MPI Interface Reference for PIX, PDQ

MPI 3.0

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1 Introduction

This document provides technical details on the messaging interface of the Master Patient Index (MPI) application, implemented by its integration module Medical Service Bus (MSB). The document complements the MSB administration guide and targets the same reader.

All non-legacy interfaces of MPI/MSB possess proven compliance with the requirements of the interopearbility initiative Integrating the Healthcare Enterprise (IHE). Several actors and profiles of the technical framework „IT Infrastructure“ (ITI TF) are implemented – see the sumary in the table below.

Profile	Actor	Technologies Used
Patient Identifier Cross-Referencing (PIX)	Patient Identifier Cross-Referencing Manager (PIX Manager)	Health Level 7, Version 2.x (HL7 2.x), Minimal Lower Layer Protocol (MLLP)
Patient Identifier Cross-Referencing (PIX)	Patient Identity Source (PIX Source)	Health Level 7, Version 2.x (HL7 2.x), Minimal Lower Layer Protocol (MLLP)
Patient Demographics Query (PDQ)	Patient Demographics Supplier (PDQ Supplier)	Health Level 7, Version 2.x (HL7 2.x),

		Minimal Lower Layer Protocol (MLLP)
Patient Demographics Query (PIXV3)	Patient Identifier Cross-Referencing Manager (PIXv3 Manager)	Health Level 7, Version 3 (HL7 3.0), Web Services (WS)
Patient Demographics Query (PDQV3)	Patient Demographics Supplier (PDQv3 Supplier)	Health Level 7, Version 3 (HL7 3.0), Web Services (WS)

The interface reference mainly refers the ITI specifiaction and only focuses on issues needing further clarification:

- interface functionality defined as optional in the technical framework (e. g. optional fields of HL7 2.x messages)
- interface functionality being explicitly specified „out of scope“ by the technical framework and left to the implementor (e. g. additional parameters in the demographics query)
- interface functionality specified by the technical framework in an abstract way, needing a concrete implementation (e. g. requirements on PIX Manager cofiguration)
- interface functionality specified by the technical framework allowing for multiple valid interpretations (e. g. use of datatape CX in HL7 2.x messages)
- known minor inconsistencies between the implementation and the IHE specification, which shall be resolved in the future
- other relevant technical aspects of the interfaces

In all other concerns the reader may assume a full compliance of the interface with therequirements of IHE ITI TF.

The document considers the capabilities and limitations of the interfaces, providing in particular

- specific references to the IHE technical framework
- description of the message and interaction structure
- message and interaction examples

Features controllable by MSB configuration, being referred to as „configuration“, „pre-configured“, „configurable“ etc., are comprehensively described in the MSB administration manual [2].

1.1 Typographic conventions

Text parts machinally generated or intended to be machine readable are printed in the `source code` font.

1.1.1 Typographic conventions in the description of HL7 2.x messages

The message format. The column Usage in the description of HL7 2.x message structures has the usal notation (cf. HL7 2.5 [4]):

<usage code>[(<original value>)]. Original value refers to the value defined either in IHE ITI TF or in the base standard (HL7 2.3.1, 2.5), depending on whether IHE imposes a specific constraint on the base standard for the given item. Original value only present if different from <usage code>.

1.1.2 Typographic conventions in the description of HL7 Version 3 interactions

Caption	Meaning
`XML`	XML fragment, containing at most one element and zero to many attributes.
`Element`	Cardinality of the given element, in the form [<min>..<max>]. If no text in the element is allowed, the mark „nt“ is included. If nullFlavor use is allowed for this element, the mark „nf“ is included. If the XML fragment contains no elements, the „not appliable“ status is marked by a dash (-).

Attributes	Cardinality of each attribute in the order of occurence. The notation is [<min>..<max>]. If the XML fragment contains no attributes, the „not appliable“ status is marked by a dash (-).
Comment	Notes on meaning, use and constraints.

2 Interface pxsa

This legacy interface based on HL7 2.3 is described in a separate document [10].

3 Common features of IHE based interfaces

The profiles regarded in here belong to the same technical framework and therefore share common features:

- they use uniform transport method: Minimal Lower Layer Protocol(MLLP) or webservices (WS) over SOAP and http
- they use the same set of message building-blocks (common elements)
- they share security mechanisms: node authentication of the ATNA profile

3.1 MLLP level of PIX and PDQ communication

Refer to *ITI-TF Rev. 7, Vol. 2x, Section C.2.1: Network Guidelines*.

3.2 HTTP/SOAP level of PIXv3 and PDQv3 communication

Refer to *ITI-TF Rev. 7, Vol. 2x, Appendix V „Web Services for IHE Transactions“*.

3.2.1 HTTP/SOAP header example

```
POST /msb/ws/iti47Service HTTP/1.1
Accept-Encoding: gzip,deflate
Content-Type: application/soap+xml;charset=UTF-8;action="urn:getAvailableValidations"
User-Agent: Jakarta Commons-HttpClient/3.1
```

```
Host: prg-3.dev.icw.int:8484
Content-Length: 2282

<env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing">
  <env:Body>
    <PRPA_IN201305UV02 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:hl7-org:v3
../../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201305UV02.xsd" xmlns="urn:hl7-org:v3" ITSVersion="XML_1.0">
      <id root="1.2.840.114350.1.13.0.1.7.1.1" extension="35423"/>
      ...
  </env:Body>
</env:Envelope>

HTTP/1.1 200 OK
Content-Type: application/soap+xml; charset=UTF-8
Content-Length: 6402
Server: Jetty(7.1.6.v20100715)

<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"><soap:Body><PRPA_IN201306UV02 xmlns="urn:hl7-org:v3"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" ITSVersion="XML_1.0">
  <id root="1.2.3" extension="205105" />
  ...
</PRPA_IN201306UV02></soap:Body></soap:Envelope>
```

3.3 Common HL7 2.x elements

3.3.1 PV1 segment (outbound message)

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1	1	ST	R (O)	1..1		00001	Set ID – PV1	
2	4	ST	R	1..1		00002	Patient Class	Value set: Configurable by mappings.
...			X					No fields after PV-1 used.

