

NextGenATMIA

IMPLEMENTATION GUIDE



For Next Gen API App ATMs



2/11/2019

Version 0.4, M. Ficken

The ATMIA anti-trust and IPR policies will apply to this document (see references 5 and 6).

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VERSION HISTORY

Version	Date	Author	Changes
0.1	10/10/2018	M. Ficken	First setup of Implementation Guide, based on reference 1+2.
0.2	26/11/2018	M. Ficken	First input meeting cycle (November 2018) from Implementation Committee and Functional-, Technical- and Certification WorkingGroups.
0.3	4/1/2019	M. Ficken	Process review and feedback of meeting cycle (December) from Implementation Committee and Functional-, Technical- and Certification WorkingGroups
0.4	11/2/2019	M. Ficken	Process review and feedback of meeting cycle (Jan/Feb) from Implementation Guide Working Groups Functional-, Technical- and Certification meeting. Update according to ATMIA Clarification Statement 2.0 (reference 7)

REFERENCES

No.	Document	Version	Author
1	Technical Standards Assessment Report	2.0 final	M. Ficken
2	Implementation Model	2.0	M. Ficken
3	NextGen Blueprint	1.0 signed-off	ATMIA
4	Glossary of Terms, 2018-04	1	ATMIA
5	ATMIA anti-trust compliance policy – 10018816	Final	ATMIA
6	ATMIA IPR policy – 10020625	Draft	ATMIA
7	ATMIA Clarification Statement	2.0	ATMIA
8	NextGen ATM User Interface Best Practices	2018-10	ATMIA
9	NextGen Ecosystem Security for API App ATMs	2018-09	ATMIA
10	Added Value Services to boost Next Gen ATMs	2018-10	ATMIA

2 Introduction

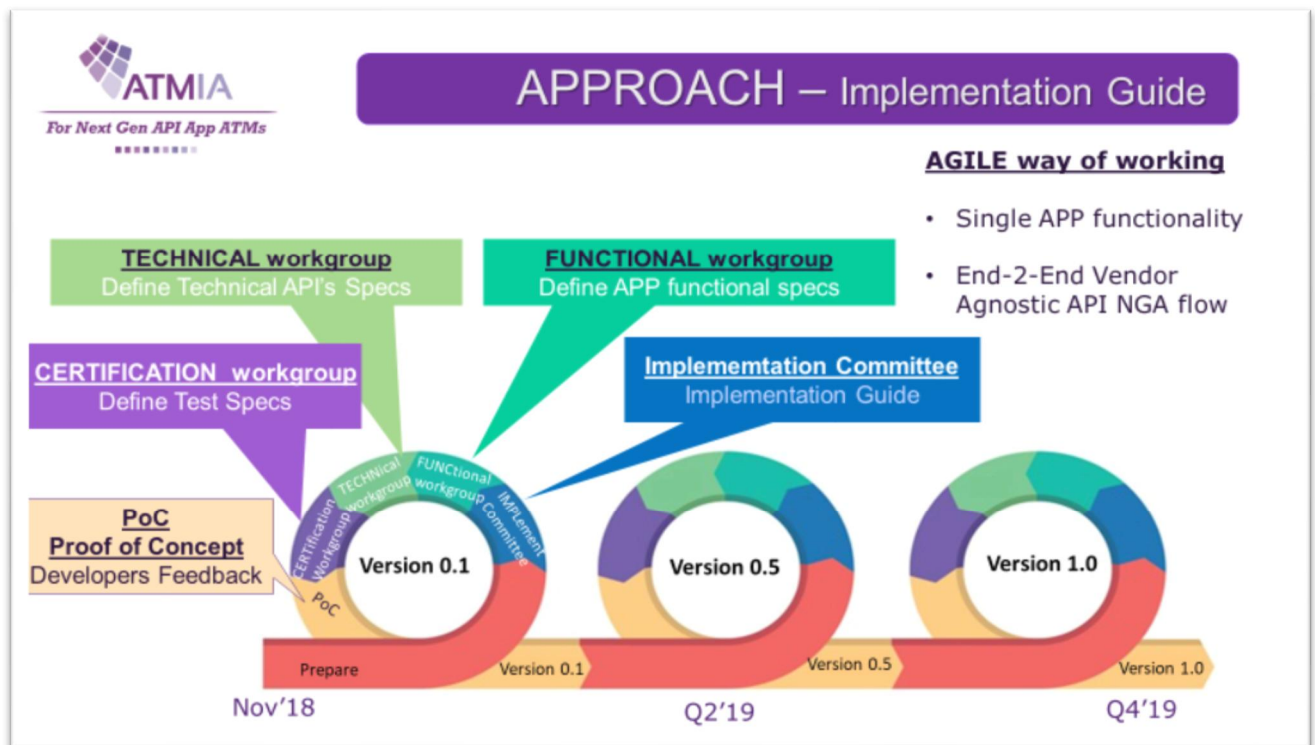
The Implementation Guide will contain the NextGenATMIA Specifications from Functional-, Technical and Certification perspective as a single source for NextGenATMIA providers to develop, test and certification of NextGen software.

The Technical Standards Roadmap (see reference 1) contains of the following three phases;

Phase-1	Phase-2	Phase-3
Define NextGenATMIA Implementation Guide 1.0: Containing NextGen Blueprint, Technical Standards, Vendor Agnostic Functional Flow (see paragraph 5.1) and Implementation Model (see paragraph 5.2)		
	Proof of Concept Implementations (see paragraph 5.4): to validate the specifications, gain implementation experience and demonstrate implementation reference showcases for ATMIA events in 2019.	
		NextGenATMIA Implementation Guide version 2.0: based on validated reference implementations to have the majority of possible NextGen implementation issues tackled

3 Approach

The approach for used for the implementation guide is following an Agile way of working. Each cycle version is based on a single NextGen APP functionality covering the end-2-end vendor agnostic interfaces in the NextGen Architecture Blueprint (NGA, see reference 3).



The aim is to finish phase-1 (implementation guide version 1.0) and have started phase-2 (Proof of Concept) at the end of 2019.

