)	
	enforced. Ideally, follow a key management standard such as NIST SP 800-57.	· ·	Cryptographic policy			
1.9 MSTG-ARCH-9	A mechanism for enforcing updates of the mobile app exists.	$\checkmark$	Testing enforced updating (MSTG-ARCH-9)			
.10 MSTG-ARCH-10	Security is addressed within all parts of the software development lifecycle. A responsible disclosure policy is in place and effectively applied.	$\checkmark$	Security Testing and the SDLC			
.12 MSTG-ARCH-11		$\checkmark$				
V2	Data Storage and Privacy					
2.1 MSTG-STORAGE-1	System credential storage facilities need to be used to store sensitive data, such as PII, user credentials or cryptographic	$\checkmark$ $\checkmark$	Testing Local Storage for Sensitive Data (MSTG-STORAGE-1 and MSTG-STORAGE-2)	Testing Key Management (MSTG-STORAGE-1, MSTG-CRYPTO-1 and MSTG-CRYPTO-5)		
2.2 MSTG-STORAGE-2	Keys. No sensitive data should be stored outside of the app container or system credential storage facilities.		Testing Local Storage for Sensitive Data (MSTG-STORAGE-1 and MSTG-STORAGE-2)			
	No sensitive data is written to application logs.	✓ ✓	Testing Logs for Sensitive Data (MSTG-STORAGE-3)			
	No sensitive data is shared with third parties unless it is a necessary part of the architecture.	$\checkmark$	Determining Whether Sensitive Data is Sent to Third Parties (MSTG-STORAGE-4)			
			Determining Whether the Keyboard Cache Is Disabled for Text Input Fields (MSTG-STORAGE-5)			
	<ul> <li>No sensitive data is exposed via IPC mechanisms.</li> <li>No sensitive data, such as passwords or pins, is exposed through the user interface.</li> </ul>		Determining Whether Sensitive Stored Data Has Been Exposed via IPC Mechanisms (MSTG-STORAGE-6) Checking for Sensitive Data Disclosure Through the User Interface (MSTG-STORAGE-7)			
	No sensitive data is included in backups generated by the mobile operating system.	$\checkmark$	Testing Backups for Sensitive Data (MSTG-STORAGE-8)			
		$\checkmark$	Finding Sensitive Information in Auto-Generated Screenshots (MSTG-STORAGE-9)			
	The app does not hold sensitive data in memory longer than necessary, and memory is cleared explicitly after use.	$\checkmark$	Checking Memory for Sensitive Data (MSTG-STORAGE-10)			
	<ol> <li>The app enforces a minimum device-access-security policy, such as requiring the user to set a device passcode.</li> <li>The app educates the user about the types of personally identifiable information processed, as well as security best</li> </ol>	$\checkmark$	Testing the Device-Access-Security Policy (MSTG-STORAGE-11) Testing User Education (MSTG-STORAGE-12)	Testing Confirm Credentials (MSTG-AUTH-1 and MSTG-STORAGE-11)		
	practices the user should follow in using the app.	, i i i i i i i i i i i i i i i i i i i				
	No sensitive data should be stored locally on the mobile device. Instead, data should be retrieved from a remote endpoint					
	<ul><li>when needed and only be kept in memory.</li><li>If sensitive data is still required to be stored locally, it should be encrypted using a key derived from hardware backed</li></ul>					
MSTG-STORAGE-14	storage which requires authentication.	V				
15 MSTG-STORAGE-15	5 The app's local storage should be wiped after an excessive number of failed authentication attempts.	$\checkmark$				
	Cryptography The app does not rely on symmetric cryptography with hardcoded keys as a sole method of encryption		Tecting Kow Management (MCTC CTODACE 4 MCTC CDVDTC 4 MCTC CDVDTC 5)	Common Configuration Leaves (NACTO COMPTO 4 NACTO COMPTO 2 - LAACTO COMPTO 2)		
	The app does not rely on symmetric cryptography with hardcoded keys as a sole method of encryption. The app uses proven implementations of cryptographic primitives.		Testing Key Management (MSTG-STORAGE-1, MSTG-CRYPTO-1 and MSTG-CRYPTO-5) Common Configuration Issues (MSTG-CRYPTO-1, MSTG-CRYPTO-2 and MSTG-CRYPTO-3)	<u>Common Configuration Issues (MSTG-CRYPTO-1, MSTG-CRYPTO-2 and MSTG-CRYPTO-3)</u> Testing the Configuration of Cryptographic Standard Algorithms (MSTG-CRYPTO-2, MSTG-CRYPTO-3		
				and MSTG-CRYPTO-4)		
3.3 MSTG-CRYPTO-3		$\checkmark$ $\checkmark$	Testing the Configuration of Cryptographic Standard Algorithms (MSTG-CRYPTO-2, MSTG-CRYPTO-3 and MSTG-CRYPTO-4)	Common Configuration Issues (MSTG-CRYPTO-1, MSTG-CRYPTO-2 and MSTG-CRYPTO-3)		
	adhere to industry best practices.					
.4 MSTG-CRYPTO-4	The app does not use cryptographic protocols or algorithms that are widely considered deprecated for security purposes.	$\checkmark$ $\checkmark$	Identifying Insecure and/or Deprecated Cryptographic Algorithms (MSTG-CRYPTO-4)	<u>Testing the Configuration of Cryptographic Standard Algorithms (MSTG-CRYPTO-2, MSTG-CRYPTO-3</u> and MSTG-CRYPTO-4)		
5.5 MSTG-CRYPTO-5	The app doesn't re-use the same cryptographic key for multiple purposes.	$\checkmark$ $\checkmark$	Testing Key Management (MSTG-STORAGE-1, MSTG-CRYPTO-1 and MSTG-CRYPTO-5)			
3.6 MSTG-CRYPTO-6	All random values are generated using a sufficiently secure random number generator.	✓ ✓	Testing Random Number Generation (MSTG-CRYPTO-6)			
/4	Authentication and Session Management					
4.1 MSTG-AUTH-1	If the app provides users access to a remote service, some form of authentication, such as username/password authentication, is performed at the remote endpoint.	$\checkmark$ $\checkmark$	Testing Confirm Credentials (MSTG-AUTH-1 and MSTG-STORAGE-11)	Verifying that Appropriate Authentication is in Place (MSTG-ARCH-2 and MSTG-AUTH-1)	Testing OAuth 2.0 Flows (MSTG-AUTH-1 and MSTG-AUTH-3)	
.2 MSTG-AUTH-2	If stateful session management is used, the remote endpoint uses randomly generated session identifiers to authenticate	✓ ✓	Testing Stateful Session Management (MSTG-AUTH-2)			
	client requests without sending the user's credentials.					
.3 MSTG-AUTH-3	If stateless token-based authentication is used, the server provides a token that has been signed using a secure algorithm	. 🗸 🗸	Testing Stateless (Token-Based) Authentication (MSTG-AUTH-3)	Testing OAuth 2.0 Flows (MSTG-AUTH-1 and MSTG-AUTH-3)		
.4 MSTG-AUTH-4	The remote endpoint terminates the existing session when the user logs out.		Testing User Logout (MSTG-AUTH-4)			
		$\checkmark$ $\checkmark$	Testing Best Practices for Passwords (MSTG-AUTH-5 and MSTG-AUTH-6)			
4.6 MSTG-AUTH-6	The remote endpoint implements a mechanism to protect against the submission of credentials an excessive number of times.	$\checkmark$ $\checkmark$	Testing Best Practices for Passwords (MSTG-AUTH-5 and MSTG-AUTH-6)	Dynamic Testing (MSTG-AUTH-6)		
4.7 MSTG-AUTH-7	Sessions are invalidated at the remote endpoint after a predefined period of inactivity and access tokens expire.	$\checkmark$ $\checkmark$	Testing Session Timeout (MSTG-AUTH-7)			
	Biometric authentication, if any, is not event-bound (i.e. using an API that simply returns "true" or "false"). Instead, it is	$\checkmark$	Testing Biometric Authentication (MSTG-AUTH-8)			
	based on unlocking the keychain/keystore.					
4.9 MSTG-AUTH-9 10 MSTG-AUTH-10	A second factor of authentication exists at the remote endpoint and the 2FA requirement is consistently enforced. Sensitive transactions require step-up authentication.	$\checkmark$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10) Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)			
.11 MSTG-AUTH-11	The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view					
		$\checkmark$	Testing Login Activity and Device Blocking (MSTG-AUTH-11)			
	contextual information (IP address, location, etc.), and to block specific devices.	$\checkmark$	Testing Login Activity and Device Blocking (MSTG-AUTH-11)			
.12 MSTG-AUTH-12	Authorization models should be defined and enforced at the remote endpoint.	√ √ √	Testing Login Activity and Device Blocking (MSTG-AUTH-11)			
V5	Authorization models should be defined and enforced at the remote endpoint. Network Communication	$\checkmark$ $\checkmark$				
V5 5.1 MSTG-NETWORK-1	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not</li> </ul>		Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)			
V5 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)			
V5 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)			
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)	Testing the Network Security Configuration Settings (MSTG-NETWORK-4)		
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Testing Endpoint Identify Verification (MSTG-NETWORK-3) Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)	Testing the Network Security Configuration Settings (MSTG-NETWORK-4)		
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Testing Endpoint Identify Verification (MSTG-NETWORK-3)	Testing the Network Security Configuration Settings (MSTG-NETWORK-4)		
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2) Testing Endpoint Identify Verification (MSTG-NETWORK-3) Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)	Testing the Network Security Configuration Settings (MSTG-NETWORK-4)		
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)	Testing the Network Security Configuration Settings (MSTG-NETWORK-4)		
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app only requests the minimum set of permissions necessary.</li> </ul>	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2).         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2).         Testing Endpoint Identify Verification (MSTG-NETWORK-3).         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4).         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5).         Testing the Security Provider (MSTG-NETWORK-6).         Testing App Permissions (MSTG-PLATFORM-1).			
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> </ul>	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)	Testing the Network Security Configuration Settings (MSTG-NETWORK-4)         Testing for Fragment Injection (MSTG-PLATFORM-2)		
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1 6.2 MSTG-PLATFORM-2	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app only requests the minimum set of permissions necessary.</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2).         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2).         Testing Endpoint Identify Verification (MSTG-NETWORK-3).         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4).         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5).         Testing the Security Provider (MSTG-NETWORK-6).         Testing App Permissions (MSTG-PLATFORM-1).			
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1 6.2 MSTG-PLATFORM-2 5.3 MSTG-PLATFORM-3	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app only requests the minimum set of permissions necessary.</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the UI, IPC mechanisms such as intents, custom URLs, and network sources.</li> <li>The app does not export sensitive functionality via custom URL schemes, unless these mechanisms are properly protected</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)         Testing App Permissions (MSTG-PLATFORM-1)         Testing for Injection Flaws (MSTG-PLATFORM-2)         Testing Custom URL Schemes (MSTG-PLATFORM-3)			
VS 5.1 MSTG-NETWORK-1 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1 6.2 MSTG-PLATFORM-2 6.3 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-4	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app only requests the minimum set of permissions necessary.</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the UI, IPC mechanisms such as intents, custom URLs, and network sources.</li> </ul>		Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)         Testing App Permissions (MSTG-PLATFORM-1)         Testing for Injection Flaws (MSTG-PLATFORM-2)         Testing Custom URL Schemes (MSTG-PLATFORM-3)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)			
