Annex 2

Technical Requirements

CONTENTS

FIGURES

TABLES

1 INTRODUCTION

It is recommended to deal with the definitions and descriptions as described in “Machine Readable Travel Documents” [ICAO9303], FRONTEX “Best Practice Technical Guidelines for Automated Border Control (ABC) Systems”, “Best Practice Operational Guidelines for Automated Border Control (ABC) Systems” as well as in the ICAO “Technical Report on Machine Assisted Document Security Verification”. Regarding modern electronic Identity Documents the Technical Guidelines [TR-03127] and [TR-03110] are recommended.

The document readers must be capable to provide input to satisfy the requirements provided in this document for processing data in the Inspection System even if the processing is not taking place / cannot be applied directly to the reader device.

1.1 SCOPE OF TENDER

Table 1 describes the scope of this tender. Refer to Chapter 2 for further description of each component.

Solution component	Scope
Document model database	The Vendor SHALL deliver document model database which copies will be installed in the IS workstations.
Document Reader Provider for Secunet Biomiddle version 3.2x or later.	If the solution provided does not have the Reader Provider module by Secunet the Vendor SHALL supply the module together with corresponding license.
Document readers	Readers capable of processing all [ICAODOC] and [ISO/IEC 18013-1] compatible identity and travel documents.
Licenses	The Vendor SHALL submit all the licenses required to operate the document reader and Document model database. Licenses MUST cover all the document readers purchased in course of this Tender.
Support	The Vendor will provide full support and warranty service of the delivered hard- and software, including the Database, for 3 years. The Vendor SHALL provide updates to the Database at least once per month.

SDK	The Vendor SHALL deliver SDK together with the document readers.

Table 1: Scope of Tender

The requested software, hardware and related licenses MUST cover all different environments – live, testing, development etc. Every reader MUST be able to be operated in these environments.

1.2 REQUIREMENTS STRUCTURE

Chapter 2 contains overall requirements.

Chapter 3 contains technical requirements to the reader devices.

Chapter 4 contains requirements to the procedures of document reading and verification process.

1.3 TERMINOLOGY

Requirements as defined in this Specification can be mandatory, recommended or optional. All the requirements in this document are mandatory if not otherwise clearly specified.

MUST, SHALL, REQUIRED, NORMATIVE	The implementation is an absolute requirement of the specification and must be used/included.
RECOMMENDED, NOT RECOMMENDED, SHOULD, SHOULD NOT	The requirements are recommendations, this means that there may exist valid reasons in particular circumstances to ignore a particular item or requirement, but the full implications must be understood and carefully weighed before choosing a different course.
MAY, OPTIONAL	The requirements are not binding. One operator or vendor may choose to include it, another may omit it.
MUST NOT, SHALL NOT	A so-called requirement is an absolute prohibition of the specification.

Table 2: Interpretation of keywords

1.4 Definitions And Abbreviations

1.4.1 Definitions

Term	Definition
Contracting Authority	The term Contracting Authority is used to refer to IT and Development Centre, Ministry of the Interior (SMIT) as responsible for the tender process and as responsible Commissioning Party.
EAC-PKI	Extended Access Control Public Key Infrastructure – The infrastructure required to control read access to fingerprint biometrics on Passports and Travel Documents through Extended Access Control.
MRTD	Term used to encompass all Machine Readable Travel Documents.
eMRTD	Term used to encompass all electronic Machine Readable Travel Documents, hereunder electronic Passports, Residence Permits, Local Border Traffic Permits and National Identity Cards.
Inspection System	In the scope of the present tender the system containing document reading SDK, Secunet Biomiddle module and user interface to display information to the operator. Inspection System gets its input data from a full-page flatbed document reader and Contracting Authority's backoffice services and databases.
Terminal	Inspection System (IS) as defined in [BSI_TR_03110_1] p.2.2.
Travel Document	An identity document compliant to [ICAO9303] and acknowledged as such due to [ICAO9303] or international agreements.

Operator	Term is used to cover all human personnel that require system access to operate, administer, or audit the Inspection System and document reader.
Vendor	The term is used throughout this specification to refer to the vendor, tenderer/bidder or contractor in all phases of the procurement and delivery of the requested solution.

Table 3: Definitions

1.4.2 ABBREVIATIONS

CA	Certification Authority
CRL	Certificate Revocation List
CSCA	Country Signing Certification Authority
CS-PKI	Country Signing Public Key Infrastructure
CVCA	Country Verifying Certification Authority
EAC	Extended Access Control
ECC	Elliptic Curve Cryptography
e-DL	Electronic driver's license
e-ID	Electronic identity document
eMRTD	Electronic Machine Readable Travel Document
ePass	Electronic Passport

eRP	Electronic Residence Permit
ICAO	International Civil Aviation Organisation
IS	Inspection System
MRTD	Machine-Readable Travel Document
PA	Passive Authentication
PKI	Public Key Infrastructure
SO_D	Document Security Object
TA	Terminal Authentication
RSA	Rivest Shamir Adleman
SHA	Secure Hash Algorithm
DTC	Digital Travel Credentials
DTC-VC	Digital Travel Credentials Virtual Component
DTC-PC	Digital Travel Credentials Physical Component

