



Healthcare solution: HL7 connector 2.1.6

Qmatic Platform

Revision history

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1. What's new

This a brief list of what's new in this version **2.1.6**:

- Fixed the issue The conditional path cannot work handling multiline. Please read conditional HL7 path. Finding in segment

2. Glossary

	Description
HIS	Hospital information System
PAS	Patient appointment system

3. Introduction

The Orchestra HL7 Module is a middleware product which greatly decreased effort and time required to integrate Qmatic Orchestra with a hospital information system.

This document describes all aspects of the modules including the supported use cases, a typical implementation process and how to configure the middleware.

3.1. What is HL7?

Official site: <http://www.hl7.org>

Hospitals and other healthcare provider organizations typically have many different computer systems used for everything from billing records to patient tracking. All of these systems should communicate with each other (or "interface") when they receive new information but not all do so. HL7 specifies a number of flexible standards, guidelines, and methodologies by which various healthcare systems can communicate with each other. Such guidelines or data standards are a set of rules that allow information to be shared and processed in a uniform and consistent manner. These data standards are meant to allow healthcare organizations to easily share clinical information. Theoretically, this ability to exchange information should help to minimize the tendency for medical care to be geographically isolated and highly variable.

HL7 version 2 defines a series of electronic messages to support administrative, logistical, financial as well as clinical processes. Since 1987 the standard has been updated regularly, resulting in versions 2.1, 2.2, 2.3, 2.3.1, 2.4, 2.5, 2.5.1 and 2.6. The v2.x standards are backward compatible (e.g., a message based on version 2.3 will be understood by an application that supports version 2.6).

HL7 v2.x messages use a human-readable (ASCII), non-XML encoding syntax based on segments (lines) and one-character delimiters.

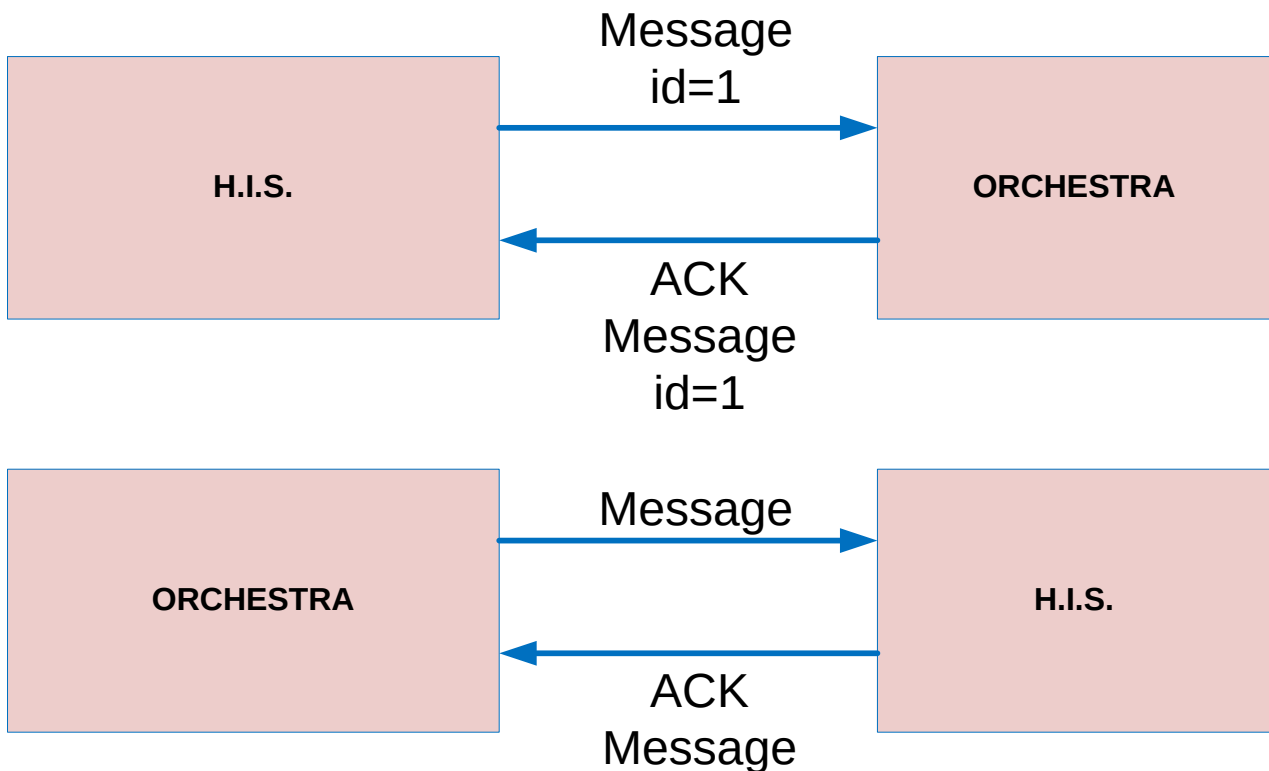
- Segments have composites (fields) separated by the composite delimiter.
- A composite can have sub-composites (subcomponents) separated by the sub-composite delimiter, and sub-composites can have sub-sub-composites (subcomponents) separated by the sub-sub-composite delimiter.
- The default delimiters are vertical bar or pipe (|) for the field separator, caret (^) for the component separator, and ampersand (&) for the subcomponent separator.
- The tilde (~) is the default repetition separator. The first field (composite) in each segment contains the 3-character segment name.
- Each segment of the message contains one specific category of information.
- Every message has MSH as its first segment, which includes a field that identifies the message type.
- The message type determines the expected segment names in the message.
- The segment names for a particular message type are specified by the segment grammar notation used in the HL7 standards.

The following is an example of an admission record. MSH is the header record, PID the Patient Identity, etc. The 5th field for the PID record is the patients name.

```
MSH|^~\&|MegaReg|XYZHospC|SuperOE|XYZImgCtr|20060529090131-0500||ADT^A01^ADT_A01|01052901|P|2.5|
EVN||200605290901||||200605290900|
PID|||56782445^^^UReg^PI||KLEINSAMPLE^BARRY^Q^JR||19620910|M||2028-9^^HL70005^RA99113^XYZ|260
GOODWIN CREST DRIVE^^BIRMINGHAM^AL^35 209^M-NICKELL'S PICKLES^10000 W 100TH
AVE^BIRMINGHAM^AL^35200^^O |||||||0105I30001^^^99DEF^AN|
PV1||I|W^389^1^UABH^^^3||||12345^MORGAN^REX^J^^MD^0010^UAMC^L||678
90^GRAINGER^LUCY^X^^MD^0010^UAMC^L|MED|||||A0||13579^POTTER^SHER
MAN^T^^MD^0010^UAMC^L|||||||||||||||||||||200605290900|
OBX|1|NM|^Body Height||1.80|m^Meter^ISO+||||F|
OBX|2|NM|^Body Weight||79|kg^Kilogram^ISO+||||F|
AL1|1||^ASPIRIN|
DG1|1||786.50^CHEST PAIN, UNSPECIFIED^I9|||A|
```

(taken from http://en.wikipedia.org/wiki/Health_Level_7)

Every transaction starts and ends with a message.



One of the response message is the ACK (general acknowledgment) message

Example: ACK

```
MSH|^~\&|QMATIC|Branch-1-1-1|HNAM|Branch-1-1-1|20140103092126.952+0100||ACK^S12|701||2.3
MSA|AA|Q151577380T189191625
```

Example: ACK. Execution ends with error.

```
MSH|^~\&|QMATIC|Branch-1-1-1|HNAM|Branch-1-1-1|20140102190824.882+0100||ACK^S14|630||2.3
MSA|AR|Q151577380T189191625|Application internal error
ERR|^^207&Application internal error&HL70357&&KO CUSTOMER is not found
```

This message consists of the next message structure:

Segment	Description
MSH	Message Header
MSA	Message acknowledgment
[ERR]	Error

The MSA segment contains information sent while acknowledging another message:

MSA elements
Acknowledgment Code
Message Control ID
Text Message
Expected Sequence Number
Delayed Acknowledgment Type
Error Condition

Acknowledgment code valid values:

Value	Description
AA	Original mode: Application Accept Enhanced mode: Application acknowledgment: Accept
AE	Original mode: Application Error Enhanced mode: Application acknowledgment: Error
AR	Original mode: Application Reject Enhanced mode: Application acknowledgment: Reject

3.2. HL7 issues

For historical reasons, each vendor implements HL7 messages in slightly different ways.

It is necessary to have these issues on account:

Issue	Description
1 Missing Fields	Some vendors tend to omit fields in the message instead of leaving them empty. This will change the number of every subsequent field from the start of the message.
2 Same Data in Different Fields	The same information may be located in other fields - and even in different segments - in various HL7 implementations.
3 Same Data in Different Formats	The same data may be provided in different formats. For example, timestamp information should appear as 19991231100000.000 , but some vendors divide the date and time into different sub-fields: 19991231^100000.000 . This is only one example of the possible mis-formats.
4 Different Versions	The existence of a number of different versions allows data exchange only between applications that support the same version of HL7.
5 Missing Values (including mandatory fields)	Although the standard requires only a limited set of values to be present (95 percent of the fields are optional), some vendors omit even those with required values.
6 Invalid Segment Grammar	There is a lack of adherence to the segment grammar that is required by the standard. Some expected segments may be missing, while other unexpected segments may appear.

3.3. HL7 messages. A brief description.

3.3.1. MESSAGES

A **message** is the atomic unit of data transferred between systems. It is comprised of a group of segments in a defined sequence. Each message has a **message type** that defines its purpose.

For example, the ADT Message type is used to transmit portions of a patient's Patient Administration (ADT) data from one system to another. A three-character code contained within each message identifies its type. These are listed in the Message Type list, Appendix A.

Example:

```
MSH|^~\&|MegaReg|XYZHospC|SuperOE|XYZImgCtr|20060529090131-0500||ADT^A01^ADT_A01|01052901|P|2.5|
EVN||200605290901|||200605290900|
PID|||56782445^^^UABH^PI||KLEINSAMPLE^BARRY^Q^JR||19620910|M||2028-9^^HL70005^RA99113^^XYZ|260
GOODWIN CREST DRIVE^^BIRMINGHAM^AL^35 209^M^NICKELL'S PICKLES^10000 W 100TH
AVE^BIRMINGHAM^AL^35200^^O |||||0105I30001^^^99DEF^AN|
PVL||I|W^389^1^UABH^3|||12345^MORGAN^REX^J^^MD^0010^UAMC^L||678
90^GRAINGER^LUCY^X^^MD^0010^UAMC^L|MED||||A0||13579^POTTER^SHER
MAN^T^^MD^0010^UAMC^L|||||||200605290900|
OBX|1|NM|^Body Height||1.80|m^Meter^ISO+||||F|
OBX|2|NM|^Body Weight||79|kg^Kilogram^ISO+||||F|
AL1|1||^ASPIRIN|
DGL1|1||786.50^CHEST PAIN, UNSPECIFIED^I9|||A|
```

3.3.2. SEGMENTS

A **segment** is a logical grouping of **data fields**. Segments of a message may be required or optional. They may occur only once in a message or they may be allowed to repeat. Each segment is given a name. For example, the ADT message may contain the following segments: Message Header (MSH), Event Type (EVN), Patient ID (PID), and Patient Visit (PV1).

Each segment is identified by a unique three-character code known as the Segment ID. Although the actual segments are defined in various chapters, the ID codes assigned to the various segments are listed in Appendix A.

All segment ID codes beginning with the letter **Z** are reserved for locally defined messages. No such codes will be defined within the HL7 Standard.

Example:

```
MSH|^~\&|MegaReg|XYZHospC|SuperOE|XYZImgCtr|20060529090131-0500||ADT^A01^ADT_A01|01052901|P|2.5|
```

3.3.3. FIELDS

A field is a string of characters. HL7 does not care how systems actually store data within an application. When fields are transmitted, they are sent as character strings.

Example: HL7 version field is marked in yellow: 2.5

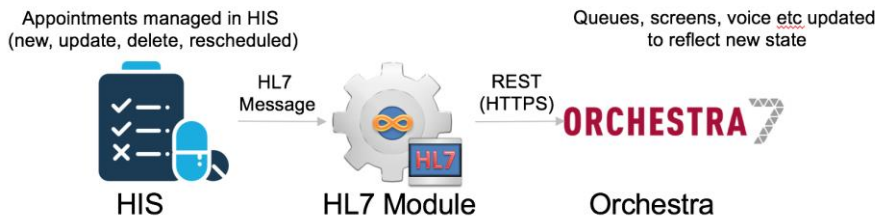
```
MSH|^~\&|MegaReg|XYZHospC|SuperOE|XYZImgCtr|20060529090131-0500||ADT^A01^ADT_A01|01052901|P|2.5|
```

4. HIS integration scenarios

According to the Customer flow management (CFM) steps this application can provide a solution for the following scenarios:

4.1. At PRE-ARRIVAL

In this scenario, Orchestra's appointments are synchronized with HIS appointments.



Orchestra's appointments must have custom parameters with relevant data from the HIS appointment, such as

- **integrationId:** unique appointment Id number from the Hospital
- **ticketId:** On creating the appointment, a custom ticket number calculation may be needed. This value will be printed in the ticket.

4.1.1. Synchronization of appointments

HIS will keep us updated in term of appointments and customers. Therefore, HIS will send us any appointment event happening on its side, such as:

- A new appointment is created.
- An appointment is updated.
- An appointment is deleted.
- A customer is updated with new data.



This is scenario is INCLUDED in the current solution

4.1.2. Daily Import of appointments

In this scenario, Qmatic is required to fetch the appointments from HIS and store them into the calendar backend scheme. There could be several ways to perform this integration. HL7 (QBP message) may be one of these ways.



This scenario is INCLUDED



Please refer to the hl7Connector public api for more details

4.2. At ARRIVAL

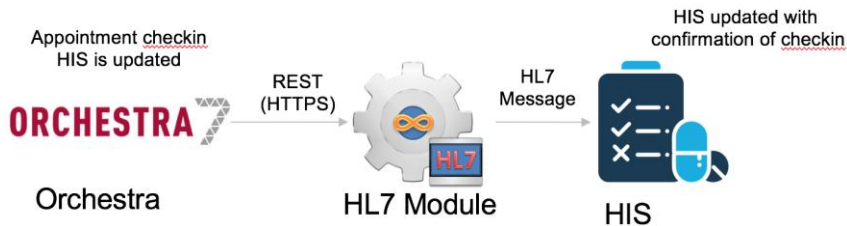
4.2.1. At a kiosk/reception: Fetching appointments from Qmatic

In this scenario, appointments are previously synchronized with HIS appointments.

Therefore, we already have everything in place so when the patient arrives to the hospital and identity themselves in a kiosk and/or desk entry point, a proper patient check In is done:

Patient appointments are found in Qmatic and visit are created.

This scenario ends after Qmatic reports this visit check In event to the HIS.



This scenario is INCLUDED

4.2.2. At a kiosk/reception: Fetching appointments from HIS

When the patient arrives to the hospital and identity themselves in a kiosk and/or entry point and Qmatic requires to develop a custom integration to the HIS appointment system to fetch in real time data from the patient: patient appointments and/or patient demographics data.

There could be several ways to perform this integration. HL7 (QBP message) may be one of these ways.

After fetching the appointments, Qmatic creates a visit and reports this check in event to the HIS.



This scenario is INCLUDED

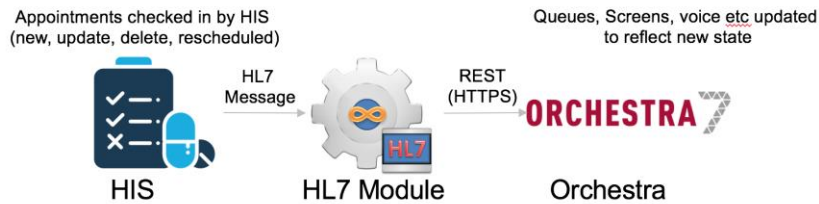


Please refer to the [hl7Connector public api](#) for more details

4.2.3. At a Reception: HIS sends Qmatic a Check In message

Patient arrives to the hospital and identify themselves to the staff at a reception.

Staff is working with the HIS reception module.



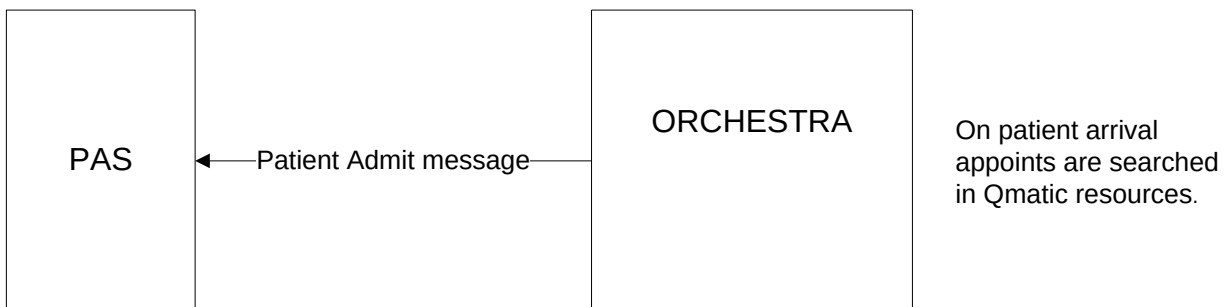
Qmatic receives the check in message and creates a visit and reports this check In event to the HIS.



This scenario is **INCLUDED**

4.3. Reporting appointment Check IN to HIS

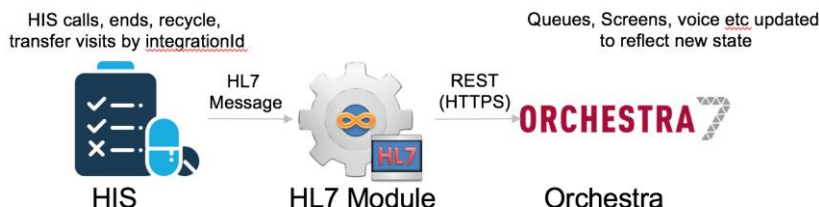
Qmatic will be able to report this data to HIS if the visit contains all the data required to build the check In HL7 messages.



4.4. At SERVING

HIS implements Qmatic workstation functionality. Typically, the following actions can be requested:

- Calling a visit by integrationId
- Ending a visit by integrationId
- Recycle a visit by integrationId
- Transferring a visit by integrationId
- Ending a visit by integrationId
- Add a custom parameter to a visit
- Add a service to a visit





This scenario is INCLUDED

5. Sector

Healthcare due to the nature of the HL7.

