

Integrating the Healthcare Enterprise



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**IHE IT Infrastructure
Technical Framework Supplement**

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**Patient Location Tracking
(PLT)**

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Trial Implementation

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Please verify you have the most recent version of this document. See [here](#) for Trial Implementation and Final Text versions and [here](#) for Public Comment versions.

Foreword

30 This is a supplement to the IHE IT Infrastructure Technical Framework 11.0. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

This supplement is published on August 31, 2015 for trial implementation and may be available for testing at subsequent IHE Connectathons. The supplement may be amended based on the results of testing. Following successful testing it will be incorporated into the IT Infrastructure
35 Technical Framework. Comments are invited and can be submitted at http://www.ihe.net/ITI_Public_Comments.

This supplement describes changes to the existing technical framework documents.

“Boxed” instructions like the sample below indicate to the Volume Editor how to integrate the relevant section(s) into the relevant Technical Framework volume.

40

<i>Amend Section X.X by the following:</i>
--

Where the amendment adds text, make the added text **bold underline**. Where the amendment removes text, make the removed text **~~bold strikethrough~~**. When entire new sections are added, introduce with editor’s instructions to “add new text” or similar, which for readability are not bolded or underlined.

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General information about IHE can be found at: www.ihe.net.

Information about the IHE IT Infrastructure domain can be found at: ihe.net/IHE_Domains.

Information about the organization of IHE Technical Frameworks and Supplements and the process used to create them can be found at: http://ihe.net/IHE_Process and
50 <http://ihe.net/Profiles>.

The current version of the IHE IT Infrastructure Technical Framework can be found at: http://ihe.net/Technical_Frameworks.

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150 **Introduction to this Supplement**

The Patient Location Tracking (PLT) Integration Profile provides an integration solution to find the physical location (PL) of patients.

155 A physical location can be mapped to the service delivery location (SDL). An implementation may support SDL with this profile, e.g., using an appropriate code system of locations which relates PL to SDL.

A PL may be shared by more than one SDL. It is up to an implementation to define their relationship if it decides to support SDL with this profile. IHE does not specify a mapping of PL to SDL.

Open Issues and Questions

160 • How to profile the PL

How should PL be constrained in this profile (which components should be optional/prohibited/required). The HL7® v2.5 definition alone leaves too much room

• RFID (passive RFID at doorway)

165 Passive RFID cannot identify arriving or leaving. Please review making sure that this use case works with the current state of the profile.

• A Patient Location Tracking Manager is required to be grouped with ITI Patient Administration Management (PAM) Patient Demographics Consumer to update patient demographic information. Is this grouping requirement necessary?

Closed Issues

170 • Assumption of location information:

Assumptions of location information can be implemented on actors in PLT when a location of patient A is undefined (e.g., when patient A left location-A one hour ago and not detected at any place, Patient Location Tracking Manager may be able to assume patient A is waiting at location-B).

175 In this version, we do not consider such assumptions.

• Boundary for the PLT (Intra or Inter-enterprise):

Intra only.

• Desired location information in PLT:

180 A physical location can be mapped to the service delivery location (SDL). An implementation may support SDL with this profile, e.g., using an appropriate code system of locations which relates PL (Physical Location) to SDL.

• RFID Tag ID - Patient ID mapping:

PLT Profile does not specify the mapping between RFID Tag ID and Patient ID.

- Communication between RFID system and PLT actors:

185

PLT Profile does not specify the communication between RFID system and PLT actors.

- Mapping of PL to SDL:

PLT Profile does not specify a mapping of PL to SDL.

- History of movement:

PLM must have the latest location at least. PLM may keep prior locations.

190

- Trigger Event in Query:

PLT uses a customer trigger for Query.

General Introduction

Update the following appendices to the General Introduction as indicated below. Note that these are not appendices to Volume 1.

195 Appendix A – Actor Summary Definitions

Add the following actors to the IHE Technical Frameworks General Introduction list of actors:

Actor	Definition
Patient Location Tracking Manager	Manages patient locations within an enterprise.
Patient Location Tracking Supplier	Provides updated patient locations.
Patient Location Tracking Consumer	Searches for current patient locations.

Appendix B – Transaction Summary Definitions

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Add the following transactions to the IHE Technical Frameworks General Introduction list of Transactions:

Transaction	Definition
[ITI-76] Patient Location Tracking Feed	Used to update patient location.
[ITI-77] Patient Location Tracking Query	Used to query for the current patient location

Glossary

Add the following glossary terms to the IHE Technical Frameworks General Introduction Glossary:

205

Glossary Term	Definition
RFID – Radio Frequency Identification	A technology that uses radio waves to transfer data from an electronic tag, called RFID tag or label, attached to an object, through a reader for the purpose of identifying and tracking the object.

Volume 1 – Profiles

Copyright Licenses

NA

210 **Domain-specific additions**

NA

<i>Add Section 36</i>

215 **36 Patient Location Tracking Profile (PLT) Profile**

The Patient Location Tracking (PLT) Integration Profile supports collecting the patient location information in a facility, and providing his/her recently recognized location to other systems. PLT covers patient location tracking inside single facilities, not between two or more facilities.

220 There is no systemized mechanism that records the latest location of the patients in a hospital due to the lack of a standardized method to collect it. The Patient Location Tracking (PLT) Integration Profile standardizes the transactions, records patients' locations, and provides the latest information upon request from external subsystems.

225 Patient locations are recognized by Patient Location Tracking Suppliers, and received/managed by Patient Location Tracking Managers. Transaction [ITI-76] is used for a Patient Location Tracking Feed. Requests for a patient location are sent from Patient Location Tracking Consumers to Patient Location Tracking Managers using Patient Location Tracking Query [ITI-77].

230 Patient Location Tracking Suppliers can be many small systems from different vendors that specialize in certain types of exams where an individual room is assigned. A patient can be traced whether he/she has left/arrived from/at the physical location, and the Patient Location Tracking Manager will know the last location he/she was assigned to.

36.1 PLT Actors, Transactions, and Content Modules

235 This section defines the actors, transactions, and/or content modules in this profile. General definitions of actors are given in the Technical Frameworks General Introduction Appendix A at http://ihe.net/Technical_Frameworks.

240 Figure 36.1-1 shows the actors directly involved in the PLT Profile and the relevant transactions between them. If needed for context, other actors that may be indirectly involved due to their participation in other related profiles are shown in dotted lines. Actors which have a mandatory grouping are shown in conjoined boxes.

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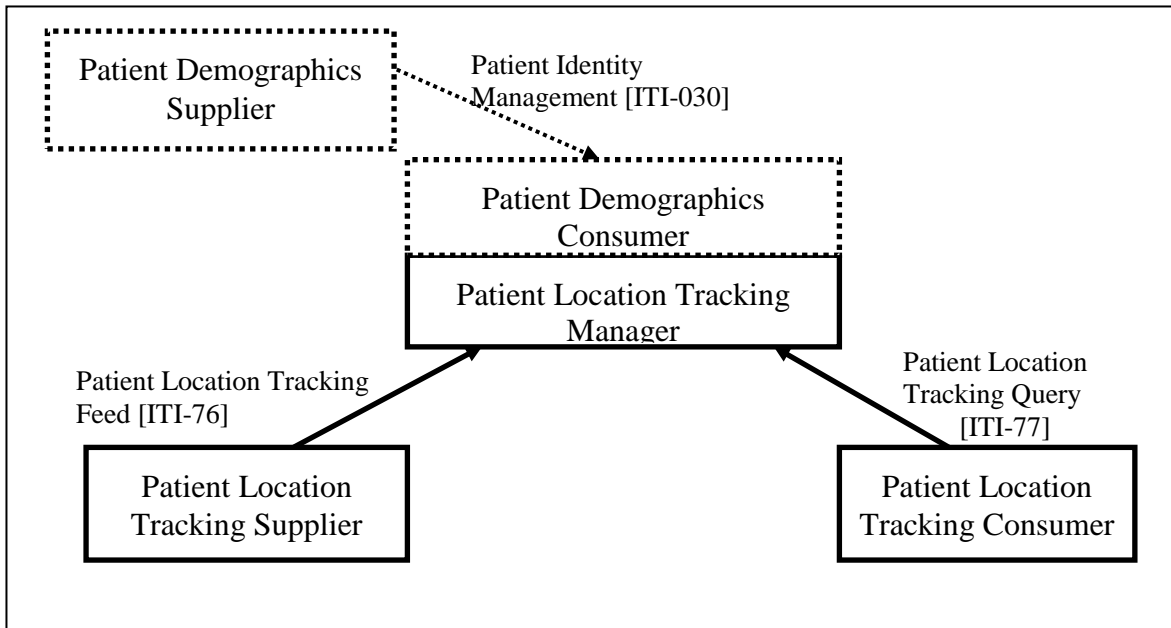


Figure 36.1-1: PLT Actor Diagram

265 Table 36.1-1 lists the transactions for each actor directly involved in the PLT Profile. To claim compliance with this Profile, an actor shall support all required transactions (labeled “R”) and may support the optional transactions (labeled “O”). Actor groupings are further described in Section 36.3.

