

National Medicine Verification System

Software Supplier Workshop

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



Tallinn, June 14th, 2018

A hand holding a smartphone is shown in the lower right corner. The background is a blue and green gradient with floating squares and a particle effect. The text "Who are we?" is centered in white, flanked by two horizontal lines.

— Who are we? —

Bertelsmann at a Glance

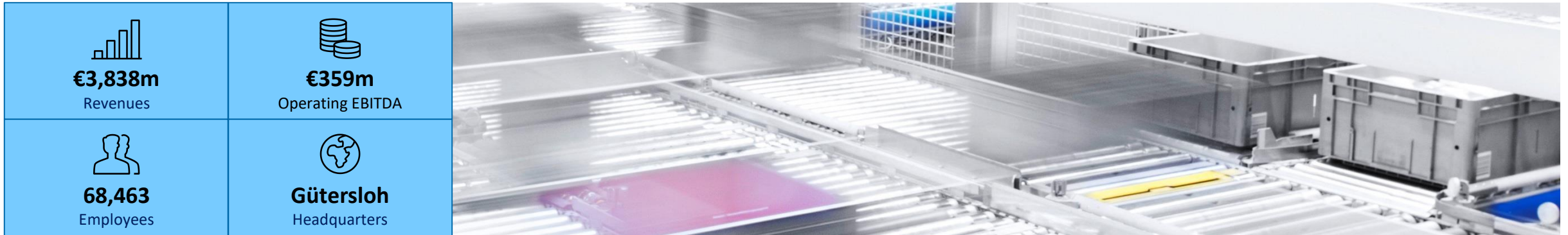


 €17.0 billion Group revenues	 €2.6 billion Operating EBITDA
 €1.1 billion Group profit	 116,434 Employees

BERTELSMANN







Arvato – A leading international service provider

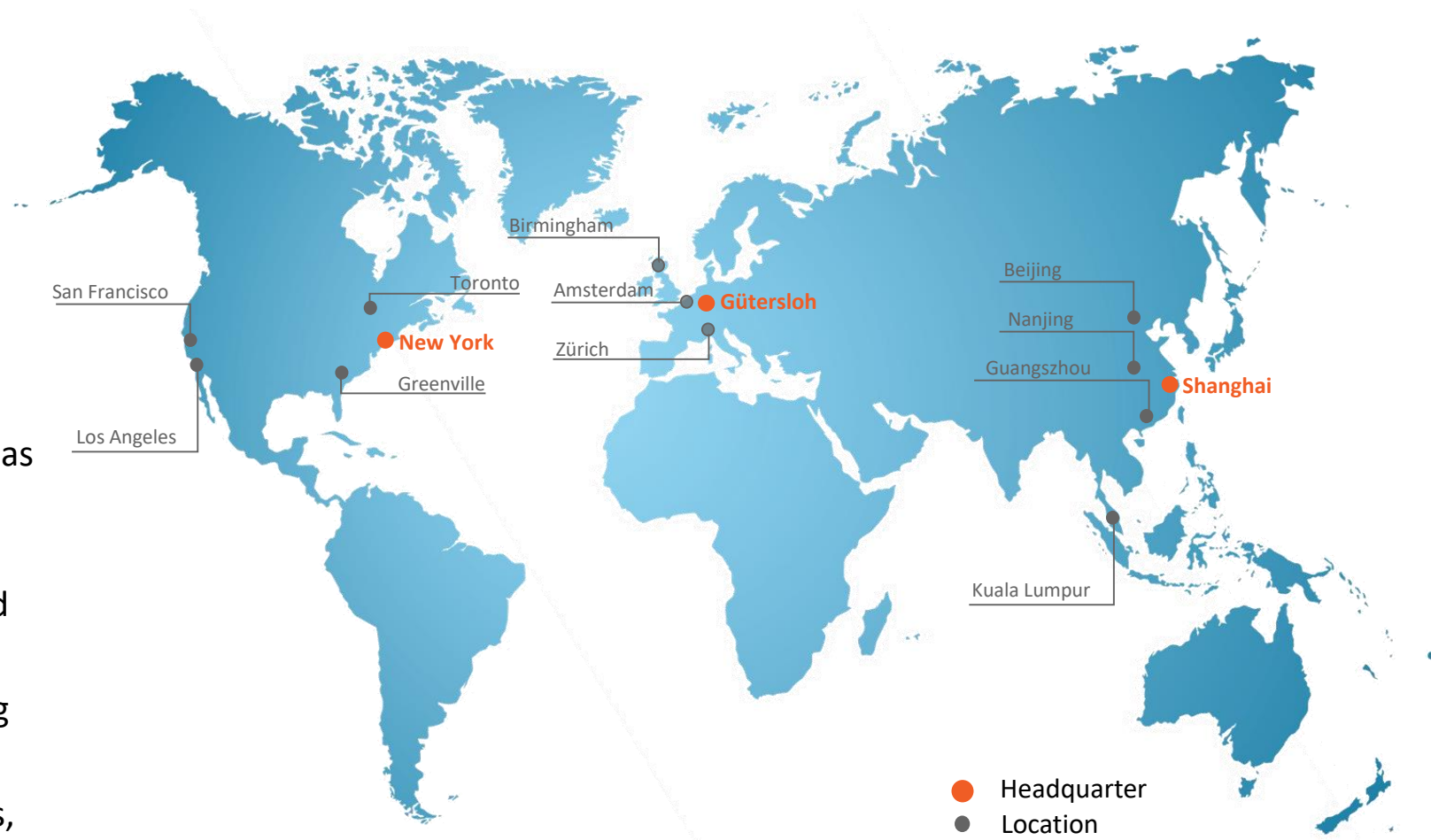


- Service portfolio: CRM services, supply chain management, financial services, IT services
- more than 1,1 billion parcels delivered a year
- 600 million customers serviced in customer loyalty systems
- 170 million online credit checks performed per year
- Runs more than 70 online shops for numerous international fashion brands

Arvato Systems - Systems integration and infrastructure services

 €425m Revenues	 25 Locations Worldwide
 >3000 Employees	 Gütersloh Headquarters

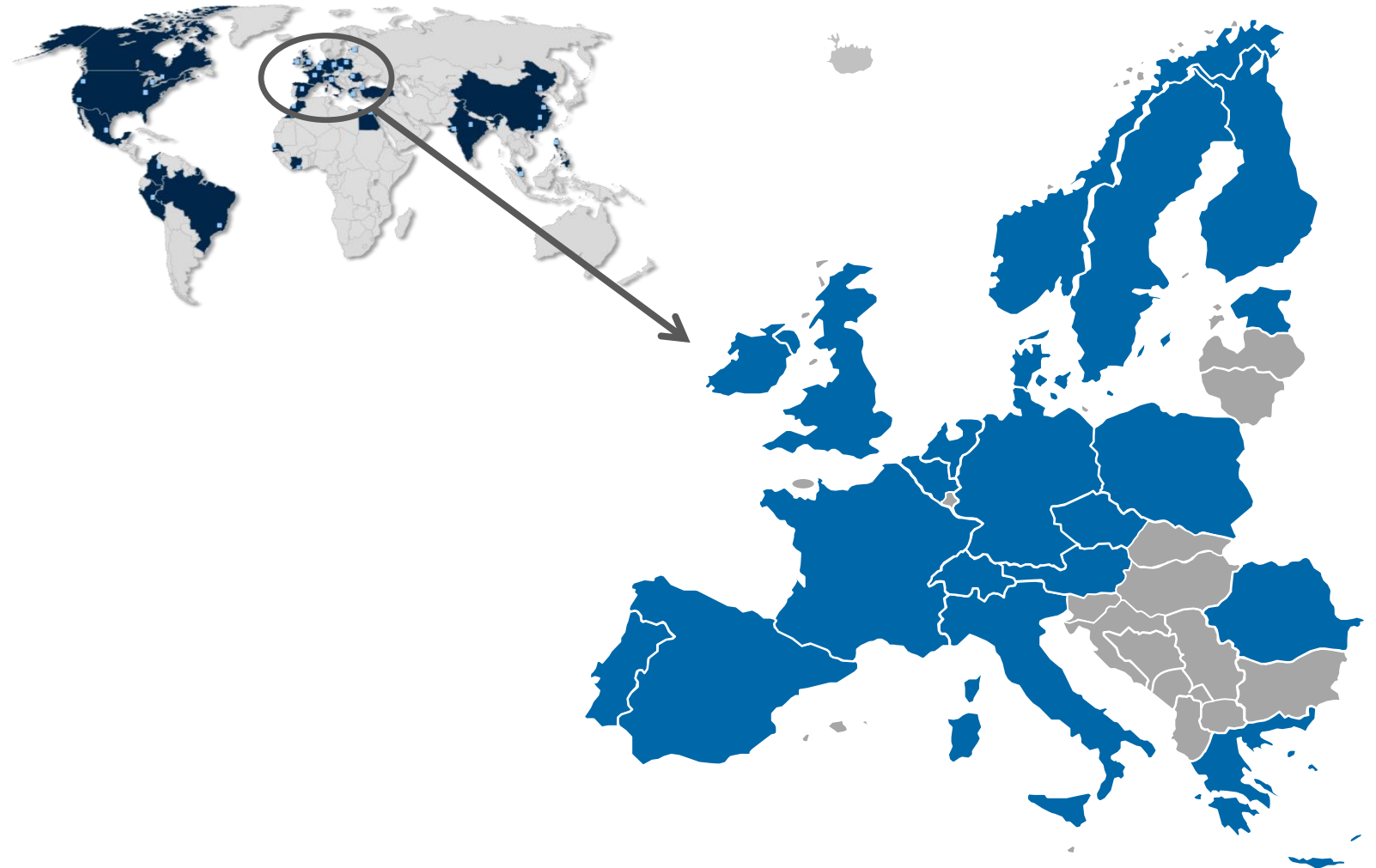
- Comprehensive IT solutions for the trade, logistics and shipping and media industries as well as for utility companies and public administrations
- Competence in the key areas of BPM, Cloud Computing, CRM and E-Commerce
- Know-how in robust technologies, including Microsoft and SAP
- A broad spectrum of infrastructure Services, including Managed Services, and an according Application Management



Further locations in Germany:

e.g. Baden-Baden, Berlin, Bielefeld, Bremen, Dortmund, Düsseldorf, Hamburg, Köln, Leipzig, München, Ratingen, Rostock, Walldorf

European Footprint



Arvato is ready to support
with local resources.