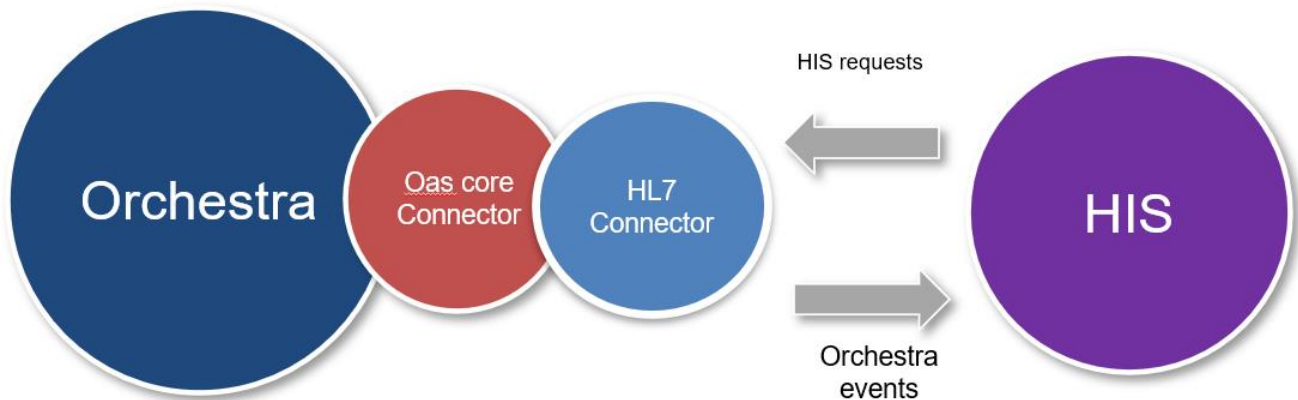
6. Components

The solution consists of the following components:

- HI7Connector application (war file)
- A unit type for service points: **ServicePoint_WebServicePoint_HI7** unit type
- A unit type for fetching the service points management information called **managementInformationServicePoints** unit type. This unit type provides a better response when actions interact with visits.
- A unit type to catch events from Orchestra: **notifyHI7VisitEvents** unit type

6.1. HI7Connector application

This application works as a bridge between the HIS and Orchestra. It will be the HL7 translator between both systems.



Main features:

- Opens a socket and/or servlet to listen to the HL7 stream.
- Implements an engine to work with the incoming messages. It is fed from the socket
- Exposes an endpoint to receive orchestra events and feed the outgoing messages engine
- Implements an engine to work with Outgoing messages.
- Provides a user interface to configure:
 - Incoming messages, rules & actions, HL7 paths.
 - Outgoing messages, rules, HL7 templates, fields
 - Mappings
- To test HL7 endpoints by sending raw HL7 messages.

6.2. Notify Events to HIS Unit type

This unit type catches Orchestra events and POST a http request to the hl7Connector endpoint responsible of sending the HL7 message to the third party HIS remote server.

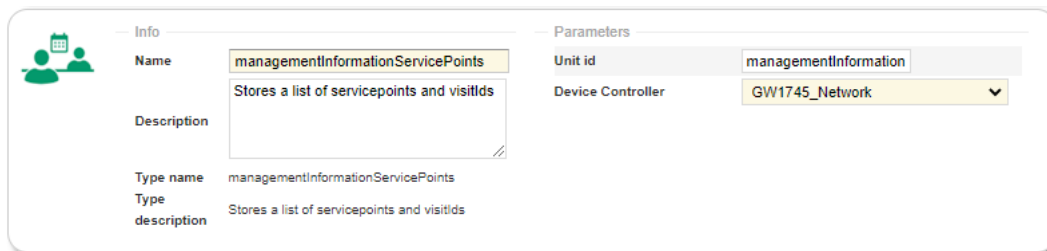
The image shows a web interface for configuring a unit type. On the left, there is a sidebar with a logo and a list of unit identifiers. The main area is divided into two sections: 'Info' and 'Parameters'. The 'Info' section contains fields for 'Default name' (notifyHL7VisitEvents) and 'Description' (Used to notify via POST the visit events (included in the payload) to an external endpoint). The 'Parameters' section contains fields for 'Unit id' (notifyHL7VisitEvents), 'Notify visits for these queues' (a dropdown menu with options: Queue 1, Queue 2, Default Queue 3, In Progress Queue), 'Write data in QAgent log (debug)' (a checked checkbox), 'Password' (password), 'Url to notify the event' (http://localhost:8080/hl7Cor), 'User' (user), and 'logger Name for handling logs files' (HL7Connector_Events_han).

Branch profile view

Parameter	Description
Unit id	Identification code of the unit
Notify visits for these queues	From the list, select the Queues that this unit should handle visit event from. The selected Queues will then be marked with blue
Write data in QAgent log (debug)	If enabled, logs data will be written on agent logs files.
Url to notify the event	Endpoint page for the page responsible to send the HL7 messages to the third-party system. For instance: http://localhost:8080/hl7Connector/service/outgoingMessagesEngine.groovy
Logger Name for handling logs files	Name of the logger for the log settings in the orchestra backlog.xml file

6.3. Management information service points Unit type

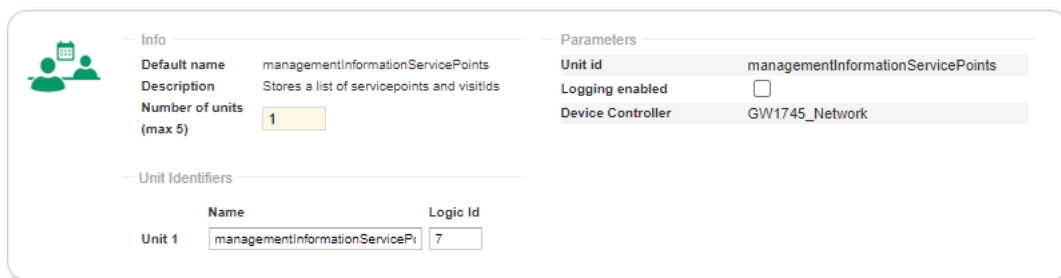
This unit type provides the service point visit status to the HL7 service point unit types. This unit type is required to improve the overall performance of the response when handling visits.



The 'Operation profile view' shows the configuration for the 'managementInformationServicePoints' unit type. It includes an 'Info' section with fields for Name, Description, Type name, Type, and description. The 'Parameters' section includes Unit id, Device Controller, and a dropdown menu.

Info		Parameters	
Name	managementInformationServicePoints	Unit id	managementInformation
Description	Stores a list of servicepoints and visitids	Device Controller	GW1745_Network
Type name	managementInformationServicePoints		
Type	Stores a list of servicepoints and visitids		
description			

Operation profile view



The 'Branch profile view' shows the configuration for the 'managementInformationServicePoints' unit type. It includes an 'Info' section with fields for Default name, Description, Number of units (max 5), and Unit Identifiers. The 'Parameters' section includes Unit id, Logging enabled, and Device Controller. The 'Unit Identifiers' section includes a table for Unit 1.

Info		Parameters	
Default name	managementInformationServicePoints	Unit id	managementInformationServicePoints
Description	Stores a list of servicepoints and visitids	Logging enabled	☐
Number of units (max 5)	1	Device Controller	GW1745_Network

Unit Identifiers	
Name	Logic Id
Unit 1	managementInformationServicePt

Branch profile view

Parameter	Description
Unit id	Identification code of the unit
Logging enabled	If enabled, logs data will be written on agent logs files.

7. Service Points Unit type (UTT)

This service point unit type can handle service points without having a user **assigned** to it. This is quite convenient in large installations where configuring the system is not an easy task.

In this first delivery the **ServicePoint_WebServicePoint_HI7.utt** is included.

If any other ServicePoint_WebServicePoint_HI7_XXX is required, please let us know to adjust it.

The screenshot shows a configuration window for the 'WebServicePointMulti' unit type. It is divided into three main sections: 'Info', 'Unit Identifiers', and 'Parameters'.
- The 'Info' section includes a computer icon, a 'Default name' of 'WebServicePointMulti', a 'Description' of 'Service Point for multi terminal', and a 'Number of units (max 127)' set to '10'.
- The 'Unit Identifiers' section contains a table with 10 units, each with a 'Name' and a 'Logic Id'.
- The 'Parameters' section includes fields for 'Unit id' (WebServicePointMulti), 'Media Application' (positionalDisplay - 800x1024), 'WorkProfile' (workProfile 1), a checked 'Write data in QAgent log (debug)' checkbox, and a 'logger Name for handling logs files' field set to 'HI7Connector_Unattended_'.

Unit	Name	Logic Id
Unit 1	Multi 2	9
Unit 2	Multi 3	10
Unit 3	Multi 4	11
Unit 4	Multi 5	12
Unit 5	Multi 6	13
Unit 6	Multi 7	14
Unit 7	Multi 8	15
Unit 8	Multi 9	16
Unit 9	Multi 10	17
Unit 10	Multi 1	8

Parameter	Description
Unit id	Identification code of the unit
Media Application	Name of the Media Application Surface created in the <i>Surface Editor</i> application. Generic resolutions can also be used. For more information, see the Surface Editing chapter of the Administrator's Guide, on Qmatic World.
Write data in QAgent log (debug)	If enabled, logs data will be written on agent logs files.
Work Profile	Name of the work profile to be used in the workstation by default
Logger Name for handling logs files	Name of the logger for the log settings in the orchestra backlog.xml file

8. Installation

Effort has been made to keep the installation process as simple as possible. There are only four artifacts to deploy: one middleware as a war-file and three unit type templates. They are all included in the deployment package of the service.



Please note: Orchestra version must be above **Orchestra 7.0 [4.0.0.697]**

Unit type must be added following the default procedure. Please refer to the manual for more information.

Applications (war files) must be installed in the **/custdeploy** folder following the standard procedure. Please refer to the manual for more information.

HI7Connector application requires some connection parameters to connect to Orchestra.

By default, it is configured to

- **Protocol:** http
- **Server:** localhost:8080

If your Orchestra is running on a different port, you will need to adjust this.

You are required to configure a user and a password to be able to connect to Orchestra.

8.1. Settings by ApplicationContext.xml

Please change '**yourUser**' and '**yourPassword**' to an existing and active Orchestra account with valid credentials. This user must have access to the Central branch.

To change it, you must open the following file inside the war file:

WEB-INF/ CONFIG/ applicationContext.xml

```
<!-- oas Connection Parameters -->
<lang:groovy id="oasConnectionParameters" refresh-check-delay="5000"
  <lang:property name="user" value="yourUser" />
  <lang:property name="passWord" value="yourPassword" />
  <lang:property name="server" value="localhost:8080" />
  <lang:property name="protocol" value="http" />
</lang:groovy>
```

8.2. Settings by external file at Orchestra conf folder

Place a file with name **hl7-connector.conf** with the following content:

```
username= user
password= password
server= localhost:8080
protocol= http
```

If this file is found, then the previous setting will be overridden.

9. Settings

These are the basic steps to properly configured the solution:

- Configure a branch with at least an entry point and add some **ServicePoint_WebServicePoint_HI7** service points
- Configure some calendar settings for this branch: Appointment Profile, calendar services, calendar resources, etc.
- Configure a folder for the logs files.

Menu: Configuration

Logging & Monitoring

Enable/Disable logs and monitoring

☒ Logging Enabled

Logging Folder Path

C:/QMatic/hl7

Number of days to keep logs files

60

☐ Save all incoming hl7 messages

☐ Monitor Thread Enabled

- Menu: Configuration -> Configure an Orchestra Central connection Settings: Central Orchestra connection & credentials related to appointments and customers
- Menu: Configuration -> Configure an Orchestra Agent Settings: Orchestra Agent connection and credentials related to entry point and service point

Username
integration

Password

Protocol ☒ Http ☐ Https

Server (host:port)
localhost:8080

Connection settings fields

9.1. Logs

9.1.1. Adding custom logger and appenders

This type of integration requires to keep a trace of the transactions between both systems:

- To be able to monitor the overall behavior.
- To provide a tool to the support team

Log traces can be redirect to specific files keeping the qp-server.log file with the minimum amount of data from this module.

To achieve it we must edit and add some appenders and loggers to the **conf/logback.xml**.

Please handle this file carefully.

These are the proposed Slf4j Appenders and loggers

- **hl7Connector.log** for monitoring the incoming messages
- **HL7Connector_Events_handling.log** for monitoring the outgoing messages
- **HL7Connector_Unattended_servicepoints.log** for monitoring the unattended servicepoints behavior.
- **integrationSummary.log** which provides a summary of the incoming HL7 messages and our HL7 response to those.
- **transactionErrorLog.log** which provides a summary of the incoming HL7 messages that end up in an error.

9.2. logback.xml settings



Please note: In production environment this setting should be set to **INFO**

```
<appender name="Hl7Connector_Unattended_servicepoints"
class="com.qmatic.qp.logging.QPRollingFileAppender">
  <file>${jboss.home.dir}/../../logs/Hl7Connector_Unattended_servicepoints.log</file>
  <rollingPolicy class="ch.qos.logback.core.rolling.SizeAndTimeBasedRollingPolicy">
    <fileNamePattern>${jboss.home.dir}/../../logs/Hl7Connector_Unattended_servicepoints-%d{yyyy -
MM - dd}.%i.log</fileNamePattern>
    <maxFileSize>10MB</maxFileSize>
    <maxHistory>10</maxHistory>
    <totalSizeCap>120MB</totalSizeCap>
  </rollingPolicy>
  <encoder>
    <pattern>%d{yyyy - MM - dd HH:mm:ss.SSS} [%thread] %-5level %logger{36} - %msg%n</pattern>
  </encoder>
  <filter class="ch.qos.logback.classic.filter.ThresholdFilter">
    <level>INFO</level>
  </filter>
</appender>

<appender name="Hl7Connector_Events_handling" class="com.qmatic.qp.logging.QPRollingFileAppender">
  <file>${jboss.home.dir}/../../logs/Hl7Connector_Events_handling.log</file>
  <rollingPolicy class="ch.qos.logback.core.rolling.SizeAndTimeBasedRollingPolicy">
    <fileNamePattern>${jboss.home.dir}/../../logs/Hl7Connector_Events_handling-%d{yyyy - MM -
dd}.%i.log</fileNamePattern>
    <maxFileSize>10MB</maxFileSize>
    <maxHistory>10</maxHistory>
    <totalSizeCap>120MB</totalSizeCap>
  </rollingPolicy>
  <encoder>
    <pattern>%d{yyyy - MM - dd HH:mm:ss.SSS} [%thread] %-5level %logger{36} - %msg%n</pattern>
  </encoder>
  <filter class="ch.qos.logback.classic.filter.ThresholdFilter">
    <level>INFO</level>
  </filter>
</appender>
```

```

<appender name="hl7Connector" class="com.qmatic.qp.logging.QPRollingFileAppender">
  <file>${jboss.home.dir}/../../logs/hl7Connector.log</file>
  <rollingPolicy class="ch.qos.logback.core.rolling.SizeAndTimeBasedRollingPolicy">
    <fileNamePattern>${jboss.home.dir}/../../logs/hl7Connector-%d{yyyy - MM -
dd}.%i.log</fileNamePattern>
    <maxFileSize>10MB</maxFileSize>
    <maxHistory>10</maxHistory>
    <totalSizeCap>120MB</totalSizeCap>
  </rollingPolicy>
  <encoder>
    <pattern>%d{yyyy - MM - dd HH:mm:ss.SSS} [%thread] %-5level %logger{36} - %msg%n</pattern>
  </encoder>
  <filter class="ch.qos.logback.classic.filter.ThresholdFilter">
    <level>INFO</level>
  </filter>
</appender>

<appender name="integrationSummary" class="com.qmatic.qp.logging.QPRollingFileAppender">
  <file>${jboss.home.dir}/../../logs/integrationSummary.log</file>
  <rollingPolicy class="ch.qos.logback.core.rolling.SizeAndTimeBasedRollingPolicy">
    <fileNamePattern>${jboss.home.dir}/../../logs/integrationSummary-%d{yyyy - MM -
dd}.%i.log</fileNamePattern>
    <maxFileSize>10MB</maxFileSize>
    <maxHistory>10</maxHistory>
    <totalSizeCap>120MB</totalSizeCap>
  </rollingPolicy>
  <encoder>
    <pattern>%d{yyyy - MM - dd HH:mm:ss.SSS} [%thread] %-5level %logger{36} - %msg%n</pattern>
  </encoder>
  <filter class="ch.qos.logback.classic.filter.ThresholdFilter">
    <level>INFO</level>
  </filter>
</appender>

<logger name="integrationSummary" level="INFO" additivity="false">
  <appender-ref ref="integrationSummary"/>
</logger>

<logger name="Hl7Connector_Unattended_servicepoints" level="INFO" additivity="false">
  <appender-ref ref="Hl7Connector_Unattended_servicepoints"/>
</logger>

<logger name="Hl7Connector_Events_handling" level="INFO" additivity="false">
  <appender-ref ref="Hl7Connector_Events_handling"/>
</logger>

<logger name="outgoingMessagesEngine" level="INFO" additivity="false">
  <appender-ref ref="Hl7Connector_Events_handling"/>
</logger>

<logger name="hl7_connector.OutgoingMessagesEngine" level="INFO" additivity="false">
  <appender-ref ref="Hl7Connector_Events_handling"/>
</logger>

<logger name="hl7_connector" level="INFO" additivity="false">
  <appender-ref ref="hl7Connector"/>
</logger>

```

10. HL7 Connector User Interface

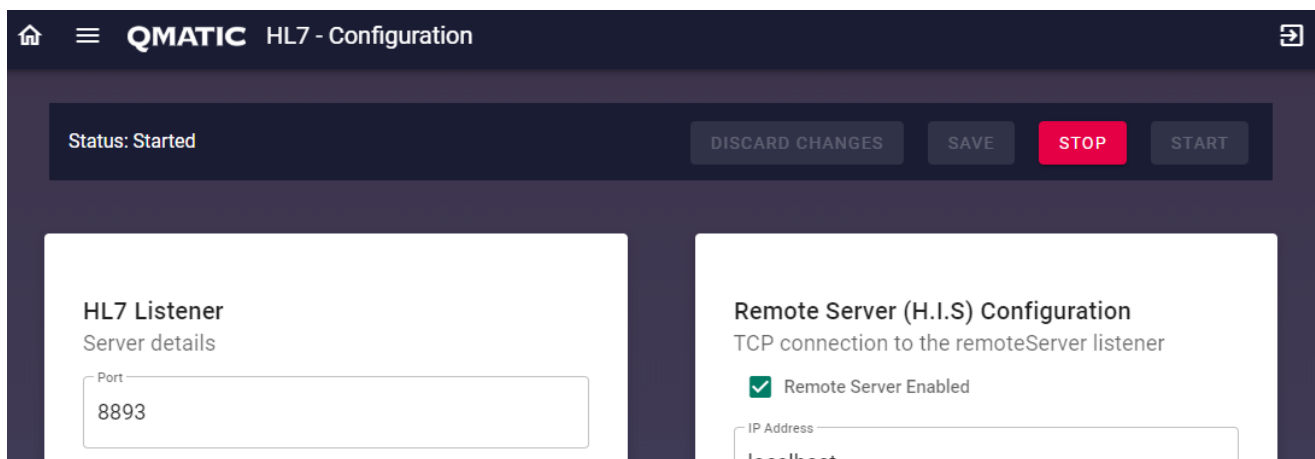
Current version: 2.1.0

This the menu of the application:

-  Main Menu
-  Configuration
-  Templates
-  Journeys
-  Mappings
-  HL7 Connector Test

11. Configuration

At the configuration menu, you can configure the HL7 solution.
This is how the configuration module looks like:



The status of the server is displayed: if listener is **started** or **stooped**.

