

Software Supplier Meeting

Tallinn

November 24th, 2017





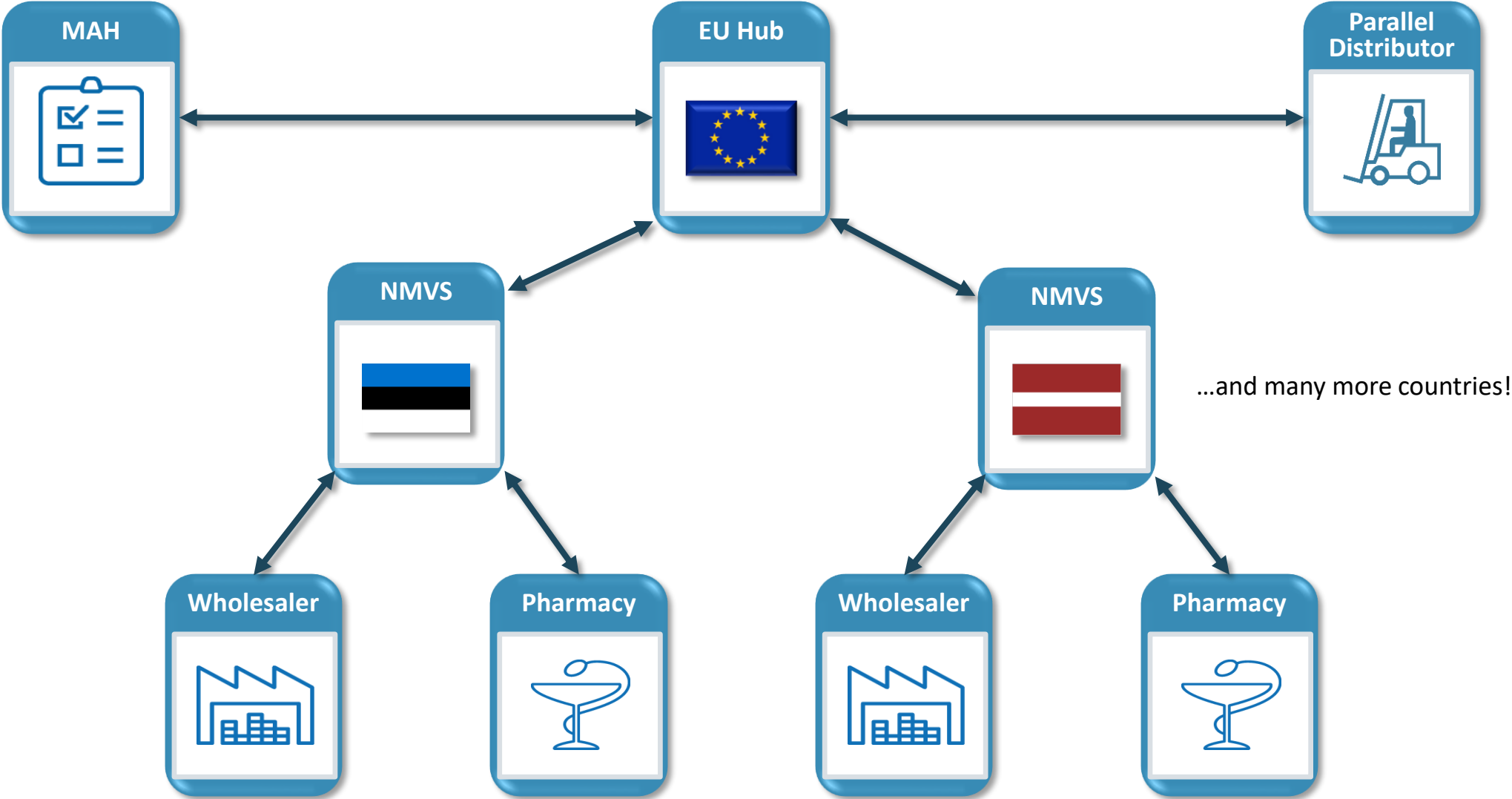
— Introduction / Overview —

Our Mission

- 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”



Where the data goes



Many stakeholders are involved

- Organisers

- REKS
- EMVO



- Software providers

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

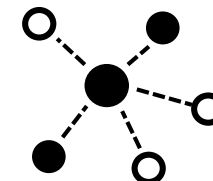


- Authorities



- 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
- ...



Master the Challenges

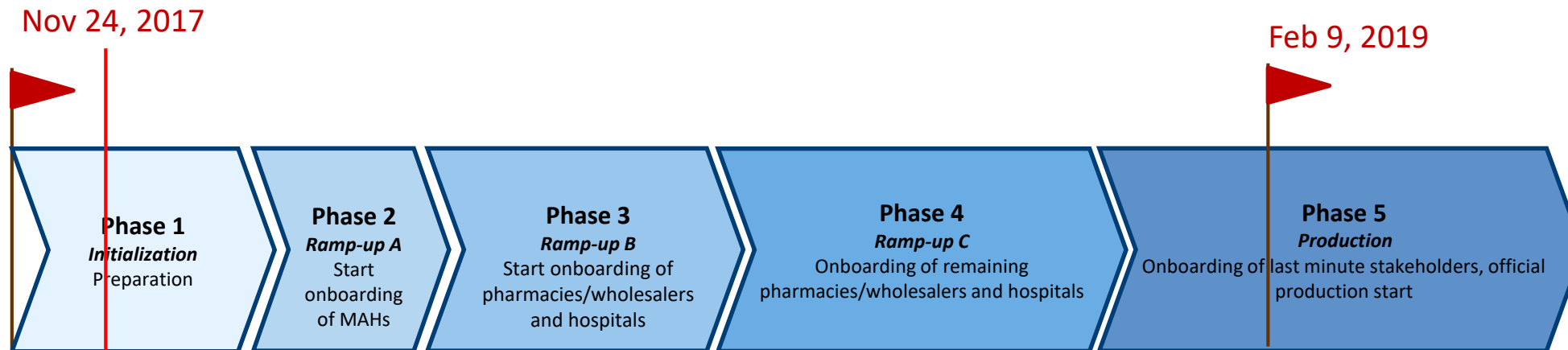
- Organize Cooperation
- The stakeholders must learn to act together in a new context.
- New overarching processes must be established.
- Stakeholders are depending on each other,
i.e. delays and errors will propagate and accumulate downstream.



— Schedule —

Time Planning, High Level Perspective

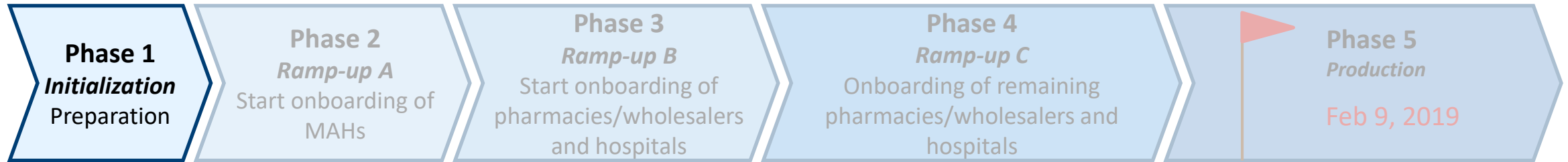
- There are roughly 15 months left until medicine verification becomes mandatory in Europe
- This is our plan to complete the project within the available time frame from Estonia:



- What are the results of each phase?
Let's go through the five phases shown.