3.1 Implementation Committee

The (draft) Mission of the Implementation Committee is;

Working together with industry stakeholders and standards bodies, the Next Gen ATM Implementation Committee will take all steps required to implement the standards roadmap and implementation model on behalf of the Standards & Technical Subcommittee, while managing and tracking the on-going progress of the implementation guide and reference implementations.

It's recommended that the reference implementations will focus on the ATM channel (ATM+COD Layer), especially the NextGen ATM APP. The other layers can rely on the ISO20022 standard.

The following objective and way of working is used by the implementation committee and working groups to define the implementation guide;

Implementation Guide - Objective

The objective of the ATMIA NextGen Committee and Workinggroups are;

to create a NextGenATM Implementation Guide as a global ATM industry standard specification (functional-, technical and test specifications)

**owned and managed by ATMIA (NextGen)
for a free market ATM Level Playing Field.**

**ATMIA's legal counsel will ensure safeguards are put in place
to protect the project against IPR and Antitrust claims.**

The Committee and Workinggroups are all accountable to the Standards & Technical committee for final decisions to sign off our implementation plan.

3.2 FUNCTIONAL Working Group

ATM product managers, ATM functional designers, ATM architects from especially ATM deployers (Bank, IADS, PSP, Processors) designed together with the NextGen Blueprint architects the desired vendor-agnostic functional requirements for an open NextGenATM App Model.

The Functional Working Group defined the first NextGen ATM app functionality.

3.3 TECHNICAL Working Group

ATM interface/API experts, JavaScript API designers/developers and ATM software developers from ATM software vendors designed the technical specifications for the implementation guide based on the desired vendor-agnostic functionalities.

The Technical Working Group defined the first NextGen ATM app.

3.4 CERTIFICATION Working Group

ATM test/certification expertise from ATM test tool vendors and ATM test/certification service providers designed and developed a testplan and testscripts for the development of a NextGen Certification system.

The Certification Work Group developed the first NextGen Certification system to validate the first NextGen ATM app reference implementation (when available by the software providers)

3.5 Proof of Concept (PoC)

ATMIA stimulate that the implementation Guide specifications will be validated in a Proof of Concept (PoC), to get developers implementation feedback from the ATM industry on the Implementation Guide to improve the quality and clarity of the specifications.

The PoC implementation will not be part of the implementation guide (conform reference 7, clarification statement, no software) and stays at the individual PoC implementation company. However ATMIA stimulate to demonstrate these PoC implementations during ATMIA events.

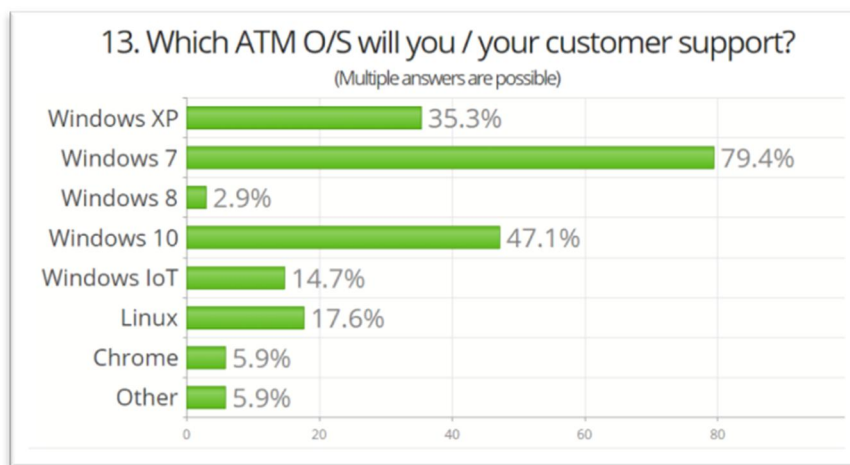
3.6 PoC Implementations

Action for Implementation Committee:

Inventory of parties who want to develop a PoC implementation in 2019 based on this implementation guide ?

Which O/S will reference implementation provider(s) use?

ATMIA EU 2018 – Madrid Voting results showed the following O/S support.