Arvato has
over 150 locations
within 22 countries
in Europe.

NMVS KPI Dashboard

245 days

Time remaining until go live
(Feb 9, 2019)

752

Number of registered
software suppliers

35/496

Number of Support Tickets (open/total)

233/4.500

Number of MAHs in NMVSs

8 / 8

Number of prio 1 certification
test cases successfully passed



3 / 16

Number NMVOs who passed EMVO
Assessment Part 2 and are on PRD

794/ 2.291 (45)

Number of OBPs onboarded to
EMVO Portal (on EU-HUB PRD)

^{IQE}
15/16

^{PRD}
4/16

Number of countries where environment is ready to go live

? / 73.280

Number of End Users connected in NMVS
(without DE/ES)



Before we can start...

Before we start to talk about integration scenarios/technical topics/etc.
we first need to take a look at the:

- Regulatory Framework

and then

- NMVS Web GUI.



Requirements Specification Part VII: Additional Requirements for Delegated Regulation Compliance - Extract

6. National Blueprint System GUI (for Client)

Each National System, Blueprint or Standalone, is required by Article 35(i) (i) to include a graphical user interface (GUI) for use by wholesalers and persons authorised or entitled to supply medicinal products to the public (hereafter referred to as 'end clients'), **for the purposes of verifying the authenticity of the unique identifier and decommissioning it in case of failure of their own software.**

The GUI will be provided in the form of a web-based 'portal'. **Each client location will be provided with single hardware token (or similar alternative) and access credentials, an "account". It is a requirement that the GUI only be operable from a single location and that it cannot be used in a portable (location to location) manner.** This GUI implementation will not include the concept of user administration beyond the resetting or changing of a single set of access credentials. It is vital that the connection implementation, beyond being compliant with the security and access requirements defined elsewhere within the EMVS URS, does not also incur an overhead for the operator or owner in terms of user administration.

If a low overhead means can be defined using a combination of the OAuth 2 protocol (as described for the NCA GUI) and a physical hardware token, this can be agreed during design elaboration.

Requirements Specification Part VII: Additional Requirements for Delegated Regulation Compliance - Extract

6.1. GUI Operation

The GUI for **end clients** shall provide the ability to permit continuance of their operation by the provision of a simple portal to the National (Blueprint) System. However, the Delegated Regulation is clear that this is **only available for use when the client system has failed**. It is not intended to be used as a low-cost entry point for smaller clients who would rather not invest in 'their own software'. To this end, **the GUI shall be effective but not so effective that it represents a viable long-term alternative to 'own client software'**.

The GUI shall:

1. Allow the entry of the pack:
 - a. Product Code
 - b. Serial Number
 - c. Batch ID (optional)
 - d. Expiry Date (optional)
2. Allow the pre-selection of applicable use-case (presented by actor/client type)
 - a. Wholesaler:
 - i. Verify a single pack
 - ii. Dispense a single pack
 - iii. Export a single pack
 - iv. Change the status of a pack to 'Stolen'
 - v. Change the status of a pack to 'Destroyed'
 - vi. Change the status of a pack to 'Sample'
 - vii. Change the status of a pack to 'Locked'
 - b. Persons authorised or entitled to supply medicinal products to the public:
 - i. Verify a single pack
 - ii. Dispense a single pack
 - iii. Change the status of a pack to 'Destroyed'
 - iv. Change the status of a pack to 'Sample'

The GUI shall **not**:

1. **Permit use with a barcode scanner. This should be actively prevented** by being unable to parse the incoming data from a barcode reader and split it into the component parts and also by preventing the automated keystroke based movement from one data entry box to another. This exclusion is a requirement to dramatically minimise the potential use of the GUI beyond its intended, and required scope.
2. Provide any reporting capabilities.

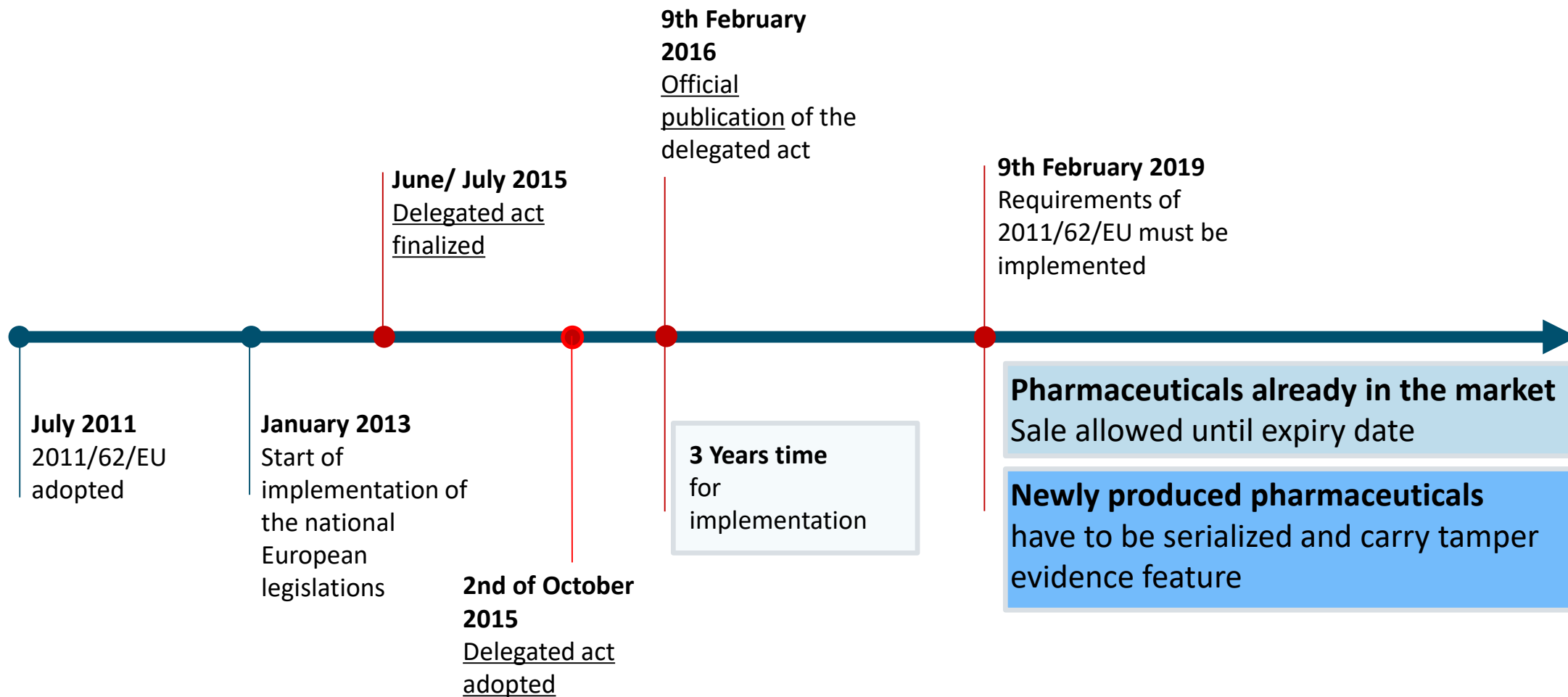
- Two factors for GUI Authentication:
 - Password and Certificate.
- GUI Portal Access can be reached via
 - HTTPS access and Port 443
- GUI Portal Time-out Session – 30 Minutes.
- End User will receive 3 E-Mails:
 - 1.)User-Name 2.) Link to PKI portal and TAN to download and install the certificate. 3.)One time password
- Log in IQE Environment Core Release 1.1 :
 - https://portal-int-ee.nmvs.eu/NMVS_PORTAL/login.xhtml?dswid=-240
 - With Pharmacy user: KESKLINNA/LIIVALAIA333

A photograph of two business professionals, a man and a woman, in a meeting. They are both wearing business suits and are looking down at a tablet computer on a table. The tablet displays a bar chart with several bars of different colors. The man is pointing at the tablet with his right hand. The woman is looking at the tablet with her hand near her chin. The background is a plain, light-colored wall. The image has a blue tint and a semi-transparent dark blue overlay.