VS 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.6 MSTG-PLATFORM-1 6.2 MSTG-PLATFORM-2 6.3 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-4 6.5 MSTG-PLATFORM-5	<ul> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app only requests the minimum set of permissions necessary.</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the UI, IPC mechanisms such as intents, custom URLs, and network sources.</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected. JavaScript is disabled in WebViews unless explicitly required.</li> <li>WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported).</li> </ul>	√       √         √       √	Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)         Testing App Permissions (MSTG-PLATFORM-1)         Testing for Injection Flaws (MSTG-PLATFORM-2)         Testing Custom URL Schemes (MSTG-PLATFORM-3)			
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VS 5.1 MSTG-NETWORK-1 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1 6.2 MSTG-PLATFORM-2 6.3 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-4 6.5 MSTG-PLATFORM-4 6.5 MSTG-PLATFORM-6 6.7 MSTG-PLATFORM-6 6.7 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-10 MSTG-PLATFORM-10 11 MSTG-PLATFORM-11 V7 7.1 MSTG-CODE-1 7.2 MSTG-CODE-2	Authorization models should be defined and enforced at the remote endpoint.         Petwork Communication         Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.         The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.         The app verifies the X.S09 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.         The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.         The app olosing trely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.         The app only depends on up-to-date connectivity and security libraries.         Platform Interaction         The app does not export sensitive functionality via custom URLs, and network sources.         The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.         JavaScript is disabled in WebViews unless explicitly required.         WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported). Protectial dangerous handlers, such as file, tel and app-id, are disabled.         If native methods of the app are exposed to a WebView, verify that the WebView only renders JavaScript contained within	$ \begin{array}{c} \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)         Testing App Permissions (MSTG-PLATFORM-1)         Testing for Injection Flaws (MSTG-PLATFORM-2)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing IavaScript Execution in WebViews (MSTG-PLATFORM-5)         Testing WebView Protocol Handlers (MSTG-PLATFORM-6)         Determining Whether Java Objects Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure That the App is Properly Signed (MSTG-CODE-1)         Testing Whether the App is Debuggable (MSTG-CODE-2)			
VS 5.1 MSTG-NETWORK-1 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.6 MSTG-PLATFORM-1 6.1 MSTG-PLATFORM-2 6.3 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-4 6.5 MSTG-PLATFORM-6 6.7 MSTG-PLATFORM-6 6.7 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-7 10 MSTG-PLATFORM-10 .11 MSTG-PLATFORM-11 V7 7.1 MSTG-CODE-1 7.2 MSTG-CODE-2 7.3 MSTG-CODE-3	Authorization models should be defined and enforced at the remote endpoint.         Network Communication         Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.         The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.         The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.         The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.         The app oils constructions with endpoints that offer a different certificate or key, even if signed by a trusted CA.         The app only depends on up-to-date connectivity and security libraries.         Platform Interaction         The app only requests the minimum set of permissions necessary.         All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the UJ, IPC mechanisms such as intents, custom URLs, and network sources.         The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.         JavaScript is disabled in WebViews unless explicitly required.         WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported). Potentially dangerous handlers, such as file, tel and	$ \begin{array}{c} \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)         Testing the Security Provider (MSTG-NETWORK-6)         Testing for Injection Flaws (MSTG-PLATFORM-1)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing WebView Protocol Handlers (MSTG-PLATFORM-5)         Testing WebView Protocol Handlers (MSTG-PLATFORM-5)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure That the App is Properly Signed (MSTG-CODE-1)         Testing for Debuggable (MSTG-CODE-1)         Testing for Debuggable (MSTG-CODE-3)			
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VS 5.1 MSTG-NETWORK-1 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1 6.2 MSTG-PLATFORM-2 6.3 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-4 MSTG-PLATFORM-4 6.5 MSTG-PLATFORM-5 6.6 MSTG-PLATFORM-6 6.7 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-10 MSTG-PLATFORM-10 11 MSTG-PLATFORM-11 V7 7.1 MSTG-PLATFORM-11 V7 7.1 MSTG-CODE-1 7.2 MSTG-CODE-2 7.3 MSTG-CODE-3 7.4 MSTG-CODE-5	Authorization models should be defined and enforced at the remote endpoint.         Network Communication         Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.         The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.         The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.         The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.         The app deen't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.         The app only depends on up-to-date connectivity and security libraries.         Platform Interaction         1         1       The app only requests the minimum set of permissions necessary.         2       All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the U, IPC mechanisms such as intents, custom URLs, and network sources.         3       The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.         4       The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.	$ \begin{array}{c} \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing App Permissions (MSTG-PLATFORM-1)         Testing for Injection Flaws (MSTG-PLATFORM-2)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing WebView Protocol Handlers (MSTG-PLATFORM-5)         Testing Whether Java Objects Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure That the App is Properly Signed (MSTG-CODE-1)         Testing tor Debugging Symbols (MSTG-CODE-3)         Testing for Debugging Code and Verbose Error Logging (MSTG-CODE-4)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)			
VS 5.1 MSTG-NETWORK-1 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.6 MSTG-PLATFORM-1 6.1 MSTG-PLATFORM-2 6.3 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-4 6.5 MSTG-PLATFORM-5 6.6 MSTG-PLATFORM-5 6.7 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-7 10 MSTG-PLATFORM-10 NTG-PLATFORM-10 NTG-PLATFORM-11 V7 7.1 MSTG-CODE-1 7.2 MSTG-CODE-2 7.3 MSTG-CODE-3 7.4 MSTG-CODE-5 7.6 MSTG-CODE-6	Authorization models should be defined and enforced at the remote endpoint.         Network Communication         Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.         The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.         The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.         The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.         The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.         The app only requests the minimum set of permissions necessary.         All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the U, IPC mechanisms such as intents, custom URLs, and network sources.         The app does not export sensitive functionality vincuph IPC facilities, unless these mechanisms are properly protected.         JavaScript is disabled in WebViews unless explicitly required.         WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported). Potentially dangerous handlers, such as file, et and app-id, are disabled.         If native methods of the app are exposed to a WebView, verify that the WebVie	$ \begin{array}{c} \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	Yerifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing the Security Provider (MSTG-NETWORK-6)         Testing for Injection Flaws (MSTG-PLATFORM-1)         Testing for Linjection Flaws (MSTG-PLATFORM-2)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing WebView Protocol Handlers (MSTG-PLATFORM-5)         Testing Object Persistence (MSTG-PLATFORM-6)         Determining Whether Java Objects Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure That the App is Properly Signed (MSTG-CODE-1)         Testing Object Persistence (MSTG-CODE-2)         Testing for Debugging Symbols (MSTG-CODE-3)         Testing for Debugging Code and Verbose Error Logging (MSTG-CODE-4)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing for Weaknesses in Third Party Libraries (MSTG-CODE-7)			
VS 5.1 MSTG-NETWORK-1 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3 5.4 MSTG-NETWORK-4 5.5 MSTG-NETWORK-5 5.6 MSTG-NETWORK-6 V6 5.1 MSTG-PLATFORM-1 5.2 MSTG-PLATFORM-3 6.3 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-3 6.4 MSTG-PLATFORM-3 6.5 MSTG-PLATFORM-4 6.5 MSTG-PLATFORM-5 6.6 MSTG-PLATFORM-6 6.7 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-7 6.8 MSTG-PLATFORM-10 .11 MSTG-PLATFORM-10 .11 MSTG-PLATFORM-11 V7 7.1 MSTG-PLATFORM-11 V7 7.1 MSTG-CODE-1 7.2 MSTG-CODE-2 7.3 MSTG-CODE-3 7.4 MSTG-CODE-5 7.6 MSTG-CODE-7 7.8 MSTG-CODE-7 7.8 MSTG-CODE-7 7.8 MSTG-CODE-7	Authorization models should be defined and enforced at the remote endpoint.         Network Communication         Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.         The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.         The app evifies the XSO9 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.         The app evifies the XSO9 certificate store, or pins the endpoint certificate or twy, even if signed by a trusted CA.         The app evifies the XSO9 certificate store, or pins the endpoint certificate or twy, even if signed by a trusted CA.         The app oller russes its own certificate communication channel (email or SMS) for critical operations, such as errollments and account recovery.         Platform Interaction         Norm Interaction         Norm Interaction         All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the U, IPC mechanisms such as intents, custom URLs, and network sources.         The app does not export sensitive functionality triangli IPC facilities, unless these mechanisms are properly protected.         JavaScript is disabled in WebViews unless explicitly required.         WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported).         Potentially dangerous handlers, such as file, tel and app-id	・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Endpoint Identify Verification (MSTG-NETWORK-3)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Testing App Permissions (MSTG-PLATFORM-1)         Testing for Injection Flaws (MSTG-PLATFORM-2)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing WebView Protocol Handlers (MSTG-PLATFORM-5)         Testing Whether Java Objects Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure That the App is Properly Signed (MSTG-CODE-1)         Testing tor Debugging Symbols (MSTG-CODE-3)         Testing for Debugging Code and Verbose Error Logging (MSTG-CODE-4)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)			