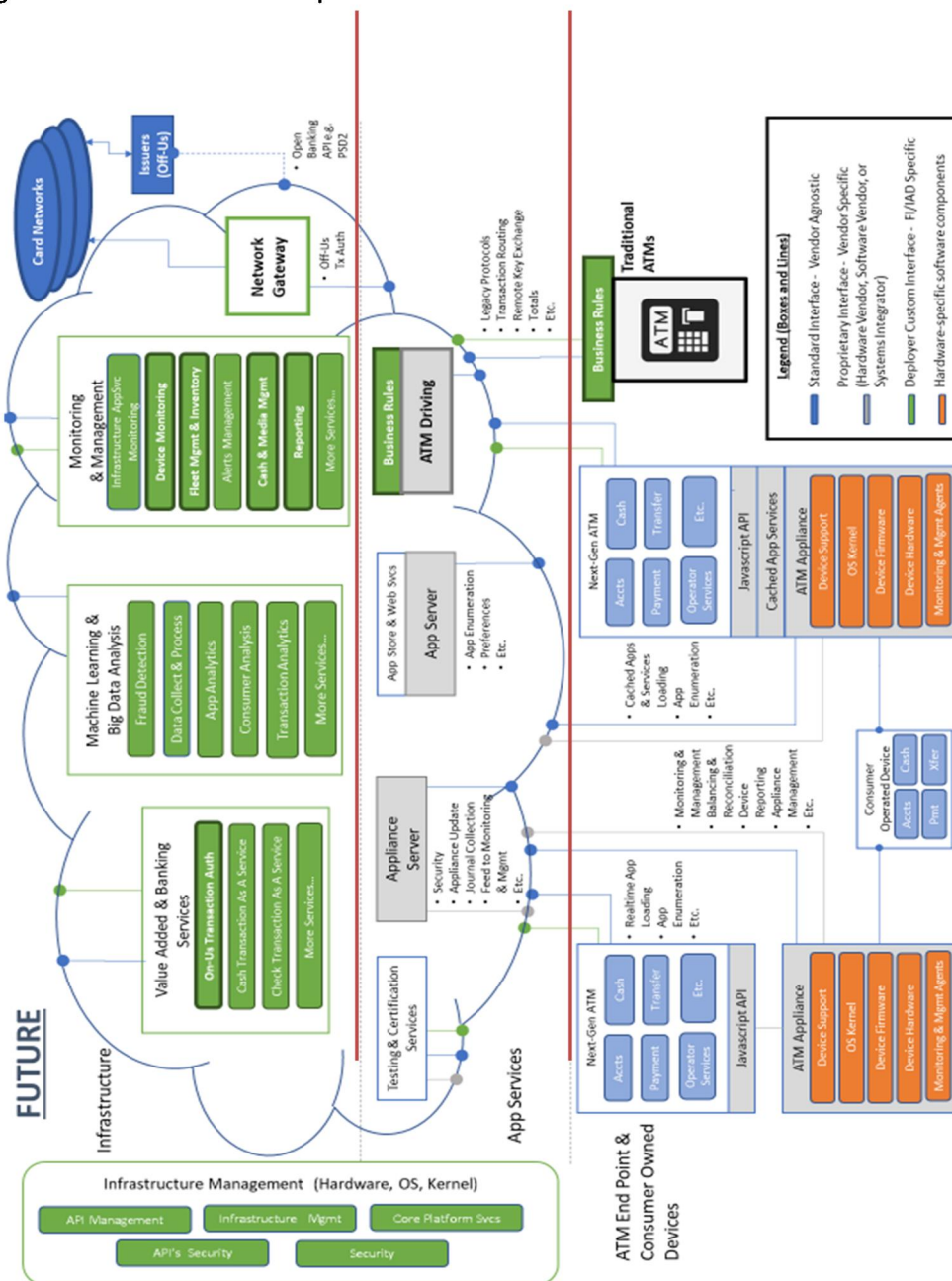


4 NextGenATMIA Blueprint

This Implementation Guide is guideline for the implementation of the ATMIA Next Gen Blueprint, which contains three layers, which are delineated by red lines:

- Infrastructure
- APP services
- ATM End Point & Consumer owned Devices

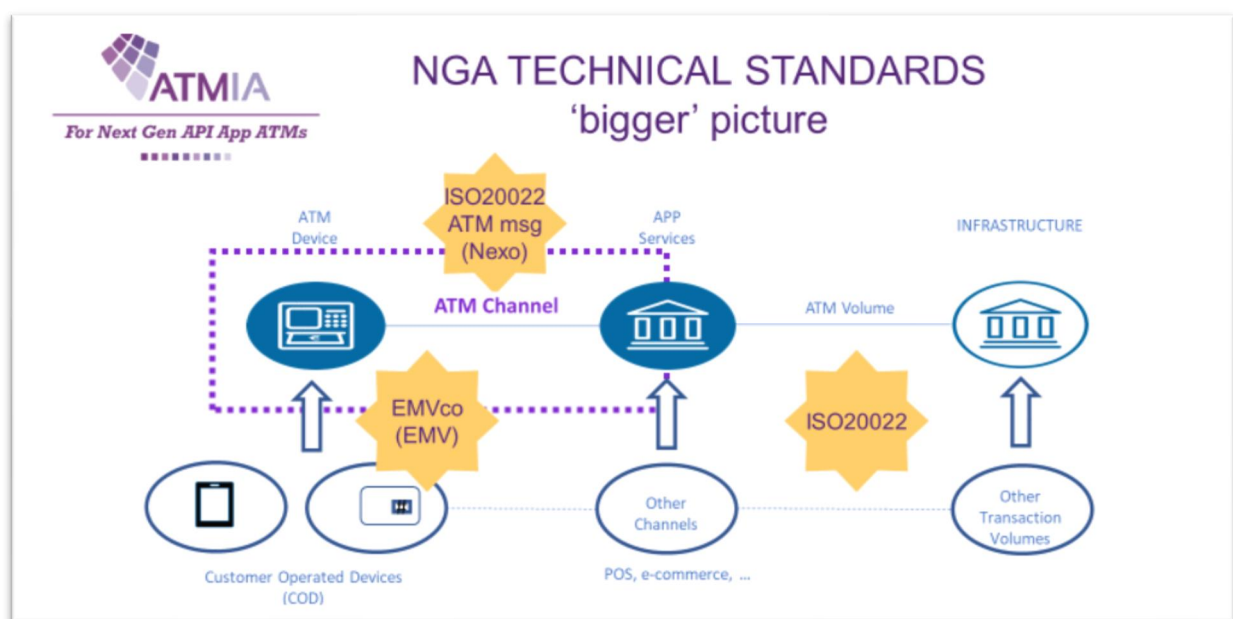
Figure 1: ATMIA Next Gen Blueprint version 1.1