—The Blueprint Solution—

- Falsified / counterfeit medicines are a serious risk for the citizens all around the world
- New legislation published on the 9th February 2016 as delegated act
- This new legislation is mandatory for all EU members
- Pan-European strategy to fight illegal medicine products
- Based on a “Point-of-Dispense Verification”





Challenge:

Many stakeholders are involved

- Organisations

- NMVO
- EMVO



- Software providers

- Solidsoft (EMVS/EU Hub)
- Arvato
- Pharmacy/hospital/wholesaler
SW providers/IT departments

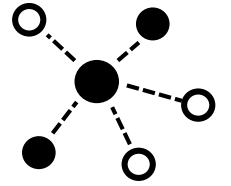


- Authorities



- Primary distributors

- Marketing authorization holders
- Contract manufacturers
- Wholesalers
- Parallel distributors
- Public pharmacies
- Hospital pharmacies



- Secondary distributors

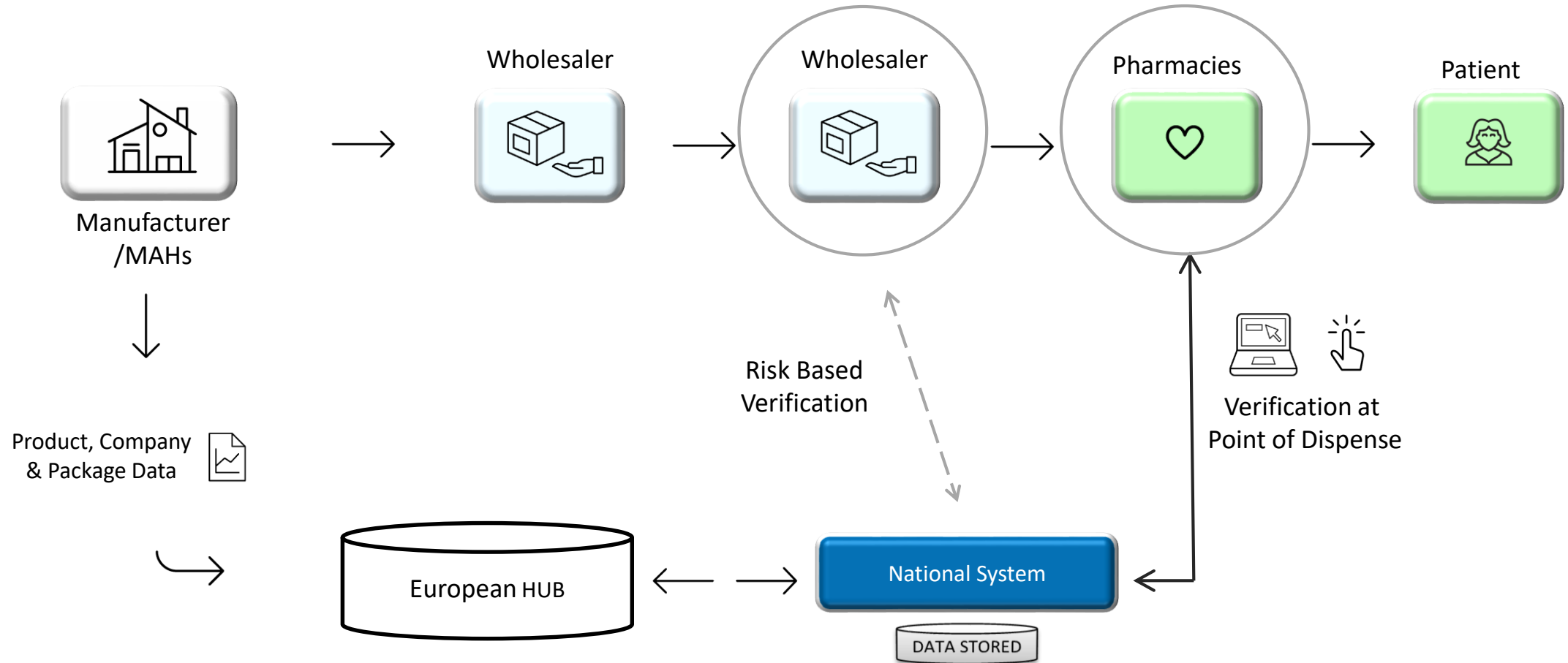
- Army
- Prisons
- Airlines
- Nursing homes
- Drug treatment centers
- NGOs
- ...



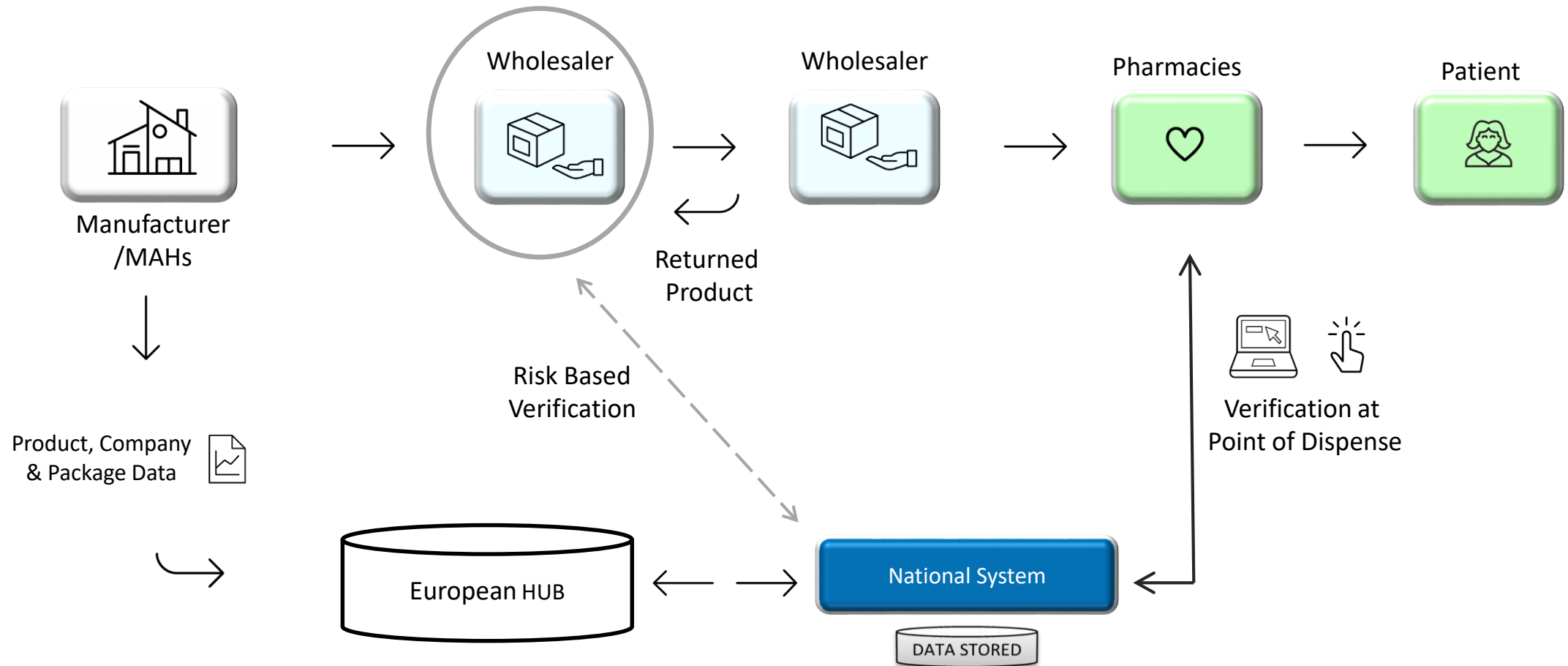
A hand holding a smartphone is shown in the lower right corner. The background is a deep blue with a gradient and several semi-transparent squares of various sizes floating around. The text 'Verification by End Users' is centered in white, with horizontal lines on either side.