Table 36.1-1: PLT Profile - Actors and Transactions

Actors	Transactions	Optionality	Reference
Patient Location Tracking Manager	Patient Location Tracking Feed	R	ITI TF-2c:3.76.1
	Patient Location Tracking Query	R	ITI TF-2c:3.77.1
Patient Location Tracking Supplier	Patient Location Tracking Feed	R	ITI TF-2c:3.76.1
Patient Location Tracking Consumer	Patient Location Tracking Query	R	ITI TF-2c:3.77.1

270 **36.1.1 Actor Descriptions and Actor Profile Requirements**

Most requirements are documented in Transactions (Volume 2) and Content Modules (Volume 3). This section documents any additional requirements on profile’s actors.

36.1.1.1 Patient Location Tracking Manager

275 The Patient Location Tracking Manager keeps track of patient locations by means of a location feed from one or more Patient Location Tracking Suppliers. The Patient Location Tracking Manager provides a service to query the last known patient location(s).

36.1.1.2 Patient Location Tracking Supplier

280 Patient Location Tracking Supplier actors use the Patient Location Tracking Feed [ITI-76] to notify Patient Location Tracking Manager actors of patient location information.

36.1.1.3 Patient Location Tracking Consumer

The Patient Location Tracking Consumer inquires about patient location information using the Patient Location Tracking Query [ITI-77]. The Patient Location Tracking Manager replies with the patient location information and the event time.

285 36.2 PLT Actor Options

Options that may be selected for each actor in this profile, if any, are listed in the Table 36.2-1. Dependencies between options when applicable are specified in notes.

Table 36.2-1: PLT - Actors and Options

Actor	Option Name	Reference
Patient Location Tracking Manager	No options defined	--
Patient Location Tracking Supplier	No options defined	--
Patient Location Tracking Consumer	No options defined	--

290

36.3 PLT Required Actor Groupings

An actor from this profile (Column 1) shall implement all of the required transactions and/or content modules in this profile *in addition to* all of the transactions required for the grouped actor (Column 2).

295 A Patient Location Tracking Manager shall be grouped with ITI Patient Administration Management (PAM) Patient Demographics Consumer to update patient demographic information.

Table 36.3-1: PLT - Required Actor Groupings

PLT Actor	Actor to be grouped with	Reference	Note
Patient Location Tracking Manager	ITI Patient Administration Management (PAM) Patient Demographics Consumer	ITI TF1: 14.2.2	
	Audit Trail and Node Authentication (ATNA) Secure Node or Secure Application	ITI TF1: 9.4	Note 1
Patient Location Tracking Supplier	Audit Trail and Node Authentication (ATNA) Secure Node or Secure Application	ITI TF1: 9.4	Note 1
Patient Location Tracking Consumer	Audit Trail and Node Authentication (ATNA) Secure Node or Secure Application	ITI TF1: 9.4	Note 1

300 Note: All Patient Location Tracking Actors are grouped with ATNA Secure Node or Secure Application to require that TLS or equivalent is applied to all transactions, for audit support, and for application security enforcement of user authentication, authorization, and access control.

36.4 PLT Overview

305 36.4.1 Concepts

It is common, especially for aged patients, to get consultation at multiple departments in a day. Finding the location of patients quickly is very important for the productivity and effective use of resources (staff/devices/systems/ etc.) in a hospital.

310 The Patient Location Tracking (PLT) Integration Profile has the ability to track the whereabouts of patients in a hospital.

There are two typical use cases described below. The first is a simple one describing how to find the patient location using PLT, and the second is a case using a Radio-Frequency Identification (RFID) system that is considered effective for PLT.

36.4.2 Use Cases

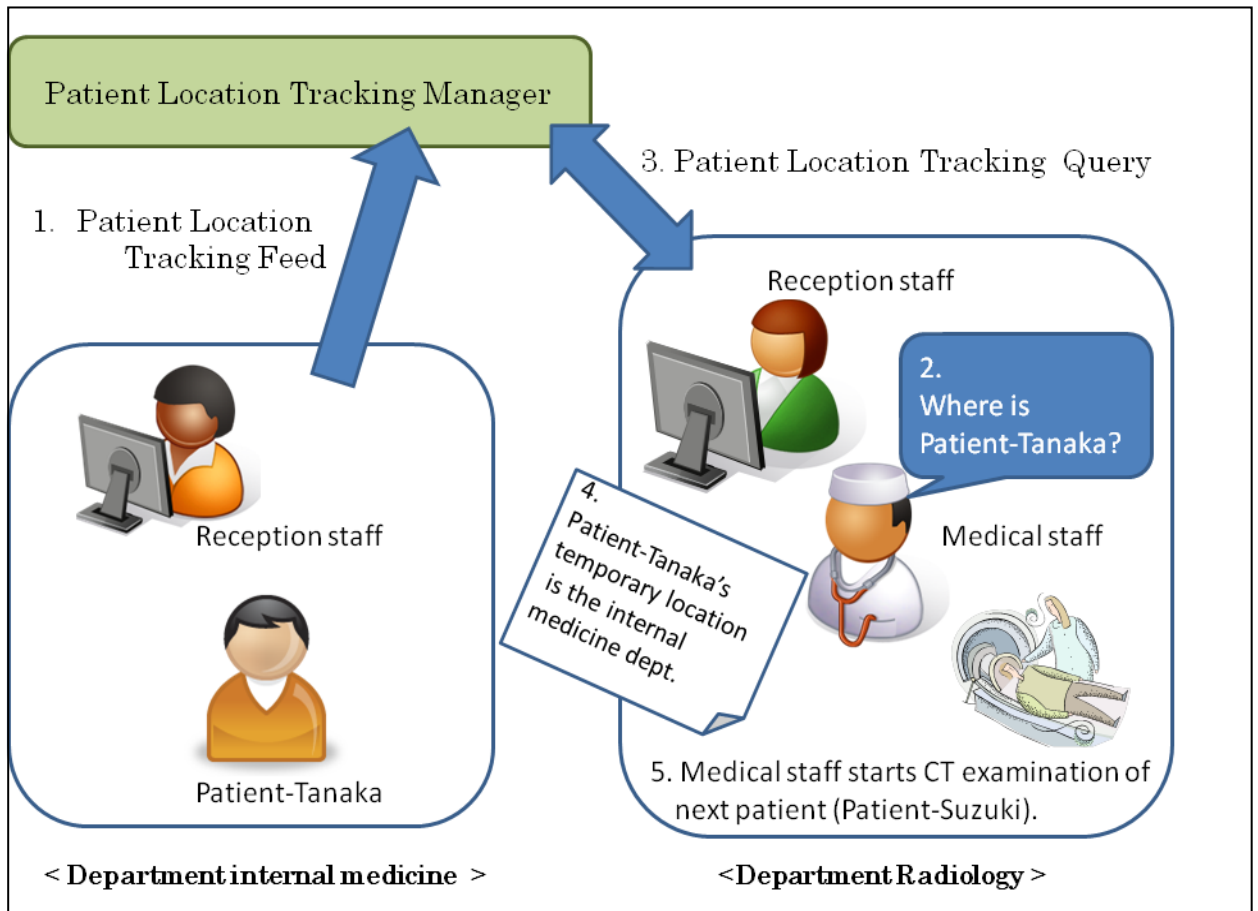
315 36.4.2.1 Use Case #1: Finding current patient location

This section shows the workflow to find the location of a patient using PLT.

36.4.2.1.1 Finding current patient location: Use Case Description

320 A CT scan of a patient Mr. Tanaka is scheduled at 10:00 am. But Mr. Tanaka has not arrived yet at the reception of the radiology department, so the staff cannot start the CT scan. To find the location of Mr. Tanaka, the staff of the radiology department uses a Patient Location Tracking Query. The result shows that Mr. Tanaka was accepted at the outpatient department and has not

left there yet. Therefore, they delay the CT scan of Mr. Tanaka and start another CT scan of Mr. Suzuki who has already been accepted at the radiology department.