4.1 Bigger Picture

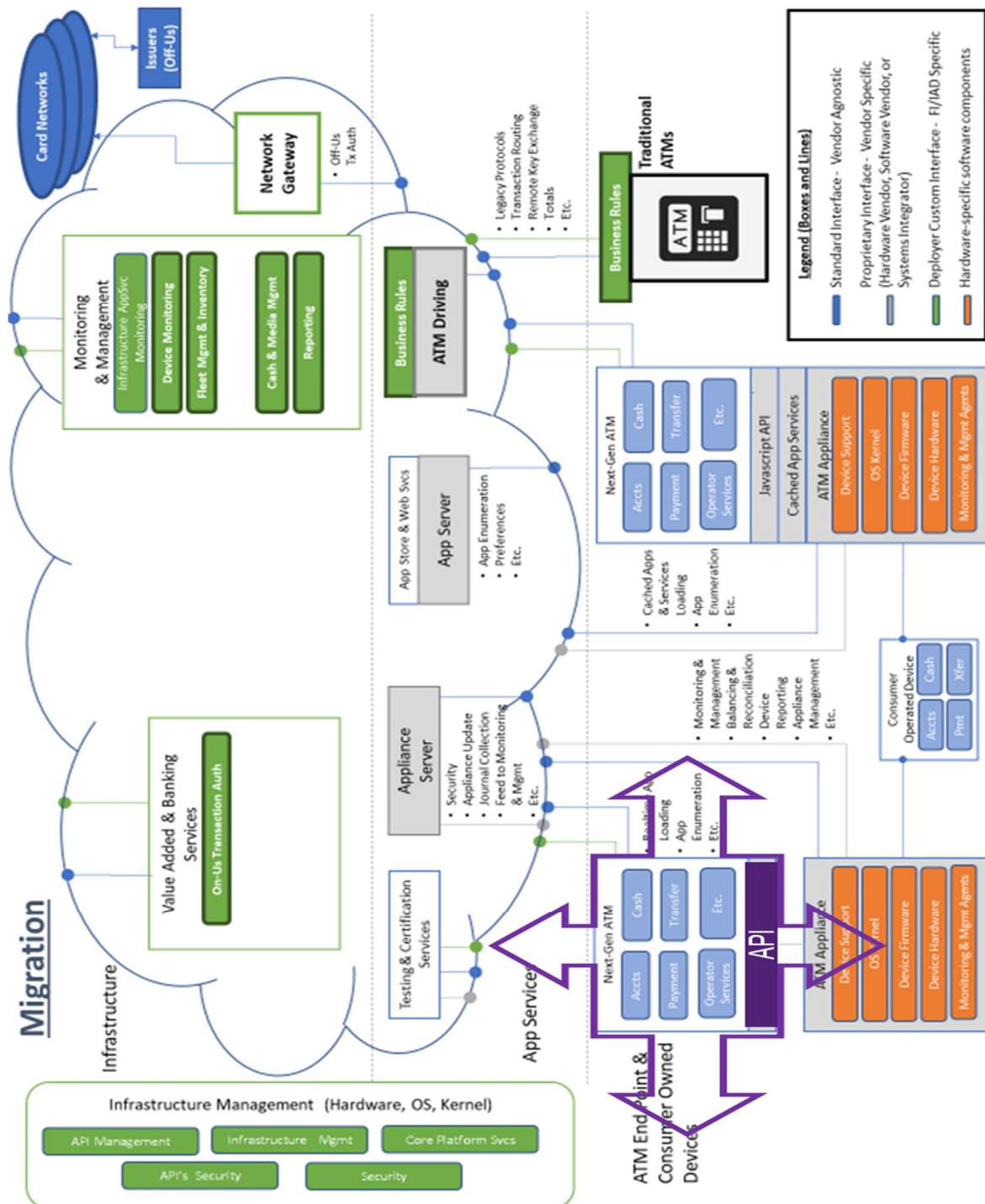
The ATM channel cannot be viewed in isolation. The ATM app services and host infrastructure domains are part of a multi-channel environment that includes but is not limited to mobile (customer-owned devices or “CODs”) and POS channels. It is essential that this interactivity be taken into consideration when developing standards and aligning with current standards. Doing so will contribute to the efficiency and quality of implementation, support improved economies of scale, and help entities optimize their return on investment over the long term.

The ATM channel (ATM device and interfaces to the COD and APP Services) should be the primary focus for vendor agnostic standardisation, as shown in the figure below.



4.2 Migration Blueprint

This Implementation Guide is using the ATMIA NextGen Migration Blueprint from a **Next-Gen ATM app** component perspective and interfaces to other blueprint components, like shown in the figure below.



The Implementation Guide (version 0.4) follows ATMIA Clarification Statement (v2, reference 7) about the high- or low Javascript API interface between the ATM Appliance and NextGen ATM APP which stated;

“For the standard, vendor-agnostic interface between the ATM Appliance and the NextGen ATM APP, ATMIA encourages the continued availability of CEN-XFS, and the future XFS4IoT, as the principal interface standard between the ATM Appliance and the software running within Next Gen ATMs Apps for the customers that request them”

“The vendor-specific interface between the ATM Appliance and the NextGen ATM APP is also supported by the ATMIA Next-Gen ATM Blueprint for the provision of additional APIs, (which, it is believed, will expand customer choice)”

“ATMIA encourages standardization of functionality in the vendor-agnostic interface in the NextGen ATM Architecture and Implementation Guide to promote global interoperability; prior to the establishment of such standard components and interfaces, however, there will be room for innovative components/interfaces provided by vendors and ATM operators (FIs/IADs)”

So both API interfaces vendor-agnostic and vendor-specific are supported.

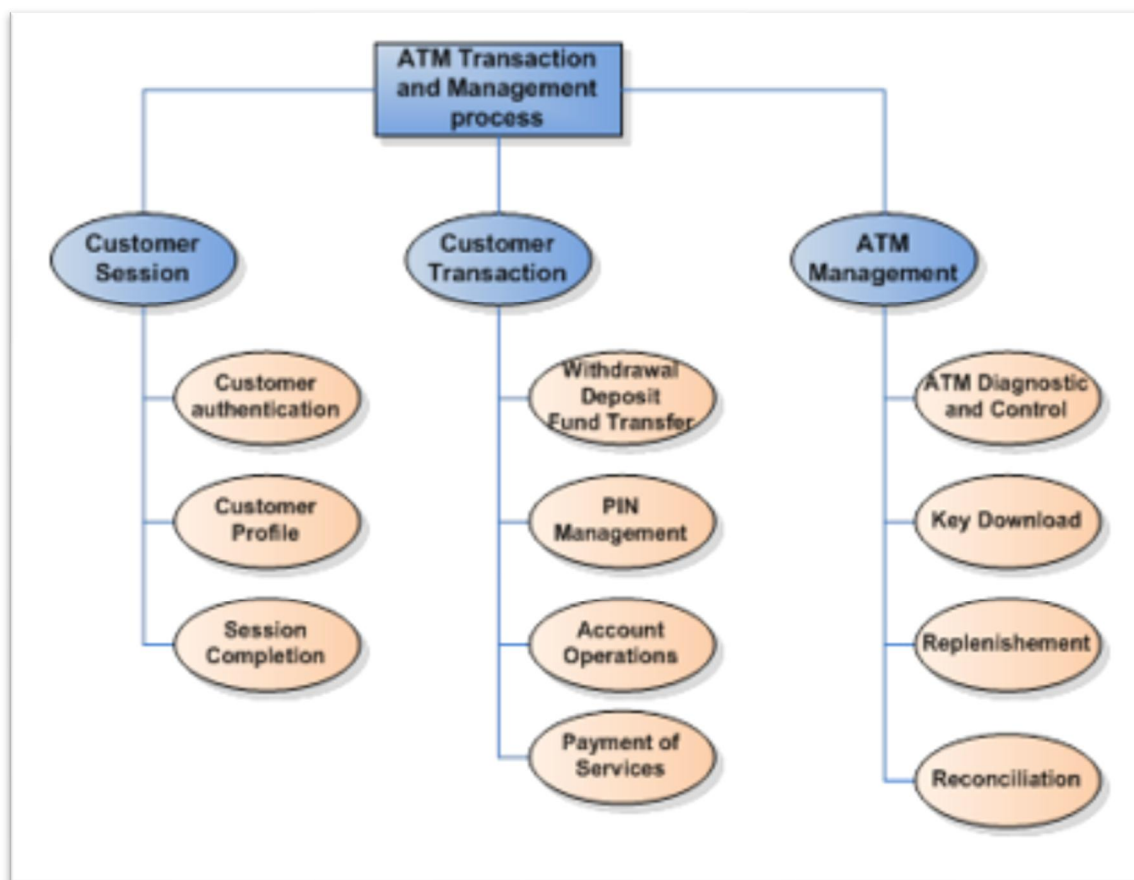
Action: STD&TECHNICAL committee and Architecture committee to discuss /confirm this in their first 2019 meeting