START

Click on this button to start all the listeners

STOP

Click on this button to stop all the listeners

DISCARD CHANGES

SAVE

Any time a parameter is changed you have the chance to discard changes or save them.



Click on this icon to show the context menu for import / export options

Export

Import

The context menu for import / export is shown as follows

- Clicking on **Export** , a file will be downloaded by the browser. This file is a json format file with the hl7Settings
- Clicking on **Import** , a dialog for selecting a file is shown.

11.1. HL7 Listener

HL7 Listener

Server details

Port
8896;9998;9999

☐ TLS

Parameter	Description
Port	Server local ports for receiving messages. Several ports can be configured separated by ;
TLS	To create a client or a server which uses TLS/SSL Note that in most cases you will need to import certificates to make this work.

11.2. Listener Performance

Many of HAPI's internal tasks rely on background threads to do work (in particular, HL7 servers require several execution threads). HAPI uses the "java.util.concurrent.ExecutorService" facility to schedule background work.

By default, all instances of DefaultHapiContext will share a single thread pool executor instance. This should be fine for most use cases as the shared executor will grow as needed and close completely when it is not. You can override this if you want different behavior.

Performance

Performance settings

☒ Custom Thread Pool Executor

Core Pool Size
10

Maximum Pool Size
100

Keep Alive Time
30

Max Threads
100

Default values:

- Core Pool Size = 10 (corePoolSize)
- Maximum Pool Size = 100 (maximumPoolSize)
- Keep Alive Time = 30
- Max number of Threads = 100

The `java.util.concurrent.ThreadPoolExecutor` is an implementation of the `ExecutorService` interface. The `ThreadPoolExecutor` executes the given task (`Callable` or `Runnable`) using one of its internally pooled threads.

The thread pool contained inside the `ThreadPoolExecutor` can contain a varying amount of threads. The number of threads in the pool is determined by these variables:

- `corePoolSize`
- `maximumPoolSize`

If less than `corePoolSize` threads are created in the the thread pool when a task is delegated to the thread pool, then a new thread is created, even if idle threads exist in the pool.

If the internal queue of tasks is full, and `corePoolSize` threads or more are running, but less than `maximumPoolSize` threads are running, then a new thread is created to execute the task.

<https://docs.oracle.com/javase/7/docs/api/java/util/concurrent/ThreadPoolExecutor.html>

11.3. HL7 monitoring

This feature will provide information related to the thread written in the log files.

☒ Monitor Thread Enabled

Monitor Service Interval

Parameter	Description
Monitor Thread Enabled	Enable the thread monitor

Monitor Service Interval	Interval for the thread monitoring in seconds Default value: 10 seconds
--------------------------	--

11.4. HL7 settings

HL7 Settings

HL7 settings

Charset
UTF-8

Message Type
*

Trigger Event
*

HL7 Version
2.6

☒ ERP

Parameter	Description
Charset	It is possible to set the use of a specific character set. Example: UTF-8
Message type	String value for filtering messages. Just messages which matches this pattern would be considered. If * all messages would be accepted. Example: SIU, ADT
Trigger event	String value for filtering events. Just events which matches this pattern would be considered. If * all events would be accepted. Example: S12, A01
HL7 Version	HL7 version for incoming messages. Possible versions: 2.1, 2.2, 2.3, 2.3.1, 2.4, 2.5, 2.5.1, 2.6
ER7 option	If enabled, the message is based on and ^ (pipes & carets) based format. Otherwise the message would be in XML format.

11.5. Remote Server (H.I.S) Configuration

Parameter	Description
Remote Server Enabled	Enable/disable sending messages to HIS
IP Address	Remote server IP address
Port	Remote server portnumber
Server Timeout (ms)	TimeOut in milliseconds to be waiting for HIS response when opening a connection.
TLS	To access a server which uses TLS/SSL Note that in most cases you will need to import certificates to make this work.
Enable remote server connection by Http	If remote server exposes a servlet
Http Context	/hl7list
Enable Http Credentials	Enable/disable credential usage
User	Username
Password	Password

Remote Server (H.I.S) Configuration

TCP connection to the remoteServer listener

☒ Remote Server Enabled

IP Address
localhost

Port
56386

Server Timeout (ms)
3000000

☒ TLS

☒ configuration.remote.isHttp

configuration.remote.httpContext
/hl7list

☒ configuration.remote.hasHttpCredentials

configuration.remote.httpUser
user

configuration.remote.httpPassword
password

11.6. Logging & Monitoring

If logging is enabled on hl7conf.properties a single log file will be created per transaction.

Every day a new folder will be created for that day

 20131203

 20131204

as well as a log file per transaction.

 130842_Hl7_message.log

 133121_Hl7_message.log

 133122_Hl7_message.log

Logging & Monitoring

Enable/Disable logs and monitoring

☒ Logging Enabled

Logging Folder Path

C:/QMatic/hl7

Number of days to keep logs files

60

☐ Save all incoming hl7 messages

☐ Monitor Thread Enabled

Parameter	Description
Logging Enabled	This value specifies if the Logging per transaction feature is enable or not.
Logging Folder Path	This value specifies the folder to be used to store the log files for every transaction. This folder must be created manually on the server if it does not exist
Number of days to keep logs files	This value specifies the number of days to keep logging data in files format. For example: A value of 30 would mean that application will logging files for the latest 30 days.
Save all incoming hl7 messages	Enable this option to save every incoming hl7 message to a file in the log folder

For every received HL7 message a file with the raw HL7 content will be created.

It will be created in the Logging folder path and the name of the file will have the following format:
in_YYYYMMDD_HHMMSS.sss_Hl7_message.log

11.7. Orchestra Central Settings

Orchestra Central Settings

Central Orchestra connection & credentials (related to appointments and customers)

☒ Central Orchestra Enabled

Username
integration

Password

Protocol ☒ Http ☐ Https

Server (host:port)
localhost:8080

Parameter	Description
Central Orchestra Enabled	Enable/disable Orchestra Central connection
Username	User for calling central connector functions
Password	Password of the user calling central connector functions
Protocol	Protocol for the rest calls, Http or Https
Server (host:port)	Orchestra server and port. For example: localhost:8080

11.8. Orchestra Agent Settings

Orchestra Agent Settings

Orchestra Agent connection and credentials (related to entrypoint and servicePoint)

☒ Orchestra Agent Enabled

Username
integration

Password

Protocol ☒ Http ☐ Https

Server (host:port)
localhost:8080

Parameter	Description
Orchestra Agent Enabled	Enable/disable Orchestra Agent connection
Username	User for calling agent connector functions
Password	Password of the user calling agent connector functions
Protocol	Protocol for the rest calls, Http or Https
Server (host:port)	Orchestra server and port. For example: localhost:8080

11.9. Date Settings

Date Settings

Date formats

HL7 Date Format

yyyyMMddHHmmss

Orchestra Date Format

yyyy-MM-dd'T'HH:mm:ss.000+0000

Parameter	Description
HL7 Date Format	Date format used by HL7 format For example: yyyyMMddHHmmss or yyyyMMddHHmm
Orchestra Date Format	Orchestra date format for API functions For example: yyyy-MM-dd'T'HH:mm:ss.000+0000

11.10. Customer

Default values:

- For calendar customer type: {customer.externalId}
- For central customer type: {customer.cardNumber}

Customer

settings for customer

Customer external Id template

{customer.externalId}

Parameter	Description
String template to build the customer externalId	Format used by HL7 format Example: For calendar customer type :{customer.externalId} For central customer type :{customer.cardNumber} Possible values: • customer.phone • customer.identificationNumber • customer.externalId • customer.firstName • customer.lastName • customer.publicId • customer.email • customer.name

11.11. Branches

Branches

Find visits in branches

Branch ids

QHospital

Parameter	Description
List of branches integrated by HL7 for searching the visits by the custom parameter	Select from the branch(es) dropdown list.

12. Incoming journeys

Incoming journeys are triggered by the incoming HL7 message.

Each HL7 message has a **message type** that defines its purpose.

Journeys configured with the message type will be processed. Executing a journey consists of:

- Checking rules: Every rule must be fulfilled to execute the collection of actions
- Executing all defined actions

Q					CREATE NEW JOURNEY
Name	Message Code	Description	Enabled	Actions	
01 Create a visit	ADTA01	Create a visit for the X-Ray department	✓	     	
02 Call visit	ADTA02	Call a visit for the X-Ray department	✓	     	
03 Transfer visit	ADTA08	Transfer a visit within the X-Ray department	✓	     	
04 End a visit	ADTA03	End a visit for the X-Ray department	✓	     	
Rows per Page					All 1-4 of 4



Click on this icon for a quick view of the journey.



Click on this icon to edit the rules of the journey.



Click on this icon to edit the actions of the journey.



Click on this icon to duplicate this journey.



Click on this icon to delete the journey.



Click on this icon to test this journey. Local server port and Journey HL7 template will be used by default.



Click on this icon to export this journey.

CREATE NEW JOURNEY

Click on this button to add a new journey



Click on this icon to show the context menu for import / export options

Export journeys

Import journeys

The context menu for import / export is shown as follows

Clicking on **Export journeys**, a file will be downloaded by the browser. This file is a json format file with the description of the existing journeys

Clicking on **Import journeys**, the following dialog for importing journeys is shown.

12.1. Quick view of journey

A quick view of the journey is shown on clicking on the  icon from the incoming journeys.

Rules and actions are shown together with their parameters, its hl7 paths and default values. This view is useful to quickly review the settings of the journey.

01 Create a visit

ADTA01

Enabled

→

Rules

Check branch

Currently, only this branch HIS_VENDOR1 or HIS_VENDOR2 is integrated with Qmatic

HL7 paths

/MSH-3-1

HIS_VENDOR1,HIS_VENDOR2,HIS_NAME,HIS

Check Location - facility

Create if Location - facility= Local

HL7 paths

/PV1-3-4

Local,Local ({id}){t}

Actions

Parameters

Integration Id

Integration Id for identifying the visit

/PV1-19-1

Entry point

This value will be used for the mapping of the entry point

/PV1-3-4

Service

This value will be used for the mapping of the services

/PV1-39-1

Custom

CaseId

HIS Internal visit case identification number

/PV1-19-1

string:-

string:-

patientIdentifier_id

patientIdentifier_id

if /.PID-3-5==JHN then use value from /.PID-3-1

anonymous

Ticket Parameter Name

Ticket Parameter Name

If a custom ticketId is calculated it will be stored in this field

ticket

Example of quick view

12.2. Importing journeys dialog

Select json file with the journeys to be imported

Click on this button to start the import

Click on this checkbox to remove the existing journeys and start just with the imported journeys

Click on the left checkbox to select the journeys from the file that will be imported.

Click on this button to start the import

Once the import process is done the following alert will be shown

3 journey(s) imported

Please note that imported journeys will be disabled by default.

Import journeys

Click here to select a .json file

CLOSE

Import journeys

Click here to select a .json file

All_incomi...xport.json

IMPORT

☐ Remove existing objects

☐	Name ↑	Message Code	Description
☐	Create appointment	SIUS12	Create appointment by appointmentId
☐	Delete an appointment	SIUS13	Delete an appointment
☐	Update appointment	SIUS14	Update an appointment

Rows per Page 10 1-3 of 3 < >

CLOSE

Import journeys

Click here to select a .json file

All_incomi...xport.json

IMPORT

☐ Remove existing objects

☒ 3 journey(s) imported

☒	Name ↑	Message Code	Description
☒	Create appointment	SIUS12	Create appointment by appointmentId
☒	Delete an appointment	SIUS13	Delete an appointment
☒	Update appointment	SIUS14	Update an appointment

Rows per Page 10 1-3 of 3 < >

CLOSE

12.3. Message

A Message Template and Message Code must exist to define what type of message is handled through this journey.

Details view

A Message consists of:

- Name and Description
- HL7 Message Code (this must be something like SIUS12 or ADTA14)
- HL7 Message Template

Create appointment

1

2

3

DETAILS

SUMMARY

Journey Name

Create appointment

Description

Create appointment by appointmentId

HL7 Message Code

SIUS12

☐ Journey Enabled

HL7 Message Template

MSH|^~\&|app|sender|HL7API|PKB|201303080949|SIU^S12|ABCO000000001|P|2.3.1
PID||999999999^NHS^NH~1234^P|^~1525634184^CAMD^JHN^MD&&IS
O3166-2||Smith^John^Joe^Mr||1970010100|M||My flat name^1, The
Road^London^London^SW1A
TAA^GBR||john.smith@hotmail.com^NET~01234567890^PRN~07123456789^PRSj
ohn.smith@company.com^NET~01234098765^WPN|||||||||IN|
SCHID123|||||*checkup*|||||20210409183000^20210409184000|||||||

CANCEL

SAVE

NEXT

Detail view

02 Call visit

1

2

3

DETAILS

SUMMARY

02 Call visit

Rules

Check if correct branch

If (/MSH-3-1) equals (HIS_VENDOR1 or HIS_NAME)

Actions

Call visit

Integration Id

Integration Id

/PV1-19-1

Service point

Service Point

/PV1-3-4-1

/PV1-3-2

Visit second call

Visit second call

Default Value true

CANCEL

SAVE

NEXT

Summary view

12.4. Rules

All rules must be fulfilled to execute the actions. A rule consists of:

- Name and description
- HL7 Paths: Path to the HL7 field within the HL7 message
- Accepted values: List of accepted values

If the value in any of the HL7 paths matches at least one of the Accepted Values, then the rule is fulfilled.

Accepted values can be

- REGEX expression
- String **null** for null values, if hl7 path does not found any value on the hl7 message

01 Create appointment

1 Message 2 Rules 3 Actions

Check department > Rule Details

Rule Name
Check department

Rule Description
If the field Appointment Reason found at SCH-7.2 = checkup

HL7 Paths:

/SCH-7.2
Single Path

+ SINGLE PATH + CONDITIONAL PATH

Existing Accepted Values:

checkup

New Accepted Value

ADD

CANCEL RULE SAVE RULE

CANCEL SAVE PREVIOUS NEXT

Rule settings

Rules can be ordered by using the ↓ and ↑ arrows

Rules		
Name:	Description	Actions
Check branch	Currently, only this branch HIS_VENDOR1 or HIS_VENDOR2 is integrated with Qmatic	↓ ✎ 🗑
Check Location - facility	Create if Location - facility= Local	↑ ✎ 🗑

There are two types of HL7 path settings:

12.4.1. Simple path

A simple path is defined by a single HL7 path and a collection of accepted values

HL7 Single Path

Single Path Location

/SCH-7.2

CANCEL CONFIRM

If the value in any of the HL7 paths matches at least one of the Accepted Values, then the rule is fulfilled.

12.4.2. Conditional path

A Conditional path is defined by 4 parameters:

- A value to check
- An HL7 path to get the value to check
- An HL7 path to read the final value
- Find in segment

Example: This an example of a PID Segment:

```
PID|1||1234^^^PI~108517^^^CAMD^JHN^^^MD&&ISO3166-2~506105R^^^MI^NNE^ESP&&ISO3166~28/02432891-28^^^SS^SS^^^ESP&&ISO3166~CR062916017^^^MS^HC^^^ESP&&ISO3166~28/02066711-23^^^SS^SS^^^ESP&&ISO3166~19600622000000|F|||^172^28^28810^724^^16||918859547^PRN^PH^^^^^^^^^918859547~^ORN^PH~^PRN^Internet|627925676^PRS^CP||||28/02432891-28||||NO EXISTE|||ESP^ |||N|
```

This is the PID-3-X:

Item	Value	PID-3-1	PID-3-5
0	1234^^^PI~	1234	PI
1	108517^^^CAMD^JHN^^^MD&&ISO3166-2~	108517	JHN
2	506105R^^^MI^NNE^ESP&&ISO3166~	506105R	NNESP
3	ISO3166~28/02066711-23^^^SS^SS^^^ESP&&ISO3166~	ISO3166~28/02066711-23	SS
4	CR062916017^^^MS^HC^^^ESP&&ISO3166~	CR062916017	HC

12.4.3. Conditional HL7 path. Not Finding in segment

If 'Find in segment' is not selected, if the value found by the 'HL7 path to check' is equals the 'value to find' then the final value will be taken by the 'HL7 path for the overall value'

With the following settings no value will be read because HL7 value for /.PID-3-5 = PI and not JHN

The screenshot shows a form titled "HL7 Conditional Path". It contains three input fields: "Value to Find" with the text "JHN", "HL7 Path to check" with the text "/.PID-3-5", and "HL7 Path for Overall Value" with the text "/.PID-3-1". At the bottom, there is a checkbox labeled "Find in segment" which is currently unchecked.

12.4.4. Conditional HL7 path. Finding in segment

If 'Find in segment' is selected, then the search will iterate through the items in the segment.

In this example it will be checking if /.PID-3-5 equals JHN.

This screenshot is identical to the previous one, showing the "HL7 Conditional Path" form with "Value to Find" as "JHN", "HL7 Path to check" as "/.PID-3-5", and "HL7 Path for Overall Value" as "/.PID-3-1". However, the "Find in segment" checkbox at the bottom is now checked.

So, with the settings shown on the previous you will read this value 108517

You can also set the path by using the format: (i{number of iterations}), for example:

- /.PID-3(i5)-5. It will iterate 5 times: /PID-3(0)-5, /PID-3(1)-5, /PID-3(2)-5, /PID-3(3)-5, /PID-3(4)-5. The loop will terminate if any value is found

- `/PID(i10)-3-5`. It will iterate 10 times: From `/PID(0)-3-5` to `/PID(9)-3-5`. The loop will terminate if any value is found
- `/PID(i10)-3(i5)-5`. It will iterate from `/PID(0)-3(0)-5` to `/PID(9)-3(4)-5`. It will iterate 10 times in the PID and per each value it will iterate 5 times from `/PID(x)-3(0)-5` to `/PID(x)-3(4)-5`. The loop will terminate if any value is found

12.4.5. Accepted values for rules

The accepted values can be REGEX expression such as **^QHospital{1}** that will be true if the value starts with the word 'QHospital' just 1 match.