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Figure 36.4.2.1.1-1: Finding Current Patient Location

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335 **36.4.2.1.2 Finding current patient location: Process Flow**

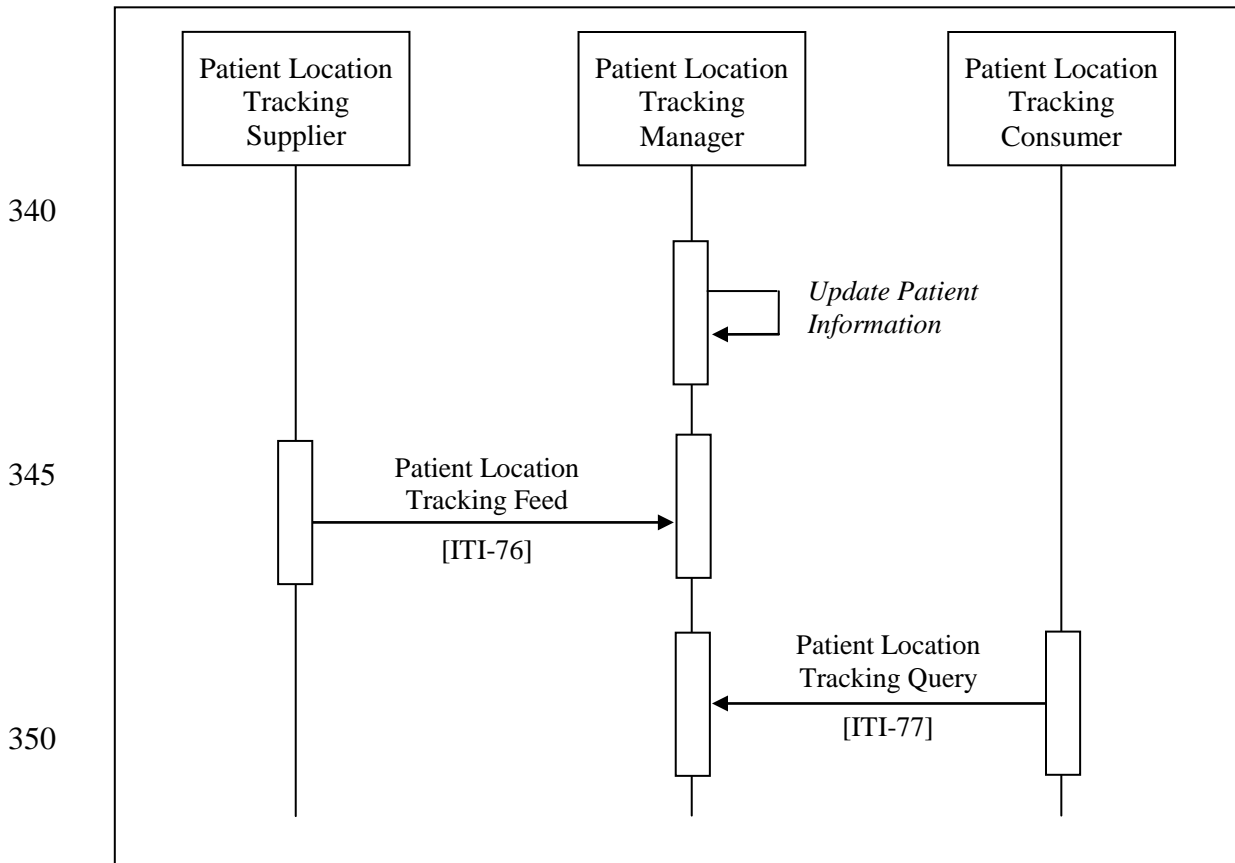


Figure 36.4.2.1.2-1: Basic Process Flow in PLT Profile

355 **36.4.2.2 Use Case #2: Tracking patient’s location using RFID**

This use case shows how a RFID (Radio-Frequency Identification) device works effectively in PLT.

36.4.2.2.1 Tracking patient’s location using RFID: Use Case Description

360 Patient-Sato is scheduled to visit the internal medicine department at 10:00 and the ophthalmology department at 10:30. Patient-Suzuki is scheduled to visit ophthalmology department at 11:00. RFID monitoring devices are installed at both the lobbies and the consultation rooms. Patients always carry the RFID-tag in this hospital.

365 At 10:30, the doctor in the ophthalmology department checks the location of Patient-Sato with Patient Location Tracking Query. The doctor quickly finds that Patient-Sato is still in the internal medicine department and skips Patient-Sato. The doctor finds the next patient who is waiting at the lobby and calls Patient-Suzuki. Patient-Suzuki need not wait for a consultation. Before

introducing PLT, the ophthalmology physician had to stop consultation and may lose several minutes waiting for Patient-Sato. Patient-Sato has to wait at the ophthalmology department for a long time.

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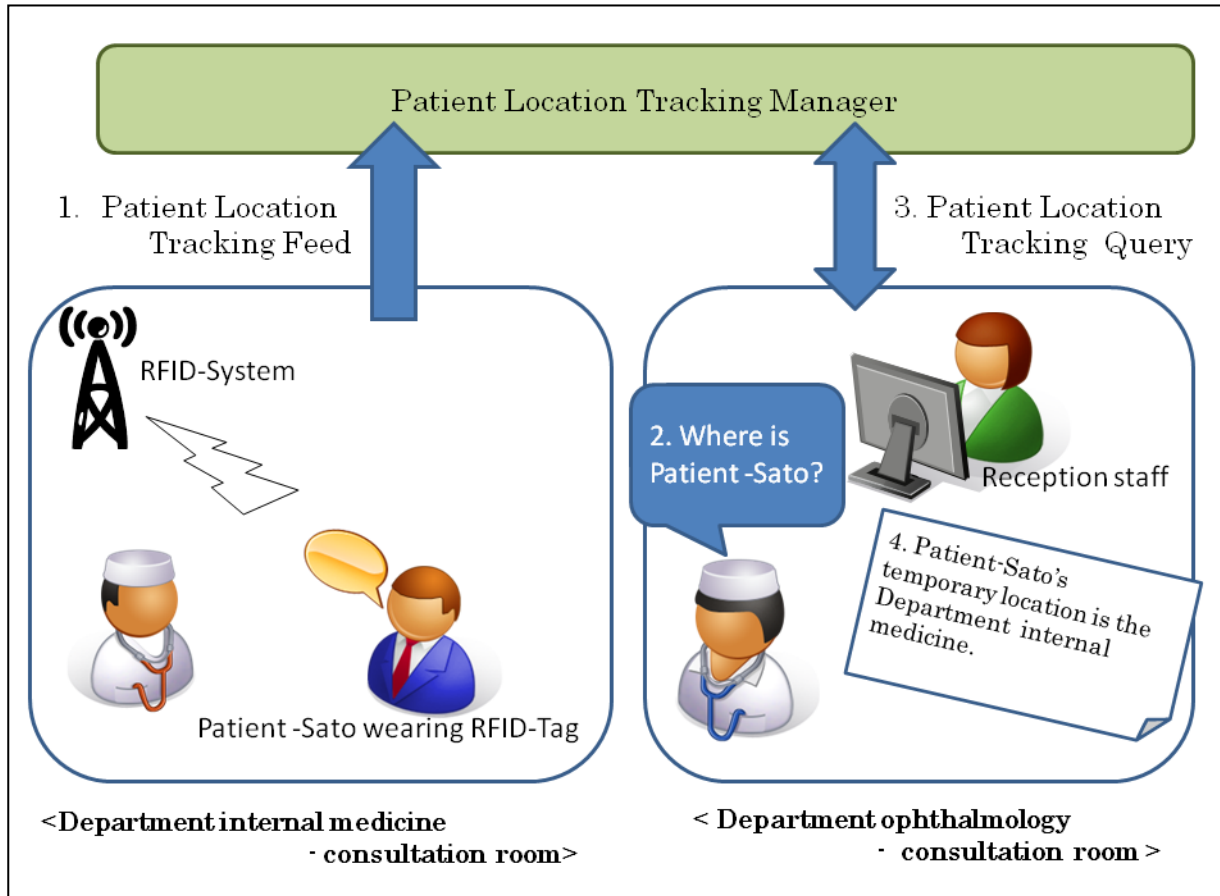
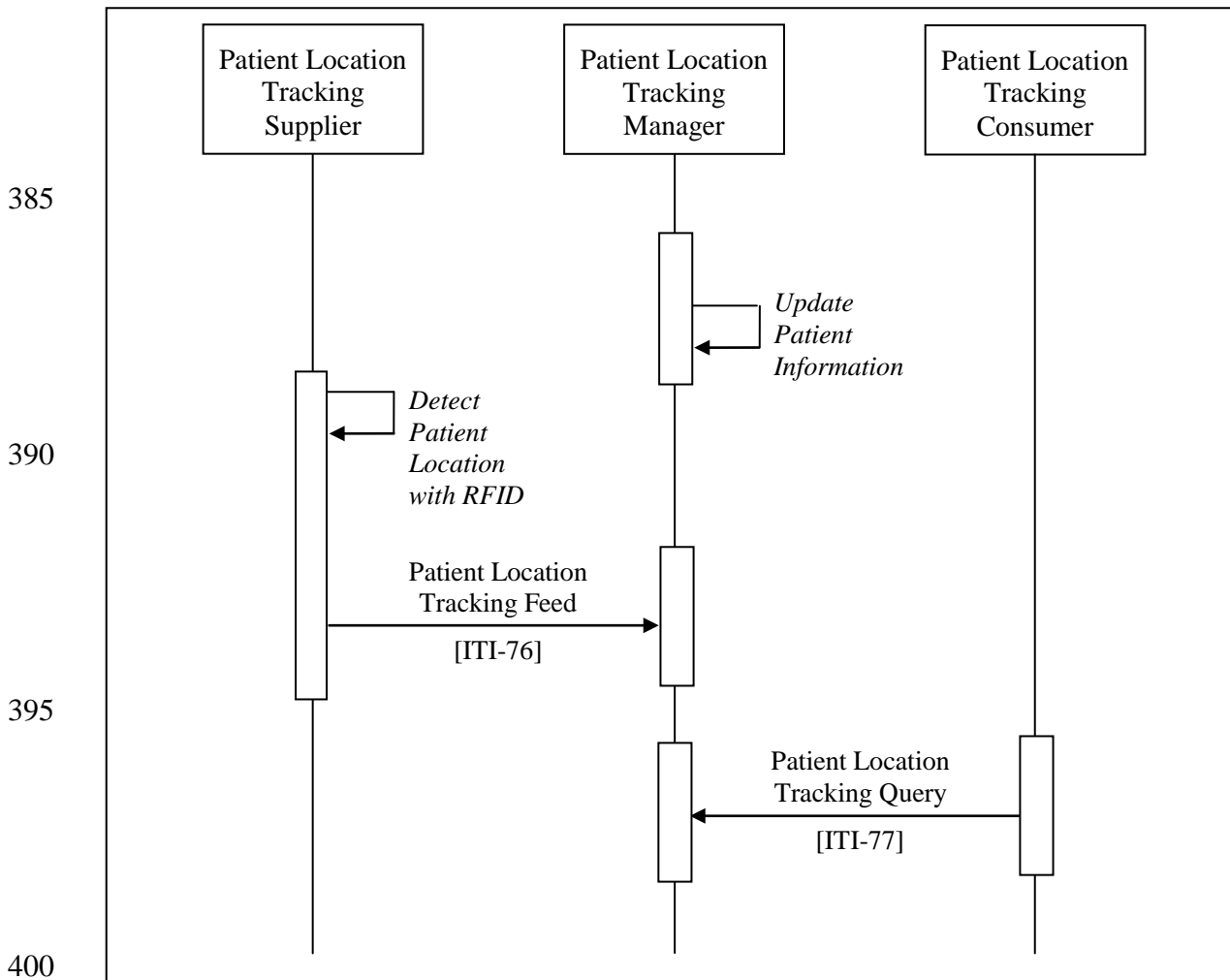