3.3.2 MSA segment (outbound response message)

Refer to *ITI-TF Rev. 7, Vol. 2x, Section C.2.3.1 „MSA - Message Acknowledgement segment“, Tab. C.2.3.1-1*.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name	Comment
2	ID		R	[1..1]	0008	00018	Acknowledgement code	
2	20	ST	R	[1..1]		00010	Message Control Id	
3	80	ST	RE (X)	[0..1]		00020	Text Message	For selected error conditions, MSA-3 conveys a human readable error description, redundantly to ERR-3-2.
4	15	NM	X (O)	[0..1]		00021	Expected Sequence Number	

5			X	[0..0]		00022	Delayed Acknowledgment Type	
6	250	CE	X	[0..0]	0357	00023	Error Condition	

3.3.3 ERR segment (outbound response message)

Refer to *ITI-TF Rev. 7, Vol. 2x, Section C.2.3.2 „ERR - Error segment“, Tab. C.2.3.2-1*.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	Element name	Comment
1	493	ELD	X	[0..0]		00024	Error Code and Location	
2	18	ERL	RE	[0..*]		01812	Error Location	Filled in query response for described error cases.
1		ST	R	[1..1]			Segment ID	
2		NM	R	[1..1]			Segment Sequence	Segment repetitions are numbered from 0 (consistent with the underlying HAPI HL7 library).
3		NM	RE (O)				Field Position	
4		NM	RE (O)				Field Repetition	Field repetitions are numbered from 0 (consistent with the underlying HAPI HL7 library).
5		NM	RE (O)				Component Number	
6		NM	RE (O)				Sub-Component Number	
3	705	CWE	R	[1..1]	0357	01813	HL7 Error Code	
1		ST	R	[1..1]			Identifier	Filled in query response for described error cases.
2		ST	R (O)	[1..1]			Text	Filled in query response for described error cases.
3		ID	R (O)	[1..1]	0396		Name of Coding System	Constant “HL70357“.
4		ST	X (O)				Alternate Identifier	
5		ST	RE (O)				Alternate Text	For selected error conditions, ERR-3-5 conveys the human readable text description of the error condition.
6		ID	X (O)		0396		Name of Alternate Coding System	

	7		ST	X (O)				Coding System Version ID	
	8		ST	X (O)				Alternate Coding System Version ID	
	9		ST	X (O)				Original Text	
4		2	ID	R	[1..1]	0516	01814	Severity	All error conditions producing an ERR segment have severity „E“ (error).
5		705	CWE	X (O)	[0..1]	0533	01815	Application Error Code	
6		80	ST	X (O)	[0..10]		01816	Application Error Parameter	
7		2048	TX	X (O)	[0..1]		01817	Diagnostic Information	
8		250	TX	X (O)	[0..1]		01818	User Message	
9		20	IS	X (O)	[0..*]	0517	01819	Inform Person Indicator	
10		705	CWE	X (O)	[0..1]	0518	01820	Override Type	
11		705	CWE	X (O)	[0..*]	0519	01821	Override Reason Code	
12		652	XTN	X (O)	[0..*]		01822	Help Desk Contact Point	

3.3.4 QAK segment (outbound response message)

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.2.2.3 „QAK Segment“*.
Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.2.2.3 „QAK Segment“*.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1		ST	R	[1..1]			Query Tag	
2		ID	R (R+)	[1..1]			Query Response Status	

4 Interfaces supporting IHE profiles PIX and PIXv3

4.1 Overview

The functionality of the profiles and thei actors is explained in IHE TF Vol. 1 [20]. MSB implement the actors PIX Manager, PIXv3 Manager and PIX Source – see also section 1.

4.2 PIX message structures

4.2.1 Structure of incoming PIX ITI-8 request

As specified by IHE, trigger events A01, A04, A05, A08, A40 are supported.

A08 message affects the receiver in a snapshot manner - values conveyed by the most recent message overwrite the previously persisted values for the (facility) patient. Selective update of elements by distinguishing empty values (||)from null values (|""|) is not supported.

Note: In the A08 message the sender shall export a complete snapshot of the up-to-date patient data.

4.2.1.1 Message structure

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.8.4.1.2 „Message Semantics", Tab. 3.8-1*.

4.2.1.2 MSH segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.8.4.1.2.1 "MSH Segment"*.
Refer to *ITI-TF Rev. 7, Vol. 2x, Section C.2.2, Tab. C.2.2-1*.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1	1	ST	R	[1..1]		00001	Field Separator	
2	4	ST	R	[1..1]		00002	Encoding Characters	
3	180	HD	RE (R+)	[0..1]		00003	Sending Application	Only required, if patient identifiers used without assigning authority.
4	180	HD	RE (R+)	[0..1]		00004	Sending Facility	