As an example, this is the explanation of the previous expression taken from an online regex tester:

^	Beginning. Matches the beginning of the string, or the beginning of a line if the multiline flag (m) is enabled.
Q	Character. Matches a "Q" character (char code 81). Case sensitive.
H	Character. Matches a "H" character (char code 72). Case sensitive.
o	Character. Matches a "o" character (char code 111). Case sensitive.
s	Character. Matches a "s" character (char code 115). Case sensitive.
p	Character. Matches a "p" character (char code 112). Case sensitive.
i	Character. Matches a "i" character (char code 105). Case sensitive.
t	Character. Matches a "t" character (char code 116). Case sensitive.
a	Character. Matches a "a" character (char code 97). Case sensitive.
l	Character. Matches a "l" character (char code 108). Case sensitive.
{1}	Quantifier. Match 1 of the preceding token.

The string '**null**' can be used for those cases where the hl7 path is not found

12.5. Actions

If the whole collection of rules is fulfilled, then the action(s) can be executed.

If you have several actions to be executed, they will be executed in the configured order. If one of them fails, then the execution will be stopped, and the rest of the actions will not be executed.

Actions can be sorted by using the
↓ and ↑ arrows

Actions

Name:	Description	Actions
Check In appointment by integrationId	Check In appointment by integrationId	↓  
Fetch visit and send Arrival msg to HIS	Fetch visit and send Arrival msg to HIS	↑  

These actions will be executed in the specified order

12.6. Parameters

A parameter consists of one or several fields. A field contains properties.

A field can have the following properties:

- **Name** and **description**
- **Action Type**: this sets what sort of action is done, e.g. 'Create an Appointment' or 'Transfer a visit'
- **Mandatory**: if this field must be populated or can be optional
- **HL7 Path**: the HL7 path to read the piece of information from the HL7 message.
- **Default value**: A default value can be populated in case no HL7 path is defined or no value is found. The String **now** can be used to get current date in the orchestra date time format.
- **Is Date**: If this field must be treated as a date. Check configuration > Date settings

This is the list of the different parameters that can be used to populate the actions

12.6.1. HL7 path selection



Click on this icon to edit the hl7 path value

HL7 Paths:

/.PV1-3-4-1 Single Path	 
/.PV1-3-2 Single Path	 

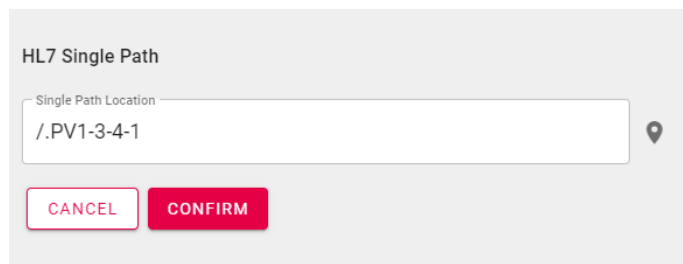
+ SINGLE PATH + CONDITIONAL PATH

You can manually edit it or click or  to select the hl7 path from the hl7 paths tree view.

ⓘ Any string can be also appended to the final value.

Format: **string:STRING**

For example: **string:-** will append the – character.



HL7 Single Path

Single Path Location

/.PV1-3-4-1

CANCEL CONFIRM

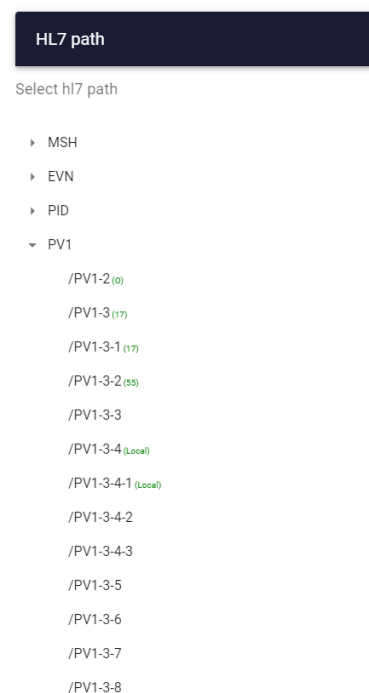
This view allows you to navigate through the hl7 message and find the relationship between hl7 paths and values.

Click on the Segment name to expand the values

Click on the final hl7 path to select it

The current value is shown in **green font**.

For example, **Local** is the value for hl7 path **/PV1-3-4-1**



HL7 path

Select hl7 path

- MSH
- EVN
- PID
- PV1
 - /PV1-2 (0)
 - /PV1-3 (17)
 - /PV1-3-1 (17)
 - /PV1-3-2 (55)
 - /PV1-3-3
 - /PV1-3-4 (Local)
 - /PV1-3-4-1 (Local)
 - /PV1-3-4-2
 - /PV1-3-4-3
 - /PV1-3-5
 - /PV1-3-6
 - /PV1-3-7
 - /PV1-3-8

ⓘ **This view is only available if message is built with PIPES**

12.6.2. HL7 path value concatenation

Several HL7 paths can be populated, and the final value will be the result of concatenation of the different values.

For a given PID segment like this:

PV1|1|O|17^55^^Local|||||12321^TestS|||||||100326|||||||190|||||20190620164500

This is the field explanation of the yellow marked field:

PV1-3.1	Assigned Patient Location- -Point of Care	17
PV1-3.2	Assigned Patient Location- -Room	55
PV1-3.4	Assigned Patient Location- -Facility	Local

Let us say we would the service point code is **Local55**, so we need to read 'PV1-3-4-1' value and after that the 'PV1-3-2' value. To achieve this, we would need to configure the HL7 path like this:

HL7 Paths:

/.PV1-3-4-1
Single Path




/.PV1-3-2
Single Path




+ SINGLE PATH
+ CONDITIONAL PATH

12.6.3. Integration Id

Parameters details		
Name	Integration Id	
Description	Integration id value for the visit	HIS system and Orchestra require to share an Id value to be able to address same visit in both systems. It is been called 'integration id' (key:integrationId).
Number of fields	1	
Field 1	Name	Integration Id
	Description	Integration id for identifying the visit
	Mandatory	true
	Predefined HL7 path	/.PV1-19-1
	Default value	None

12.6.4. Entry point

Parameters details		
Name	Entry point	MAPPING is REQUIRED
Description	Third party entry point	
Number of fields	1	
Field 1	Name	Entry point
	Description	This value will be used for the mapping of the entry point
	Mandatory	true
	Predefined HL7 path	<i>/.PV1-39-1</i>
	Default value	None

12.6.5. Service

Parameters details		
Name	Service	MAPPING is REQUIRED
Description	Third party Service	
Number of fields	1	
Field 1	Name	serviceCode
	Description	This value will be used for the mapping of the services
	Mandatory	true
	Predefined HL7 path	<i>/.PV1-39-1</i>
	Default value	None

12.6.6. Ticket Parameter Name

Parameters details		
Name	Ticket Parameter Name	
Description	Ticket parameter name to store the ticketId in the visit	
Number of fields	1	
Field 1	Name	Ticket Parameter Name
	Description	If a custom ticket Id is calculated it will be stored in this field
	Mandatory	True

12.6.7. Appointment Public Id

Parameters details		
Name	Appointment Public Id	
Description	Third party Appointment Public Id	
Number of fields	1	
Field 1	Name	Appointment Public Id
	Description	Appointment Public Id to identify an appointment
	Mandatory	true
	Predefined HL7 path	<i>/ .PV1-19-1</i>
	Default value	None

12.6.8. Service point

Parameters details		
Name	Service point	
Description	Third party Service point	
Number of fields	1	
Field 1	Name	Service Point
	Description	This value will be used for the mapping of the service points
	Mandatory	true
	Predefined HL7 path	<i>/ .PV1-3-4-1</i>
	Default value	None

12.6.9. Calendar service

Parameters details		
Name	Calendar service	MAPPING is REQUIRED
Description	Third party Calendar Service	
Number of fields	1	
Field 1	Name	Calendar Service
	Description	This value will be used for the mapping of the calendar services related to appointments
	Mandatory	true
	Predefined HL7 path	<i>/ .PV1-39-1</i>
	Default value	None

12.6.10. Calendar resource

Parameters details		
Name	Calendar resource	MAPPING is REQUIRED
Description	Third party calendar resource	
Number of fields	1	
Field 1	Name	Calendar Resource
	Description	This value will be used for the mapping of the calendar resources related to appointments
	Mandatory	true
	Predefined HL7 path	<i>/.PV1-39-1</i>
	Default value	None

12.6.11. Calendar Appointment

Parameters details		
Name	Appointment	
Description	Define appointment fields from the HL7 message	
Number of fields	9	
Field 1	Name	Start date
	Description	Start date of the appointment. Will be read in the HL7 format and translate to the qmatic format
	Mandatory	true
	Predefined HL7 path	<i>/.SCH-11-4</i>
	Default value	None
Field 2	Name	End date
	Description	End date. Will be read in the HL7 format and translate to the qmatic format
	Mandatory	true
	Predefined HL7 path	<i>/.SCH-11-5</i>
	Default value	None
Field 3	Name	Title
	Description	Title
	Mandatory	true
	Predefined HL7 path	<i>/.SCH-7-2</i>
	Default value	None
Field 4	Name	Notes
	Description	Notes
	Mandatory	True
	Predefined HL7 path	<i>/.SCH-7-2</i>
	Default value	None

Field 5	Name	public Id
	Description	Public Id of the appointment
	Mandatory	False
	Predefined HL7 path	<i>/.SCH-1-1</i>
	Default value	None
Field 6	Name	Number Of Customers
	Description	Number of Customers associated to the appointment. By default 1
	Mandatory	false
Field 7	Name	Slot length
	Description	Define a Custom Slot Length.5 By default
	Mandatory	False
Field 8	Name	All day appointment
	Description	if true this appointment will be booked for the whole day
	Mandatory	False
Field 9	Name	Block
	Description	if true this appointment will be booked as a block
	Mandatory	False
Field 10	Name	Duration of the appointment
	Description	This is field is only required is endtime is not populated.
	Mandatory	False



Custom parameters can be also added.

12.6.12. Central Appointment

Parameters details		
Name	Appointment	
Description	Define appointment fields from the HL7 message	
Number of fields	9	
Field 1	Name	Start date
	Description	Start date of the appointment. Will be read in the HL7 format and translate to the qmatic format
	Mandatory	true
	Predefined HL7 path	<i>/.SCH-11-4</i>
	Default value	None
Field 2	Name	End date
	Description	End date. Will be read in the HL7 format and translate to the qmatic format
	Mandatory	true
	Predefined HL7 path	<i>/.SCH-11-5</i>

	Default value	None
Field 3	Name	Title
	Description	Title
	Mandatory	true
	Predefined HL7 path	<i>/.SCH-7-2</i>
	Default value	None
Field 4	Name	Notes
	Description	Notes
	Mandatory	True
	Predefined HL7 path	<i>/.SCH-7-2</i>
	Default value	None
Field 5	Name	Appointment integration Id
	Description	External Id of the appointment
	Mandatory	False
	Predefined HL7 path	<i>/.SCH-1-1</i>
	Default value	None
Field 6	Name	External service code
	Description	Service code from the HIS side that will used in the central service mapping
	Mandatory	True
Field 7	Name	External resource id
	Description	Third party resource id. It is an integer
	Mandatory	True
Field 8	Name	External resource name
	Description	Third party resource name. It is a String
	Mandatory	True
Field 9	Name	External resource group id
	Description	It is an integer
	Mandatory	True
Field 10	Name	External resource group name
	Description	Third party resource group name. It is a String
	Mandatory	True



Custom parameters can be also added.

	Mandatory	true
	Predefined HL7 path	<i>/.PID-5-2</i>
	Default value	None
Field 4	Name	Phone
	Description	Phone of the customer
	Mandatory	false
	Predefined HL7 path	<i>/.PID-14-1</i>
	Default value	None
Field 5	Name	Address
	Description	Address of the customer
	Mandatory	false
	Predefined HL7 path	<i>/.PID-11-1</i>
	Default value	None
Field 6	Name	Address line2
	Description	Address of the customer (line2)
	Mandatory	False
	Predefined HL7 path	<i>/.PID-11-1</i>
	Default value	None
Field 7	Name	City
	Description	City of the customer
	Mandatory	False
	Predefined HL7 path	<i>/.PID-11-3</i>
	Default value	None
Field 8	Name	State
	Description	State of the customer
	Mandatory	false
	Predefined HL7 path	<i>/.PID-11-4</i>
	Default value	None
Field 9	Name	Zip code
	Description	Zip code of the customer
	Mandatory	false
	Predefined HL7 path	<i>/.PID-11-5</i>
	Default value	None
Field 10	Name	Country
	Description	Country of the customer
	Mandatory	False
	Predefined HL7 path	<i>/.PID-11-6</i>
	Default value	None
Field 11	Name	Identification Number

	Description	Identification Number of the customer
	Mandatory	False
	Predefined HL7 path	! This HL7 path must be populated based on the integration
	Default value	None
Field 12	Name	Customer external Id
	Description	Customer external Id of the customer
	Mandatory	False
	Predefined HL7 path	! This HL7 path must be populated based on the integration
	Default value	None
Field 13	Name	Customer public Id
	Description	Customer public Id of the customer
	Mandatory	False
	Predefined HL7 path	! This HL7 path must be populated based on the integration
	Default value	None
Field 14	Name	Email
	Description	Email of the customer
	Mandatory	False
	Predefined HL7 path	/.PID-13-4
	Default value	None
Field 15	Name	Date of birth
	Description	Customers date of birth.Format:yyyy-MM-dd
	Mandatory	False
	Predefined HL7 path	/.PID-7-1
	Default value	None



Custom parameters can be also added

12.6.14. Transfer parameters

Parameters details		
Name	Transfer	
Description	Transfer fields	
Number of fields	3	
Field 1	Name	Queue. MAPPING is REQUIRED
	Description	Third party queue
	Mandatory	True
	Predefined HL7 path	/.PV1-39-1
	Default value	None

Field 2	Name	Delay (sec)
	Description	The number of seconds before the visit is transferred to its destination
	Mandatory	false

12.6.15. Central customer

Parameters details		
Name	Customer	
Description	Define customer fields from the HL7 message	
Number of fields	15	
Field 1	Name	First name
	Description	First name of the customer
	Mandatory	true
	Predefined HL7 path	<code>/.PID-5-2</code>
	Default value	None
Field 2	Name	Last name
	Description	Last name of the customer
	Mandatory	true
	Predefined HL7 path	<code>/.PID-5-2</code>
	Default value	None
Field 3	Name	External customer id
	Description	Third party customer id. This information is stored in the cardnumber field.
	Mandatory	true
	Predefined HL7 path	<code>/.PID-14-1</code>
	Default value	None



Custom parameters can be also added.

Fields that can be configured in the calendar backend customer such as country, address2, city, address1, postalCode, phoneNumber, state, email, must be added as custom fields.



Please note that **email** and **phoneNumber** fields must be added as custom fields.

12.6.16. Transfer parameters

Parameters details		
Name	Transfer	
Description	Transfer fields	
Number of fields	3	

Field 1	Name	Queue. MAPPING is REQUIRED
	Description	Third party queue
	Mandatory	True
	Predefined HL7 path	<i>/.PV1-39-1</i>
	Default value	None
Field 2	Name	Delay (sec)
	Description	The number of seconds before the visit is transferred to its destination
	Mandatory	false

12.7. Actions

There is a collection of available actions which can be used to build your journey. Actions can be categorized into two groups:

- Actions related to Calendar: appointments and customers
- Actions related to visits

For actions related to Calendar, such as create/update/delete an appointment or create/update/delete a customer.

12.7.1. Identifying a customer

A unique Id is required to identify a customer. From the Hospital side, a customer can be identified by several ways:

- By an internal Patient Id (Just for a local healthcare facility)
- By an id from a card number probably issued by the government
- By citizen id issued by the government
- An id printed in a document to be scanned (Just for a local healthcare facility)

From a Qmatic point of view, the external id must be defined **Configuration->Customer->Customer external id template.**

The appointmentCheckIn widget for the healthcare sector must search the customer using this value.

Customer

settings for customer

Customer external Id template

{customer.externalId}

12.7.2. Identifying an appointment

A unique id is required to identify an appointment. From a Qmatic point of view a way to set the an integration id must be defined

12.7.3. Create a visit

Create a visit with a custom parameter called integrationId for the given entry point code and service code.

With the following 5 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Entry point - Third party entry point. Requires entry entry point Mapping
- Parameter: Service - Third party Service. Requires Standard service Mapping
- Parameter: Custom - Add your custom fields
- Parameter: Ticket Parameter Name - Ticket Parameter Name to store the ticketId

This action will:

1. Get entry point from mapping
2. Get service from mapping
3. Calculate custom ticket Id if a custom ticket template id is defined in the service mapping
4. Create visit with custom parameter if any custom parameter is set.

12.7.4. Create a visit - check In an appointment

Performs the appointment check In. The visit will contain a custom parameter called integrationId

With the following 5 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Entry point - Third party entry point.
- Parameter: Appointment Public Id - Third party Appointment Public Id
- Parameter: Custom - Add your custom fields
- Parameter: Ticket Parameter Name - Ticket Parameter Name to store the ticketId

This action will:

1. Get entry point from mapping
2. Find appointment by appointment publicId
3. Find customer by external Id. If a customer is found, then it will be used else a new customer will be created.
4. Find appointment by appointment publicId
5. Appointment can be check Id if the entryPoint and appointment belong to the same branch.
6. Get service from appointment and get service mapping.
7. Calculate custom ticket Id if a custom ticket template id is defined in the service mapping
8. Create visit with appointmentId with the custom parameter from the appointment.

12.7.5. Create a visit linked to a customer

Create a visit linked to a customer. The visit will contain a custom parameter called integrationId

With the following 5 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Entry point - Third party entry point.
- Parameter: Service - Third party Service. Requires Standard service Mapping.
- Parameter: Customer - Define customer fields from the HL7 message
- Parameter: Custom - Add your custom fields
- Parameter: Ticket Parameter Name - Ticket Parameter Name to store the ticketId

This action will:

9. Get entry point from mapping
10. Find customer by external Id. If a customer is found, then it will be used else a new customer will be created.
11. Get service from appointment and get service mapping.
12. Calculate custom ticket Id if a custom ticket template id is defined in the service mapping
13. Create visit with customer id together with the custom parameters.

12.7.6. Call a visit

Call a visit by a custom parameter called integrationId for the given service point code

With the following 2 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service point - Third party Service point

This action will:

1. Get branches related to the HL7
2. Find the visit in these branches by a custom parameter called integrationId
3. If visit is found:
 - a. Check if visit is being served at a servicepoint.
 - i. If It is being served at the requested servicepoint then the visit is recalled
 - ii. If it is being in any other servicepoint then the call visit action can be executed
 - iii. If visit is waiting, then visit will be called.