— Verification by End — Users

Pharmacies and additional Wholesaler Reporting and Verification



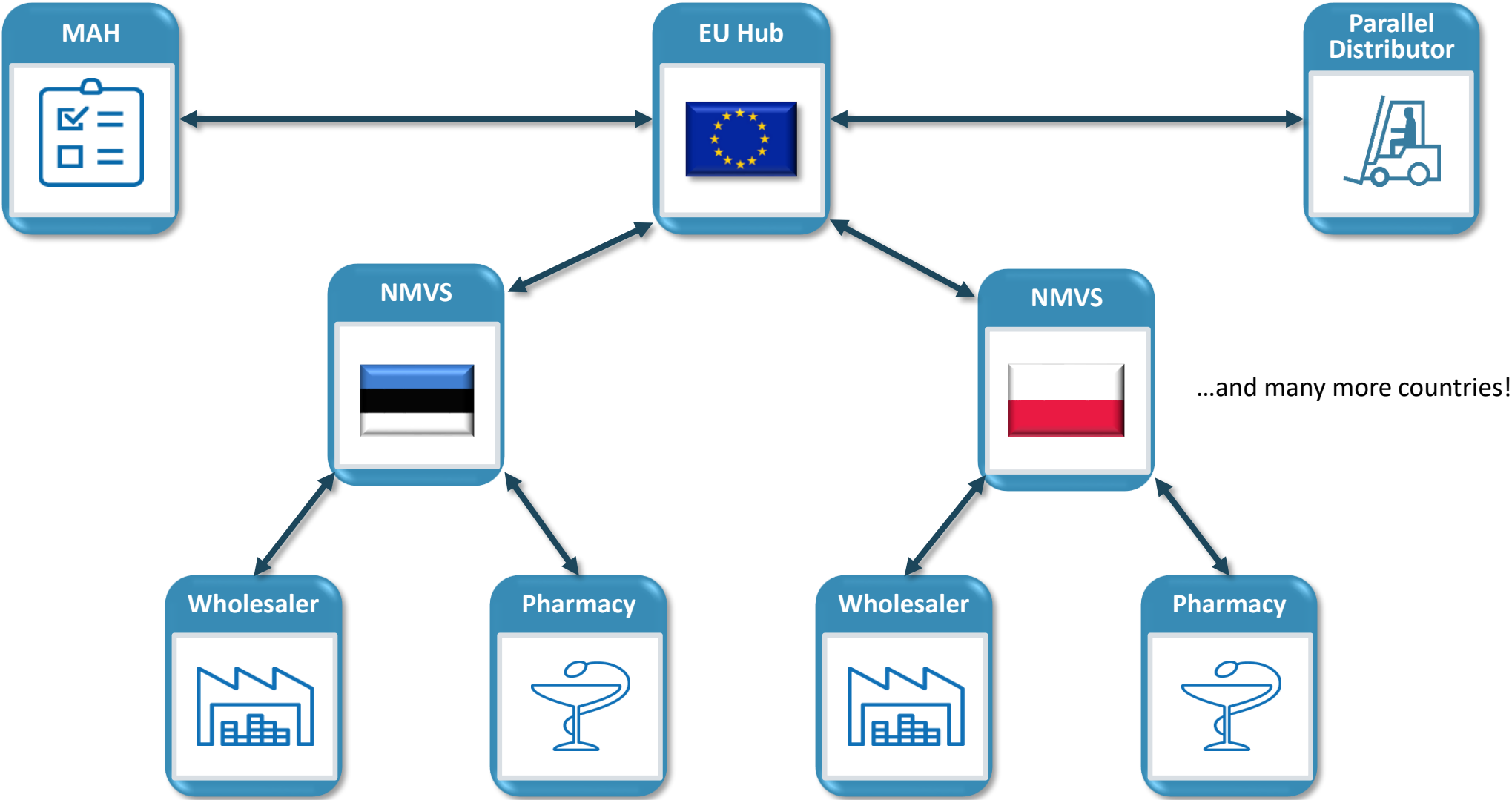
Wholesaler Returns Product Reporting and Verification



A photograph of two business professionals, a man and a woman, in a meeting. They are both wearing business suits and are looking down at a tablet computer on a table. The tablet displays a bar chart with several bars of different colors. The man is pointing at the tablet with his right hand. The woman is looking at the tablet with her hand near her chin. The background is a plain, light-colored wall. The image has a blue tint and a semi-transparent dark blue overlay.