								Mapping applied.
5	180	HD	RE (R+)	[0..1]		00005	Receiving Application	
6	180	HD	RE (R+)	[0..1]		00006	Receiving Facility	
7	26	TS	R	[1..1]		00007	Date/Time Of Message	Format: YYYYMMDDHHMI[SS]
8	40	ST	X (O)			00008	Security	
9	13	CM	R	[1..1]		00009	Message Type	
1		ID	R	[1..1]	0076		Message Code	Value set: ADT
2		ID	R	[1..1]	0003		Trigger Event	Value set: A01, A04, A05, A08, A40
3		ID	RE	[0..1]	0354		Message Structure	Optional in HL7 2.3.1. Value set: ADT_A01, ADT_A05.
10	20	ST	R	[1..1]		00010	Message Control ID	
11	3	PT	R	[1..1]		00011	Processing ID	
12	60	VID	R	[1..1]	0104	00012	Version ID	
13	15	NM	X (O)			00013	Sequence Number	
14	180	ST	X (O)			00014	Continuation Pointer	
15	2	ID	X (O)		0155	00015	Accept Acknowledgment Type	Original message mode without MSH-15 or MSH-16 is used.
16	2	ID	X (O)		0155	00016	Application Acknowledgment Type	Original message mode without MSH-15 or MSH-16 is used.
17	3	ID	X (O)		0399	00017	Country Code	
18	16	ID	X (O)		0211	00692	Character Set	Character set of incoming messages is determined by configuration rather than by the value of MSH-18.
19	250	CE	X (O)			00693	Principal Language Of Message	
20	20	ID	X (O)		0356	01317	Alternate Character Set Handling Scheme	
21	10	ID	X (O)		0449	01598	Conformance Statement ID #	

4.2.1.3 EVN segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.8.4.1.2.2 "EVN Segment"* and *ITI-TF Rev. 7, Vol. 2x, Section C.2.4, Tab. C.2.4-1*.

4.2.1.4 PID segment

ITI-TF Rev. 7, Vol. 2a, Section 3.8.4.1.2.3 "PID Segment", Tab. 3.8-2.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	ELEMENT NAME	Comment
1	4	SI	X (O)			00104	Set ID – Patient ID	Number of the PID segment.
2	20	CX	X (O)			00105	Patient ID	
3	250	CX	R	[1..1]		00106	Patient Identifier List	List of facility patient identifiers, including: - facility patient identifiers (configured by 'bdm-patientOid-serversidePatientOid') - index patient identifer See also ITI-TF Rev. 7, Vol. 2x, Section N.1, N.2.
1		ST	R				ID	Patient identifier. Shall have exactly one repetition.
2		ST	X (O)				Check digit	
3		ID	X (O)		0061		Code identifying the check digit scheme employed	
4		HD	R		0363		Assigning Authority	
1		IS	RE (O)		0300		Namespace ID	Only following combinations are allowed: „Namespace ID“, „Universal ID + Universal ID type“, „Namespace ID +Universal ID + Universal ID Type“. Universal ID type, if present , is „ISO“.
2		ST	RE (C)				Universal ID	
3		ID	RE (C)		0301		Universal ID type	

									See also ITI-TF Rev. 7, Vol. 2x, Section E.
	5		ID	RE (O)		0203		Identifier type code	Constant ‚PI'.
	6		HD	X (O)				Assigning facility	
	7		DT	X (O)				Effective date	
	8		DT	X (O)				Expiration date	
4		20	CX	X (O)			00107	Alternate Patient ID	
5		250	XPN	R	[1..2]		00108	Patient Name	Legal name of the patient. See also ITI-TF Rev. 7, Vol. 2x, Section N.6.
	1	194	FN	RE	[0..1]			Family Name	
	1	50	ST	R	[1..1]			Surname	Family name.
	2	20	ST	X (O)				Own Surname Prefix	
	3	50	ST	X (O)				Own Surname	
	4	20	ST	X (O)				Surname Prefix From Partner/Spouse	
	5	50	ST	X (O)				Surname From Partner/Spouse	
	2	30	ST	RE (O)				Given Name	Patient's given name.
	3	30	ST	RE (O)				Second and Further Given Names or Initials Thereof	Further patient's names.

	4	20	ST	RE (O)	0..1			Suffix (e.g., JR or III)	Patient's name sufffix.
	5	20	ST	RE (O)	0..1			Prefix (e.g., DR)	Patient's name prefix.
	6	6	IS	X		0360		Degree (e.g., MD)	
	7	1	ID	R	1..1	0200		Name Type Code	ICW: Does not really matter, as there is no retrieval of this value – all data exports from MPI use a fix name type.
	8	1	ID	X (O)		0465		Name Representation Code	
	9	483	CE	X (O)		0448		Name Context	
	10	53	DR	X		0444		Name Validity Range	
	11	1	ID	X (O)				Name Assembly Order	
	12	26	TS	X (O)				Effective Date	
	13	26	TS	X (O)				Expiration Date	
	14	199	ST	X (O)				Professional Suffix	
6		250	XPN	RE (O)			00109	Mother‟s Maiden Name	Birth name of the patient – family name only.
	1	194	FN	RE	0..1			Family Name	
	1	50	ST	R	1..1			Surname	Family name.
	2	20	ST	X (O)				Own Surname Prefix	

		3	50	ST	X (O)				Own Surname	
		4	20	ST	X (O)				Surname Prefix From Partner/Spouse	
		5	50	ST	X (O)				Surname From Partner/Spouse	
7			26	TS	RE (R+)	[0..1]		00110	Date/Time Of Birth	Patient's date of birth. Format: YYYYMMDD. See also ITI-TF Rev. 7, Vol. 2x, Section N.5.
8			1	IS	RE (R+)	0..1	0001	00111	Administrative Sex	Mapping applied: 'map-administrativeGender-administrativeGender'. Value set: see mapping.
9			250	XPN	X (O)			00112	Patient Alias	
10			250	CE	X (O)		0005	00113	Race	
11			250	XAD	RE (R2)	0..*		00114	Patient Address	At most one address is returned.
	1		184	SAD	RE (O)				Street Address	
		1	120	ST	R (O)				Street or Mailing Address	Street address line.
		2	50	ST	X (O)				Street Name	
		3	12	ST	X (O)				Dwelling Number	
	2			ST	X (O)				Other Designation	
	3			ST	RE (O)				City	City.