Planning, Detail View

Phase 1: Initialization



Results of the Initialization phase

Organization:

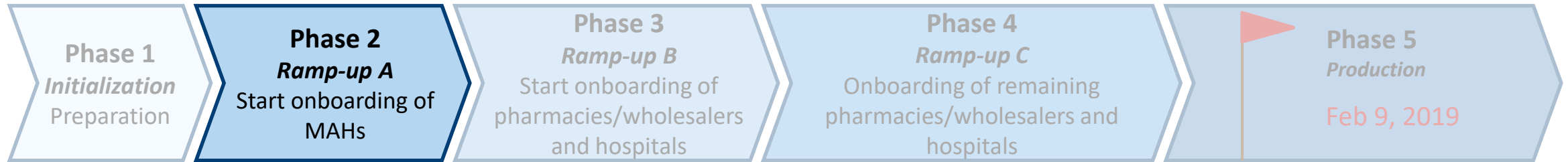
- A final requirements analysis for the NMVS has been made
- The major project decisions have been taken
- The planning is complete
- All software suppliers have registered themselves in the software supplier portal
- The description of the NMVS web service interface has been made available to all software suppliers of pharmacies and wholesalers

New functionalities:

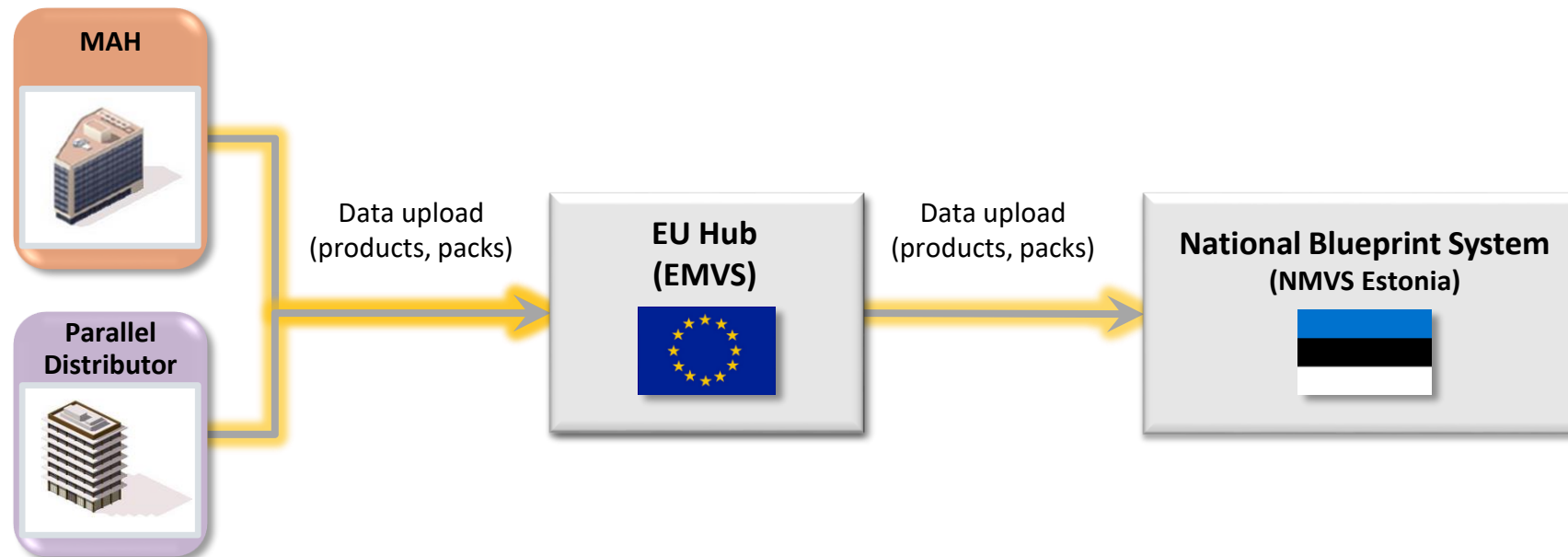
- The MAHs are preparing the production of serialized Medicines
- The MAHs are able to upload product/pack data to the EU Hub
- A connection between the NMVS and the EU Hub has been established
- The EU Hub can upload product/pack data to the NMVS

Planning, Detail View

Phase 2: Ramp-up A

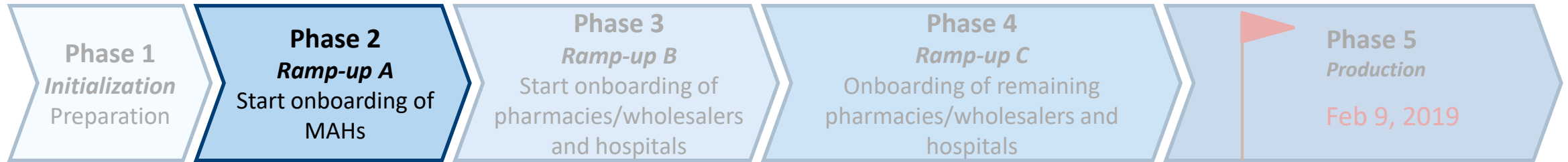


During phase 2, the highlighted information flows will be tested:



Planning, Detail View

Phase 2: Ramp-up A



Results of ramp-up phase A

Usage:

- The first serialized medicines have been manufactured and put into the supply chain.
- Product/pack data have been transferred to the NMVS, i.e. the information flow between MAHs and the NMVS via the EU Hub has been tested

Organization:

- A small group of pharmacies and wholesalers has been chosen to test the verification/dispensing of medicines in Phase 3

New functionalities:

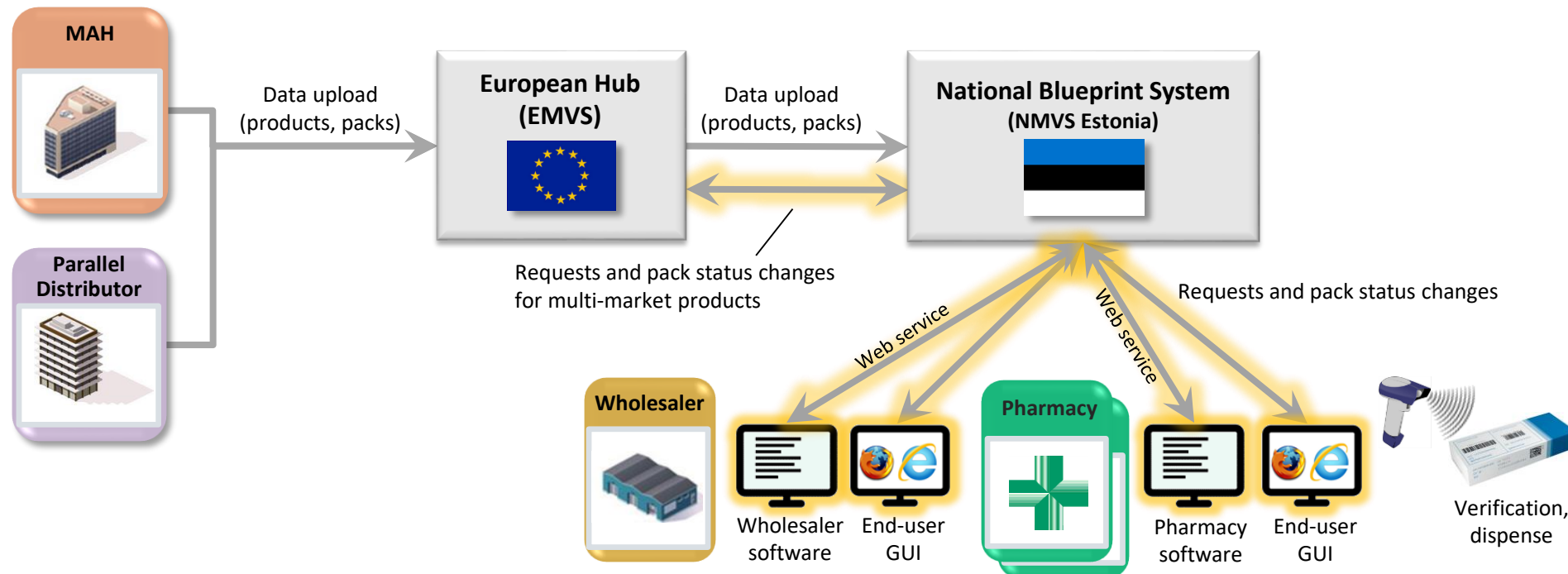
- The first pharmacy software suppliers have already connected their software products with the NMVS web services interface
- A web app will be provided as fall-back scenario for Phase 3 (if the software suppliers are not fast enough)

Planning, Detail View

Phase 3: Ramp-up B



During Phase 3, additional data flows will be tested:



Planning, Detail View

Phase 3: Ramp-up B



Results of Ramp-up phase B

Usage

- The first serialized Medicines have arrived at the pharmacies/wholesalers.
- The first software suppliers have connected their pharmacy/wholesaler software with the NMVS web services.
- Pharmacies/wholesalers have verified/dispensed the first serialized Medicines, i.e. the information flow between the MAHs and the NMVS has been tested end-to-end.
- The web app is no longer available for testing.