Mobile Application Security Requirements - Android

ID MSTG-ID Detailed Verification Requirement

Symbol	Definition	
Pass	Requirement is applicable to mobile App and implemented according to best practices.	
Fail	Requirement is applicable to mobile App but not fulfilled.	
N/A	Requirement is not applicable to mobile App.	

# Resiliency against Reverse Engineering - Android

	MSTG-ID	Resiliency Against Reverse Engineering Requirements	R Statu	us Testing Procedure(s) Comment
		Impede Dynamic Analysis and Tampering		
8.1	MSTG-RESILIENCE-1	The app detects, and responds to, the presence of a rooted or jailbroken device either by alerting the user or terminating the app.	$\checkmark$	Testing Root Detection (MSTG-RESILIENCE-1)
8.2	MSTG-RESILIENCE-2	The app prevents debugging and/or detects, and responds to, a debugger being attached. All available debugging protocols must be covered.	<b>√</b>	Testing Anti-Debugging Detection (MSTG-RESILIENCE-2)
8.3	MSTG-RESILIENCE-3	The app detects, and responds to, tampering with executable files and critical data within its own sandbox.	✓	Testing File Integrity Checks (MSTG-RESILIENCE-3)
8.4	MSTG-RESILIENCE-4	The app detects, and responds to, the presence of widely used reverse engineering tools and frameworks on the device.	<b>√</b>	Testing Reverse Engineering Tools Detection (MSTG-RESILIENCE-4)
8.5	MSTG-RESILIENCE-5	The app detects, and responds to, being run in an emulator.	<b>√</b>	Testing Emulator Detection (MSTG-RESILIENCE-5)
8.6	MSTG-RESILIENCE-6	The app detects, and responds to, tampering the code and data in its own memory space.	$\checkmark$	Testing Run Time Integrity Checks (MSTG-RESILIENCE-6)
8.7	MSTG-RESILIENCE-7	The app implements multiple mechanisms in each defense category (8.1 to 8.6). Note that resiliency scales with the amount, diversity of the originality of the mechanisms used.	~	-
8.8	MSTG-RESILIENCE-8	The detection mechanisms trigger responses of different types, including delayed and stealthy responses.	$\checkmark$	_
8.9	MSTG-RESILIENCE-9	Obfuscation is applied to programmatic defenses, which in turn impede de-obfuscation via dynamic analysis.	✓	Testing Obfuscation (MSTG-RESILIENCE-9)
		Device Binding		
8.10	MSTG-RESILIENCE-10	The app implements a 'device binding' functionality using a device fingerprint derived from multiple properties unique to the device.	~	Testing Device Binding (MSTG-RESILIENCE-10)
		Impede Comprehension	_	
8.11	MSTG-RESILIENCE-11	All executable files and libraries belonging to the app are either encrypted on the file level and/or important code and data segments	$\checkmark$	Testing Obfuscation (MSTG-RESILIENCE-9)
		inside the executables are encrypted or packed. Trivial static analysis does not reveal important code or data.		
8.12	MSTG-RESILIENCE-12	If the goal of obfuscation is to protect sensitive computations, an obfuscation scheme is used that is both appropriate for the particular task and robust against manual and automated de-obfuscation methods, considering currently published research. The	<b>√</b>	-
		effectiveness of the obfuscation scheme must be verified through manual testing. Note that hardware-based isolation features are preferred over obfuscation whenever possible.		
		Impede Eavesdropping		
8.13	MSTG-RESILIENCE-13	As a defense in depth, next to having solid hardening of the communicating parties, application level payload encryption can be	$\checkmark$	_
0.110		applied to further impede eavesdropping.		

Legend	
Symbol	Definition
Pass	Requirement is applicable to mobile App and implemented according to best practices.
Fail	Requirement is applicable to mobile App but not fulfilled.
N/A	Requirement is not applicable to mobile App.