	4		ST	RE (O)				State or Province	State or province.
	5		ST	RE (O)				Zip or Postal Code	Postal code.
	6		ID	RE (O)		0399		Country	Value set: configurable in the MPI backend. By default ISO 3166-1 alpha 2.
	7		ID	X (O)		0190		Address Type	
	8		ST	X (O)				Other Geographic Designation	
	9		IS	X (O)				County/Parish Code	
	10		IS	X (O)				Census Tract	
	11		ID	X (O)				Address Representation Code	
	12		DR	X (B)				Address Validity Range	
	13		TS	X (O)				Effective Date	
	14		TS	X (O)				Expiration Date	
12		4	IS	X (O)		0289	00115	County Code	
13		250	XTN	RE (R2)	[0..*]		00116	Phone Number – Home	Telecom contacts not related to working place. At most one of each kind will be persisted: - home phone number, - business/working place phone number

								- mobile/cellular phone number - fax number - e-mail address
1	199	ST	RE (B)				Telephone Number	Telecom information, unless being an e-mail address.
2	3	ID	RE (O)				Telecommunication Use Code	Mapping applied: 'map-AddressUse-telecomUse'. Value set: see mapping. If empty, „H“ (home) is assumed.
3	8	ID	RE (O)				Telecommunication Equipment Type	Mapping applied: 'map-protocolPrefix-telecomEquipment'. Value set: see mapping. If empty, „PH“ (phone) is assumed.
4	199	ST	RE (O)				Email Address	E-mail address.
5	3	NM	X (O)				Country Code	Value set: configurable in the MPI backend. By default ISO 3166-1 alpha 2.
6	5	NM	X (O)				Area/City Code	
7	9	NM	X (O)				Local Number	
8	5	NM	X (O)				Extension	
9	199	ST	X (O)				Any Text	
10	4	ST	X (O)				Extension Prefix	
11	6	ST	X (O)				Speed Dial Code	
12	199	ST	X (C)				Unformatted Telephone	

								number	
14		250	XTN	RE (R2)	[0..*]		00117	Phone Number – Business	Telecom contacts related to working place. At most one of each kind will be persisted: - home phone number, - business/working place phone number - mobile/cellular phone number - fax number - e-mail address
	1	199	ST	RE (B)				Telephone Number	Telecom information, unless being an e-mail address.
	2	3	ID	RE (O)				Telecommunication Use Code	Mapping applied: 'map-AddressUse-telecomUse'. Value set: see mapping. If empty, „WPN“ (work number) is assumed.
	3	8	ID	RE (O)				Telecommunication Equipment Type	Mapping applied: 'map-protocolPrefix-telecomEquipment'. Value set: see mapping. If empty, „PH“ (phone) is assumed.
	4	199	ST	RE (O)				Email Address	E-mail address.
	5	3	NM	X (O)				Country Code	
	6	5	NM	X (O)				Area/City Code	
	7	9	NM	X (O)				Local Number	
	8	5	NM	X (O)				Extension	
	9	199	ST	X (O)				Any Text	

	10	4	ST	X (O)				Extension Prefix	
	11	6	ST	X (O)				Speed Dial Code	
	12	199	ST	X (C)				Unformatted Telephone number	
15		250	CE	RE (O)	1..1	0296	00118	Primary Language	Supported only in the Swiss localization of MPI/MSB. Value set: configurable in MPI backend, by default „ISO 639-2, Alpha 3“.
16		250	CE	RE (O)		0002	00119	Marital Status	Mapping applied: 'map-maritalStatus-marital status'. Value set: see mapping.
17		250	CE	O		0006	00120	Religion	
18		250	CX	RE (O)			00121	Patient Account Number	Will be persisted, if support for account number is configured in MPI/MSB. See also ITI-TF Rev. 7, Vol. 2x, Sections N.1, N.2.
	1		ST	R				ID	
	2		ST	X (O)				Check digit	
	3		ID	X (O)		0061		Code identifying the check digit scheme employed	
	4		HD	R		0363		Assigning Authority	
	1		IS	RE (O)		0300		Namespace ID	Only following three combinations are allowed: „Namespace ID“, „Universal ID + Universal ID type“, „Namespace ID +Universal ID + Universal
	2		ST	RE (C)				Universal ID	

		3		ID	RE (C)		0301		Universal ID type	ID Type“. Universal ID type, if present , is „ISO“. See also ITI-TF Rev. 7, Vol. 2x, Section E.
	5			ID	X(O)		0203		Identifier type code	
	6			HD	X (O)				Assigning facility	
	7			DT	X (O)				Effective date	
	8			DT	X (O)				Expiration date	
19			16	ST	RE (B)			00122	SSN Number – Patient	Conveys the patient’s national identifer, such as „SSN“ in the USA, „AHV-Nummer“ in Switzerland, „NHS number“ in Great Britain etc.
20			25	DLN	X (RE)			00123	Driver's License Number – Patient	
21			250	CX	X (O)			00124	Mother's Identifier	
22			250	CE	X (O)		0189	00125	Ethnic Group	
23			250	ST	RE (O)			00126	Birth Place	Patient’s city of birth.
24			1	ID	X (O)		0136	00127	Multiple Birth Indicator	
25			2	NM	X (O)			00128	Birth Order	
26			250	CE	X (O)		0171	00129	Citizenship	
27			250	CE	X (O)		0172	00130	Veterans Military Status	

4.2.1.5 PV1 segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.8.4.1.2.4 „PV1 Segment“*.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1	1	ST	X (O)	1..1		00001	Set ID – PV1	
2	4	ST	R	1..1		00002	Patient Class	
...			X					

4.2.2 Structure of outgoing PIX ITI-8 response

4.2.2.1 Message structure

Refer to *ITI-TF Rev. 7, Vol. 2x, Section C.2.3 "Acknowledgment Modes", Tab. C.2.3-1*.

4.2.2.2 MSH segment

Refer to *ITI-TF Rev. 7, Vol. 2x, Section C.2.2, Tab. C.2.2-1*.