Table 4: Abbreviations

1.5 REFERENCES AND STANDARDS

#	Standard	Publisher	Date

[ANSI X9.142]	ANSI X9.142-2020 Public Public Key Cryptography for the Financial Services Industry — The Elliptic Curve Digital Signature Algorithm ECDSA.	ANSI	Sep. 10th, 2020
[BSI_TR_03105-4]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03105 Part 4. Test Plan for ICAO-compliant Proximity Coupling Devices (PCD) on Layers 1-4, version 3	BSI	2016-11-04
[BSI_TR_03105_5-1]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03105 Part 5.1, version 1.5: Test plan for ICAO compliant Inspection Systems with EACv1	BSI	February 10th, 2020

#	**Standard**	**Publisher**	**Date**
[BSI_TR_03105_5-2]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03105 version 1.2, Conformity Tests for Official Electronic ID Documents, Part 5.2, version 1.2 Test plan for eID and eSign compliant eCard reader systems with EAC 2	BSI	2013-11-19

[BSI_TR_03110_1]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03110-1 version 2.10, Advanced Security Mechanisms for Machine Readable Travel Documents – Part 1 - eMRTDs with BAC/PACEv2 and EACv1.	BSI	March 20th, 2012
[BSI_TR_03110_3]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03110-3 version 2.10, Advanced Security Mechanisms for Machine Readable Travel Documents – Part 3 – Common Specifications	BSI	March 20th, 2012
[BSI_TR_03127]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03127 version 1.13, Architecture electronic Identity Card and electronic Resident Permit	BSI	March 10th, 2011
[BSI-TR-03135-1-v2-5]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03135 - Machine Authentication of MRTDs for Public Sector Applications Part 1: Overview and Functional Requirements	BSI	2023

[BSI-TR-03135-2-v2-5]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03135 - Machine Authentication of MRTDs for Public Sector Applications Part 2: Application profiles for official document inspection systems	BSI	2023
[BSI-TR-03135-3-v2-5]	Bundesamt für Sicherheit in der Informationstechnik, Technical Guideline TR-03135 - Machine Authentication of MRTDs for Public Sector Applications Part 3: High Level Document Check Interface Specification	BSI	2023
[EN 62368-1:2024]	IEC/EN 62368-1:2024: Audio/video, information and communication technology equipment. Safety requirements.	IEC/EN	2024
[ICAO9303]	Doc 9303 Machine Readable Travel Documents, Eight Edition, Parts 1 – 13	ICAO	2021
#	**Standard**	**Publisher**	**Date**
[IEC 62471]	IEC 62471-6:2023: Photobiological safety of lamps and lamp systems		2023
[ISO_1831]	ISO 1831: Printing specifications for optical character recognition	ISO	

[ISO10918-1]	ISO/IEC 10918-1: Information technology - Digital compression and coding of continuous-tone still images: Requirements and guidelines		
[ISO/IEC 18013]	ISO/IEC 18013: Information technology - Personal identification - ISO-compliant driving licence – a set of standards.	ISO/IEC	
[RFC_4122]	RFC 4122: A UUID URN Namespace	IETF	July 2005
[RFC 5639]	RFC 5639: Elliptic Curve Cryptography (ECC) Brainpool Standard Curves and Curve Generation	IETF	March 2010

Table 5: References

2 GENERAL REQUIREMENTS

Each MRTD MUST be assigned to a document model according [BSI-TR-03135-1-v2-5] p. 5.5.1.1