V1 1.1 MSTG-ARCH-1	Architecture, design and threat modelling		tatus	Testing Procedure(s) Comment
		$\checkmark$ $\checkmark$	Architectural Information	
1.2 MSTG-ARCH-2 1.3 MSTG-ARCH-3			Injection Flaws (MSTG-ARCH-2 and MSTG-PLATFORM-2) Architectural Information	Verifying that Appropriate Authentication is in Place (MSTG-ARCH-2 and MSTG-AUTH-1)
	addressed in that architecture.			
1.4 MSTG-ARCH-4 1.5 MSTG-ARCH-5	······································		Identifying Sensitive Data Environmental Information	
1.6 MSTG-ARCH-6	A threat model for the mobile app and the associated remote services has been produced that identifies potential threat	s √	Mapping the Application	
	and countermeasures.			
1.7 MSTG-ARCH-7 1.8 MSTG-ARCH-8		$\checkmark$	Principles of Testing Cryptographic policy	Penetration Testing (a.k.a. Pentesting)
	enforced. Ideally, follow a key management standard such as NIST SP 800-57.			
1.9 MSTG-ARCH-9 10 MSTG-ARCH-10		$\checkmark$	Testing enforced updating (MSTG-ARCH-9)	
10 MSTG-ARCH-10		$\checkmark$	Security Testing and the SDLC	
12 MSTG-ARCH-12	The app should comply with privacy laws and regulations.	✓ ✓		
V2 2.1 MSTG-STORAGE-1	<ul> <li>Data Storage and Privacy</li> <li>-1 System credential storage facilities need to be used to store sensitive data, such as PII, user credentials or cryptographi</li> </ul>		Testing Local Data Storage (MSTG-STORAGE-1 and MSTG-STORAGE-2)	
.1 WSTG-STORAGE-1	keys.		Testing Local Data Storage (IVISTO-STORAGE-1 and IVISTO-STORAGE-2)	
2.2 MSTG-STORAGE-2			Testing Local Data Storage (MSTG-STORAGE-1 and MSTG-STORAGE-2)	
2.3 MSTG-STORAGE-3 2.4 MSTG-STORAGE-4	<ul> <li>-3 No sensitive data is written to application logs.</li> <li>-4 No sensitive data is shared with third parties unless it is a necessary part of the architecture.</li> </ul>		Checking Logs for Sensitive Data (MSTG-STORAGE-3) Determining Whether Sensitive Data Is Sent to Third Parties (MSTG-STORAGE-4)	
	-5 The keyboard cache is disabled on text inputs that process sensitive data.	$\checkmark$	Finding Sensitive Data in the Keyboard Cache (MSTG-STORAGE-5)	
2.6 MSTG-STORAGE-6 2.7 MSTG-STORAGE-7	-6 No sensitive data is exposed via IPC mechanisms.		Determining Whether Sensitive Data Is Exposed via IPC Mechanisms (MSTG-STORAGE-6)	
2.7 MISTG-STORAGE-7 2.8 MSTG-STORAGE-8		$\checkmark$ $\checkmark$	Checking for Sensitive Data Disclosed Through the User Interface (MSTG-STORAGE-7) Testing Backups for Sensitive Data (MSTG-STORAGE-8)	
2.9 MSTG-STORAGE-9	-9 The app removes sensitive data from views when moved to the background.	$\checkmark$	Testing Auto-Generated Screenshots for Sensitive Information (MSTG-STORAGE-9)	
	<ul> <li>The app does not hold sensitive data in memory longer than necessary, and memory is cleared explicitly after use.</li> <li>The app enforces a minimum device-access-security policy, such as requiring the user to set a device passcode.</li> </ul>	$\checkmark$	Testing Memory for Sensitive Data (MSTG-STORAGE-10)	
	12 The app educates the user about the types of personally identifiable information processed, as well as security best	$\checkmark$	Testing Local Authentication (MSTG-AUTH-8 and MSTG-STORAGE-11) Testing User Education (MSTG-STORAGE-12)	
	practices the user should follow in using the app.	nt (		
IS MSTG-STORAGE-1:	13 No sensitive data should be stored locally on the mobile device. Instead, data should be retrieved from a remote endpoin when needed and only be kept in memory.			
.14 MSTG-STORAGE-1	14 If sensitive data is still required to be stored locally, it should be encrypted using a key derived from hardware backed	$\checkmark$		
.15 MSTG-STORAGE-1	<ul><li>storage which requires authentication.</li><li>The app's local storage should be wiped after an excessive number of failed authentication attempts.</li></ul>			
V3	Cryptography			
3.1 MSTG-CRYPTO-1			Testing Key Management (MSTG-CRYPTO-1 and MSTG-CRYPTO-5)	
3.2MSTG-CRYPTO-23.3MSTG-CRYPTO-3	<ul> <li>The app uses proven implementations of cryptographic primitives.</li> <li>The app uses cryptographic primitives that are appropriate for the particular use-case, configured with parameters that</li> </ul>		Verifying the Configuration of Cryptographic Standard Algorithms (MSTG-CRYPTO-2 and MSTG-CRYPTO-3) Verifying the Configuration of Cryptographic Standard Algorithms (MSTG-CRYPTO-2 and MSTG-CRYPTO-3)	
	adhere to industry best practices.			
.4 MSTG-CRYPTO-4	The app does not use cryptographic protocols or algorithms that are widely considered deprecated for security purpose	s. ✓ ✓	Identifying Insecure and/or Deprecated Cryptographic Algorithms (MSTG-CRYPTO-4)	
3.5 MSTG-CRYPTO-5	5 The app doesn't re-use the same cryptographic key for multiple purposes.	<b>√</b> √	Testing Key Management (MSTG-CRYPTO-1 and MSTG-CRYPTO-5)	
3.6 MSTG-CRYPTO-6		$\checkmark$ $\checkmark$	Testing Random Number Generation (MSTG-CRYPTO-6)	
V4 4.1 MSTG-AUTH-1	Authentication and Session Management If the app provides users access to a remote service, some form of authentication, such as username/password	$\checkmark$	Verifying that Appropriate Authentication is in Place (MSTG-ARCH-2 and MSTG-AUTH-1)	Testing OAuth 2.0 Flows (MSTG-AUTH-1 and MSTG-AUTH-3)
	authentication, is performed at the remote endpoint.			
4.2 MSTG-AUTH-2	If stateful session management is used, the remote endpoint uses randomly generated session identifiers to authenticate client requests without sending the user's credentials.	e ✓ ✓	Testing Stateful Session Management (MSTG-AUTH-2)	
4.3 MSTG-AUTH-3		m. 🗸 🗸	Testing Stateless (Token-Based) Authentication (MSTG-AUTH-3)	Testing OAuth 2.0 Flows (MSTG-AUTH-1 and MSTG-AUTH-3)
4.4 MSTG-AUTH-4	The remote endpoint terminates the existing session when the user logs out.		Testing User Legout (MSTG-AUTH-A)	
4.4 MSTG-AUTH-4 4.5 MSTG-AUTH-5		$\checkmark$	Testing User Logout (MSTG-AUTH-4) Testing Best Practices for Passwords (MSTG-AUTH-5 and MSTG-AUTH-6)	
4.6 MSTG-AUTH-6	The remote endpoint implements a mechanism to protect against the submission of credentials an excessive number of	✓ ✓	Testing Best Practices for Passwords (MSTG-AUTH-5 and MSTG-AUTH-6)	Dynamic Testing (MSTG-AUTH-6)
4.7 MSTG-AUTH-7	times. Sessions are invalidated at the remote endpoint after a predefined period of inactivity and access tokens expire.		Testing Session Timeout (MSTG-AUTH-7)	
4.8 MSTG-AUTH-8	Biometric authentication, if any, is not event-bound (i.e. using an API that simply returns "true" or "false"). Instead, it is	$\checkmark$	Testing Local Authentication (MSTG-AUTH-8 and MSTG-STORAGE-11)	
4.9 MSTG-ALITH-9	based on unlocking the keychain/keystore. A second factor of authentication exists at the remote endpoint and the 2FA requirement is consistently enforced.			
			Testing Two-Factor Authentication and Sten-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)	
.10 MSTG-AUTH-10		$\checkmark$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10) Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)	
.10MSTG-AUTH-10.11MSTG-AUTH-11	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view</li> </ul>			
	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> </ul>		Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)	
11 MSTG-AUTH-11 12 MSTG-AUTH-12 VS	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> </ul>		Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10) Testing Login Activity and Device Blocking (MSTG-AUTH-11)	
.11 MSTG-AUTH-11 .12 MSTG-AUTH-12 V5 5.1 MSTG-NETWORK-1	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Contextual is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> </ul>	✓ ✓	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)	App Transport Security (MSTG-NETWORK-2)
A.11 MSTG-AUTH-11 A.12 MSTG-AUTH-12 V5 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>C-1</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> </ul>		Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10) Testing Login Activity and Device Blocking (MSTG-AUTH-11)	App Transport Security (MSTG-NETWORK-2)
A.11 MSTG-AUTH-11 A.12 MSTG-AUTH-12 V5 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates</li> </ul>	✓ ✓	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)	App Transport Security (MSTG-NETWORK-2)