SEQ		LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1		1	ST	R	1..1		00001	Field Separator	
2		4	ST	R	1..1		00002	Encoding Characters	
3		180	HD	RE (R+)	0..1		00003	Sending Application	
4		180	HD	RE (R+)	0..1		00004	Sending Facility	
5		180	HD	RE (R+)	0..1		00005	Receiving Application	
6		180	HD	RE (R+)	0..1		00006	Receiving Facility	
7		26	TS	R	1..1		00007	Date/Time Of Message	
8		40	ST	X (O)			00008	Security	
9		13	CM	R	1..1	0076/ 0003	00009	Message Type	
	1		ID	R	[1..1]	0076		Message Code	Value set: ACK
	2		ID	R	[1..1]	0003		Trigger Event	Value set: A01, A04, A05, A08, A40
	3		ID	RE	[0..1]	0354		Message Structure	Optional in HL7 2.3.1. Value set: ACK. Presence of this component is configurable.

10	20	ST	R	1..1		00010	Message Control ID	
11	3	PT	R	1..1		00011	Processing ID	
12	60	VID	R	1..1	0104	00012	Version ID	Same version as the original request. Value set: 2.3.1
13	15	NM	X (O)			00013	Sequence Number	
14	180	ST	X (O)			00014	Continuation Pointer	
15	2	ID	X (O)		0155	00015	Accept Acknowledgment Type	
16	2	ID	X (O)		0155	00016	Application Acknowledgment Type	
17	3	ID	X (O)		0399	00017	Country Code	
18	16	ID	X (O)		0211	00692	Character Set	
19	250	CE	X (O)			00693	Principal Language Of Message	
20	20	ID	X (O)		0356	01317	Alternate Character Set Handling Scheme	
21	10	ID	X (O)		0449	01598	Conformance Statement ID #	

4.2.2.3 MSA segment

See common elements.

4.2.2.4 ERR segment

See common elements.

4.2.3 Examples of PIX ITI-8 transactions

4.2.3.1 Example: Successfull ITI-8, ADT^A01

Request:

```
MSH|^~\&|SOME_SENDER|MESA_ADT|||20081204114742||ADT^A01|123456|P|2.3.1|||ER
EVN|A01|20081204114742
PID|1||12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO||Hansen^Peter^Sven^PhD.^Mr.^^L~Powers^Max|Johannsen|19630429|M|||650 E Swedesford Road Suite
180^^Wayne^PA^19087^USA^H~151 East Wacker^Chicago Loop^Chicago^IL^60601^USA^H||012-0001~012-0002^WPN^PH~012-0003^ORN^CP~012-
0004^ORN^FX~ap@gmx.de^ORN^X.400~peter@myprovider.com^ORN^Internet|555-456-78|ENG|W|||444-555-666|777-888-999^NY|||London|||UK|||20093009|Y
NK1|1|Hansen^Maria|SPO|Altrottstr. 31^^Walldorf^Baden^69190^DE|012-8650
PV1||O|
```

```
IN1|1||A-666-777|BKK Hoesch|||||||20040101|20141231|||||||||||||||||||||||||||||||||||333-444-555
```

Response:

```
MSH|^~\&|||SOME_SENDER|MESA_ADT|20110126212547||ACK^A01|205042|P^T|2.3.1
MSA|AA|123456
```

4.2.3.2 Example: Successfull ITI-8, ADT^A04

Request:

```
MSH|^~\&|SOME_SENDER|MESA_ADT|||20081204114742||ADT^A04|123457|P|2.3.1|||ER
EVN|A04|20081204114742
PID|1||12345678Y^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO||Petersen^Hans^Christian^Esq.^Sir^^L|Andersen|19841213|M|||Waltersbachstrasse
5^^Zuerich^PA^8006^CH^H||013-0001~013-0002^WPN^PH~013-0003^ORN^CP~013-0004^ORN^FX~ap@gmx.de^ORN^X.400~peter@myprovider.com^ORN^Internet|555-456-79|GER|W|||444-
555-666|777-888-999^NY|||Copenhagen||DK|||20093009|Y NK1|1|Hansen^Maria|SPO|Altrottstr. 31^^Walldorf^Baden^69190^DE|012-8650
PV1||O|
IN1|1||A-666-777|BKK Hoesch|||||||20040101|20141231|||||||||||||||||||||||||||||||||||333-444-555
```

Response:

```
MSH|^~\&|||SOME_SENDER|MESA_ADT|20110127105024||ACK^A04|205049|P^T|2.3.1
MSA|AA|123457
```

4.2.3.3 Example: Successfull ITI-8, ADT^A08

Request:

```
MSH|^~\&|SOME_SENDER|MESA_ADT|||20081204114742||ADT^A08|123456|P|2.3.1|||ER
EVN|A08|20081204114742
PID|1||12345678X^^^HZLN||Hansen^Peter^Paul^PhD.^Mr.^^L~Powers^Max|Johannsen|19630429|M|||650 E Swedesford Road Suite 180^^Wayne^PA^19087^USA^H~151 East
Wacker^Chicago Loop^Chicago^IL^60601^USA^H||012-0001~012-0002^WPN^PH~012-0003^ORN^CP~012-
0004^ORN^FX~ap@gmx.de^ORN^X.400~peter@anotherprovider.com^ORN^Internet|555-456-78|ENG|W|||444-555-666|777-888-999^NY|||London|||UK|||20093009|Y
NK1|1|Hansen^Maria|SPO|Altrottstr. 31^^Walldorf^Baden^69190^DE|012-8650
PV1||O|
IN1|1||A-666-777|BKK Hoesch|||||||20040101|20141231|||||||||||||||||||||||||||||||||||333-444-555
```

