Rowa® Technologies

Becton Dickinson Rowa Germany GmbH

WWKS 2 for Automated Storage and Retrieval Systems

Revision 6.22

Content

1 Introduction

What is this document about?

This document details the communication between a pharmacy IT system and an automated storage and retrieval system via the WWKS 2 protocol.

Messages are exchanged in both directions directions, and are used to control inventory movements (stock input and output) in an automated storage and retrieval system (picking system).

This specification lists all available messages, their use and syntax. A software developer may use this information to enable successful communication between a pharmacy IT system and a picking system via WWKS 2.

Who should read this document?

This document is intended for:

- Personnel involved in integrating a pick-up terminal to a pharmacy IT system
- Developers developing software (such as parsers) to translate between WWKS 2 messages and the pharmacy IT system

Definition of terms

The systems are abbreviated as follows in places within the text:

Abbreviation	Definition
PIS	Pharmacy IT system
ASRS KS	Automated storage and retrieval system. In the context of this document, an automated storage and retrieval system also means a system comprising multiple interconnected automatic storage machines with or without a shared control computer
FMD	Falsified Medicine Directive. EU regulation that enforces datamatrix codes on Rx packs and introduce serial number that allow to track packs.

2   Structure of the manual

Breakdown

This manual assigns WWKS 2 messages to the following function groups:

- Initialization   Prepare message exchange between pharmacy IT system

  and automated storage and retrieval system

- Keepalive   Check data link

- System status   Poll automated storage and retrieval system readiness

- Stock input   Store packs in automated storage and retrieval system

- Stock input initiation system   Trigger pack input into automated storage and retrieval
  system

- Master data   Transfer article and shipping lists

- Inventory checking   Check automated storage and retrieval system stock
  levels

- Stock output   Output packs from automated storage and retrieval
  system

- Task status   Poll task processing status

- Cancellation   Cancel tasks

- Stock location checking   Check stock location information

Flowcharts

The flowcharts based on the UML2 standard depict the flow of messages between the pharmacy IT system and automated storage and retrieval system as well as the decisions and actions triggered as a result. If the sequence is dependent on conditions, the variants are depicted by branching.

Element tables

The message element tables describe the syntax and the possible values of the elements.

The "M/O" column indicates whether the element is mandatory (M) or optional (O).

If an element can be used more than once per message, the fact is mentioned in the description. If this attribute is not mentioned, the element can be used only once.

Examples

An example is presented for each message described. The example messages have fictitious values.

Library

The corresponding methods of the WWKS 2 library and its usage are presented for each message with examples in the C# language.

You will find general information on the library in section *WWKS 2 library*.

3 Technical basics of communication

3.1 WWKS2 via TCP

The default transport technology for WWKS2 communication between the PIS and the device is the TCP/IP protocol.

The IP address of the device in the pharmacy network is either assigned via DHCP or configured as a fixed address.

3.1.1 Server and client roles

Whether the device or the PIS acts as a server depends on the device class.

Device which are critical for pharmacy workflows like ASRS or devices to which a PIS wants to establish multiple connections, usually acts as server. Device which are in case of failure non-critical for the pharmacy workflows (e.g. screens) usually act as clients. PIS and device vendor may agree on different setups.

The default port for communication via WWKS 2 is 6050. Different port configurations should be configurable on both sides.

It is possible to connect several device to the PIS via only one socket connection. To distinguish different devices, the messages contain device ids that are unique within the pharmacy.

Multiple connections from the different components of the PIS to a device that acts as server are allowed. The device will broadcast all outgoing messages to all connected PIS components. Incoming requests will be answered just for the sending component, though. Differing details are described in the individual application cases.

3.1.2 TCP connection handling

Methods for securing the connection in unsafe environments are currently not part of the WWKS 2 specification.

The respective server waits for incoming requests from the client. The data connection is established exclusively by the client and remains active as long as the device and PIS are in operation. The connection is not opened and closed for every single operation. The client is responsible for re-establishing the connection immediately after an abort. If this fails, it will repeat the recovery attempt at regular intervals.

UTF8-encoded XML messages are exchanged in both directions via the connection.

After establishing the connection, the client sends a `HelloRequest` within five seconds. The server closes the connection if no `HelloRequest` is received within this period.

3.2   Device numbers

For communication via WWKS 2, each device that is connected to the pharmacy IT system (PIS) is uniquely identified by a device number.

The device number is configured in the device and communicated to the PIS during connection setup. The device manufacturer ensures that no two devices connected to the PIS via the same connection use the same number.

In each message and each request for a new use case, the initiator of the communication specifies its own device number as the `source` and the target device number as `destination`. In replies to these messages, the received `source` is returned as `destination` so that the receiver can route the response to the original message source. The own device number is entered as `source` in the reply.

Sub-components of a device can use their own device numbers in outgoing messages. They do not have to be listed explicitly in the HelloRequest, but then cannot be explicit recipients of messages from the PIS (except for replies to requests from the sub-component).

If a message is not addressed to a specific device, `destination` "0" is used.

The following device numbers and number ranges are defined:

Number	Device
0	Broadcast to all connected devices
100	PIS
101..199	Device of the PIS vendors (e.g. cash register).
200..999	Devices of other vendors connected to the PIS

4 WWKS 2 library

To aid programming of the WWKS 2 interface, Rowa provides a library as an API. The library is part of the WWKS2 SDK available for download at www.rowa.de/wwks2.

The programming language you use must be compatible with the .NET framework. The programming examples in this manual are written in C#, as is the library itself. To enable customization to specific needs, the source code is provided along with the library.

General information on programming

The central point of access is the class `RowaStorageSystem`. This implements the `IStorageSystem` interface, which provides a complete interface to a automated storage and retrieval system.

The `RowaStorageSystem` class corresponds to the interface to a Rowa system.

Instancing is implemented via the `new` operator, while clearing is implemented by the `Dispose` method:

```
IStorageSystem storageSystem = new RowaStorageSystem();
storageSystem.Dispose();
```

As `IStorageSystem` inherits from `IDisposable`, the instruction `using` can also be used in:
```
using (IStorageSystem storageSystem = new RowaStorageSystem())
{
// do your actions here
}
```

Use of the methods

The individual methods of the library are described in the *message reference* on the following pages. The methods are assigned to the XML messages to which they correspond. For each of the "lead" message elements described in the reference you will find a subsection headed *Library*, where the methods that support the desired message are listed.

Commentaried code examples demonstrate the possible procedure. Code add-ons from Visual Studio or other development environments will show the developer further elements and defined values.

The methods process the message pairs ...*Request* and ...*Response* mostly together.

Example: The `UpdateMasterArticles` method sends the *ArticleMasterSetRequest*, waits for the corresponding *ArticleMasterSetResponse* and evaluates it.

5 Data Types

Messages and data structures use these elemental data types:

Data type	Description
Tag	XML tag
String	Character string (corresponding to the data type *string* of the W3C specification for the XML scheme) The permissible value ranges are defined as follows: *#x9 | #xA | [#x20-#xD7FF] | [#xE000-#xFFFD] | [#x10000-#x10FFFF]* and each Unicode character apart from the surrogate blocks *FFFE* and *FFFF*, as specified in the standard ISO/IEC 10646. All control characters (e.g. *#x1D*) not specified in the ISO standard must be coded with *\x00*. The zeros represent the respective HEX code. Example: *\x1D.* These characters must be substituted: & by `&` < by `<` > by `>` " by `"` ' by `'`
String64	A `String` with a maximum length of 64 characters.
FormattedString	A `String` that may contain format information. `[br]` New line `[tab]` Indent `[u]` Start/end underline `[b]` Start/end bold text `[i]` Start/end italic text
Integer 32-bit	32-bit integer (corresponding to the data type *int* of the W3C specification for the XML scheme) This data type has a syntax comprising a sequence of integers (*#x30-#x39*). Thousands separators and decimal points are not allowed.

	The permitted value range covers the numbers between -2147483648 and 2147483647.
Integer 64-bit	64-bit integer (corresponding to the data type *long* of the W3C specification for the XML scheme) This data type has a syntax comprising a sequence of integers (*#x30-#x39*). Thousand separators and decimal points are not allowed. The permitted value range covers the numbers between -9223372036854775808 and 9223372036854775807.
Decimal	Decimal number with any precision (corresponds to the data type float in the W3C specification for the XML schema) with at least 18 significant digits. This data type has a lexical representation consisting of a sequence of integers (#x30-#x39). Thousands of points are not allowed, decimal points are allowed.
Boolean	One of the statements *True* or *False*. This is a deviation from standard XML which defines lower case values!
Date	Date in the format YYYY-MM-TT

In case an attribute of a message is defined as optional, and it is not sent in this message, the recipient uses a default value.

In some cases, the types described here are restricted if they are used in attributes (e.g., 32-bit integer > 0). This is noted at the relevant locations.

6 Message reference I – General messages

Mandatory and optional message elements

The messages descriptions contain only the mandatory and typically useful optional elements of the data structures with their special meaning in the context of the respective message. Additional elements can still always be sent with the message. The recipient will process these as far as possible and useful. If an expected optional element is not sent, the recipient should use the default value.

Example: Batch numbers (`Pack.BatchNumber`) should be included in the pack data structure whenever information about a pack is transmitted, if supported by the PIS/device and known for the pack. The receiver will process it, if supported and useful for the current workflow step. It will assume an empty batch number if it is not sent.

6.1   Message structure

Each message is embedded in the container element `WWKS`, which is constructed according to this scheme:

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
</WWKS>
```

The element `WWKS` encloses each individual message. All other elements of a message are sub elements of `WWKS`.

The attribute `TimeStamp` is a time stamp in extended UTC format (coordinated universal time). The timestamp is for information purpose only and might be used to determine clock differences when analyzing log files.

In each message, `WWKS` is followed by the "lead" element, which determines the message type.

Sample message :

```
<WWKS Version="2.0" TimeStamp="2018-01-02T11:14:01Z">
  <InputRequest Id="1002" Source="999" Destination="100">
    <Article>
      <Pack ScanCode="01479163"/>
    </Article>
  </InputRequest>
</WWKS>
```

In the example, the lead element `InputRequest` determines the message type: stock input request for a pack. `InputRequest` is followed by additional sub elements further specifying the input request.

6.2 Initialization

Device Support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead elements

HelloRequest

HelloResponse

Usage

When the TCP/IP connection between the pharmacy IT system and the automated storage and retrieval system has been established, the client sends the `HelloRequest` once to prepare for the further communications with the communication partner. The server responds with `HelloResponse`. This initializes the connection, readying it for the exchange of further messages.

`HelloRequest` and `HelloResponse` include by a list of supported WWKS capabilities. Both systems thereby indicate which WWKS functions they can process.

Optionally, a tenant identifier can be sent in the `HelloRequest`. This identifier is used to distinguish between individual pharmacy IT systems if an automated storage and retrieval system is addressed by several pharmacy IT system at once. All subsequent `Request` messages are then processed in the context of this tenant.

Sequence
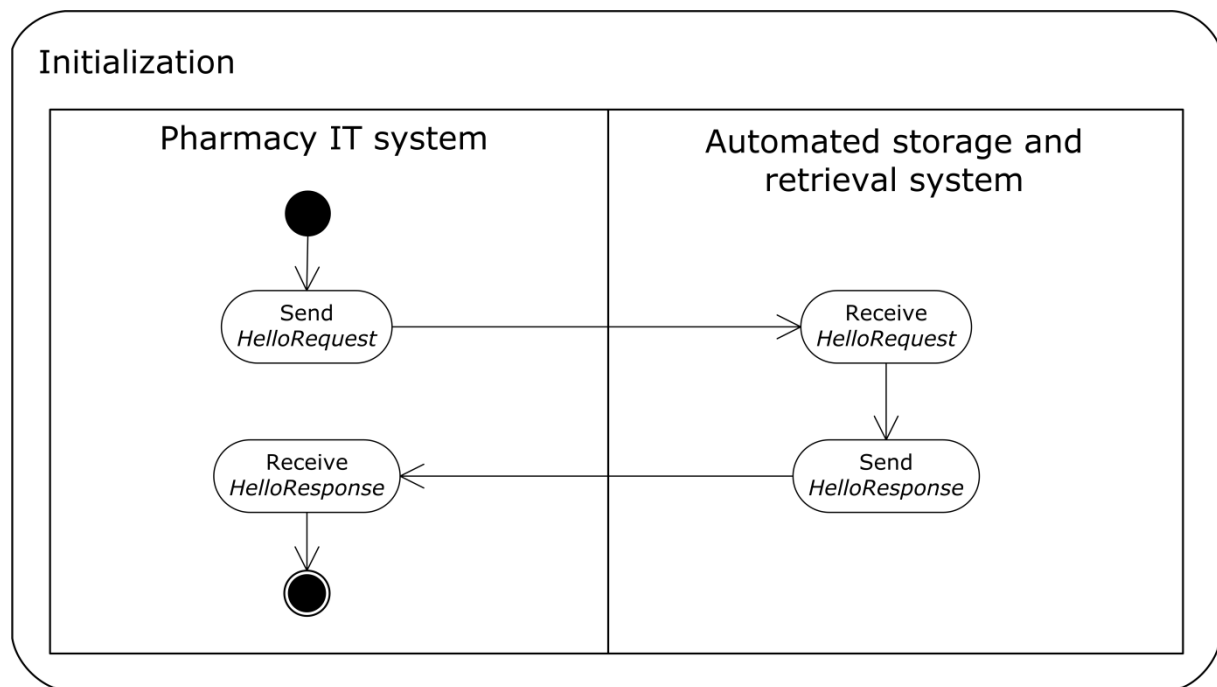
6.2.1 HelloRequest

Structure

```
<WWKS>
  <HelloRequest>
    <Subscriber>
      <Capability/>
    </Subscriber>
  </HelloRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
HelloRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	Message ID. This is returned in *HelloResponse*.

Element	M/O	Data type	Description
Subscriber	M	Tag	Identification of sender
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 32-bit >0	ID of the message sender (here the pharmacy IT system). The ID is used in all further messages to identify their senders and recipients. The ID of the pharmacy IT system is defined in the pharmacy IT system. Possible Values (see 5.3 Device Numbers): 100: PIS 101..199: PIS device (e.g. cash register) 200..999: Device of another vendor
Type	M	String	Type of sending system. Possible values: "IMS": Pharmacy IT system (PIS), „POS": Cash register, "Robot": ASRS, „Pickup": Pick-up terminal, „SelfCheckOut": Self-Service cash register, „OrderTerminal": Order terminal, „OTCDisplay": Digital shelf for OTC products, „SelfServiceDisplay": Self-service digital shelf, „InformationDisplay": Information display.
Manufacturer	M	String	Name of the manufacturer of the sending system
ProductInfo	M	String	Product name of the sending system
VersionInfo	M	String	Product version number of the sending system
DeviceName	O	String	Human readable name of the device that allows to identify it within the pharmacy (e.g. „Cash register 3")

TenantId	O	String	Tenant identifier. Default value is "".

Element	M/O	Data type	Description
Capability	O	Tag	List of supported WWKS 2 functions. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Name	M	String	Name of supported WWKS 2+ - capability. Possible values: "KeepAlive" "Status" "Input" "InitiateInput" "ArticleMaster" "StockDelivery" "StockInfo" "Output" "TaskInfo" "TaskCancel" "Configuration" "StockLocationInfo" "InfeedInput"

Example

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <HelloRequest Id="1001">
    <Subscriber Id="100" Type="IMS" Manufacturer="IT-SysProvider"
                ProductInfo="PharmaProg 2013" VersionInfo="1.4.0"
                TenantId="XAB12345">
      <Capability Name="KeepAlive"/>
      <Capability Name="Status"/>
      <Capability Name="Input"/>
      <Capability Name="InitiateInput"/>
      <Capability Name="ArticleMaster"/>
      <Capability Name="StockDelivery"/>
      <Capability Name="StockInfo"/>
      <Capability Name="Output"/>
      <Capability Name="TaskInfo"/>
      <Capability Name="TaskCancel"/>
      <Capability Name="Configuration"/>
      <Capability Name="StockLocationInfo"/>
    </Subscriber>
  </HelloRequest>
</WWKS>
```

Library

TCP/IP connection setup, including initial sending of the `HelloRequest` and receiving of the `HelloResponse` is implemented by the `Connect` method. A mandatory operator is the computer name, or IP address, of the Rowa system. This automatically connects to port 6050. Example:

```
storageSystem.Connect("192.168.64.6");
```

If an alternative port is specified (here 6053), the connection would look like this:

```
storageSystem.Connect("192.168.64.6", 6053);
```

6.2.2 HelloResponse

Structure

```xml
<WWKS>
  <HelloResponse>
    <Subscriber>
      <Capability/>
    </Subscriber>
  </HelloResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
HelloResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID sent in the *HelloRequest*

Element	M/O	Data type	Description
Subscriber	M	Tag	Identification of sender
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 32-bit >0	ID of the message sender (here the pharmacy IT system). The ID is used in all further messages to identify their senders and recipients. The ID of the pharmacy IT system is defined in the pharmacy IT system.

			Possible Values (see 3.2 Device numbers):
			100: PIS
			101..199: PIS device (e.g. cash register)
			200..999: Device of another vendor
Type	M	String	Type of sending system.
			Possible values:
			"IMS": Pharmacy IT system (PIS),
			„POS": Cash register,
			"Robot": ASRS, picking robot,
			„Pickup": Pick-up terminal,
			„SelfCheckOut": Self-Service cash register,
			„OrderTerminal": Order terminal,
			„OTCDisplay": Digital shelf for OTC products,
			„SelfServiceDisplay": Self-service digital shelf,
			„InformationDisplay": Information display.
Manufacturer	M	String	Name of the manufacturer of the sending system
ProductInfo	M	String	Product name of the sending system
VersionInfo	M	String	Product version number of the sending system
DeviceName	O	String	Human readable name of the device that allows to identify it within the pharmacy (e.g. „Cash register 3")
TenantId	O	String	Tenant identifier. Default value is "".

Element	M/O	Data type	Description
Capability	O	Tag	List of supported WWKS 2 functions. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Name	M	String	Name of the supported WWKS2 function:

			Possible values: "KeepAlive" "Status" "Input" "InitiateInput" "ArticleMaster" "StockDelivery" "StockInfo" "Output" "TaskInfo" "TaskCancel" "Configuration" "StockLocationInfo" "InfeedInput"

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <HelloResponse Id="1001">
    <Subscriber Id="999" Type="Robot" Manufacturer="BD Rowa Germany
               GmbH" ProductInfo="Mosaic" VersionInfo="2.0.1">
      <Capability Name="KeepAlive"/>
      <Capability Name="Status"/>
      <Capability Name="Input"/>
      <Capability Name="InitiateInput"/>
      <Capability Name="ArticleMaster"/>
      <Capability Name="StockDelivery"/>
      <Capability Name="StockInfo"/>
      <Capability Name="Output"/>
      <Capability Name="TaskInfo"/>
      <Capability Name="TaskCancel"/>
      <Capability Name="Configuration"/>
      <Capability Name="StockLocationInfo"/>
    </Subscriber>
  </HelloResponse>
</WWKS>
```

Library

See *HelloRequest*.

6.3   Keep alive

Device Support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead elements

KeepAliveRequest

KeepAliveResponse

Usage

A `Keepalive` request can be sent at any time by both systems to check whether the transport channel underlying the connection is still active. This may be useful under the following conditions:

- When the transport channel is potentially unstable (such as with UMTS, GPRS).
- When the network infrastructure being used comprises many active components (e.g. managed switches, routers) and it may be that one of the components has cut the connection.

Sequence
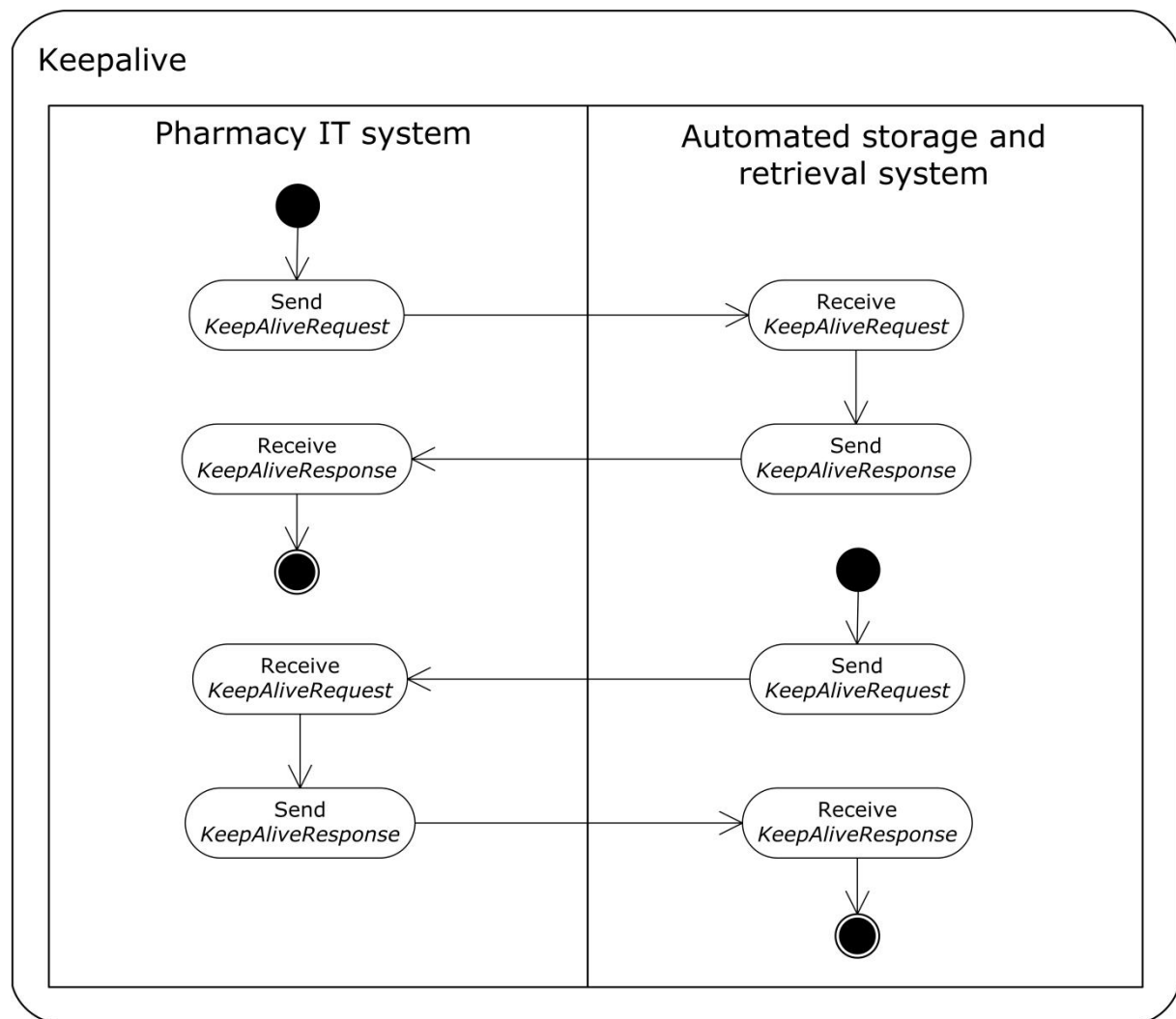
6.3.1 KeepAliveRequest

Structure

```
<WWKS>
  <KeepAliveRequest/>
</WWKS>
```

Elements

Element	M/O	Data type	Description
KeepAliveRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	Message ID. This is returned in the *KeepAliveResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *KeepAliveRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *KeepAliveRequest*

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <KeepAliveRequest Id="1003" Source="100" Destination="999"/>
</WWKS>
```

Library

The library responds automatically and transparently to every `KeepAliveRequest` from the automated storage and retrieval system.
The library does not currently support a `KeepAliveRequest` from the pharmacy IT system.

6.3.2 KeepAliveResponse

Structure

```
<WWKS>
  <KeepAliveResponse/>
</WWKS>
```

Elements

Element	M/O	Data type	Description
KeepAliveResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	Message ID. This is the same as the one sent in the *KeepAliveResponse* message.
Source	M	Integer 32-bit >0	ID of the system sending the *KeepAliveResponse*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *KeepAliveResponse*

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <KeepAliveResponse Id="1003" Source="999" Destination="100"/>
</WWKS>
```

Library

The library responds automatically and transparently to every `KeepAliveRequest` from the automated storage and retrieval system.
The library does not currently support a `KeepAliveRequest` from the pharmacy IT system.

6.4 Unknown messages

Device Support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead elements

UnprocessedMessage

Usage

If PIS or device receive a message, they cannot understand or process, they may tell the other side about this fact by sending an `UnprocessedMessage`.

The receiver of this message should not process it automatically except writing it into a log file. This log might help analyzing issues when developing the interface integration.

Sequence
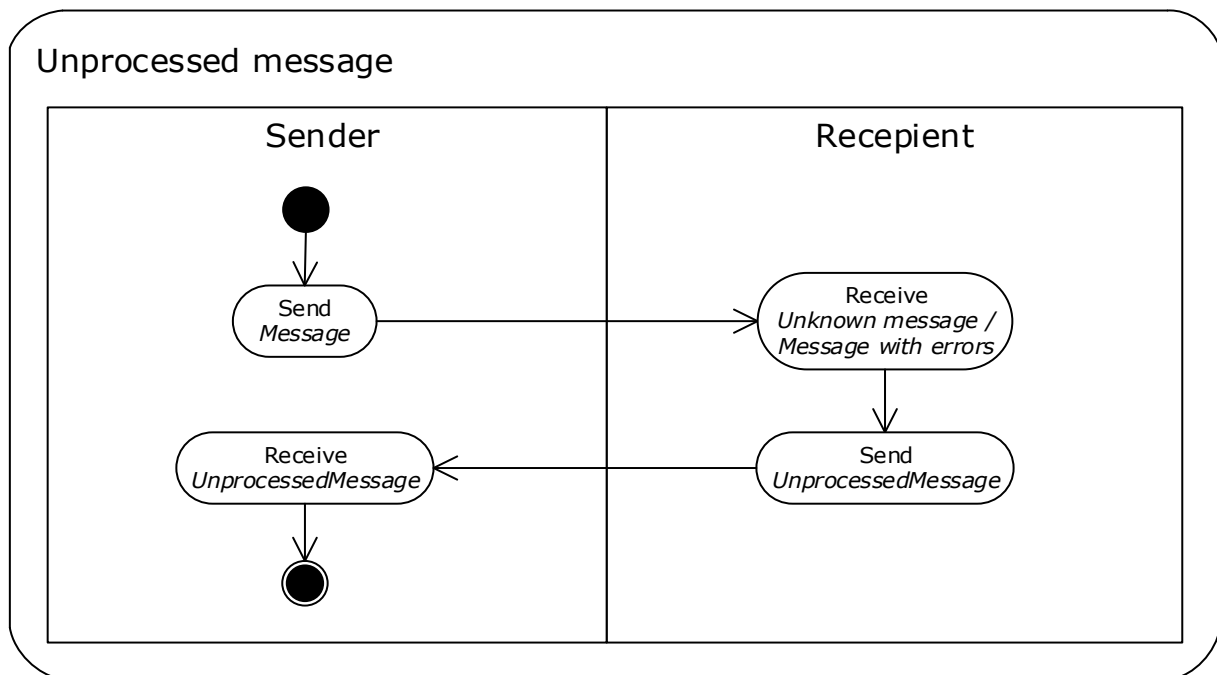
6.4.1 UnprocessedMessage

Structure

```
<WWKS>
  <UnprocessedMessage/>
</WWKS>
```

Elements

Element	M/O	Data type	Description
UnprocessedMessage	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and values**
Id	M	String64	ID of the message.
Source	M	Integer 32-bit >0	ID of the system component that sends the message.
Destination	P	Integer 32-bit >0	ID of the message destination system component
Reason	O	String	Reason of non-processing the original message. Possible values: "SyntaxError": Invalid XML or other syntactical errors "NotSupported": Receiver does not support this message type. "DataError": Receiver expected additional attributes in the message or received unknown data it was not able to handle. Used only if no specific Response is defined to handle this error. "TooManyRequests": Receiver has received too many messages in a short period of time and is not able to handle this big number of messages. The sender should reduce the number of messages.
Text	O	String	Human readable text with additional hints to reason.

Element	M/O	Data type	Description
Message	M	Tag	Information of received but unprocessed message. The message content is embedded as CDATA XML into this element.
Id	O	String64	ID of received message, if detected.

Example