4.11 MSTG-AUTH-11 4.12 MSTG-AUTH-12 V5 5.1 MSTG-NETWORK-1 5.2 MSTG-NETWORK-2 5.3 MSTG-NETWORK-3	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>C-1 Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>K-3 The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>K-4 The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not</li> </ul>	✓ ✓	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)	App Transport Security (MSTG-NETWORK-2)
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A.11       MSTG-AUTH-11         A.12       MSTG-AUTH-12         V5       S.1         5.1       MSTG-NETWORK-1         5.2       MSTG-NETWORK-2         5.3       MSTG-NETWORK-3         5.4       MSTG-NETWORK-4         5.5       MSTG-NETWORK-6         V6       S.5         5.6       MSTG-NETWORK-6         V6       S.5         6.1       MSTG-PLATFORM-2         6.2       MSTG-PLATFORM-3         6.3       MSTG-PLATFORM-4         6.4       MSTG-PLATFORM-4         6.5       MSTG-PLATFORM-4         6.6       MSTG-PLATFORM-4         6.7       MSTG-PLATFORM-1         6.8       MSTG-PLATFORM-1         6.10       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1         6.13       MSTG-PLATFORM-1         6.14       MSTG-PLATFORM-1         6.17       MSTG-PLATFORM-1         6.18       MSTG-PLATFORM-1         6.10       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.500 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or prins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app orbit rey on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only requests the minimum set of permissions necessary.</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via th UI, IPC mechanisms such as intents, custom URLs, and network sources.</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.</li> <li>JavaScript is disabled in WebViews unless explicitly required.</li> <li>WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported) Potentially dangerous handlers, such as file, tel and app-id, are disabled.</li> <li>Object deseralization, if any, is implemented using safe seralization APIs.</li> <li>The app package.</li> <li>Object desera</li></ul>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Yerifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing App Permissions (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-3)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing IOS WebViews (MSTG-PLATFORM-3)         Testing IOS WebViews (MSTG-PLATFORM-5)         Determining Whether Native Methods Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure that the App Is Properly Signed (MSTG-CODE-1)         Determining Whether the App Is Debuggable (MSTG-CODE-1)         Determining Ubetter the App Is Debuggable (MSTG-CODE-2)         Finding Debugging Symbols (MSTG-CODE-3)	App Transport Security (MSTG-NETWORK-2)
A.11       MSTG-AUTH-11         A.12       MSTG-AUTH-12         V5       S.1         5.1       MSTG-NETWORK-1         5.2       MSTG-NETWORK-2         5.3       MSTG-NETWORK-3         5.4       MSTG-NETWORK-4         5.5       MSTG-NETWORK-6         V6       S.5         5.6       MSTG-NETWORK-6         V6       S.5         6.1       MSTG-PLATFORM-2         6.2       MSTG-PLATFORM-3         6.3       MSTG-PLATFORM-4         6.4       MSTG-PLATFORM-4         6.5       MSTG-PLATFORM-4         6.6       MSTG-PLATFORM-4         6.7       MSTG-PLATFORM-1         6.8       MSTG-PLATFORM-1         6.10       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1         6.13       MSTG-PLATFORM-1         6.14       MSTG-PLATFORM-1         6.17       MSTG-PLATFORM-1         6.18       MSTG-PLATFORM-1         6.10       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.509 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or key, even if signed by a trusted CA.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or key, even if signed by a trusted CA.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>Platform Interaction</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via the U, IPC mechanisms such as intents, custom URLs, and network sources.</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.</li> <li>Veebviews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported) potentially dangerous handlers, such as file, tel and app-id, are disabled.</li> <li>Veebviews are configured to allow only the minimum set of protocol handlers required tideally, only https is supported) potentially dangerous handlers, such as file, tel and app-id, are disabled.</li> <li>Veebview's cache, storage, and loaded resources (JavaScript</li></ul>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Yerifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing App Permissions (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-3)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing OS WebViews (MSTG-PLATFORM-5)         Testing WebView Protocol Handlers (MSTG-PLATFORM-6)         Determining Whether Native Methods Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure that the App Is Properly Signed (MSTG-CODE-1)         Determining Whether the App is Debuggable (MSTG-CODE-2)	App Transport Security (MSTG-NETWORK-2)
A.11       MSTG-AUTH-11         A.12       MSTG-AUTH-12         V5       S.1         5.1       MSTG-NETWORK-1         5.2       MSTG-NETWORK-2         5.3       MSTG-NETWORK-3         5.4       MSTG-NETWORK-4         5.5       MSTG-NETWORK-6         V6       S.5         5.6       MSTG-NETWORK-6         V6       S.5         6.1       MSTG-PLATFORM-2         6.2       MSTG-PLATFORM-3         6.3       MSTG-PLATFORM-4         6.4       MSTG-PLATFORM-4         6.5       MSTG-PLATFORM-4         6.6       MSTG-PLATFORM-4         6.7       MSTG-PLATFORM-1         6.8       MSTG-PLATFORM-1         6.10       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1         6.13       MSTG-PLATFORM-1         6.14       MSTG-PLATFORM-1         6.17       MSTG-PLATFORM-1         6.18       MSTG-PLATFORM-1         6.10       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app either uses its own certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even if signed by a trusted CA.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via th UI, IPC mechanisms such as intents, custom URLs, and network sources.</li> <li>The app does not export sensitive functionality via custom URL schemes, unless these mechanisms are properly protected.</li> <li>JavaScripti s disabled in WebViews unless explicitly required.</li> <li>WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported) Potentially dangerous handlers, such as file, tel and app-id, are disabled.</li> <li>The app package.<th><math display="block"> \begin{array}{cccccccccccccccccccccccccccccccccccc</math></th><th>Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Yerifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing App Permissions (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-3)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing IOS WebViews (MSTG-PLATFORM-3)         Testing IOS WebViews (MSTG-PLATFORM-5)         Determining Whether Native Methods Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure that the App Is Properly Signed (MSTG-CODE-1)         Determining Whether the App Is Debuggable (MSTG-CODE-1)         Determining Ubetter the App Is Debuggable (MSTG-CODE-2)         Finding Debugging Symbols (MSTG-CODE-3)</th><th>App Transport Security (MSTG-AH TWORE 2)      </th></li></ul>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Yerifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing App Permissions (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-3)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing IOS WebViews (MSTG-PLATFORM-3)         Testing IOS WebViews (MSTG-PLATFORM-5)         Determining Whether Native Methods Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure that the App Is Properly Signed (MSTG-CODE-1)         Determining Whether the App Is Debuggable (MSTG-CODE-1)         Determining Ubetter the App Is Debuggable (MSTG-CODE-2)         Finding Debugging Symbols (MSTG-CODE-3)	App Transport Security (MSTG-AH TWORE 2)