Response:

```
MSH|^~\&|||SOME_SENDER|MESA_ADT|20110127105629||ACK^A08|205052|P^T|2.3.1
MSA|AA|123456
```

4.2.3.4 Example: Successfull ITI-8, ADT^A40

Request:

```
MSH|^~\&|SOME_SENDER|MESA_ADT|||20081204114742||ADT^A40|123456|P|2.3.1|||ER
EVN|A40|20081204114742
PID|1||12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO||Hansen
MRG|12345678Y^^^&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO
```

Response:

```
MSH|^~\&|||SOME_SENDER|MESA_ADT|20110127110139||ACK^A40|205056|P^T|2.3.1
MSA|AA|123456
```

4.2.3.5 Example: Failed ITI-8

Request:

```
MSH|^~\&|SOME_SENDER|MESA_ADT|||20081204114742||ADT^A09|123457|P|2.3.1|||ER
EVN|A01|20081204114743
PID|1||12345678Y^^^PKLN&2.16.840.1.113883.3.37.4.1.1.2.511.1&ISO||Hanson^Peter||19630429|M|||151 East Wacker^Chicago Loop^Chicago^IL^60601^USA^H||012-
0001~pete1963@gmx.de^ORN^X.400|||||||||||||||20093009|Y
PV1||O|
```

Response:

```
MSH|^~\&|||SOME_SENDER|MESA_ADT|20101229144040||ACK^A09|83|P^T|2.3.1
MSA|AR|123457
ERR|^^^201&Unsupported event code&HL70357&&Invalid trigger event A09
```

4.2.4 Structure of outgoing PIX ITI-8 request

4.2.4.1 Message examples

Message emitted by MPI after a facility patient has been mapped to an existing index patient:

```
MSH|^~\&|ICW_MPI|ICW|NIST_Swan_PIX_Manager_131|NIST|20101230105920||ADT^A08|205140|P^T|2.3.1
EVN|A08|20101230105920
PID|1||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO~12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO||Hansen^Peter^Sven^PhD.^Mr.^^L|Johannsen^^
^^^^B|19630429|M|||650 E Swedesford Road Suite 180^^Wayne^PA^19087^USA^H||012-0001^PRN^PH~012-0002^WPN^PH~^PRN^Internet^peter@myprovider.com~012-
0004^PRN^FX~012-0003^PRN^CP|||W|||444-555-666||||London
PV1||O
```

4.2.5 Structure of the PIX ITI-9 request

4.2.5.1 Message structure

ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.1.2 „Message Semantics“, Tab. 3.9-1. Segments MSH, QPD, RCP.

4.2.5.2 QPD segment

ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.1.2.2 „QPD Segment“, Table 3.9-2

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1		CE	R	[1..1]			Message Query Name	
2		ST	R (R+)	[1..1]			Query Tag	
3		CX	R	[1..1]			Person Identifier	
4		CX	RE (O)	[0..1]			What Domains Returned	

4.2.6 Structure of the PIX ITI-9 response

4.2.6.1 Message Structure

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.2.2 „Message Semantics“, Tab. 3.9-3*.
MSH MSA [ERR] QAK QPD [PID]

4.2.6.2 MSH segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.2.2.1 „MSH Segment“*.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1	1	ST	R	1..1		00001	Field Separator	
2	4	ST	R	1..1		00002	Encoding Characters	

3		180	HD	RE (R+)	0..1		00003	Sending Application	
4		180	HD	RE (R+)	0..1		00004	Sending Facility	
5		180	HD	RE (R+)	0..1		00005	Receiving Application	
6		180	HD	RE (R+)	0..1		00006	Receiving Facility	
7		26	TS	R	1..1		00007	Date/Time Of Message	
8		40	ST	X (O)			00008	Security	
9		13	CM	R	1..1	0076/ 0003	00009	Message Type	
	1		ID	R	[1..1]	0076		Message Code	Value set: QBP
	2		ID	R	[1..1]	0003		Trigger Event	Value set: Q23
	3		ID	RE (R)	[0..1]	0354		Message Structure	Value set: QBP_Q22. Altough missing MSH-9-3 is tolerated by the interface, the component is required by HL7 2.5 and IHE.
10		20	ST	R	1..1		00010	Message Control ID	
11		3	PT	R	1..1		00011	Processing ID	
12		60	VID	R	1..1	0104	00012	Version ID	Value set: 2.5.
13		15	NM	X (O)			00013	Sequence Number	
14		180	ST	X (O)			00014	Continuation Pointer	
15		2	ID	X (O)		0155	00015	Accept Acknowledgment Type	
16		2	ID	X (O)		0155	00016	Application Acknowledgment Type	
17		3	ID	X (O)		0399	00017	Country Code	
18		16	ID	X (O)		0211	00692	Character Set	
19		250	CE	X (O)			00693	Principal Language Of Message	
20		20	ID	X (O)		0356	01317	Alternate Character Set Handling Scheme	
21		10	ID	X (O)		0449	01598	Conformance Statement ID #	

4.2.6.3 MSA segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.2.2.2 „MSA Segment“.*
See common elements.

4.2.6.4 QAK segment

See common elements.

4.2.6.5 QPD segment

The QPD segment is completely copied from the request – *refer to ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.2.2.4 „QPD Segment“*.

4.2.6.6 PID segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.2.2.5 „PID Segment“*.

SEQ	LEN	DT	Usage	Card.	TBL	ITEM	Element name	Comment
3		ST	R	[1..*]			Patient Identifier List	Contains: - facility patient ID - index patient ID - account number Depends on configuration.
5		ID	R	[2..2]			Patient Name	Constant „~^^^^^^S“.