12.7.7. Recycle a visit

Recycle a visit by a custom parameter called integrationId for the given service point code

With the following 2 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service point - Third party Service point

This action will:

4. Get branches related to the HL7
5. Find the visit in these branches by a custom parameter called integrationId
6. If visit is found:
 - b. Check if visit is being served at a service point.
 - i. If It is being served at the requested service point, then the visit is recycled
 - ii. If it is being in any other service point, then the visit is recycled

12.7.8. End a visit

End a visit referred by a custom parameter called integrationId

With the following 2 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service point - Third party Service point

This action will:

1. Get branches related to the HL7
2. Find the visit in these branches by a custom parameter called integrationId
3. If visit is found and it is being served at a service point, then the visit is ended

12.7.9. Merge visits

Merge visits referred by two patients id. One of the visit will be removed.

With the following 3 parameters:

- Parameter: Patient Id number To Be Removed value - Patient id value for the visit to be removed
- Parameter: Patient Id value - Patient id value for the visit
- Parameter: Patient Id key - Patient Id key for the visit to be removed

This action will:

1. Get branches related to the HL7
2. Find the visit in these branches by a custom parameter configured by the patient id key.
3. If visit is found for this 'Patient id value for the visit to be removed' and it is being served at a service point, then the visit is removed

12.7.10. Remove a visit

Remove a visit by a custom parameter called integrationId

With the following 2 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service point - Third party Service point

This action will:

1. Get branches related to the HL7
2. Find the visit in these branches by a custom parameter called integrationId
3. If visit is found, then the visit is removed

12.7.11. Transfer a visit

Transfer a visit by a custom parameter called integrationId

With the following 4 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service point - Third party Service point
- Parameter: Entry point - Third party entry point
- Parameter: Transfer - Transfer fields

This action will:

- Get service point from mapping
- Get queue from mapping
- Get branches related to the HL7
- Find the visit in these branches by a custom parameter called integrationId
- If visit is found and is waiting, then the visit is transferred
- If visit is found and is being server at the requested service point, then the visit is transferred

12.7.12. Add Parameters to a Visit

Add custom parameters to a visit referred by a custom parameter called integrationId

With the following 2 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Custom - Add your custom fields

This action will:

1. Get branches related to the HL7
2. Find the visit in these branches by a custom parameter called integrationId
3. If visit is found, then the visit is updated with these custom parameters

12.7.13. Add service to a visit

Add service to a visit referred by a custom parameter called integrationId

With the following 2 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service - Third party Service

This action will:

1. Get branches related to the HL7
2. Get service Id from the service mapping
3. Find the visit in these branches by a custom parameter called integrationId
4. If visit is found, then the service is added to the unserved services for this visit

12.7.14. Create an appointment by integration Id

Create an appointment in the calendar database by the calendar-backend connector for a given calendar service, calendar resource and integration Id.

With the following 5 parameters:

- Parameter: Calendar service - Third party Calendar Service
- Parameter: Calendar resource - Third party calendar resource
- Parameter: Appointment - Define appointment fields from the HL7 message
- Parameter: Customer - Define customer fields from the HL7 message
- Parameter: Ticket Parameter Name - Ticket Parameter Name to store the ticketId

This action will:

1. Find qmatic calendar service from the mapping for the given calendar service
2. Find qmatic calendar resource from the mapping for the given calendar resource.
3. Find customer by external Id. If a customer is found, then it will be used else a new customer will be created.
4. Find customer's appointments and then filter them by integration id.
5. If appointment is not found, then appointment is created and a custom parameter called integrationId is set to the value from the HIS

12.7.15. Update an appointment by integration Id

Update an appointment from the calendar database by the calendar-backend connector.

With the following 6 parameters:

- Parameter: Calendar branch - Third party calendar branch
- Parameter: Calendar service - Third party Calendar Service
- Parameter: Calendar resource - Third party calendar resource
- Parameter: Appointment - Define appointment fields from the HL7 message
- Parameter: Customer - Define customer fields from the HL7 message
- Parameter: Ticket Parameter Name - Ticket Parameter Name to store the ticketId

This action will:

1. Find qmatic calendar service from the mapping for the given calendar service
2. Find qmatic calendar resource from the mapping for the given calendar resource.
3. Find customer by external Id. If a customer is found, then it will be used else a new customer will be created.
4. Find customer's appointments and then filter them by integration id.
5. If appointment is not found, then appointment is created and a custom parameter called integrationId is set to the value from the HIS

12.7.16. Delete an appointment by integration Id

Delete an appointment from the calendar database by the calendar-backend connector.

With the following 2 parameter:

- Parameter: Integration Id - Third party Appointment Public Id
- Parameter: Customer - Define customer fields from the HL7 message

This action will:

1. Find customer by external id.
2. Find appointment for that customer by this integration id.
3. If an appointment is found, then it will be deleted.

12.7.17. Create a CENTRAL appointment by integration Id

Create an appointment for a given calendar service and calendar resource by using the appointment connector (central appointment table)

With the following 5 parameters:

- Parameter: Calendar service - Third party Calendar Service
- Parameter: Calendar resource - Third party calendar resource
- Parameter: Central Appointment - Define appointment fields from the HL7 message
- Parameter: Central Customer - Define customer fields from the HL7 message
- Parameter: Ticket Parameter Name - Ticket Parameter Name to store the ticketId

This action will:

1. Find qmatic calendar service from the mapping for the given calendar service.
2. Find qmatic calendar resource from the mapping for the given calendar resource.
3. Find customer by external Id. If a customer is found, then it will be used else a new customer will be created.
4. Find appointment by integration id
5. If appointment is not found, then appointment is created and its publicId is set to the value from the HIS

12.7.18. Update a CENTRAL appointment by integration Id

Update an appointment by using the appointment connector (central appointment table).

With the following 6 parameters:

- Parameter: Calendar branch - Third party calendar branch
- Parameter: Calendar service - Third party Calendar Service
- Parameter: Calendar resource - Third party calendar resource
- Parameter: Central Appointment - Define appointment fields from the HL7 message
- Parameter: Central Customer - Define customer fields from the HL7 message
- Parameter: Ticket Parameter Name - Ticket Parameter Name to store the ticketId

This action will:

6. Find qmatic calendar service from the mapping for the given calendar service
7. Find qmatic calendar resource from the mapping for the given calendar resource.
8. Find customer by external Id. If a customer is found, then it will be used else a new customer will be created.
9. Find appointment by appointment public Id
10. If appointment is found, then appointment is updated and its publicId is set to the value from the HIS

12.7.19. Delete a CENTRAL appointment by integration Id

Delete an appointment by using the appointment connector (central appointment table).

With the following 1 parameter:

- Parameter: Appointment Public Id - Third party Appointment Public Id

This action will:

4. Find appointment by this appointment public id
5. If an appointment is found, then it will be deleted

12.7.20. Create a customer

Create a customer by calendar-backend connector.

With the following 1 parameter:

- Parameter: Customer - Define customer fields from the HL7 message

This action will:

1. Find customer by external Id.
2. If a customer is found, then it will be used else a new customer will be created.



calendar-backend/api/v1/customers/search?externalId=\${externalCustomerId}&limit=10

12.7.21. Update a customer

Update a customer referred by the customer external id by calendar-backend connector.

With the following 1 parameter:

- Parameter: Customer - Define customer fields from the HL7 message

This action will:

1. Calculate customer external Id.
2. Find customer by external Id.
3. If a customer is found, then it will be updated.



calendar-backend/api/v1/customers/search?externalId=\${externalCustomerId}&limit=10

12.7.22. Delete a customer

Delete a customer referred by its customer external id by calendar-backend connector.

With the following 1 parameter:

- Parameter: Customer - Define customer fields from the HL7 message

This action will:

1. Find customer by external Id.
2. If a customer is found, then it will be deleted.



calendar-backend/api/v1/customers/search?externalId=\${externalCustomerId}&limit=10

12.7.23. No action

No action is done. This action can be useful to be able to provide an action to those messages that HIS can't prevent to send us or those messages that will fulfil a set of rules, but nothing is required to be done on Orchestra

12.7.24. Fetch data for an appointment

This action fetches appointment data from a hl7 message. Typically, this action will be used when the hl7Connector api is invoked to fetch data from the HIS. An outgoing journey is executed in the first place and then the response hl7 will be redirect to the incoming journeys where a journey with this action could be executed.

This action will provide a response as an array of Orchestra calendar appointment objects.



Please refer to the SDK for further detail.

12.7.25. Create or update a customer

Create or update a customer by calendar-backend connector.

With the following 1 parameter:

- Parameter: Customer - Define customer fields from the HL7 message

This action will:

1. Find customer by external Id
2. If a customer is found, then it will be updated else a new customer will be created.

12.7.26. Fetch a customer

This action fetches customer data from a hl7 message. Typically, this action will be used when the hl7Connector api is invoked to fetch data from the HIS. An outgoing journey is executed in the first place and then the response hl7 will be redirect to the incoming journeys where a journey with this action could be executed.

This action will provide a response as an Orchestra calendar customer object.



Please refer to the SDK for further detail.

12.7.27. Fetch a customer from central

This action fetches customer data from a hl7 message. Typically, this action will be used when the hl7Connector API is invoked to fetch data from the HIS. An outgoing journey is executed in the first place and then the response hl7 will be redirect to the incoming journeys where a journey with this action could be executed.

This action will provide a response as an Orchestra central appointment customer object.



Please refer to the SDK for further detail.

12.7.28. Fetch visit data including multi-service and customer information

This action fetches visit data from a hl7 message. Typically, this action will be used when the hl7Connector API is invoked to fetch visit data from the HIS. An outgoing journey is executed in the first place and then the response hl7 will be redirect to the incoming journeys where a journey with this action could be executed.

With the following 3 parameters:

- Parameter: Service - Third party Service
- Parameter: Customer - Define customer fields from the HL7 message
- Parameter: Custom - Add your custom fields

SQR_S25 message parsing			
Response from SQM S25			
Enabled			
Actions			
Fetch visit parameters FetchVisitWithMultiService	Service serviceCode	serviceCode This value will be used for the mapping of the services	/SCHEDULE/SCH-5-1
	Customer customer	Name name of the customer	/PID-5-3
		First name First name of the customer	/PID-5-2
		Last name Last name of the customer	/PID-5-2
		Phone Phone of the customer	/PID-14-1
		Address Address of the customer	/PID-11-1
		Address line2 Address of the customer (line2)	/PID-11-2
		City City of the customer	/PID-11-3
		State State of the customer	/PID-11-4
		Zip code Zip code of the customer	/PID-11-5
		Country Country of the customer	/PID-11-6
		Identification Number Identification Number of the customer	/SCHEDULE/PATIENT/PID-3
		Customer external id External Id of the customer	/SCHEDULE/PATIENT/PID-3
		Customer public id public id of the customer	/SCHEDULE/PATIENT/PID-3
		Email email of the customer	/PID-13-4
		Date of birth Customers date of birth Format yyyy-MM-dd	/PID-7-1
	Custom custom	info info	/SCHEDULE/PATIENT/PID-3

Example of settings

This action will:

- Get Customer by customer external id.
- Get service code from the HL7 response

This action will provide the following json response:

```
{
  "customer": {
    "cardNumber": "0084068470",
    "externalId": "0084068470",
    "id": 24380
  },
  "parameters": {
    "info": "0084068470"
  },
  "services": [
    {
      "Balie",
      "Loket"
    }
  ]
}
```

12.7.29. Fetch data from a HL7 message

This action fetches data from a hl7 message. Typically, this action will be used when the hl7Connector api is invoked to fetch information from the HIS.

An outgoing journey is executed in the first place and then the response hl7 will be redirect to the incoming journeys where a journey with this action could be executed.

With the following 3 parameters:

- Parameter: Custom - Add your custom fields

SQR_S25 Fetch Data					
Fetch HL7 data-type 2 from SQM S25					
Enabled					
Rules			Actions		
Check action	/MSH-6-1	FETCH_DATA	Fetch data	Custom	cardNumber
Rule for			FetchDataAction	custom	cardNumber
FETCH_DATA					appointmentCode
					Appointment external code
					serviceCode
					External service code
					/PID-3-1
					/SCHEDULE/PATIENT/PID-3-1
					/SCHEDULE/SCH-1-1
					/SCHEDULE/SCH-5-1

Example of settings

This action will provide the following json response:

```
{
  "parameters": [
    {
      "appointmentCode": "0021075589",
      "cardNumber": "0084068470",
      "serviceCode": "Balie"
    },
    {
      "appointmentCode": "0021075589",
      "cardNumber": "0084068470",
      "serviceCode": "Loket"
    },
    {
      "appointmentCode": "0021075589",
      "cardNumber": "0084068470",
      "serviceCode": "Afname"
    }
  ]
}
```

12.7.30. Create a customer from central

This action creates a customer referred by the customer external id from the central database by the appointment connector.

With the following 1 parameter:

- Parameter: Central customer - Define customer fields from the HL7 message

This action will:

1. Find customer by external Id
2. If a customer is not found, then it will be created.

12.7.31. Update a customer from central

This action updates a customer referred by the customer external id from the central database by the appointment connector.

With the following 1 parameter:

- Parameter: Central customer - Define customer fields from the HL7 message

This action will:

1. Find customer by external Id.
2. If a customer is found, then it will be updated.

12.7.32. Delete a customer from central

This action deletes a customer referred by the customer external id from the central database by the appointment connector.

With the following 1 parameter:

- Parameter: Central customer - Define customer fields from the HL7 message

This action will:

1. Find customer by external Id
2. If a customer is found, then it will be deleted.



The customer will be deleted if no appointments are assigned to it.

12.7.33. Transfer current visit at service point

This action transfers the current being served visit at a given service point to a queue.

With the following 2 parameters:

- Parameter: Service point - Third party Service point defined by service point mapping code
- Parameter: Transfer options – Define the transfer parameters: queue defined by queue mapping code, delay

This action will:

1. Find visit at service point
2. If visit is being served at service point, then it will be transferred to the given

queue

12.7.34. Recycle current visit

This action recycles the current being served visit at a given service point.

With the following 1 parameter:

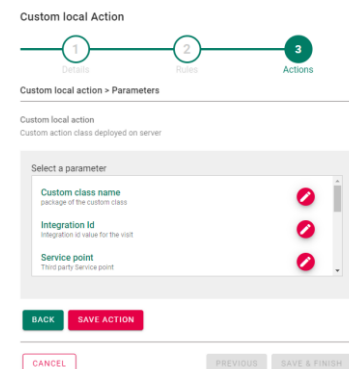
- Parameter: Service point - Third party Service point defined by service point mapping code

This action will:

1. Find visit at service point
2. If visit is being served at service point then it will be recycled

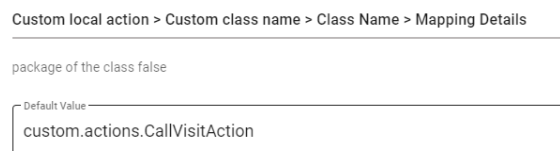
12.7.35. Custom local action

This action will execute a Custom action class deployed on server.



With the following mandatory parameter and several optional parameters:

- Parameter: class name – path of the java package with the web-inf/classes



This action:

1. Instantiate an Action with the referred class name, A file called 'Class Name'.**groovy** must be located at **web-inf/classes/custom/actions**. For example: CallVisitAction.
2. Add parameters and launch the action.
3. The referred action will validate the input parameters and will be executed

12.7.36. Multi-appointment check-out

A customer may have more than one appointment for the day.

The customer arrives and a check In is done for the first valid appointment.

When the current visit must be ended then a few rules are considered:

- If this customer has more appointments, then the current visit is ended, and the next appointment sorted by appointment date is arrived. Some custom parameters are added to the new visit.
- If this is just the last appointment, then the visit will be recycled.

12.7.37. Check In a visit and end existing visit handling multi-appointments check out

Check In visit and end existing visit handling multi-appointments.

Remove a visit by a custom parameter called integrationId

With the following 4 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: customer
- Parameter: custom parameters
- Parameter: entry point - Third party entry point

This action will:

- Find customer by external customer id.
- If a customer is found, then find today's appointment for this customer.
- Find customer appointment by integrationId.
- If appointment is found:
 - Delete any visit at the appointment branch.
 - Arrive the appointment.
 - Add custom parameters to the new visit.

12.7.38. End a visit with multi-appointments check out

This action will implement the multi-appointment check out for visit referred by a custom parameter called integrationId.

With the following 3 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service point - Third party Service point
- Parameter: custom parameters
-

This action will:

- Get branches related to the HL7.
- Find the visit in these branches by a custom parameter called integrationId.
If visit is found, then the multi-appointment check out will be applied.



Please check the multi-appointment check out.

12.7.39. End a current visit at service point with multi-appointments check out

This action will implement the multi-appointment check out for the current visit at a given service point.

With the following 4 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: Service point - Third party Service point
- Parameter: custom parameters
- Parameter: entry point - Third party entry point

This action will:

Find service point.
Check if there is a visit at service point.

If a visit is being served, then the multi-appointment check out will be applied.



Please check the multi-appointment check out.

12.7.40. Send visit data by HL7

Find visit by a custom parameter called integrationId and send it by HL7 by using an outgoing message.

With the following 3 parameters:

- Parameter: Integration Id - Integration id value for the visit
- Parameter: HL7 message code for the outgoing journeys engine.
- Parameter: HL7 message type for the outgoing journeys engine.

Send data to third party system > Parameters

Action Type

Select an event

Send visit data by HL7

Send visit data by HL7

Find visit by a custom parameter called integrationId and send it by HL7 by using an outgoing message

Select a parameter

Integration Id

Integration id value for the visit



HL7 message code

HL7 message code for the outgoing message journey



HL7 message type

HL7 message type for the outgoing message journey



This action will:

- Get branches related to the HL7.
- Find the visit among these branches by a custom parameter called integrationId.
- If visit is found an outgoing journey is redirected to the outgoing engine.



A valid outgoing message must be configured to take care of this journey

13. Outgoing journeys

The messages to be sent to the HIS are called outgoing journeys. These journeys are triggered by orchestra events such as visit creation, by calling a visit and so on.

Search Journey Q					CREATE NEW JOURNEY ...
Name ^	Orchestra Event	Description	Enabled	Actions	
Visit is checked In	VISIT_CREATE	reporting visit created to HIS. TicketId is included	✓	    	
Visit is checked In by action	CUSTOM	reporting visit created to HIS. TicketId is included	✓	    	
					Rows per Page 10 1-2 of 2 < >

This the main page for outgoing messages



Click on this icon to edit a journey



Click on this icon to edit the rules of the journey



Click on this icon to edit the fields of the journey



Click on this icon to duplicate this journey



Click on this icon to delete the journey

CREATE NEW JOURNEY

Click on this button to add a new journey



Click on this icon to show the context menu for import / export options

Export journeys

Import journeys

The context menu for import / export is shown as follows

Clicking on **Export journeys**, a file will be downloaded by the browser. This file is a json format file with the description of the existing journeys

Clicking on **Import journeys**, the following dialog for importing journeys is shown. Please refer to the incoming message importing dialog section for further detail.