Figure 36.4.2.2.1-1: Tracking patient's location using RFID

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380 **36.4.2.2.2 Tracking patient’s location using RFID: Process Flow**



Note: This diagram is exactly equal to the diagram in use case 1. It is just the detection technology that is more automated in this use case.

Figure 36.4.2.2.2-1: Tracking patient’s location using RFID: Process Flow

405 **36.5 PLT Security Considerations**

Location information of patients in a hospital is privacy sensitive. The security concerns include:
 Ensuring that the patient location feed is sent only to the authorized patient location manager
 Auditing patient location queries, to detect unauthorized activity

410 For this purpose both feed and query transactions have audit messages defined. It is likely that the feed will be selectively audited while query activity may be continually audited to avoid

overloading the audit repository with excessive audit messages, which itself poses a patient privacy issue.

The implementation should be considered carefully in order to protect the patient privacy information.

415 **36.6 PLT Cross Profile Considerations**

None

Appendices

No additions to appendices.

Volume 2c – Transactions

420 *Add Section 3.76*

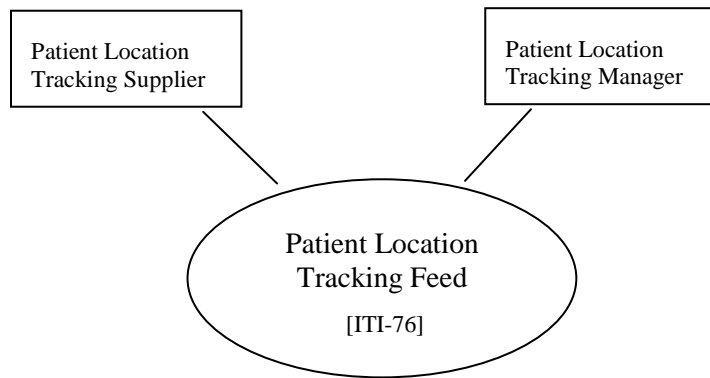
3.76 Patient Location Tracking Feed [ITI-76]

This section corresponds to Transaction ITI-76 of the IHE IT Infrastructure Technical Framework. Transaction ITI-76 is used by the Patient Location Tracking Supplier and Patient Location Tracking Manager.

425 3.76.1 Scope

This transaction communicates patient location information, including temporary location and event time.

3.76.2 Use Case Roles



430

Figure 3.76.2-1: Use Case Diagram

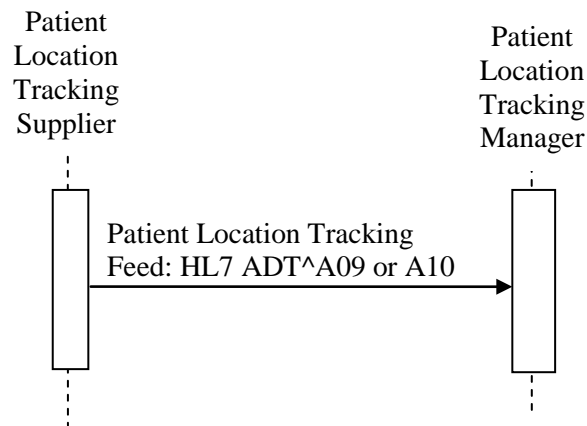
Table 3.76.2-1: Actor Roles

Actor:	Patient Location Tracking Supplier
Role:	Provides notification to the Patient Location Tracking Manager for any patient location related events including: arrive, depart, etc.
Actor:	Patient Location Tracking Manager
Role:	Serves patient location information provided by Patient Location Tracking Supplier.

435 **3.76.3 Referenced Standards**

- HL7® Version 2.5 Chapter 2 – Control, Chapter 3 – Patient Administration, Chapter 15 – Personnel Management.

3.76.4 Interaction Diagram



440 **Figure 3.76.4-1: Patient Location Tracking Feed Interaction Diagram**

3.76.4.1 Patient Location Tracking Feed

3.76.4.1.1 Trigger Events

445 The following events from a Patient Location Tracking Supplier will trigger one of the Patient departing or Patient arriving messages:

- A09 – Patient departing from temporary location.
- A10 – Patient arriving to temporary location.

3.76.4.1.2 Message Semantics

450 The Patient Location Tracking Feed transaction is conducted by the HL7® ADT message, as defined in the subsequent sections. The Patient Location Tracking Supplier shall generate the message whenever a patient is departing or arriving from/to temporary locations. The segments of the message listed below are required, and their detailed descriptions are provided in the following subsections.

455 Required segments are defined below. Other segments are optional and may be ignored if present.

Table 3.76.4.1.2-1: ADT Patient Administration Messages

ADT	Patient Administration Message	Chapter in HL7 2.5
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3

460 Each message shall be acknowledged by the HL7® ACK message sent by the receiver of an ADT message to its sender. See ITI TF-2x: C.2.3, “Acknowledgement Modes”, for definition and discussion of the ACK message.

3.76.4.1.2.1 MSH - Message Header Segment

The MSH segment shall be constructed as defined in the “Message Control” Section (ITI TF-2x: C.2.2).

465 Field MSH-9-Message Type shall have all three components populated with a value. The first component shall have a value of ADT; the second component shall have a value of A09 or A10. The third component shall have a value of ADT_A09.

3.76.4.1.2.2 EVN – Event Type Segment

470 The Patient Location Tracking Supplier is not required to send any attributes within the EVN segment beyond what is specified in the HL7® standard except as specified below.

See ITI-TF-2X: C.2.4

EVN-1 Event Type Code (ID): Not supported (deprecated in HL7® 2.5). The Event Type Code is given in MSH-9 of segment MSH.

EVN-2 Recorded Date Time (TS): Required. Date/time when the event was recorded.

475 **EVN-6 Event Occurred (TS):** This field contains the date/time that the event really occurred.
Condition predicate:

In messages communicating effective events (inserts and updates), this field shall be populated with the real date/time of the notified event.

480 **EVN-7 Event Facility (HD):** Required if known to the sender. This field identifies the actual facility where the event occurred as distinct from the sending facility (MSH-4).

Patient Location Tracking Supplier shall notify Patient Location Tracking Manager with ADT^A09 message when a patient leaves a physical location in a hospital.

ADT^A09 message shall contain information below:

EVN-6 - Event Occurred departure time of patient

485

Patient Location Tracking Supplier shall notify Patient Location Tracking Manager with ADT^A10 message when a patient arrives at a physical location in a hospital.

ADT^A10 message shall contain information below:

EVN-6 - Event Occurred arrival time of patient

490 **3.76.4.1.2.3 PID - Patient Identification segment**

Usage of the PID segment shall comply with the requirements specified in ITI TF-2b: 3.30.5.3 PID Segment.