```
<WWKS Version="2.0" TimeStamp="2018-03-14T11:14:01Z">
  <UnprocessedMessage Id="3335" Source="100" Destination="999"
                      Reason="SyntaxError" Text="Missing WWKS tag">
    <Message>
      <![CDATA[
        <WWX Version="2.0" TimeStamp="2018-03-14T11:14:00Z">
          <InputRequest Id="1002" Source="999" Destination="100">
            <Article>
              <Pack ScanCode="12156894"/>
            </Article>
          </InputRequest>
        </WWX>
      ]]>
    </Message>
  </UnprocessedMessage>
</WWKS>

<WWKS Version="2.0" TimeStamp="2018-03-14T12:14:01Z">
  <UnprocessedMessage Id="3336" Source="100" Destination="999"
                Reason="NotSupported" Text="Unknown Message ArticlePriceRequest">
    <Message Id="1101">
      <![CDATA[
        <WWKS Version="2.0" TimeStamp="2018-03-14T12:14:00Z">
          <ArticlePriceRequest Id="1101" Source="100" Destination="999"
                               Currency="EUR">
            <Article Id="Article-1234"/>
          </ArticlePriceRequest>
        </WWKS>
      ]]>
    </Message>
  </UnprocessedMessage>
</WWKS>
```

Library

The library sends an `UnprocessedMessage` in case it receives a message it cannot process. It logs all received `UnprocessedMessage`.

7 Message reference II – Article data

7.1 Master data

Device Support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead elements

ArticleMasterSetRequest

ArticleMasterSetResponse

Usage

Technical restrictions (such as a slow data connection between the pharmacy IT system and automated storage and retrieval system or long response times) might mean that the pharmacy IT system cannot monitor the stock input process in real time. In such cases, the pharmacy IT can send the automated storage and retrieval system all the data relating to articles capable of being placed into stock in advance. The automated storage and retrieval system then executes the stock input without referring back to the pharmacy IT system.

The `ArticleMasterSetRequest` contains the descriptions of all articles which can be placed into stock without a stock delivery number. This is applicable primarily for stock returns which might possibly already have been stored in the system.
An article master already existing in the automated storage and retrieval system is completely overwritten. It is also possible to send the `ArticleMasterSetRequest` with a blank article list, so as to reset the automated storage and retrieval system's article master.

Sequence
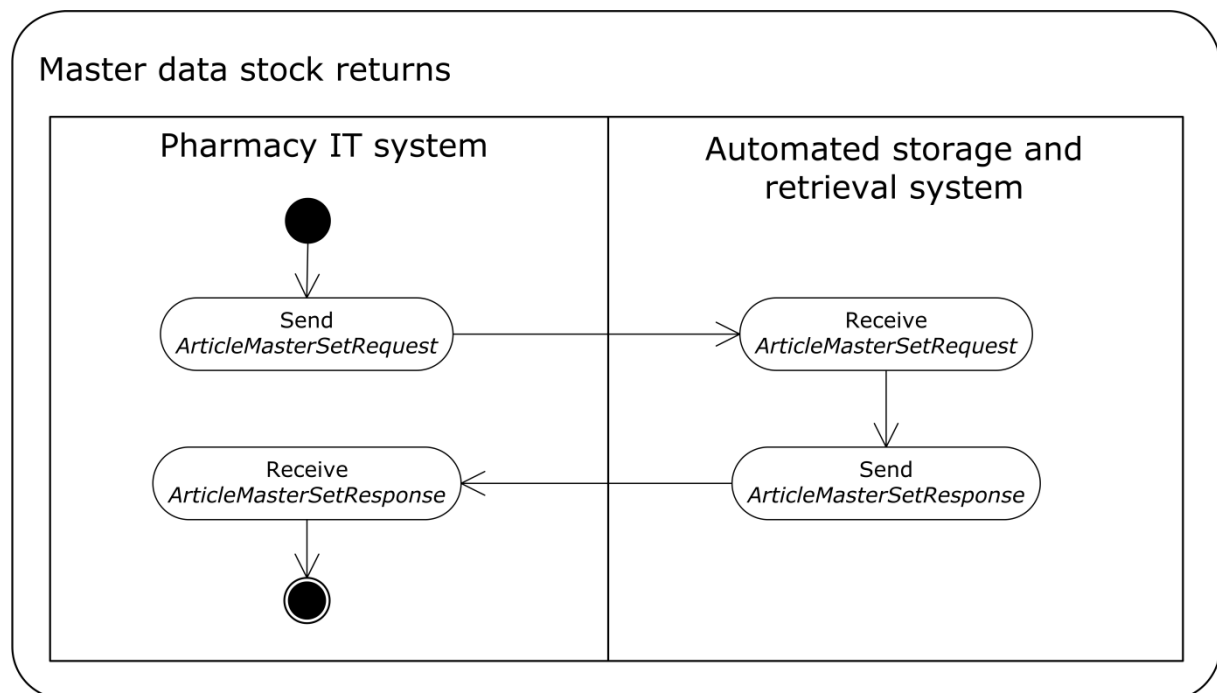
7.1.1 ArticleMasterSetRequest

Structure

```
<WWKS>
  <ArticleMasterSetRequest>
    <Article>
        <ProductCode/>
    </Article>
  </ArticleMasterSetRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
ArticleMasterSetRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	O	String	ID of the master data process. This ID is returned in the *ArticleMasterSetResponse*.
Source	O	Integer 32-bit >0	ID of the system sending the *ArticleMasterSetRequest*

| Destination | O | Integer 32-bit >0 | ID of the system intended to receive the *ArticleMasterSetRequest* |

Element	M/O	Data type	Description
Article	O	Tag	Article information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article. This may be the original barcode of the article or a derivative of it. The pharmacy IT system specifies how the article ID is composed. If the ID is a custom composition, the automated storage and retrieval system must be able to autonomously break the pack barcodes down into the relevant form.
Name	O	String	Name of the article
DosageForm	O	String	Dosage form of the article
PackingUnit	O	String	Packaging unit of the article
RequiresFridge	O	Boolean	Flag indicating whether the article has to be stored refrigerated ("True"). The default value is "False".
MaxSubItemQuantity	O	Integer 32-bit >0	Maximum number of units (e.g. pills or ampules) which might be contained in a full pack of the article. The value "0" means that the number of units is unknown.
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system that has to be used for packs of this article. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine that has to store packs of this article. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Element	M/O	Data type	Description
ProductCode	O	Tag	Information about alternative article identification code follow. Each product code and the article may be used to identify an article. May appear multiple times.

Attribute	M/O	Data type	Description and values
Code	M	String64	Additional product code of the article. May be used to identify the article when scanning a pack. Cannot be used to request device actions on the article, e.g. dispensing from a picking robot.

All further attributes and sub-elements of the article data type are valid in this message as well.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <ArticleMasterSetRequest Id="1003" Source="100" Destination="999">
    <Article Id="0004-56-034-G00007T" Name="ACCU CHEK AVIVA"
            DosageForm="LOE" PackagingUnit="1X2.5 ML" RequiresFridge="False"/>
    <Article Id="06810645" Name="Elmex Sensitive Professional" DosageForm="ZPA"
PackagingUnit="1">
      <ProductCode Code="4150068106452" />
      <ProductCode Code="8714789994055" />
    </Article>
  </ArticleMasterSetRequest>
</WWKS>
```

Library

If a pharmacy IT system is not permanently connected to the automated storage and retrieval system or does not respond directly to stock input requests for other reasons, the pharmacy IT system can define an article master with which the automated storage and retrieval system then works autonomously.

The `CreateMasterArticle` method is used to define new master articles. These are collated in a list and then transferred to the automated storage and retrieval system by the `UpdateMasterArticles` method:

```
var masterArticleList = new List<IMasterArticle>();

masterArticleList.Add(storageSystem.CreateMasterArticle("47463736",
"Article Number 1", "Dosage Form", "Packaging Unit"));

masterArticleList.Add(storageSystem.CreateMasterArticle("78695739", "Article Number
2", "Dosage Form", "Packaging Unit"));

storageSystem.UpdateMasterArticles(masterArticleList);
```

7.1.2   ArticleMasterSetResponse

Structure

```
<WWKS>
  <ArticleMasterSetResponse>
    <SetResult/>
  </ArticleMasterSetResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
ArticleMasterSetResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the master data process. This ID was sent in the *ArticleMasterSetRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *ArticleMasterSetResponse*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *ArticleMasterSetResponse*

Element	M/O	Data type	Description
SetResult	M	Tag	Result follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Value	M	String	Displays the result of the master data process. Possible values: "Accepted" if the articles were accepted as a master article "Rejected" if the articles were not accepted as a master article.
Text	O	String	Any text for debugging and logging information. Can be used here for detailed error messages if the articles were not accepted.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <ArticleMasterSetResponse Id="1003" Source="999" Destination="100">
    <SetResult Value="Accepted" Text="Master Articles accepted."/>
  </ArticleMasterSetResponse>
</WWKS>
```

Library

See *ArticleMasterSetRequest*.

7.2 Good receipt

Device Support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead elements

StockDeliverySetRequest

StockDeliverySetResponse

StockDeliveryInfoRequest

StockDeliveryInfoResponse

Usage

In case technical limitation do not allow the pharmacy IT system to check goods receipt as part of the input workflow in real time, the automated storage and retrieval system may take over this task.

The PIS sends data about expected deliveries in advance and the picking robot uses them to check if a pack scanned for input is expected for the delivery.

The `StockDeliverySetRequest` contains all the data relating to one or more stock deliveries – that is to say, descriptions of all the articles which may be placed into stock under a specific stock delivery number.
The stock deliveries predefined in the automated storage and retrieval system are not overwritten; the newly defined stock deliveries are added to them.

The PIS may query at any time the current state of the delivery using the `StockDeliveryInfoRequest`.

Articles in the StockDeliverySetRequest must be part of the last ArticleMasterSetRequest sent. Otherwise, the Delivery will be rejected.

Sequence
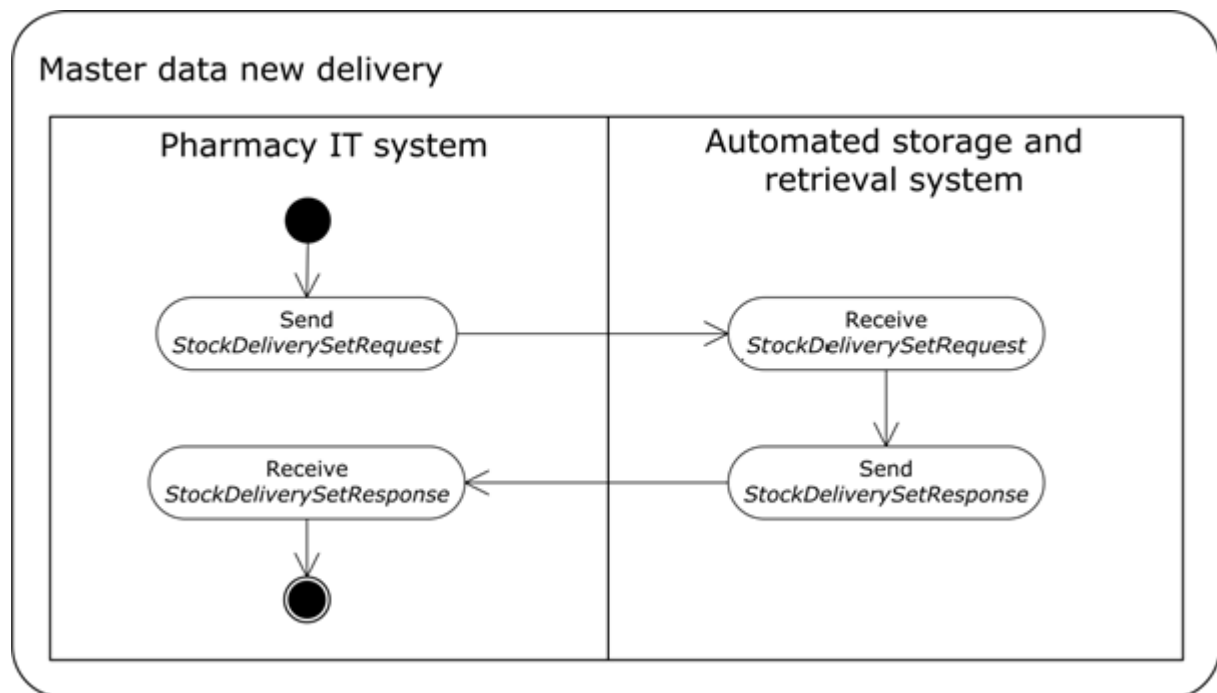
7.2.1 StockDeliverySetRequest

Structure

```
<WWKS>
  <StockDeliverySetRequest>
    <StockDelivery>
      <Article/>
    </StockDelivery>
  </StockDeliverySetRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockDeliverySetRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock delivery process. This ID is returned in the *StockDeliverySetResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockDeliverySetRequest*

Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StockDeliverySetRequest*

Element	M/O	Data type	Description
StockDelivery	M	Tag	Stock delivery information follows. This element can be used multiple times.
DeliveryNumber	M	String	ID of the stock delivery. This must be a unique number within all active or pending stock deliveries. This number is used by the automated storage and retrieval system to assign packs placed into stock to a stock delivery.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article as defined in ArticleMasterSetRequest or InputResponse. The barcode of the pack is not a valid value here.
ProductCode	O	String	(Article identifying part) of the barcode that has to be scanned to match the pack with this line. Other barcodes that match the same ArticleId will not match to this line if a value is given. If ProductCode is empty, all barcodes matching the ArticleId will be accepted.
Name	O	String	*Deprecated.* *It is not possible to set the name of an article in the StockDeliverySetRequest.*
DosageForm	O	String	*Deprecated.* *It is not possible to set the dosage form of an article in the StockDeliverySetRequest.*
PackingUnit	O	String	*Deprecated.*

			It is not possible to set the packaging unit of an article in the StockDeliverySetRequest.
RequiresFridge	O	Boolean	Flag indicating whether the article has to be stored refrigerated ("True"). The default value is "False".
BatchNumber	O	String	Batch number which must be assigned to the packs of the article in this stock delivery. Input of packs with different batch numbers are rejected. If no batch number is known at the time of input, the value of this attribute is assigned to the pack.
ExternalId	O	String	External ID which must be assigned to the packs of the article in this stock delivery
ExpiryDate	O	String	Expiry date in format YYYY-MM-DD which must be assigned to the packs of the article in this stock delivery. Input of packs with different expiry dates is rejected. If no expiry date is known at the time of input the value of this attribute is assigned to the pack.
MaxSubItemQuantity	O	Integer 32-bit >=0	*Deprecated.* *It is not possible to set the MaxSubItemQuantity of an article in the StockDeliverySetRequest.*
Quantity	O	Integer 32-bit >=0	Maximum number of packs of this article which may be placed into stock in this stock delivery. The value "0" means there is no limitation. The default value is "0".
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system that has use for packs of this article. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockDeliverySetRequest Id="1003" Source="100" Destination="999">
    <StockDelivery DeliveryNumber="1234">
      <Article Id="0004-56-034-G00007T" Quantity="15"/>
      <Article Id="0004-24-085-G0060R11" ProductCode="08000301" Quantity="15"/>
      <Article Id="0004-24-085-G0060R11" ProductCode="08000318"
```

```
                BatchNumber=" BN123" ExternalId="XT11725"
                ExpiryDate=" 2023-12-31" Quantity="5"/>
     </StockDelivery>
   </StockDeliverySetRequest>
</WWKS>
```

Library

If a pharmacy IT system is not permanently connected to the automated storage and retrieval system, or does not respond directly to stock input requests for other reasons, the pharmacy IT system can define stock deliveries with which the automated storage and retrieval system then works autonomously. Stock deliveries are created with the `CreateStockDelivery` method. Then the `AddItem` method is used to specify the articles in each stock delivery allowed to be placed into stock. Finally, the `AddStockDeliveries` method is used to transfer the stock delivery definitions to the automated storage and retrieval system.

```
var stockDeliveryList = new List<IStockDelivery>();

var stockDelivery = storageSystem.CreateStockDelivery("1234");
stockDelivery.AddItem("0004-24-085-G0060R11", // ArticleId
                "08000301", // ProductCode
                "Article Name 1",
                "Dosage Form",
                "Packaging Unit");

stockDelivery.AddItem("0004-56-034-G00007T", // ArticleId
                "", // no ProductCode defined
                "Article Name 2",
                "Dosage Form",
                "Packaging Unit");

stockDeliveryList.Add(stockDelivery);

var stockDelivery2 = storageSystem.CreateStockDelivery("5132");
stockDelivery2.AddItem("68575484",
                "",
                "Article Name 3",
                "Dosage Form",
                "Packaging Unit",
                false,  // RequiresFridge
                0,  // MaxSubItemQty
                "BA1234",  // BatchNumber
                "2029-12-31",  // ExpiryDate
                "",  // ExternalId
                10,  // Quantity
                "",  // StockLocationId
                "",  // MachineLocation);

stockDelivery2.AddItem("69574362",
                "",
```

```
                    "Article Number 4",
                    "Dosage Form",
                    "Packaging Unit");

stockDeliveryList.Add(stockDelivery2);
storageSystem.AddStockDeliveries(stockDeliveryList);
```

7.2.2 StockDeliverySetResponse

Structure

```xml
<WWKS>
  <StockDeliverySetResponse>
    <SetResult/>
  </StockDeliverySetResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockDeliverySetResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock delivery process. This ID was sent in the *StockDeliverySetRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockDeliverySetResponse*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StockDeliverySetResponse*

Element	M/O	Data type	Description
SetResult	M	Tag	Result follows.

Attributes	M/O	Data type	Description and Values
Value	M	String	Displays the result of the stock delivery process. Possible values: "Accepted" if the predefined stock deliveries were accepted "Rejected" if the predefined stock deliveries were not accepted
Text	O	String	Any text for debugging and logging information. Can be used here for detailed error messages if the stock deliveries were not accepted.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockDeliverySetResponse Id="1003" Source="999" Destination="100">
    <SetResult Value="Accepted" Text="Stock Delivery accepted."/>
  </StockDeliverySetResponse>
</WWKS>
```

Library

See *StockDeliverySetRequest*.

7.2.3 StockDeliveryInfoRequest

Structure

```
<WWKS>
  < StockDeliveryInfoRequest>
    <Task/>
  </StockDeliveryInfoRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockDeliveryInfoRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the information process. This ID is returned in the *TaskInfoResponse*.

Source	M	Integer 32-bit >0	ID of the system sending the *TaskInfoRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *TaskInfoRequest*
IncludeTaskDetails	O	Boolean	This flag specifies whether detailed task information like outputted packs, etc. are to be returned. Possible values: "True" if details of the tasks are to be sent "False" if no task data is to be sent The default value is "False".

Element	M/O	Data type	Description
Task		Tag	Task information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the task, this is the DeliveryNumber specified in the *StockDeliverySetRequest*.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockDeliveryInfoRequest Id="3330" Source="100" Destination="999">
    <Task Id="1004"/>
  </StockDeliveryInfoRequest>
</WWKS>
```

Library

Detailed information on a running or an already completed new delivery can be checked via the GetStockDeliveryInfo method.

```
// retrieve the detailed information of stock delivery 1234
// delivery number as string
IStockDeliveryInfo info = storageSystem.GetStockDeliveryInfo("1234");
```

7.2.4 StockDeliveryInfoResponse

Structure

```
<WWKS>
  <StockDeliveryInfoResponse>
    <Task>
      <Article>
        <Pack/>
      </Article>
      <Box/>
    </Task>
  </StockDeliveryInfoResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockDeliveryInfoResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the information process. This ID was sent in the *StockDeliveryInfoRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockDeliveryInfoRequest*.
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StockDeliveryInfoResponse*.

Element	M/O	Data type	Description
Task	M	Tag	Task information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the task, this is the DeliveryNumber specified in the *StockDeliverySetRequest*.
Status	M	String	Status of the task. Possible values: "Unknown" if the task was not found "Queued" if processing is pending "InProcess" if currently being processed "Aborting" if the process is currently being aborted "Aborted" if processing has been aborted "Completed" if the task is complete

			"Incomplete" if the task was not completed fully

Element	M/O	Data type	Description
Article	O	Tag	Article information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	O	String	Article ID of the affected pack
Quantity	O	Integer 32-bit >=0	This data is only used for the "StockDelivery" task type. Maximum number of packs of this article which may be placed into stock in this stock delivery. The value "0" means there is no limitation. The default value is "0".

Element	M/O	Data type	Description
Pack	O	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 64-bit >0	Picking system internal ID of the affected pack
DeliveryNumber	O	String	Stock delivery number of the affected pack
BatchNumber	O	String	Batch number of the affected pack
ExternalId	O	String	External ID of the affected pack
ExpiryDate	O	String	Expiration date of the affected pack in format YYYY-MM-DD.
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values:

			Unknown: Source unknown (default value)
			AutoCalculated: Calculated by the robot from the input date
			ManualEntry: User has entered the expiry date manually
			ITSystem: Defined by IT System
			OCR: Expiry date printed on pack read by optical character recognition
			Barcode: Expiry has been extracted from a data matrix code
			Infeed: Defined by ITSystem sending an InfeedInputRequest
ScanCode	O	String	Barcode of the output pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) in the affected pack. The value "0" means that the pack is full.
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. Possible values: "Cuboid" "Cylinder" The default value is "Cuboid".
IsInFridge	O	Boolean	Flag indicating whether the pack has been or is being stored refrigerated. The default value is "False".
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval

			system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine that was or will be used to store packs of this article. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Example without details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockDeliveryInfoResponse Id="3330" Source="999" Destination="100">
    <Task Id="1234" Status="InProcess"/>
  </StockDeliveryInfoResponse>
</WWKS>
```

Example with details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockDeliveryInfoResponse Id="3330" Source="999" Destination="100">
    <Task Id="1234" Status="Completed">
      <Article Id="0004-56-034-G00025T" Quantity="1">
        <Pack Id="5637" DeliveryNumber="1234" BatchNumber="Omepra0004"
              ExternalId="PalH09051200001" ExpiryDate="2015-11-05"
              Depth="50" Width="50" Height="50" Shape="Cuboid" />
      </Article>
    </Task>
  </StockDeliveryInfoResponse >
</WWKS>
```

Library

See StockDeliveryInfoRequest.

7.3 Article Information

Lead elements

ArticleInfoRequest

ArticleInfoResponse

Usage

ArticleInfoRequest can be used to request basic information on any article from the pharmacy IT system at any time. The pharmacy IT system responds with a corresponding *ArticleInfoResponse*.

Article information request sequence
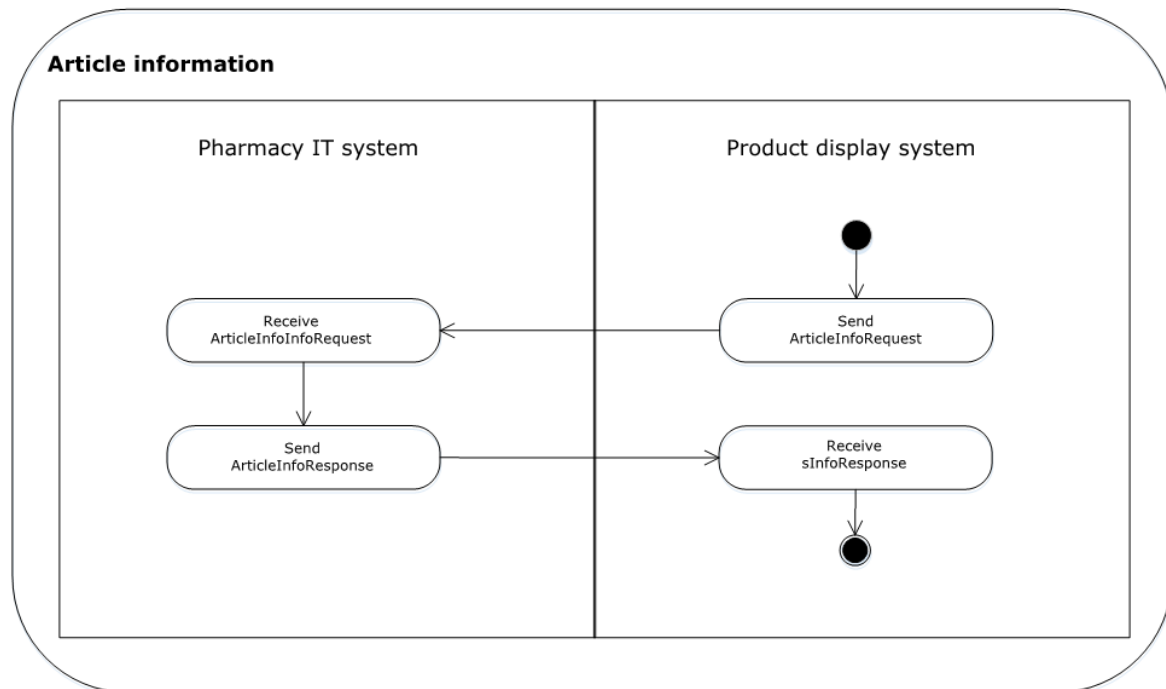
Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Not supported

7.3.1 ArticleInfoRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Not supported

Structure

```
<WWKS>
  <ArticleInfoRequest>
    <Article/>
  </ArticleInfoRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description

Rowa® Technologies

ArticleInfoRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article information request. This ID is returned in the *ArticleInfoResponse* message.
Source	M	Integer 32-bit >0	ID of the system sending the *ArticleInfoRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *ArticleInfoRequest*

Element	**M/O**	**Data type**	**Description**
Article	M	Tag	Article information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <ArticleInfoRequest Id="1100" Source="100" Destination="999">
    <Article Id="Article-1234"/>
  </ArticleInfoRequest>
</WWKS>
```

Library

Not supported for Automated Storage and Retrieval Systems.

7.3.2 ArticleInfoResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Not supported
Digital OTC Shelf	Rowa Vmotion	Supported
Pick-up Terminal	Rowa Vpoint Pick-up	Not supported
Self-checkout	Rowa Self-Checkout	Supported, deprecated.

Structure

```
<WWKS>
  <ArticleInfoResponse>
    <Article>
      <Tag/>
    </Article>
  </ArticleInfoResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
ArticleInfoResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article information request. This ID was sent in the *ArticleInfoRequest* message.
Source	M	Integer 32-bit >0	ID of the system sending the *ArticleInfoResponse.*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *ArticleInfoResponse* message.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element may occur multiply.

Attributes	M/O	Data type	Description and Values
Id	M	String	ID of the article.
Name	O	String	Name of article.
DosageForm	O	String	Dosage form of the article.
PackingUnit	O	String	Packaging unit of the article.
MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which might be contained in a full pack of the article. The value "0" means that the number of units is unknown.

Element	M/O	Data type	Description
Tag	O	Tag	Article tag follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Value	M	String	The value of the Tag. Samples: "Discrete" or "Profit"

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <ArticleInfoResponse Id="1100" Source="999" Destination="100">
    <Article Id="1111" Name="Article-1111" MaxSubItemQuantity="100">
      <Tag Value="Discrete"/>
    </Article>
  </ArticleInfoResponse>
</WWKS>
```

8 Message reference III – Automated storage and retrieval system

8.1 System state

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead Elements

StatusRequest

StatusResponse

Usage

StatusRequest is used to identify the status of the automated storage and retrieval system. In its response, the automated storage and retrieval system indicates whether it is ready for operation and able to execute tasks. This message can be sent as often as desired.