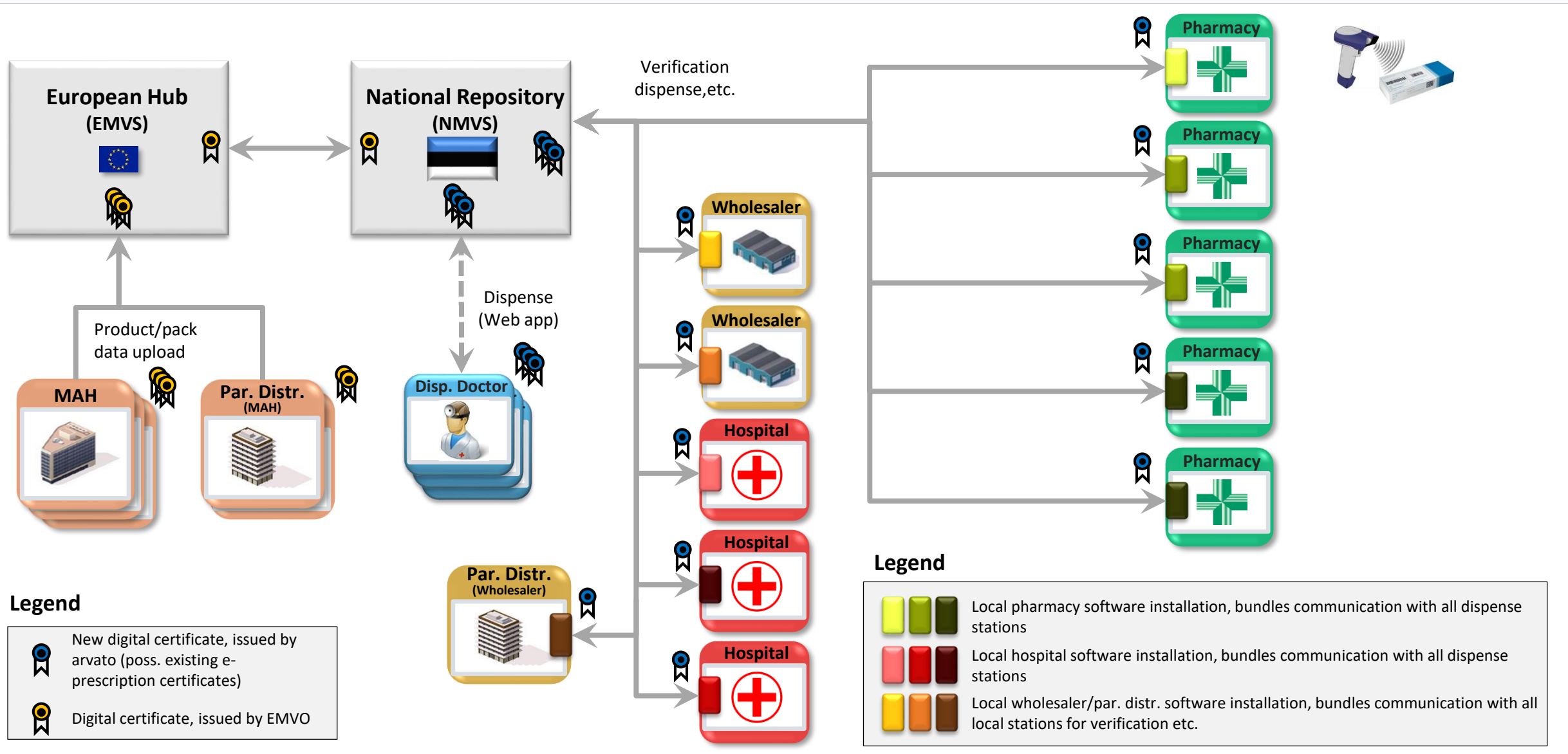
— Connections and Data — Workflows

Where the data goes



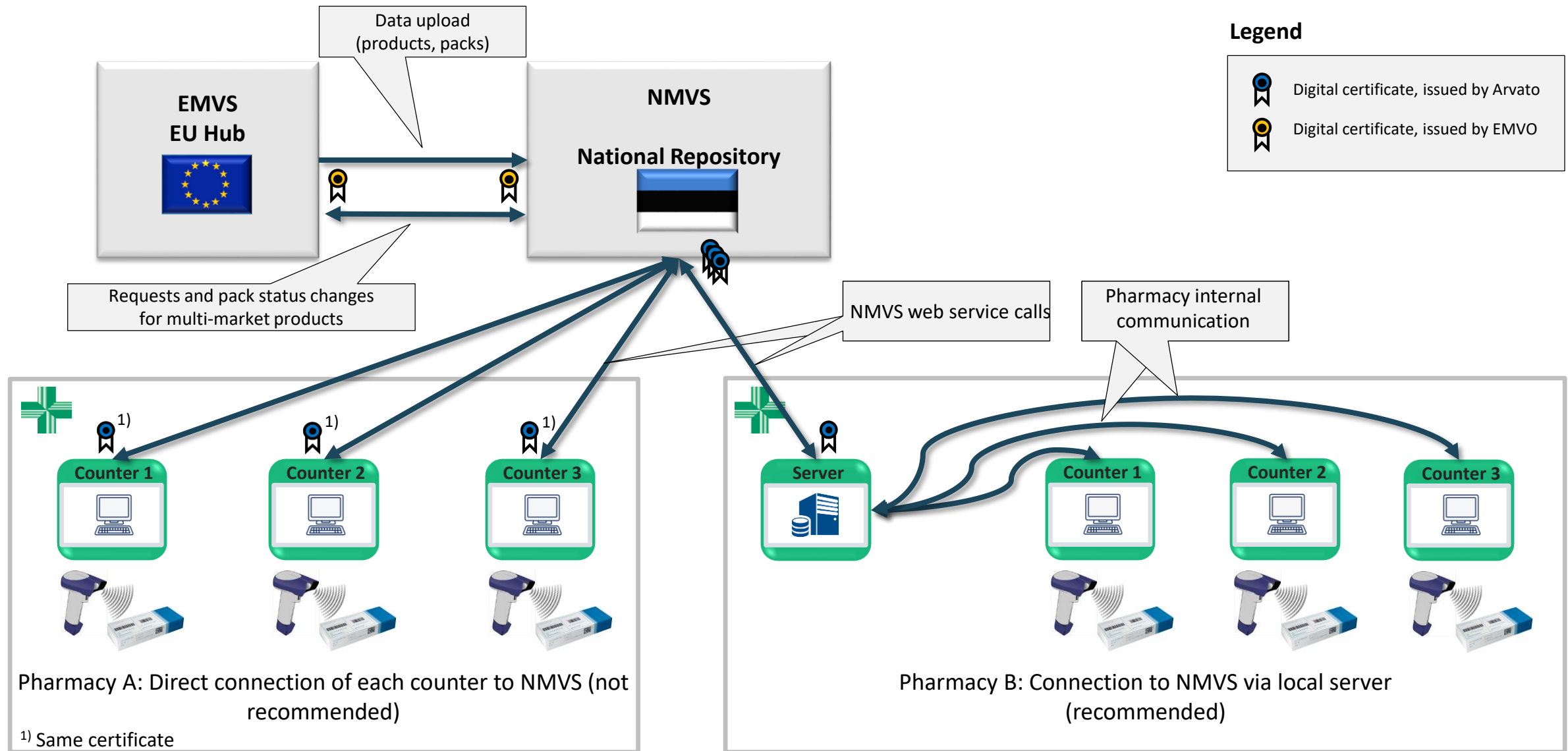
System Architecture Overview

General



System Architecture Overview

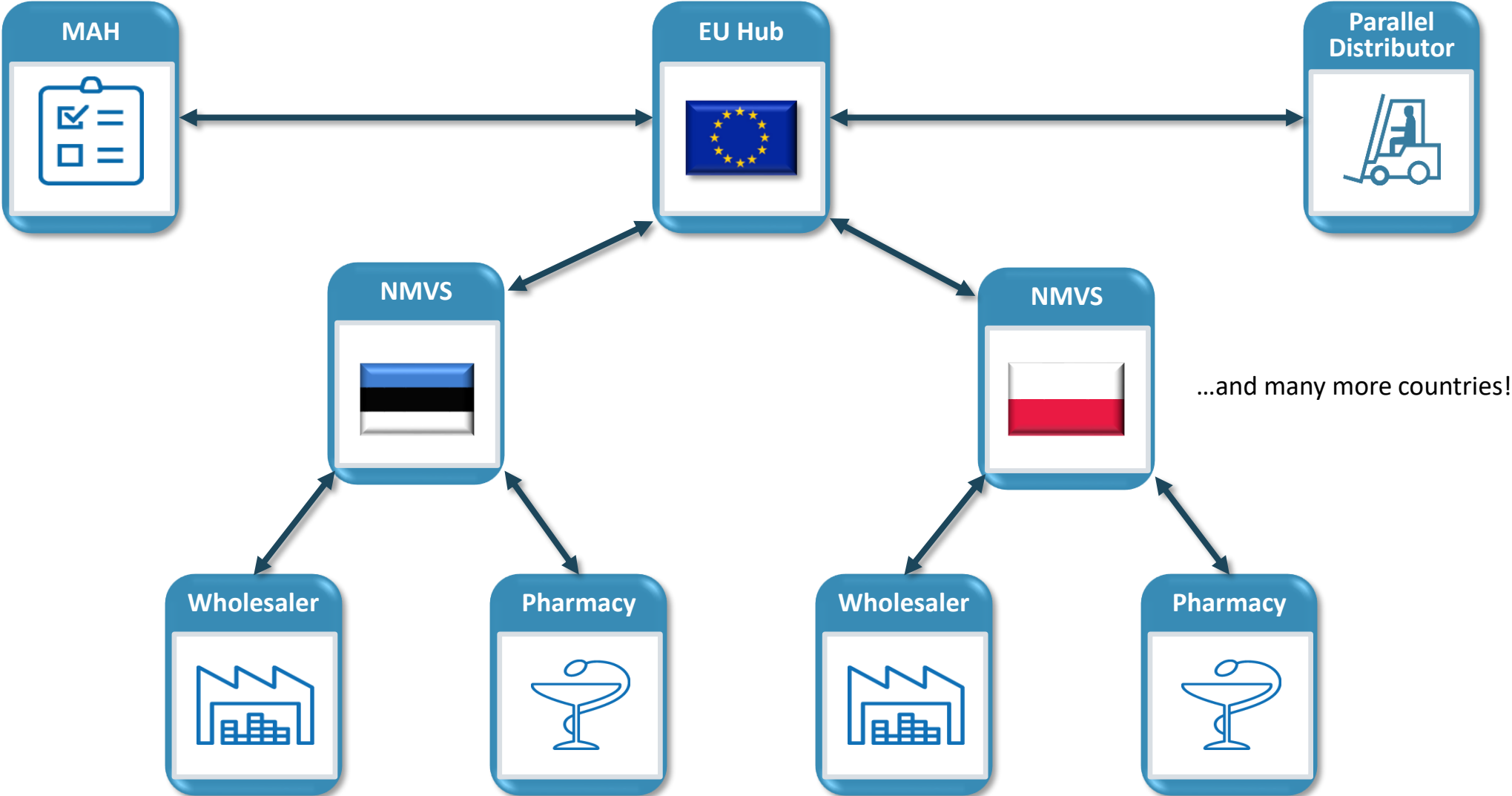
Cumulators



A photograph of two business professionals, a man and a woman, in a meeting. They are both wearing business suits and are looking down at a tablet computer on a table. The man is pointing at the screen with his right hand. The tablet displays a colorful bar chart. The image has a blue tint and is overlaid with a semi-transparent blue rectangle containing the title text.

Multimarket / Intermarket

Where the data goes



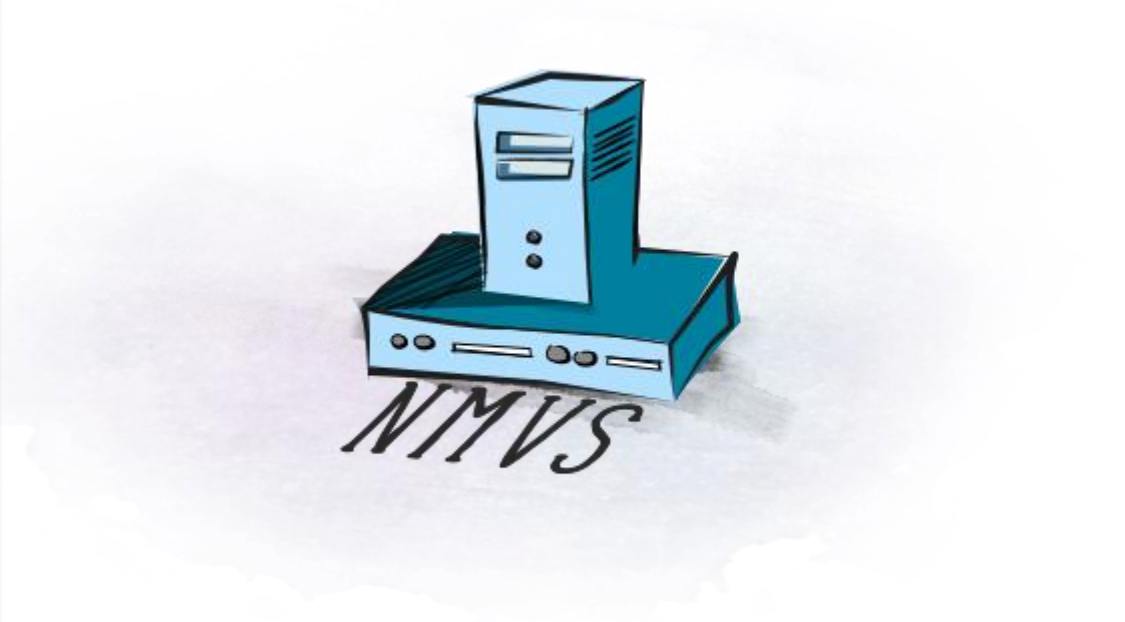
A hand holding a smartphone is shown in the lower right corner. The background is a blue and green gradient with several semi-transparent squares floating in the air. The text "—Business Use Cases—" is centered in white.

—Business Use Cases—

Business Use Cases / Transaction Types

You (only) need to ensure that your software works properly for the type of stakeholder that is using the software.