A.11       MSTG-AUTH-11         A.12       MSTG-AUTH-12         V5       S.1         S.1       MSTG-NETWORK-1         S.2       MSTG-NETWORK-2         S.3       MSTG-NETWORK-3         S.4       MSTG-NETWORK-4         S.5       MSTG-NETWORK-4         S.5       MSTG-NETWORK-5         S.6       MSTG-NETWORK-6         V6       Stright and the str	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app entifies the X-500 certificate of the remote endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key even is signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key even is signed by a trusted CA.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via thu, IPC mechanisms such as intents, custom URLs, and network sources.</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.</li> <li>JavaScript is disabled in WebViews unless explicitly required.</li> <li>WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported) Potentially dangerous handlers, such as file, tel and app-id, are disa</li></ul>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Yerifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Yerifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing App Permissions (MSTG-PLATFORM-1)         Injection Flaws (MSTG-ARCH-2 and MSTG-PLATFORM-2)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing WebView Protocol Handlers (MSTG-PLATFORM-6)         Determining Whether Native Methods Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure that the App Is Properly Signed (MSTG-CODE-1)         Determining Whether the App is Debuggable (MSTG-CODE-2)         Finding Debugging Symbols (MSTG-CODE-3)         Ending Debugging Symbols (MSTG-CODE-3)         E	Arp Tunneerd Scority (MSTE NETWORK 2)
A.11       MSTG-AUTH-11         A.12       MSTG-AUTH-12         V5       V5         5.1       MSTG-NETWORK-1         5.2       MSTG-NETWORK-2         5.3       MSTG-NETWORK-3         5.4       MSTG-NETWORK-4         5.5       MSTG-NETWORK-4         5.6       MSTG-NETWORK-6         V6       V6         6.1       MSTG-PLATFORM-2         6.3       MSTG-PLATFORM-2         6.4       MSTG-PLATFORM-3         6.5       MSTG-PLATFORM-4         6.6       MSTG-PLATFORM-4         6.7       MSTG-PLATFORM-5         6.6       MSTG-PLATFORM-1         6.7       MSTG-PLATFORM-1         6.8       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1         6.3       MSTG-PLATFORM-1         6.4       MSTG-PLATFORM-1         6.5       MSTG-PLATFORM-1         6.6       MSTG-PLATFORM-1         7.1       MSTG-CODE-1         7.1       MSTG-CODE-3         7.4       MSTG-CODE-5         7.5       MSTG-CODE-5         7.6       MSTG-CODE-6	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP address, location, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app entifies the X-S00 certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app either uses its own certificate store, or pins the endpoint certificate or public key, and subsequently does not establish connections with endpoints that offer a different certificate or key, even i signed by a trusted CA.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>All inputs from external sources and the user are validated and if necessary sanitized. This includes data received via thu, IPC mechanisms such as intents, custom URLs, and network sources.</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.</li> <li>JavaScript is disabled in WebViews unless explicitly required.</li> <li>WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported) Potentially dangerous handlers, such as file, tel and app-id, are disabled.</li> <li>The app package.</li> <li>Object deserialization, if any, i</li></ul>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing Custom URL Schemes (MSTG-PLATFORM-1)         Injection Flaws (MSTG-PLATFORM-3)         Testing Custom URL Schemes (MSTG-PLATFORM-3)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing Object Persistence (MSTG-PLATFORM-5)         Determining Whether Native Methods Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure that the App Is Properly Signed (MSTG-CODE-1)         Determining Whether the App is Debuggable (MSTG-CODE-2)         Finding Debugging Symbols (MSTG-CODE-3)         Finding Debugging Code and Verbose Error Logging (MSTG-CODE-4)	Age Transport Security (MSTG-ARETWORK-2)
A.11       MSTG-AUTH-11         A.12       MSTG-AUTH-12         V5       V5         5.1       MSTG-NETWORK-1         5.2       MSTG-NETWORK-2         5.3       MSTG-NETWORK-3         5.4       MSTG-NETWORK-4         5.5       MSTG-NETWORK-4         5.6       MSTG-NETWORK-6         V6       V6         6.1       MSTG-PLATFORM-2         6.3       MSTG-PLATFORM-2         6.4       MSTG-PLATFORM-3         6.5       MSTG-PLATFORM-4         6.6       MSTG-PLATFORM-4         6.7       MSTG-PLATFORM-5         6.6       MSTG-PLATFORM-1         6.7       MSTG-PLATFORM-1         6.8       MSTG-PLATFORM-1         6.11       MSTG-PLATFORM-1         6.12       MSTG-PLATFORM-1         6.3       MSTG-PLATFORM-1         6.4       MSTG-PLATFORM-1         6.5       MSTG-PLATFORM-1         6.6       MSTG-PLATFORM-1         7.1       MSTG-CODE-1         7.1       MSTG-CODE-3         7.4       MSTG-CODE-5         7.5       MSTG-CODE-5         7.6       MSTG-CODE-6	<ul> <li>Sensitive transactions require step-up authentication.</li> <li>The app informs the user of all sensitive activities with their account. Users are able to view a list of devices, view contextual information (IP addres, Jocation, etc.), and to block specific devices.</li> <li>Authorization models should be defined and enforced at the remote endpoint.</li> <li>Network Communication</li> <li>Data is encrypted on the network using TLS. The secure channel is used consistently throughout the app.</li> <li>The TLS settings are in line with current best practices, or as close as possible if the mobile operating system does not support the recommended standards.</li> <li>The app verifies the X.SOP certificate of the remote endpoint when the secure channel is established. Only certificates signed by a trusted CA are accepted.</li> <li>The app doesn't rely on a single insecure communication channel (email or SMS) for critical operations, such as enrollments and account recovery.</li> <li>The app only depends on up-to-date connectivity and security libraries.</li> <li>Platform Interaction</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.</li> <li>JavaScriptis disabled in WebViews unless explicitly required.</li> <li>WebViews are configured to allow only the minimum set of pertoscol handlers required (ideally, only https is supported) potential y dangerous handlers, such as the selectialization APIs.</li> <li>The app does not export sensitive functionality through IPC facilities, unless these mechanisms are properly protected.</li> <li>JavaScriptis disabled in WebViews unless explicitly required.</li> <li>WebViews are configured to allow only the minimum set of protocol handlers required (ideally, only https is supported) potential y dangerous</li></ul>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Testing Two-Factor Authentication and Step-up Authentication (MSTG-AUTH-9 and MSTG-AUTH-10)         Testing Login Activity and Device Blocking (MSTG-AUTH-11)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Verifying Data Encryption on the Network (MSTG-NETWORK-1 and MSTG-NETWORK-2)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Testing Custom Certificate Stores and Certificate Pinning (MSTG-NETWORK-3 and MSTG-NETWORK-4)         Making Sure that Critical Operations Use Secure Communication Channels (MSTG-NETWORK-5)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)         Testing Custom URL Schemes (MSTG-PLATFORM-1)         Inection Flaws (MSTG-ARCH-2 and MSTG-PLATFORM-2)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing for Sensitive Functionality Exposure Through IPC (MSTG-PLATFORM-4)         Testing Ubbliew Protocol Handlers (MSTG-PLATFORM-6)         Determining Whether Native Methods Are Exposed Through WebViews (MSTG-PLATFORM-7)         Testing Object Persistence (MSTG-PLATFORM-8)         Making Sure that the App Is Properly Signed (MSTG-CODE-1)         Determining Whether the App is Debuggable (MSTG-CODE-1)         Determining Whether the App is Debuggable (MSTG-CODE-1)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-4)         Checking for Weaknesses in Third Party Libraries (MSTG-CODE-5)	App Tamport Security (MSIGHETINOING)