Click on the  to see an overview of the journey

Visit is checked In VISIT_CREATE Enabled →	
Remote HIS listener: localhost:121212	
Rules	
Check branch Name	branchName *QHospital(1)
Check if valid visit	integrationId \d+
Fields	
tickettoticket-random5-1	HL7 paths
Ticket number	/PV1-50-1
patientIdentifier_id	HL7 paths
patientIdentifier_id	/PID-3-1
entryPointName	HL7 paths
entryPointName	/PID-3-1
integrationId	HL7 paths
Custom ticket Id	/PV1-49-1

13.1. Orchestra event

Before explaining rules and fields let us explain a bit about orchestra events. Orchestra triggers events when some actions happen. For example, when a visit is created then a VISIT_CREATED event is triggered with data related to it.

An orchestra event contains a set of fields:

Some fields are provided by Orchestra:

- visitId: 16861
- branchId: 8
- serviceExtDesc: InProgress
- entryPointName: WebReception
- ticket: D008
- queueLogicId: 44
- queueName: In Progress Queue
- service: 62
- serviceExtName: InProgress

Some fields can be customized by adding custom parameters to the visit. If so, these fields are available when the event is received. For example:

- ticket2: LEA19
- integrationId: 100326
- patientIdentifier_id: 1039298517
- CaseId: 100326

13.2. Message

Every outgoing message contains a message template, just like the incoming messages.

Set the following fields

- Name and Description
- Remote server to send the hl7 message
- Remote port to send the hl7 message
- Select Orchestra Event, Available values:
 - VISIT_CREATE
 - VISIT_REMOVE
 - VISIT_END
 - VISIT_NEXT
 - VISIT_CONFIRM
 - VISIT_CALL
 - VISIT_NOSHOW
 - VISIT_RECYCLE
 - VISIT_TRANSFER_TO_QUEUE
 - VISIT_TRANSFER_TO_SERVICE_POINT_POOL
 - VISIT_TRANSFER_TO_USER_POOL
 - CUSTOM
- HL7 Message Template

 **SUMMARY** tab is also available to have a quick check of the current settings of the journey

Visit is checked In

1Details

2Rules

3Fields

DETAILS

SUMMARY

Journey Name

Visit is checked In

Description

reporting visit created to HIS. TicketId is included

Select Orchestra Event

VISIT_CREATE

Remote server

Remote port

☒ Journey Enabled

HL7 Message Template

MSH|^~\&|HIS_NAME|||20190620165608||ADT^A01|92|P|2.6
EVN|A01|20190620165608||HIS name|20190620165608
PID|1|358210^*Local^MR||TestS||M|||*****P||^NET^Internet^jj@qmatic.com
PV1|1|O|17^55^*Local|||12321^TestS|||1199003613|||190|||2019062016
4500
PV2|||20190620164500|20190620170500

CANCEL

SAVE

NEXT

13.3. Rules

For the outgoing messages we must check the fields of the event to match some values.

This is the job for rules. If all rules are fulfilled the HL7 message will be send to the HIS remote server.

ADT_A11

1 Details 2 Rules 3 Fields

Rules

Name:	Description	Actions
Check branch Name	Check if branch equals QHospital	 

NEW RULE

CANCEL SAVE PREVIOUS NEXT

Rule definitions

ADT_A11

1 Details 2 Rules 3 Fields

Rules

Rule Name
Check branch Name

Rule Description
Check if branch equals QHospital

Visit Field
branchName

Accepted Values:
^QHospital(1) 

Enter New Value

CANCEL RULE SAVE RULE

CANCEL SAVE PREVIOUS NEXT

Rule settings

By this form, you can have no rules, or you can add several rules



Click on this icon to edit a rule



Click on this icon to delete the rule

NEW RULE

Click on this button to add a new rule.

A Rule consists of:

- Name and description
- Visit field name of the parameter from the orchestra event
- Accepted values: List of accepted values

If the value of the visit Field matches at least one of the accepted values, then the rule is fulfilled.

13.4. Fields

Some fields in the HL7 message template will be replaced with the defined fields.

ADT_A11

1 Details 2 Rules 3 Fields

Fields

Name:	Description	Actions
Ticket number	ticket number is sent to HIS	 
patientIdentifier_id	patientIdentifier_id	 
entryPointName	entryPointName	 
Custom ticket Id	Custom ticket generated GDPR	 

NEW FIELD

CANCEL PREVIOUS SAVE & FINISH

Replacing a field requires an HL7 path and a value. For example:

- Ticket number:** HL7 path `/.PV1-50-1` and value from the event field `'ticket'` with value `'D008'`
- Custom ticket id:** HL7 path `/.PV1-49-1` and value from the event field `'ticket2'` with value `'LEA19'`. This is a custom field for this visit
- EntryPointName:** HL7 path `/.PID-3-1` finding in PID segment and checking is `/PID-3-5` equals `'JHN'` and value from the event `'entryPointName'` with value `'WebReception'`

ADT_A11

1 Details 2 Rules 3 Fields

Fields

Rule Name: Ticket number

Rule Description: ticket number is sent to HIS

Visit Field: ticket

HL7 Paths: `/.PV1-50-1` Single Path

+ SINGLE PATH + CONDITIONAL PATH

CANCEL FIELD SAVE FIELD

CANCEL PREVIOUS SAVE & FINISH

ADT_A11

1 Details 2 Rules 3 Fields

Fields

Rule Name: Custom ticket Id

Rule Description: Custom ticket generated GDPR

Visit Field: ticket2

HL7 Paths: `/.PV1-49-1` Single Path

+ SINGLE PATH + CONDITIONAL PATH

CANCEL FIELD SAVE FIELD

CANCEL PREVIOUS SAVE & FINISH

ADT_A11

1 Details 2 Rules 3 Fields

Fields

Rule Name: entryPointName

Rule Description: entryPointName

Visit Field: entryPointName

HL7 Paths: `/.PID-3-1` Conditional Path

+ SINGLE PATH + CONDITIONAL PATH

CANCEL FIELD SAVE FIELD

CANCEL PREVIOUS SAVE & FINISH

This the final HL7 message:

```
MSH|^~\&|HIS_NAME|||20200609005003|ADT^A01|QMATI20200609005003|P|2.6|
EVN|A08|20200609005003|||streets heaven|20200609005003|
PID|1||WebReception^^^^PI~108517^^^^CAMD^JHN^^^^MD&&ISO3166-
2~506105R^^^^MI^NNEESP^^^^ESP&&ISO3166~28/02432891-
28^^^^SS^SS^^^^ESP&&ISO3166~CR062916017^^^^MS^HC^^^^ESP&&ISO3166~~~~~| | ^ ^ |
|19600622000000|F|||^172^28^28810^724^^16||918859547^PRN^PH^^^^^^^^918859547~^ORN^PH~^PR
N^Internet|627925676^PRS^CP|||||28/02432891-28|||||NO EXISTE|||||ESP^ ||||N|
```

PV1|1|O|17^55^Local|||12321^TestS|||100326|||190|||20190620164500|||OUA70|D010|
 PV2|||20190620164500|20190620170500|



Please notice the text in yellow font

For the visit field, the following rules applies:

- String **random** plus a number can be used to append a random value. For example, use random5 to append a random value of 5 digits.
- Any event field name can be used and will be replaced by the value of the event. For example, **entryPointName** and/or **ticket**
- Any other literal string will remain.

Example: Let say we have:

- Visit field as **RX-ticket-random2-entryPointName**
 - The event field '**ticket**' with value '**D008**'
 - The event '**entryPointName**' with value '**WebReception**'

The final value for **/.PV1-50-1** will be calculated as: **RX-D008-23-WebReception**

Fields

Field Name
Ticket number

Field Description
Ticket number

Visit Field
RX-ticket-random2-entryPointName

HL7 Paths:
/.PV1-50-1
Single Path

Visit is checked In					
reporting visit created to HIS. Ticketid is included Remote HIS listener: localhost:121212 Enabled					
Description	Event field	Accepted values	Description	Event field	HL7 path to change the template
Check branch Name Check if branch equals QHospital	branchName	*(QHospital 1)	Ticket number Ticket number	tickettoticket-random5-1	/.PV1-50-1
Check if valid visit Check if visits contains a integrationid field (numeric value)	integrationid	\d+	patientIdentifier_id Patient Identifier id	patientIdentifier_id	If /PID-3-5+MR then use value from /PID-3-1
			entryPointName Entry point name	entryPointName	If /PID-3-5+PI then use value from /PID-3-1
			Custom ticket id Custom ticket id	integrationid	/.PV1-49-1

Example of outgoing message configuration

13.5. Send the message to HIS

If rules are fulfilled, then a HL7 message will be sent to the HIS accordingly to the remote server settings.

14. Templates

This option allows you to configure templates of customer and appointment type that will be used in the actions.

14.1. Customer template

There are two types of customer templates:

- Calendar customer type
- Central customer type

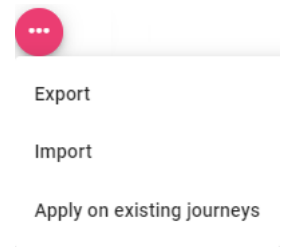
These templates are commonly used on working with appointments and customer and are used in many actions. Once a template is configured it can be applied to every journey that includes it.

These templates can:

- Be exported to a json format file.
- Be imported from a json format file.
- Be applied to every journey that contains it.



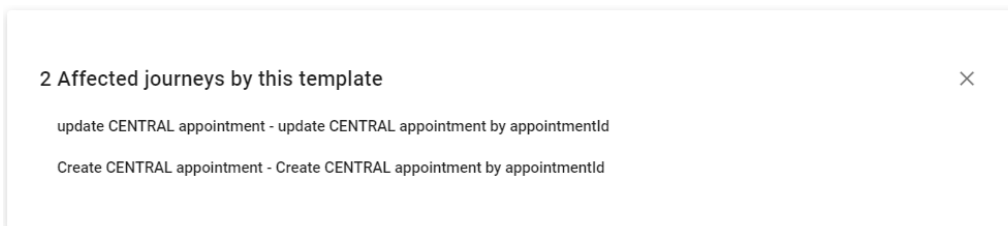
Click on this icon to show the context menu for these options.



For every template:



Click on this icon to view the journey that includes this type of template.



14.1.1. Calendar customer template

This template allows the mapping of the fields coming from the hl7 message to the calendar customer type that is required for Orchestra to handle a calendar customer from an API point of view.

In this case, the calendar backend connector is used to collect the data.

 Click on this icon to view the journey that includes this type of template.

 Click on this icon to edit this field.

 Click on this icon to add a custom field to the template.

Default customer template

Predefined customer template to use on Actions that include a customer object

Select customer type 

☒ calendar ☐ central

Name

/PID-5-2

First name

/PID-5-2

Last name

/PID-5-2

Phone

/PID-14-1

Address

/PID-11-1

Address line2

/PID-11-2

City

/PID-11-3

State

/PID-11-4

Zip code

/PID-11-5

Country

/PID-11-6

Identification Number

if (/PID-3-5 == P1) then /PID-3-1

Customer external Id

if (/PID-3-5 == P1) then /PID-3-1

Customer public Id

if (/PID-3-5 == JHN) then /PID-3-1

Email

/PID-13-4

Date of birth

/PID-7-1



The previous figure shows an example of this settings. Please, for your own implementation, use the ones that you required.

14.1.2. Central customer template

This template allows the mapping of the fields coming from the hl7 message to the CENTRAL customer type that is required for Orchestra to handle a central customer from an API point of view.

In this case, the appointment connector is used to collect the data.

 Click on this icon to view the journey that includes this type of template.

 Click on this icon to edit this field.

 Click on this icon to add a custom field to the template.

Default customer template

Predefined customer template to use on Actions that include a customer object
Select customer type

☐ calendar ☒ central

First name of the customer

/PATIENT/PID-S-1

Last name of the customer

/PATIENT/PID-S-2

External Id of the customer

if (/PATIENT/PID-3-5 == MRN) then /PATIENT/PID-3-1

SAVE



The previous figure shows an example of this settings. Please, for your own implementation, use the ones that you required.

14.2. Appointment template

There are two types of appointment templates:

- Calendar appointment type
- Central appointment type

14.2.1. Calendar appointment template

This template allows the mapping of the fields coming from the hl7 message to the calendar appointment type that is required for Orchestra to handle a calendar appointment from an API point of view.

In this case, the calendar backend connector is used to collect the data.

 Click on this icon to view the journey that includes this type of template.

 Click on this icon to edit this field.

 Click on this icon to add a custom field to the template.

Default appointment template

Predefined appointment template to use on Actions that include an appointent object

Select appointment type

☒ calendar ☐ central

Start date of the appointment. Will be read in the hl7 format and translate to the qmatic format

/PATIENT/SCH-11(0)-4

End date. Will be read in the hl7 format and translate to the qmatic format

/PATIENT/SCH-11(0)-5

Title

/PATIENT/SCH-7-2

Notes

/PATIENT/SCH-7-2

Appointment integration Id

/PATIENT/SCH-7-1

Number of Customers associated to the appointment. By default 1

Default value:1

Define a Custom Slot Length.5 By default

Default value:5

if true this appointment will be booked for the whole day

Default value:false

if true this appointment will be booked as a block

Default value:false

Duration of the appointment. This is field is only required is endtime is not populated.

/PATIENT/SCH-11(0)-3

SAVE

 The previous figure shows an example of this settings. Please, for your own implementation, use the ones that you required.

14.2.2. Central appointment template

This template allows the mapping of the fields coming from the hl7 message to the central appointment type that is required for Orchestra to handle a central appointment from an API point of view.

In this case, the appointment connector is used to collect the data.

 Click on this icon to view the journey that includes this type of template.

 Click on this icon to edit this field.

 Click on this icon to add a custom field to the template.

Default appointment template

Predefined appointment template to use on Actions that include an appointent object
Select appointment type

☐ calendar ☒ central

Start date of the appointment. Will be read in the hl7 format and translate to the qmatic format
/SCH-11-4-1

End date. Will be read in the hl7 format and translate to the qmatic format
/SCH-11-5-1

Title
/SCH-1-2

Notes
/SCH-1-2

Appointment integration Id
/SCH-1-1

External Resource id
/SCH-1-2

External Resource id
Default value:0

External resource name
/SCH-1-2

External resource group id
Default value:0

External resource group name
/SCH-1-2

Duration of the appointment. This is field is only required is endtime is not populated.
Default value:10

SAVE



The previous figure shows an example of this settings. Please, for your own implementation, use the ones that you required.

15. Mappings between values from Hospital to Orchestra values

As Messages from the HIS are based on its own values and terminology, a translation into Qmatic ids must be done.

As an example:

For HIS, X-Ray department is referred by id=190 and we must translate this value to a valid branch-service.



From version 2.1.4: If the code mappings starts with the ^ character, then it will be evaluated as a regex expression.

For example:

- If the code for the mapping is 'XRay' then only if this word is read from the HL7 message the mapping will be found.
- If the code for the mapping is '^XRay' then all values that start with 'Xray' will match this code but also values such as 'XRay box 1', 'XRay box 2', 'XRay department' will match this code.
- If the code for the mapping is '^XRay (ld){1}' then values such as 'XRay 1', 'XRay 99' will match the code but values such as 'XRay xyz' will not match the code. **ld** implies matching a digit [0 to 9]

15.1. Import/export of mapping

For any of the following mappings, an import/export feature can be done.

Search Mapping Q				CREATE NEW MAPPING ...
Code: ↑	Orchestra Branch	Orchestra Queue	Description	Actions
190	QHospital	Queue 2	Holding queue: Visits are stored in this queue because HIS may need to recover a visit at any moment.	  
192	QHospital	Queue 1	RX queue: Visit are transferred to the radiology queue	  
Rows per Page 10 ▾				1-2 of 2 < >



Click on this icon to duplicate a mapping



Click on this icon to show the context menu for import / export options

Export

Import

The context menu for import / export is shown as follows

Clicking on **Export**, a file will be downloaded by the browser. This file is a json format file with the mappings

Clicking on **Import**, the following dialog for importing mappings is shown.

15.1.1. Dialog for importing mappings

IMPORT

Click on this button to start the import

Import mappings

 Click here to select a .json file
queues_164...xport.json

IMPORT

X

CLOSE

Once the import process is done the following alert will be shown

 2 mapping(s) imported

Import mappings

 Click here to select a .json file
queues_164...xport.json

IMPORT

X

 2 mapping(s) imported

CLOSE

15.2. Mapping of services

These mapping can be related to:

- Standard services
- Calendar services

QUEUES SERVICES ENTRYPOINTS SERVICEPOINTS CALENDAR RESOURCES

Search Mapping

CREATE NEW MAPPING

Code: ↑	Orchestra Branch	Service	Description	Type	Actions
190	QHospital	InProgress	This is the checkin queue for the department 190 (HIS terminology)	NORMAL	 
checkup	QHospital		Appointment Reason: checkup (read from SCH-7-2)	CALENDAR	 

Rows per Page 10 1-2 of 2 < >



Click on this icon to edit a mapping



Click on this icon to delete a mapping

CREATE NEW MAPPING

Click on this button to add a new mapping

15.3. Mapping of standard services

Values from the HIS will be translate into services.

Used for actions related to visit such as create visit, add service to visit

⚠ If the code starts with the ^ character, then it will be evaluated as a regex expression.

Service Mapping

Select Type

☒ Standard ☐ Calendar

HIS Service Code	190
Description	This is the checkIn queue for the department 190 (HI
Orchestra Branch Select	QHospital
Orchestra Service Select	InProgress
Custom Ticket Template Select	Ticket id as a ramdom value
CANCEL SAVE	

15.4. Mapping of calendar services

Values from the HIS will be translated into calendar services.

Used for actions related to calendar such as create an appointment, update an appointment, and delete and appointment

⚠ If the code starts with the ^ character, then it will be evaluated as a regex expression.

Service Mapping

Select Type

☐ Standard ☒ Calendar

HIS Service Code	checkup
Description	Appointment Reason: checkup (read from SCH-7-2)
Calendar Branch Select	QHospital
Calendar Service Select	Service 1
Custom Ticket Template Select	Last 5 digits from customer card number
CANCEL SAVE	

15.5. Mapping of queues

Values from the HIS will be translated into queues.
Used for actions related to visit such as transfer a visit

QUEUES SERVICES ENTRYPOINTS SERVICEPOINTS CALENDAR RESOURCES

Search Mapping

CREATE NEW MAPPING

Code: ↑	Orchestra Branch	Orchestra Queue	Description	Actions
190	QHospital	Queue 2	Holding queue: Visits are stored in this queue because HIS may need to recover a visit at any moment.	

Rows per Page101-1 of 1



Click on this icon to edit a mapping



Click on this icon to delete a mapping

CREATE NEW MAPPING

Click on this button to add a new mapping



If the code starts with the ^ character, then it will be evaluated as a regex expression.

15.6. Mapping of entry points

Values from the HIS will be translated into entry points.