4.2.7 Message examples

The following examples illustrate selected error cases, in particular those described in *ITI-TF Rev. 7, Vol. 2a, Section 3.9.4.2.2.6 „Patient Identifier Cross-reference Manager Actor Query Response Behavior“.*

Query error case 1, QPD-4 empty:

```
MSH|^~\&|MESA_PIX_CLIENT|MESA_DEPARTMENT|MESA_XREF|XYZ_HOSPITAL|200603121200||QBP^Q23|10501108|P|2.5||||||||
QPD|QRY_1001^Query for Corresponding Identifiers^IHEDEMO|QRY10501108|12345678X^^^HZLN^PI|
RCP|I||||||


MSH|^~\&|MESA_XREF|XYZ_HOSPITAL|MESA_PIX_CLIENT|MESA_DEPARTMENT|20101229144522||RSP^K23^RSP_K23|205113|P^T|2.5
MSA|AA|10501108
```

```
QAK|QRY10501108|OK
QPD|QRY_1001^Query for Corresponding Identifiers^IHEDEMO|QRY10501108|12345678X^^^HZLN^PI
PID|||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI~12345678Y^^^PKLN&2.16.840.1.113883.3.37.4.1.1.2.511.1&ISO^PI||~^^^^^^S
```

Query error case 1, QPD-4 filled:

```
MSH|^~\&|MESA_XREF|XYZ_HOSPITAL|MESA_PIX_CLIENT|MESA_DEPARTMENT|20101229145317||RSP^K23^RSP_K23|205117|P^T|2.5
MSA|AA|10501108
QAK|QRY10501108|OK
QPD|QRY_1001^Query for Corresponding Identifiers^IHEDEMO|QRY10501108|12345678X^^^HZLN^PI|^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO
PID|||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI||~^^^^^^S
```

Query error case 2, with index patient identifier suppressed:

```
MSH|^~\&|MESA_XREF|XYZ_HOSPITAL|MESA_PIX_CLIENT|MESA_DEPARTMENT|20101229150057||RSP^K23^RSP_K23|205124|P^T|2.5
MSA|AA|10501108
QAK|QRY10501108|NF
QPD|QRY_1001^Query for Corresponding Identifiers^IHEDEMO|QRY10501108|12345678X^^^HZLN^PI


MSH|^~\&|MESA_XREF|XYZ_HOSPITAL|MESA_PIX_CLIENT|MESA_DEPARTMENT|20101229144742||RSP^K23^RSP_K23|205114|P^T|2.5
MSA|AA|10501108
QAK|QRY10501108|OK
QPD|QRY_1001^Query for Corresponding Identifiers^IHEDEMO|QRY10501108|12345678X^^^HZLN^PI^^^PKLN
PID|||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI~12345678Y^^^PKLN&2.16.840.1.113883.3.37.4.1.1.2.511.1&ISO^PI||~^^^^^^S
```

Query error case 3. Response is of the message type ACK (see MSH-9).

```
MSH|^~\&|MESA_XREF|XYZ_HOSPITAL|MESA_PIX_CLIENT|MESA_DEPARTMENT|20101229144904||ACK^Q23^ACK|92|P^T|2.5
MSA|AR|10501108
ERR||QPD^1^3^1^4|204^Unknown key identifier^HL70357^^Unknown assigning authority in QPD-3: HZLX|E|||Unknown assigning authority in QPD-3: HZLX
```

Query error case 4.

```
MSH|^~\&|MESA_XREF|XYZ_HOSPITAL|MESA_PIX_CLIENT|MESA_DEPARTMENT|20101229144837||RSP^K23^RSP_K23|205115|P^T|2.5
MSA|AE|10501108
ERR||QPD^1^3^1^1|204|E||Unknown patient ID
QAK|QRY10501108|AE
QPD|QRY_1001^Query for Corresponding Identifiers^IHEDEMO|QRY10501108|12345678Z^^^HZLN^PI^^^PKLN
```

Query error case case 5. Response is of the message type ACK (see MSH-9). MSA-3 is filled. Field repetitions in ERR[2] are numbered from 0 per default (configurable):

```
MSH|^~\&|MESA_XREF|XYZ_HOSPITAL|MESA_PIX_CLIENT|MESA_DEPARTMENT|20101229154423||ACK^Q23^ACK|106|P^T|2.5
MSA|AR|10501108|Unable to resolve requested domains in QPD-4: \S\\S\\S\HZLX
ERR||QPD^1^4^1|204^Unknown key identifier^HL70357|E
```

4.2.8 Structure of PIX ITI-10

4.2.9 Message structure

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.10.4.1.2 „Message Semantics“*.

4.2.10 Message examples

```
MSH|^~\&|ICW_MPI|ICW|NIST_Swan_PIX_Manager_131|NIST|20101230105920||ADT^A31^ADT_A05|205140|P^T|2.5
EVN|A31|20101230105920^MPID|||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI~444-555-
666^^^SSN&2.16.840.1.113883.4.1&ISO^PI~12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO^PI||
PV1||N
```

4.3 PIXv3 interaction structures

4.3.1 Structure of PIX ITI-44 request

Refer to PIXv3/PDQv3 Supplement, Section 3.44.4.1.2.1 *"Major Components of the Patient Registry Record Added/Revised Messages"*, Section *3.44.4.1.2.2 "Message Information Model of the Patient Registry Record Added/Revised Messages"*,
Section *3.44.4.2.2.1 "Major Components of the Patient Registry Duplicates Resolved"*, Section *3.44.4.2.2.2 "Message Information Model of the Patient Registry Duplicates Resolved Message"*.
The example below includes the union of elements/attributes, which

- are required by IHE or HL7
- are evaluated by MPI.

For the Patient Registry Record Revised interaction, the behavior described for the analogue ITI-8 A08 message in section 4.2.1 applies.

Note: In the ITI-44 interaction the sender shall export a complete snapshot of the up-to-date patient data.