3.76.4.1.2.4 PV1 - Patient Visit segment

495 The PV1 segment is used by the Patient Location Tracking Manager to convey the location of the patient.

Table 3.76.4.1.2.4-1: PV1 - Patient Visit segment

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
1	4	SI	O	[0..1]		00131	Set ID – PV1
2	1	IS	R	[1..1]	0004	00132	Patient Class
3	80	PL	O	[0..1]		00133	Assigned Patient Location
4	2	IS	O	[0..1]	0007	00134	Admission Type
5	250	CX	O	[0..1]		00135	Preadmit Number
6	80	PL	O	[0..1]		00136	Prior Patient Location
10	3	IS	O	[0..1]	0069	00140	Hospital Service
11	80	PL	R+	[0..1]		00141	Temporary Location
12	2	IS	O	[0..1]	0087	00142	Preadmit Test Indicator
13	2	IS	O	[0..1]	0092	00143	Re-admission Indicator
14	6	IS	O	[0..1]	0023	00144	Admit Supplier
15	2	IS	O	[0..*]	0009	00145	Ambulatory Status
16	2	IS	O	[0..1]	0099	00146	VIP Indicator
18	2	IS	O	[0..1]	0018	00148	Patient Type
19	250	CX	O	[0..1]		00149	Visit Number
20	50	FC	O	[0..*]	0064	00150	Financial Class
21	2	IS	O	[0..1]	0032	00151	Charge Price Indicator
22	2	IS	O	[0..1]	0045	00152	Courtesy Code
23	2	IS	O	[0..1]	0046	00153	Credit Rating
24	2	IS	O	[0..*]	0044	00154	Contract Code
25	8	DT	O	[0..*]		00155	Contract Effective Date
26	12	NM	O	[0..*]		00156	Contract Amount
27	3	NM	O	[0..*]		00157	Contract Period

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
28	2	IS	O	[0..1]	0073	00158	Interest Code
29	4	IS	O	[0..1]	0110	00159	Transfer to Bad Debt Code
30	8	DT	O	[0..1]		00160	Transfer to Bad Debt Date
31	10	IS	O	[0..1]	0021	00161	Bad Debt Agency Code
32	12	NM	O	[0..1]		00162	Bad Debt Transfer Amount
33	12	NM	O	[0..1]		00163	Bad Debt Recovery Amount
34	1	IS	O	[0..1]	0111	00164	Delete Account Indicator
35	8	DT	O	[0..1]		00165	Delete Account Date
36	3	IS	O	[0..1]	0112	00166	Discharge Disposition
37	47	DLD	O	[0..1]	0113	00167	Discharged to Location
38	250	CE	O	[0..1]	0114	00168	Diet Type
39	2	IS	O	[0..1]	0115	00169	Servicing Facility
40	1	IS	X	[0..1]	0116	00170	Bed Status
41	2	IS	O	[0..1]	0117	00171	Account Status
42	80	PL	O	[0..1]		00172	Pending Location
43	80	PL	O	[0..1]		00173	Prior Temporary Location
44	26	TS	O	[0..1]		00174	Admit Date/Time
45	26	TS	O	[0..1]		00175	Discharge Date/Time
46	12	NM	O	[0..1]		00176	Current Patient Balance
47	12	NM	O	[0..1]		00177	Total Charges
48	12	NM	O	[0..1]		00178	Total Adjustments
49	12	NM	O	[0..1]		00179	Total Payments
50	250	CX	O	[0..1]	0203	00180	Alternate Visit ID
51	1	IS	O	[0..1]	0326	01226	Visit Indicator
52	250	XCN	X	[0..*]	0010	01274	Other Healthcare Provider

500 **PV1-11 – Temporary Location (PL)**, Required. This field contains reported patient temporary location.

PV1-43 – Prior Temporary Location (PL), Optional, but recommended for A09. This field contains patient prior temporary location.

3.76.4.1.2.5 Message Examples

505 Patient Location Tracking Supplier sends “ITI-76: Patient Location Tracking Feed (ADT^A10)” message when Patient “Taro Tanaka” arrives in the Outpatient waiting room.

510

```
MSH|^~\&|PLQ-Supplier|HospitalA|PLQ-Manager|HospitalA|20130310092015||
ADT^A10^ADT_A09|000001|P|2.5|||||JPN|JP||
EVN||20130310092015|||20130310092015|HospitalA
PID||12345^^^^PI|Tanaka^Taro^^^^^L||M||||||||||||||||||||||||||||||||
PV1|1|O|||||||||Outpatient^WaitingRoom||||||||||||||||||||||||||||||||
||
```

515 Patient Location Tracking Supplier sends “ITI-76: Patient Location Tracking Feed (ADT^A09)” message when Patient “Taro Tanaka” departs from the Outpatient waiting room.

520

```
MSH|^~\&|PLQ-Supplier|HospitalA|PLQ-Manager|HospitalA|20130310094015||
ADT^A09^ADT_A09|000002|P|2.5|||||JPN|JP||
EVN||20130310094015|||20130310094015|HospitalA
PID|1||12345^^^^PI|Tanaka^Taro^^^^^L||M||||||||||||||||||||||||||||||||
PV1|1|O|||||||||Outpatient^WaitingRoom||||||||||||||||||||||||||||||||
||
```

525 **3.76.4.1.3 Expected Actions**

The Patient Location Tracking Manager shall maintain an internal database of patient location history so that it can respond properly to later queries.

3.76.5 Security Considerations

530 **3.76.5.1 Audit Record Considerations – Patient arriving and departing from temporary location**

The Patient arriving and departing from temporary location event of Patient Location Tracking Feed transactions may be audited as “Patient Record” events, as defined in Section 3.76.5.1.1 and 3.76.5.1.2. The following tables show items that are required to be part of the audit record for these specific Patient Location Tracking Feed transactions.

535

3.76.5.1.1 Patient Location Tracking Supplier Actor audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110110, DCM, “Patient Record”)
	EventActionCode	M	“U” (update)
	EventDateTime	M	not specialized
	EventOutcomeIndicator	M	not specialized
	EventTypeCode	M	EV(“ITI-76”, “IHE Transactions”, “Patient Location Tracking Feed”)
Source (Patient Location Tracking Supplier) (1)			
Destination (Patient Location Tracking Manager) (1)			

Audit Source (Patient Location Tracking Supplier) (1)
Patient (1)

Where:

Source AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Supplier and sending application from the HL7 message; concatenated together, separated by the character.
	AlternativeUserID	M	The process ID as used within the local operating system in the local system logs.
	<i>UserName</i>	<i>U</i>	<i>not specialized</i>
	<i>UserIsRequestor</i>	<i>U</i>	<i>not specialized</i>
	RoleIDCode	M	EV(110153, DCM, “Source”)
	NetworkAccessPointType Code	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address

Destination AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Manager and receiving application from the HL7 message; concatenated together, separated by the character.
	<i>AlternativeUserID</i>	<i>M</i>	<i>not specialized</i>
	<i>UserName</i>	<i>U</i>	<i>not specialized</i>
	<i>UserIsRequestor</i>	<i>U</i>	<i>not specialized</i>
	RoleIDCode	M	EV(110152, DCM, “Destination”)
	NetworkAccessPointType Code	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address

Audit Source AuditMessage/ AuditSourceIdentif ication	<i>AuditSourceID</i>	<i>U</i>	<i>not specialized</i>
	<i>AuditEnterpriseSiteID</i>	<i>U</i>	<i>not specialized</i>
	<i>AuditSourceTypeCode</i>	<i>U</i>	<i>not specialized</i>

540

Patient (AuditMessage/ ParticipantObject identification)	ParticipantObjectTypeCode	M	“1” (person)
	ParticipantObjectTypeCodeRole	M	“1” (patient)
	<i>ParticipantObjectDataLife Cycle</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectIDTypeCode</i>	<i>M</i>	<i>not specialized</i>
	<i>ParticipantObjectSensitivity</i>	<i>U</i>	<i>not specialized</i>
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	<i>ParticipantObjectName</i>	<i>U</i>	<i>not specialized</i>

	<i>ParticipantObjectQuery</i>	<i>U</i>	<i>not specialized</i>
	ParticipantObjectDetail	M	Type=MSH-10 (the literal string), Value=the value of MSH-10 (from the message content, base64 encoded)

3.76.5.1.2 Patient Location Tracking Manager Actor audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110110, DCM, “Patient Record”)
	EventActionCode	M	“U” (update)
	<i>EventDateTime</i>	<i>M</i>	<i>not specialized</i>
	<i>EventOutcomeIndicator</i>	<i>M</i>	<i>not specialized</i>
	EventTypeCode	M	EV(“ITI-76”, “IHE Transactions”, “Patient Location Tracking Feed”)
Source (Patient Location Tracking Supplier) (1)			
Destination (Patient Location Tracking Manager) (1)			
Audit Source (Patient Location Tracking Manager) (1)			
Patient(1)			

Where:

Source AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Supplier and sending application from the HL7 message; concatenated together, separated by the character.
	<i>AlternativeUserID</i>	<i>U</i>	<i>not specialized</i>
	<i>UserName</i>	<i>U</i>	<i>not specialized</i>
	<i>UserIsRequestor</i>	<i>U</i>	<i>not specialized</i>
	RoleIDCode	M	EV(110153, DCM, “Source”)
	NetworkAccessPointType Code	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address