2.1 REQUESTED SOLUTION

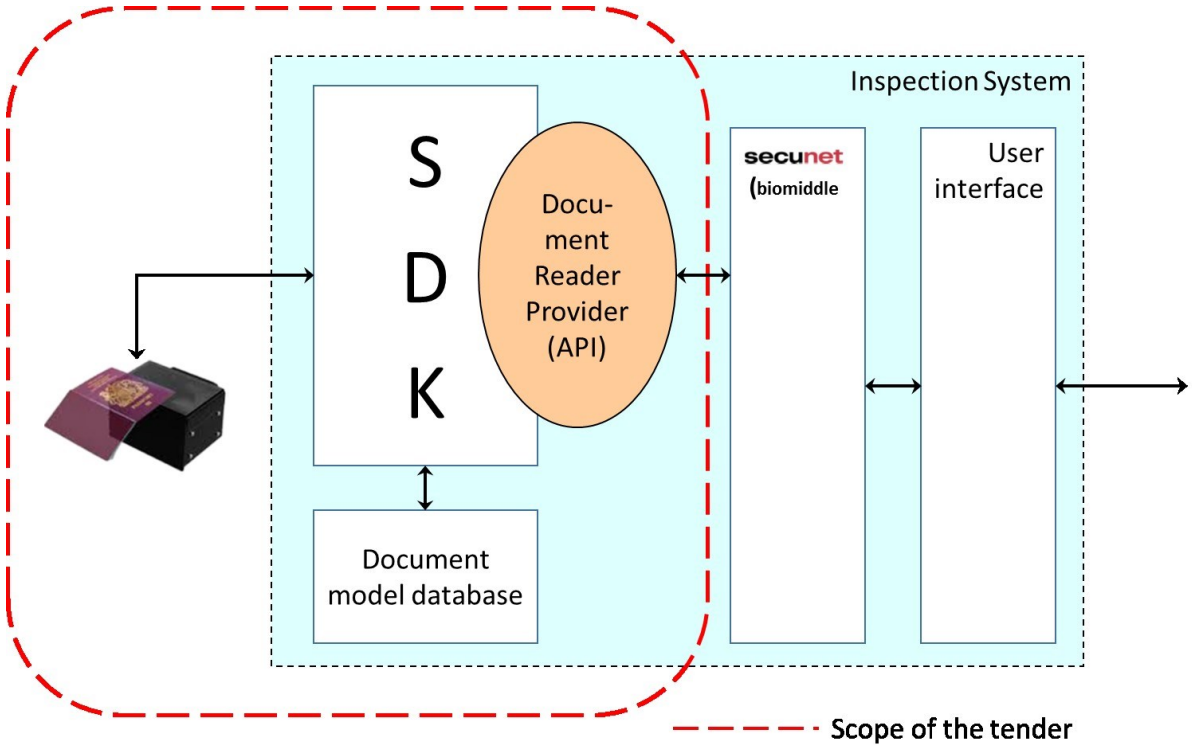

Figure 1. Schematic description of the requested solution

The Contracting Authority intends through this tender to update the currently deployed identity and travel document verification infrastructure. At the same time, the Contracting Authority intends to acquire an enhanced solution providing more advanced services for Inspection Systems together than today.

Figure 1 provides a schematic overview of the requested solution. The figure serves the purpose of functional specification and scoping only. The Contracting Authority accepts that the naming of systems or components of the Vendor's offered solution may differ from the naming used in this document. The Contracting Authority also accepts that the Vendor's solution might be implemented in such a way that systems or system components are combined or linked in a different manner than reflected in Figure 1.
A more detailed description of each functional component in Figure 1 is provided in the following sub-chapters.

2.1.1 DOCUMENT READER

The document reader records the features of a given MRTD according to its type. Afterwards, the document reader transmits this data to an Inspection Application for further processing.

The document readers MUST be standalone stationary models for indoor use.

2.1.2 SDK

The role of SDK is:

to manage mapping of the read document to a document model in the model database; and manage data exchange between document reader and Secunet BioMiddle environment.

2.1.3 EXISTING INSPECTION APPLICATION

The Inspection System contains Secunet Biomiddle services that control the reading process of the document reader, processes the information and MRTD features obtained by it.

2.1.4 CONFORMITY

All components supplied by the Vendor SHALL make it possible for the Inspection System and Inspection Application to completely implement and meet all requirements from chapters 4.2.3 of [BSI-TR-03135-2-v2-5] for the Stationary application scenario.

2.2 DOCUMENT VERIFICATION DATA

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 1.	Document reader and SDK SHALL be able to provide all the document verification data in a format that is sufficient to build [BSI-TR-03135-1-v2-5] compatible transaction log, according to XML schemas provided in [BSI-TR-03135-XML, v2.5]. Transaction log MUST contain all data obtained in the process of document verification process.		

2.3 SYSTEM DOCUMENTATION

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 2.	**General System Documentation** The Vendor SHALL, for all software and equipment (hardware) offered, provide general system documentation written in English covering the following topics: • "Maintenance Guide of the document readers" containing instructions of cleaning, calibration etc. targeting personnel responsible for installation, configuration and maintenance. • "Programmers Guide" targeting personnel responsible for system integration/customization, e.g. if software is provided with SDKs/APIs.		

3 REQUIREMENTS TO DOCUMENT READERS

3.1 TECHNICAL REQUIREMENTS

1. MRZ quick Scan
2. Full (data)page full resolution scan
3. Chip

3.1.1 DOCUMENT FORMATS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 3.	Document reader type: full-page. Swipe reading functionality of MRZ MUST NOT be present.		
REQ 4.	Document reader supports TD1 format of MRTDs specified in [ICAO9303]		
REQ 5.	Document reader supports TD2 format of MRTDs specified in [ICAO9303]		
REQ 6.	Document reader supports TD3 format of MRTDs specified in [ICAO9303]		
REQ 7.	Document reader supports MRVA format of MRTDs specified in [ICAO9303]		
REQ 8.	Document reader supports MRVB format of MRTDs specified in [ICAO9303]		
REQ 9.	Document reader supports documents not compatible to [ICAO9303] up to scanning area size ≥ 87*125 mm		

3.1.2 READING THE OPTICAL DATA

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 10.	Reading of VIZ, MRZ and CAN MUST be supported.		
REQ 11.	Recording of images in 365 nm UV, visible and near IR (B900) spectral ranges MUST be supported.		
REQ 12.	Document reader sensitivity to incoming ambient light MUST be minimized by: 1. shielding by technical safeguarding measurements; 2. by compensating of external light; or 3. by both methods. Requirement MUST be fulfilled at least for UV wavelength spectral range.		

REQ 13.	Glare removal from laminate and DOVIDs in visible and B900 illumination spectral range MUST be supported.		
REQ 14.	Computer readable image file formats (PNG, TIFF and JPEG) with an image resolution of at least 450 ppi MUST be supported when recording the data page image.		
REQ 15.	OCR of data in VIZ, MRZ and CAN MUST be supported.		