Organization

- The onboarding of the major part of the pharmacies and wholesalers has been prepared

New functionalities

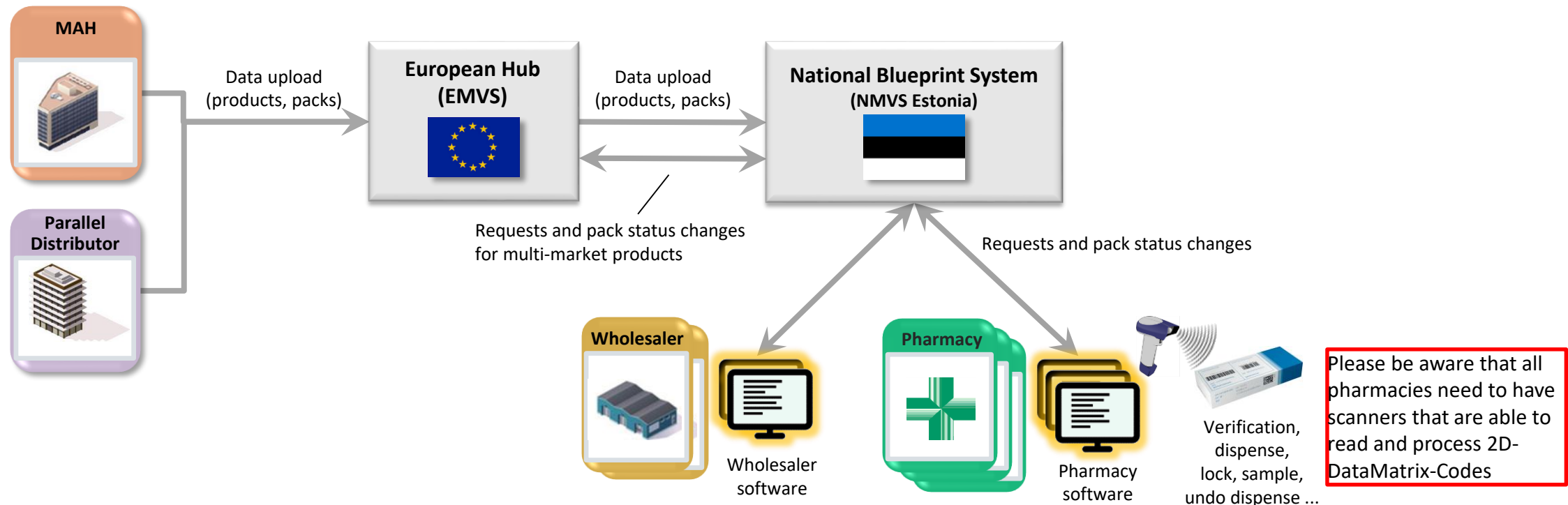
- The NMVS web services are fully functional, including multi-country transactions.

Planning, Detail View

Phase 4: Ramp-up C



During Phase 4, the functionality of the various pharmacy and wholesaler software systems will be tested:



Planning, Detail View

Phase 4: Ramp-up C



Results of Phase 4:

New functionalities

- All software suppliers have connected their systems with the NMVS web services
- The new pharmacy/wholesaler software systems have been installed at almost all pharmacies and wholesalers

Organisation

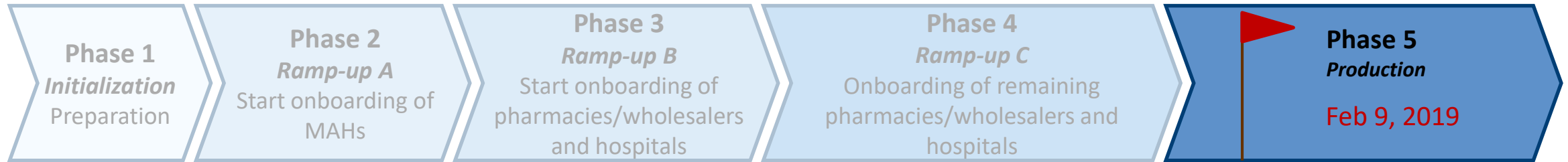
- The software suppliers have trained their users at pharmacies and wholesalers

Utilization

- The new software version have already been used at the pharmacies and wholesalers
- The vast majority of medicament packs on the Estonian markets is now serialized

Planning, Detail View

Phase 5: Production



Results until Feb 9, 2019:

New functionalities

- The new developed pharmacy/wholesaler software systems have been installed at all pharmacies and wholesalers

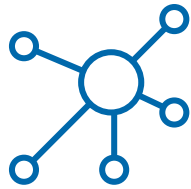
Utilization

- The verification of Medicines has become a routine at the pharmacies and wholesalers.
- Almost all medicament packs on the Estonian market are now serialized.



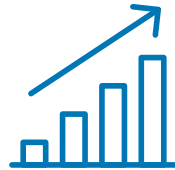
— Software Supplier — Onboarding

How to Support the Integration for Software Developers



Share Knowledge

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



Enable for Start

- Create a User Account and hand out client certificates
- Get access to the NMVS Integration environment



Support Implementation

- Get support in case of technical problems
- FAQ is available



Assist Testing/Validation

- Quality assurance with complete test set for all relevant use-cases

Onboarding Procedure for Software Suppliers

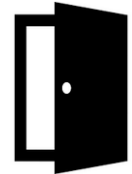
Three steps

→ All Software Suppliers need to align with REKS before they will be approved to access the 'Software Supplier Portal' in step 2!

(1) Software Supplier registers with the software supplier portal and applies for access.

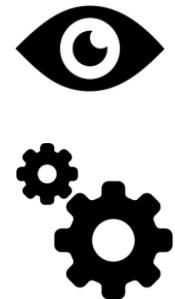


(2) REKS checks the request and approves portal access.
Each software supplier gets one portal user only.



(3) Software supplier ...