Destination AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Manager and receiving application from the HL7 message; concatenated together, separated by the character.
	AlternativeUserID	M	The process ID as used within the local operating system in the local system logs.
	<i>UserName</i>	<i>U</i>	<i>not specialized</i>
	<i>UserIsRequestor</i>	<i>U</i>	<i>not specialized</i>
	RoleIDCode	M	EV(110152, DCM, “Destination”)
	NetworkAccessPointType Code	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address

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Audit Source AuditMessage/ AuditSourceIdentification	<i>AuditSourceID</i>	<i>U</i>	<i>not specialized</i>
	<i>AuditEnterpriseSiteID</i>	<i>U</i>	<i>not specialized</i>
	<i>AuditSourceTypeCode</i>	<i>U</i>	<i>not specialized</i>

Patient (AuditMessage/ ParticipantObject Identification)	<i>ParticipantObjectTypeCode</i>	<i>M</i>	“1” (person)
	<i>ParticipantObjectTypeCodeRole</i>	<i>M</i>	“1” (patient)
	<i>ParticipantObjectDataLifeCycle</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectIDTypeCode</i>	<i>M</i>	<i>not specialized</i>
	<i>ParticipantObjectSensitivity</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectID</i>	<i>M</i>	The patient ID in HL7 CX format.
	<i>ParticipantObjectName</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectQuery</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectDetail</i>	<i>M</i>	Type=MSH-10 (the literal string), Value=the value of MSH-10 (from the message content, base64 encoded)

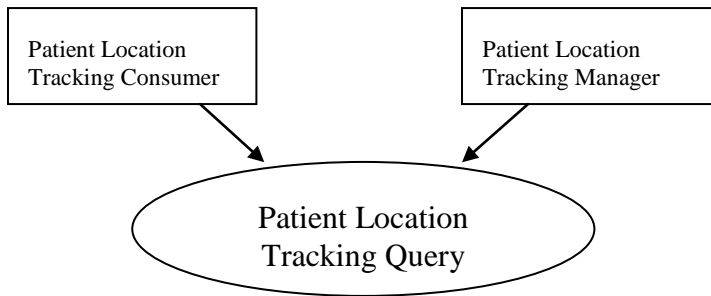
3.77 Patient Location Tracking Query [ITI-77]

550 **3.77.1 Scope**

This transaction involves a request by the Patient Location Tracking Consumer for information about patients whose location data match data provided in the query message. The request is received by the Patient Location Tracking Manager. The Patient Location Tracking Manager immediately processes the request and returns a response containing patient location information for matching patients.

555

3.77.2 Use Case Roles



Actor:	Patient Location Tracking Manager
Role:	Returns patient location information for all patients matching the criteria provided by the Patient Location Tracking Consumer.
Actor:	Patient Location Tracking Consumer
Role:	Requests a list of patients and location information matching a minimal set of criteria (e.g., patient id, place in the hospital) from the Patient Location Tracking Manager.

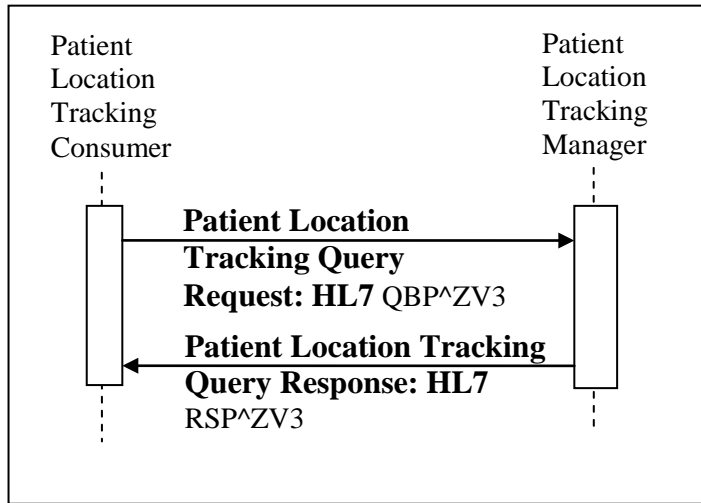
560

3.77.3 Referenced Standards

HL7® Version 2.5 Chapter 2 – Control, Chapter 3 – Patient Administration, Chapter 5 – Query

565

3.77.4 Interaction Diagram



570

Figure 3.77.4-1: Patient Location Tracking Query Interaction Diagram

3.77.4.1 Patient Location Tracking Query Request

3.77.4.1.1 Trigger Events

575 A Patient Location Tracking Consumer’s need to select a patient based on tracking information about patients whose information matches a minimal set of known data will trigger the Patient Location Tracking Query based on the following HL7® trigger event:

ZV3 – Patient Location Tracking Query Request

3.77.4.1.2 Message Semantics

The Patient Location Tracking Query transaction is conducted by the HL7® QBP^ZV3 message.

580 The Patient Location Tracking Consumer shall generate the query message whenever it needs to select from a list of patients whose information matches a minimal set of tracking data. The segments of the message listed below are required, and their detailed descriptions are provided in the following subsections.

Required segments are defined below. Other segments are prohibited.

585

Table 3.77.4.1.2-1: QBP Query by Parameter

ADT	Patient Administration Message	Chapter in HL7 2.5
MSH	Message Header	2
QPD	Query Parameter Definition	5
RCP	Response Control Parameter	5

The Patient Location Tracking Manager shall respond to the query by sending the RSP^ZV3 message.

3.77.4.1.2.1 MSH - Message Header Segment

590 The MSH segment shall be constructed as defined in the “Message Control” Section (ITI TF-2x: C.2.2).

Field MSH-9-Message Type shall have all three components populated with a value. The first component shall have a value of QPB; the second component shall have a value of ZV3 respectively. The third component shall have a value of QPB_ZV3.

595 **3.77.4.1.2.2 QPD – Query Parameter Definition Segment**

The Patient Location Tracking Consumer shall send attributes within the QPD segment as described in Table 3.77.4.1.2.2-1.

Table 3.77.4.1.2.2-1: QPD – Query Parameter Definition segment

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
1	3	CE	R	[1..1]	0471	01375	Message Query Name
2	32	ST	R+	[1..1]		00696	Query Tag
3		QIP	R	[1..1]			Query Fields

600 Adapted from the HL7® standard, version 2.5

QPD-1 Message Query Name (CE): Required:

The Consumer shall specify “IHE PLT Query”.

QPD-2 Query Tag (ST): Required:

605 An identifier specified by the Patient Location Tracking Consumer that uniquely identifies a query across all messages related to it.

QPD-3 Query Fields (QIP): Required:

610 Field QPD-3-Query Fields-Related Fields consists of one or more repetitions, each of which contains two components that together contain the name and value of a distinct parameter to the query.

The first component of each parameter contains the name of an HL7® element in the form @<seg>.<field no>.<component no>.<subcomponent no>

The above format is populated according to common HL7® usage for specifying elements used in query parameters, as follows:

615 <seg> represents a 3-character segment ID from the HL7® Standard.

<field no> is the number of a field within the segment as shown in the SEQ column of the segment table for the segment selected.

620 <component no>, for fields whose data types contain multiple components, shall contain the cardinal number of the component being valued. For fields whose data types do not contain multiple components, <component no> shall not be valued and its preceding period should not appear.

625 <subcomponent no>, for components whose data types contain multiple subcomponents, shall contain the cardinal number of the subcomponent being valued. For components whose data types do not contain multiple subcomponents, <subcomponent no> shall not be valued and its preceding period shall not appear.

The second subcomponent of each parameter contains the value that is to be matched.

The Patient Location Tracking Consumer shall specify at least one of the fields in Table 3.77.4.1.2.2-2. The Patient Location Tracking Manager shall support all of the fields in the following table.

630

Table 3.77.4.1.2.2-2: QPD-3 fields required to be supported

FLD	Element name
PID.3	Patient Identifier List
PV1.19	Visit Number

635 In addition, the Patient Location Tracking Manager shall support all of the fields in Table 3.77.4.1.2.2-3. Patient Location Tracking Consumer actors may support any of the fields in the table. Some fields may not be relevant to particular care settings (e.g., inpatient, day patient) and will thus not be supportable by consumers in those care settings.

Table 3.77.4.1.2.2-3: Additional QPD-3 fields

FLD	Element name
PID.5	Patient Name
PV1.2	Patient Class
PV1.10	Hospital Service

640 The Patient Location Tracking Manager shall return demographic records that reflect the exact matches to all of the search criteria.

Examples of parameter expressions in QPD-3:

@PID.3.1^12345

645 Requests a patient’s location information whose Patient ID (PID-3-Patient Identifier List (data type CX)) matches the value “12345”.

3.77.4.1.2.3 RCP – Response Control Parameter Segment

The Patient Location Tracking Consumer shall send attributes within the RCP segment as described in Table 3.77.4.1.2.3-1. Fields not listed are optional.