Transaction Type	Pharmacy ¹⁾	Wholesaler ¹⁾
<i>Verification</i>	X	X
<i>Dispense</i>	X	X
<i>Destroy</i>	X	X
<i>Export</i>		X
<i>Sample, for authorities/sample archives</i>	X	X
<i>Free sample, for healthcare professionals</i>		X
<i>Lock</i>		X
<i>Stolen</i>		X



¹⁾ X = Transaction authorized,

Source: EMVO, URS EMVO_0015 European Medicines Verification System: Requirements Specification Part II, version 2016-10-20

Request / Response: Request

→ Verification Request

XML Example

```
<G110Request>
<Header>
  <Auth authMethod="">
    <ClientLoginId>G4321-14-01RT</ClientLoginId>
    <UserId>9821</UserId>
    <Password>838hdjLk#</Password>
    <!--Optional!-->
    <SubUserId>9824</SubUserId>
  </Auth>
  <UserSoftware name="EasyPharm" supplier="PharmSoft Ltd." version="3.2.0"/>
  <Transaction>
    <ClientTrxd>c295a450-0caa-4cf1-8e62-c6165c4</ClientTrxd>
    <Language>deu</Language>
  </Transaction>
</Header>
<Body>
  <Product>
    <ProductCode scheme="GTIN">05060141900015</ProductCode>
    <Batch>
      <Id>1264</Id>
      <ExpDate>171200</ExpDate>
    </Batch>
  </Product>
  <Pack sn="XVTR75973491006155"/>
</Body>
</G110Request>
```

Sorry, if the font size hurts your eyes!

Request / Response: Response

→ Verification Response

XML Example

```
<G110Response>
<Header>
  <Auth>
    <ClientLoginId>G4321-14-01RT</ClientLoginId>
    <UserId>9821</UserId>
    <!--Optional:-->
    <SubUserId>9824</SubUserId>
  </Auth>
  <Transaction>
    <Language>deu</Language>
    <ClientTrxId>c295a450-0caa-4cf1-8e62-c6165c4</ClientTrxId>
    <NMVSTrxId>c295a450-0caa-4cf1-7e62-c6865d41</NMVSTrxId>
    <Timestamp>2017-12-31T12:00:00</Timestamp>
  </Transaction>
  <Notification code="NMVS_NOTIFY_02" desc=
    "The transaction was successfully processed using an old password.
    The password of your user account has changed, so please adjust your password as soon as possible.
    The password you are using will be deactivated in $oldPWExpDate days."
  </Notification>
</Header>
<Body>
  <Product>
    <ProductCode scheme="GTIN">05060141900015</ProductCode>
    <!--Optional:-->
    <IntermarketFlag>true</IntermarketFlag>
    <!--Optional:-->
    <NHRN>09556886</NHRN>
    <!--Optional:-->
    <ProductInfoRef date="2014-12-31" modified="false">890754389</ProductInfoRef>
    <Batch>
      <Id>1264</Id>
      <ExpDate>171231</ExpDate>
      <ExpDateNMVS>2017-12-31</ExpDateNMVS>
    </Batch>
  </Product>
  <Pack sn="XVTR75973491006155" state="INACTIVE">
    <!--0 to 20 repetitions:-->
    <Reason>SUPPLIED</Reason>
  </Pack>
  <ReturnCode code="NMVS_SUCCESS" desc="Successfully processed"/>
</Body>
</G110Response>
```

Sorry, if the font size hurts your eyes!

Request / Response: Notifications

→ Notifications

Attributes	Detailed information	Description
H - Header data		
Notifications	NMVS_NOTIFY_AU_01	You are using an old password. The password of your user account has changed, so please adjust your password as soon as possible. The password you are using will be deactivated in \$1 day(s).
	NMVS_NOTIFY_AU_02	Your password will expire in \$1 day(s). Please change your password using the password-change function in the system. If your password expires, you will no longer be able to connect to the system.
	NMVS_NOTIFY_PMS_01	A new version of the NMVS terms and conditions are available. Please confirm the new terms and conditions within the next \$newTCStartDate day(s). If you do not confirm the new terms and conditions version in time, you will no longer have access to the system.
B - Pack data		
Pack state	ACTIVE	Pack is able to be dispensed
	INACTIVE	Pack is not able to be dispensed
	UNKNOWN	Pack is not able to be dispensed
Pack-related reasons	CHECKED_OUT	Pack is repacked into a new pack
	DESTROYED	Pack is destroyed
	EXPIRED	Batch is expired and is not allowed to be dispensed
	EXPORTED	Pack is exported and is not allowed to be dispensed
	FREESAMPLE	Pack is given away as a free sample
	LOCKED	Pack is locked and is not allowed to be dispensed
	RECALLED	Batch is recalled and is not allowed to be dispensed
	SAMPLE	Pack was given away as a sample for national authorities
	STOLEN	Pack is stolen and is not allowed to be dispensed
	SUPPLIED	Pack is supplied
	UNKNOWN	Product, batch or pack is unknown and not allowed to be dispensed
	WITHDRAWN	Product is inactive with the property withdrawn and not allowed to be dispensed

Please read TD-014 Catalogue Translations.xlsx

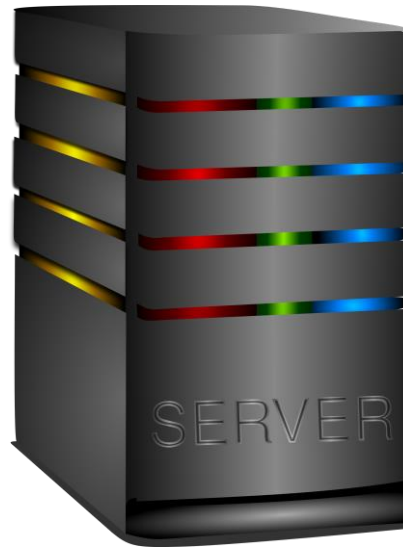


— How support — Software Suppliers —

Arvato supports you with...



Documentation and SDKs



Test and Dev environment
(Sandbox)



Helpdesk via Email and Phone

Onboarding Procedure for Software Suppliers

Share Knowledge



Share
Knowledge

- short registration process
- Hand out first documentation about the National Verification System
- Hand out technical information (WSDL)

- Software suppliers registers himself and
- agrees to Terms and Conditions.

- Kowal approves request

- Software supplier gets access to
 - sandbox environment,
 - documents,
 - manuals,
 - SDKs (WSDLs, XMLs, handbooks),
 - test documentation and test sets
 - certificates for sandbox environment and
 - qualification process for higher environments

Registration Portal

Registration
Register to get access to the system. Your application will be sent to your NMVO for approval.