- downloads documentation (handbooks, WSDLs, XML)
- checks for news & updates
- submits questions and service requests
- downloads certificates for the NMVS integration environment
- downloads test sets to ...
 - ... test against the NMVS integration environment
 - ... qualify its software for the NMVS production environment



Onboarding Procedure for Software Suppliers

Overview Software Supplier Portal



NMVS Software Supplier Portal

- Home
- Registration
- Documentation
- Implementation Support
- Test Suite
- Roll Out Management

<https://www.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

Please delete all out-da

We kindly ask for your

Best Regards

NMVS Project-Office

[Test set for interface validation](#) 26.06.2017 14:19 Zacharias, Martin, NMA-ST-R ☆☆☆☆☆

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

Information Document
Software Supplier Onboarding

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Dokument
"ID-004 Software Supplier Onboarding"



Manuals



[BP 1.0 Interface Description for Distributors](#)



[BP 1.0 NMVS API Reference Distributors Interface](#)



[Short Description for Sharepoint-Users](#)



[Implementation_Guideline_NMVO 0.91](#)



[Link to the EMVO Documentation Website](#)



Technical
Documentation



[BP 1.0 Interface Specification Administration - EXAMPLES](#)



[BP 1.0 Interface Description for Distributors - EXAMPLES](#)



[WSDL-XSD-FOR-DISTRIBUTORS](#)



Legal
Documentation



[Arvato_IT_Commerce_Terms_Conditions_NMVS_Portal_EN](#)



[Delegated_Regulation_2016-161_EN_](#)



[Falsified_Medicines_Directive_2011-62_EN](#)



Frequently
Asked
Questions



Create User
Account



Certificates

Onboarding Procedure for Software Suppliers



Manuals



BP 1.0 Interface Description for Distributors



BP 1.0 NMVS API Reference Distributors Interface



Short Description for Sharepoint-Users



Implementation_Guideline_NMVO 0.91



Link to the EMVO Documentation Website



Technical Documentation



BP 1.0 Interface Specification Administration - EXAMPLES



BP 1.0 Interface Description for Distributors - EXAMPLES



WSDL-XSD-FOR-DISTRIBUTORS

Distribution Pack 1



Update of Distribution Pack 1

... => [TD-001] Interface Description for Distributors
... => [FD-002]
... => [ID-003] Short Description for Sharepoint-Users
... => [FD-002] Implementation Guideline NMVS

+

- Complete technical interface description
- Implementation examples for webservice-clients:
 - Single Transactions
 - Offline concept
 - Bulk concept
 - Java example
 - C# example
 - Generic test concept

Distribution Pack 2

Onboarding Procedure for Software Suppliers

Software Developer Kit

Arvato will provide the following resources as part of a “Starter package”:

- Interface documentation (Technical / XSD, Use-Cases and API usage)
- Test environment incl. test accounts and test data
- Code samples (c#, java)
- Reference implementation (c#, java) of client stubs and offline functionality
- Comprehensive testing plans – cover functional and non-functional tests
- SOAP-UI Mock Testing Project
- Approval of client software on integration environment
- General information
- Detailed roadmap regarding future developments and interface releases



Questions and answers

FAQs



Frequently Asked Questions

#	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.

...



FAQs

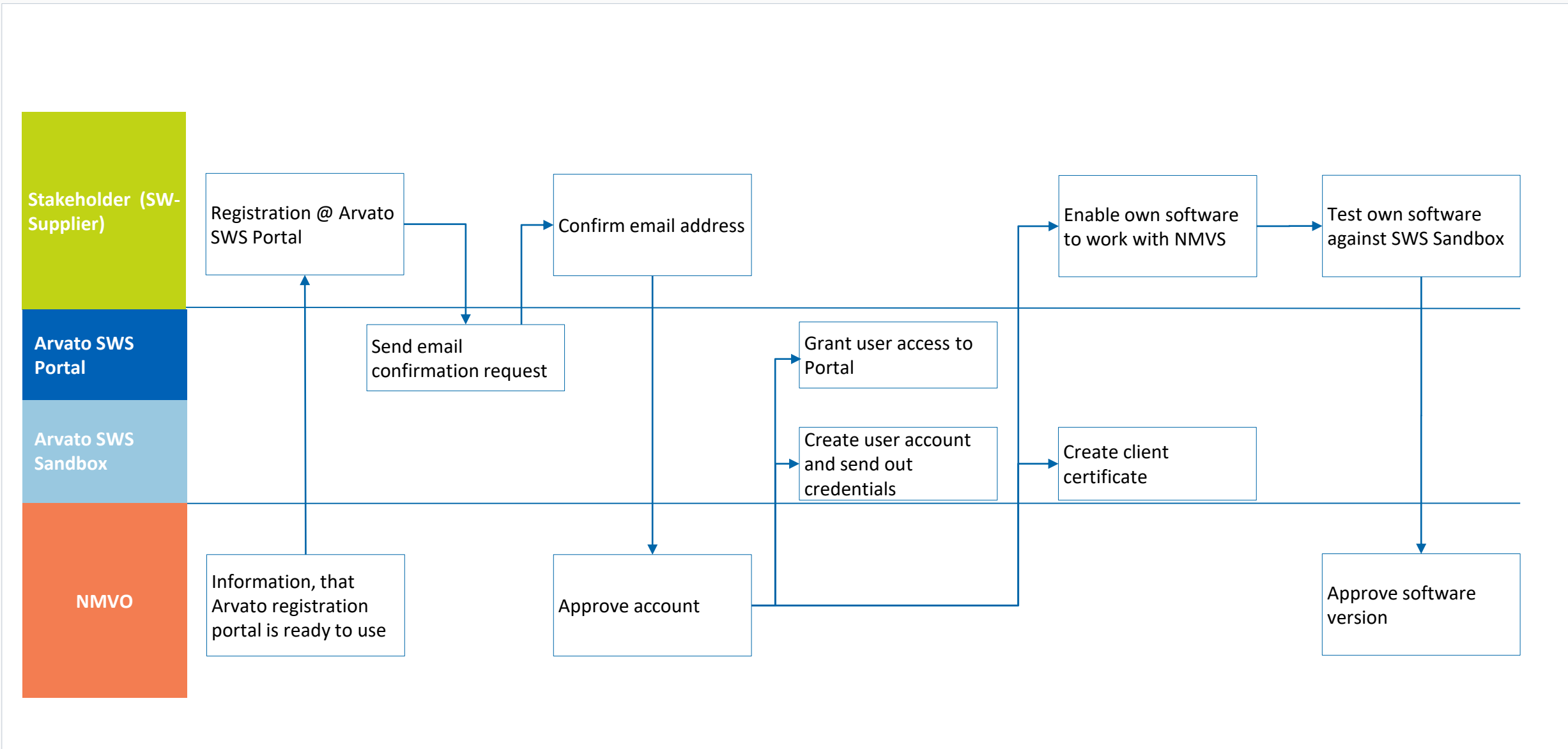
Questions?



Please contact:

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

Onboarding Procedure for Software Suppliers (Flow Chart)



Onboarding Procedure for Software Suppliers (2)

Which systems are important for Software Suppliers?

NMVS Software Supplier Portal

Registration page <https://sws-nmvs.eu/register>
Register as a Software Supplier

Login page <https://sws-nmvs.eu>
Login and access documentation

NMVS Certificate Management System

Login page https://portal-pki-int-bp.nmvs.eu/NMVS_PORTAL_PKI
Login and download a certificate to connect with the NMVS Integration Environment
(switch to English language on the upper right side of the page)

Generic NMVS Integration Environment

End points https://ws-single-transactions-int-bp.nmvs.eu:8443/WS_SINGLE_TRANSACTIONS_V1/SinglePackServiceV10
Call web services via end points on the Generic NMVS Integration Environment, e.g. single pack transactions via the end point shown above

Onboarding Procedure for Software Suppliers (3)

How does the registration process work in detail?

After you have registered and been approved by the NMVO, you will receive **three e-mails**.

- 1. E-mail 1** informs you that you have now access to the **Software Supplier Portal**.
Just use the credentials you have defined during the registration process (i.e. your e-mail address and the password you have chosen).
- 2. E-mail 2** provides additional user credentials for the **NMVS Certificate Management System** **and the Generic NMVS Integration Environment**.
You will use these credentials to access the NMVS Certificate Management System **and** to authenticate yourself towards the Generic NMVS Integration Environment (together with the digital certificate downloaded in step 3).
- 3. E-mail 3** provides a **TAN** which is required to download your individual **digital certificate** from the NMVS Certificate Management System.
Important: Do not forget to note the **passphrase** which will be displayed when downloading the certificate. You will need the passphrase to activate the certificate.