650 **Table 3.77.4.1.2.3-1: RCP – Response Control Parameter Segment**

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
1	1	ID	R	[1..1]	0091	00027	Query Priority

Adapted from the HL7® standard, version 2.5

RCP-1 Query Priority (ID): Required:

655 Field RCP-1-Query Priority shall always contain “I”, signifying that the response to the query is to be returned in Immediate mode.

3.77.4.1.3 Expected Actions

3.77.4.1.3.1 Immediate Acknowledgement

660 The Patient Location Tracking Manager shall immediately return an RSP^ZV3 response message as specified in Section 3.77.4.2, “Patient Location Response.” The Patient Location Tracking Manager shall use Field MSH-3-Sending Application of the RSP^ZV3 message to return the value it received from the Patient Location Tracking Consumer in Field MSH-5-Receiving Application of the QBP^ZV3 message.

3.77.4.1.3.2 Query Parameter Processing

665 The Patient Location Tracking Manager shall be capable of accepting, searching on, and responding with attributes in the QPD segment as specified in Table 3.77.4.1.2.2-2 and Table 3.77.4.1.2.2-3.

The Patient Location Tracking Manager shall be capable of receiving all valid combinations of subcomponents that make up the Assigning Authority component (i.e., all valid combinations of QPD-3.8).

670 The Patient Location Tracking Manager shall return at least all exact matches to the query parameters sent by the Patient Location Tracking Consumer; IHE does not further specify matching requirements.

3.77.4.1.3.3 Message Examples

```
675 MSH|^~\&|PLT-Consumer|HospitalA|PLT-Manager|HospitalA|20130310095015||
    QBP^ZV3^QBP_Q21|000003|P|2.5|||JPN|JP|
    QPD|IHE PLT Query|000001|@PID.3.1^12345
    RCP|I|
```

680 3.77.4.2 Patient Location Tracking Query Response

3.77.4.2.1 Trigger Events

The Patient Location Tracking Query Response message to the Patient Location Tracking Query Request message shall be the following message:

RSP^ZV3 – Patient Location Tracking Query Response

685 3.77.4.2.2 Message Semantics

The Patient Location Tracking Query Response is conducted by the RSP^ZV3 message. The Patient Location Tracking Manager shall generate this message in direct response to the QBP^ZV3 message previously received.

690 The segments of the message listed without enclosing square brackets in Table 3.77.4.2.2-1 are required. Detailed descriptions of all segments listed in the table below are provided in the following subsections. Other segments of the message are optional.

Message Structure for Response

```
MSH
MSA
[ {ERR} ]
QAK
QPD
[ {
    PID
    [QRI]
    {
        PV1
        ZTI
    }
} ]
```

695 Table 3.77.4.2.2-1: RSP Segment Pattern Response

RSP	Segment Pattern Response	Chapter in HL7 2.5
MSH	Message Header	2
MSA	Message Acknowledgement	2
[{ERR}]	Error	2

RSP	Segment Pattern Response	Chapter in HL7 2.5
QAK	Query Acknowledgement	5
QPD	Query Parameter Definition	5
[{ PID	Patient Identification	3
[QRI]	Query Response Instance	5
{PV1	Patient Visit	3
ZTI}}]	Additional Tracking Information	
DSC	Continuation Pointer	2

3.77.4.2.2.1 MSH - Message Header Segment

The MSH segment shall be constructed as defined in the “Message Control” Section (ITI TF-2x: C.2.2).

700 Field MSH-3-Sending Application specifies the patient information source that from which the data in the response message was retrieved. The Patient Location Tracking Manager shall use Field MSH-3-Sending Application of the RSP^ZV3 message to return the value it received from the Patient Location Tracking Consumer in Field MSH-5-Receiving Application of the QBP^ZV3 message. Field MSH-9-Message Type shall have all three components populated with
705 a value. The first component shall have a value of RSP; the second component shall have a value of ZV3. The third component shall have a value of RSP_ZV3.

3.77.4.2.2.2 MSA – Message Acknowledgement Segment

The Patient Location Tracking Manager is not required to send any attributes within the MSA segment beyond what is specified in the HL7® standard. See the “Acknowledgment Modes”
710 Section (ITI TF-2x: C.2.3) for the list of all required and optional fields within the MSA segment.

3.77.4.2.2.3 QAK – Query Acknowledgement Segment

The Patient Location Tracking Manager shall send attributes within the QAK segment as defined in Table 3.77.4.2.2.3-1.

715

Table 3.77.4.2.2.3-1: QAK – Query Acknowledgement Segment

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
1	32	ST	R	[1..1]		00696	Query Tag
2	2	ID	R+	[1..1]	0208	00708	Query Response Status

Adapted from the HL7® standard, version 2.5

QAK-1 Query Tag (ST): Required:

720 Field QAK-1 (Query Tag) shall echo the same value of QPD-2 (Query Tag) of the QBP^ZV3 message, to allow the Patient Location Tracking Consumer to match the response to the corresponding query request.

QAK-2 Query Response Status (ID): Required:

725 For the details on filling in Field QAK-2 (Query Response Status) refer to the “Patient Location Tracking Manager Query Response Behavior” Section 3.77.4.2.2.10)

3.77.4.2.2.4 QPD - Query Parameter Definition segment

The Patient Location Tracking Manager shall echo the QPD Segment value that was sent in the QBP^ZV3 message.

3.77.4.2.2.5 PID - Patient Identification segment

730 The Patient Location Tracking Manager shall return one PID segment group (i.e., one PID segment plus any segments associated with it in the message syntax shown in Table 3.77.4.2.2.1) for each matching patient record found. The Manager shall return the attributes within the PID segment as specified in Table 3.77.4.2.2.5-1. In addition, the Patient Location Tracking Manager may return all other attributes within the PID segment for which it is able and permitted to supply values.

735

Table 3.77.4.2.2.5-1: PID - Patient Identification segment

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
3	250	CX	R	[1..*]		00106	Patient Identifier List
5	250	XPN	R2	[1..*]		00108	Patient Name

Adapted from the HL7® standard, version 2.5

740 The Patient Location Tracking Manager may or may not be able to supply additional identifiers from the domains specified in QPD-8. Inability to supply an identifier in a particular domain is not an error, provided that the domain is recognized.

745 The PID segment and the PV1, ZTI, and QRI segments that are associated with it are returned only when the Patient Location Tracking Manager is able to associate the search parameters in QPD-3 with one or more patient records in the patient information source associated with MSH-5-Receiving Application. See the “Patient Location Manager Query Response Behavior” Section (3.77.4.2.2.10) for a detailed description of how the Patient Location Tracking Manager responds to the query request under various circumstances.

3.77.4.2.2.6 PV1 - Patient Visit segment

750 For each patient for which the Patient Location Tracking Manager returns a PID segment, it shall also return a PV1 Segment in which attributes are populated as specified in Table 3.77.4.2.2.6-1.

Table 3.77.4.2.2.6-1: PV1 - Patient Visit segment

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
2	1	IS	R	[1..1]	0004	00132	Patient Class
3	80	PL	R	[1..1]		00133	Assigned Patient Location
10	3	IS	O	[0..1]	0069	00140	Hospital Service

Adapted from the HL7® standard, version 2.5

755

3.77.4.2.2.7 ZTI – Additional Tracking Information

The Patient Location Tracking Manager shall return one ZTI (Additional Tracking Information) segment for each PV1 segment returned in the Patient Location Tracking Query Response message. This segment contains two fields as defined in Table 3.77.4.2.2.7-1. These fields are for the arrival and departure time of the location in the associated PV1-3 Assigned Patient Location field.

760

Table 3.77.4.2.2.7-1: ZTI – Additional Tracking Information segment

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name
1	26	TS	R2	[0..1]			Arrival Time
2	26	TS	R2	[0..1]			Departure Time

765 The Patient Location Tracking Manager shall return at least one of “Arrival Time” or “Departure Time”.

3.77.4.2.2.8 QRI - Query Response Instance segment

For each patient for which the Patient Location Tracking Manager returns a PID segment, it may optionally return the QRI (Query Response Instance) segment, but is not required to do so. Refer to the HL7® Standard, Version 2.5, Chapter 5, Section 5.5.5, for more information.

770

3.77.4.2.2.9 Patient Location Tracking Manager Actor Query Response Behavior

The Patient Location Tracking Manager shall perform the matching of patient data based on the query parameter values it receives. The information provided by the Patient Location Tracking Manager to Patient Location Tracking Consumers is a list of possible matching patients from the patient information source associated with the value that the Consumer sent in MSH-5-Receiving Application of the query message.

775

The list of record in the query response shall go up in timestamp order from the latest record to prior record, and the number of records shall depend on the value specified in RCP-2. If the RCP-2 is not specified, only the latest one record shall be included in the response.

780 The Patient Location Tracking Manager shall respond to the query request as described by the following 3 cases:

Case 1: The Patient Location Tracking Manager finds at least one patient record matching the criteria sent in QPD-3-Query Fields.

AA (application accept) is returned in MSA-1.

785 **OK** (data found, no errors) is returned in QAK-2.