Used for actions related to visit such as create a visit, create a visit with an appointment

QUEUES SERVICES **ENTRYPPOINTS** SERVICEPOINTS CALENDAR RESOURCES

Search Mapping Q CREATE NEW MAPPING				
Code: ↑	Orchestra Branch	EntryPoint	Description	Actions
190	QHospital	WebReception	Reception desk for department 190 (HIS terminology)	 
Rows per Page 10 1-1 of 1 < >				



Click on this icon to edit a mapping



Click on this icon to delete a mapping

CREATE NEW MAPPING

Click on this button to add a new mapping

EntryPoint Mapping

HIS EntryPoint Code	190
Description	Reception desk for department 190 (HIS terminology)
Orchestra Branch Select	QHospital
Orchestra EntryPoint Select	WebReception
CANCEL	SAVE



If the code starts with the ^ character, then it will be evaluated as a regex expression.

15.7. Mapping of service points

Values from the HIS will be translated into service points.
Used for actions related to visit such as Call a visit, recycle a visit, end a visit.

QUEUES SERVICES ENTRYPOINTS SERVICEPOINTS CALENDAR RESOURCES

Search Mapping

Q

CREATE NEW MAPPING

Code: ↑	Orchestra Branch	ServicePoint	Description	Actions
Local	QHospital	Multi 1	1st Floor - Waiting area B: Room 1	 
Local2	QHospital	Multi 2	1st Floor - Waiting area B: Room 2	 
Local3	QHospital	Multi 3	1st Floor - Waiting area B: Room 3	 

Rows per Page 10 1-3 of 3 < >



Click on this icon to edit a mapping



Click on this icon to delete a mapping



Click on this button to add a new mapping

ServicePoint Mapping

HIS ServicePoint Code

Local2

Description

1st Floor - Waiting area B: Room 2

Orchestra Branch Select

QHospital

Orchestra ServicePoint Select

Multi 2

CANCEL

SAVE



If the code starts with the ^ character, then it will be evaluated as a regex expression.

15.8. Mapping of calendar resources

Values from the HIS will be translate into calendar resources.

Used for actions related to calendar such as create an appointment, update an appointment, and delete and appointment

QUEUES SERVICES ENTRYPOINTS SERVICEPOINTS CALENDAR RESOURCES

Search Mapping

Q

CREATE NEW MAPPING

Name: ↑	Calendar Branch	Resource	Description	Actions
c2	QHospital	QHospital R1	Resource Id from department 190. Agenda C2	 
c3	QHospital	QHospital R3	Resource Id from department 190. Agenda C3	 
checkup	QHospital	QHospital R1	Appointment Reason: checkup (read from SCH-7-2)	 

Rows per Page 10 1-3 of 3 < >



Click on this icon to edit a mapping



Click on this icon to delete a mapping



Click on this button to add a new mapping

Calendar Resource Mapping

HIS Resource Name

checkup

Description

Appointment Reason: checkup (read from SCH-7-2)

Calendar Branch Select

QHospital

Calendar Resource Select

QHospital R1

CANCEL

SAVE



If the code starts with the ^ character, then it will be evaluated as a regex expression.

16. Custom ticket Id templates

A collection of available custom ticket Id templates are defined.

These templates will be used:

- When creating a visit
- When creating an appointment, and therefore the appointment will contain a custom field populated the already calculated ticket number.

17. Connector tester

This module allows us to test the journeys by sending the message to a HL7 listener opening over a port.

The list of available journeys is shown

HL7 Connector Test
Test messages and connections

Search

Q

CREATE NEW TEST

Journey Name ↑	Message Code	Description	Actions
01 Create a visit for department 190	ADTA01	X-Ray department (internal HIS id:190)	▶
01 Create appointment	SIUS12	X-Ray department: Book an appointment for department 190	▶
01 Create customer	SIUS26	01 Create customer	▶
02 call visit and add service	ADTA22	02 call visit and add service	▶
02 Call visit for department 190	ADTA02	X-Ray department (internal HIS id:190)	▶
02 Update Appointment	SIUS14	X-Ray department: Update an existing appointment for department 190	▶
02 Update Customer	SIUS27	02 Update Customer	▶
03 Delete Appointment	SIUS13	X-Ray department: Cancel an appointment for department 190	▶
03 Delete customer	SIUS28	03 Delete customer	▶
03 Transfer a visit by integrationId and location	ADTA08	X-Ray department (internal HIS id:190)	▶

Rows per Page 10 1-10 of 14 < >



Click on this icon to test this journey. Local server port and Journey HL7 template will be used by default

☐ Consider message as a response from an hl7 query message

For those scenarios when HI7Connector sends a query message to HIS and get a response and we want to test that response, since this response message will be a new input for the incoming message engine. If enabled the message will be processed as a response from an HL7 query message.

CREATE NEW TEST

Click on this button to open an empty form for testing. Just Local server port will be used by default.

Message Test

Host Serverlocalhost

Port9998

☐ Consider message as a response from an hl7 query message

HL7 Message Template

Required

CANCEL

TEST

Empty form for custom testing

If you click on an existing:

Type or select the port from the dropdown box

These ports are configured in the settings:

HL7 Listener

Server details

Port
8896;9998;9999

☐ TLS

TEST

Click on this button to send the HL7 message

01 Create a visit

Host Server
localhost

Port
9998

HL7 Message Template

```
MSH|^~\&||HIS_NAME|||20190620165608||A|
EVN|A01|20190620165608||HIS name|20190
PID|1|358210^Local^MR||TestS||IM|||
PV1|1|O|17^55^Local|||12321^TestS|||1
4500
PV2|||20190620164500|20190620170500
```

CANCEL

TEST

UpdateCustomerAction

Host Server

localhost

Port

8893

HL7 Message Template

```
MSH|^~\&||HIS_NAME|||20190620165608||A|
EVN|A01|20190620165608||HIS name|20190
PID|1|358210^Local^MR||TestS||IM|||
PV1|1|O|17^55^Local|||12321^TestS|||1
4500
PV2|||20190620164500|20190620170500
```

Server Response

OK

MSH|^~\&||Compucare||20200531195429.615+0200||ACK^A01^ACK|15301|P|2.3.1
MSA|AR|QMATIC20200531195428 ERR||207^Application internal
error^HL70357^VISIT IS NOT FOUND - parameters:[branchId:8,
integrationId:100326, servicePointCode:Local, servicePointId:9]]|E

CANCEL

TEST

Server Responses:

- OK: The message succeeds
- KO: The message fails

HL7 ACK message from the server: This is the raw HL7 response from the server. (String format)

18. Public API

18.1. Rest call endpoint to send data to HIS

This endpoint will send an outgoing journey to HIS and will provide a response to the sender application.

Endpoint

POST /hl7Connector/service/outgoingMessageEngine.groovy

Payload must be set in json format.

A field called **eventName** is required to be able to select the outgoing journey that will be executed. A collection of fields should be also added to be able to populate the hl7 message with the right data, this fields will be also considered when applying the rules of the outgoing messages.

The following is a proposed example of execution for javascript to implement a request to the HL7 connector endpoint to send some data to HIS by executing an outgoing journey.

Javascript Example

```
notifyCheckIn: function (customerId, integrationId, visit) {
    var that = this;
    var payload = {}
    payload.eventName = "VISIT_CREATE"
    payload.customerId = customerId
    payload.integrationId = integrationId
    payload.branchId = visit.branchId.toString();
    payload.ticket = visit.ticketId;
    payload.visitId = visit.id.toString();
    $.ajax({
        url: "/hl7Connector/service/outgoingMessageEngine.groovy",
        cache: false,
        async: false,
        data: JSON.stringify(payload),
        type: "POST",
        contentType: "application/json",
        dataType: "json",
        success: function (result) {
            // Result will contain the data
        },
        error: function () {
            // Switching to request error
            wwClient.switchHostPage(that.pageError, false);
        }
    });
},
```

18.2. Rest call endpoint to collect data from HIS

This endpoint will send an outgoing journey to HIS, the hl7 response would be redirected to the incoming journeys engine and the incoming journeys actions would be executed and/or a response would be provided to the sender application.

For this type of integration, both an outgoing journey and an incoming journey must be configured.

Endpoint

POST /hl7Connector/service/outgoingIncomingMessageEngine.groovy

A field called **eventName** is required to be able to select the outgoing journey that will be executed. A collection of fields should be also added to be able to populate the hl7 message with the right data, this fields will be also considered when applying the rules of the outgoing messages.

A field called **eventType** can be used as a new input for the incoming journeys engine.

Example

As an input we may have the following fields:

- Payload.eventName = "CUSTOM"
- Payload.eventType = "FETCH_CUSTOMER"

The output is provided in Json format and has the following fields:

- 'status': 'OK' for success or 'KO' for fail
- 'description': a description of the result.
- 'data': A string with json format with the response.

Once a response is retrieved the hl7 message field referred as **/MSH-6-1** (Receiving Facility-|-Namespace ID), is replaced with the value from the payload.eventType, in this case **'FETCH_CUSTOMER'** and this field can be used to configure a RULE

MSH | ^~\&|MegaReg|XYZHospC|SuperOE|XYZImgCtr|20060529090131-0500||SQR^S25|01052901|P|2.5|
PID | ||56782445^^^UAREg^PI||KLEINSAMPLE^BARRY^Q^JR||19620910|M||2028-9^^HL70005^RA99113^^XYZ|260

An incoming journey with HL7 message code equals to **SQRS25** must be found to process this journey and provide the final response.



Please note: If there is more than 1 journey with this hl7 message code then a rule for field **/MSH-6-1** equals **'FETCH_CUSTOMER'** can be added to the journey.

Name ^	Message Code	Description	Enabled
SQR_S25 Fetch data	SQRS25	Fetch HL7 data-type 1 from SQM S25	✓
SQR_S25 Fetch Data	SQRS25	Fetch HL7 data-type 2 from SQM S25	✓

2 journeys with same message code

One journey adds a rule /MSH-6-1='FETCH_CUSTOMER' as shown in the following picture.

SQR_S25 Fetch data						
Fetch HL7 data-type 1 from SQM S25						
Enabled						
Rules		Actions				
Check action	/MSH-6-1	FETCH_CUSTOMER	Fetch data	Custom	cardNumber	/PID-3-1
Rule for			FetchDataAction	custom	cardNumber	/SCHEDULE/PATIENT/PID-3-1
FETCH_CUSTOMER					appointmentCode	/SCHEDULE/SCH-1-1
					serviceCode	/SCHEDULE/SCH-5-1
					customerName	/SCHEDULE/PATIENT/PID-5-1
					Appointment external code	
					External service code	
					Name of customer	

The second journey adds a rule /MSH-6-1='FETCH_DATA' as shown in the following picture.

SQR_S25 Fetch Data						
Fetch HL7 data-type 2 from SQM S25						
Enabled						
Rules		Actions				
Check action	/MSH-6-1	FETCH_DATA	Fetch data	Custom	cardNumber	/PID-3-1
Rule for			FetchDataAction	custom	cardNumber	/SCHEDULE/PATIENT/PID-3-1
FETCH_DATA					appointmentCode	/SCHEDULE/SCH-1-1
					serviceCode	/SCHEDULE/SCH-5-1
					Appointment external code	
					External service code	

The following is a proposed example of execution for javascript to implement a request to the HL7 connector endpoint to fetch some data by executing a outgoing journey followed by an incoming journey.

Javascript Example

```
collectCustomerAppointments: function (customerId) {
    var that = this;
    var payload = {}
    payload.eventName = "CUSTOM"
    payload.customerId = customerId
    payload.eventType = "FETCH_DATA"
    payload.operation = "FETCH_DATA_BY_SSN"
    payload.branchId = visit.branchId.toString();
    $.ajax({
        url: "/hl7Connector/service/outgoingIncomingMessageEngine.groovy",
        cache: false,
        async: false,
        data: JSON.stringify(payload),
        type: "POST",
        contentType: "application/json",
        dataType: "json",
        success: function (result) {
            // Result will contain the requested data
            // Add your own logic from this point
        },
        error: function () {
            // Switching to request error
            wwClient.switchHostPage(that.pageError, false);
        }
    });
},
```

18.2.1. User case example

Let's consider the following user case:

- We would like to collect the HIS laboratory services for a given patient.

- The patient id will be read from a kiosk
- The integration would be implemented in a widget that will be placed at a surface running on a kiosk.

At some point, the widget would need to send a POST api call to this url:
/hl7Connector/service/outgoingIncomingMessageEngine.groovy with the following payload:

```
{
  "eventName" : "CUSTOM",
  "eventType" : "FETCH_DATA",
  "cardNumber" : "121112",
  "identityType" : "PI",
}
```

At the HL7Connector, an outgoing message should be configured:

- A rule to match the eventType and another rule to be sure the card number is a valid one.
- Two hl7 path will be replace with values from the event:
 - cardNumber will be placed on the /QRD-8-1-1
 - identityType will be placed on the /QRD-8-13-1
- The target server and port must be also configured.

Fetch data from HIS - Laboratory					
CUSTOM					
Collect laboratory services for a given customer from HIS Remote HIS listener: 127.0.0.1:9991 Enabled					
Rules			Fields		
Name	Event field	Accepted values	Name	Event field	HL7 path to change the template
Type of event Type of event must be FETCH_DATA	eventType	FETCH_DATA	Customer card number Card number of the patient	cardNumber	/QRD-8-1-1
Customer cardNumber Check if customer cardNumber field is included	cardNumber	\d+	Type of identification Customer identification type	identityType	/QRD-8-13-1

From this call, HIS may provide us with the following HL7 message response:

```
MSH|^~\&|Lab|Lab|HISName|Facility|20170131140357||SQR^S25|0120507713|P|2.5
QAK|1|OK||1
SCH|0021075589|||Balie
PID|||0084068470^^^LOCAL^PI||Jansen&""&Boer^Truus^B||19801128|F||||||||||||N
SCH|0021075589|||Loket
PID|||0084068470^^^LOCAL^PI||Jansen&""&Boer^Truus^B||19801128|F||||||||||||N
SCH|0021075589|||Afname
PID|||0084068470^^^LOCAL^PI||Jansen&""&Boer^Truus^B||19801128|F||||||||||||N
```

Then, the /MSH-6-1 field will be replaced with the value coming from the payload field **eventType** (FETCH_DATA), producing the following hl7 message:

```
MSH|^~\&|Lab|Lab|HISName|FETCH_DATA|20170131140357||SQR^S25|0120507713|P|2.5
QAK|1|OK||1
SCH|0021075589|||Balie
PID|||0084068470^^^LOCAL^PI||Jansen&""&Boer^Truus^B||19801128|F||||||||||||N
SCH|0021075589|||Loket
PID|||0084068470^^^LOCAL^PI||Jansen&""&Boer^Truus^B||19801128|F||||||||||||N
SCH|0021075589|||Afname
PID|||0084068470^^^LOCAL^PI||Jansen&""&Boer^Truus^B||19801128|F||||||||||||N
```

And finally, this message will be feed as an incoming journey.

SQR_S25 Fetch Data

SQRS25

Fetch HL7 data-type 2 from SQM S25

Enabled

Rules	Actions					
Check action Rule for FETCH_DATA	/MSH-6-1	FETCH_DATA	Fetch data FetchDataAction	Custom custom	cardNumber cardNumber serviceCode External service code	/PID-3-1 /SCHEDULE/PATIENT/PID-3-1 /SCHEDULE/SCH-5-1

This journey will handle the input and provide a Json response to the widget.



Please note: the /MSH-6-1 field may be required if multiple SQRS25 messages.

Testing the output (without a HL7 HIS server):

SQR_S25 Fetch Data

Host Server
localhost

Port
9998

☒ Consider message as a response from an hl7 query message

```

HL7 Message Template
MSH|^~\&|Cloverleaf|Cloverleaf|LabTrain|FETCH_DATA|20220222154553||SQR*S25|25
4351|P|2.5
MSA|AA|20220222154552
QAK|2|OK||3
SCH||||24u
PID|||1525363***LOCAL*P|||Achternaam&&Achternaam*voorletter||19750303|M|||||
||IN
SCH||||bloedafname
PID|||1525363***LOCAL*P|||Achternaam&&Achternaam*voorletter||19750303|M|||||
||IN
SCH||||overige_bepaling
PID|||1525363***LOCAL*P|||Achternaam&&Achternaam*voorletter||19750303|M|||||
||IN

```

Server Response

OK

```

[{"cardNumber":"1525363","serviceCode":"24u"},
{"cardNumber":"1525363","serviceCode":"bloedafname"},
{"cardNumber":"1525363","serviceCode":"overige_bepaling"}]

```

CANCEL
TEST

Please note:

☒ Consider message as a response from an hl7 query message must be enabled, since we don't have a HIS to provide us a response.

The output to the widget has the following fields:

- 'status': 'OK' for success or 'KO' for fail
- 'description'
- 'data': A string with json format with the response.

Example of response:

```

{
  "status": "OK",
  "data": "[{"cardNumber":"1525363","serviceCode":"24u"},
{"cardNumber":"1525363","serviceCode":"bloedafname"},
{"cardNumber":"1525363","serviceCode":"overige_bepaling"}]",
  "description": "SQR_S25 Fetch Data - OK"
}

```

19. Example use case

As an example, let us propose a use case:

Patients will be checked In by HIS at a reception desk and will print a document including ticketId

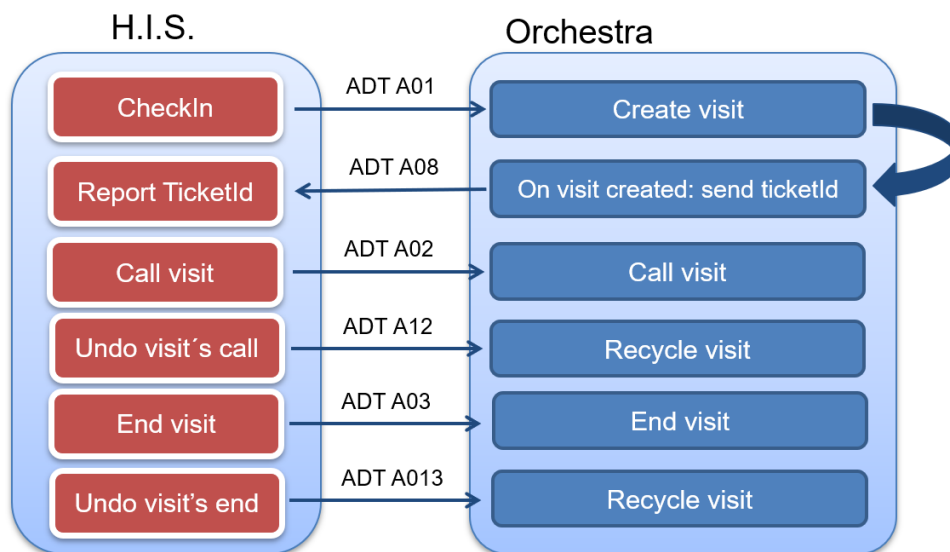
Patients will be led to a waiting area where they may be called from different locations.