<https://sws-nmvs.eu>

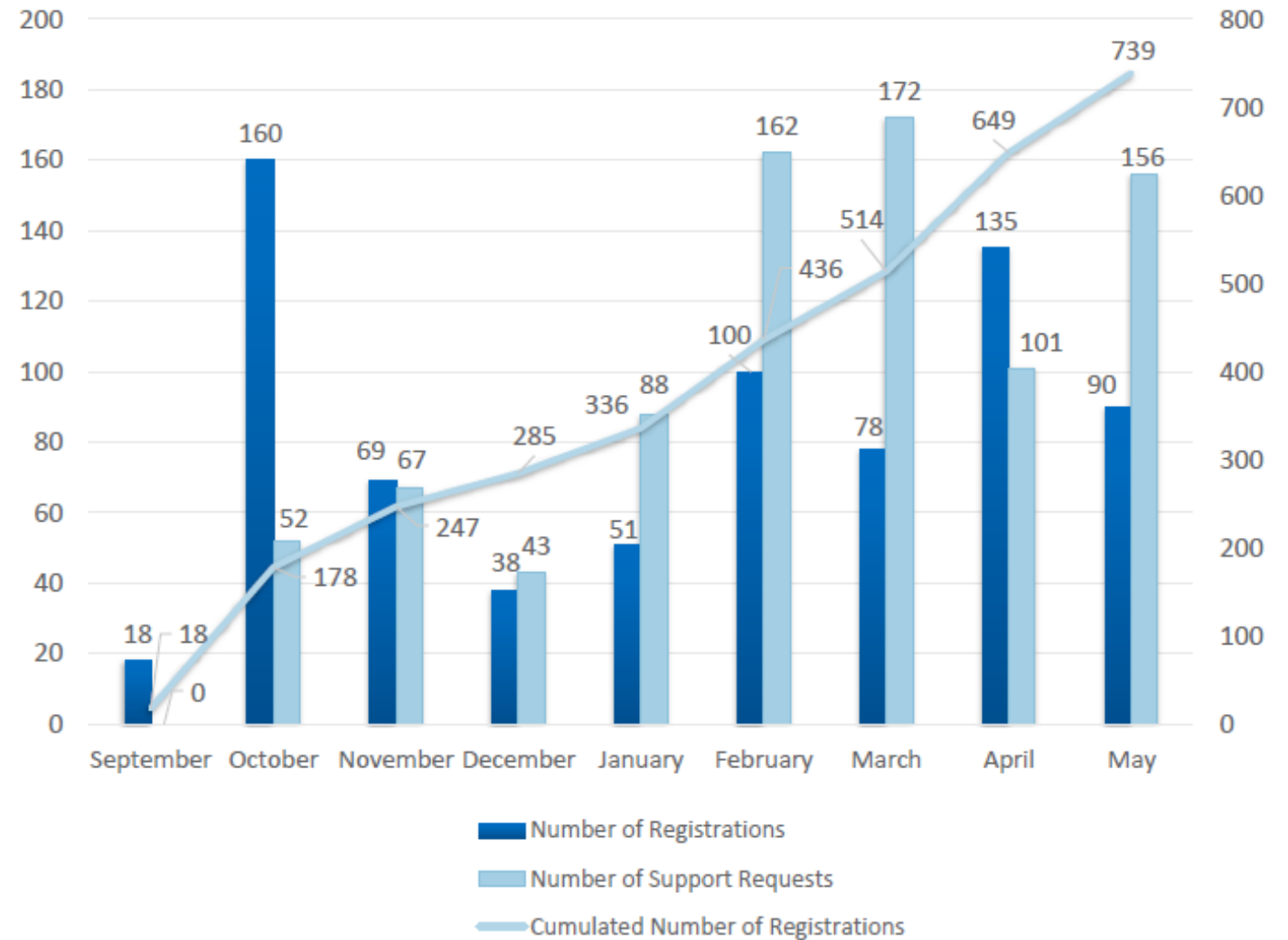
Software Supplier Portal

Connect your system with the NMVS
The best way to integrate your software



<https://sws.nmvs.eu>

Registrations and Support Requests



Onboarding Procedure for Software Suppliers

Overview Software Supplier Portal



Home

Documentation

Test & Fix

Market Roll Out

https://sws-nmvs.eu

[UPDATE - Implementation Guideline](#)

21.03.2017 13:10

Zacharias, Martin, NMA-ST-R

☆☆☆☆☆

Dear Ladies and Gentlemen,

Within our constantly ongoing quality assurance, we identified some mistakes within the document "Implementation Guideline". We corrected those mistakes and would like to inform you about an updated version. The adjusted c

[Test set for interface validation](#)

26.06.2017 14:19

Zacharias, Martin, NMA-ST-R

☆☆☆☆☆

Please delete all out-d

A general test environment will be set-up by the end of August 2017. This environment will contain several test cases for you as software-supplier in an area of activity for a pharmacy, hospital or wholesaler.

Beforehand, you already can download the existing WSDL and XSD-files and import them to your development environment and start the implementation.

We will inform you mid of August about the Go-Live of the Test-Environment. We will create a test user for you and send credentials for the connection. With this information you can have a first connection to the test-environment-system.

Best Regards

NMVS Project-Office

Manuals				
Technical Documents				
WSDL				
Legals				
Others				
Read our Implementation Guidelines to get an entire overview of the business processes which are served by our system.				
Type	Name		Date modified	File size
	FD-002 Implementation Guideline NMVO.pdf		09/11/2017	3.6 MB
	NMVS Request			

Manuals				
Technical Documents				
WSDL				
Legals				
Others				
Type	Name		Date modified	File size
	Csharp_Java_SoapUI_Examples.zip		09/11/2017	385.4 KB
	TD-001 BP 1.0 Interface Description - G100 Distributor Transactions.xlsx		09/11/2017	461.1 KB

Manuals				
Technical Documents				
WSDL				
Legals				
Others				
Type	Name		Date modified	File size
	NMVS - WSDL - XSD.zip		09/11/2017	29.8 KB

69.6 KB	Download
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Onboarding Procedure for Software Suppliers

Overview Software Supplier Portal


Home Documentation Test & Fix Market Roll Out

https://sws-nmvs.eu

Create a Test-Package right here

Test-Packages

You'd like to start your tests, but there is no test package available? Use our Test-Package generator. We outline several typical business cases and describe it in our test concept. In addition to that, you can download serial numbers for your test which will cause defined return codes.

 Get a new Test-Package

Create a Test-Package right here


Test-Packages

You'd like to start your tests, but there is no test package available? Use our Test-Package generator. We outline several typical business cases and describe it in our test concept. In addition to that, you can download serial numbers for your test which will cause defined return codes.

1-DevTest


Testing the business use cases

Please, download your test package:

 Download test package

View Test Results and Used Packages

This list contains the log files corresponding to your downloaded test packages. Please ensure that the test case name is correct.

Date	Test name	Description	
09/15/2017	1-DevTest	Testing the business use cases	 View test cases

Questions and answers

FAQs



#	Question	Answer
1	How can we test the web services of your system?	For test purposes we set-up a general test-environment end of August 2017. This environment will contain several test cases for you as software-supplier in a role as Pharmacy or wholesaler.
2	Information: EMVO FAQ	EMVO has prepared a specific FAQ list, explaining important facts concerning their connection to the European Hub.

...

Questions?



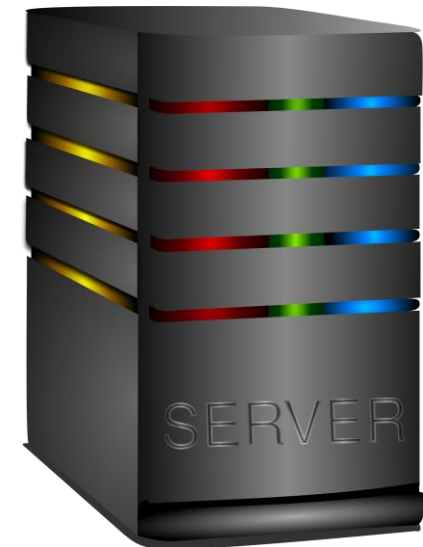
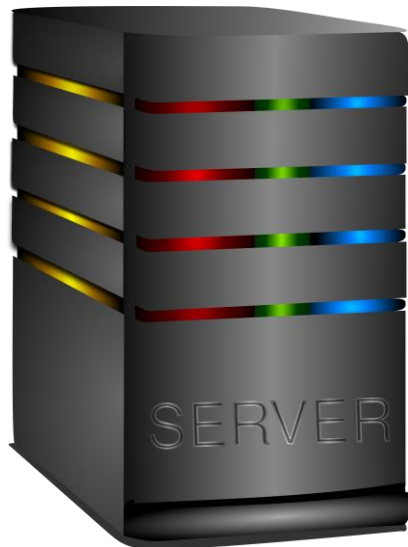
Please contact:

NMVS Software Supplier Support Team
support@sws-nmvs.eu

Moving between environments

Bevor you connect your software to the integration or production environment:

- Develop and test your software within the test and development environment.
- Bevor moving from test and dev environment to integration or production environment, the connection must be tested and certified.
- Certification is only valid for one version of the software. New versions need to be re-certified.



Test and Dev Environment
(Sandbox)

Certification of Connection

Integration / Production
Environment

Helping hand: Additional support and sources of information

- Please make sure to register if you are a SW supplier or an IT department: <https://sws-nmvs.eu>

Connect your system with the NMVS

The best way to integrate your software

FIGHT THE COUNTERFEITERS!

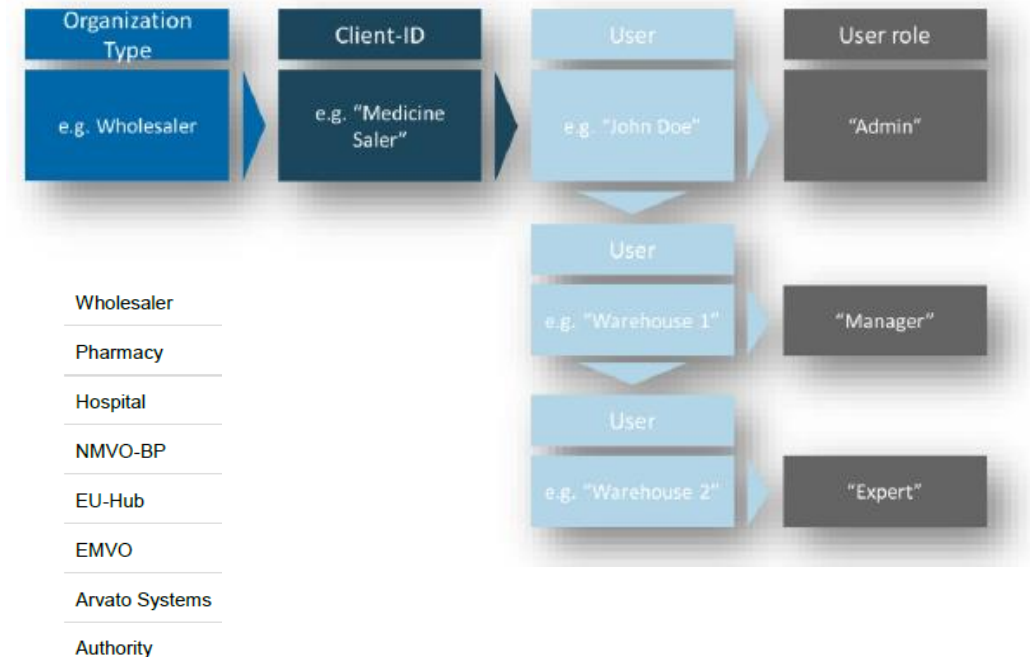




— Users and Permissions —

Rights and roles

Hierarchy	Description
Organization Type	The Organization Type allocates all possible rights for the processes used by the Client-ID. The Organization Type is set as standard by Arvato.
Client-ID / User group	A Client-ID groups many users of one Organization Type. It is directly linked to an Organization Type. The Admin of the Client can control all users at this client.
User	A User can be the technical end point or a physical user.
Role	A role allocates the rights for a user and can be named by the Client.
Sub-User	A Sub-User is an additional, optional information to structure bigger organizations like pharmacy-networks to deal with existing internal structures.