Onboarding Procedure for End Users ¹⁾

- (1) NMVO collects end user addresses (street pharmacies, hospital pharmacies, wholesalers, etc.).



- (2) NMVO creates user groups (clients) for the different types of end users.



- (3) NMVO creates user accounts by importing end user addresses to the NMVS and assigning them to user groups (clients).



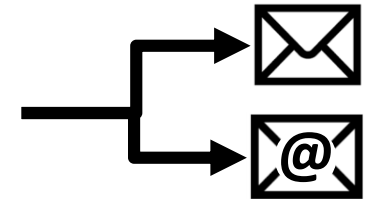
¹⁾ Any entity a) obliged to verify medicines and b) distributing medicines to patients or other entities, e.g. a pharmacy

Onboarding Procedure for End Users

(4) NMVO exports end user data including onboarding/logon data from the NMVS.



(5) Based on the exported end user data, the NMVO orders a service provider to send onboarding/login data to the end users, e.g. via mail and e-mail.
For security reasons, two independent communication channels are needed.



(6) With their access data, end users log on to the NMVS portal. They now can download certificates and connect with the NMVS via Web Service and/or Web GUI.



What exactly needs to be done? (software suppliers)

All software suppliers must

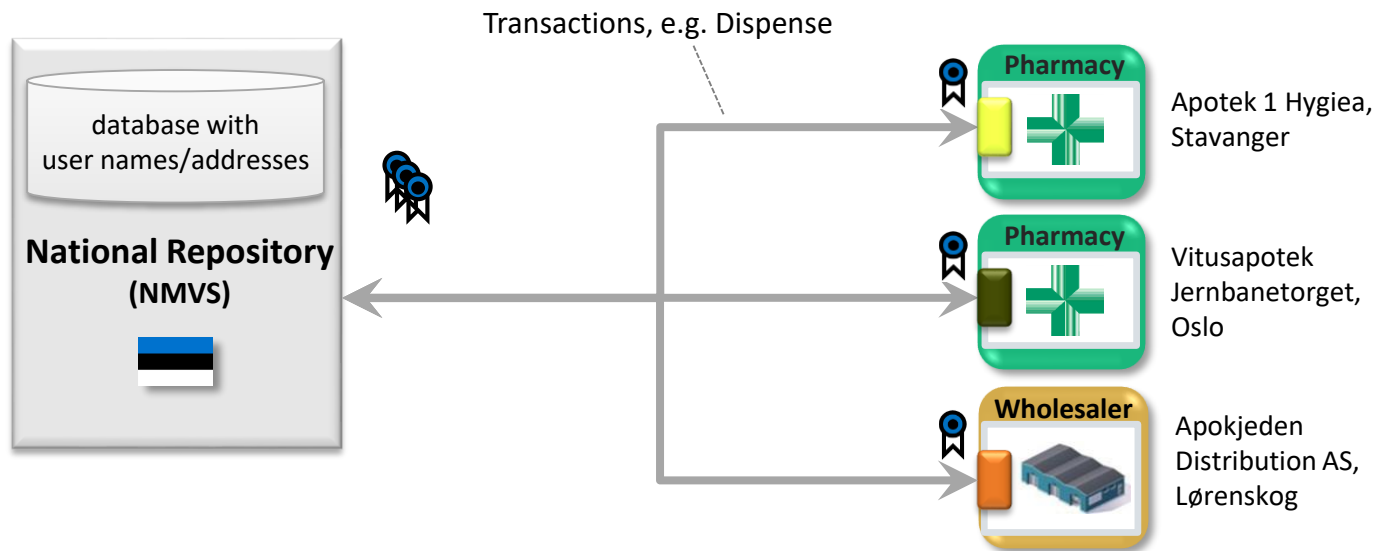
- Understand the NMVS web service interface and specify the required changes to their software products
- Reserve implementation capacities
- Implement and test the specified changes to their software products
- Coordinate the rollout of their new software product releases to the pharmacies
- Kick off with the Implementation Guideline
(FD-002 Implementation Guideline)



— Integration scenarios —

Comparison of User Integration Scenarios

1: Direct Integration



Direct Integration

1. For each user, name and address are registered with the NMVS.
2. Each user has an individual user ID, password, and certificate to access the NMVS.
3. Each user sends transactions including its user ID directly from its own IT system to the NMVS
4. With each transaction, the name/version of the local software is transmitted to the NMVS.