NO.	**REQUIREMENT DESCRIPTION**	**VENDOR'S RESPONSE**	**FULFILLED**
REQ 16.	OCR of data MUST be based on the B-900 spectral range (IR) image. MRZ check based on the visible light (VI) image SHALL be performed only if the OCR reading of the MRZ based on IR was not successful.		
REQ 17.	Document model identification MUST be based on spectrally selective check for identification characteristics in VI, UV and/or IR images only in case the MRZ analysis is not sufficient for such an identification.		
REQ 18.	System MUST check quality of the MRZ.		
REQ 19.	Following MRZ configurations MUST be supported: • 44*2 symbols; • 36*2 symbols; • 30*3 symbols; and • 30*1 symbols.		

REQ 20.	Automated reading of following 1D and 2D barcodes MUST be supported: • Codabar; • Code 128; • Code 39 (+extended); • Code 93; • EAN-8; • EAN-13; • Interleaved 2 of 5 (ITF); • STF (Industrial); • Matrix 2 of 5 • IATA 2 of 5 (Airline); • UPC-A; • UPC-E; • PDF-417; • QR Code; • Datamatrix; • Aztec		
REQ 21.	Automated reading, decoding and verification of following 2D barcodes MUST be supported: ICAO Digital Barcode EU Schengen Visa sticker 2D barcode		

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 22.	2-sided reading of TD1 format of MRTDs specified in [ICAO9303] MUST be supported.		
REQ 23.	2-step reading of documents[1] within the same transaction MUST be supported.		

3.1.3 SUPPORTED IMAGE/CAMERA RESOLUTION

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 24.	Image/camera optical resolution MUST be ≥ 450 dpi / ≥ 5 Mpi		

3.1.4 SUPPORTED CODE PAGES BY OCR

3.1.4.1 CODE PAGE RECOGNITION

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 25.	At least CP1250, CP1251, CP1252, CP1253, CP1254, CP1257 code pages MUST be supported.		

3.1.4.2 FEATURES

REQ 26.	Dictionary Support MUST be present.		
REQ 27.	Automatic text division into separate fields MUST be supported.		
REQ 28.	Recognition of dates with complex formats MUST be supported.		
REQ 29.	Recognition of characters from different code pages in one line MUST be supported.		

3.1.5 RFID CHIP READER

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED

[1] For example, checks across several documents (e. g. passport, visa) or document pages are possible for a given model and additional sticker (e. g. visa).

REQ 30.	Compliance to ISO 14443 Type A and B		
REQ 31.	Transmission protocol T=CL MUST be supported.		
REQ 32.	Communication protocols Direct, BAC, SAC/PACE, EAC; Chip Authentication (CA v1, CA v2) and Terminal Authentication (TA v1, TA v2) , Active and Passive Authentication MUST be supported.		
REQ 33.	Data exchange rates 106, 212, 424 and 848 kbps, Extended Length MUST be supported.		
REQ 34.	Chip detection in any part of the document MUST be supported.		
REQ 35.	Chip MUST be readable when document is positioned on the optical reading surface.		
REQ 36.	Anti-collision protocol (chip selection based on MRZ reading results) MUST be used.		
REQ 37.	LDS versions and eMRTD PKI defined in ICAO 9303 MUST be supported.		
REQ 38.	NFC Wireless Charging (NFC WLC) capability MAY supported.		

3.1.6 NETWORK INTERFACES

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 39.	Connection interface to the IS workstation – USB 2.0[2].		
REQ 40.	Bluetooth 6.0, including Bluetooth Low Energy (BLE) MUST be supported.		
REQ 41.	Power supply MUST be accomplished via connection interface to IS Workstation.		
REQ 42.	Supply current, max – 2 A.		

[2] USB 3.0 and 3.1 recommended

3.1.7 DOCUMENT READER CERTIFICATION

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 43.	Document reader MUST have the following certifications - CE, RoHS, EN 62368-1, EN62471.		
REQ 44.	Document reader MUST have the following certifications - [BSI_TR_03105_4] ,[BSI_TR_03105_5-1] and [BSI_TR_03105_5-2]		

3.1.8 PERFORMANCE CAPABILITIES AND TEMPORAL REQUIREMENTS

REQ 45.	Chip access process MUST start as soon as the MRZ or the CAN content becomes available.		
REQ 46.	Digitized records of the extracted MRZ or CAN MUST be made available to the IS in ≤ 2,5 seconds[3] after the document[4] has been placed onto the reader.		
REQ 47.	Activation of concurrent optical and electronic checks MUST take place as soon as the optical and electronic data required for such checks are available. See Figure 2.		
REQ 48.	Document verification MUST start as soon as the input data becomes available to the system.		
REQ 49.	Full document verification process of an electronic MRTD[5] SHALL NOT take longer than 7 seconds[6].		

3.1.9 COMMUNICATION REQUIREMENTS FOR THE RF-READING MODULE

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 50.	The RF-reading module MUST be certified according to [TR-03105-4]		

3.1.10 DOCUMENT MODEL DATABASE SUPPORT

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED

[3] Corresponds to t_1 on the Figure 2.