Hospital staff will work with HIS software to:

- Call a visit
- Undo a visit's call
- End a visit
- Undo a visit's end

So, from an integration perspective the following table summarizes the different interactions:

Step	HIS (Hospital information system)	HL7 message	QMATIC	Remarks
1	Check In (IntegrationId)	ADT A01 →	Creates the visit	At HIS reception
	Print ticket	← ADT A08	Update with ticketId for this IntegrationId	At HIS reception
2	CALL VISIT: Start serving visit (IntegrationId)	ADT A02 →	Call visit	Show ticket at media&Display
3	UNDO Visit's call (IntegrationId)	ADT A12 →	Recycle visit	
4	End working with visit (IntegrationId)	ADT A03 →	End visit	
5	UNDO visit's end (IntegrationId)	ADT A13 →	Recycle visit	



HL7 messages and Orchestra methods



Please note: A visit/appointment must have an unique Id and HIS and Orchestra must share/use this Id. Let's call it **integrationId** and it refers to a visit in the HIS that will be also created in Orchestra.

Any request from HIS to Orchestra must include this integrationId to be sure that both systems are working with the same visit.

From HIS, at the reception desk, the following message will be sent:

- For the Appointment CheckIn: message **ADT_A01**. Qmatic answers back an ACK message.
- Qmatic creates a visit and sends an **ADT_A08** to HIS including the ticketId, so HIS can include it to the checkIn template document and prints it.

This is an example of the **ADT_A01** message and its more relevant fields:

ADT A01 Check In message

```
MSH|^~\&|app|sender|HL7API|PKB|201303080949||ADT^A01|ABC0000000001|P|2.6
EVN|A08|20190620165737|||HIS name|20190620165737
PID||999999999||NHS|NH|Smith|John|Joe|Mr||19700101|M|||My Flat name^1, The Road^London^London^SW1A 1AA^GBR||john.smith@hotmail.com^NET-01234567890^PRN-07123456789^PRS|john.smith
PV1||O|PSCNCQ|5287||Local|PSPSIN|Facility Desc^CEX||^2821|1271|DoctorFamilyName^DoctorGivenName^DoctorLastName^Assigning Authority^PN^C2||PQV^CEX Department|||2
PV2|||||20190620164500|20190620170500
```

ID	Name	Value
PID-11.6	Patient Address-I-Country	GBR
PID-13.1	Phone Number - Home-I-Telephone Number	07123456789
PID-13.2	Phone Number - Home-I-Tele-Communication Use Code	PN
PID-13.1	Phone Number - Home-I-Telephone Number	01234567890
PID-13.2	Phone Number - Home-I-Tele-Communication Use Code	PRN
PID-13.1	Phone Number - Home-I-Telephone Number	john.smith@hotmail.com
PID-13.2	Phone Number - Home-I-Tele-Communication Use Code	NET
PID-14.1	Phone Number - Business-I-Telephone Number	01234098765
PID-14.2	Phone Number - Business-I-Tele-Communication Use Code	WPN
PID-14.1	Phone Number - Business-I-Telephone Number	john.smith@company.com
PID-14.2	Phone Number - Business-I-Tele-Communication Use Code	NET
PID-10.1	Patient Death Indicator	N
PV1-0.1	Segment Name	PV1
PV1-1.1	Set ID - PV1-I-Sequence ID	1
PV1-2.1	Patient Class	0
PV1-3.1	Assigned Patient Location-I-Point of Care	PSCNCQ
PV1-3.2	Assigned Patient Location-I-Room	5287
PV1-3.4	Assigned Patient Location-I-Facility	Local
PV1-4.1	Admission Type	PSPSIN
PV1-6.1	Prior Patient Location-I-Facility	2821
PV1-7.1	Attending Doctor-I-ID Number	1271
PV1-7.2	Attending Doctor-I-Family Name	DoctorFamilyName
PV1-7.3	Attending Doctor-I-Given Name	DoctorGivenName
PV1-7.4	Attending Doctor-I-Second and Further Given Names or Initials...	DoctorLastName
PV1-7.9	Attending Doctor-I-Assigning Authority	Assigning Authority
PV1-7.13	Attending Doctor-I-Identifier Type Code	PN
PV1-7.22	Attending Doctor-I-Assigning Jurisdiction	C2
PV1-10.1	Hospital Service	PQV
PV1-14.1	Admit Source	2
PV1-17.1	Admitting Doctor-I-ID Number	1271
PV1-17.2	Admitting Doctor-I-Family Name	DoctorFamilyName
PV1-17.3	Admitting Doctor-I-Given Name	DoctorGivenName
PV1-17.4	Admitting Doctor-I-Second and Further Given Names or Initials...	DoctorLastName
PV1-17.9	Admitting Doctor-I-Assigning Authority	Assigning Authority
PV1-17.13	Admitting Doctor-I-Identifier Type Code	PN
PV1-17.22	Admitting Doctor-I-Assigning Jurisdiction	C2
PV1-18.1	Patient Type	CEX
PV1-19.1	Visit Number-I-ID Number	1199003613
PV1-20.1	Financial Class-I-Financial Class Code	101
PV1-21.1	Charge Price Indicator	100
PV1-39.1	Servicing Facility	190
PV1-44.1	Admit Date/Time-I-Time	20190618080000
PV1-45.1	Discharge Date/Time-I-Time	20190618084000
PV1-50.1	Alternate Visit ID-I-ID Number	37052429
PV1-50.5	Alternate Visit ID-I-Identifier Type Code	C
PV2-0.1	Segment Name	PV2
PV2-6.1	Expected Admit Date/Time-I-Time	20190620164500
PV2-9.1	Expected Discharge Date/Time-I-Time	20190620170500

IntegrationId: **PV1-19-1** →

ServiceCode: **PV1-39-1** →

EntryPointCode: **PV1-39-1**

HIS works internally with its own values therefore we must take some fields from the HL7 message and mapping the final orchestra value.

From the HIS, we need to know:

- Entry point code
- Service code
- Integration Id

And to create a visit in Orchestra, we need to know:

- Branch
- Entry point
- Service
- Integration Id

A mapping is required between this two set of values.

HIS input parameter	HL7 fields	Description
Entry point code	PV1-39-1	This value should describe a HIS reception desk For instance, a value for the ER department, a value for the Outpatients department
Service code	PV1-39-1	This value should describe the HIS department For instance, a value for the Traumatology, a value for the X-Ray
Integration Id	PV1-19-1	This is the internal and unique id which refers to this visit/appointment.

HIS input parameter	Orchestra parameter
Entry point code	Branch – entryPoint
Service code	Branch – service
Integration Id	integrationId

Once the visit is created then the ticketId is notify to HIS by an HL7 message.

The notify Appointment check In unit type catches the event and sends a ADT_A08 HL7 message to HIS.

This is an example of the **ADT_A08** message and its more relevant fields:

ADT A08

This message reports the ticketId

CheckIn response
Message

```
MSH|^~&|app|sender|HL7API|PKB|201303080949||ADT^A08|ABC0000000001|P|2.6
EVN|A08|20190620165737||HIS name|20190620165737
PID|1|999999999||NHS NW|Smith John Joe|Mr||19700101|M||My flat name|1, The Road London London SW1A 1AA GBR||john.smith@hotmail.com|NET-01234567890|PRN-07123456789|PRS|john.smith@company
PV1|1|O|PSCNCQ|5287|Local|PSPSIN|Facility Desc|CEX||^2821|1271|DoctorFamilyName|DoctorGivenName|DoctorLastName|^|Assigning Authority|^|PN|^|C2||PSQV|CEX Department|||2||1271|
PV2|||||20190620164500|20190620170500
```

PV1-0.1	Segment Name	PV1
PV1-1.1	Set ID - PV1-Sequence ID	1
PV1-2.1	Patient Class	0
PV1-3.1	Assigned Patient Location-Point of Care	PSCNCQ
PV1-3.2	Assigned Patient Location-Room	5287
PV1-3.4	Assigned Patient Location-Facility	Local
PV1-4.1	Admission Type	PSPSIN
PV1-6.4	Prior Patient Location-Facility	2821
PV1-7.1	Attending Doctor-ID Number	1271
PV1-7.2	Attending Doctor-Family Name	DoctorFamilyName
PV1-7.3	Attending Doctor-Given Name	DoctorGivenName
PV1-7.4	Attending Doctor-Second and Further Given Names or Initials...	DoctorLastName
PV1-7.9	Attending Doctor-Assigning Authority	Assigning Authority
PV1-7.13	Attending Doctor-Identifier Type Code	PN
PV1-7.22	Attending Doctor-Assigning Jurisdiction	C2
PV1-10.1	Hospital Service	PSQV
PV1-14.1	Admit Source	2
PV1-17.1	Admitting Doctor-ID Number	1271
PV1-17.2	Admitting Doctor-Family Name	DoctorFamilyName
PV1-17.3	Admitting Doctor-Given Name	DoctorGivenName
PV1-17.4	Admitting Doctor-Second and Further Given Names or Initials...	DoctorLastName
PV1-17.9	Admitting Doctor-Assigning Authority	Assigning Authority
PV1-17.13	Admitting Doctor-Identifier Type Code	PN
PV1-17.22	Admitting Doctor-Assigning Jurisdiction	C2
PV1-18.1	Patient Type	CEX
PV1-19.1	Visit Number-ID Number	1199003613
PV1-20.1	Financial Class-Financial Class Code	101
PV1-21.1	Charge Price Indicator	100
PV1-39.1	Servicing Facility	190
PV1-44.1	Admit Date/Time-Time	20200618080000
PV1-45.1	Discharge Date/Time-Time	20200618084000
PV1-50.1	Alternate Visit ID-ID Number	37052429
PV1-50.5	Alternate Visit ID-Identifier Type Code	C

IntegrationId:

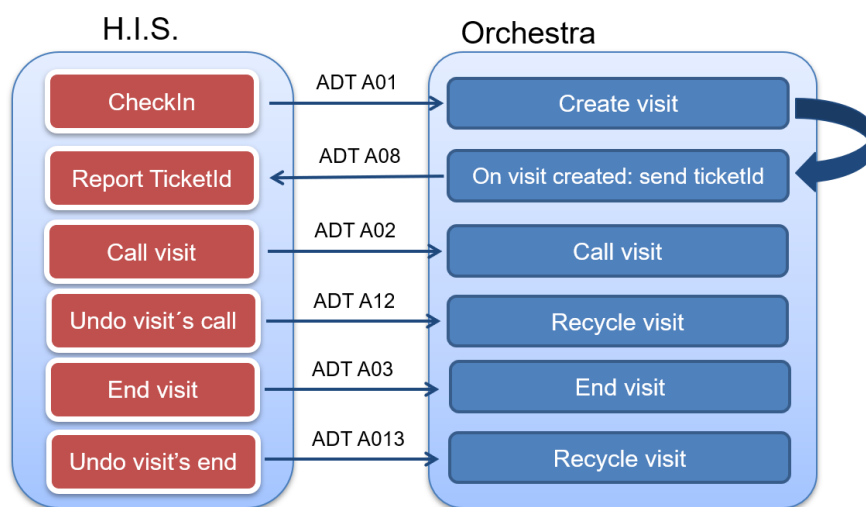
PV1-19-1

TicketId:
PV1-50-1

	PV1-3-4 and PV1-3-2	For instance, room 1, x-Ray 2
Integration Id	PV1-19-1	This is the internal and unique id which refers to this visit/appointment.

HIS input parameter	Orchestra parameter
Location	Branch – servicePoint
Integration Id	integrationId

Given the following use case, let us build the incoming and outgoing messages:



There are several departments all over the hospital but just department X-Ray (HIS internal Id =190) is currently integrated with Orchestra. HIS will send every visit Check In happening at any of its departments, therefore we must filter by the X-Ray department Id.

Steps to create an Incoming message:

- Create a Visit journey for creating a visit
- Add name and description
- Add HL7 message Code: **ADTA01**
- Add HL7 message template: Copy from the HIS HL7 guidelines

1 Details 2 Rules 3 Actions

- Set Rule to filter out any department except X-Ray department

- Add action: Create visit

01 Create a visit



Actions

Name:	Description	Actions
Create Visit	Requires SERVICE mapping and ENTRYPOINT mapping	 

NEW ACTION

CANCEL

PREVIOUS

SAVE & FINISH

- Configure HL7 path to every parameter- field
- Add custom parameters to the visit. We need them to composite the outgoing message

01 Create a visit



Create Visit > Custom > Fields

Add your custom fields

Select a Field

Caseld
HIS Internal visit case identification number

patientIdentifier_id
patientIdentifier_id

NEW CUSTOM FIELD

BACK

SAVE ACTION

CANCEL

PREVIOUS

SAVE & FINISH

01 Create a visit

1 Details 2 Rules 3 Actions

Create Visit > Custom > Caseld > Mapping Details

Custom Field Name: Caseld

Custom Field Description: HIS Internal visit case identification number

Default Value:

☐ Is Date? ☐ Is Required?

HL7 Paths: /PV1-19-1 Single Path

+ SINGLE PATH + CONDITIONAL PATH

CANCEL SAVE MAPPING

CANCEL PREVIOUS SAVE & FINISH

01 Create a visit

1 Details 2 Rules 3 Actions

Create Visit > Custom > patientIdentifier_id > Mapping Details

Custom Field Name: patientIdentifier_id

Custom Field Description: patientIdentifier_id

Default Value: anonymous

☐ Is Date? ☐ Is Required?

HL7 Paths: /PID-3-1 Conditional Path

+ SINGLE PATH + CONDITIONAL PATH

CANCEL SAVE MAPPING

CANCEL PREVIOUS SAVE & FINISH

Steps to create an outgoing message

- Add name and description
- Select Orchestra event name from the dropdown list: **VISIT_CREATE**
- Add HL7 message template: Copy from the HIS HL7 guidelines

Visit is checked In

1 Details 2 Rules 3 Fields

Journey Name: Visit is checked In

Description: reporting visit created to HIS. TicketId is included

Select Orchestra Event: VISIT_CREATE ☒ Journey Enabled

HL7 Message Template:

```
MSH|^~\&[app]sender|HL7API|PKB|201303080949||ADT^A01|ABC0000000001|P|2.6
EVN|A08|20190620165737||[HIS name]|20190620165737
PID||999999999^NHS^NH||Smith^John^Joe^Mr||19700101|M||My flat name^1,
The Road^London^London^SW1A
1AA^GBR||john.smith@hotmail.com^NET~01234567890^PRN~07123456789^PRS|j
ohn.smith@company.com^NET~01234098765^WPN|||||||||N
PV1|1|O|PSCNCQ^S287^Local|PSPSIN^Facility
Desc^CEX||^2821|1271^DoctorFamilyName^DoctorGivenName^DoctorLastName^
```

CANCEL SAVE NEXT

- Optional: Add Rule(s): We just want to report the visits:
 - From the QHospital branch (QHospital is the name of the branch)
 - Containing an integrationId field

Both rules must be fulfilled.

Visit is checked In

1 Details 2 Rules 3 Fields

Rules

Rule Name
Check branch Name

Rule Description
Check if branch equals QHospital

Visit Field
branchName

Accepted Values:
*QHospital(1)

Enter New Value ADD

CANCEL RULE SAVE RULE

CANCEL SAVE PREVIOUS NEXT

Visit is checked In

1 Details 2 Rules 3 Fields

Rules

Rule Name
Check if valid visit

Rule Description
Check if visits contains a integrationId field (numeric value)

Visit Field
integrationId

Accepted Values:
\d+

Enter New Value ADD

CANCEL RULE SAVE RULE

CANCEL SAVE PREVIOUS NEXT



Please note the regex expression \d+ for the **integrationId** value

\d Digit. Matches any digit character (0-9).

+ Quantifier. Match 1 or more of the preceding token.

• Add Fields

Visit is checked In

1 Details 2 Rules 3 Fields

Fields

Name:	Description	Actions
Ticket number	ticket number is sent to HIS	
patientIdentifier_id	patientIdentifier_id	
entryPointName	entryPointName	
Custom ticket Id	Custom ticket generated GDPR	

NEW FIELD

CANCEL PREVIOUS SAVE & FINISH

ADT_A11

1

2

3

DetailsRulesFields

Fields

Rule Name

Ticket number

Rule Description

ticket number is sent to HIS

Visit Field

ticket

HL7 Paths:

/PV1-50-1

Single Path

+ SINGLE PATH

+ CONDITIONAL PATH

CANCEL FIELD

SAVE FIELD

CANCEL

PREVIOUS

SAVE & FINISH

ADT_A11

1

2

3

DetailsRulesFields

Fields

Rule Name

Custom ticket Id

Rule Description

Custom ticket generated GDPR

Visit Field

ticket2

HL7 Paths:

/PV1-49-1

Single Path

+ SINGLE PATH

+ CONDITIONAL PATH

CANCEL FIELD

SAVE FIELD

CANCEL

PREVIOUS

SAVE & FINISH

ADT_A11

1

2

3

DetailsRulesFields

Fields

Rule Name

entryPointName

Rule Description

entryPointName

Visit Field

entryPointName

HL7 Paths:

/PID-3-1

Conditional Path

+ SINGLE PATH

+ CONDITIONAL PATH

CANCEL FIELD

SAVE FIELD

CANCEL

PREVIOUS

SAVE & FINISH

- Create Mappings
 - Create Mapping for service

Service Mapping

Select Type

☒ Standard
 ☐ Calendar

HIS Service Code

190

Description

This is the checkIn queue for the department 190 (HI

Orchestra Branch Select

QHospital

Orchestra Service Select

InProgress

Custom Ticket Template Select

Ticket id as a ramdom value

CANCEL

SAVE

- Create Mapping for entry point.

EntryPoint Mapping

HIS EntryPoint Code

190

Description

Reception desk for department 190 (HIS terminology

Orchestra Branch Select

QHospital

Orchestra EntryPoint Select

WebReception

CANCEL

SAVE

The following picture displays the incoming messages:

Journeys

Journeys Description

INCOMING OUTGOING

Search Journey					CREATE NEW JOURNEY
Name ↑	Message Code	Description	Enabled	Actions	
01 Create a visit	ADTA01	X-Ray department (internal HIS id:190)	✓	   	
02 Call visit	ADTA02	X-Ray department (internal HIS id:190)	✓	   	
03 Recycle visit	ADTA12	X-Ray department (internal HIS id:190)	✓	   	
04 End a Visit	ADTA03	X-Ray department (internal HIS id:190)	✓	   	
Rows per Page 10 1-4 of 4 < >					

And finally, the following picture displays the outgoing message:

Journeys

Journeys Description

INCOMING OUTGOING

Search Journey					CREATE NEW JOURNEY
Name ↑	Orchestra Event	Description	Enabled	Actions	
Visit is checked In	VISIT_CREATE	reporting visit created to HIS. TicketId is included	✓	   	
Rows per Page 10 1-1 of 1 < >					