Testing Procedure(s)

Level 1 Level 2 Status

Comment

# Mobile Application Security Requirements - iOS

ID MSTG-ID Detailed Verification Requirement

Legend				
Symbol	Definition			
Pass	Requirement is applicable to mobile App and implemented according to best practices.			
Fail	Requirement is applicable to mobile App but not fulfilled.			
N/A	Requirement is not applicable to mobile App.			

# Resiliency Against Reverse Engineering - iOS

ID	MSTG-ID	Resiliency Against Reverse Engineering Requirements	R Status	Testing Procedure(s)	Comment
		Impede Dynamic Analysis and Tampering			
8.1	MSTG-RESILIENCE-1	The app detects, and responds to, the presence of a rooted or jailbroken device either by alerting the user or terminating the	✓	Jailbreak Detection (MSTG-RESILIENCE-1)	
		app.			
8.2	MSTG-RESILIENCE-2	The app prevents debugging and/or detects, and responds to, a debugger being attached. All available debugging protocols	✓	Anti-Debugging Checks (MSTG-RESILIENCE-2)	
8.3		must be covered. The app detects, and responds to, tampering with executable files and critical data within its own sandbox.	/	File Intervity Checks (MCTC DECULENCE 2 and MCTC DECULENCE 11)	
		The app detects, and responds to, the presence of widely used reverse engineering tools and frameworks on the device.	× /	File Integrity Checks (MSTG-RESILIENCE-3 and MSTG-RESILIENCE-11)	
8.4	IVISTG-RESILIEINCE-4	The app detects, and responds to, the presence of widely used reverse engineering tools and traineworks on the device.	×	Testing Reverse Engineering Tools Detection (MSTG-RESILIENCE-4)	
8.5	MSTG-RESILIENCE-5	The app detects, and responds to, being run in an emulator.	$\checkmark$	Testing Emulator Detection (MSTG-RESILIENCE-5)	
8.6		The app detects, and responds to, tampering the code and data in its own memory space.	$\checkmark$		
8.7		The app implements multiple mechanisms in each defense category (8.1 to 8.6). Note that resiliency scales with the amount,	✓	_	
		diversity of the originality of the mechanisms used.			
8.8	MSTG-RESILIENCE-8	The detection mechanisms trigger responses of different types, including delayed and stealthy responses.	$\checkmark$	-	
8.9	MSTG-RESILIENCE-9	Obfuscation is applied to programmatic defenses, which in turn impede de-obfuscation via dynamic analysis.	$\checkmark$	Testing Obfuscation (MSTG-RESILIENCE-9)	
		Device Binding			
8.10	MSTG-RESILIENCE-10	The app implements a 'device binding' functionality using a device fingerprint derived from multiple properties unique to the	$\checkmark$	Device Binding (MSTG-RESILIENCE-10)	
		device.			
		Impede Comprehension			
8.11	MSTG-RESILIENCE-11	All executable files and libraries belonging to the app are either encrypted on the file level and/or important code and data	✓	File Integrity Checks (MSTG-RESILIENCE-3 and MSTG-RESILIENCE-11)	
		segments inside the executables are encrypted or packed. Trivial static analysis does not reveal important code or data.			
8.12	MSTG-RESILIENCE-12	If the goal of obfuscation is to protect sensitive computations, an obfuscation scheme is used that is both appropriate for the		_	
0.112		particular task and robust against manual and automated de-obfuscation methods, considering currently published research.	·		
		The effectiveness of the obfuscation scheme must be verified through manual testing. Note that hardware-based isolation			
		features are preferred over obfuscation whenever possible.			
		Impede Eavesdropping			
8.13	MSTG-RESILIENCE-13	As a defense in depth, next to having solid hardening of the communicating parties, application level payload encryption can	$\checkmark$	-	
		be applied to further impede eavesdropping.			

Legend				
Symbol	Definition			
Pass	Requirement is applicable to mobile App and implemented according to best practices.			
Fail	Requirement is applicable to mobile App but not fulfilled.			
N/A	Requirement is not applicable to mobile App.			