[4] Estonian passport of 2025 is used as the reference document.

[5] On a reference electronic MRTD using an Inspection System operated on technology using the minimal system requirements as specified by the manufacturer.

[6] Corresponds to t_2 on the Figure 2.

REQ 47.	Only local database copies installable in IS workstations applicable. No cloud service allowed.		
NO.	**REQUIREMENT DESCRIPTION**	**VENDOR'S RESPONSE**	**FULFILLED**
REQ 51.	Database MUST be updated at least once per 2 months.		
REQ 52.	Database MUST be updated in 2 weeks with new document data after providing relevant document specimens by the Contracting Authority.		

3.1.11 CHIP APPLICATION SUPPORT

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 53.	Applications to be supported: e-Passport (DG01 – DG16); e-ID (DG01 – DG21); eDL (DG01 – DG14) ; DTC-PC (DG01 – DG24) and LDS2 (TravelRecords, VisaRecords, AddBiometrics*)*		

3.1.12 AUTOMATION REQUIREMENTS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 54.	Automatic document detection MUST be supported.		
REQ 55.	Document scanning process MUST start automatically		
REQ 56.	Document recognition and mapping to model database MUST take place automatically.		
REQ 57.	Automatic search and cropping of document image MUST be supported.		

3.1.13 DIGITAL TRAVEL DOCUMENT HANDLING REQUIREMENTS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 58.	DTC-VC attributes parsing and validation MUST be supported.		
REQ 59.	Creating DTC-VC from existing eMRTD data MUST be supported.		
REQ 60.	Full support of handling DTC-PC Type 2 and Type 3		

3.1.14 OPERATING CONDITIONS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 61.	Document readers MUST be able to operate at ambient temperatures 5 – 35 degrees centigrade.		

3.1.15 VARIA

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 62.	No moving parts allowed.		
REQ 63.	The working status of the document reader must be shown by LED indicator(s).		
REQ 64.	Document reader MUST be compliant to [EN 62368-1:2024] and [IEC 62471]		
REQ 65.	Document reader MUST support new DG2 data format according to ISO/IEC 39794-5		
REQ 66.	Document reader MUST support new DG3 data format according to ISO/IEC 39794-4		

4 VERIFICATION OF MRTDS

Chapter 4 describes data processing procedures that must be accomplished during a document check whether it takes place in the reader or in the IS workstation. If the data processing takes place in the IS workstation the Document Reader Provider (API, see Figure 1. here above) MUST be capable to provide corresponding data formatted according to XML-schema according to the [TR-03135] Part 1 p. 5.2.

4.1 PROCESS SEQUENCE OF CHECKING A MRTD

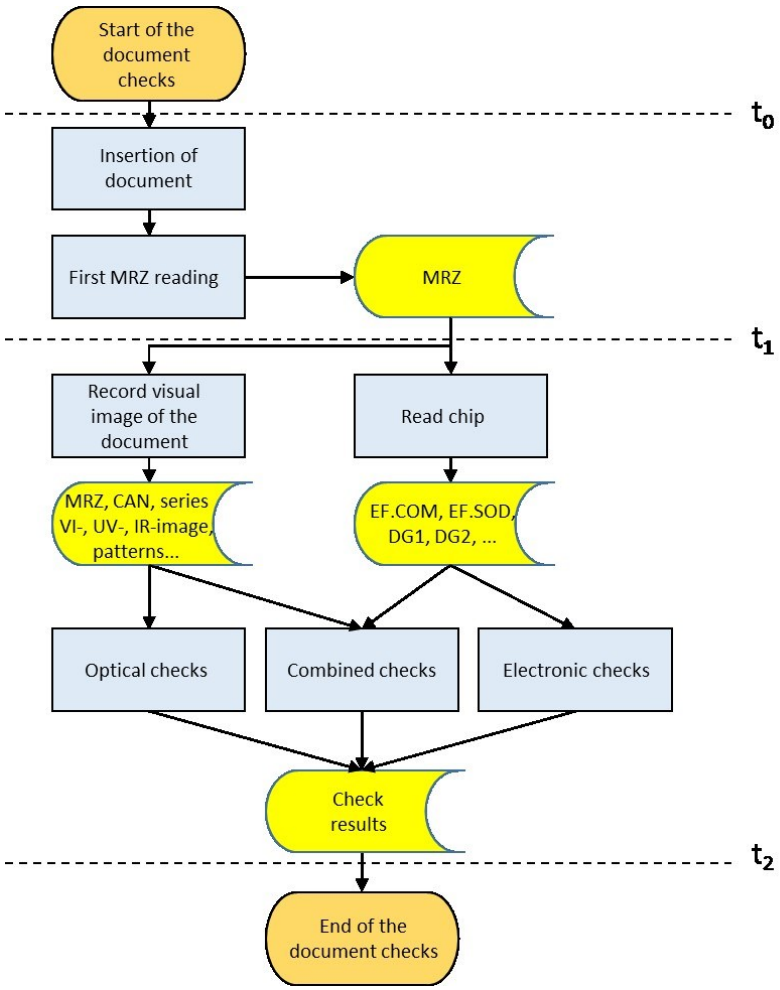

Figure 2. Process sequence of checking MRTDs

Document verification MUST start automatically (time t_0) with placing a document to the reader's reading surface. The first reading of the MRZ takes place while the document is slided towards the final reading position. As the MRZ is read during sliding the document to its final reading position the result of the reading will be delivered to the IS right after the successful result of OCR (time t_1). This allows to start communication between chip and the reader and thus document verification process earlier and reduce overall time of the verification process for the holder this way increasing throughput of persons. Time t_2 indicates the end of the document checking process and making results available for the IS.