Legend



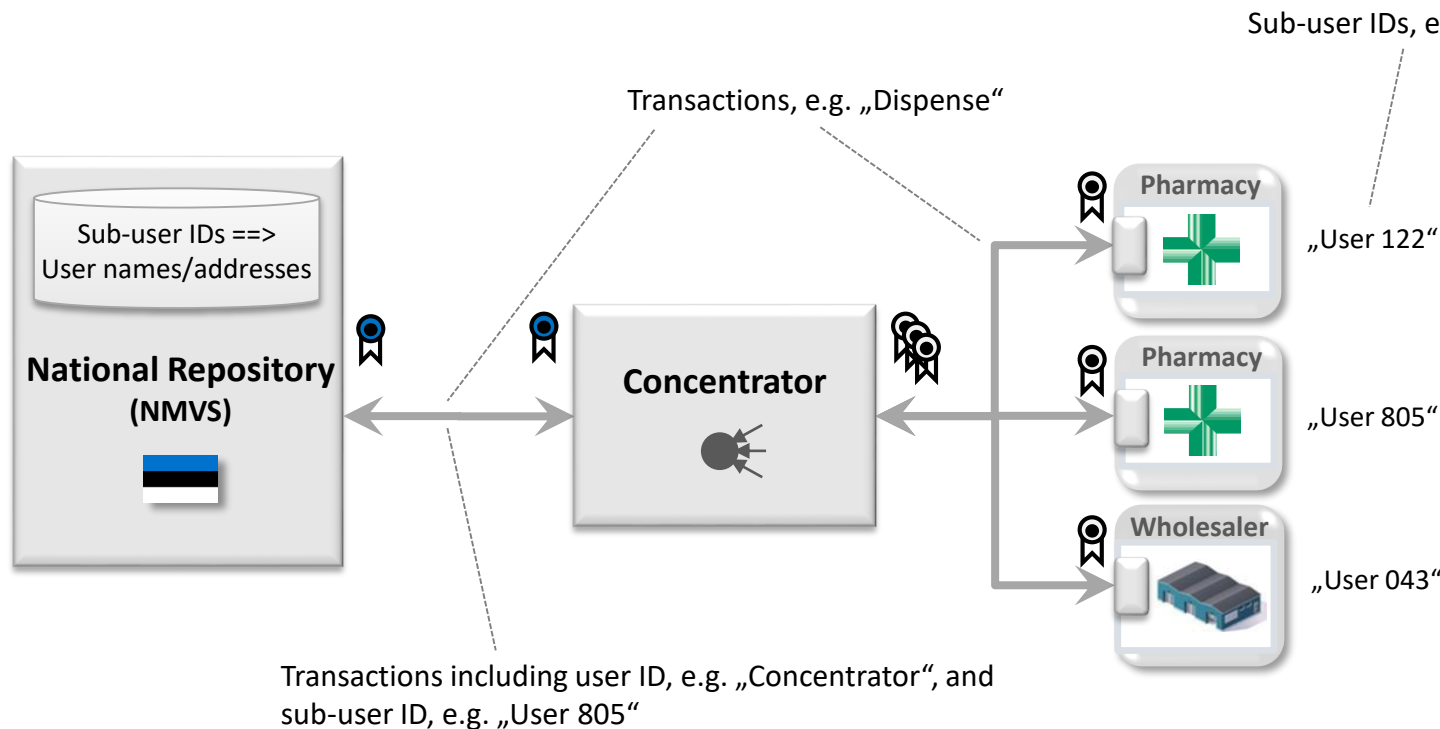
Local user software



Digital certificate,
managed by Arvato

Comparison of User Integration Scenarios

2: Transparent Concentrator



Transparent Concentrator

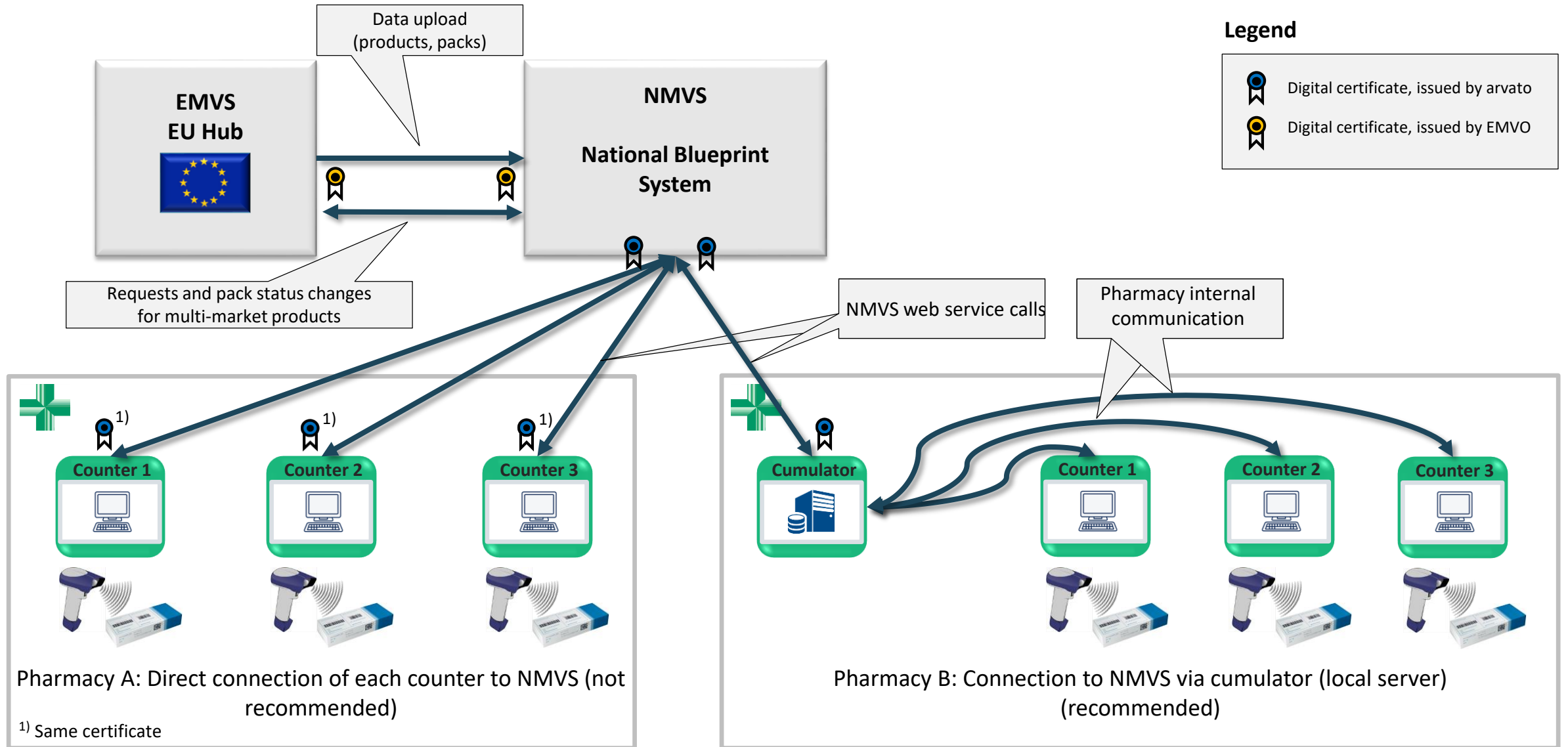
1. Only the concentrator is registered with the NMVS.
2. The concentrator has its own user ID, password, and certificate to access the NMVS.
3. The concentrator manages individual users (e.g. pharmacies), assigns sub-user IDs to them and assures their authenticity.
4. The NMVS has a lookup table where each sub-user ID is mapped to the name and address of the corresponding user.
5. The concentrator sends transactions including its own ID and the respective sub-user ID to the NMVS. Each transaction from the same user has the same sub-user ID.
6. With each transaction, the name/version of the concentrator software is transmitted to the NMVS.

Legend

	Local user software
	Digital certificate, managed by Arvato
	Digital certificate, managed by the operator of the concentrator

Connection Scenarios for End Users, e.g. Pharmacies

Usage of direct connection vs. cumulator



— Transactions —

Transaction Types, Overview

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

Transaction types

Overview

(1) **Single Pack** transactions

- **Submit Single Pack Transaction**

Single pack transactions, e.g. *Verify Single Pack, Dispense Single Pack, Destroy Single Pack*

- **Undo Single Pack Transaction**

Reverse single pack transactions, e.g. *Undo Dispense*

(2) **Homogenous Bulk** transactions

- **Submit Homogenous Bulk Transactions**

Bulk transactions are lists of transactions with the same product, batch id and transaction type.

They are generated by wholesalers to handle large quantities of packs, e.g. *Bulk Verify Packs, Bulk Export Packs*.

- **Request Homogenous Bulk Transactions Result**

Bulk transactions are processed asynchronously. These web services are used to fetch the results of previously submitted bulk transactions.

(3) **Mixed Bulk** transactions

- **Submit Mixed Bulk Transactions (“Offline Recap”)**

Offline bulk transactions contain transactions with heterogeneous products and transaction types.

They are generated by pharmacies when the local transaction buffer is emptied after an offline period.

- **Request Mixed Bulk Transactions Result (“Offline Recap”)**

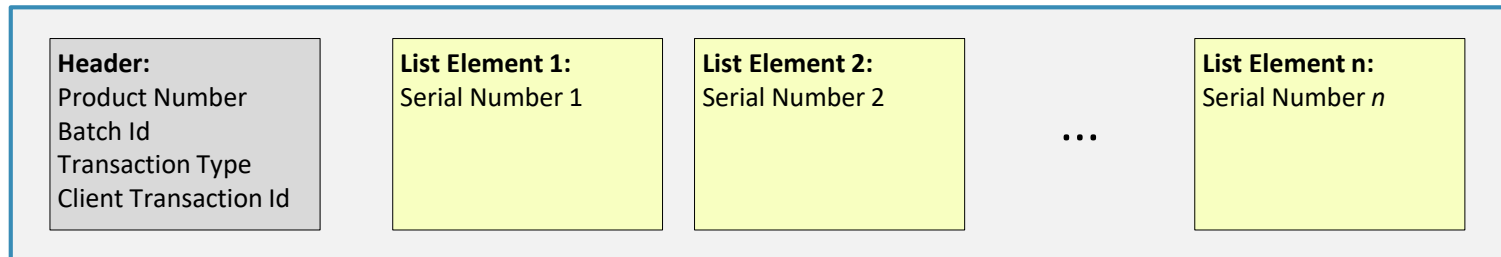
Offline bulk transactions are processed asynchronously.

These web services are used to fetch the results of previously submitted offline bulk transactions.