5 FUNCTIONAL Specifications

The Functional Use Cases chapter follows the NextGen Committees approved recommendations in the NextGen Standards Assessment Report (see reference 1) about NextGen App functionality.

The functionality in the NextGen Apps will be the main driving force and direction of the next steps. Starting with the NextGen App and transaction flow description of the NextGenATM Blueprint.

The high-level business processes covered by ISO 20022 ATM messages (Nexo) standard would be a good starting point, as shown in the figure below, which functionality should be vendor-agnostic.



Source: ISO20022 ATM message – high level business process

Recommendation: make the ATM user interface device-agnostic among ATMs or, even better, design the NGA App so the same NGA App can run on the ATM device and the COD.

FUNCTIONAL Overview

Overview of Vendor Agnostic APP-API Functionality;

First Cycles

No	APP Vendor Agnostic		End-Point	
	Group	Function	ATM	COD
1	CASH	OUT (Magstripe, EMV contact)	X	N.A.
2	CASH	OUT (Contactless, NFC, QRCode,...)	X	X

Next Cycles

No	APP Vendor Agnostic		End-Point	
	Group	Function	ATM	COD
	Value Added Services	Marketing Campaign See 50 examples to boost Next Gen ATMs (reference 10).		
	CASH	Deposit		
	Accounts	Balance Inquiry		
	Payment			
	Transfer			
	Operator Services			
	Ect..	???		

Out-of-Scope ATM/COD-APP functionality

1	FI/IAD specific	Customer User Interface	X	X

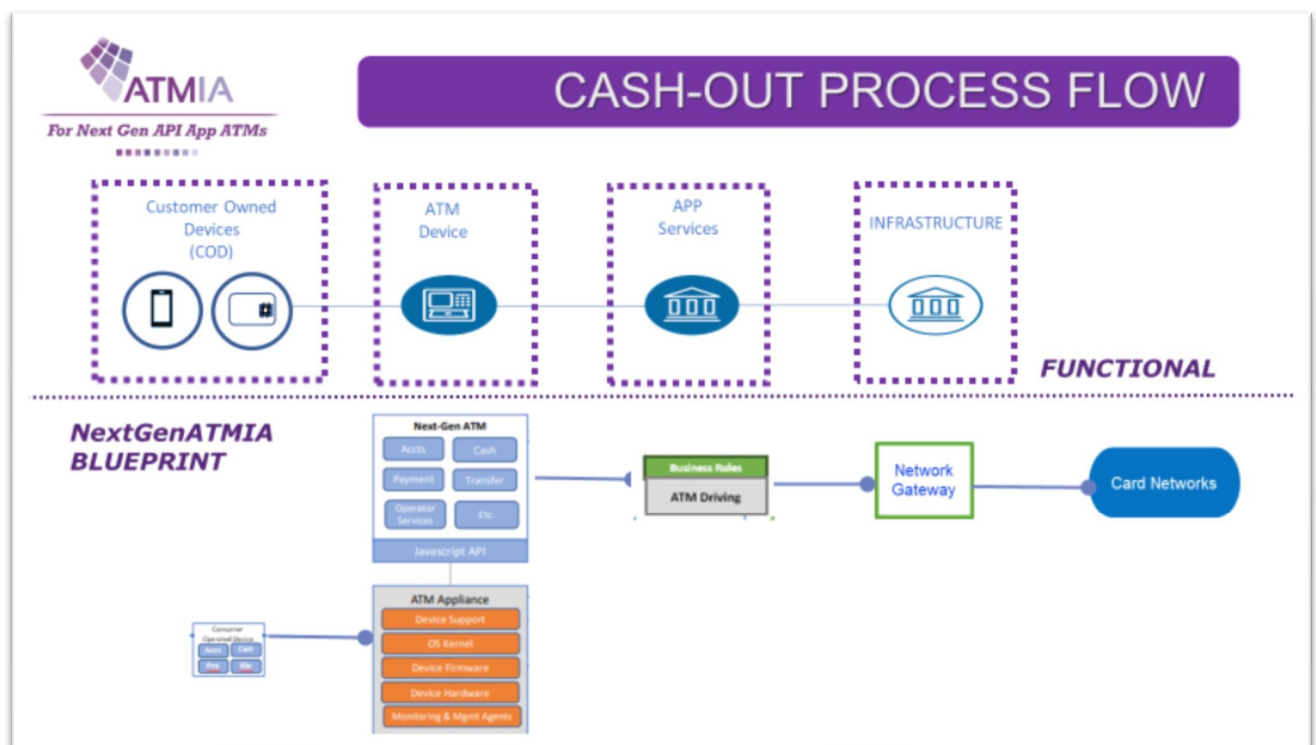
NON-FUNCTIONAL Overview

Overview of Vendor Agnostic Generic Non-Functional requirements.