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 67.	Compatibility to the schema on Figure 2		
REQ 68.	Performing logical check based on data generated during optical reading		
REQ 69.	Performing check of the optical/physical security features of the document		

4.2 ERROR CODES

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 70.	Data made available for processing errors logging for optical, electronic, and combined check classes.		
REQ 71.	Error code MUST be in numeric integer format having value defined in the integer range of 1 – 999 999.		
REQ 72.	Error code for each partial check SHALL make it possible to distinguish between check classes.		

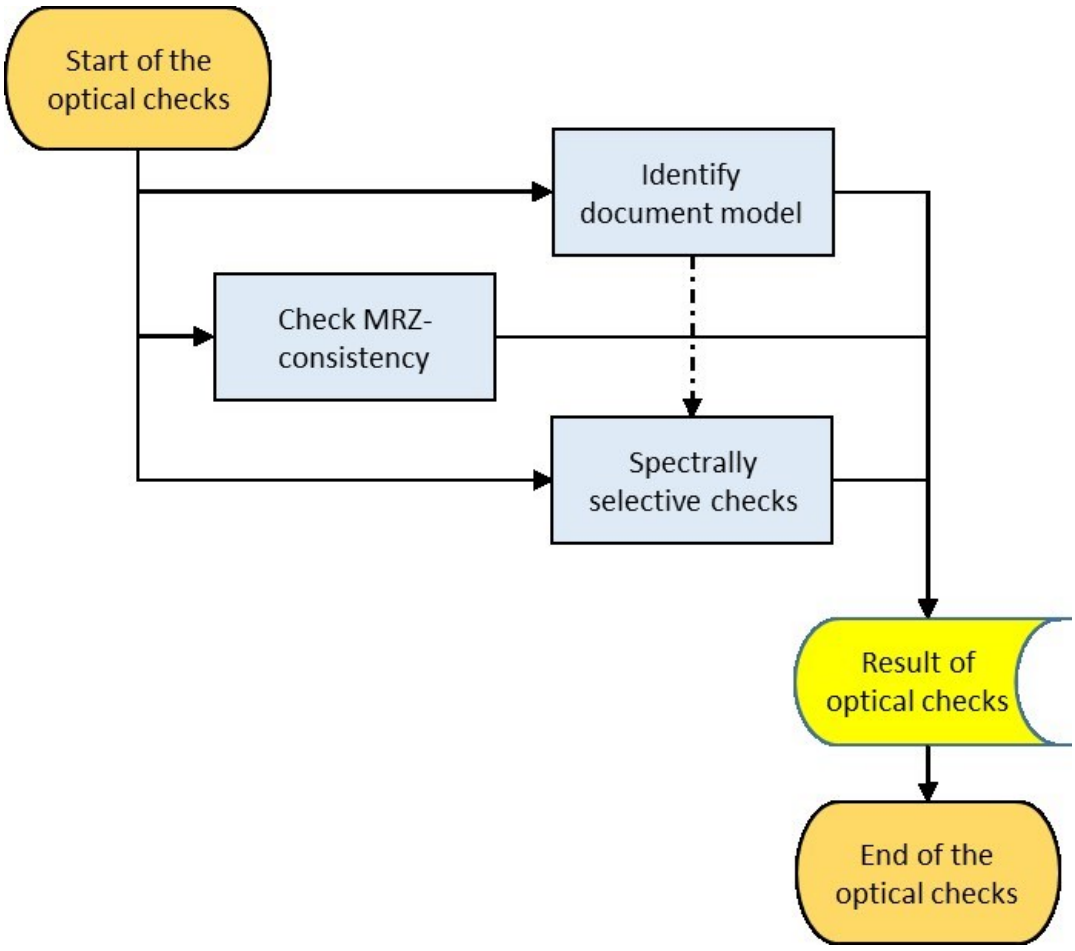

Figure 3. Process of optical checks of MRTDs

4.3 OPTICAL CHECKS OF MRTDS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 73.	Compatibility to the schema on Figure 3		
REQ 74.	Presence of barcode and contents of decoded barcode data MUST be delivered to Secunet BioMiddle module.		
REQ 75.	Transliteration of characters in compliance with [ICAO9303] for comparison with MRZ MUST be supported.		

4.3.1 DOCUMENT MODEL

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 76.	Each MRTD MUST be assigned to a document model (sometimes also called series) according to [TR-03135-1] p.5.5.1.1.[6]		

4.3.2 SPECTRALLY SELECTIVE CHECK ROUTINES

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 77.	Local document model database assisting in the checking process.		
REQ 78.	Assignment of an unique identifier (UUID according [RFC4122]) for each generic check by the manufacturer according to [TR-03135-1] p.5.5.1.2		

[6] A document model is defined by means of the country code (C), document type (T), a distinct identification number (N) and a year value (Y).