- With the first registration, a client gets the **user** credentials for an admin who is able to create further users with specific rights.
- **Sub-Users** are also possible for central pharmacy systems or pharmacy chains.
- 2-Factor authentication has to be used (Client Certificate + Password)

Permission mapping

Permission Mapping

		Orgatype		Wholesaler		Pharmacy		Hospital		NMVO - BP		Authority		EU-HUB		EMVO		Arvato Systems	
		Channel		WS	GUI	WS	GUI	WS	GUI	WS	GUI	WS	GUI	WS	GUI	WS	GUI	WS	GUI
G100 - Distributor Transactions																			
Single Pack Transactions																			
G110	Verify single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No	No	Yes	Yes
G120	Dispense single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G122	Dispense single pack manual entry			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G130	Destroy single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G140	Export single pack			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G150	Sample single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G160	Free sample single pack			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G170	Lock single pack			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G180	Stolen single pack			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G182	Stolen single pack manual entry			No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G121	Undo dispense single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G131	Undo destroy single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G141	Undo export single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G151	Undo sample single pack			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G161	Undo free sample single pack			Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G171	Undo lock single pack			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G181	Undo stolen single pack			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
Homogenous Bulk Transactions																			
G115	Bulk verify packs			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G125	Bulk dispense packs			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G127	Bulk undo dispense packs			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
G135	Bulk destroy packs			Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes

Distributor Web Service Header, Example A: Direct, non-anonymous integration scenario

Client with 100 pharmacies, decentralized integration scenario
(i.e. direct communication between NMVS and each pharmacy)

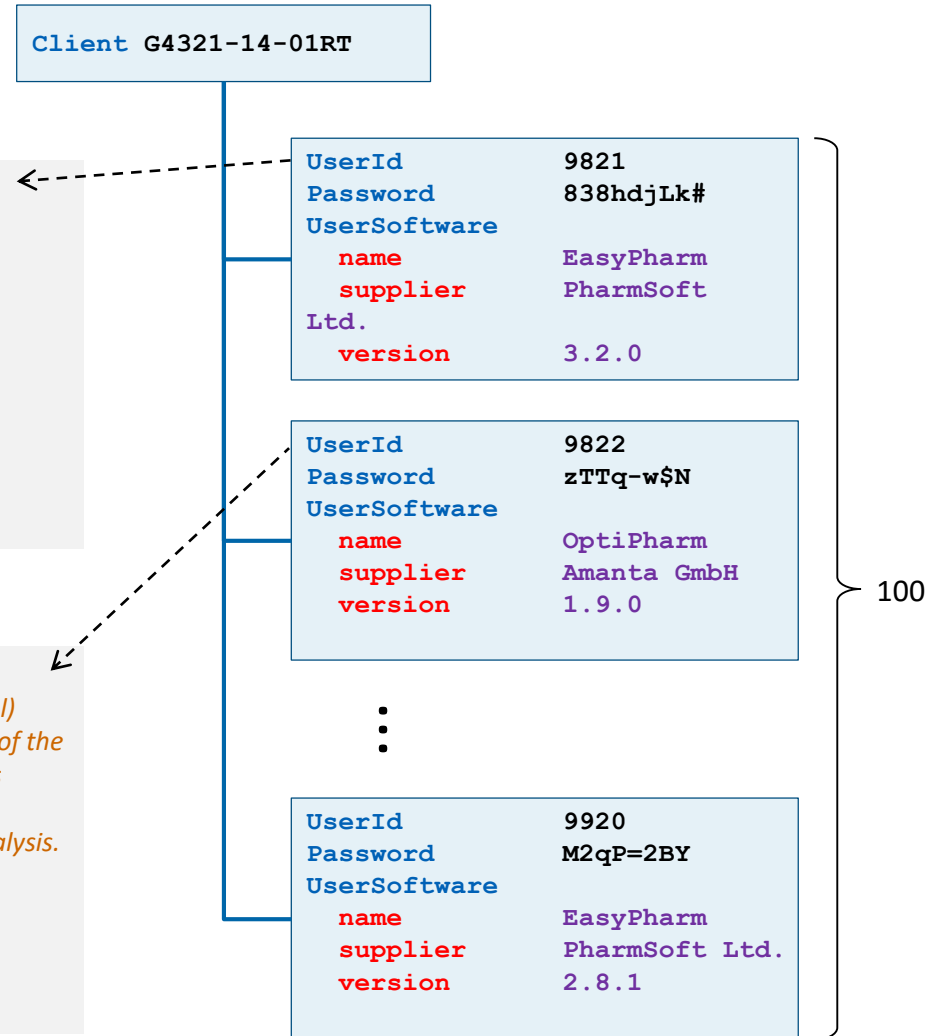
Web service header data for pharmacy with **UserId** 9821 :

```
<Header>
  <Auth>
    <ClientLoginId>G4321-14-01RT</ClientLoginId>
    <UserId>9821</UserId>
    <Password>838hdjLk#</Password>
    <SubUserId></SubUserId>
  </Auth>
  <UserSoftware name="EasyPharm" supplier="PharmSoft Ltd." version="3.2.0" />
  <Transaction>
    <ClientTrxId>c295a450-0caa-4cf1-8e62-c6165c4</ClientTrxId>
  </Transaction>
</Header>
```

Web service header data for pharmacy with **UserId** 9822 :

```
<Header>
  <Auth>
    <ClientLoginId>G4321-14-01RT</ClientLoginId>
    <UserId>9822</UserId>
    <Password>zTTq-w$N</Password>
    <SubUserId>3</SubUserId>
  </Auth>
  <UserSoftware name="OptiPharm" supplier="Amanta GmbH" version="1.9.0" />
  <Transaction>
    <ClientTrxId>a2bee042-8f1a-0c99-6602-c24ffaa</ClientTrxId>
  </Transaction>
</Header>
```

As a special feature, the (hypothetical)
OptiPharm software transmits the id of the
local teller where the transaction was
generated.
This may be helpful for later error analysis.





— Technical details —

Connection Details (1/4)

- HTTPS
- TLS 1.1 / 1.2 are supported
- Cipher
 - ECDHE-ECDSA-CHACHA20-POLY1305
 - ECDHE-RSA-CHACHA20-POLY1305
 - ECDHE-ECDSA-AES128-GCM-SHA256
 - ECDHE-RSA-AES128-GCM-SHA256
 - ECDHE-ECDSA-AES128-SHA256
 - ECDHE-RSA-AES128-SHA256
- SOAP -Simple Object Access Protocol (SOAP 1.2)
- Web Service Description Language (WSDL 1.1)
- WS-I Basic Profile 1.1.1
- Charset Encoding: Standard UTF-8

Connection Details (2/4)

- Two factor authentication
 - user/password in SOAP payload
 - client certificate (https connection)
- Client certificates
 - X.509 standard
 - [PKCS](#)#12 container for enrollment
 - contains:
 - public/private key pair
 - client certificate

Connection Details (3/4)

Handling on client side

- DNS
 - all technical endpoints have registered DNS names
 - before connection attempt dns resolution needs to be done
 - ip addresses can change over time
- Client certificate validation
 - only use valid client certificates, no connection attempts with expired certificates should be done
- Latency
 - use http keep alive for low latency synchronous transactions
- Ping-Service
 - NMVS web services provide a simple “ping service” to test the general connectivity to NMVS. The service can also be used for holding connections (http keep alive) to prevent from connection timeouts.

Connection Details (4/4)

Handling on client side

- Connection termination
 - The client should drop connections when no activity is expected in a reasonable amount of time.
- Reconnection policy
 - Detailed policy will be supplied with the final documentation. In general the policy will be based on increasing time frames between failed connection attempts.
- Parallelism
 - In general, a client should not maintain more than one connection to each service endpoint of the NMVS. In case of higher parallelism on synchronous services, it is possible to open additional connections. For services with asynchronous processing, it is not allowed to submit requests in parallel as processing order cannot be guaranteed in that case.



— Next steps —

What exactly needs to be done? (end users)

All end users must

- Understand the verification process and the need for risk based verification
- Train their employees
- Rethink business workflows
- Get hold of software capable of verification

What exactly needs to be done? (software suppliers)

All software suppliers must

- Understand the NMVS web service interface and specify the required changes to their software products
- Reserve implementation capacities
- Implement and test the specified changes to their software products
- Coordinate the rollout of their new software product releases to the pharmacies
- Download and read the main onboarding document from the software supplier portal: The Implementation Guideline (FD-002 Implementation Guideline)

Thank you
for your attention.

Tallinn, June 14th, 2018

An abstract graphic featuring several interlocking gears of various sizes in shades of blue. The background is a light blue gradient with faint, complex circuitry and data-like patterns, including lines, squares, and arrows. The overall aesthetic is technological and modern.

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