No	Vendor Agnostic Non-Functional Requirements	
	Type	Requirement
1	Architecture	Support of multi-vendor NextGen ATM APPs
2		

5.1 FUNCTIONAL CASH-OUT Process Flow

The first APP functionality will be the CASH-OUT Process Flow, which is drawn in the figure below in a FUNCTIONAL process flow based on the corresponding NextGenATMIA Blueprint process flow.



In the following paragraphs the vendor-agnostic CASH OUT functionality will be defined.

Customer User Interface is not vendor-agnostic and will be ATM deployer FI/IAD specific.

The Payment Scheme Specifications defines which functionality is supported too, especially for the endpoints and gateway to the card schemes.

Last but not least the ATMIA best practices for the User Interface and Security (see references 8+9).

5.1.1 COD functionality

Customer User Interface is not vendor-agnostic and will be ATM deployer FI/IAD specific.
The Payment Scheme Specifications defines which functionality is supported too, especially for the endpoints and gateway to the card schemes.

No.	Supported Functionality	Customer Owned Device
1	Customer Token / Technology	NFC / Contactless QRCode
2	Customer Authentication	PINcode Biometrics (optional)
3	Bank Note	Selection of notes (optional)
4		

5.1.2 ATM Device functionality

Customer User Interface is not vendor-agnostic and will be ATM deployer FI/IAD specific.
The Payment Scheme Specifications defines which functionality is supported too, especially for the endpoints and gateway to the card schemes.

No.	Supported Functionality	NextGenATMIA ATM APP
1	Customer Token / Technology	Card Magstripe Card EMV ICC Contact Card EMV ICC Contactless QRCode
2	Customer Authentication	PINcode Which Biometrics ? (optional)
3	Bank Note	Selection of notes (optional)
4		

5.1.3 APP Service functionality

Most APP Services are generic for all the ATM DEVICE APP functionality and will be described in another common chapter.

No.	APP Service	Functionality
1	ATM Driving Service	See Paragraph 5.x
2	ATM APP Service	See Paragraph 5.x
3	ATM APPLIANCE Service	See Paragraph 5.x
4	Testing & Certification Service	See Chapter 7.

5.1.4 INFRAstructure functionality

The Payment Scheme Specifications defines which functionality is supported too, especially for the endpoints and gateway to the card schemes.

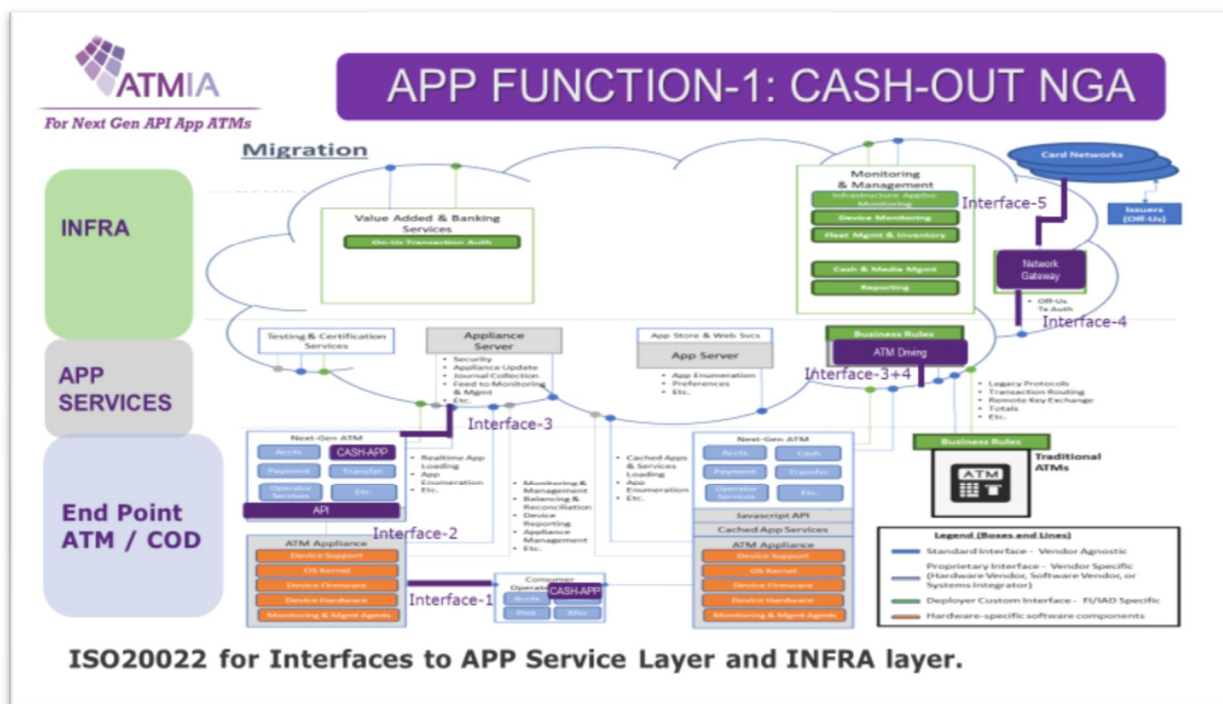
5.x APP Service functionality

Most APP Services are generic for all the ATM DEVICE APP functionality and will be described in this common chapter.

No.	APP Service	Functionality
1	ATM Driving Service	Processing ATM Financial Messages
2	ATM APP Service	APP Store & Web Services
3	ATM APPLIANCE Service	Security (see reference 9) Remote Appliance Update Journal Collection Feed to Monitoring & Device Management
4	Testing & Certification Service	See Chapter 7.

6 TECHNICAL Specifications

The NextGen Committees approved NextGen Standards Assessment Report (see reference 1) defines the following interface standards for the NextGen ATM App.