Feature / Area (ZZ)		**Light Source (XX)**		
		VI	UV	IR
Fibers	FI		LU	
Full data page	FU		BR	
Static printed feature	IS	{AB, TR}	LU	{AB, TR, TL}
MRZ	MR	AB	BR	AB
Overprinted MRZ	OM		LU	
CAN	CA	AB		AB
Personalized perforation (dynamic)	PD	AB	LU	AB
Perforation of the substrate	PS	AB	LU	AB
Photo	PH	{AB, FR}	{BR, FR}	{AB, FR, TR}
Secondary Photo	SP	{AB, TR}	LU	{AB, TR}
Overprinted photo	OP		LU	
Security thread	TH	TR	LU	AB
Visual Inspection Zone (VIZ)	VZ		BR	
Watermark	WM			AB

Personalized dynamic feature	ID	{AB, TR}	LU	{AB, TR}
Additional feature	AF	{AB, BR, LU, TL, TR}	{AB, BR, LU, TL, TR}	{AB, BR, LU, TL, TR}

Table 6: Matrix representation of the generic basic check routines. Used abbreviations according to the [TR-03135-1] p.5.5.1.2.

In addition, there can be the following composite check routines:

– (**IR, AB, TH**) in combination with (**VI, TR, TH**): Check that a thread visible under IR light is invisible under white light.

– (**IR, TR, ID**) in combination with (**VI, AB, ID**): Check that the ink of the dynamic print image absorbent under white light is transparent under IR light.

– (**IR, TR, IS**) in combination with (**IR, AB, IS**): Check that some parts of the static print image are absorbent under IR light, whereas other parts of the characteristics are transparent.

– (**IR, TR, IS**) in combination with (**VI, AB, IS**): Check that the ink of the static print image absorbent under white light is transparent under IR light.

– (**IR, TR, IS**) in combination with (**VI, AB, IS**) and (**IR, AB, ID**): Check that the ink of the static print image absorbent under white light is transparent under IR light and a dynamically printed characteristic becomes visible in the same position under IR light.

The Contracting Authority SHALL have freedom of choice which security elements in which combinations will be checked.

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 79.	Classification and logging of manufacturer- and model-specific check routines according to the schema given in table 6		

4.3.3 CATALOGUE FOR SPECTRALLY SELECTIVE CHECKS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 80.	Supporting a catalogue according to [TR-03135-1] p. 5.5. 1.3		

REQ 81.	Presence of the following information on each generic check routine of a document model: • UUID of the check routine; • Generic check identifier; • Proprietary check; • Textual description of the check routine performed; • Attribute containing the upper limit of the range of values; • Attribute containing the lower limit of the range of values; • Attribute containing the threshold configured for the decision for the spectrally selective verification; • The bounding rectangle for the checking area; or • The description of an alternative geometric check region if a bounding rectangle is not applicable; • The image section of the reference image region checked against the corresponding database.		
REQ 82.	Any proprietary decision function for composite generic check routines MUST be described by the manufacturer and disclosed to the Contracting Authority.		
REQ 83.	Listing of all test configurations with group checks and decision functions for the given document models		

4.4 DOCUMENT MODEL IDENTIFICATION

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 84.	Automatic recognition of a document type and mapping to the document model for all further modelspecific checking steps.		
REQ 85.	Document model identification MUST be based on the MRZ[7].		

[7] In case of insufficiency of MRZ analysis refer to REQ. 17

REQ 86.	The system MUST accept manual input of correct MRZ data from Secunet BioMiddle module to continue document verification in case of reading and OCR errors.		
REQ 87.	Parametrization of the UV recording conditions MUST also be performed based on a model identification.		
REQ 88.	Identification of the document model based on model mark on the document MUST be supported.		

4.5 DOCUMENT AUTHENTICITY VERIFICATION

4.5.1 CHECKING THE MRZ CONSISTENCY

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 89.	Verification of control sums in MRZ		
REQ 90.	Verification of accuracy of MRZ filling-in		

4.5.2 SPECTRALLY SELECTIVE VERIFCATION

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 91.	Compliance to the verification scenario provided in [BSI-TR-03135-1-v2-1] chapter 5.5.4.2 MUST be followed.		

4.5.3 CROSS VERIFICATION OF DATA

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 92.	Cross-verification of data retrieved from MRZ, VIZ (data page area), barcode, RFID-chip SHALL be part of the document verification scenario.		