Web Service Groups

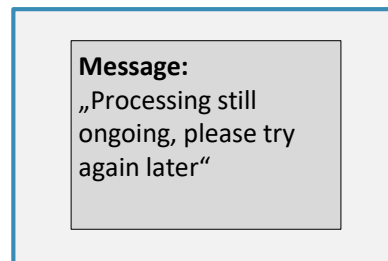
(2) Bulk Transactions – Function Principle

Submit a list of homogeneous single pack requests as one bulk request (wholesalers only):

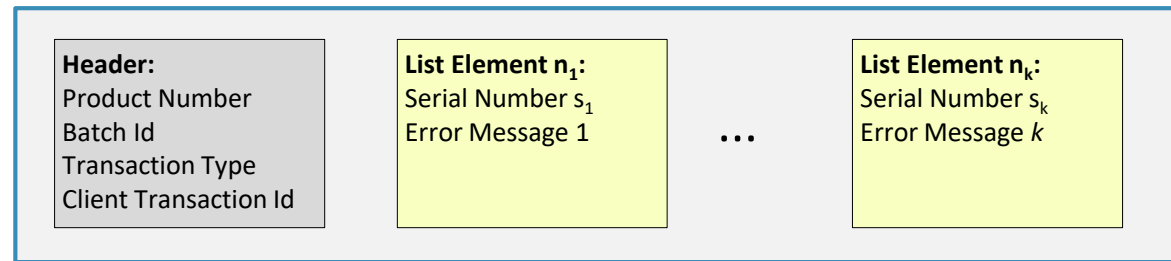


Request the result of the bulk request, two possible results:

a) Ongoing processing



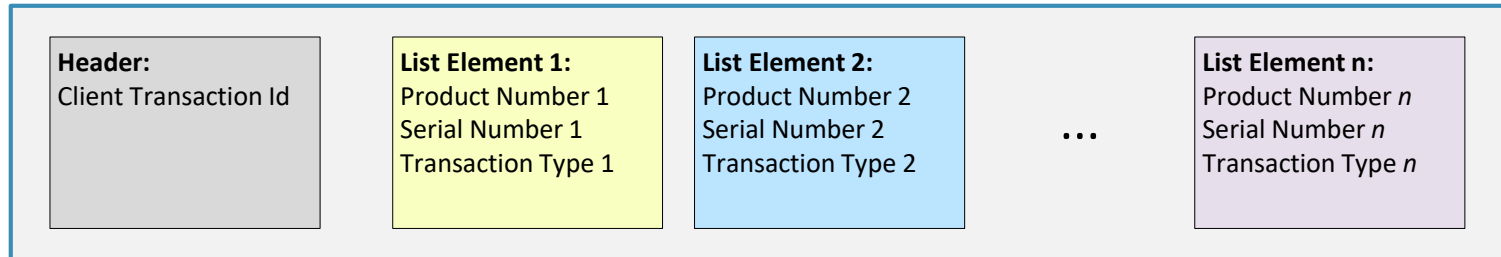
b) Processing finished (only errors are returned):



Web Service Groups

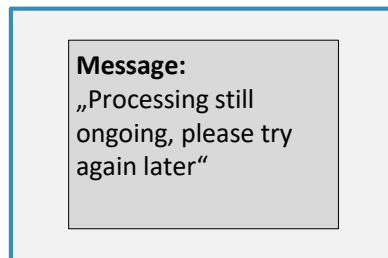
(3) Offline Bulk Transactions – Function Principle

Submit a list of mixed single pack requests as one bulk request (pharmacies only):

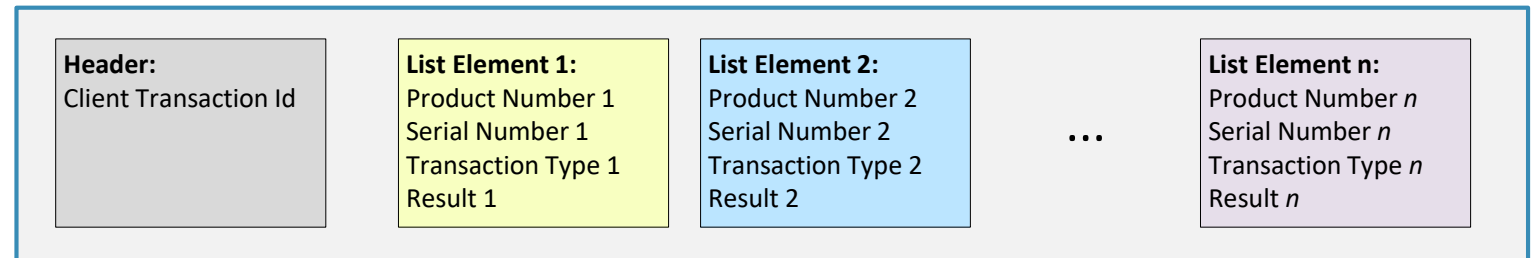


Request the result of the bulk request, two possible results:

a) Ongoing processing



b) Processing finished:



Transaction groups

Overview

- **G100 - Distributor Transactions**
- G200 - MAH Transactions
- G300 – Reports
- G400 - Administration
- G500 - EU Hub Transactions
- G600 - Stakeholder Onboarding Support
- G700 - Onboarding software suppliers



FD001_BusinessPr
sOverview NMVO\

Web Service Groups

(1) *Submit* Single Pack Transactions

Web Service Id	Web Service Name/Description	Pharmacy	Wholesaler
G110	Verify Single Pack Verify a single pack. This does not change the status of the pack.	X	X
G120	Dispense Single Pack Dispense a single pack using a scanner. All data matrix fields will be submitted (incl. product number, batch number, expiry date).	X	X
G122	Dispense Single Pack Manual Entry Dispense a single pack with manual data entry. Only the product number and the serial number will be submitted.	X	X
G130	Destroy Single Pack Report a single pack as destroyed.	X	X
G140	Export Single Pack Report a single pack as exported.		X
G150	Sample Single Pack Report that a single pack has been provided to authorities for sampling purposes.	X	X
G160	Free Sample Single Pack Report that a single pack has been given away as a free sample.		X
G170	Lock Single Pack Report that a single pack has been locked, e.g. to provide time for further investigations.		X

Pharmacies are **not** allowed to submit this type of transaction

Wholesalers are allowed to submit this type of transaction

Source: EMVO

Web Service Groups

(1) *Submit* Single Pack Transactions

Web Service Id	Web Service Name/Description	Pharmacy	Wholesaler
G180	Stolen Single Pack Report that a single pack has been stolen. Assumption: The data matrix content is still available (e.g. pack has been emptied or data from an earlier pack scan are still available).		X
G182	Stolen Single Pack Manual Entry Report that a single pack has been stolen, with manual data entry. Assumption: The product number and the serial number is still available (e.g. from an earlier scan).		X
G111	End-to-End Test to Scan a Single Pack Used to validate a pharmacy/wholesaler before admission to the production environment.	X	X

Web Service Groups

(1) *Undo* Single Pack Transactions

Web Service Id	Web Service Name/Description	Pharmacy	Wholesaler
G121	Undo Dispense Single Pack Reverse the effect of a previous <i>dispense</i> transaction (G120 or G122).	X	X
G131	Undo Destroy Single Pack Reverse the effect of a previous <i>destroy</i> transaction.	X	X
G141	Undo Export Single Pack Reverse the effect of a previous <i>export</i> transaction.		X
G151	Undo Sample Single Pack Reverse the effect of a previous <i>sample</i> transaction.	X	X
G161	Undo Free Sample Single Pack Reverse the effect of a previous <i>free sample</i> transaction.		X
G171	Undo Lock Single Pack Unlock a previously locked pack.		X
G181	Undo Stolen Single Pack Reverse the effect of a previous <i>stolen</i> transaction (G180 or G182).		X