Sequence
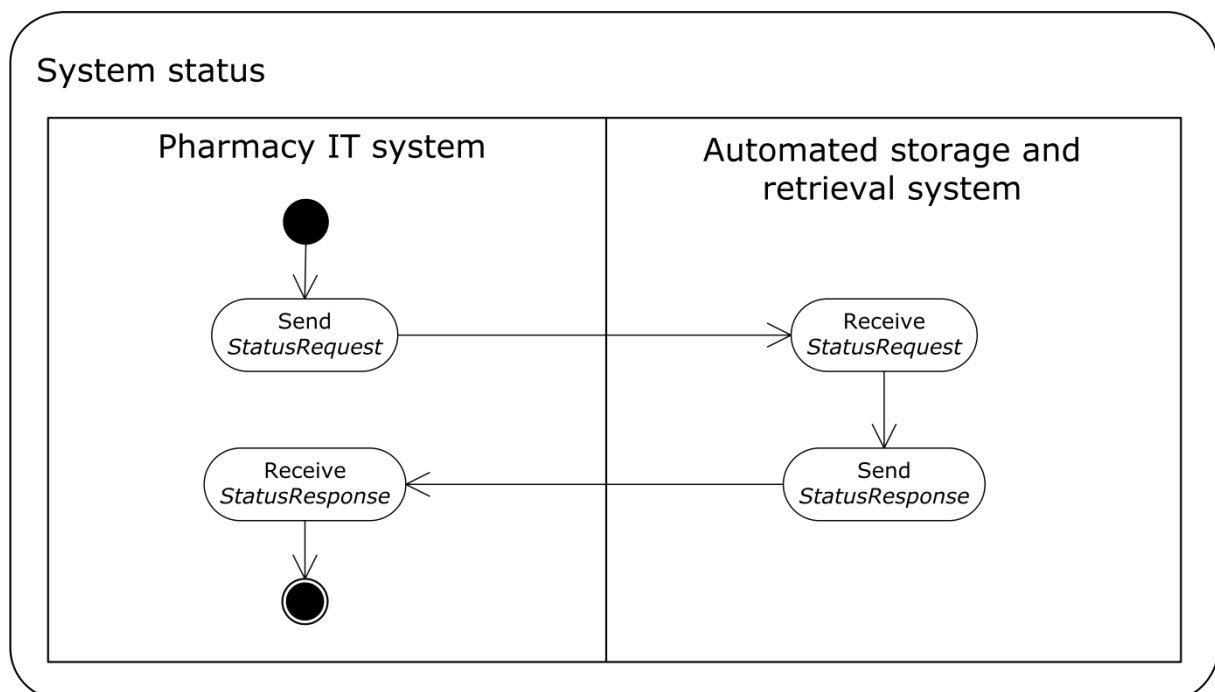
8.1.1 StatusRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <StatusRequest/>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StatusRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	Message ID. This is returned in the *StatusResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *StatusRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StatusRequest*
IncludeDetails	O	Boolean	Optional data, indicates whether the StatusResponse is intended to contain component information. The default value is "False".

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StatusRequest Id="1003" Source="100" Destination="999"/>
</WWKS>
```

Library

The current status of the automated storage and retrieval system can be polled at any time by way of the State attribute:

```
StorageSystemState state = storageSystem.State;
```

When polling the status, the library sends a *StatusRequest*, waits for the corresponding *StatusResponse* and evaluates it.

If automatic notification of state changes is required, the user can register for the `StateChanged` event:

```
storageSystem.StateChanged += StorageSystem_StateChanged;
void StorageSystem_StateChanged(IStorageSystem sender, StorageSystemState state)
{
        Console.WriteLine("Storage system changed state to '{0}'.",
                        state.ToString());
}
```

8.1.2 StatusResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <StatusResponse>
      <Component/>
  </StatusResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StatusResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the status request sent in *StatusRequest*
Source	M	Integer 32-bit >0	ID of the system sending the *StatusResponse*
Destination	M	Integer 32-bit >0	Corresponds to the value of Source in the *StatusRequest*.
State	M	String	Designates the current status of the automated storage and retrieval system. Possible values:

			"Ready" "NotReady"
StateText	O	String	Any text for debugging and logging information

Element	M/O	Data type	Description
Component	O	Tag	Component information follows. This element may occur multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Type	M	String	Type of component. Possible values: "StorageSystem" "BoxSystem"
Description	M	String	Component description. This text can be displayed on program interfaces.
State	M	String	Designates the current status of the component. Possible values: "Ready" "NotReady"
State Text	O	String	Any text for debugging and logging information

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StatusResponse Id="1003" Source="999" Destination="100" State="NotReady">
      <Component Type="StorageSystem" Description="Vmax 1" State="Ready"/>
      <Component Type="StorageSystem" Description="Vmax 2" State="Ready"/>
      <Component Type="BoxSystem" Description="Box System" State="NotReady"
                StateText="Box system plc is turned off."/>
  </StatusResponse>
</WWKS>
```

Library

See `StatusRequest`.

8.2 Stock query and pack detail update

8.2.1 Stock query

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead Elements

StockInfoRequest

StockInfoResponse

Usage

To poll the current stock level in the automated storage and retrieval system, the pharmacy IT system can send the *StockInfoRequest*. The automated storage and retrieval system will respond with *StockInfoResponse*.

The prompt can be constrained by filters. If filters are set, the automated storage and retrieval system's response only contains articles and packs matching the set criteria. If no filters are defined, the full inventory is listed.

If there is no stock in the automated storage in retrieval system or if there are no articles corresponding to the filters defined in the search, the content of the *StockInfoResponse* message is empty (contains no *Article* elements).

The ASRS accepts both article id and virtual id in the ArticleId search criteria attribute. It will first search for packs that have the given value stored in its article id. If no pack is found, it will continue to search for packs that have the given value as virtual id.

Sequence

Inventory synchronization

Pharmacy IT system	Automated storage and retrieval system

Send *StockInfoRequest* → Receive *StockInfoRequest*

Receive *StockInfoResponse* ← Send *StockInfoResponse*
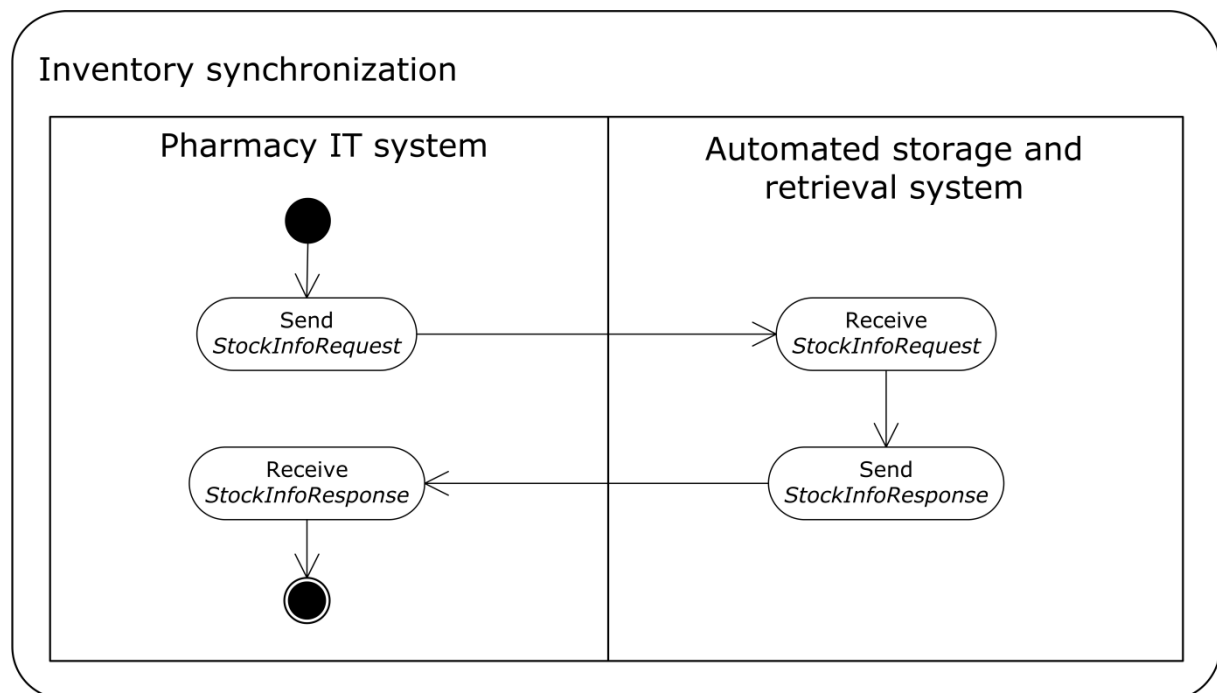
A stock update is a change of stock-related data (e.g. expiration date or status of a package). The number of stored items or packages does not change in the event of a stock update. The automated storage and retrieval system sends a message in the form of a StockInfoMessage to the pharmacy IT system.

Sequence

Stock update

Pharmacy IT system	Automated storage and retrieval system

Receive ConfigurationGetResponse ← Send ConfigurationGetResponse
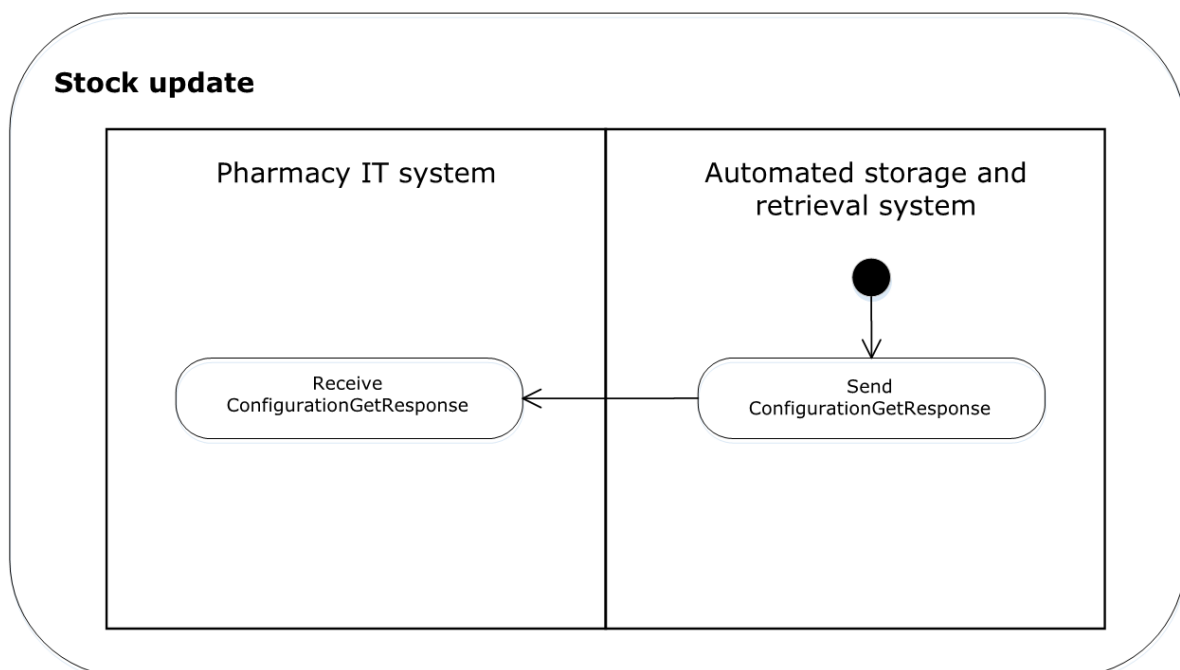
8.2.1.1 StockInfoRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <StockInfoRequest>
    <Criteria/>
  </StockInfoRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockInfoRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the inventory request. This ID is returned in the *StockInfoResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockInfoRequest*.
Destination	M	Integer 32-bit >0	ID of the system to which the *StockInfoRequest* is sent.
IncludePacks	O	Boolean	This flag specifies whether details of the existing packs are to be returned. Possible values: "True" if details of the packs are to be included "False" if only article data is to be sent The default value is "True".
IncludeArticleDetails	O	Boolean	This flag specifies whether detailed article information like name, dosage form, etc. are to be returned. Possible values: "True" if details of the articles are to be sent "False" if only minimal article data is to be sent The default value is "False".

Element	M/O	Data type	Description
Criteria	O	Tag	Request filter follows. Multiple criteria can be defined.

Attributes	M/O	Data type	Description and Values
ArticleId	O	String	By setting this filter, only articles with the specified article ID are included. The ID of the article must correspond to either the article id or the virtual id assigned by the pharmacy IT system when placing the article into stock in the *InputResponse*.
BatchNumber	O	String	By setting this filter, only packs with the specified batch number are included.
ExternalId	O	String	By setting this filter, only packs with the specified external ID are included.
StockLocationId	O	String	By setting this filter, only packs with the specified stock location ID within the automated storage and retrieval system are included. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	By setting this filter, only packs are with the specified identification of the machine used for storing the pack are included. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

In case of multiple attributes within the same Criteria element, all these must match to return a pack in the response.

If multiple criteria elements are defined, just one of them must match to return a pack in the response.

Example without filter criteria

Returns all articles on stock

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockInfoRequest Id="1003" Source="100" Destination="999" />
</WWKS>
```

Example with filter criteria

Returns all packs for article "0004" that have either batch "1234" or batch "5678". Does not return any packs of article "0004" that have another batch.

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockInfoRequest Id="1003" Source="100" Destination="999" IncludePacks="True">
    <Criteria ArticleId="0004" BatchNumber="1234"/>
    <Criteria ArticleId="0004" BatchNumber="5678"/>
  </StockInfoRequest>
</WWKS>
```

Library

The inventory can be polled with the `GetStock` method:

```
List<IArticle> stockList = storageSystem.GetStock();
```

The full inventory is returned, including all pack details and all article details.

If, rather than pack details, only an article listing indicating the associated number of packs is needed, it is polled as follows:

```
List<IArticle> stockList = storageSystem.GetStock(false);
```

If only the stock of a specific article is needed, it is polled as follows:

```
List<IArticle> stockList = storageSystem.GetStock(true, "68575484");
```

8.2.1.2 StockInfoResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```xml
<WWKS>
  <StockInfoResponse>
    <Article>
      <Pack/>
    </Article>
  </StockInfoResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockInfoResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the inventory request. This ID was sent in the *StockInfoRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockInfoResponse*.
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StockInfoResponse*.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article. This ID corresponds to the one assigned by the pharmacy IT system when placing the article into stock in the *StockInputResponse*.
VirtualId	O	String	Virtual ID of the article. This ID corresponds to the one assigned by the pharmacy IT system when placing the article into stock in the *InputResponse*.
Name	O	String	Name of the article
DosageForm	O	String	Dosage form of the article
PackingUnit	O	String	Packaging unit of the article
MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which might be contained in a full pack of the article. The value "0" means that the number of units is unknown.

Quantity	O	Integer 32-bit >0	Number of existing packs on stock of this article
SubItemQuantity	O	Integer 32-bit >0	Number of summed unit doses on stock of this article *Currently not supported by Rowa devices.*
Availability	O	String	Availability of the summed stock reported in Quantity and/or SubItemQuantity attributes. Possible values: "Available": On stock, may be used for any incoming order "Reserved": On stock, but not available for a new order. "Orderable": Not on stock but available at short notice "NotAvailable": Currently not available. Default value is "Available". *Currently not supported by Rowa devices.*

Element	M/O	Data type	Description
Pack	O	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 64-bit >0	Internal pack ID in the automated storage and retrieval system for a specific pack
DeliveryNumber	O	String	Stock delivery number specified on stock input
BatchNumber	O	String	Batch number. This was sent in the *InputResponse* during stock input.
ExternalId	O	String	External ID, an additional ID of the pack as sent in the *InputResponse* on stock input.
SerialNumber	O	String	Serial number of the pack.

ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values: Unknown: Source unknown (default value) AutoCalculated: Calculated by the robot from the input date ManualEntry: User has entered the expiry date manually ITSystem: Defined by IT System OCR: Expiry date printed on pack read by optical character recognition Barcode: Expiry has been extracted from a data matrix code Infeed: Defined by ITSystem sending an InfeedInputRequest
ScanCode	O	String	Barcode of the pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened).
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. Possible values: "Cuboid" "Cylinder" The default value is "Cuboid".
State	O	String	Status of the pack. This data is required when multiple automatic storage machines are connected. Possible values:

			"Available": the pack is currently available for output. "NotAvailable": the pack is currently not available for output. "Reserved": the pack is blocked for a specific order. *(currently not supported by Rowa devices)* The default value is "Available".
IsInFridge	O	Boolean	Flag indicating whether the pack is stored in a refrigeration unit ("True"). The default value is "False".
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.
StorageComponentId	*O*	*String64*	*Id of the physical component in which the pack is located (e.g. a channel). Used only if the picking robot has different physical components.* *Empty if the pack is not stored in a specific physical component.* *Currently not supported by Rowa devices.*
GUID	O	String	Global unique id of a pack in stock of an ASRS.

Example

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockInfoResponse Id="1003" Source="999" Destination="100">
    <Article Id="23226921000171118"
             Name="Galpharm Hayfever+ Allergy Relief 10mg tabs"
             DosageForm="" PackagingUnit="14" VirtualId="22181451000171112"
             Quantity="1" MaxSubItemQuantity="14" />
      <Pack Id="4536" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" State="Available">
      <Pack Id="7664" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2012-11-05" Depth="50" Width="50" Height="50"
```

```
                Shape="Cuboid" State="Available">
      <Pack Id="7857" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
                ExpiryDate="2012-11-05" Depth="50" Width="50" Height="50"
                Shape="Cuboid" State="Available">
      </Article>
  </StockInfoResponse>
</WWKS>
```

Library

See `StockInfoRequest`.

8.2.2 Stock details update

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	StockUpdateRequest/-Response: Planned, StockInfoMessage: Supported
ASRS	Rowa Select	Not supported

Lead Elements

StockUpdateRequest

StockUpdateResponse

StockInfoMessage

Usage

A stock update is a change of stock-related data (e.g. expiration date or status of a package). The number of stored items or packages does not change in the event of a stock update.

The pharmacy IT system may request the change of pack attributes by sending a StockInfoRequest that defines filter criterias for the packs to be updated and defines new values for the attributes to be updated. Pack attributes not listed in the requested will not be updated. Pack attributes listed with an empty value will be changed to have an empty value.

The automated storage and retrieval system answers with a StockUpdateResponse indicating if the update has been performed or not. In case of a success the StockUpdateResponse lists all packs that have been matching the filter criterias with the new value applied. Packs matching the filter criteria, that already had the same attribute value are listed as well.

In case of a stock update, no matter if initiated by a connected IT system or by the ASRS, the automated storage and retrieval system sends a message in the form of a StockInfoMessage to the pharmacy IT system.

Robot Vmax robots send a StockInfoMessage if the expiry date is updated after the result of an optical character recognition is available or when the availability of a pack for automated picking changes.

Sequence

Stock update (initiated by pharmacy IT system)

Pharmacy IT system	ASRS

Send
StockUpdateRequest → Receive
StockUpdateRequest

Receive
StockUpdateResponse ← Send
StockUpdateResponse

Stock updated? — No

Yes

Receive
StockInfoMessage ← Send
StockInfoMessage
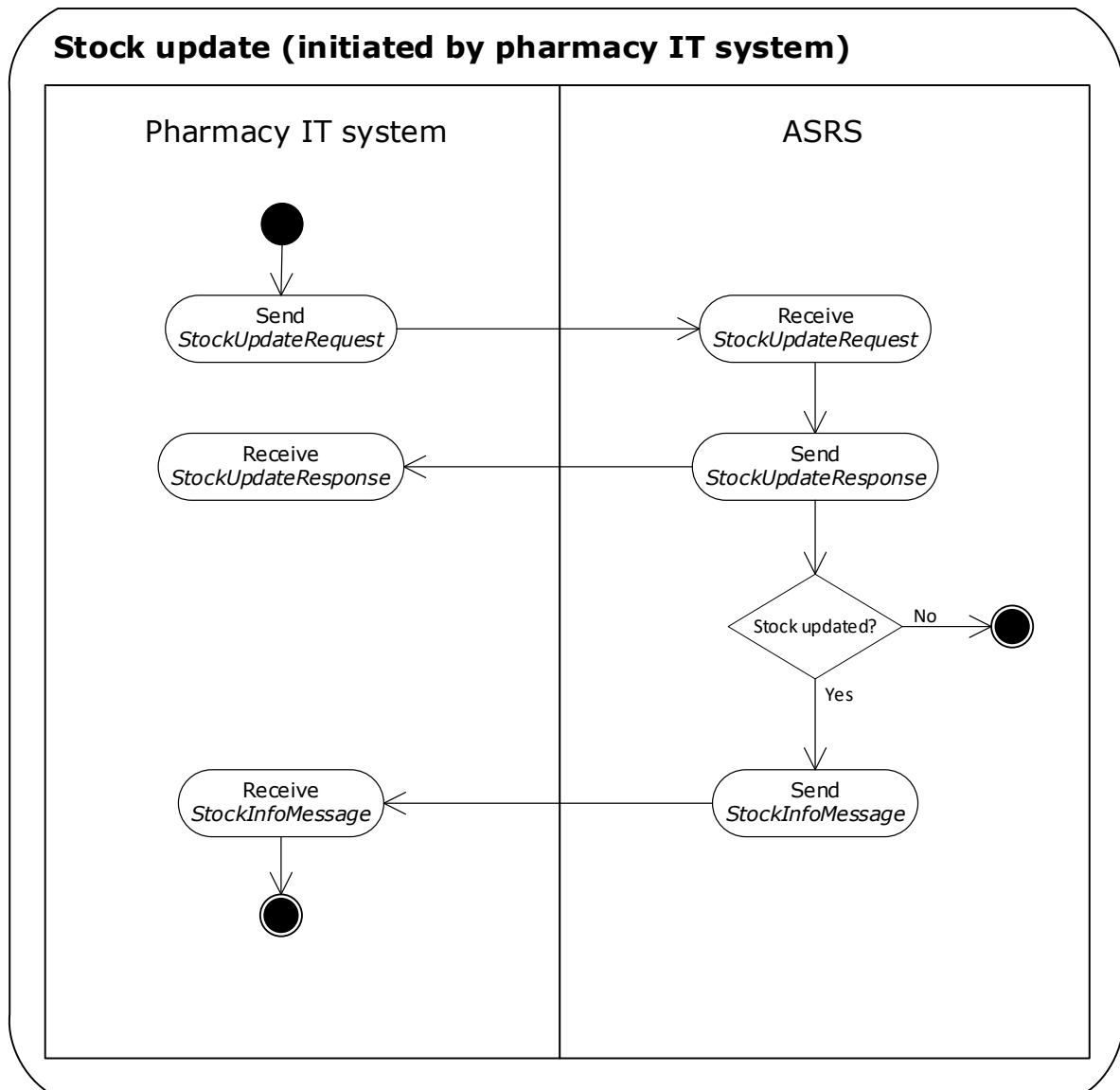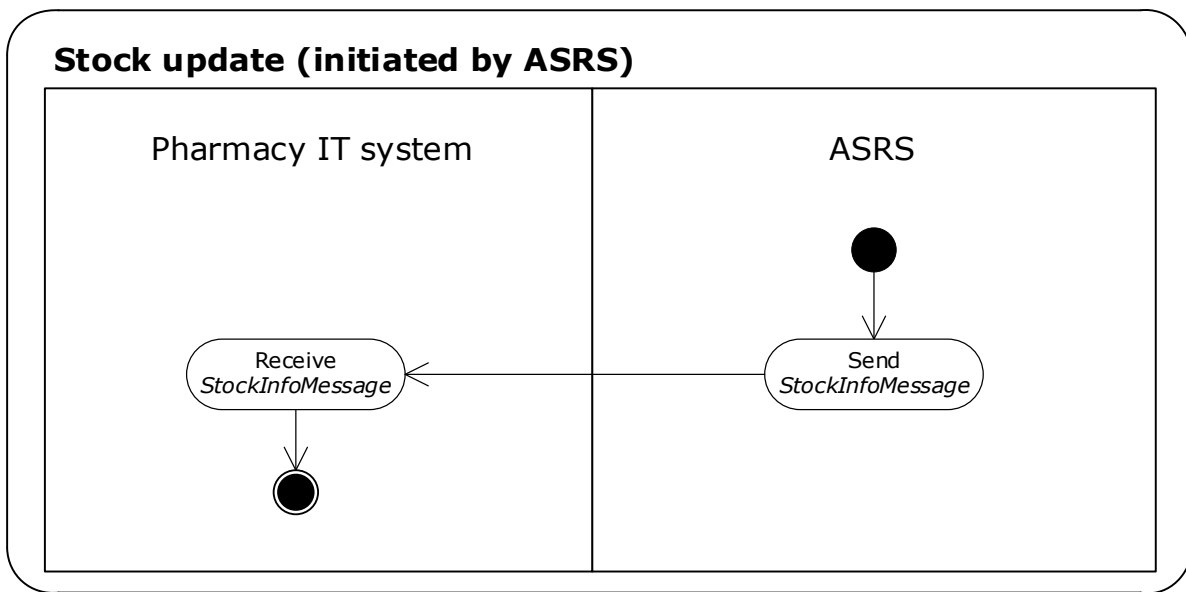
8.2.2.1 StockUpdateRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Planned.
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <StockUpdateRequest>
    <Criteria/>
  </StockUpdateRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockUpdateRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the inventory request. This ID is returned in the *StockUpdateResponse*.

Source	M	Integer 32-bit >0	ID of the system sending the *StockUpdateRequest*.
Destination	M	Integer 32-bit >0	ID of the system to which the *StockUpdateRequest* is sent.

Element	M/O	Data type	Description
Criteria	M	Tag	Stock update filters follow. This element can be used multiple times. Multiple criteria elements or interpreted as "OR".
Attributes	**M/O**	**Data type**	**Description and Values**
ArticleId	O	String	The article ID serving as a filter for the packs. The ID must exactly match the one in the *StockInputResponse*.
BatchNumber	O	String	Filter for packs having the specified batch number
ExternalId	O	String	Filter for packs having the specified external ID
SerialNumber	O	String	Filter for packs having the specified serial number.
PackId	O	Integer 64-bit >0	Filter for packs having the specified automated storage and retrieval system internal pack ID. This filter can be used to output a specific pack.
StockLocationId	O	String	Filter for packs having the specified ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Filter for packs having the specified identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.
Element	**M/O**	**Data type**	**Description**
Pack	O	Tag	Pack information with attributes to update follows. This element may occur only once.

			Attributes listed in the request will be update with the given value, even if it is an empty or default value. Attributes will not be updated if the attribute does not appear in the request.
Attributes	**M/O**	**Data type**	**Description and Values**
DeliveryNumber	O	String	Stock delivery number specified on stock input. *Update currently not supported by Vmax.*
BatchNumber	O	String	Batch number. This was sent in the *InputResponse* during stock input.
ExternalId	O	String	External ID, an additional ID of the pack as sent in the *InputResponse* on stock input. *Update currently not supported by Vmax.*
SerialNumber	O	String	Serial number of the pack. *Update currently not supported by Vmax.*
ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD *Update currently not supported by Vmax.*
ScanCode	O	String	Barcode of the pack. *Update currently not supported by Vmax.*
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened). *Update currently not supported by Vmax.*
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations. *Update currently not supported by Vmax.*

Examples

Request to update batch number of specific pack:

```xml
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
      <StockUpdateRequest Id="277045" Source="100" Destination="999">
            <Criteria PackId="7046263776958"/>
            <Pack BatchNumber="NewBatch"/>
      </StockUpdateRequest>
</WWKS>
```

Request to clear batch number of specific pack:

```xml
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
      <StockUpdateRequest Id="277045" Source="100" Destination="999">
            <Criteria PackId="7046263776958"/>
            <Pack BatchNumber=""/>
      </StockUpdateRequest>
</WWKS>
```

Request to update attribute for which update is not supported by the robot:

```xml
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
      <StockUpdateRequest Id="277046" Source="100" Destination="999">
            <Criteria PackId="7046263776958"/>
            <Pack Id="456"/>
      </StockUpdateRequest>
</WWKS>
```

Request to update batch number of all packs matching search criteria:

```xml
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
      <StockUpdateRequest Id="277047" Source="100" Destination="999">
            <Criteria ArticleId="1234567" BatchNumber="OldBatch"/>
            <Pack BatchNumber="NewBatch"/>
      </StockUpdateRequest>
</WWKS>
```

Library

Currently not supported.

8.2.2.2 StockUpdateResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Planned.
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <StockUpdateResponse>
    <Details/>
    <Article>
      <Pack/>
    </Article>
  </StockUpdateRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockUpdateResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the inventory request. This ID is returned in the *StockUpdateResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockUpdateRequest*.
Destination	M	Integer 32-bit >0	ID of the system to which the *StockUpdateRequest* is sent.

Element	M/O	Data type	Description
Details	M	Tag	Stock update information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Status	M	String	Status of the triggered stock update process.

			Possible values:
			"Accepted", if the update has been performed.
			"Rejected", if the update wasn't performed fully or partially.
Text	O	String	Additional human readable information why the update has failed.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article. This ID corresponds to the one assigned by the pharmacy IT system when placing the article into stock in the *StockInputResponse*.
Name	O	String	Name of the article
DosageForm	O	String	Dosage form of the article
PackingUnit	O	String	Packaging unit of the article
MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which might be contained in a full pack of the article. The value "0" means that the number of units is unknown.

Element	M/O	Data type	Description
Pack	O	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 64-bit >0	Internal pack ID in the automated storage and retrieval system for a specific pack
DeliveryNumber	O	String	Stock delivery number specified on stock input

BatchNumber	O	String	Batch number. This was sent in the *InputResponse* during stock input.
ExternalId	O	String	External ID, an additional ID of the pack as sent in the *InputResponse* on stock input.
SerialNumber	O	String	Serial number of the pack.
ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values: Unknown: Source unknown (default value) AutoCalculated: Calculated by the robot from the input date ManualEntry: User has entered the expiry date manually ITSystem: Defined by IT System OCR: Expiry date printed on pack read by optical character recognition Barcode: Expiry has been extracted from a data matrix code Infeed: Defined by ITSystem sending an InfeedInputRequest
ScanCode	O	String	Barcode of the pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened).
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack.

			Possible values: "Cuboid" "Cylinder" The default value is "Cuboid".
State	O	String	Status of the pack. This data is required when multiple automatic storage machines are connected. Possible values: "Available" means that the pack is currently available for output. "NotAvailable" means that the pack is currently not available for output. The default value is "Available".
IsInFridge	O	Boolean	Flag indicating whether the pack is stored in a refrigeration unit ("True"). The default value is "False".
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.
StorageComponentId	*O*	*String64*	*Id of the physical component in which the pack is located (e.g. a channel). Used only if the picking robot has different physical components.* *Empty if the pack is not stored in a specific physical component.* *Currently not supported by Rowa devices.*
GUID	O	String	Global unique id of a pack in stock of an ASRS.

Examples

Request to update batch number of specific pack:

```
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
     <StockUpdateResponse Id="277045" Source="100" Destination="999">
          <Details Status="Accepted"/>
          <Article Id="0004-56-034-G00007T">
               <Pack Id="7046263776958" BatchNumber="NewBatch"
```

```
                        ExternalId="PalH09051200001" SerialNumber=""
                        ExpiryDate="2022-11-30" Depth="50" Width="50" Height="50"
                        Shape="Cuboid" State="Available"/>
            </Article>
      </StockUpdateResponse>
</WWKS>
```

Request to update attribute for which update is not supported by the robot:

```
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
      <StockUpdateResponse Id="277046" Source="100" Destination="999">
            <Details Status="Rejected" Text="Update of Pack.Id not supported"/>
      </StockUpdateResponse>
</WWKS>
```

Request for which no packs on stock match criterias:

```
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
      <StockUpdateResponse Id="277045" Source="100" Destination="999">
            <Details Status="Rejected"
                     Text="No pack on stock matches update criterias"/>
      </StockUpdateResponse>
</WWKS>
```

Request to update batch number of all packs matching search criteria:

```
<WWKS Version="2.0" TimeStamp="2020-11-24T12:34:41Z">
      <StockUpdateResponse Id="277047" Source="100" Destination="999">
            <Details Status="Accepted"/>
            <Article Id="12345678">
                  <Pack Id="7046263776958" BatchNumber="NewBatch"
                        ExternalId="PalH09051200001" SerialNumber=""
                        ExpiryDate="2022-11-30" Depth="50" Width="50" Height="50"
                        Shape="Cuboid" State="Available"/>
                  <Pack Id="89688583483" BatchNumber="NewBatch"
                        ExternalId="847665632" SerialNumber=""
                        ExpiryDate="2025-12-31" Depth="50" Width="50" Height="50"
                        Shape="Cuboid" State="Available"/>
            </Article>
      </StockUpdateResponse>
</WWKS>
```

Library

Currently not supported.

8.2.2.3 StockInfoMessage

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported. Used for updates on `Pack.ExpiryDate` and `Pack.Status` attributes.

Structure

```
<WWKS>
  <StockInfoMessage>
    <Article>
      <Pack/>
    </Article>
  </StockInfoMessage>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockInfoMessage	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock update.
Source	M	Integer 32-bit >0	ID of the system sending the *StockInfoMessage*.
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StockInfoMessage.*

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the article. This ID corresponds to the one assigned by the pharmacy IT system when

			placing the article into stock in the *StockInputResponse*.
Name	O	String	Name of the article
DosageForm	O	String	Dosage form of the article
PackingUnit	O	String	Packaging unit of the article
MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which might be contained in a full pack of the article. The value "0" means that the number of units is unknown.
Quantity	O	Integer 32-bit >0	Number of existing packs of this article

Element	M/O	Data type	Description
Pack	O	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 64-bit >0	Internal pack ID in the automated storage and retrieval system for a specific pack
DeliveryNumber	O	String	Stock delivery number specified on stock input
BatchNumber	O	String	Batch number. This was sent in the *InputResponse* during stock input.
ExternalId	O	String	External ID, an additional ID of the pack as sent in the *InputResponse* on stock input.
ExpiryDateSource	O	String	Source of expiry date transmitted in the request.

Possible values:

Unknown: Source unknown (default value)

AutoCalculated: Calculated by the robot from the input date

ManualEntry: User has entered the expiry date manually |

			ITSystem: Defined by IT System OCR: Expiry date printed on pack read by optical character recognition Barcode: Expiry has been extracted from a data matrix code Infeed: Defined by ITSystem sending an InfeedInputRequest
ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD
StockInDate	O	String	Input date of the pack in format YYYY-MM-DD
ScanCode	O	String	Barcode of the pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened).
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. Possible values: "Cuboid" "Cylinder" The default value is "Cuboid".
State	O	String	Status of the pack. This data is required when multiple automatic storage machines are connected. Possible values: "Available" means that the pack is currently available for output. "NotAvailable" means that the pack is currently not available for output. The default value is "Available".

IsInFridge	O	Boolean	Flag indicating whether the pack is stored in a refrigeration unit ("True"). The default value is "False".
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.
StorageComponentId	*O*	*String64*	*Id of the physical component in which the pack is located (e.g. a channel). Used only if the picking robot has different physical components.* *Empty if the pack is not stored in a specific physical component.* *Currently not supported by Rowa devices.*
GUID	O	String	Global unique id of a pack in stock of an ASRS.

Example

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockInfoMessage Id="1003" Source="999" Destination="100">
    <Article Id="0004-56-034-G00007T" Quantity="3">
      <Pack Id="4536" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" State="Available">
      <Pack Id="7664" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2012-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" State="Available">
      <Pack Id="7857" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2012-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" State="Available">
    </Article>
  </StockInfoMessage>
</WWKS>
```

Library

The event `OnStockUpdated` must be registered to be notified about the stock updates:

```
storageSystem.StockUpdated += StorageSystem_StockUpdated;
```

If there is stock update, the automated storage and retrieval system sends a list of one or more items with the packages in question that have changed.

```csharp
void StorageSystem_StockUpdated(IStorageSystem sender, IArticle[] articleList)
{
    foreach (var article in articleList)
    {
        for each (var pack in article.Packs)
        {
            // process pack related updates
        }
    }
}
```

8.3 Stock input

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead elements

InputRequest

InputResponse

InputMessage

Usage

When a user or an automatic stock input system is wanting to store a pack in the automated storage and retrieval system, the `InputRequest` is sent from the automated storage and retrieval system to the pharmacy IT system. The pharmacy IT system must respond to the stock input request with the `InputResponse`. The response from the pharmacy IT system may also send additional article data to the automated storage and retrieval system.

If stock input is allowed, it is executed. In this case, the PIS should mirror back all article and pack attributes provided in the `InputRequest` as well in the `InputResponse`. If they are not provided in the `InputResponse`, the ASRS may assume the PIS wants to override the attribute with the default value, e.g., "" for a batch number or "0" for a `SubItemQuantity` (which means full pack instead of an opened one). The automated storage and retrieval system then sends the `InputMessage` to the pharmacy IT system, informing it of the changed inventory level.

If stock input is not allowed or fails for technical reasons, the automated storage and retrieval system sends the `InputMessage` with the attribute `Input="Aborted"` to the pharmacy IT system.

If the stock input is rejected with the reasons "`RejectedNoExpiryDate`" or "`RejectedNoBatchNumber`", the automated storage and retrieval system can resend an `InputRequest` message with the same ID and the missing information.

If Rowa automated input devices use optical character recognition (OCR) to read printed or embossed expiry dates, the expiry date read is usually not yet available in the `InputRequest` or `InputMessage` messages. Instead, Rowa sends a calculated date and updates the expiry date later as soon as the OCR date is available. The robot will send a `StockInfoMessage` to inform about the expiry date update.

Sequence
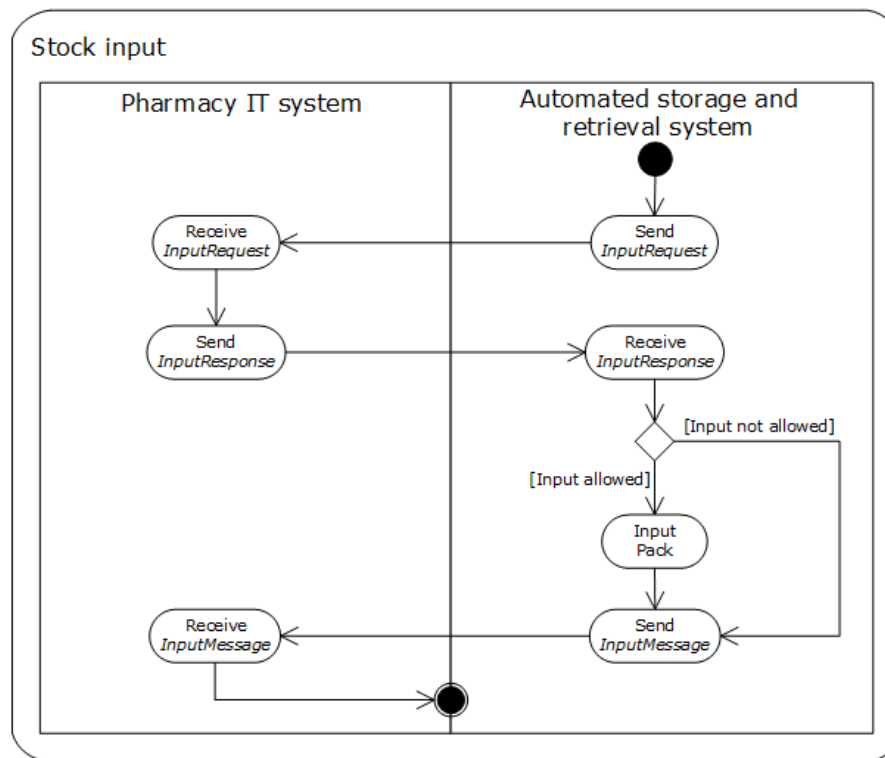
8.3.1 InputRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <InputRequest>
    <Article>
      <Pack/>
    </Article>
    <InputComponent/>
  </InputRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InputRequest	M	Tag	Message type

Attributes	M/O	Data type	Description and Values
Id	M	String	ID of the stock input process. This ID is returned in the *InputResponse* and is used in the associated *InputMessage*.
Source	M	Integer 32-bit >0	ID of the system sending the *InputRequest*
Destination	M	Integer 32-bit >0	ID of the system receiving this message
IsNewDelivery	O	Boolean	This flag identifies the stock input request as part of a stock delivery. "True" means that a stock delivery is taking place. The attribute *DeliveryNumber* in the element *Pack* should then contain the stock delivery number. Blank stock delivery numbers (e.g. "") are possible in some customer-specific scenarios. "False" means that the stock input relates to a stock return. The default value is "False".
SetPickingIndicator	O	Boolean	This flag forces definition of the article as capable of automated handling after the pharmacy IT system has initially rejected stock input with the reason "RejectedNoPickingIndicator". This case occurs primarily on initial stocking of the automated storage and retrieval system. The default value is "False".

Element	M/O	Data type	
Article	M	Tag	
Id	O	String64	Article identifying part of the scancode as detected by the ASRS.

Element	M/O	Data type	Description
Pack	M	Tag	Pack information follows. This element can be used multiple times.

Attributes	M/O	Data type	Description and Values
Index	O	Integer 32-bit >=0	If the stock input request comprises multiple packs, a pack index is sent here.
ScanCode	M	String	Barcode of the pack being placed into stock. This code is checked by the pharmacy IT system and compared against internal data. Based on the information contained in the code, the pharmacy IT system can decide whether the pack can be placed into stock. In case of a datamatrix code scanned, it depends on robot configuration if the attribute contains the full content of the scanned code or just the article identifying part of it.
DeliveryNumber	M/O	String	Stock delivery number for this pack. This data is only required if the attribute *IsNewDelivery* of the element *InputRequest* has the value "True".
BatchNumber	O	String	Batch number of the pack. This attribute is used when the picker has entered a batch number.
ExternalId	O	String	External ID. Additional identifying attribute. This can be used, for example, to store additional information about a pack.
SerialNumber	O	String	Serial number of the pack.
ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD. This attribute is used when the picker has entered an expiration date. Hint: If Rowa automated input devices use optical character recognition (OCR) to read printed or embossed expiry dates, the expiry date read is usually not yet available in the InputRequest or InputMessage messages. Instead, Rowa sends a calculated date and updates the expiry date later as soon as the OCR date is available. The robot will send a StockInfoMessage to inform about the expiry date update.
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values: Unknown: Source unknown (default value)

			AutoCalculated: Calculated by the robot from the input date ManualEntry: User has entered the expiry date manually OCR: Expiry date printed on pack read by optical character recognition Barcode: Expiry has been extracted from a data matrix code Infeed: Defined by ITSystem sending an InfeedInputRequest
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened). This attribute is used for the stock input of opened packs.
StockLocationId	O	String	ID of the selected stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the requesting machine intended to be used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Element	M/O	Data type	
InputComponent	O	Tag	
Id	M	String64	ID of the device component used to load the pack into the picking robot. Defined by the picking robot.
Name	O	String	Human readable description of the input device component.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InputRequest Id="1002" Source="989" Destination="100" IsNewDelivery="True">
    <Article Id="0004-56-034-G">
      <Pack Index="0" DeliveryNumber="463526"
```

```xml
    ScanCode="0004-56-034-G|00007|T|Omepra0004|PalH09051200001|051112|XXXXXX"/>
  </Article>
  <InputComponent Id="Vmax_2.Prolog2Belt_1458" Name="EasyLoad - Rechts"/>
  </InputRequest>
</WWKS>
```

Library

To handle a stock input process, the user must register for the following events:

`PackInputRequested` or `PackInputRequestedExtended`

`PackStored` or `PackStoredExtended`

`PackInputFinished` or `PackInputFinishedExtended`

```
storageSystem.PackInputRequested +=
  StorageSystem_PackInputRequested;
storageSystem.PackStored += StorageSystem_PackStored;

storageSystem.PackInputRequestedExtended +=
  StorageSystem_PackInputRequestedExtended;
storageSystem.PackStoredExtended +=
  StorageSystem_PackStoredExtended;
```

When one or more packs is awaiting stock input, the automated storage and retrieval system sends an *InputRequest*. This triggers the `PackInputRequested` or `PackInputRequestedExtended` event depending on which you registered for. As part of the event handling method, the pharmacy IT system must decide whether the requested packs may be placed into stock or not. At the same time, additional article information about the packs being placed into stock must be delivered. The pack objects being placed into stock contain as a minimum the pack's scan code, and optionally also other attributes such as an expiration date or batch number.

```csharp
void StorageSystem_PackInputRequested(IStorageSystem sender, IInputRequest request)
{
      foreach (var pack in request.Packs)
      {
      // Check the scan code of the pack and generate an appropriate article
      // identifier. In this sample we use the pack scan code as article identifier
      // for simplicity reasons,
      string articleId = pack.ScanCode;

      string virtualId = "V12345";

      // PUT DECISION LOGIC HERE

      // define article information for this pack
      pack.SetArticleInformation(articleId,
                                 "My Article Name",
                                 "Dosage Form",
                                 "Packaging Unit",
                                 14, // MaxSubItemQuantity
```

```csharp
                                      virtualId,
                                      "My Virtual Name" );
        // allow pack input
        pack.SetHandling(InputHandling.Allowed);
        }
        // send InputResponse
        request.Finish();


}


void StorageSystem_PackInputRequestedExtended(object sender,
PackInputRequestedEventArgs eventArgs)
        {
            // for now just accept every input request
            foreach (var pack in eventArgs.Request.Packs)
            {
                Console.WriteLine("Pack '{0}' requested input via request '{1}'
from source '{2}'.", pack.ScanCode, eventArgs.Request.Id,
eventArgs.Request.Source);

                var articleCode = pack.ScanCode;
                if (articleCode.Length < 8)
                    articleCode = articleCode.PadLeft(8, '0');

                var virtualCode = 'V' + articleCode;

                // set dummy article information
                pack.SetArticleInformation(articleCode,
                                           string.Format("My Article {0}",
                                             articleCode),
                                           "Dosage Form",
                                           "Packaging Unit",
                                           0,
                                           string.Format("Virtual-{0}",
                                             virtualCode),
                                           string.Format("My Virtual Article {0}",
                                             virtualCode));


                // allow pack input
                pack.SetHandling(InputHandling.Allowed);
            }

            eventArgs.Request.Finish();
        }
```

where `PackInputRequestedEventArgs` has the following structure:

```csharp
/// <summary>
    /// The PackInputRequested event arguments.
    /// </summary>
    public class PackInputRequestedEventArgs : EventArgs
    {
        /// <summary>
        /// Initializes a new instance of the <see cref="PackInputRequestedEventArgs"/>
class.
        /// </summary>
        /// <param name="request"></param>
        public PackInputRequestedEventArgs(IInputRequest request)
         {
            Request = request;
```

```
        }

        /// <summary>
        /// Gets the details about the requested pack input.
        /// </summary>
        public IInputRequest Request { get; }
    }
```

A pack can be rejected by the call `pack.SetHandling(InputHandling.Rejected)`. Input to a refrigerated storage location can be forced by the call `pack.SetHandling(InputHandling.AllowedForFridge)`. There are more handling definitions which, for example, force specification of a batch number or an expiration date for the scanned pack.

The code add-on of the development environment shows additional defined values of *InputHandling*. The naming of values may also be derived from the descriptions of the XML messages (see above).

8.3.2   InputResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <InputResponse>
    <Article>
      <Pack>
        <Handling/>
      </Pack>
    </Article>
  </InputResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InputResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input process. This ID was sent in the *InputRequest*.

Source	M	Integer 32-bit >0	ID of the system sending the *InputResponse*
Destination	M	Integer 32-bit >0	Corresponds to the value of Source in the associated *InputRequest*.
IsNewDelivery	O	Boolean	This flag identifies the stock input request as part of a stock delivery. The same value as in the associated *InputRequest* is used here.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	O	String	The article ID to be used on stock input into the automated storage and retrieval system. In the code examples below the ID is composed from data taken from the transmitted barcode. It is up to the pharmacy IT system how the article ID is composed. Default value is the barcode transferred in the InputRequest.
Name	O	String	Name of article. The automated storage and retrieval system displays the name in its own inventory view (GUI).
VirtualId	O	String	Virtual level article id used as alternative identification of the article. Both article id and virtual id may be used to request dispensing of this pack.
VirtualName	O	String	Name of virtual level article. The automated storage and retrieval system displays the name in its own inventory view (GUI).
DosageForm	O	String	Dosage form of the article. The automated storage and retrieval system displays the name in its own inventory view (GUI).

PackagingUnit	O	String	Packaging unit of the article. The automated storage and retrieval system displays the name in its own inventory view (GUI).
MaxSubItemQuantity	M/O	Integer 32-bit >=0	Maximum number of units (e.g., pills or ampules) which are contained in a full pack of the article. The value "0" means that the number of units is unknown. Mandatory, if outputs of full packs shall be requested using SubItemQuantities.
RequiresFridge	O	Boolean	Indicates if pack requires cooled storing. True: Pack requires cooling (2-8° C) No: Pack does not require cooling

Element	M/O	Data type	Description
Pack	M	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Index	O	Integer 32-bit >=0	Index number of the pack. Used only if the *InputResponse* covers multiple packs. The index number corresponds to the one in the *InputRequest*.
DeliveryNumber	O	String	Stock delivery number specified in the *InputRequest*
BatchNumber	M/O	String	Batch number to be saved for this pack. Mandatory if the attribute was defined in the InputRequest and if omitted; requested value may be overwritten by the default value "" depending on ASRS implementation.
ExternalId	M/O	String	External ID. Additional identifying attribute. This can be used, for example, to store additional information about a pack (*deprecated: the serial number*). Mandatory if the attribute was defined in the InputRequest and if omitted; requested value

			may be overwritten by the default value "" depending on ASRS implementation.
SerialNumber	M/O	String	Serial number of the pack. Mandatory if the attribute was defined in the InputRequest and if omitted; requested value may be overwritten by the default value "" depending on ASRS implementation.
ExpiryDate	M/O	String	Expiration date in format YYYY-MM-DD Mandatory if the attribute was defined in the InputRequest and if omitted; requested value may be overwritten by the default value "1899-12-31" depending on ASRS implementation.
SubItemQuantity	M/O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The pharmacy IT system can overwrite the original value from the *InputRequest* with this. The value "0" means that the pack is full (not opened). Mandatory if the attribute was defined in the InputRequest and if omitted, requested value may be overwritten by the default value 0 depending on ASRS implementation.
StockLocationId	M/O	String	ID of the stock location in the automated storage and retrieval system to be used. Is only used when an automated storage and retrieval system is divided into several virtual stock locations. Mandatory if the attribute was defined in the InputRequest and if omitted; requested value may be overwritten by the default value "No location" depending on ASRS implementation.

Element	M/O	Data type	Description
Handling	M	Tag	Instructions for handling of the pack follow. This element can occur once per pack.
Attributes	**M/O**	**Data type**	**Description and Values**
Input	M	String	Handling instructions for the pack. Possible values: "Allowed" if stock input is allowed

			"AllowedForFridge" if the article needs to be refrigerated

"Rejected" if stock input is not allowed

"RejectedNoExpiryDate" if stock input is not allowed because the expiration date was not specified

"RejectedNoPickingIndicator" if stock input is not allowed because the article is not declared as capable of automated handling

"RejectedNoBatchNumber" if stock input is not allowed because the batch number was not specified by the automated storage and retrieval system

„RejectedNoSerialNumber", if stock input is not allowed because the serial number was not specified by the automated storage and retrieval system

"RejectedNoStockLocation" if stock input is not allowed because the stock location ID was not specified by the automated storage and retrieval system

"RejectedInvalidStockLocation" if stock input is not allowed because the stock location ID specified by the automated storage and retrieval system is not authorized for this article |
| Text | O | String | Any text detailing additional instructions for handling of the pack. The text is normally used to detail the reasons for rejection of packs. The text might be displayed on the automated storage and retrieval system, and so should be capable of being localized. |

Example of allowing stock input of a pack

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InputResponse Id="1002" Source="100" Destination="999">
    <Article Id="0004-56-034-G00007T" Name="ACCU CHEK AVIVA"
            DosageForm="LOE" PackagingUnit="1X2.5 ML">
      <Pack Index="0" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
           ExpiryDate="2012-11-05">
        <Handling Input="Allowed" Text="Pack input allowed."/>
      </Pack>
    </Article>
  </InputResponse>
</WWKS>
```

Example of allowing stock input of a pack with virtual id

```xml
<WWKS Version="2.0" TimeStamp="2019-01-18T10:02:17Z">
  <InputResponse Id="112240" Source="100" Destination="999" IsNewDelivery="True">
    <Article Id="23226921000171118"

            Name="Galpharm Hayfever+ Allergy Relief 10mg tabs"
            DosageForm="" PackagingUnit="14" RequiresFridge="False"
            VirtualId="22181451000171112"
            VirtualName="Galpharm Hayfever+ Allergy Relief 10mg tabs"
            MaxSubItemQuantity="14">
      <Pack Index="0" ScanCode="5017353503558" DeliveryNumber="" BatchNumber=""
            ExternalId="" SerialNumber="" SubItemQuantity="14" StockLocationId="">
        <Handling Input="Allowed" />
      </Pack>
    </Article>
  </InputResponse>
</WWKS>
```

Example of refusing stock input of a pack

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InputResponse Id="1002" Source="100" Destination="999">
    <Article>
      <Pack Index="0">
        <Handling Input="Rejected" Text="Pack input forbidden."/>
      </Pack>
    </Article>
  </InputResponse>
</WWKS>
```

Library

See `InputRequest.`

8.3.3 InputMessage

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <InputMessage>
    <Article>
      <Pack>
        <Handling/>
      </Pack>
    </Article>
    <InputComponent/>
  </InputMessage>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InputMessage	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input process. This ID was sent in the *InputRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *InputMessage*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *InputMessage*
IsNewDelivery	O	Boolean	This flag identifies the stock input as part of a stock delivery. The same value as in the associated *InputRequest* is used here.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element may occur multiply.

Attributes	M/O	Data type	Description and Values
Id	M	String	The article ID sent in the *InputResponse*
Name	O	String	Name of the article sent in the *InputResponse*
VirtualId	O	String	The virtual ID sent in the *InputResponse*
VirtualName	O	String	The virtual name sent in the *InputResponse*
DosageForm	O	String	The dosage form sent in the *InputResponse*
PackagingUnit	O	String	The packaging unit sent in the *InputResponse*
MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which are contained in a full pack of the article. The value "0" means that the number of units is unknown. The value corresponds to the one sent in the *InputResponse*.

Element	M/O	Data type	Description
Pack	M	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Index	O	Integer 32-bit >=0	Index number of the pack. Used only if the *InputMessage* covers multiple packs. The index number corresponds to the one in the *InputRequest*.
Id	M	Integer 64-bit >=0	Internal pack ID. If the pack has not been placed into stock, the value is "0".
DeliveryNumber	O	String	Stock delivery number specified in the *InputRequest*
BatchNumber	O	String	Batch number saved for this pack
ExternalId	O	String	External ID specified in the *InputResponse* and saved for this pack
SerialNumber	O	String	Serial number of the pack.

ExpiryDate	O	String	Expiration date in format YYYY-MM-DD. Hint: If Rowa automated input devices use optical character recognition (OCR) to read printed or embossed expiry dates, the expiry date read is usually not yet available in the InputRequest or InputMessage messages. Instead, Rowa sends a calculated date and updates the expiry date later as soon as the OCR date is available. The robot will send a StockInfoMessage to inform about the expiry date update.
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values: Unknown: Source unknown (default value) AutoCalculated: Calculated by the robot from the input date ManualEntry: User has entered the expiry date manually ITSystem: Defined by IT System OCR: Expiry date printed on pack read by optical character recognition Barcode: Expiry has been extracted from a data matrix code Infeed: Defined by ITSystem sending an InfeedInputRequest
ScanCode	O	String	Barcode of the input pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened).
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. The default value is "Cuboid". "Cylinder" is also supported.

IsInFridge	O	Boolean	Flag indicating whether the pack has been stored refrigerated. The default value is "False".
State	O	String	Status of the pack. This data is required when multiple automatic storage machines are connected. The default value "Available" means that the pack is currently available for output. "NotAvailable" is also supported.
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.
GUID	O	String	Global unique id of a pack in stock of an ASRS.

Element	M/O	Data type	Description
Handling	M	Tag	Input result follows. This element can occur once per pack.
Attributes	**M/O**	**Data type**	**Description and Values**
Input	M	String	Outcome of the stock input. Possible values: "Completed" if the pack was placed into stock "Aborted" if an error occurred or the stock input was aborted
Text	O	String	Any text for debugging and logging information

Element	M/O	Data type	
InputComponent	O	Tag	

Id	M	String64	ID of the device component used to load the pack into the picking robot. Defined by the picking robot.
Name	O	String	Human readable description of the input device component.