4.6 Electronic checks of electronic MRTDs

4.6.1 Support of the following protocols and security mechanisms

No.	Requirement Description	Vendor's Response	Fulfilled
REQ 93.	Basic Access Control (BAC) according to [ICAO9303]		
REQ 94.	Password Authentication Connection Establishment (PACE) according to [ICAO9303]		
REQ 95.	Passive Authentication (PA) according to [ICAO9303]		
REQ 96.	Active Authentication (AA) according to [ICAO9303]		
REQ 97.	Chip Authentication Version 1 (CA1) according to [TR-03110]		
REQ 98.	Chip Authentication Version 2 (CA2) according to [TR-03110]		
REQ 99.	Terminal Authentication Version 1 (TA1) according to [TR-03110]		
REQ 100.	Terminal Authentication Version 2 (TA2) according to [TR-03110]		

4.6.2 FILES AND DATA GROUPS TO BE READ

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 101.	EF.SOD		
REQ 102.	DG14		
REQ 103.	DG15		
REQ 104.	EF.CVCA		
REQ 105.	EF.CardAccess according to [ICAO9303]		
REQ 106.	EF.CardSecurity according to [ICAO9303]		
REQ 107.	EF.ChipSecurity according to [ICAO9303]		
REQ 108.	DG1		
REQ 109.	DG2		
REQ 110.	DG3		
REQ 111.	DG11		
REQ 112.	DG12		

4.6.3 PROCESSING SEQUENCES

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 113.	Implementation and support for the process sequence described in TR-03135-1 p.5.6.2.1.		
REQ 114.	Implementation and support for the process sequence described in TR-03135-1 p.5.6.2.2.		
REQ 115.	Implementation and support for the process sequence described in TR-03135-1 p.5.6.2.3.		
REQ 116.	Implementation and support for the process sequence described in TR-03135-1 p.5.6.2.4.		

4.6.4 CHIP ACCESS VIA BAC OR PACE

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 117.	It MUST be possible to configure the system in order that PACE will be used as the primary protocol and BAC will be used as fallback one.		

4.6.5 CHECKING THE CHIP AUTHENTICITY (AA, CA)

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 118.	Using CA if both protocols (CA and AA) are supported.		

4.6.6 VERIFICATION OF THE SECURITY OBJECTS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 119.	Verification of the hash and signature for EF.SOD and mapping to its own final check result		
REQ 120.	Verification of the hash and signature for EF.CardSecurity and mapping to its own final check result (if existing)		
REQ 121.	Verification of the hash and signature for EF.ChipSecurity and mapping to its own final check result (if existing)		

REQ 122.	Ability to process security objects with one, several or no C_{DS}.		

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 123.	Verification of the digital signature of a security object.		
REQ 124.	Comparison of the stored and calculated on site security object's hash values MUST be supported.		

4.6.7 CHECKING ISSUER CERTIFICATES

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 125.	Check of the issuer certificate for $EF.SO_D$ MUST be supported.		
REQ 126.	Check of the issuer certificate for EF.CardSecurity MUST be supported.		
REQ 127.	Check of the issuer certificate for EF.ChipSecurity MUST be supported.		
REQ 128.	Possibility to check C_{DS} signature against its respective C_{CSCA} MUST be supported.		
REQ 129.	Check if the time at which the check is performed is within the validity period of the C_{DS} MUST be supported.		
REQ 130.	Check of the revocation state of the C_{DS} MUST be supported.		

4.6.8 INTEGRITY OF CHIP CONTENTS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 131.	If the document includes the two files - EF.SOD and EF.COM, mandatory check must be executed to verify if each data group listed in $EF.SO_D$ is included also in EF.COM		

4.6.9 INTEGRITY OF DOCUMENT CONTENTS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 132.	Comparison of the expiration date of the document and the current date the check was performed provided by the IS MUST be supported. The expiration date of the document MUST be derived from MRZ.		
REQ 133.	Comparison of VIZ data elements against DG1 MUST be supported.		
REQ 134.	Comparison of the MRZ of the back for consistency against the VIZ of the front MUST be supported.		

5 REQUIREMENTS DEFINITION AND TENDER EVALUATION

5.1 REQUIREMENTS DEFINITION

As stated here above in this document all the provided requirements are mandatory.

5.1.1 MINIMUM REQUIREMENTS

NO.	REQUIREMENT DESCRIPTION	VENDOR'S RESPONSE	FULFILLED
REQ 1	**[Requirement title]** [Customer's Requirement Description]	*[Vendor to include, or refer to, supporting documentation that prove/support fulfilment of the minimum requirement]*	**Yes/No**
REQ 2	**[Requirement title]** [Customer's Requirement Description]		**Yes/No**

The requirements will be stated as in the example above.

The first column labelled “No.” provides a unique number for each requirement, using the prefix “REQ”. Requirements are numbered sequentially throughout the document.

The second column labelled “Requirement Description” contains a Requirement Title (bold text) and the Contracting Authority’s Requirement Description. The requirements are not scored, but evaluated as fulfilled/not fulfilled based on the documentation provided by the Vendor. The Contracting Authority reserves the right to decide if the Vendor fulfils the requirements or not based on the documentation provided.

The third column labelled “Vendor’s Response” shall be filled by the Vendor to include, or refer to, supporting documentation to convince the Customer that the requirement is fulfilled. The referenced documentation should be as short and precise as possible.

In the last column labelled “Fulfilled” the Vendor must clearly state whether the Vendor fulfils the requirement (**Yes**) or not (**No**). Should the column “Fulfilled” not be filled in, then the Customer will assume the column to be filled in with “No” and therefore it will constitute a confirmation that the Vendor cannot comply with the requirements.