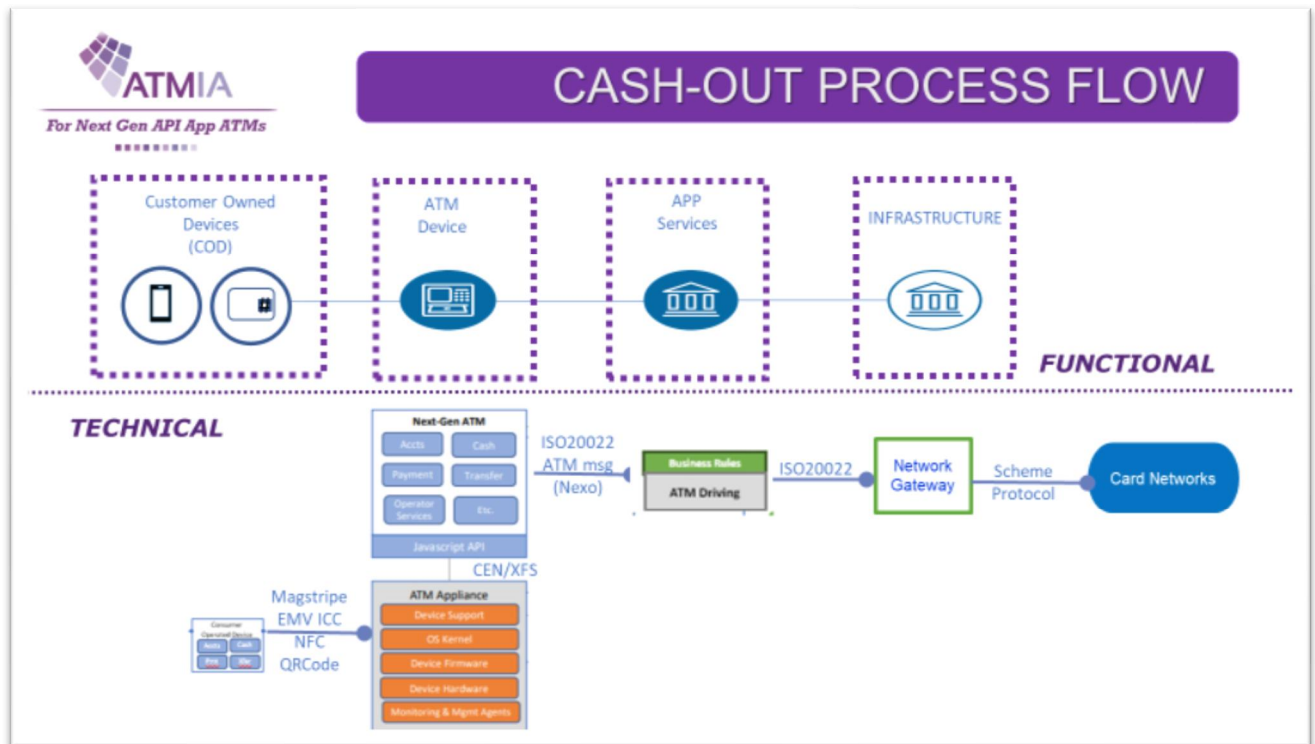


The following Technical Interface standards will be leveraged on;

TECHNICAL API: CASH-OUT		
NextGen Blueprint Component	Interface	API-Specification
INFRA	(6) Card Networks	
		I/F-5 Card Network Specs
	(5) Network Gateway (API-4, API-5)	
		I/F-4 ISO20022
	(4) ATM Driver APP (API-3, API-4)	
APP SERVICES		I/F-3 ISO20022-ATM-(Nexo) Msg
	(3) ATM APP CASH OUT functionality	
		I/F-2 Vendor agnostic (XFS) Vendor Specific.
End Point ATM / COD	(2) ATM Appliance HW	
		I/F-1 EMVco Specs
	(1) COD device APP	

6.1 TECHNICAL CASH-OUT PROCESS FLOW

The first APP functionality will be the CASH-OUT Process Flow, which is drawn in the figure below in a TECHNICAL process flow based on the corresponding FUNCTIONAL and NextGenATMIA blueprint process flow.



Customer User Interface is not vendor-agnostic and will be ATM deployer FI/IAD specific. The Payment Scheme Specifications defines which functionality and technology is supported too, especially for the endpoints and gateway to the card schemes.

6.1.1 Interface-1 (COD – ATM Appliance)

Customer User Interface is not vendor-agnostic and will be ATM deployer FI/IAD specific. The Payment Scheme Specifications defines which functionality and technology is supported too, especially for the endpoints by EMVco like Magstripe, EMV contact(less) and QRCode.

6.1.2 Interface-2 (ATM Appliance – NextGenATMIA APP)

The Implementation Guide (version 0.4) follows ATMIA Clarification Statement (v2, reference 7) about the high- or low Javascript API interface between the ATM Appliance and NextGen ATM APP which stated;

“For the standard, vendor-agnostic interface between the ATM Appliance and the NextGen ATM APP, ATMIA encourages the continued availability of CEN-XFS, and the future XFS4IoT, as the principal interface standard between the ATM Appliance and the software running within Next Gen ATMs Apps for the customers that request them”

“The vendor-specific interface between the ATM Appliance and the NextGen ATM APP is also supported by the ATMIA Next-Gen ATM Blueprint for the provision of additional APIs, (which, it is believed, will expand customer choice)”

“ATMIA encourages standardization of functionality in the vendor-agnostic interface in the NextGen ATM Architecture and Implementation Guide to promote global interoperability; prior to the establishment of such standard components and interfaces, however, there will be room for innovative components/interfaces provided by vendors and ATM operators (FIs/IADs)”

So both API interfaces vendor-agnostic and vendor-specific are supported.

Action Page 12: STD&TECHNICAL committee and Architecture committee to discuss /confirm this.

6.1.3 Interface-3 (NextGenATMIA APP – ATM driving APP service)

Leverage on the ISO-20022 ATM Message (Nexo)

6.1.4 Interface-4 (ATM Driving APP service – Network Gateway INFRA)

Leverage on the ISO-20022 Message

6.1.5 Interface-5 (Network Gateway INFRA – Card Networks)

Customer User Interface is not vendor-agnostic and will be ATM deployer FI/IAD specific. The Payment Scheme Specifications defines which functionality and technology is supported too, especially for the gateway to the card schemes like MasterCard- and VISA network specifications.

7 CERTIFICATION Specifications

The following DRAFT mission of the Certification Working Group is defined;

To build an achievable, pro-competitive next gen certification system which takes account of available resources and which delivers a certification service designed to ensure global vendor interoperability and ubiquity of next gen ATMs, focusing primarily, but not exclusively, on the vendor-agnostic infrastructure level of the blueprint, whilst encouraging the widest possible industry participation and adoption.