Example of successful stock input

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InputMessage Id="1002" Source="999" Destination="100">
    <Article Id="0004-56-034-G00007T" Name="ACCU CHEK AVIVA"
             DosageForm="LOE" PackagingUnit="1X2.5 ML">
      <Pack Index="0" Id="565362" BatchNumber="Omepra0004"
            ExternalId="PalH09051200001" ExpiryDate="2012-11-05"
            Depth="50" Width="50" Height="50" Shape="Cuboid"
            State="Available">
        <Handling Input="Completed" Text="Pack input completed."/>
      </Pack>
    </Article>
    <InputComponent Id="Vmax_1.Belt1" Name="Vmax Input Belt"/>
  </InputMessage>
</WWKS>
```

Example of stock input aborted because of rejection by pharmacy IT system

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InputMessage Id="1003" Source="989" Destination="100">
    <Article>
      <Pack Index="0" Id="0">
        <Handling Input="Aborted" Text="Pack input aborted."/>
      </Pack>
    </Article>
    <InputComponent Id="Vmax_2.Prolog2Belt_1458" Name="EasyLoad - Rechts"/>
  </InputMessage>
</WWKS>
```

Example of stock input aborted by user

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InputMessage Id="1002" Source="999" Destination="100">
    <Article Id="0004-56-034-G00007T" Name="ACCU CHEK AVIVA"
             DosageForm="LOE" PackagingUnit="1X2.5 ML">
      <Pack Index="0" Id="0" BatchNumber="Omepra0004"
            ExternalId="PalH09051200001" ExpiryDate="2012-11-05">
        <Handling Input="Aborted" Text="Pack input aborted."/>
      </Pack>
    </Article>
```

```
    </InputMessage>
</WWKS>
```

Library

If packs have been successfully placed into stock, the *InputMessage* sent by the automated storage and retrieval system sends triggers the `PackStored` event. In the event handling method the pharmacy IT system can then update its inventory information. If the stock input process was aborted, no event is triggered because the inventory was not changed.

```
void StorageSystem_PackStored(IStorageSystem sender, IArticle[] articleList)
{
        foreach (var article in articleList)
        {
                foreach (var pack in article.Packs)
                {
                Console.WriteLine("Pack '{0}' has been stored in the storage system.",
                pack.Id);
                }
        }
}
```

8.4 Stock input initiation

8.4.1 External input feeder

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Supported
ASRS	Rowa Select	Not supported

Lead elements

InfeedInputRequest

InfeedInputResponse

InfeedInputMessage

InfeedInputPackPlaceRequest

InfeedInputPackPlaceResponse

Usage

Instead of the user controlling the process of loading an item into an ASRS by scanning the pack barcode and entering any additional information required manually, an external device ("*input feeder*") may hand over the pack and provide all required information to handle the input.

Sequence

8.4.1.1 InfeedInputRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Supported
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <InfeedInputRequest>
    <Details/>
    <Article>
      <Pack/>
    </Article>
  </InfeedInputRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InfeedInputRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process. This ID is returned in the *InfeedInputResponse* and used in the corresponding *InfeedInputPackPlaseRequest/-Response* and *InfeedInputMessage*.
Source	M	Integer 32-bit >0	ID of the system sending *InfeedInputRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to start the stock input. Example: 999 = Rowa Vmax 1 998 = Rowa Vmax 2 The values between 899 and 1000 are reserved for Rowa.
IsNewDelivery	O	Boolean	This flag specifies whether the triggered stock input is part of a new delivery.

			"True" means that a stock delivery is taking place. The attribute *DeliveryNumber* in the element *Pack* should then contain the stock delivery number. Blank stock delivery numbers (e.g. "") are possible in some customer-specific scenarios. "False" means that the triggered stock input relates to a stock return. The default value is "False".
SetPickingIndicator	O	Boolean	This flag forces definition of the article as capable of automated handling after the pharmacy IT system has initially rejected stock input with the reason "RejectedNoPickingIndicator". This case occurs primarily on initial stocking of the automated storage and retrieval system. The default value is "False".

Element	M/O	Data type	Description
Details	M	Tag	Stock input information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
InfeedNumber	M	Integer 32-bit	Identifies the handover point to the automated storage and retrieval system intended to be used for the stock input.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows.
Id	O	String64	Article identifying part of the scancode.

Element	M/O	Data type	Description
Pack	M	Tag	Pack information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**

Index	O	Integer 32-bit >=0	If the stock input request comprises multiple packs of an article, a pack index is sent here. *Currently not supported by Rowa Vmax.*
ScanCode	M	String	Barcode of the pack being placed into stock. This code is checked by the pharmacy IT system and compared against internal data. Based on the information contained in the code, the pharmacy IT system can decide whether the pack can be placed into stock. The ScanCode must not be empty.
DeliveryNumber	O	String	Stock delivery number for this pack. This information is only necessary when the attribute *IsNewDelivery* of the element *InfeedInputRequest* has the value "True".
BatchNumber	O	String	Batch number of the pack. This attribute is used when a batch number is to be sent along with the stock input request.
ExternalId	O	String	External ID. Additional identifying attribute. This attribute is used when an external ID is to be sent along with the input request.
SerialNumber	O	String	Serial number. This attribute is used when a serial number is to be sent along with the input request.
ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD. This attribute is used when an expiration date is to be sent along with the stock input request.
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened). This attribute is used for the stock input of opened packs.
Depth	M	Integer 32-bit >=0	Depth of the pack in mm
Width	M	Integer 32-bit >=0	Width of the pack in mm
Height	M	Integer 32-bit >=0	Height of the pack in mm

Shape	O	String	Form factor of the pack. The default value is "Cuboid". "Cylinder" is also supported.
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system that is intended to be used for storing the pack. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the requesting machine intended to be used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InfeedInputRequest Id="1003" Source="100" Destination="999">
    <Details InfeedNumber="3"/>
    <Article>
      <Pack ScanCode="12345678" Depth="50" Width="50" Height="50"/>
    </Article>
  </InfeedInputRequest>
</WWKS>
```

Library

Currently not supported

8.4.1.2 InfeedInputResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Supported
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <InfeedInputResponse>
    <Details/>
  </InfeedInputResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InfeedInputResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process
Source	M	Integer 32-bit >0	ID of the system sending *InfeedInputResponse*
Destination	M	Integer 32-bit >0	ID of the system that sent the original *InfeedInputRequest.*

Element	M/O	Data type	Description
Details	M	Tag	Stock input information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
InfeedNumber	M	Integer 32-bit	Identifies the handover point to the automated storage and retrieval system intended to be used for the stock input.
Status	M	String	Status of the triggered stock input process. Within the *InfeedInputResponse,* only the values "Accepted" and "Rejected" are permitted. If the process was canceled with the "Rejected" status, the process is completed and no further messages are sent.
Reason	O	String	Reason for the rejection of the request: Possible values: "": No reason given "UnknownPackDimensions": No valid pack dimensions defined in InfeedInputRequest. "InputBroken": Input currently not possible at this handover point. "NoSpaceInMachine": Pack cannot be loaded as there is no space available for the given pack size.

			"UnknownTenant": Tenant of WWKS2 connection not configured in ASRS "UnknownStockLocation": Stock location defined in request or in PIS InputResponse not known in ASRS "TaskCancelled": Workflow cancelled by input feeder NoSpaceOnBelt": Input rejected due to missing space on input belt. Try again later. "SystemNotActive": The machine is not ready and currently unable to process the request. "InputProcessInProgress": Another infeed input process is still active at this infeed location. […]
Description	O	String	Additional human readable details for the reason

Examples

```
<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <InfeedInputResponse Id="5000" Source="999" Destination="100">
    <Details InfeedNumber="3" Status="Accepted"/>
  </InfeedInputResponse>
</WWKS>

<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <InfeedInputResponse Id="5000" Source="999" Destination="100">
    <Details InfeedNumber="3" Status="Rejected" Reason="NoSpaceInMachine"/>
  </InfeedInputResponse>
</WWKS>
```

Library

See *InfeedInputRequest*.

8.4.1.3 InfeedInputMessage

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Supported
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <InfeedInputMessage>
    <Details/>
    <Article>
      <Pack>
        <Error/>
      </Pack>
    </Article>
  </InfeedInputMessage>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InfeedInputMessage	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process. This ID was sent in the *InfeedInputRequest*.
Source	M	Integer 32-bit >0	ID of the system sending *InfeedInputMessage*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *InfeedInputMessage*

Element	M/O	Data type	Description
Details	M	Tag	Stock input information follows.
Attributes	**M/O**	**Data type**	**Description and Values**

InfeedNumber	M	Integer 32-bit >=0	Identifies the handover point to the automated storage and retrieval system used for the stock input.
Status	M	String	Final status of the triggered stock input process. Possible values: "Completed": Pack has been loaded successfully into the ASRS. "Aborted": Pack wasn't loaded.
Reason	O	String	Reason why a pack wasn't loaded. Possible values: "": No reason available "NotAllowed": Pack input denied by PIS "ExpiryDateRequired": PIS needs expiry date to allow pack input "InvalidExpiryDate": Expiry date provided by input feeder is invalid or before the date defined by Vmax parameter *Stock.ExpiryTime.Minimum* "StockLocationRequired": PIS needs stock location to allow pack input "FridgeRequired": Article requires cooling but no fridge unit available in the ASRS "BatchNumberRequired": PIS needs batch number to allow pack input "MeasurementError": ASRS detected that actual pack dimension differ from values provided in the request "PackAcknowledged": Pack was removed before or while Vmax was inputting it (e.g. as part of an error handling action) "InputBroken": Input currently not possible at this handover point. "NoSpaceInMachine": Pack cannot be loaded as there is no space available for the given pack size. "NoPackPlaced": Input feeder rejected placement of pack.

			"TimeoutWaitingForPack": Timeout when waiting for handover of pack (no *InfeedInputPackPlacedResponse* received). "UnknownTenant": Tenant of WWKS2 connection not configured in ASRS "UnknownStockLocation": Stock location defined in request or in PIS InputResponse not known in ASRS "TaskCancelled": Workflow cancelled by input feeder "EmergencyStop": The machine had to perform an emergency stop and is not able to finish the request. If pack has been already placed, when emergency stop occurred, no abort will be reported, and the machine will process and finish the request when the emergency stop has been released. "InternalError": An unexpected error occurred. The machine is not able to finish the request. […]
Description	O	String	Additional human readable details for the reason

Element	M/O	Data type	Description
Article	O	Tag	Article information follows. This element may occur multiply. Only part of the message if `Details.Status="Finished"`.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	Article ID of the pack that was initiated for stock input
Name	O	String	Name of the article for the pack that was initiated for stock input
DosageForm	O	String	Dosage form of the article for the pack that was initiated for stock input
PackagingUnit	O	String	Packaging unit of the article for the pack that was initiated for stock input

MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which are contained in a full pack of the article. The value "0" means that the number of units is unknown.

Element	M/O	Data type	Description
Pack	M	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Index	O	Integer 32-bit >=0	Index number of the pack. Used only if the *InfeedInputMessage* covers multiple packs. The index number corresponds to the one in the *InfeedInputRequest*. *Currently not supported by Rowa Vmax.*
Id	M	Integer 64-bit >=0	Internal pack ID in the automated storage and retrieval system. If the pack has not been placed into stock, the value is "0".
DeliveryNumber	O	String	Stock delivery number specified in the *InfeedInputRequest*
BatchNumber	O	String	Batch number saved for this pack
ExternalId	O	String	External ID stored for the pack.
SerialNumber	O	String	Serial number stored for the pack.
ExpiryDate	O	String	Expiration date in format YYYY-MM-DD
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values: Unknown: Source unknown (default value) AutoCalculated: Calculated by the robot from the input date ManualEntry: User has entered the expiry date manually ITSystem: Defined by IT System

			OCR: Expiry date printed on pack read by optical character recognition
			Barcode: Expiry has been extracted from a data matrix code
			Infeed: Defined by ITSystem sending an InfeedInputRequest
StockInDate	O	String	Input date in the format YYYY-MM-DD
ScanCode	O	String	Barcode of the input pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened).
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. The default value is "Cuboid". "Cylinder" is also supported.
IsInFridge	O	Boolean	Flag indicating whether the pack has been stored refrigerated. The default value is "False".
State	O	String	Status of the pack. This data is required when multiple automatic storage machines are connected. The default value "Available" means that the pack is currently available for output. "NotAvailable" is also supported.
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

GUID	O	String	Global unique id of a pack in stock of an ASRS.

Example of successful stock input

```
<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <InfeedInputMessage  Id="1002" Source="999" Destination="100">
    <Details InfeedNumber="3"  Status="Completed"/>
    <Article Id="12345678" Name="Demo Article"
             DosageForm="LOE" PackagingUnit="1X2.5 ML">
      <Pack Id="565362" BatchNumber="Omepra0004"
            ExternalId="PalH09051200001" ExpiryDate="2024-11-30"
            Depth="50" Width="50" Height="50" Shape="Cuboid"
            State="Available" GUID="936DA01F-9ABD-4D9D-80C7-02AF85C822A8"/>
    </Article>
  </InfeedInputMessage>
</WWKS>
```

Example for an aborted stock input

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InfeedInputMessage Id="1003" Source="999" Destination="100">
    <Details InfeedNumber="3" Status="Aborted" Reason="NotAllowed"
             Description="Unknown barcode"/>
  </InfeedInputMessage>
</WWKS>
```

Library

Currently not supported.

8.4.1.4 InfeedInputPackPlaceRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Supported
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <InfeedInputPackPlaceRequest>
    <Details/>
  </InfeedInputPackPlaceRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InfeedInputPackPlaceRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process as defined in the related *InfeedInputRequest*. This ID is returned in the *InfeedInputPackPlaceResponse.*
Source	M	Integer 32-bit >0	ID of the system sending *InfeedInputPackPlaceRequest*
Destination	M	Integer 32-bit >0	Source used in *InfeedInputRequest.*

Element	M/O	Data type	Description
Details	M	Tag	Stock input information follows.
Attributes	**M/O**	**Data type**	**Description and Values**

InfeedNumber	M	Integer 32-bit	Identifies the handover point to the automated storage and retrieval system intended to be used for the stock input.

Examples

```
<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <InfeedInputPackPlaceRequest Id="5000" Source="999" Destination="100">
    <Details InfeedNumber="3"/>
  </InfeedInputPackPlaceRequest>
</WWKS>
```

Library

Currently not supported.

8.4.1.5 InfeedInputPackPlaceResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Supported
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <InfeedInputPackPlaceResponse>
    <Details/>
  </InfeedInputPackPlaceResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InfeedInputPackPlaceResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process as defined in the related *InfeedInputRequest* and used in the *InfeedInputPackPlaceRequest*.

Source	M	Integer 32-bit >0	ID of the system sending *InfeedInputPackPlaceResponse.*
Destination	M	Integer 32-bit >0	Source used in *InfeedInputPackPlaceRequest.*

Element	M/O	Data type	Description
Details	M	Tag	Pack placement input information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
InfeedNumber	M	Integer 32-bit >=0	Identifies the handover point to the automated storage and retrieval system used for the stock input.
Status	M	String	Result of the pack placement at the handover point. Possible values: "`Placed`": Pack has been placed successfully and ASRS may take over the pack. "`Aborted`": Pack hasn't been placed, process will be aborted. The ASRS will send a final `InfeedInputMessage` with `Details.State="Aborted"` to confirm the abortion.
Description	O	String	Additional human readbale information why a pack could not be placed.

Examples

```
<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <InfeedInputPackPlacedResponse Id="5000" Source="100" Destination="999">
    <Details InfeedNumber="3" Status="Placed"/>
  </InfeedInputPackPlacedResponse >
</WWKS>

<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <InfeedInputPackPlacedResponse Id="5000" Source="100" Destination="999">
    <Details Status="Aborted" Description="User abort"/>
  </InfeedInputPackPlacedResponse >
</WWKS>
```

Library

Currently not supported.

8.4.1.6 TaskCancelInfeedInputRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	**Not supported**
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <TaskCancelInfeedInputRequest>
    <Task/>
  </TaskCancelInfeedInputRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskCancelInfeedInputRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the cancelation process. This ID is returned in the *TaskCancelInfeedInputResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *TaskCancelInfeedInputRequest*
Destination	M	Integer 32-bit >0	ID of the automated storage and retrieval system intended to receive the *TaskCancelInfeedInputRequest*

Element	M/O	Data type	Description
Task	M	Tag	Task information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**

Id	M	String	ID of the task to be canceled as used in the related *InfeedInputRequest*.
InfeedNumber	M	Integer 32-bit >=0	Identifies the handover point to the automated storage and retrieval system used for the stock input.

Example

```
<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <TaskCancelInfeedInputRequest Id="5001" Source="100" Destination="999">
    <Task Id="5000" InfeedNumber="3"/>
  </TaskCancelInfeedInputRequest>
</WWKS>
```

Library

Currently not supported.

8.4.1.7 TaskCancelInfeedInputResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	**Not supported**
ASRS	Rowa Select	Not supported

Structure

```
<WWKS>
  <TaskCancelInfeedInputRequest>
    <Task/>
  </TaskCancelInfeedInputRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskCancelInfeedInputResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the cancelation process. This ID was sent in the *TaskCancelInfeedInputRequest*.

| Source | M | Integer 32-bit >0 | ID of the system sending the *TaskCancelInfeedInputResponse* |
| Destination | M | Integer 32-bit >0 | *Source* used in *TaskCancelInfeedInputRequest.* |

Element	M/O	Data type	Description
Task	M	Tag	Task information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the task to be canceled as used in the related *InfeedInputRequest*.
InfeedNumber	M	Integer 32-bit >=0	Identifies the handover point to the automated storage and retrieval system used for the stock input.
Status	M	String	Status of the cancellation. Possible values: "Unknown" if the task is not known "Cancelled" if the task could be canceled "CancelError", if the cancellation failed

Example

```
<WWKS Version="2.0" TimeStamp="2021-04-16T11:14:00Z">
  <TaskCancelInfeedInputResponse Id="5001" Source="100" Destination="999">
    <Task Id="5000" InfeedNumber="3" Status="Cancelled"/>
  </TaskCancelInfeedInputRequest>
</WWKS>
```

Library

Currently not supported.

8.4.2 Rowa Medport

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax	Supported (deprectated)
ASRS	Rowa Select	Not supported

Lead elements

InitiateInputRequest

InitiateInputResponse

InitiateInputMessage

Usage

The pharmacy IT system can explicitly trigger an input process by sending an *InitiateInputRequest.* This message and the appertaining messages *InitiateInputResponse* and *InitiateInputMessage* are used when the automated storage and retrieval system is connected to a third party automated input system or a specific input behavior is requested for other reasons.

It is the scope of pharmacy IT system the to make sure that the packs have been positioned correctly at a defined transfer point to the automated storage and retrieval system and are thus ready to be input by the automated storage and retrieval system. This can be, for example, realized through instructions in the user interface of the pharmacy IT system.

The triggered input process corresponds to the regular input process as described in the section *Stock input*. The entire process is completed as soon as the triggered input process is completed.

The automated storage and retrieval system can either return the *InitiateInputResponse* immediately or wait for the response to the corresponding input request of the pharmacy IT system. The process demonstrated in the flowchart corresponds to the first case.

Sequence

Stock input initialization

8.4.2.1 InitiateInputRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <InitiateInputRequest>
    <Details/>
    <Article>
      <Pack/>
    </Article>
  </InitiateInputRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InitiateInputRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process. This ID is returned in the *InitiateInputResponse* and used in the corresponding *InitiateInputMessage*.
Source	M	Integer 32-bit >0	ID of the system sending *InitiateInputRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to start the stock input. Example: 999 = Rowa Vmax 1 998 = Rowa Vmax 2 The values between 899 and 1000 are reserved for Rowa.
IsNewDelivery	O	Boolean	This flag specifies whether the triggered stock input is part of a new delivery. "True" means that a stock delivery is taking place. The attribute *DeliveryNumber* in the element *Pack* should then contain the stock

			delivery number. Blank stock delivery numbers (e.g. "") are possible in some customer-specific scenarios. "False" means that the triggered stock input relates to a stock return. The default value is "False".
SetPickingIndicator	O	Boolean	This flag forces definition of the article as capable of automated handling after the pharmacy IT system has initially rejected stock input with the reason "RejectedNoPickingIndicator". This case occurs primarily on initial stocking of the automated storage and retrieval system. The default value is "False".

Element	M/O	Data type	Description
Details	M	Tag	Stock input information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
InputSource	M	Integer 32-bit	Identifies the handover point to the automated storage and retrieval system intended to be used for the stock input.
InputPoint	O	Integer 32-bit	Detailed information on the handover point used (e.g. belt number)

Element	M/O	Data type	Description
Article	M	Tag	Article information follows.
Id	O	String64	Article identifying part of the scancode.

Element	M/O	Data type	Description
Pack	M	Tag	Pack information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**

Index	O	Integer 32-bit >=0	If the stock input request comprises multiple packs of an article, a pack index is sent here.
ScanCode	M	String	Barcode of the pack being placed into stock. This code is checked by the pharmacy IT system and compared against internal data. Based on the information contained in the code, the pharmacy IT system can decide whether the pack can be placed into stock.
DeliveryNumber	O	String	Stock delivery number for this pack. This information is only necessary when the attribute *IsNewDelivery* of the element *InitiateInputRequest* has the value "True".
BatchNumber	O	String	Batch number of the pack. This attribute is used when a batch number is to be sent along with the stock input request.
ExternalId	O	String	External ID. Additional identifying attribute. This attribute is used when an external ID is to be sent along with the input request.
SerialNumber	O	String	Serial number. This attribute is used when a serial number is to be sent along with the input request.
ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD. This attribute is used when an expiration date is to be sent along with the stock input request.
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened). This attribute is used for the stock input of opened packs.
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. The default value is "Cuboid". "Cylinder" is also supported.

StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system that is intended to be used for storing the pack. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the requesting machine intended to be used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InitiateInputRequest Id="1003" Source="100" Destination="999"
                        IsNewDelivery="True" SetPickingIndicator="False">
    <Details InputSource="3" InputPoint="1"/>
    <Article>
      <Pack Index="0" ScanCode="0004-56-034-G|00007|T|Omepra0004|PalH09051200001"
            Depth="50" Width="50" Height="50" Shape="Cuboid"/>
    </Article>
  </InitiateInputRequest>
</WWKS>
```

Library

To trigger a stock input process, a new stock input process object is created by using the `CreateInitiateInputRequest` method. Then the `AddInputPack` method is used to define the pack to be input and the `Start` method is used to start the stock input process. By registering for the `Finished` event, it is possible to react to the completion of the process.

```
// create new input process with id 111, input source 3
// and input point 1 for destination 998
var initiateInput = storageSystem.CreateInitiateInputRequest(111, 3, 1, 998);

// define a pack with the scan code "584638439" for input
initiateInput.AddInputPack("584638439");

// register for "Finished" event.
initiateInput.Finished += OnInitiateInput_Finished;

// start the input process
initiateInput.Start();
```

Within the scope of the event handling method for the `Finished` event, it is possible to determine details for the completed stock input process. As it is possible to define several packs per stock input, errors can occur for each pack. For this reason, the error information in the response are pack-based.

```csharp
void OnInitiateInput_Finished(object sender, EventArgs e)
{
    var initiateInput = sender as IInitiateInputRequest;

    if (initiateInput.State == InitiateInputRequestState.Completed)
    {
        // everything is ok -> access the list of processed articles
        // with detailed article and pack information of the stored packs
        var inputArticles = initiateInput.InputArticles;
    }
    else
    {
        // at least one pack failed to input
        for each (var article in initiateInput.InputArticles)
        {
            for each (var pack in article.Packs)
            {
                string errorText;
                InputErrorType errorType;

                if (initiateInput.GetProcessedPackError(pack,
                                                        out errorType,
                                                        out errorText))
                {
                    // process pack error details
                }
            }
        }
    }
}
```

The `InputArticles` property can already be set when the `Start` method is completed – depending on the behavior and the configuration of the connected automated storage and retrieval system – and contains the article information of the pack to be input. This can be used to display status information in the user interface of the pharmacy IT system.

8.4.2.2 InitiateInputResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```xml
<WWKS>
  <InitiateInputResponse>
    <Details/>
    <Article>
      <Pack/>
    </Article>
  </InitiateInputResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InitiateInputResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process
Source	M	Integer 32-bit >0	ID of the system sending *InitiateInputResponse*
Destination	M	Integer 32-bit >0	ID of the system that sent the original *InitiateInputRequest.*
IsNewDelivery	O	Boolean	This flag specifies whether the triggered stock input is part of a new delivery. "True" means that a stock delivery is taking place. The attribute *DeliveryNumber* in the element *Pack* should then contain the stock delivery number. Blank stock delivery numbers (e.g. "") are possible in some customer-specific scenarios. "False" means that the triggered stock input relates to a stock return. The default value is "False". Here the same value is to be seen as in the associated *InitiateInputRequest*.
SetPickingIndicator	O	Boolean	This flag forces definition of the article as capable of automated handling after the pharmacy IT system has initially rejected stock input with the reason "RejectedNoPickingIndicator". This case occurs primarily on initial stocking of the automated storage and retrieval system. The default value is "False". Here the same value is to be seen as in the associated *InitiateInputRequest*.

Element	M/O	Data type	Description
Details	M	Tag	Stock input information follows.

Attributes	M/O	Data type	Description and Values
InputSource	M	Integer 32-bit	Identifies the handover point to the automated storage and retrieval system intended to be used for the stock input.
InputPoint	O	Integer 32-bit	Detailed information on the handover point used (e.g. belt number). If this property was not defined in the associated *InitiateInputRequest*, the automated storage and retrieval system can here return the detailed handover point that was automatically determined.
Status	M	String	Status of the triggered stock input process. Within the *InitiateInputResponse,* only the values "Accepted" and "Rejected" are permitted. If the process was canceled with the "Rejected" status, the process is completed and no further messages are sent.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	O	String	Article ID of the pack that was initiated for stock input.
Name	O	String	Name of the article for the pack that was initiated for stock input.
DosageForm	O	String	Dosage form of the article for the pack that was initiated for stock input.
PackagingUnit	O	String	Packaging unit from of the article for the pack that was initiated for stock input.
MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which are contained in a full pack of the article. The value "0" means that the number of units is unknown.

Element	M/O	Data type	Description

Pack	M	Tag	Pack information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Index	O	Integer 32-bit >=0	If the stock input initiation request comprises multiple packs of an article, a pack index is sent here. Here the same value is to be seen as in the associated *InitiateInputRequest*.
ScanCode	M	String	Barcode of the pack being placed into stock. This code is checked by the pharmacy IT system and compared against internal data. Based on the information contained in the code, the pharmacy IT system can decide whether the pack can be placed into stock. Here the same value is to be seen as in the associated *InitiateInputRequest*.
DeliveryNumber	O	String	Stock delivery number for this pack. Here the same value is to be seen as in the associated *InitiateInputRequest*.
BatchNumber	O	String	Batch number of the pack. Here the same value is to be seen as in the associated *InitiateInputRequest*.
ExternalId	O	String	External ID. Additional identifying attribute. Here the same value is to be seen as in the associated *InitiateInputRequest*.
SerialNumber	O	String	Serial Number. Here the same value is to be seen as in the associated *InitiateInputRequest*.
ExpiryDate	O	String	Expiration date of the pack in format YYYY-MM-DD. Here the same value is to be seen as in the associated *InitiateInputRequest*.
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened). This attribute is used for the stock input of opened packs.

			Here the same value is to be seen as in the associated *InitiateInputRequest*.
Depth	O	Integer 32-bit >=0	Depth of the pack in mm. Here the same value is to be seen as in the associated *InitiateInputRequest*. Alternatively, the automated storage and retrieval system can return pack dimensions that it has determined itself (e.g. if there are no dimensions specified in the *InitiateInputRequest*).
Width	O	Integer 32-bit >=0	Width of the pack in mm. Here the same value is to be seen as in the associated *InitiateInputRequest*. Alternatively, the automated storage and retrieval system can return pack dimensions that it has determined itself (e.g. if there are no dimensions specified in the *InitiateInputRequest*).
Height	O	Integer 32-bit >=0	Height of the pack in mm. Here the same value is to be seen as in the associated *InitiateInputRequest*. Alternatively, the automated storage and retrieval system can return pack dimensions that it has determined itself (e.g. if there are no dimensions specified in the *InitiateInputRequest*).
Shape	O	String	Form factor of the pack. The default value is "Cuboid". "Cylinder" is also supported. Here the same value is to be seen as in the associated *InitiateInputRequest*.
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system that is intended to be used for storing the pack. Is only used when an automated storage and retrieval system is divided into several virtual stock locations. Here the same value is to be seen as in the associated *InitiateInputRequest*.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InitiateInputResponse Id="1003" Source="999" Destination="100">
    <Details InputSource="3" InputPoint="1" Status="Accepted"/>
    <Article Id="0004-56-034-G00007T" Name="ACCU CHEK AVIVA"
```

```
            DosageForm="LOE" PackagingUnit="1X2.5 ML">
      <Pack Index="0" ScanCode="0004-56-034-G|00007|T|Omepra0004|PalH09051200001"
            Depth="50" Width="50" Height="50" Shape="Cuboid"/>
    </Article>
  </InitiateInputResponse>
</WWKS>
```

Library

See *InitiateInputRequest*.