Alexander Antukh (Opera Software)Sven SchleierAbdessamad TemmarBernhard MuellerSven SchleierBernhard MuellerSven SchleierSven SchleierSven SchleierSven SchleierSven SchleierSven SchleierSven SchleierSven SchleierSven SchleierAbderrahmane Aftahi	ersion 0.1 0.2 0.3 0.8.1 0.9.2 0.9.3 0.9.3 0.9.4 1.0 1.1 1.1.0.1 1.1.0.2	MASVS version	30/01/2017 31/01/2017 12/02/2017 14/02/2017 15/02/2017 04/04/2017 03/07/2017 16/08/2017 13/01/2018 08/07/2018 30/12/2018	Comment         Initial draft         Merging of three diffeent templates         Adding Spider Chart         Rework, adding links to Testing Guide         QA (and sync version number with MASVS)         Sync with MASVS (merge 7.9 into 7.8)         Sync with MASVS (update requirements of domain 4 and R)         Sync with MASVS (update requirements of domain 1, 4 and 6)         Sync with MASVS (update requirements of domain 3 and 8)         Sync with MASVS (update requirements of domain 2), change links to new Gitbook         Translating to French based on MASVS 1.1.1         Translating to French based on MASVS 1.1.1         Sync with MASVS/MSTG v1.1.0         - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS         - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04)         - Adding 0x05 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank)         - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint Identify Verification"
Sven SchleierAbdessamad TemmarBernhard MuellerSven SchleierBernhard MuellerSven SchleierSven SchleierSven SchleierSven SchleierSven SchleierAbderrahmane Aftahi	0.2 0.3 0.8.1 0.9.2 0.9.3 0.9.3 0.9.4 1.0 1.1 1.1.0.1		31/01/2017 12/02/2017 14/02/2017 15/02/2017 04/04/2017 03/07/2017 16/08/2017 13/01/2018 08/07/2018 04/01/2019	Merging of three diffeent templates Adding Spider Chart Rework, adding links to Testing Guide QA (and sync version number with MASVS) Sync with MASVS (merge 7.9 into 7.8) Sync with MASVS (update requirements of domain 4 and R) Sync with MASVS (update requirements of domain 1, 4 and 6) Sync with MASVS (update requirements of domain 3 and 8) Sync with MASVS (update requirements of domain 2), change links to new Gitbook Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
Abdessamad TemmarBernhard MuellerSven SchleierBernhard MuellerSven SchleierSven SchleierSven SchleierSven SchleierAbderrahmane Aftahi	0.3 0.8.1 0.9.2 0.9.3 0.9.3 0.9.4 1.0 1.1 1.1.0.1		12/02/2017 14/02/2017 15/02/2017 04/04/2017 03/07/2017 16/08/2017 13/01/2018 08/07/2018 30/12/2018 04/01/2019	Adding Spider Chart Rework, adding links to Testing Guide QA (and sync version number with MASVS) Sync with MASVS (merge 7.9 into 7.8) Sync with MASVS (update requirements of domain 4 and R) Sync with MASVS (update requirements of domain 1, 4 and 6) Sync with MASVS (update requirements of domain 3 and 8) Sync with MASVS (update requirements of domain 2), change links to new Gitbook Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 <b>Sync with MASVS/MSTG v1.10</b> - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
Bernhard Mueller Sven Schleier Bernhard Mueller Sven Schleier Sven Schleier Sven Schleier Sven Schleier Abderrahmane Aftahi	0.8.1 0.9.2 0.9.3 0.9.3 0.9.4 1.0 1.1 1.1.0.1		14/02/2017 15/02/2017 04/04/2017 03/07/2017 16/08/2017 13/01/2018 08/07/2018 30/12/2018 04/01/2019	Rework, adding links to Testing Guide         QA (and sync version number with MASVS)         Sync with MASVS (merge 7.9 into 7.8)         Sync with MASVS (update requirements of domain 4 and R)         Sync with MASVS (update requirements of domain 1, 4 and 6)         Sync with MASVS (update requirements of domain 3 and 8)         Sync with MASVS (update requirements of domain 2), change links to new Gitbook         Translating to French based on MASVS 1.1.1         Translating to French based on MASVS 1.1.1         Sync with MASVS/MSTG v1.1.0         - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS         - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04)         - Adding 0x05 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank)         - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank)         - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint"
Sven SchleierBernhard MuellerSven SchleierSven SchleierSven SchleierSven SchleierAbderrahmane Aftahi	0.9.2 0.9.3 0.9.3 0.9.4 1.0 1.1 1.1.0.1		15/02/2017 04/04/2017 03/07/2017 16/08/2017 13/01/2018 08/07/2018 30/12/2018 04/01/2019	QA (and sync version number with MASVS)         Sync with MASVS (merge 7.9 into 7.8)         Sync with MASVS (update requirements of domain 4 and R)         Sync with MASVS (update requirements of domain 1, 4 and 6)         Sync with MASVS (update requirements of domain 3 and 8)         Sync with MASVS (update requirements of domain 2), change links to new Gitbook         Translating to French based on MASVS 1.1.1         Translating to French based on MASVS 1.1.1         Sync with MASVS/MSTG v1.1.0         - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS         - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04)         - Adding 0x05 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank)         - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint"
Bernhard Mueller Sven Schleier Sven Schleier Sven Schleier Sven Schleier Abderrahmane Aftahi	0.9.3 0.9.3 0.9.4 1.0 1.1 1.1.0.1		04/04/2017 03/07/2017 16/08/2017 13/01/2018 08/07/2018 30/12/2018 04/01/2019	Sync with MASVS (merge 7.9 into 7.8) Sync with MASVS (update requirements of domain 4 and R) Sync with MASVS (update requirements of domain 1, 4 and 6) Sync with MASVS (update requirements of domain 3 and 8) Sync with MASVS (update requirements of domain 2), change links to new Gitbook Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 <b>Sync with MASVS/MSTG v1.1.0</b> - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
Sven SchleierSven SchleierSven SchleierSven SchleierAbderrahmane Aftahi	0.9.3 0.9.4 1.0 1.1 1.1.0.1		03/07/2017 16/08/2017 13/01/2018 08/07/2018 30/12/2018 04/01/2019	Sync with MASVS (update requirements of domain 4 and R) Sync with MASVS (update requirements of domain 1, 4 and 6) Sync with MASVS (update requirements of domain 3 and 8) Sync with MASVS (update requirements of domain 2), change links to new Gitbook Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
Sven SchleierSven SchleierSven SchleierAbderrahmane Aftahi	0.9.4 1.0 1.1 1.1.0.1		16/08/2017 13/01/2018 08/07/2018 30/12/2018 04/01/2019	Sync with MASVS (update requirements of domain 1, 4 and 6) Sync with MASVS (update requirements of domain 3 and 8) Sync with MASVS (update requirements of domain 2), change links to new Gitbook Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
Sven Schleier     Sven Schleier     Abderrahmane Aftahi	1.0 1.1 1.1.0.1		13/01/2018 08/07/2018 30/12/2018 04/01/2019	Sync with MASVS (update requirements of domain 3 and 8) Sync with MASVS (update requirements of domain 2), change links to new Gitbook Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
Sven Schleier Abderrahmane Aftahi	1.1 1.1.0.1		08/07/2018 30/12/2018 04/01/2019	Sync with MASVS (update requirements of domain 2), change links to new Gitbook Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
Abderrahmane Aftahi	1.1.0.1		30/12/2018 04/01/2019	Translating to French based on MASVS 1.1.1 Translating to French based on MASVS 1.1.1 Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint
			04/01/2019	Translating to French based on MASVS 1.1.1 Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint"
	1.1.0.2			Sync with MASVS/MSTG v1.1.0 - Rewriting the "Detailed Verification Requirement" columns to match the wording of the MASVS - Adding 0x05/0x06 hyperlinks to MSTG for V3.3+3.5 (previously both 0x04) - Adding 0x05 hyperlink to MSTG for Android-V7.5 (previously blank) - Adding 0x06 hyperlink to MSTG for iOS-V6.1+6.6+6.7+6.8+7.5+7.8 (previously blank) - Updates the linktext of iOS-V5.3 to "Testing Custom Certificate Stores and SSL Pinning" as there's no separate paragraph for "Testing Endpoint"
				<ul> <li>- Updates the linktext of iOS-V8.1 to "Testing Jailbreak Detection" (previously "Advanced Root Detection" which is the wrong term for the platform)</li> <li>Coupling the checklist version to a specific MASVS/MSTG version and shifting to github.com instead of gitbook.io <ul> <li>- Reflecting MASVS/MSTG version in the "Dashboard" worksheet in cell D11 (named range "MASVS_VERSION")</li> <li>- Reflecting the "root" of the MSTG version on github.com in the "Dashboard" worksheet in cell D12 (named range "BASE_URL")</li> <li>- Composing the hyperlinks to the MSTG dynamically with formulas to simplify future maintenance and multilingual support by referencing the two named ranges above</li> <li>- Adding a column "MASVS version" to this "version history" worksheet to reflect the link between versioning of this checklist and MASVS/MSTG</li> </ul> </li> <li>Syncing "Anti-RE" worksheets to better match the L1/L2 "Security Requirements" worksheets <ul> <li>- Adding "ID" header</li> <li>- Removing inner cell borders</li> </ul> </li> <li>Housekeeping/Misc <ul> <li>- Adding missing "-" in the "Testing procedure" columns for where there is no testcase in the MSTG</li> <li>- Adding missing cell-border lines</li> </ul> </li> </ul>
				- Setting all ID's to "x.y" formatting. Was previously a mix of "x.y" and "x,y"
Georges Bolssens	1.1.0.3	1.1.0	06/01/2019	- Setting the cell type of the ID columns to "Text" to prevent Excel from forcing the decimal point from a period to a comma
	1.1.0.4	1.1.0		Updating the lnk to the 1.1.0 version of the guide
Georges Bolssens	1.1.0.5	1.1.0		SHA256 checksum instead of MD5 on Dashboard worksheet Fixed the Management Summary worksheet Added explanation for hyperlinking to the Dashboard worksheet Added 0x04 hyperlink to MSTG for V4.11 on both platforms (previously blank)
				Added 0x06 hyperlink to MSTG for V5.6 on iOS (previously blank)
Georges Bolssens	1.1.0.6	1.1.0	13/01/2019	Added a second hyperlink where feasible
				Adjusted headings to facilitate having 2 links to the MSTG
				Adding 0x05 hyperlink to MSTG for Android-V8.11 (previously blank)
Georges Bolssens	1.1.0.7	1.1.0	13/01/2019	Cosmetics (Top-Left alignment, WordWrap, fit-to-width and -height)
Abderrahmane Aftahi	1.1.1.1	1.1.4		Updating the links based on OSS19 restructured chapters: android 3.2 3.4 4.9 4.10 5.2 5.4 7.7 IOS 3.2 4.5 4.10 4.11 5.1 5.3 6.4 7.8
	1.1.1.1	1.1.4		Correcting the Link to the MSTG repo and adding a link to the MASVS repo
	<u></u>	1.1.4		Synchronizing the requirements wording in excel with the MASVS
				changes:
Abderrahmane Aftahi	1.1.1.3	1.1.4	03/07/2019	
	1.1.1.3	1.1.4		Updating the link 2.12 for IOS
	1.1.1.3	1.1.4		Ensure that tiles are in sync on Excel and MSTG
				Updates:
				- Adding the MSTG-IDs
Abderrahmane Aftahi	1.1.2	1.1.4	08/08/2019	- Covering the V1 MSTG links
				Updates:
				- Added missing translations for headings
Jonas Wendorf	1.1.2	1.1.4	11/09/2019	- Fixed some outlines
				Sync with MASVS 1.2 - Added 1.11, 1.12, 2.13, 2.14, 2.15, 4.12, 6.9, 6.10, 6.11, 8.13 - Changes in English 2.1, 3.4, 4.11, 7.4 - Changes in French 2.1, 4.11, 7.4 - Changes in Japanese 2.1, 4.11, 7.4 - Changes in Japanese 2.1, 4.11, 7.4 - Changes in Korean 1.2, 1.3, 1.7, 2.1, 2.12, 3.1, 3.4, 4.2, 4.6, 4.8, 4.9, 4.11, 5.4, 5.5, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 8.2, 8.5, 8.12 - Changes in Spanish
				1.7, 1.8, 1.9, 1.10, 2.1, 2.3, 2.5, 2.6, 2.8, 2.9, 2.10, 3.1, 3.3, 3.4, 3.6, 4.8, 4.9, 4.10, 4.11, 5.2, 5.3, 5.4, 5.5, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 7.1, 7.2, 7.3,