The following Certification Levels are defined for NextGenATMIA;

NextGenATMIA CERTIFICATION LEVELS			
NextGen Blueprint	Certification Levels	Certification Level Description	
INFRASTRUCTURE	Level-4	NextGenATMIA INFRA-Service	
APP Services	Level-3	NextGenATMIA APP-Service	
End Point Devices ATM & COD	Level-2	NextGenATMIA ATM APP	NextGenATMIA COD APP
	Level-1	ATM Appliance	Customer Owned Device (COD)
Leverage on Pre-Conditions	Level-0	Payment Scheme Certifications (Acquirer, Network,...) PCI certification EMVco Certifications (Level-1, Level-2, ...)	

7.1 Certification Approach

The following Certification Approach is under review how to validate the NextGenATMIA functionality (chapter 5) and technical interfaces (chapter 6);

- **Validation of single NextGen Blueprint component**
- **BlackBox testing using Interfaces (API)**
- **Leverage on Certification Standards from payment schemes (MC, VISA), EMVco, PCI, ..**

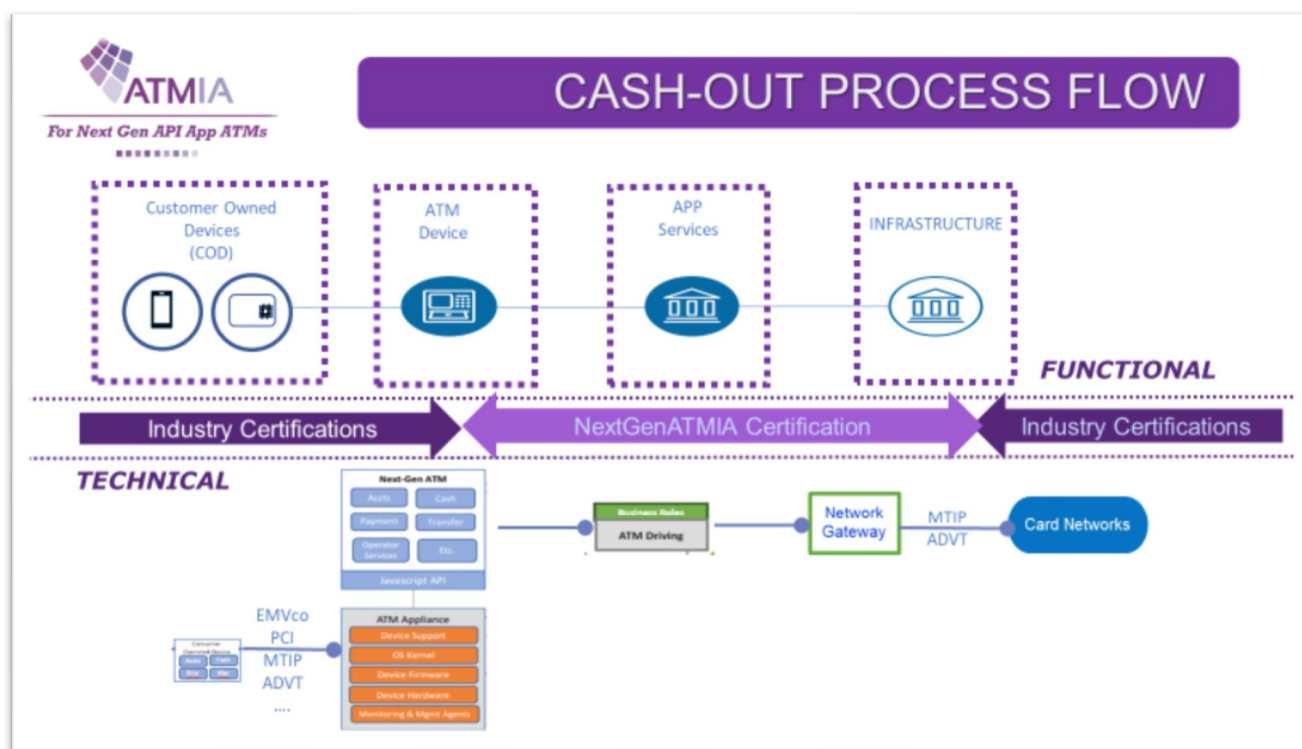
NextGenATMIA CERTIFICATION LEVELS				
NextGen Blueprint	Certification Levels	Certification Level Description		HOW to Validate ? (Blackbox – Interface)
INFRASTRUCTURE	Level-4	NextGenATMIA INFRA-Service		Send I/F-4 ISO20022 Receive I/F-5 Scheme
APP Services	Level-3	NextGenATMIA APP-Service		Send I/F-3 ISO20022 Receive I/F-4 ISO20022
End Point Devices ATM & COD	Level-2	NextGenATMIA ATM APP	NextGenATMIA COD APP	Receive I/FI-3 ISO20022 Send I/F-2 ATM Appliance
	Level-1	ATM Appliance	Customer Owned Device (COD)	Receive I/F-2 ATM/COD appliance I/F-1 between COD-ATM
Leverage on Pre-Conditions	Level-0	Payment Scheme Certifications (Acquirer, Network,..) PCI certification EMVco Certifications (Level-1, Level-2, ...)		

7.2 CERTIFICATION CASH-OUT PROCESS FLOW

The first certification functionality will be the CASH-OUT Process Flow, which is drawn in the figure below in a CERTIFICATION process domains based on the corresponding FUNCTIONAL and TECHNICAL process flows.

7.2.1 Industry Certifications (Level-0 + Level-1)

NextGenATMIA Certification will leverage on the industry certifications from EMVco, PCI and the payment schemes terminal integration process and acquirer processor/network certifications for ATM devices, like shown in the figure.



EMVco Certifications

EMVCo Level-1 Hardware, Level-2 EMV kernel, ...

PCI Certifications

PCI-PED, PCI-DSS, PCI-...

MasterCard Certification

M-TIP for ATM

VISA Certifications

ADVT for ATM



7.2.2 NextGenATMIA Certifications (Level-2)

7.2.3 NextGenATMIA Certifications (Level-3)

7.2.4 NextGenATMIA Certifications (Level-4)