8.4.2.3 InitiateInputMessage

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <InitiateInputMessage>
    <Details/>
    <Article>
      <Pack>
        <Error/>
      </Pack>
    </Article>
  </InitiateInputMessage>
</WWKS>
```

Elements

Element	M/O	Data type	Description
InitiateInputMessage	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock input initiation process. This ID was sent in the *InitiateInputRequest*.
Source	M	Integer 32-bit >0	ID of the system sending *InitiateInputMessage*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *InitiateInputMessage*

Element	M/O	Data type	Description
Details	M	Tag	Stock input information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
InputSource	M	Integer 32-bit >=0	Identifies the handover point to the automated storage and retrieval system used for the stock input.
InputPoint	O	Integer 32-bit	Detailed information on the handover point used (e.g. belt number). If this property was not defined in the associated *InitiateInputRequest*, the automated storage and retrieval system can here return the detailed handover point that was automatically determined.
Status	M	String	Final status of the triggered stock input process. Within the *InitiateInputMessage,* only the values `Completed` and `Incomplete` are permitted. If the process was completed with the `Incomplete` status, at least one of the defined packs could not be input.

Element	M/O	Data type	Description
Article	M	Tag	Article information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	Article ID of the pack that was initiated for stock input
Name	O	String	Name of the article for the pack that was initiated for stock input
DosageForm	O	String	Dosage form of the article for the pack that was initiated for stock input
PackagingUnit	O	String	Packaging unit of the article for the pack that was initiated for stock input

Element	M/O	Data type	Description
MaxSubItemQuantity	O	Integer 32-bit >=0	Maximum number of units (e.g. pills or ampules) which are contained in a full pack of the article. The value "0" means that the number of units is unknown.

Element	M/O	Data type	Description
Pack	M	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Index	O	Integer 32-bit >=0	Index number of the pack. Used only if the *InitiateInputMessage* covers multiple packs. The index number corresponds to the one in the *InitiateInputRequest*.
Id	M	Integer 64-bit >=0	Internal pack ID in the automated storage and retrieval system. If the pack has not been placed into stock, the value is "0".
DeliveryNumber	O	String	Stock delivery number specified in the *InitiateInputRequest*
BatchNumber	O	String	Batch number saved for this pack
ExternalId	O	String	External ID specified in the *InitiateInputRequest*
SerialNumber	O	String	Serial number specified in the *InitiateInputRequest*
ExpiryDate	O	String	Expiration date in format YYYY-MM-DD
StockInDate	O	String	Input date in the format YYYY-MM-DD
ScanCode	O	String	Barcode of the input pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) currently inside the pack. The value "0" means that the pack is full (not opened).
Depth	O	Integer 32-bit >=0	Depth of the pack in mm

Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. The default value is "Cuboid". "Cylinder" is also supported.
IsInFridge	O	Boolean	Flag indicating whether the pack has been stored refrigerated. The default value is "False".
State	O	String	Status of the pack. This data is required when multiple automatic storage machines are connected. The default value "Available" means that the pack is currently available for output. "NotAvailable" is also supported.
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Element	M/O	Data type	Description
Error	O	Tag	Detailed error information follows. This element can occur once per pack.
Attributes	**M/O**	**Data type**	**Description and Values**
Type	M	String	Detailed error that occurred during stock input. Possible values: "Rejected", "RejectedNoExpiryDate", "RejectedInvalidExpiryDate", "RejectedNoPickingIndicator", "RejectedNoBatchNumber", "RejectedNoStockLocation", "RejectedInvalidStockLocation", "QueueFull", "FridgeMissing", "UnknownPackDimensions", "MeasurementError",

			"PackAcknowledged", "InputBroken" "NoSpaceInMachine", "NoPackDetected"
Text	O	String	Any text for detailed error information

Example of successful stock input

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InitiateInputMessage  Id="1002" Source="999" Destination="100">
    <Details InputSource="3" InputPoint="1" Status="Completed"/>
    <Article Id="0004-56-034-G00007T" Name="ACCU CHEK AVIVA"
             DosageForm="LOE" PackagingUnit="1X2.5 ML">
      <Pack Index="0" Id="565362" BatchNumber="Omepra0004"
            ExternalId="PalH09051200001" ExpiryDate="2012-11-05"
            Depth="50" Width="50" Height="50" Shape="Cuboid"
            State="Available"/>
    </Article>
  </InitiateInputMessage>
</WWKS>
```

Example for an aborted stock input

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <InitiateInputMessage Id="1003" Source="999" Destination="100">
    <Details InputSource="3" InputPoint="1" Status="Incomplete"/>
    <Article>
      <Pack Index="0">
        <Error Type="Rejected" Text="Pack input forbidden."/>
      </Pack>
    </Article>
  </InitiateInputMessage>
</WWKS>
```

Library

See `InitiateInputRequest`.

8.5 Stock output

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead elements

OutputRequest

OutputResponse

OutputMessage

Usage

When the pharmacy IT system wants packs withdrawn from stock, it sends the *OutputRequest* to the automated storage and retrieval system. The automated storage and retrieval system responds in the *OutputResponse* indicating whether it is able to execute the output or not. The automated storage and retrieval system may refuse an output request if, for example, the system is not ready due to maintenance procedures or because the query contains invalid data. If the automated storage and retrieval system accepts the output request, the output is executed as quickly as possible. After output (but also if the output fails) the automated storage and retrieval system sends the *OutputMessage*.

The pharmacy IT system can send multiple output requests in sequence. The automated storage and retrieval system will process them in the order in which they are received or according to priority, as appropriate.

Some automated storage and retrieval systems offer the facility to request packs directly on the automated storage and retrieval system without going through the pharmacy IT system. This is done by an operative on the automated storage and retrieval system's user interface. This procedure requires a returned *OutputMessage* from the automated storage and retrieval system to the pharmacy IT system. You will find an example of this so-called manual output at the end of this section.
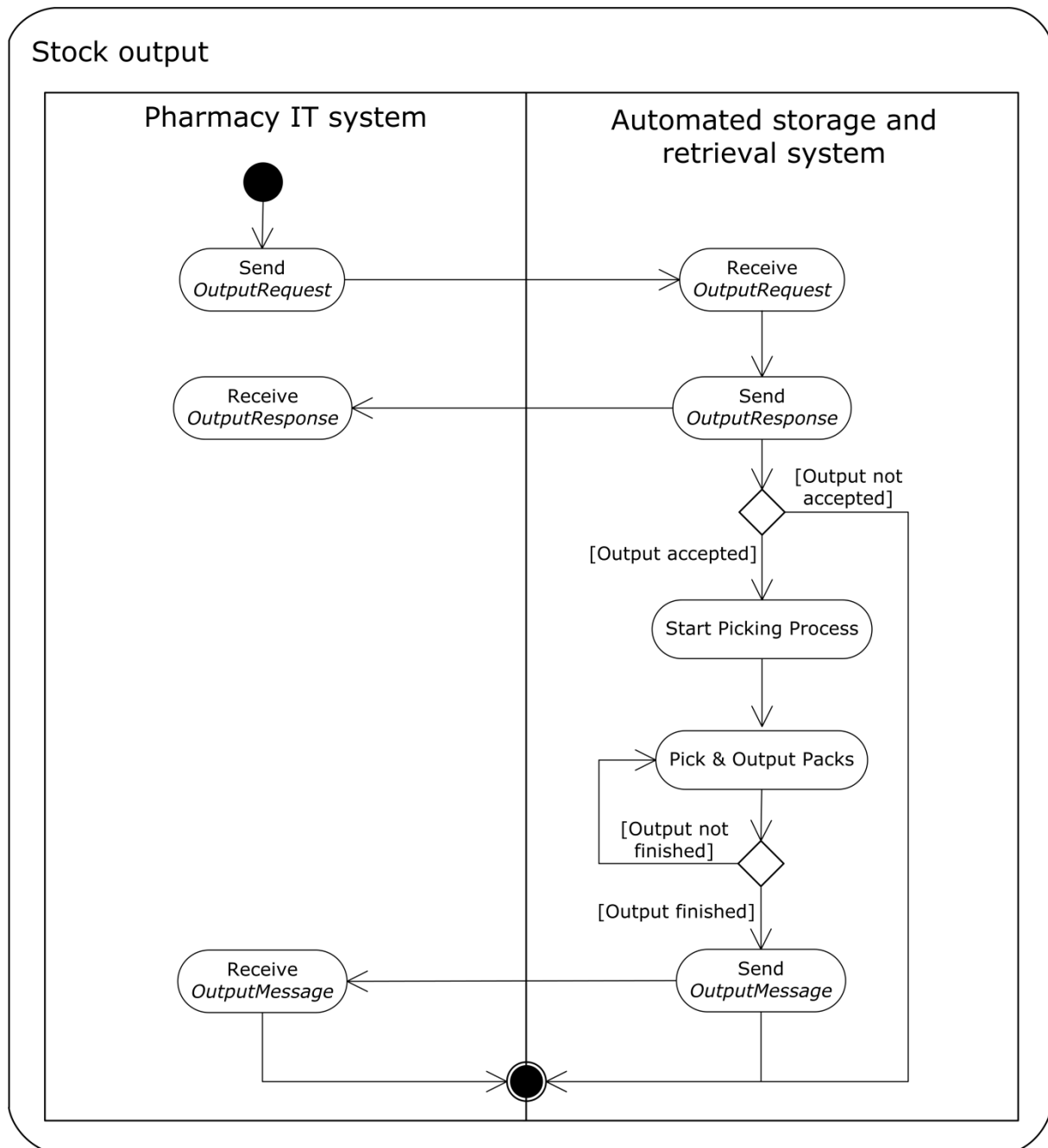
Some automated storage and retrieval systems support labeling of packs during the stock output process. A special printer is connected to the automated storage and retrieval system for the purpose. The pharmacy IT system can define the content of the printed label in the *OutputRequest*. The label print is configured in detail both by the pharmacy IT system and on the label printer. Templates are used to specify how the data is presented. The data sent to the label printer may be in a variety of formats, such as XML, HTML or SVG, depending on what the printer is able to process. The label content is therefore embedded in the *OutputRequest* and *OutputResponse* as a CDATA element.

In combination with automated container filling systems, it is possible that the automated storage and retrieval system sends a so-called empty-order to the pharmacy IT system. An empty-order

does not contain any *Criteria* elements and does not therefore prompt a pack output. Consequently the affected container is forwarded by the automated storage and retrieval system as soon as it reaches the container filling point of the automated storage and retrieval system. If no container number is specified in an empty-order, the next container reaching the container filling point of the automated storage and retrieval system is forwarded and the corresponding container number is returned to the pharmacy IT system in an *OutputMessage*.

The ASRS accepts both article id and virtual id in the ArticleId search criteria attribute. It will first search for packs that have the given value stored in its article id. If no pack is found, it will continue to search for packs that have the given value as virtual id.

Sequence

8.5.1 OutputRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <OutputRequest>
    <Details/>
    <Criteria>
      <Label>
        <Content>
        </Content>
      </Label>
    </Criteria>
  </OutputRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
OutputRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock output process. This ID is returned in the *OutputResponse* and is also used in the associated *OutputMessage*.
Source	M	Integer 32-bit >0	ID of the system sending the output order
Destination	M	Integer 32-bit >0	ID of the system receiving the output order
BoxNumber	O	String	Number of the box to be used for this task. The data is only required if an automatic box filler is being used and the pharmacy IT system predefines the box numbers for an output order.

Element	M/O	Data type	Description

Details	M	Tag	Output details follow.
Attributes	**M/O**	**Data type**	**Description and Values**
Priority	O	String	Priority of the stock output. Possible values: "Lowest" "Low" "Normal" "High" "Highest" The default value is "Normal".
OutputDestination	M	Integer 32-bit	Number of the output location to which the packs are to be sent
OutputPoint	O	Integer 32-bit	Detailed information on the requested output location (e.g. belt number).

Element	**M/O**	**Data type**	**Description**
Criteria	O	Tag	Output filters follow. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
ArticleId	O	String	The article ID serving as a filter for the packs. The ID must exactly match either the article id or the virtual Id in the *InputResponse*. The ASRS will first try to match to an article id in stock. Only if no pack is found, it will try to match to a virtual id.
Quantity	M	Integer 32-bit >=0	Number of full packs to be outputted
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets, ampules) to be outputted. The automated storage and retrieval system calculates the resultant number of packs and outputs them. If this attribute is used, the *Quantity* attribute is ignored. It should nevertheless be set to "0".
MinimumExpiryDate	O	String	Filter for packs having the specified expiration date as a minimum. Format YYYY-MM-DD.

BatchNumber	O	String	Filter for packs having the specified batch number
SingleBatchNumber	O	Boolean	Alternative to BatchNumber. Defines that all requested packs should have the same BatchNumber. The default value is False.
ExternalId	O	String	Filter for packs having the specified external ID
SerialNumber	O	String	Filter for packs having the specified serial number.
PackId	O	Integer 64-bit >0	Filter for packs having the specified automated storage and retrieval system internal pack ID. This filter can be used to output a specific pack.
StockLocationId	O	String	Filter for packs having the specified ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Filter for packs having the specified identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Element	M/O	Data type	Description
Label	O	Tag	Label information follows. This element can be used multiple times.

Attributes	M/O	Data type	Description and Values
TemplateId	M	String	ID of the label template to be used by the label printer for correct output of the label content

Element	M/O	Data type	Description
Content	M	Tag	Label content to be printed. This data is embedded in the message as a CDATA XML block.

Example of an empty output request

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputRequest Id="1004" Source="100" Destination="999">
    <Details Priority="Normal" OutputDestination="3"/>
  </OutputRequest>
</WWKS>
```

Example of an output request with article ID

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputRequest Id="1004" Source="100" Destination="999">
    <Details Priority="Normal" OutputDestination="3"/>
    <Criteria ArticleId="0004-56-034-G00025T" Quantity="1"/>
    <Criteria ArticleId="0004-56-034-G00007T" Quantity="1"
              MinimumExpiryDate="2015-11-01"/>
  </OutputRequest>
</WWKS>
```

Example of an output request with article ID and external ID

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputRequest Id="1004" Source="100" Destination="999">
    <Details Priority="Normal" OutputDestination="3"/>
    <Criteria ArticleId="0004-56-034-G00007T"
              ExternalId="PalH09051200001" Quantity="1"/>
  </OutputRequest>
</WWKS>
```

Example of an output request with article ID and label data

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputRequest Id="1004" Source="100" Destination="999">
    <Details Priority="Normal" OutputDestination="3"/>
    <Criteria ArticleId="0004-56-034-G00007T" Quantity="1">
      <Label TemplateId="3413">
        <Content>
          <![CDATA[
            <article>
              <name>NIFEDIPIN 20 retard 1A Pharma Tabl.</name>
              <quantity>30</quantity>
            </article>
            <dosagelines>
              <labeldosageline>
                <synonym>on an empty stomach</synonym>
                <amount>1</amount>
                <quantityunit>pcs</quantityunit>
              </labeldosageline>
            </dosagelines>
          ]]>
        </Content>
```

```
      </Label>
    </Criteria>
  </OutputRequest>
</WWKS>
```

Library

The `CreateOutputProcess` method is used to create an output process. There are two versions of the method: one taking the order number as `int` and another one taking the order number as `string`).

Then the `AddCriteria` method is used to define the output criteria
(e.g. *n* packs of article *x*).

The `Start` method is called to send the output order to the automated storage and retrieval system.

In the following example, an output order with the number *1234* (as `int`) is created, requesting a stock output to point *2*. The output is to include one pack of article *47463736* and two packs of article *78695739*.

```
IOutputProcess output = storageSystem.CreateOutputProcess(1234, 2);
output.AddCriteria("47463736", 1);
output.AddCriteria("78695739", 2);

// optionally add label content to a criteria
output.Criteria[0].AddLabel("4536", "<article>…");

output.Start();
```

In the following example, an output order with the number *1234* (as `string`) is created, requesting a stock output to point *2*. The output is to include one pack of article *47463736* and two packs of article *78695739*.

```
IOutputProcess output = storageSystem.CreateOutputProcess("1234", 2);
output.AddCriteria("47463736", 1);
output.AddCriteria("78695739", 2);

// optionally add label content to a criteria
output.Criteria[0].AddLabel("4536", "<article>…");

output.Start();
```

8.5.2 OutputResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <OutputResponse>
    <Details/>
    <Criteria>
      <Label>
        <Content>
        </Content>
      </Label>
    </Criteria>
  </OutputResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
OutputResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock output process. This ID was sent in the *OutputRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *OutputResponse*
Destination	M	Integer 32-bit >0	ID of the system receiving the *OutputResponse*
BoxNumber	O	String	Number of the box specified in the *OutputRequest*. The data is required if an automatic box filler is being used.

Element	M/O	Data type	Description
Details	M	Tag	Output details follow.

Attributes	M/O	Data type	Description and Values
Priority	O	String	Priority of this stock output process. Here the same value is to be seen as in the *OutputRequest*.
OutputDestination	M	Integer 32-bit	Number of the output location to which the packs are sent. Here the same value is to be seen as in the *OutputRequest*.
OutputPoint	O	Integer 32-bit	Detailed information on the requested output location (e.g. belt number). Here the same value is to be seen as in the *OutputRequest*.
Status	M	String	Status of the stock output process. Possible values: "Queued" if the output is pending "Rejected" if the output is rejected

Element	M/O	Data type	Description
Criteria	O	Tag	Output filters follow. This element may occur multiply. The attributes and values correspond to those in the *OutputRequest*.
Attributes	**M/O**	**Data type**	**Description and Values**
ArticleId	O	String	The article ID serving as a filter for the packs. The ID must exactly match the one in the *InputResponse*.
Quantity	M	Integer 32-bit >=0	Number of full packs to output. Here the same value is to be seen as in the *OutputRequest*.
SubItemQuantity	O	String	Number of units (e.g. tablets, ampules) to be outputted. If this attribute is used, the *Quantity* attribute is ignored. It should nevertheless be set to "0". Here the same value is to be seen as in the *OutputRequest*.
MinimumExpiryDate	O	Integer 32-bit >=0	Filter for packs having the specified expiration date as a minimum. Format YYYY-MM-DD. Here the same value is to be seen as in the *OutputRequest*.

BatchNumber	O	String	Filter for packs having the specified batch number. Here the same value is to be seen as in the *OutputRequest*.
SingleBatchNumber	O	Boolean	Alternative to BatchNumber. Defines that all requested packs should have the same BatchNumber. The default value is False. Here the same value is to be seen as in the *OutputRequest*.
ExternalId	O	String	Filter for packs having the specified external ID. Here the same value is to be seen as in the *OutputRequest*.
SerialNumber	O	String	Filter for packs having the specified serial number. Here the same value is to be seen as in the *OutputRequest*.
PackId	O	Integer 64-bit >0	Filter for packs having the specified automated storage and retrieval system internal pack ID. This filter can be used to output a specific pack. Here the same value is to be seen as in the *OutputRequest*.
StockLocationId	O	String	Filter for packs having the specified ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations. Here the same value is to be seen as in the *OutputRequest*.
MachineLocation	O	String	Filter for packs having the specified identification of the machine used for storing the pack. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines. Here the same value is to be seen as in the *OutputRequest*.

Element	M/O	Data type	Description
Label	O		Label information follows. This element may occur multiply. The data corresponds to that in the *OutputRequest*.
Attributes	**M/O**	**Data type**	**Description and Values**
TemplateId	M		ID of the label template to be used by the label printer for correct output of the label content.

			The data corresponds to that in the *OutputRequest*.

Element	M/O	Data type	Description
Content	M		Label content to be printed. This data is embedded in the message as a CDATA XML block. The data corresponds to that in the *OutputRequest*.

Example of an accepted output request

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputResponse Id="1004" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Queued"/>
    <Criteria ArticleId="0004-56-034-G00025T" Quantity="1"/>
    <Criteria ArticleId="0004-56-034-G00007T" Quantity="1"
             MinimumExpiryDate="2015-11-01"/>
  </OutputResponse>
</WWKS>
```

Example of a rejected output request

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputResponse Id="1004" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Rejected"/>
    <Criteria ArticleId="0004-56-034-G00025T" Quantity="1"/>
    <Criteria ArticleId="0004-56-034-G00007T" Quantity="1"
             MinimumExpiryDate="2015-11-01"/>
  </OutputResponse>
</WWKS>
```

Library

There are two ways of waiting for the task to complete:

- Option 1 (recommended): Register for the `Finished` event before calling the `Start` method.

```
output.Finished += OutputProcess_Finished;
output.Start();

void OutputProcess_Finished(object sender, EventArgs e)
{
      var output = sender as IOutputProcess;
      Console.WriteLine("Output process '{0}' finished with result '{1}'.",
                   output.OrderNumber, output.State.ToString());
}
```

- Option 2: Check the status of the task regularly in a loop.

```
while (true)
{
      OutputProcessState currentState = output.State;
      if ((currentState != OutputProcessState.Queued) &&
          (currentState != OutputProcessState.InProcess))
      {
            break;
      }
      Thread.Sleep(1000);
}
```

8.5.3 OutputMessage

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <OutputMessage>
    <Details/>
    <Article>
      <Pack/>
    </Article>
    <Box/>
  </OutputMessage>
</WWKS>
```

Elements

Element	M/O	Data type	Description
OutputMessage	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock output process. This ID was sent in the *OutputRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *OutputMessage*

Destination	M	Integer 32-bit >0	ID of the system receiving the *OutputMessage*

Element	M/O	Data type	Description
Details	M	Tag	Output details follow.
Attributes	**M/O**	**Data type**	**Description and Values**
Priority	O	String	Priority of this stock output process. Here the same value is to be seen as in the *OutputRequest*.
OutputDestination	M	Integer 32-bit	Number of the output location to which the packs were sent. Here the same value is to be seen as in the *OutputRequest*.
OutputPoint	O	Integer 32-bit	Detailed information on the requested output location (e.g. belt number). Here the same value is to be seen as in the *OutputRequest*.
Status	M	String	Status of the stock output process. Possible values: "Completed" if the output was completed successfully "Incomplete" if the output was not completed fully "Aborted" if the output was aborted "BoxReleased" if a box was successfully released

Element	M/O	Data type	Description
Article	O	Tag	Article information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	O	String	Article ID of the outputted pack
VirtualId	O	String	Virtual ID of the outputted pack

Element	M/O	Data type	Description

Pack	O	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 64-bit >0	Picking system internal ID of the outputted pack
DeliveryNumber	O	String	Stock delivery number of the outputted pack
BatchNumber	O	String	Batch number of the outputted pack
ExternalId	O	String	External ID of the outputted pack
SerialNumber	O	String	SerialNumber of the outputted pack
ExpiryDate	O	String	Expiration date of the outputted pack in format YYYY-MM-DD.
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values: Unknown: Source unknown (default value) AutoCalculated: Calculated by the robot from the input date ManualEntry: User has entered the expiry date manually ITSystem: Defined by IT System OCR: Expiry date printed on pack read by optical character recognition Barcode: Expiry has been extracted from a data matrix code Infeed: Defined by ITSystem sending an InfeedInputRequest
ScanCode	O	String	Barcode of the output pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) in the outputted pack. The value "0" means that the pack is full.
Depth	O	Integer 32-bit	Depth of the pack in mm

		>=0	
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. Possible values: "Cuboid" "Cylinder" The default value is "Cuboid".
IsInFridge	O	Boolean	Flag indicating whether the pack has been stored refrigerated. The default value is "False".
BoxNumber	O	String	Number of the box to which the pack was outputted. The data is only required if an automatic box filler is being used.
OutputDestination	M	Integer 32-bit	Number of the output location to which the pack was sent. A possible error case is output to a point other than the one requested, for example because the requested output point was not operational.
OutputPoint	O	Integer 32-bit	Detailed information on the output location (e.g. belt number) used for pack output.
LabelStatus	O	String	Status of the labeling of the outputted pack. This is only relevant in conjunction with labeling. Possible values: "Labelled" if the pack was labeled correctly with the data predefined by the pharmacy IT system "NotLabelled" if the pack was not labeled (e.g. because no printer was available) "LabelError" if an error occurred during labeling
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.

MachineLocation	O	String	Identification of the machine that was used to store packs of this article. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.
GUID	O	String	Global unique id of a pack in stock of an ASRS.

Element	M/O	Data type	Description
Box	O	Tag	Detailed information on the containers used follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Number	M	String	Number of the container either defined in the *OutputRequest* or automatically determined during filling.