One PID segment group (i.e., one PID segment and at least one PV1 segment group, plus any segments associated with them in the message syntax shown in Table 3.77-8) is returned for each patient record found. If the Patient Location Tracking Manager returns data for multiple patients, it shall return these data in successive occurrences of the PID segment group. Each PID segment group shall contain at least one PV1 segment group.

790

Within each PID segment, field PID-3-Patient Identifier List contains one or more identifiers from the set of Patient ID Domains known by the Patient Location Tracking Manager.

Case 2: The Patient Location Tracking Manager does not find a patient record matching the criteria sent in QPD-3-Query Fields.

795 **AA** (application accept) is returned in MSA-1.

NF (no data found, no errors) is returned in QAK-2.

Case 3: The Patient Location Tracking manager does not recognize a domain provided in QPD-8.

AE (application error) is returned in MSA-1 and in QAK-2.

800 For each domain that was not recognized, an ERR segment is returned in which the components of ERR-2-Error Location are valued as follows.

Table 3.77.4.2.2.9-1: ERR-2 - Error Location

COMP #	COMPONENT NAME	VALUE
1	Segment ID	QPD
2	Sequence	1
3	Field Position	8
4	Field Repetition	(see below)
5	Component Number	(empty)
6	Subcomponent Number	(empty)

805 ERR-2.4-Field Repetition identifies the ordinal occurrence of QPD-8 that contained the unrecognized domain. As specified by HL7®, ERR-2.5-Component Number and ERR-2.6-Subcomponent Number are not valued because we are referring to the entire field QPD-8.

ERR-3-HL7® Error Code is populated with the error condition code 204 (unknown key identifier).

810 **3.77.4.2.2.10 Message Examples**

```
MSH|^~\&|PLT-Manager|HospitalA|PLT-Consumer|HospitalA|20130310095015||
RSP^ZV3^RSP_ZV3|000004|P|2.5|||JPN|JP
MSA|AA|000003
QAK|000001|OK
815 QPD|IHE PLT Query|000001|@PID.3.1^12345
PID|1||12345^^^^PI||Tanaka^Taro^^^^L||M|||||||20130310094
015
PV1|1|O|Outpatient^WaitingRoom
ZTI|201301171300
820 PV1|1|I|NRTH^302^1
ZTI||201301180300
```

3.77.4.2.3 Expected Actions

825 The Patient Location Tracking Consumer shall use the demographic information provided by the Patient Location Tracking Manager to perform the functions for which it requested the information.

3.77.5 Security Considerations

3.77.5.1 Audit Record Considerations

830 The Patient Location Tracking Query Transaction is a Query Information event as defined in Section 3.77.5.1.1 and 3.77.5.1.2. The Actors involved record audit events according to the following:

3.77.5.1.1 Patient Location Tracking Consumer audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage / EventIdentification	EventID	M	EV(110112, DCM, "Query")
	EventActionCode	M	"E" (Execute)
	EventDateTime	M	not specialized
	EventOutcomeIndicator	M	not specialized
	EventTypeCode	M	EV("ITI-77", "IHE Transactions", "Patient Location Tracking Query")
Source (Patient Demographics Consumer) (1)			
Human Requestor (0..n)			
Destination (Patient Demographics Supplier) (1)			
Audit Source (Patient Demographics Consumer) (1)			
Patient (0..n)			
Query Parameters(1)			

Where:

Source AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Consumer facility and sending application from the HL7 message; concatenated together, separated by the character.
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	<i>UserName</i>	<i>U</i>	<i>not specialized</i>
	<i>UserIsRequestor</i>	<i>U</i>	<i>not specialized</i>
	RoleIDCode	M	EV(110153, DCM, “Source”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address
Human Requestor (if known) AuditMessage/ ActiveParticipant	UserID	M	Identity of the human that initiated the transaction.
	<i>AlternativeUserID</i>	<i>U</i>	<i>not specialized</i>
	<i>UserName</i>	<i>U</i>	<i>not specialized</i>
	<i>UserIsRequestor</i>	<i>U</i>	<i>not specialized</i>
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	NA	
	NetworkAccessPointID	NA	

Destination AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Manager facility and receiving application from the HL7 message; concatenated together, separated by the character.
	<i>AlternativeUserID</i>	<i>U</i>	<i>not specialized</i>
	<i>UserName</i>	<i>U</i>	<i>not specialized</i>
	<i>UserIsRequestor</i>	<i>M</i>	<i>not specialized</i>
	RoleIDCode	M	EV(110152, DCM, “Destination”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address

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Audit Source AuditMessage/ AuditSourceIdentification	<i>AuditSourceID</i>	<i>U</i>	<i>not specialized</i>
	<i>AuditEnterpriseSiteID</i>	<i>U</i>	<i>not specialized</i>
	<i>AuditSourceTypeCode</i>	<i>U</i>	<i>not specialized</i>

Patient (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	“1” (Person)
	ParticipantObjectTypeCodeRole	M	“1” (Patient)
	<i>ParticipantObjectDataLifeCycle</i>	<i>U</i>	<i>not specialized</i>

	<i>ParticipantObjectIDTypeCode</i>	<i>M</i>	<i>not specialized</i>
	<i>ParticipantObjectSensitivity</i>	<i>U</i>	<i>not specialized</i>
	ParticipantObjectID	<i>M</i>	The patient ID in HL7 CX format.
	<i>ParticipantObjectName</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectQuery</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectDetail</i>	<i>U</i>	<i>not specialized</i>
Query Parameters (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	<i>M</i>	“2” (system object)
	ParticipantObjectTypeRole	<i>M</i>	“24” (query)
	<i>ParticipantObjectDataLifeCycle</i>	<i>U</i>	<i>not specialized</i>
	ParticipantObjectIDTypeCode	<i>M</i>	EV(“ITI-77”, “IHE Transactions”, “Patient Location Tracking Query”)
	<i>ParticipantObjectSensitivity</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectID</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectName</i>	<i>U</i>	<i>not specialized</i>
	ParticipantObjectQuery	<i>M</i>	The complete query message (including MSH and QPD segments), base64 encoded.
ParticipantObjectDetail	<i>M</i>	Type=MSH-10 (the literal string), Value=the value of MSH-10 (from the message content, base64 encoded)	

3.77.5.1.2 Patient Location Tracking Manager audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage / EventIdentification	EventID	<i>M</i>	EV(110112, DCM, “Query”)
	EventActionCode	<i>M</i>	“E” (Execute)
	<i>EventDateTime</i>	<i>M</i>	<i>not specialized</i>
	<i>EventOutcomeIndicator</i>	<i>M</i>	<i>not specialized</i>
	EventTypeCode	<i>M</i>	EV(“ITI-77”, “IHE Transactions”, “Patient Location Tracking Query”)
Source (Patient Demographics Consumer) (1)			
Destination (Patient Demographics Supplier) (1)			
Audit Source (Patient Demographics Supplier) (1)			
Patient (0..n)			
Query Parameters(1)			

Where:

Source AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Consumer facility and sending application from the HL7 message; concatenated together, separated by the character.
	AlternativeUserID	U	not specialized
	UserName	U	not specialized
	UserIsRequestor	U	not specialized
	RoleIDCode	M	EV(110153, DCM, “Source”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address

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Destination AuditMessage/ ActiveParticipant	UserID	M	The identity of the Patient Location Tracking Manager facility and receiving application from the HL7 message; concatenated together, separated by the character.
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	U	not specialized
	UserIsRequestor	U	not specialized
	RoleIDCode	M	EV(110152, DCM, “Destination”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address

Audit Source AuditMessage/ AuditSourceIdentification	AuditSourceID	U	not specialized
	AuditEnterpriseSiteID	U	not specialized
	AuditSourceTypeCode	U	not specialized

Patient (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	“1” (Person)
	ParticipantObjectTypeCodeRole	M	“1” (Patient)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	not specialized
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	U	not specialized
	ParticipantObjectQuery	U	not specialized
	ParticipantObjectDetail	U	not specialized
Query	ParticipantObjectTypeCode	M	“2” (system object)

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Parameters (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCodeRole	M	“24” (query)
	<i>ParticipantObjectDataLifeCycle</i>	<i>U</i>	<i>not specialized</i>
	ParticipantObjectTypeCode	M	EV(“ITI-77”, “IHE Transactions”, “Patient Location Tracking Query”)
	<i>ParticipantObjectSensitivity</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectID</i>	<i>U</i>	<i>not specialized</i>
	<i>ParticipantObjectName</i>	<i>U</i>	<i>not specialized</i>
	ParticipantObjectQuery	M	The complete query message (including MSH and QPD segments), base64 encoded.
	ParticipantObjectDetail	M	Type=MSH-10 (the literal string), Value=the value of MSH-10 (from the message content, base64 encoded)

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Appendices

None

Volume 2 Namespace Additions

Add the following terms to the IHE General Introduction Appendix G:

None

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Volume 3 – Content Modules

NA

Appendices

860 None

Volume 3 Namespace Additions

Add the following terms to the IHE Namespace:

None

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Volume 4 – National Extensions

Add appropriate Country Section

4 National Extensions

NA