Source: EMVO

Web Service Groups

(2) Submit Bulk Transactions

	Web Service Name/Description	Pharmacy	Wholesaler
G115	Bulk Verify packs Submit a list of serial numbers (same product) for verification.		X
G125	Bulk Dispense packs Submit a list of serial numbers (same product) to report the corresponding packs as <i>dispensed</i> .		X
G135	Bulk Destroy packs Submit a list of serial numbers (same product) to report the corresponding packs as <i>destroyed</i> .		X
G145	Bulk Export packs Submit a list of serial numbers (same product) to report the corresponding packs as <i>exported</i> .		X
G155	Bulk Sample packs Submit a list of serial numbers (same product) to report that the corresponding packs have been provided to authorities for sampling purposes.		X
G165	Bulk Free sample packs Submit a list of serial numbers (same product) to report that the corresponding packs have been given away as free samples.		X
G175	Bulk Lock packs Submit a list of serial numbers (same product) to report the corresponding packs as <i>locked</i> .		X
G185	Bulk Stolen packs Submit a list of serial numbers (same product) to report the corresponding packs as <i>stolen</i> .		X

Source: EMVO

Web Service Groups

(2) Submit Bulk Transactions

Web Service Id	Web Service Name/Description	Pharmacy	Wholesaler
G127	Bulk Undo Dispense packs Submit a list of serial numbers (same product) for which the effects of a previous <i>dispense</i> transaction shall be undone.		X
G137	Bulk Undo Destroy Packs		X
G147	Bulk Undo Export Packs		X
G157	Bulk Undo Sample Packs		X
G167	Bulk Undo Free Sample Packs		X
G177	Bulk Undo Lock Packs		X
G187	Bulk Undo Stolen Packs		X

Source: EMVO

Web Service Groups

(2) Request Bulk Transactions Result

Web Service Id	Web Service Name/Description	Pharmacy	Wholesaler
G188	Request Bulk Transaction Result Fetch the result of a previously submitted bulk transaction.		X
G199	Request Pickup IDs for Bulk Transaction Result <i>A pickup id</i> is used to refer to the results of a previous bulk transaction. If such pickup ids have been lost for some reason, this web service recovers all pickup ids whose results have not been fetched yet.		X

Web Service Groups

(3) *Submit* Offline Bulk Transactions

Web Service Id	Web Service Name/Description	Pharmacy	Wholesaler
G195	Offline Bulk Transaction An offline bulk transaction contains multiple single transactions with heterogeneous products and transaction types. It is generated by pharmacies when the local transaction buffer is emptied after an offline period.	X ¹⁾	

¹⁾ Only such transaction types are allowed within offline bulk transactions which are permitted as single transactions for pharmacies.

Web Service Groups

(3) Request Offline Bulk Transactions Result

Web Service Id	Web Service Name/Description	Pharmacy	Wholesaler
G196	Request Offline Bulk Transaction Result Request the result of a previously submitted <i>offline bulk transaction</i> .	X	

Web Service Parameter Structures

Example

Web Service Id	Web Service Name/Description	Input	Output
G110	Verify Single Pack Verify a single pack. This does not change the status of the pack.	I1 - Single pack	O1 - Single pack
G120	Dispense Single Pack Dispense a single pack using a scanner. All data matrix fields will be submitted (incl. product number, batch number, expiry date).	I1 - Single pack	O1 - Single pack
G122	Dispense Single Pack Manual Entry Dispense a single pack with manual data entry. Only the serial number will be submitted.	I2 - Manual single pack	O1 - Single pack
G130	Destroy Single Pack Report a single pack as destroyed.	I1 - Single pack	O1 - Single pack
G140	Export Single Pack Report a single pack as exported.	I1 - Single pack	O1 - Single pack
G150	Sample Single Pack Report that a single pack has been provided to authorities for sampling purposes.	I1 - Single pack	O1 - Single pack
G160	Free Sample Single Pack Report that a single pack has been given away as a free sample.	I1 - Single pack	O1 - Single pack
G170	Lock Single Pack Report that a single pack has been locked, e.g. to provide time for further investigations.	I1 - Single pack	O1 - Single pack

This is a reference to the input parameter structure of this web service

This is a reference to the output parameter structure of this web service

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.

Client G4321-14-01RT

UserId 9821
Password 838hdjLk#
UserSoftware
name EasyPharm
supplier PharmSoft
Ltd.
version 3.2.0

UserId 9822
Password zTTq-w\$N
UserSoftware
name OptiPharm
supplier Amanta GmbH
version 1.9.0

⋮

UserId 9920
Password M2qP=2BY
UserSoftware
name EasyPharm
supplier PharmSoft Ltd.
version 2.8.1

100

Distributor Web Service Header

Example B: Centralized, pseudonymous integration scenario

Client with only one central server that gives indirect access to e.g. 800 pharmacies, pseudonymous scenario

Web service header data for central server with **UserId** 0209:

```
<Header>
  <Auth>
    <ClientLoginId>A8762-GZ-MMPL</ClientLoginId>
    <UserId>0209</UserId>
    <Password>8.zz5t1bf</Password>
    <SubUserId>Apo134514</SubUserId>
  </Auth>
  <UserSoftware name="NAF Concentrator"
    supplier="Norsk Apotekforeningen"
    version="1.1.4" />
  <Transaction>
    <ClientTrxId>a450c295-aa0c-4bb9-3312-faf59c1</ClientTrxId>
  </Transaction>
</Header>
```

Pseudonymous identifier of one of the 800 pharmacies behind the central server where the transaction was generated.

A pharmacy will always use the same SubUserId to identify itself.

Client A8762-GZ-MMPL

UserId	0209
Password	8.zz5t1bf
UserSoftware	
name	NAF Aggregator
supplier	Norsk Apotekforeningen
version	1.1.4

Technical user that corresponds to the central server

Distributor Web Service Header

Example C: Centralized, anonymous integration scenario

Client with only one central server that gives indirect access to e.g. 500 pharmacies, anonymous scenario

Web service header data for central server with **UserId** 0210:

```
<Header>
  <Auth>
    <ClientLoginId>BHJ1L-23-MXVU</ClientLoginId>
    <UserId>0210</UserId>
    <Password>982e5twwT</Password>
    <SubUserId></SubUserId>
  </Auth>
  <UserSoftware name=„NAF Concentrator“
    supplier=„Norsk Apotekforeningen“
    version=„1.1.4“ />
  <Transaction>
    <ClientTrxId>a450c295-aa0c-4bb9-3312-faf59c1</ClientTrxId>
  </Transaction>
</Header>
```

SubUserId will always remain empty in this scenario. ¹⁾

Client BHJ1L-23-MXVU

UserId	0210
Password	982e5twwT
UserSoftware	
name	NAF Aggregator
supplier	Norsk Apotekforeningen
version	1.1.4

Technical user that corresponds to the central server

¹⁾ As a consequence, the NMVS will not be able to identify transactions generated by the same pharmacy as a default. Thus, in case of an undo transaction, the central server will have to provide a reference to the original transaction. The field „Reference Client Transaction“ is used for that (see documentation of input parameter structure „I3 Undo Single Transaction“).

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	Yes	No	Yes	No	Yes	No	No	No	No	Yes	Yes
G120	Dispense single pack		Yes	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	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G130	Destroy single pack		Yes	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	No	Yes	Yes
G150	Sample single pack		Yes	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	No	Yes	Yes
G170	Lock single pack		Yes	Yes	No	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	No	Yes	Yes
G182	Stolen single pack manual entry		No	Yes	No	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	Yes	No	No	No	No	No	No	No	No	Yes	Yes
G131	Undo destroy single pack		Yes	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	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	No	Yes	Yes
G161	Undo free sample single pack		Yes	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	No	Yes	Yes
G181	Undo stolen single pack		Yes	Yes	No	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	No	Yes	Yes
G125	Bulk dispense packs		Yes	Yes	No	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	No	Yes	Yes
G135	Bulk destroy packs		Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes

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 "— Technical details —" is centered in white.

— 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.

Thank you