Example of a successfully completed stock output

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputMessage Id="1004" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Completed"/>
    <Article Id="0004-56-034-G00025T" VirtualId="22181451000171112">
      <Pack Id="5637" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" OutputDestination="3" LabelStatus="Labelled"/>
    </Article>
    <Article Id="0004-56-034-G00007T" VirtualId="">
      <Pack Id="8563" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="70" Width="70" Height="70"
            Shape="Cuboid" IsInFridge="True" OutputDestination="3"
            LabelStatus="Labelled"/>
    </Article>
  </OutputMessage>
</WWKS>
```

Example of a partially completed stock output (not enough packs available)

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputMessage Id="1004" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Incomplete"/>
    <Article Id="0004-56-034-G00025T">
      <Pack Id="5637" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" OutputDestination="3"/>
```

```xml
        </Article>
    </OutputMessage>
</WWKS>
```

Example of a stock output canceled before output began

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputMessage Id="1004" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Aborted"/>
  </OutputMessage>
</WWKS>
```

Example of a stock output aborted after output began

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputMessage Id="1004" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Aborted"/>
    <Article Id="0004-56-034-G00025T">
      <Pack Id="5637" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" OutputDestination="3"/>
    </Article>
  </OutputMessage>
</WWKS>
```

Example of a successfully completed stock output with container filling

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputMessage Id="1004" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Completed"/>
    <Article Id="0004-56-034-G00025T">
      <Pack Id="5637" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" OutputDestination="3" LabelStatus="Labelled"
            BoxNumber="123" />
    </Article>
    <Article Id="0004-56-034-G00007T">
      <Pack Id="8563" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="70" Width="70" Height="70"
            Shape="Cuboid" IsInFridge="True" OutputDestination="3"
            LabelStatus="Labelled" BoxNumber="456" />
    </Article>
    <Box Number="123" />
    <Box Number="456" />
  </OutputMessage>
</WWKS>
```

Example of a successfully completed output stock with multiple box released messages

Considering an output request for three packs of the article `00010808` and also considering that a box is limited to contain just one pack, before the final OutputMessage there will be three intermediary `OutputMessages` for every box released with the status "`BoxReleased`" as it follows:

```
<WWKS Version="2.0" TimeStamp="2018-04-25T05:33:01Z">
  <OutputMessage Id="100" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="1" Status="BoxReleased" />
    <Article Id="00010808">
      <Pack Id="1" ScanCode="-00010808" DeliveryNumber="" BatchNumber=""
ExternalId="" ExpiryDate="2019-04-13" StockInDate="2017-10-13" SubItemQuantity="0"
Depth="104" Width="56" Height="52" Shape="Cuboid" IsInFridge="False"
BoxNumber="100" OutputDestination="1" OutputPoint="0" LabelStatus="NotLabelled"
StockLocationId="NONE" MachineLocation="999" />
    </Article>
    <Box Number="100" />
  </OutputMessage>
</WWKS>

<WWKS Version="2.0" TimeStamp="2018-04-25T05:33:02Z">
  <OutputMessage Id="100" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="1" Status="BoxReleased" />
    <Article Id="00010808">
      <Pack Id="2" ScanCode="-00010808" DeliveryNumber="" BatchNumber=""
ExternalId="" ExpiryDate="2019-04-13" StockInDate="2017-10-13" SubItemQuantity="0"
Depth="104" Width="56" Height="52" Shape="Cuboid" IsInFridge="False"
BoxNumber="101" OutputDestination="1" OutputPoint="0" LabelStatus="NotLabelled"
StockLocationId="NONE" MachineLocation="999" />
    </Article>
    <Box Number="101" />
  </OutputMessage>
</WWKS>

<WWKS Version="2.0" TimeStamp="2018-04-25T05:33:02Z">
  <OutputMessage Id="100" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="1" Status="BoxReleased" />
    <Article Id="00010808">
      <Pack Id="3" ScanCode="-00010808" DeliveryNumber="" BatchNumber=""
ExternalId="" ExpiryDate="2019-04-13" StockInDate="2017-10-13" SubItemQuantity="0"
Depth="104" Width="56" Height="52" Shape="Cuboid" IsInFridge="False"
BoxNumber="102" OutputDestination="1" OutputPoint="0" LabelStatus="NotLabelled"
StockLocationId="NONE" MachineLocation="999" />
    </Article>
    <Box Number="102" />
  </OutputMessage>
</WWKS>
```

Library

As soon as an output order has been completed, the final process status and a detailed list of outputted packs can be polled:

```csharp
void OutputProcess_Finished(object sender, EventArgs e)
{
      var output = sender as IOutputProcess;
      foreach (var pack in output.Packs)
      {
            Console.WriteLine("Pack '{0}' was dispensed by output process {1}.",
                              pack.Id, output.OrderNumber);
      }
}
```

As soon as a box has been released, the status and a detailed list of outputted packs fot the released box can be polled:

```csharp
void OutputProcess_BoxReleased(object sender, EventArgs e)
      {
          var output = sender as IOutputProcess;

          Console.WriteLine("Output process '{0}' finished with result '{1}'.",
output.OrderNumber, output.State.ToString());

          foreach (var pack in output.Packs)
          {
              Console.WriteLine("Pack '{0}' with ScanCode '{1}' and StockInDate
'{2}' was dispensed by output process {3}.", pack.Id, pack.ScanCode,
pack.StockInDate.ToShortDateString(), output.OrderNumber);
          }
      }
```
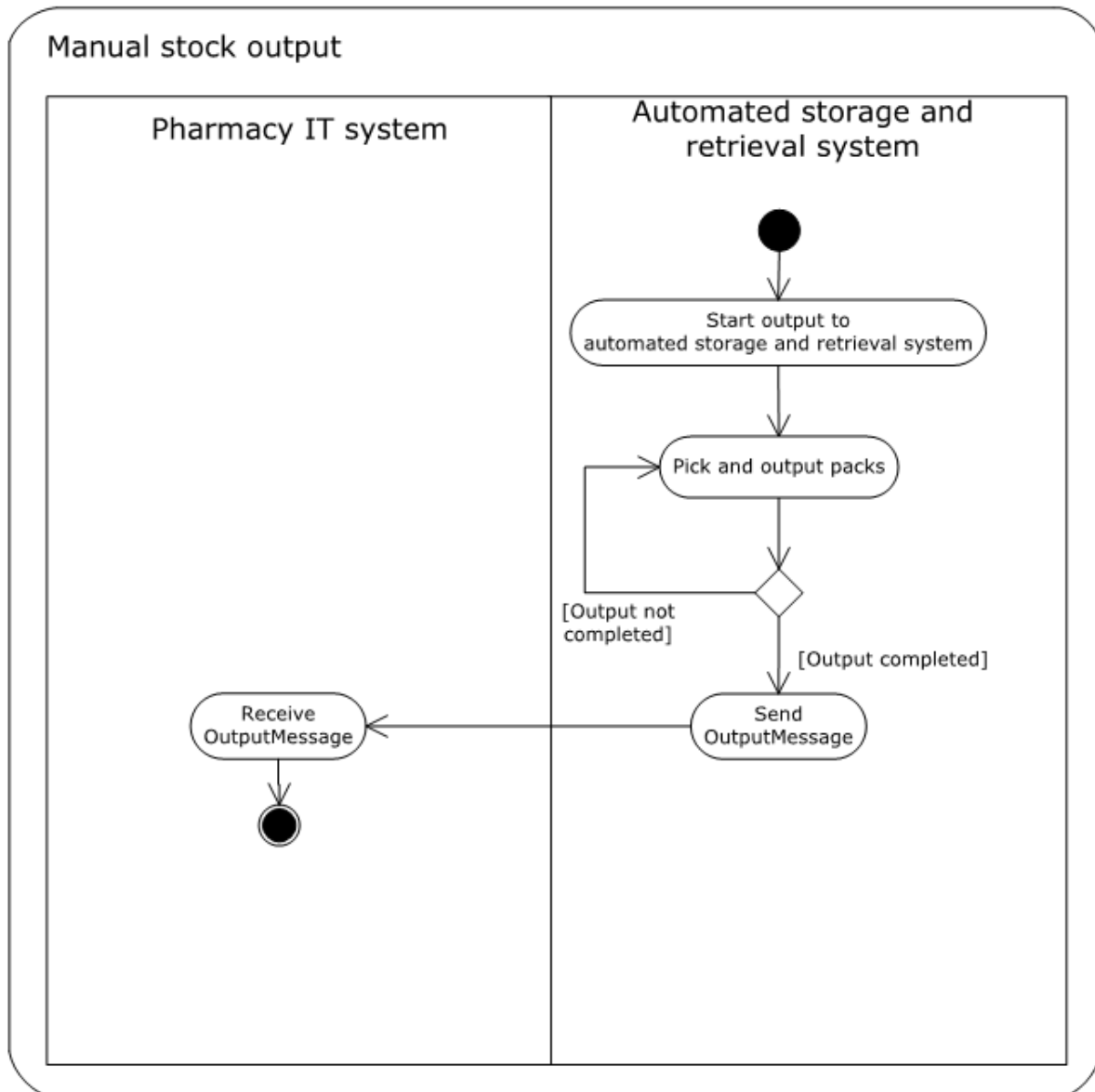
Manual stock output

Some automated storage and retrieval systems offer the facility to request packs directly on the automated storage and retrieval system without going through the pharmacy IT system. This is done by an operative on the automated storage and retrieval system's user interface. After output, an asynchronous `OutputMessage` is returned from the automated storage and retrieval system to the pharmacy IT system. The ID of this "manual" output process is always "`1`".

Sequence

Example of a successfully completed manual stock output

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputMessage Id="1" Source="999" Destination="100">
    <Details Priority="Normal" OutputDestination="3" Status="Completed"/>
    <Article Id="0004-56-034-G00025T">
      <Pack Id="5637" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
            Shape="Cuboid" OutputDestination="3"/>
    </Article>
  </OutputMessage>
</WWKS>
```

Library

To be able to respond to manually outputted packs, the user must register for the `PackDispensed` event. This event is called whenever a pack has been outputted without an output order.

```csharp
storageSystem.PackDispensed += StorageSystem_PackDispensed;

void StorageSystem_PackDispensed(IStorageSystem sender, IArticle[] articleList)
{
    foreach (var article in articleList)
    {
        foreach (var pack in article.Packs)
        {
            Console.WriteLine("Pack '{0}' has been dispensed by GUI.", pack.Id);
        }
    }
}
```

8.6 Output task state

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Planned, currently supporting only TaskInfoRequest/-Response

Lead elements

OutputInfoRequest

OutputInfoResponse

Usage

To poll the current status of an output task in progress on the automated storage and retrieval system, the pharmacy IT system can send the *OutputInfoRequest*. The automated storage and retrieval system will respond to it with the *OutputInfoResponse*.

Alternatives

Older versions of WWKS 2 defined `TaskInfoRequest/-Response` messages for the same purpose. It is recommended to use `OutputInfoRequest/-Response` instead.

Sequence

8.6.1   OutputInfoRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Planned, currently supporting only TaskInfoRequest

Structure

```
<WWKS>
  <OutputInfoRequest>
    <Task/>
  </OutputInfoRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
OutputInfoRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the information process. This ID is returned in the *OutputInfoResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *OutputInfoRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *OutputInfoRequest*
IncludeTaskDetails	O	Boolean	This flag specifies whether detailed task information like outputted packs, etc. are to be returned. Possible values: "True" if details of the tasks are to be sent "False" if no task data is to be sent The default value is "False".

Element	M/O	Data type	Description
Task		Tag	Task information follows.

Attributes	M/O	Data type	Description and Values
Type	M	String	Type of task on which information is being polled. Possible values: "Output" and "StockDelivery"

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <OutputInfoRequest Id="3330" Source="100" Destination="999">
    <Task Id="1004"/>
  </OutputInfoRequest>
</WWKS>
```

Library

As long as an output task is in progress, every time the attribute State is accessed the current status of the output order is determined.

Alternatively, it is possible to check the detailed information on running or already completed output orders via the GetOutputProcessInfo method.

```
// retrieve the detailed information of output process 124
// order number as int
IOutputProcessInfo info = storageSystem.GetOutputProcessInfo(124);
// order number as string
IOutputProcessInfo info = storageSystem.GetOutputProcessInfo("124");
```

8.6.2   OutputInfoResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Planned, currently supporting only TaskInfoResponse

Structure

```
<WWKS>
  <OutputInfoResponse>
    <Task>
      <Article>
        <Pack/>
      </Article>
      <Box/>
    </Task>
  </OutputInfoResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskInfoResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the information process. This ID was sent in the *OutputInfoRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the Output*InfoResponse*.
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *OutputInfoResponse*.

Element	M/O	Data type	Description
Task	M	Tag	Task information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the task. For output tasks, this is the ID specified in the *OutputRequest.*
Status	M	String	Status of the task. Possible values: "Unknown" if the task was not found "Queued" if processing is pending "InProcess" if currently being processed "Aborting" if the process is currently being aborted "Aborted" if processing has been aborted "Completed" if the task is complete "Incomplete" if the task was not completed fully

Element	M/O	Data type	Description
Article	O	Tag	Article information follows.
Attributes	**M/O**	**Data type**	**Description and Values**

Id	O	String	Article ID of the affected pack

Element	M/O	Data type	Description
Pack	O	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 64-bit >0	Picking system internal ID of the affected pack
DeliveryNumber	O	String	Stock delivery number of the affected pack
BatchNumber	O	String	Batch number of the affected pack
ExternalId	O	String	External ID of the affected pack
SerialNumber	O	String	Serial number of the affected pack
ExpiryDate	O	String	Expiration date of the affected pack in format YYYY-MM-DD.
ExpiryDateSource	O	String	Source of expiry date transmitted in the request. Possible values: Unknown: Source unknown (default value) AutoCalculated: Calculated by the robot from the input date ManualEntry: User has entered the expiry date manually ITSystem: Defined by IT System OCR: Expiry date printed on pack read by optical character recognition Barcode: Expiry has been extracted from a data matrix code Infeed: Defined by ITSystem sending an InfeedInputRequest
ScanCode	O	String	Barcode of the output pack

SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) in the affected pack. The value "0" means that the pack is full.
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. Possible values: "Cuboid" "Cylinder" The default value is "Cuboid".
IsInFridge	O	Boolean	Flag indicating whether the pack has been or is being stored refrigerated. The default value is "False".
BoxNumber	O	String	Number of the box to which the pack was outputted. The data is only required for the "Output" task type if an automatic box filler is being used.
OutputDestination	M	Integer 32-bit	Number of the output location to which the pack was sent. A possible error case is output to a point other than the one requested, for example because the requested output point was not operational.
OutputPoint	O	Integer 32-bit	Detailed information on the output location (e.g. belt number) used for pack output.
LabelStatus	O	String	Status of the labeling of the outputted pack. This is only relevant in conjunction with labeling. Possible values: "Labelled" if the pack was labeled correctly with the data predefined by the pharmacy IT system "NotLabelled" if the pack was not labeled (e.g. because no printer was available)

			"LabelError" if an error occurred during labeling
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine that was or will be used to store packs of this article. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.
GUID	O	String	Global unique id of a pack in stock of an ASRS.

Element	M/O	Data type	Description
Box	O	Tag	This data is only required for the "Output" task type. Detailed information on the containers used follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Number	M	String	Number of the container either defined in the *OutputRequest* or automatically determined during filling.

Example for Output without details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <outputInfoResponse Id="3330" Source="999" Destination="100">
    <Task Type="Output" Id="1004" Status="InProcess"/>
  </OutputInfoResponse>
</WWKS>
```

Example for Output with details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskInfoResponse Id="3330" Source="999" Destination="100">
    <Task Type="Output" Id="1004" Status="Completed">
      <Article Id="0004-56-034-G00025T">
        <Pack Id="5637" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
            ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
```

```xml
                    Shape="Cuboid" OutputDestination="3" LabelStatus="Labelled"
                    BoxNumber="123" />
        </Article>
        <Box Number="123" />
    </Task>
  </TaskInfoResponse>
</WWKS>
```

Library

See *OutputInfoRequest*.

8.7 Output cancellation

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Planned, currently supporting only TaskCancelRequest/-Response

Lead elements

TaskCancelOutputRequest

TaskCancelOutputResponse

Alternatives

In former releases of WWKS 2 these messages had the name `TaskCancelRequest/-Response`, which are now deprecated.

As part of the WWKS 2 standardization by ADAS they have been renamed to `TaskCancelOutputRequest/-Response` make clear that they can be used to cancel output tasks only.

Usage

To cancel a task (such as a stock output) in progress on the automated storage and retrieval system, the pharmacy IT system can send the *TaskCancelOutputRequest*. The automated storage and retrieval system will cancel processing, if possible, and send the *TaskCancelOutputResponse*.

Sequence

Output cancellation

PIS	Device

- Send *OutputRequest* → Receive *OutputRequest*
- Receive *OutputResponse* ← Send *OutputResponse*
- Pick and dispense packs
- Send *TaskCancelOutputRequest* → Receive *TaskCancelOutputRequest*
- Abort picking
- Receive *TaskCancelOutputResponse* ← Send *TaskCancelOutputResponse*
- Receive *OutputMessage* ← [Status "Aborted"] ← Send *OutputMessage*

8.7.1 TaskCancelOutputRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Planned, currently supporting only TaskCancelRequest/-Response

Structure

```
<WWKS>
  <TaskCancelOutputRequest>
    <Task/>
  </TaskCancelOutputRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskCancelOutputRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the cancelation process. This ID is returned in the *TaskCancelOutputResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *TaskCancelOutputRequest*
Destination	M	Integer 32-bit >0	ID of the automated storage and retrieval system intended to receive the *TaskCancelOutputRequest*

Element	M/O	Data type	Description
Task	M	Tag	Task information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the task to be canceled. For output tasks, this is the ID specified in the *OutputRequest*.

Example

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskCancelOutputRequest Id="3335" Source="100" Destination="999">
    <Task Id="1004"/>
  </TaskCancelOutputRequest>
</WWKS>
```

Library

An ongoing stock output order can be canceled by the `Cancel` method applied to an `IOutputProcess` object:

```
output.Cancel();
```

8.7.2 TaskCancelOutputResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Planned, currently supporting only TaskCancelRequest/-Response

Structure

```
<WWKS>
  <TaskCancelResponse>
    <Task/>
  </TaskCancelResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskCancelResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the cancelation process. This ID was sent in the *TaskCancelRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *TaskCancelResponse*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *TaskCancelResponse*

Element	M/O	Data type	Description
Task	M	Tag	Task information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the canceled task. This is the ID specified in the *OutputRequest*.
Status	M	String	Status of the cancellation. Possible values: "Unknown" if the task is not known

			"Cancelled" if the task could be canceled "CancelError", if the cancellation failed

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskCancelOutputResponse Id="3335" Source="999" Destination="100">
    <Task Id="1004" Status="Cancelled"/>
  </TaskCancelOutputResponse>
</WWKS>
```

Library

See *TaskCancelOutputResponse*.

8.8 Stock Locations

Device support

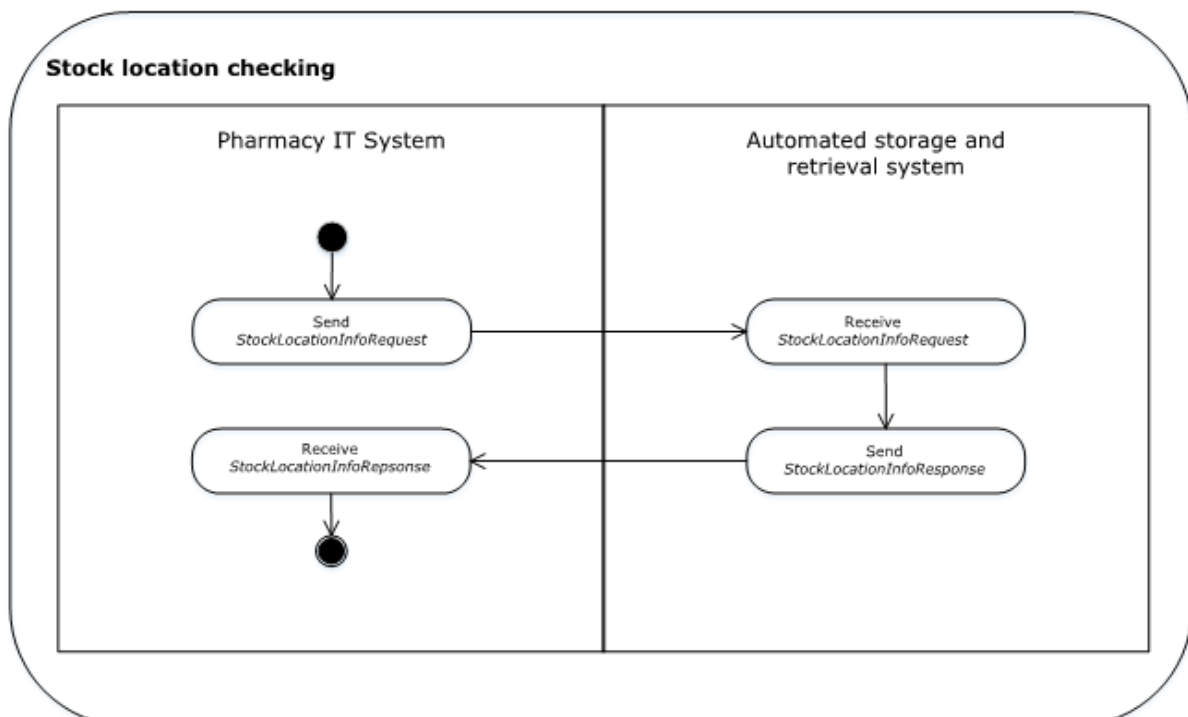| Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Lead Elements

StockLocationInfoRequest

StockLocationInfoResponse

Usage

When the pharmacy IT system wants to check the currently configured stock locations of the automated storage and retrieval system, it sends the *StockLocationInfoRequest*.

The automated storage and retrieval system will respond with a *StockLocationInfoResponse*. These messages are only used when an automated storage and retrieval system is divided into several virtual stock locations.

Sequence

8.8.1 StockLocationInfoRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <StockLocationInfoRequest/>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockLocationInfoRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock location request process. This ID is returned in the *StockLocationInfoResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockLocationInfoRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StockLocationInfoRequest*

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockLocationInfoRequest Id="3335" Source="100" Destination="999"/>
</WWKS>
```

Library

The current configuration of the automated storage and retrieval system can be checked anytime via the `StockLocations` feature:

```
var stockLocations = storageSystem.StockLocations;
```

When checking the configuration, the library sends a *StockLocationInfoRequest*, waits for the corresponding *StockLocationInfoResponse*, and evaluates it.

8.8.2 StockLocationInfoResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported

Structure

```
<WWKS>
  <StockLocationInfoResponse>
    <StockLocation/>
  </StockLocationInfoResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
StockLocationInfo Response	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the stock location request process. This ID was returned in the *StockLocationInfoRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *StockLocationInfoResponse.*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *StockLocationInfoResponse.*

Element	M/O	Data type	Description
StockLocation	M	Tag	Stock location information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	Identification of the stock location
Description	O	String	Optional description of the stock location

Example

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <StockLocationInfoResponse Id="3335" Source="999" Destination="100">
    <StockLocation Id="463563" Description="Narcotics" />
    <StockLocation Id="674638" Description="SmartDrugs" />
  </StockLocationInfoResponse>
</WWKS>
```

Library

See *StockLocationInfoRequest*.

8.9 Channel configuration

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Not supported

Lead Elements

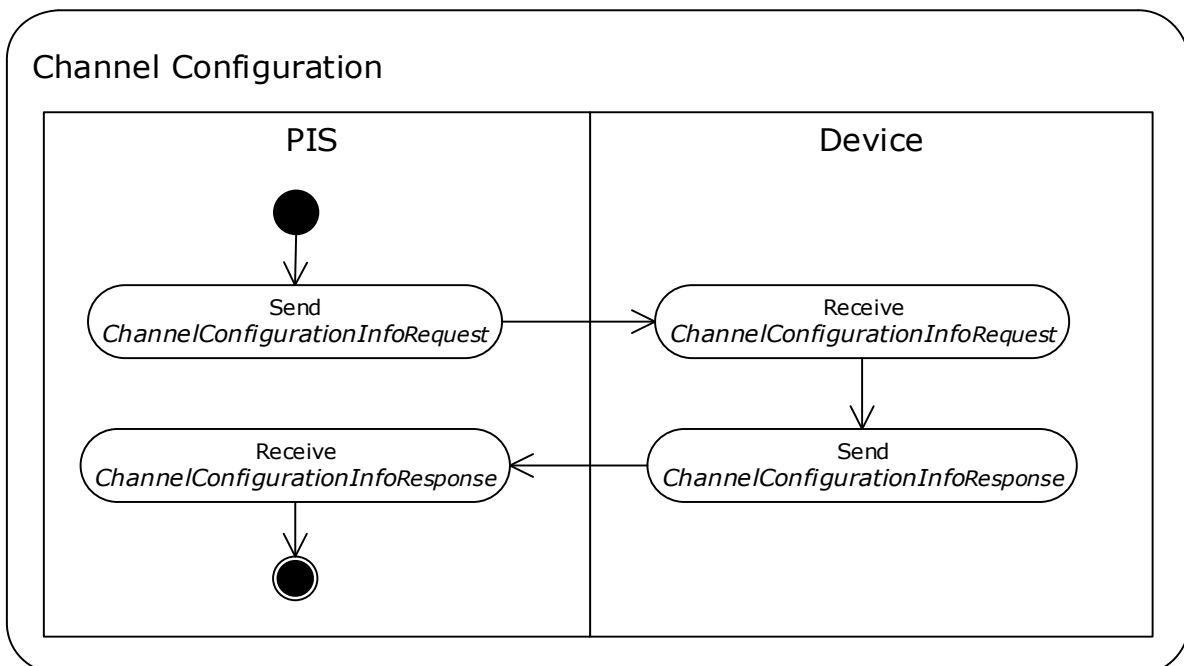*ChannelConfigurationInfoRequest*

ChannelConfigurationInfoResponse

Usage

If the automated storage and retrieval system is working with channels they have a fixed assignment to articles, the PIS may query these by sending a *ChannelConfigurationInfoRequest*.

The automated storage and retrieval system answer with a *ChannelConfigurationInfoResponse*.

Sequence

8.9.1 ChannelConfigurationInfoRequest

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Not supported

Structure

```
<WWKS>
  <ChannelConfigurationInfoRequest>
    <Criteria/>
  </ChannelConfigurationInfoRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
ChannelConfigurationInfoRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the channel configuration request process. This ID is returned in the *ChannelConfigurationInfoResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *ChannelConfigurationInfoRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *ChannelConfigurationInfoRequest*

Element	M/O	Data type	Description
Criteria	M	Tag	Request filter definition follow. May appear multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
ArticleId	O	String64	Returns only channels configured to handle the article ID given.
ChannelId	O	String64	Returns only the given channel.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <ChannelConfigurationInfoRequest Id="3335" Source="100" Destination="999">
    <Criteria ChannelId="2|6|2"/>
  </ChannelConfigurationInfoRequest>
</WWKS>
```

Library

Currently not implemented.

8.9.2 ChannelConfigurationInfoResponse

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Not supported

Structure

```
<WWKS>
  <ChannelConfigurationInfoResponse>
    <Channel/>
  </ChannelConfigurationResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
ChannelConfigurationInfoResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the channel configuration request process. This ID was send in the *ChannelConfigurationInfoRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *ChannelConfigurationInfoResponse*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *ChannelConfigurationInfoResponse*

Element	M/O	Data type	Description
Channel	M	Tag	Channel configuration details follow. May appear multiple times.

Attributes	M/O	Data type	Description and Values
Id	M	String	ID of the channel.
MinPackLength	O	Integer > 0	Minimal length of packs (in mm) that may be stored in the channel.
MinPackWidth	O	Integer > 0	Minimal width of packs (in mm) that may be stored in the channel.
MinPackHeight	O	Integer > 0	Minimal height of packs (in mm) that may be stored in the channel.
MaxPackLength	O	Integer > 0	Maximal length of packs (in mm) that may be stored in the channel.
MaxPackWidth	O	Integer > 0	Maximal width of packs (in mm) that may be stored in the channel.
MaxPackHeight	O	Integer > 0	Maximal height of packs (in mm) that may be stored in the channel.
AssignedArticleId	O	String64	ID of the article the channel is currently assigned to. Empty, if no article is assigned. Default value is "".

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <ChannelConfigurationInfoResponse Id="3335" Source="999" Destination="100">
    <Channel Id="2|6|2" MinPackLength="15" MinPackWidth="15" MinPackHeight="15"
MaxPackLength="235" MaxPackWidth="80" MaxPackHeigth="45"
AssignedArticleId="01234587"/>
  </ChannelConfigurationInfoResponse>
</WWKS>
```

Library

Currently not implemented.

8.10 Output destination user interaction

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Vmax: Supported, Select: Not supported
Digital OTC Shelf	Rowa Vmotion	Not supported
Pick-up Terminal	Rowa Vpoint Pick-up	Not supported
Self-checkout	Rowa Self-Checkout	Not supported

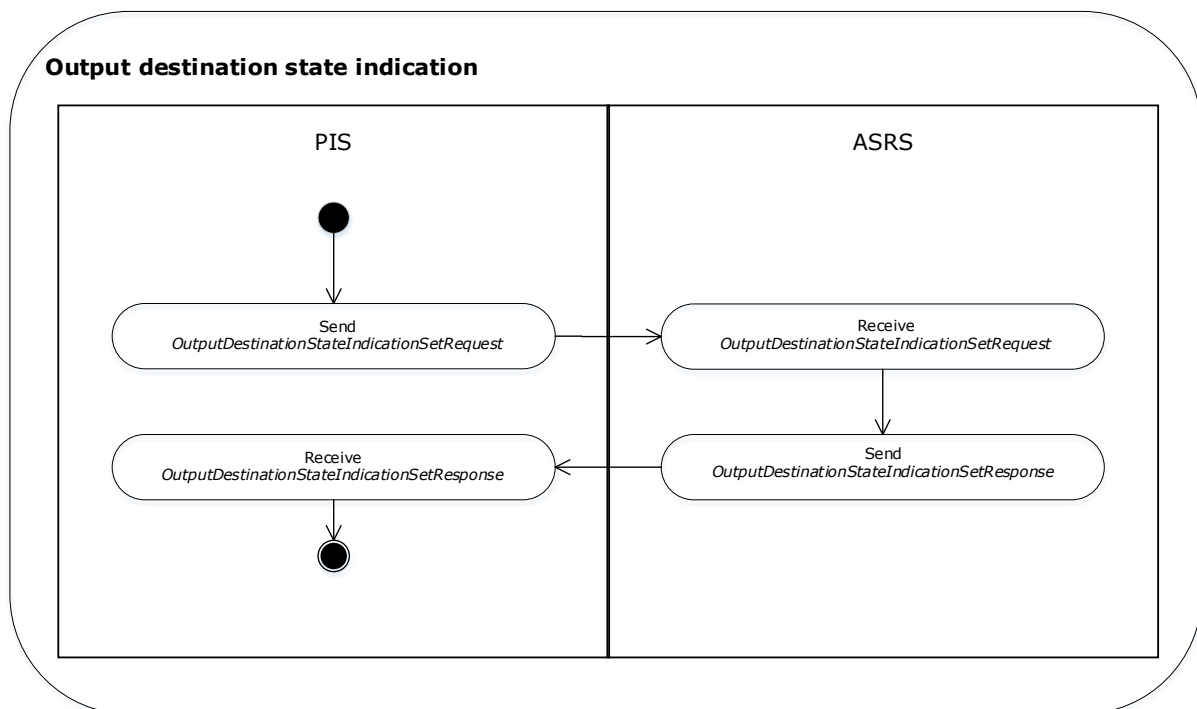### 8.10.1 Controlling state indication at an output destination

Lead elements

OutputDestinationStateIndicationSetRequest

OutputDestinationStateIndicationSetResponse

Usage

The PIS sends an *OutputDestinationStateIndicationSetRequest* to switch on or off the light at an output destination or let it start blinking. The ASRS answers with an *OutputDestinationStateIndicationSetResponse* to tell if the action has been successful.

Sequence

8.10.1.1 OutputDestinationStateIndicationSetRequest

Structure

```
<WWKS>
  < OutputDestinationStateIndicationSetRequest>
  </OutputDestinationStateIndicationSetRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
OutputDestinationState IndicationSetRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the request. This ID is returned in the *OutputDestinationStateIndicationSetResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the request.
Destination	M	Integer 32-bit >0	ID of the system to which the request is sent.
OutputDestination	M	Integer 32-bit	Number of the output location.
State	M	String	New state. Possible values: "Off": Light is switched off. "On": Light is switched on. "Blinking": Light starts blinking.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  < OutputDestinationStateIndicationSetRequest Id="1003" Source="100"
    Destination="999" OutputDestination="3" State="Blinking" />
</WWKS>
```

Library

To change the state of a light at an output destination, call the
SetOutputDestinationStateIndication method.

```
bool success = storageSystem.SetOutputDestinationStateIndication(
  outputDestination: 3,
  newState: OutputDestinationStateIndication.Blinking);
```

It will return `true` if the state has been set successfully. In case of an error, the method returns `false` and the interface log of the library contains a human readable error reason.

8.10.1.2 OutputDestinationStateIndicationSetResponse

Structure

```
<WWKS>
  <OutputDestinationStateIndicationSetResponse>
  </OutputDestinationStateIndicationSetResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
OutputDestination StateIndicationSetResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the request. This ID was sent in the *OutputDestination-StateIndicationSetRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the response
Destination	M	Integer 32-bit >0	ID of the system intended to receive the response.
OutputDestination	M	Integer 32-bit >0	Number of the output location.
Result	M	String	State change result. Possible values: "Ok": State has been changed to requested value. "Error": ASRS was not able to fulfill the request.
Text	O	String	Additional human readable information about the result, e.g., error reason.

Example

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  < OutputDestinationStateIndicationSetResponse Id="1003"
     Source="100" Destination="999" OutputDestination="3"
     Result="Ok" />
</WWKS>

<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  < OutputDestinationStateIndicationSetResponse Id="1003"
     Source="100" Destination="999" OutputDestination="1"
     Result="Error" Text="No light at output" />
</WWKS>
```

Library

See *OutputDestinationStateIndicationSetRequest*.

8.10.2 Information about button pressed at output destination

**Lead elements**

OutputDestinationButtonPressedMessage

Usage

When a user pressed a button mounted at an output destination, the ASRS send an *OutputDestinationButtonPressedMessage* that indicate at which output destination a button was pressed.

The ASRS does not check if it is a useful action to press the button at this point in time. It forwards the event no matter which order state is currently indicated at the output destination.

The PIS does not confirm this message. If the message cannot be sent, it is lost. The user must press the button again to initiate another message.

If the button is pressed again within 300ms after the last press, the ASRS will not send another *OutputDestinationButtonPressedMessage.*

Sequence
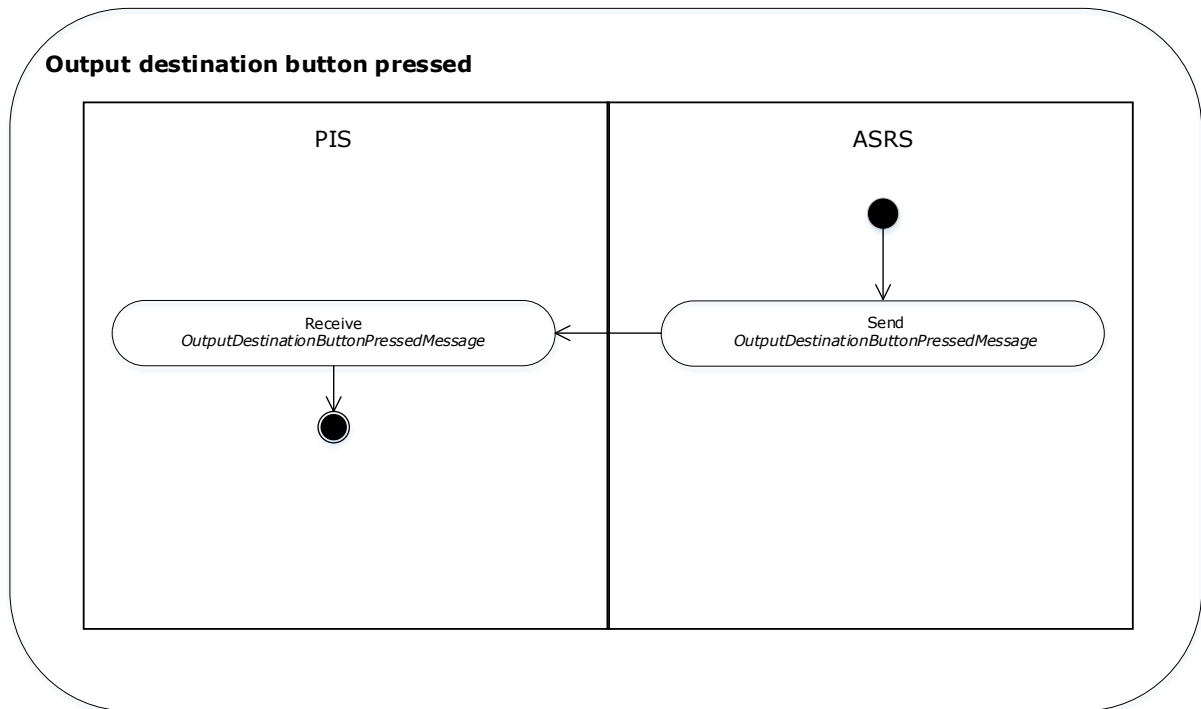
8.10.2.1 OutputDestinationButtonPressedMessage

Structure

```
<WWKS>
  < OutputDestinationButtonPressedMessage/>
</WWKS>
```

Elements

Element	M/O	Data type	Description
OutputDestination ButtonPressedMessage	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the message.
Source	M	Integer 32-bit >0	ID of the system sending the message.
Destination	M	Integer 32-bit >0	ID of the system receiving this message

OutputDestination	M	Integer 32-bit >0	Number of the output location.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  < OutputDestinationButtonPressedMessage Id="1045"
     Source="999" Destination="100" OutputDestination="3"/>
</WWKS>
```

Library

To handle a button pressed by a user at an output destination, register for the
`OutputDestinationButtonPressed` event.

```
storageSystem.OutputDestinationButtonPressed +=
  StorageSystem_OutputDestinationButtonPressed;
```

The event handler is called whenever a button is pressed. The output destination is handed over as parameter.

```
void StorageSystem_OutputDestinationButtonPressed
     (IStorageSystem sender, int outputDestination)
{
     // your handling logic here,
    // recommended to change the state indication at the output
    // destination as reaction to a button press to give the user a
    // feedback
}
```

9 Message reference V – Deprecated messages

9.1.1 Task status

Deprecated

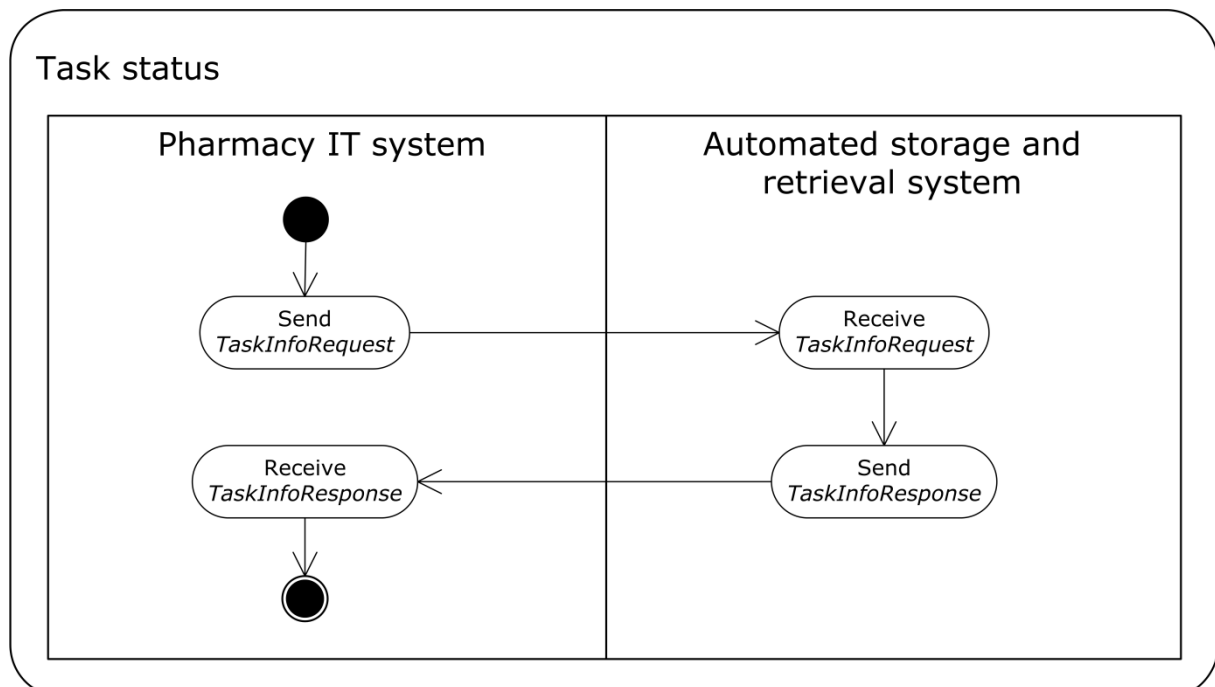WWKS 2+ now defines dedicated messages to query states of different task types.

Please use `OutputInfoRequest/-Response` to query output task states and
`StockDeliveryInfoRequest/-Response` to query delivery task states.

Rowa® Technologies

Device support

Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported
Digital OTC Shelf	Rowa Vmotion	Not supported
Pick-up Terminal	Rowa Vpoint Pick-up	Not supported
Self-checkout	Rowa Self-Checkout	Not supported

Lead elements

TaskInfoRequest

TaskInfoResponse

Usage

To poll the current status of a task (such as editing a stock output or a new delivery) in progress on the automated storage and retrieval system, the pharmacy IT system can send the *TaskInfoRequest*. The automated storage and retrieval system will respond to it with the *TaskInfoResponse*.

Sequence

9.1.1.1 TaskInfoRequest

Structure

```xml
<WWKS>
  <TaskInfoRequest>
    <Task/>
  </TaskInfoRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskInfoRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the information process. This ID is returned in the *TaskInfoResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *TaskInfoRequest*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *TaskInfoRequest*
IncludeTaskDetails	O	Boolean	This flag specifies whether detailed task information like outputted packs, etc. are to be returned. Possible values: "True" if details of the tasks are to be sent "False" if no task data is to be sent The default value is "False".

Element	M/O	Data type	Description
Task		Tag	Task information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Type	M	String	Type of task on which information is being polled. Possible values: "Output" and "StockDelivery"

Id	M	String	ID of the task. For output tasks, this is the ID specified in the *OutputRequest*. For new deliveries, this is the DeliveryNumber specified in the *StockDeliverySetRequest*.

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskInfoRequest Id="3330" Source="100" Destination="999">
    <Task Type="Output" Id="1004"/>
  </TaskInfoRequest>
</WWKS>
```

Library

As long as an output task is in progress, every time the attribute `State` is accessed the current status of the output order is determined.

Alternatively, it is possible to check the detailed information on running or already completed output orders via the `GetOutputProcessInfo` method.

```
// retrieve the detailed information of output process 124
// order number as int
IOutputProcessInfo info = storageSystem.GetOutputProcessInfo(124);
// order number as string
IOutputProcessInfo info = storageSystem.GetOutputProcessInfo("124");
```

Detailed information on a running or an already completed new delivery can be checked via the `GetStockDeliveryInfo` method.

```
// retrieve the detailed information of stock delivery 1234
// delivery number as string
IStockDeliveryInfo info = storageSystem.GetStockDeliveryInfo("1234");
```

9.1.1.2 TaskInfoResponse

Structure

```
<WWKS>
  <TaskInfoResponse>
    <Task>
      <Article>
        <Pack/>
      </Article>
      <Box/>
    </Task>
  </TaskInfoResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskInfoResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the information process. This ID was sent in the *TaskInfoRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *TaskInfoResponse*.
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *TaskInfoResponse*.

Element	M/O	Data type	Description
Task	M	Tag	Task information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Type	M	String	Type of task on which information is being polled. Possible values: "Output" and "StockDelivery"
Id	M	String	ID of the task. For output tasks, this is the ID specified in the *OutputRequest*. For new deliveries, this is the DeliveryNumber specified in the *StockDeliverySetRequest*.
Status	M	String	Status of the task. Possible values: "Unknown" if the task was not found "Queued" if processing is pending "InProcess" if currently being processed "Aborting" if the process is currently being aborted "Aborted" if processing has been aborted "Completed" if the task is complete

			"Incomplete" if the task was not completed fully

Element	M/O	Data type	Description
Article	O	Tag	Article information follows.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	O	String	Article ID of the affected pack
Quantity	O	Integer 32-bit >=0	This data is only used for the "StockDelivery" task type. Maximum number of packs of this article which may be placed into stock in this stock delivery. The value "0" means there is no limitation. The default value is "0".

Element	M/O	Data type	Description
Pack	O	Tag	Pack information follows. This element may occur multiply.
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	Integer 64-bit >0	Picking system internal ID of the affected pack
DeliveryNumber	O	String	Stock delivery number of the affected pack
BatchNumber	O	String	Batch number of the affected pack
ExternalId	O	String	External ID of the affected pack
ExpiryDate	O	String	Expiration date of the affected pack in format YYYY-MM-DD.
ExpiryDateSource	O	String	Source of expiry date transmitted in the request.

			Possible values:
			Unknown: Source unknown (default value)
			AutoCalculated: Calculated by the robot from the input date
			ManualEntry: User has entered the expiry date manually
			ITSystem: Defined by IT System
			OCR: Expiry date printed on pack read by optical character recognition
			Barcode: Expiry has been extracted from a data matrix code
			Infeed: Defined by ITSystem sending an InfeedInputRequest
ScanCode	O	String	Barcode of the output pack
SubItemQuantity	O	Integer 32-bit >=0	Number of units (e.g. tablets or ampules) in the affected pack. The value "0" means that the pack is full.
Depth	O	Integer 32-bit >=0	Depth of the pack in mm
Width	O	Integer 32-bit >=0	Width of the pack in mm
Height	O	Integer 32-bit >=0	Height of the pack in mm
Shape	O	String	Form factor of the pack. Possible values: "Cuboid" "Cylinder" The default value is "Cuboid".
IsInFridge	O	Boolean	Flag indicating whether the pack has been or is being stored refrigerated. The default value is "False".
BoxNumber	O	String	Number of the box to which the pack was outputted. The data is only required for the

			"Output" task type if an automatic box filler is being used.
OutputDestination	M	Integer 32-bit	This data is only required for the "Output" task type. Number of the output location to which the pack was sent. A possible error case is output to a point other than the one requested, for example because the requested output point was not operational.
OutputPoint	O	Integer 32-bit	This data is only required for the "Output" task type. Detailed information on the output location (e.g. belt number) used for pack output.
LabelStatus	O	String	This data is only required for the "Output" task type. Status of the labeling of the outputted pack. This is only relevant in conjunction with labeling. Possible values: "Labelled" if the pack was labeled correctly with the data predefined by the pharmacy IT system "NotLabelled" if the pack was not labeled (e.g. because no printer was available) "LabelError" if an error occurred during labeling
StockLocationId	O	String	ID of the stock location in the automated storage and retrieval system. Is only used when an automated storage and retrieval system is divided into several virtual stock locations.
MachineLocation	O	String	Identification of the machine that was or will be used to store packs of this article. Only relevant if the automated storage and retrieval system consists of several physical stand-alone machines.

Element	M/O	Data type	Description
Box	O	Tag	This data is only required for the "Output" task type. Detailed information on the containers used follows. This element may occur multiply.

Attributes	M/O	Data type	Description and Values
Number	M	String	Number of the container either defined in the *OutputRequest* or automatically determined during filling.

Example for Output without details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskInfoResponse Id="3330" Source="999" Destination="100">
    <Task Type="Output" Id="1004" Status="InProcess"/>
  </TaskInfoResponse>
</WWKS>
```

Example for Output with details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskInfoResponse Id="3330" Source="999" Destination="100">
    <Task Type="Output" Id="1004" Status="Completed">
      <Article Id="0004-56-034-G00025T">
        <Pack Id="5637" BatchNumber="Omepra0004" ExternalId="PalH09051200001"
              ExpiryDate="2015-11-05" Depth="50" Width="50" Height="50"
              Shape="Cuboid" OutputDestination="3" LabelStatus="Labelled"
              BoxNumber="123" />
      </Article>
      <Box Number="123" />
    </Task>
  </TaskInfoResponse>
</WWKS>
```

Example for StockDelivery without details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskInfoResponse Id="3330" Source="999" Destination="100">
    <Task Type="StockDelivery" Id="1234" Status="InProcess"/>
  </TaskInfoResponse>
</WWKS>
```

Example for StockDelivery with details

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskInfoResponse Id="3330" Source="999" Destination="100">
    <Task Type="StockDelivery" Id="1234" Status="Completed">
      <Article Id="0004-56-034-G00025T" Quantity="1">
        <Pack Id="5637" DeliveryNumber="1234" BatchNumber="Omepra0004"
              ExternalId="PalH09051200001" ExpiryDate="2015-11-05"
              Depth="50" Width="50" Height="50" Shape="Cuboid" />
      </Article>
    </Task>
```

```
    </TaskInfoResponse>
</WWKS>
```

Library

See *TaskInfoRequest*.

9.1.2   Cancellation

Deprecated

WWKS 2+ now defines dedicated messages to cancel different task types.

Please use `TaskCancelOutput/-Response` to cancel output task states.

Device support

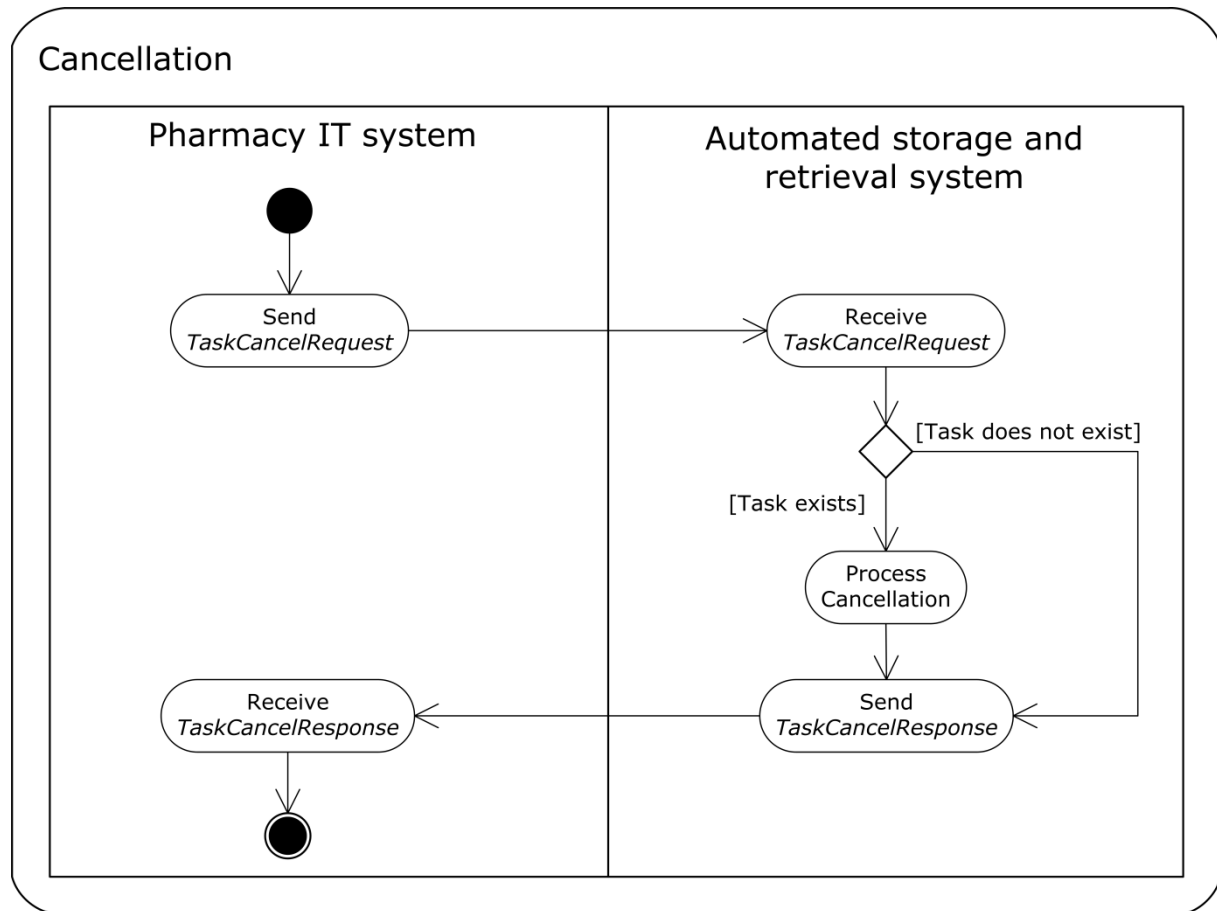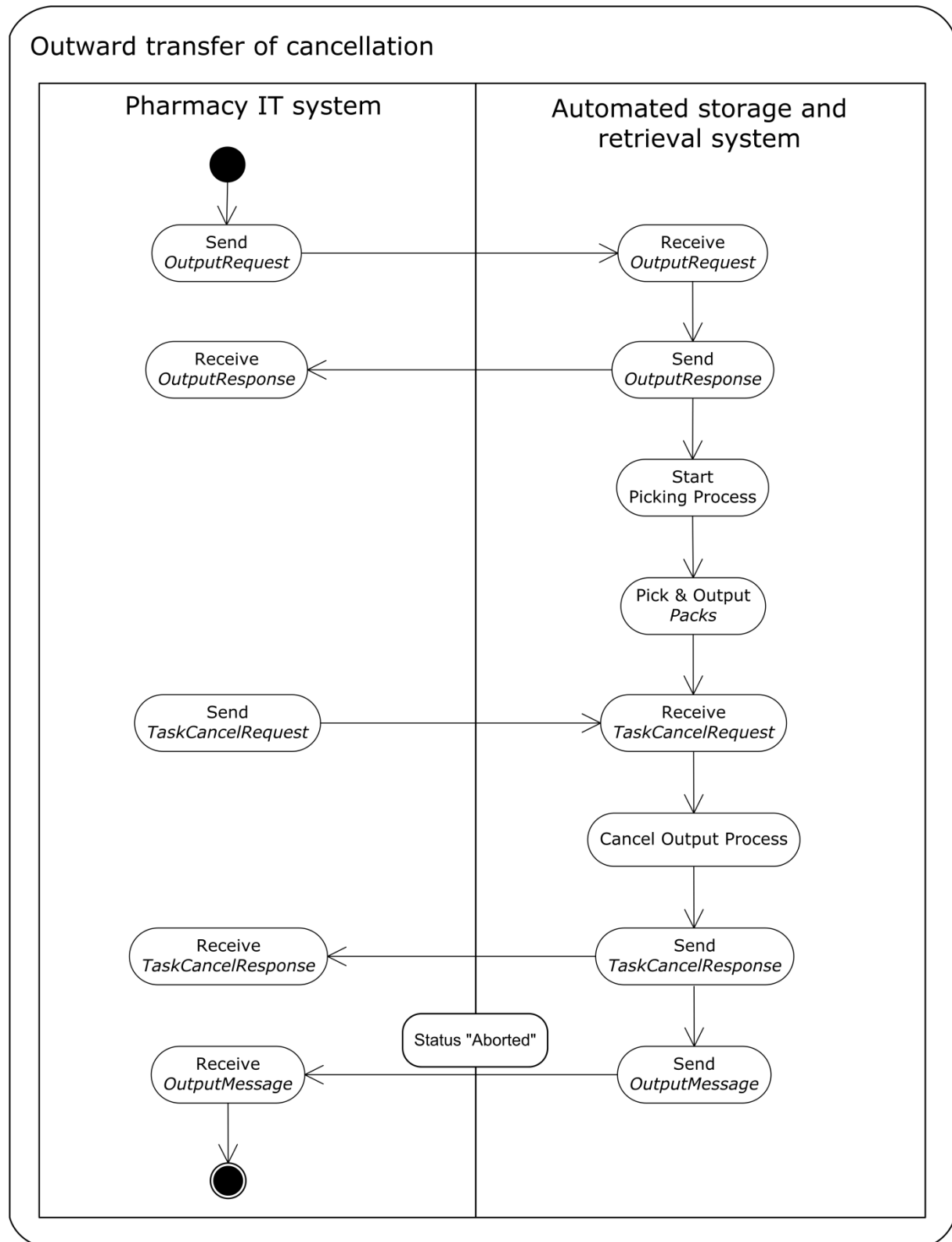| Device category	Rowa Device	Message support
ASRS	Rowa Vmax/Select	Supported
Digital OTC Shelf	Rowa Vmotion	Not supported
Pick-up Terminal	Rowa Vpoint Pick-up	Not supported
Self-checkout	Rowa Self-Checkout	Not supported

Lead elements

TaskCancelRequest

TaskCancelResponse

Usage

To cancel a task (such as a stock output) in progress on the automated storage and retrieval
system, the pharmacy IT system can send the *TaskCancelRequest*. The automated storage and
retrieval system will cancel processing, if possible, and send the *TaskCancelResponse*.

Sequence

Cancellation

The following diagram shows the cancellation function in a stock output process.

Outward transfer of cancellation

| Pharmacy IT system | Automated storage and retrieval system |

- Send *OutputRequest* → Receive *OutputRequest*
- Receive *OutputResponse* ← Send *OutputResponse*
- Start Picking Process
- Pick & Output *Packs*
- Send *TaskCancelRequest* → Receive *TaskCancelRequest*
- Cancel Output Process
- Receive *TaskCancelResponse* ← Send *TaskCancelResponse*
- Receive *OutputMessage* ← Status "Aborted" ← Send *OutputMessage*

9.1.2.1   TaskCancelRequest

Structure

```
<WWKS>
  <TaskCancelRequest>
    <Task/>
  </TaskCancelRequest>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskCancelRequest	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the cancelation process. This ID is returned in the *TaskCancelResponse*.
Source	M	Integer 32-bit >0	ID of the system sending the *TaskCancelRequest*
Destination	M	Integer 32-bit >0	ID of the automated storage and retrieval system intended to receive the *TaskCancelRequest*

Element	M/O	Data type	Description
Task	M	Tag	Task information follows. This element can be used multiple times.
Attributes	**M/O**	**Data type**	**Description and Values**
Type	M	String	Type of task to be canceled. Possible value: "Output"
Id	M	String	ID of the task to be canceled. For output tasks, this is the ID specified in the *OutputRequest*.

Example

```xml
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskCancelRequest Id="3335" Source="100" Destination="999">
    <Task Type="Output" Id="1004"/>
  </TaskCancelRequest>
</WWKS>
```

Library

An ongoing stock output order can be canceled by the `Cancel` method applied to an `IOutputProcess` object:

```
output.Cancel();
```

9.1.2.2   TaskCancelResponse

Structure

```xml
<WWKS>
  <TaskCancelResponse>
    <Task/>
  </TaskCancelResponse>
</WWKS>
```

Elements

Element	M/O	Data type	Description
TaskCancelResponse	M	Tag	Message type
Attributes	**M/O**	**Data type**	**Description and Values**
Id	M	String	ID of the cancelation process. This ID was sent in the *TaskCancelRequest*.
Source	M	Integer 32-bit >0	ID of the system sending the *TaskCancelResponse*
Destination	M	Integer 32-bit >0	ID of the system intended to receive the *TaskCancelResponse*

Element	M/O	Data type	Description
Task	M	Tag	Task information follows. This element may occur multiply.

Attributes	M/O	Data type	Description and Values
Type	M	String	Type of task canceled. Possible value: "Output"
Id	M	String	ID of the canceled task. For output tasks, this is the ID specified in the *OutputRequest*.
Status	M	String	Status of the cancellation. Possible values: "Unknown" if the task is not known "Cancelled" if the task could be canceled "CancelError", if the cancellation failed

Example

```
<WWKS Version="2.0" TimeStamp="2013-04-16T11:14:00Z">
  <TaskCancelResponse Id="3335" Source="999" Destination="100">
    <Task Type="Output" Id="1004" Status="Cancelled"/>
  </TaskCancelResponse>
</WWKS>
```

Library

See *TaskCancelResponse*.