4.3.1.1 Commented ITI-44 request example: Patient Registry Record Added PRPA_IN201301UV02

XML	Element	Attributes	Comment

<PRPA_IN201301UV02 ITSVersion="XML_1.0" xmlns:urn="urn:hl7-org:v3" xmlns="urn:hl7-org:v3">	[1..1]	[1..1] for all	
<id root="21acf7be-007c-41e6-b176-d0969794983b"/>	[1..1]	[1..1]	
<creationTime value="20091112115139"/>	[1..1]	[1..1]	
<interactionId extension="PRPA_IN201301UV02" root="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="AL"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.4567"/>	[1..1]	-	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.1234"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	[1..1]	
<asAgent classCode="AGNT">	[1..1]	[1..1]	

<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</sender>	-	-	
<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<code code="PRPA_TE201301UV02" codeSystem="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	
<subject typeCode="SUBJ">	[1..1]	[1..1]	
<registrationEvent classCode="REG" moodCode="EVN">	[1..1]	[1..1]	
<id nullFlavor="NA"/>			Registration Event Id not evaluated.
<statusCode code="active"/>	[1..1]	[1..1]	
<subject1 typeCode="SBJ">	[1..1]	[1..1]	
<patient classCode="PAT">	[1..1]	[1..1]	
<id extension="PIX10515W3"	[1..1]	[1..1] [1..1]	Patient ID shall have extension. Patient ID shall have either a root or an assigning authority.
root="1.3.6.1.4.1.21367.2005.1.1"			Shall be an OID pre-configured in MPI/MSB.
assigningAuthorityName="HIMSS2005"/>	-	[0..1]	Shall be an assigning authority string pre-configured in MPI/MSB.

<statusCode code="active"/>	[1..1]	[1..1]	
<veryImportantPersonCode code="true"/>	[0..1]	[1..1]	
<patientPerson>	[1..1]		
<name use="L">	[1..1]	[1..1]	Legal name of the patient.
<prefix qualifier="AC">Dr.</prefix>	[0..1]	-	
<given>MARY</given>	[0..1]	-	First given name.
<given>ROSE</given>	[0..1]	-	Middle name as second occurence of <given>.
<family>WASHINGTON</family>	[1..1]	-	
<suffix>II</suffix>	[0..1]	-	
</name>	-	-	
<name>	[0..1]	-	Birthname.
<family qualifier="BR">DEAN</family>	[1..1]	-	
</name>	-	-	
<telecom use="HP" value="tel:012-0001"/>	[0..1]	[1..1]	Home telephone number.
<telecom use="WP" value="tel:012-0002"/>	[0..1]	[1..1]	Workplace phone number.
<telecom use="MC" value="tel:012-0003"/>	[0..1]	[1..1]	Mobile phone number.
<telecom use="H" value="fax:012-0004"/>	[0..1]	[1..1]	Fax number.
<telecom value="mailto:marywash@gmx.de"/>	[0..1]	[1..1]	e-mail.

<administrativeGenderCode code="F"/>	[1..1]	[1..1]	
<birthTime value="19771208"/>	[0..1]	[1..1]	Value format: YYYYMMDD.
<addr>	[0..*]	-	Only one address is evaluated.
<streetAddressLine>100 JORIE BLVD</streetAddressLine>	[0..1]	-	
<city>CHICAGO</city>	[0..1]	-	
<state>IL</state>	[0..1]	-	
<postalCode>60523</postalCode>	[0..1]	-	
<country>US</country>	[0..1]	-	Value set: configurable in the MPI backend. By default ISO 3166-1 alpha 2.
</addr>	-	-	
<maritalStatusCode code="M"/>	[0..1]		
<asOtherIDs classCode="PAT">	[0..1]	[1..1]	
<id root="2.16.840.1.113883.4.1" extension="100-09-1234"/>	[1..1]	[1..1] [1..1]	
<scopingOrganization classCode="ORG" determinerCode="INSTANCE">			
<id root="2.16.840.1.113883.4.1"/>	[1..1]	[1..1]	Shall have no extension. root hall be identical with id/@root.
</scopingOrganization>	-	-	
</asOtherIDs>	-	-	

</patientPerson>	-	-	
<providerOrganization classCode="ORG" determinerCode="INSTANCE">	[1..1]	[1..1]	Not evaluated.
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	[1..1]	nullFlavor allowed.
<contactParty classCode="CON"/>	[1..1]	[1..1]	
</providerOrganization>	-	-	
</patient>	-	-	
</subject1>	-	-	
<custodian typeCode="CST">	[1..1]	[1..1]	Not evaluated.
<assignedEntity classCode="ASSIGNED">	[1..1]	[1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	[1..1]	nullFlavor allowed.
</assignedEntity>	-	-	
</custodian>	-	-	
</registrationEvent>	-	-	
</subject>	-	-	
</controlActProcess>	-	-	
</PRPA_IN201301UV02>	-	-	

4.3.1.2 Commented ITI-44 request example: Patient Registry Record Revised PRPA_IN201302UV02

XML	Element	Attributes	Comment
<PRPA_IN201302UV02 ITSVersion="XML_1.0" xmlns:urn="urn:hl7-org:v3" xmlns="urn:hl7-org:v3">	[1..1]	[1..1] for all	
<id root="21acf7be-007c-41e6-b176-d0969794983b"/>	[1..1]	[1..1]	
<creationTime value="20091112115139"/>	[1..1]	[1..1]	

<interactionId extension="PRPA_IN201302UV02" root="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="AL"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.4567"/>	[1..1]	-	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.1234"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	[1..1]	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	

</asAgent>	-	-	
</device>	-	-	
</sender>	-	-	
<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<code code="PRPA_TE201301UV02" codeSystem="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	
<subject typeCode="SUBJ">	[1..1]	[1..1]	
<registrationEvent classCode="REG" moodCode="EVN">	[1..1]	[1..1]	
<id nullFlavor="NA"/>			Registration Event Id not evaluated.
<statusCode code="active"/>	[1..1]	[1..1]	
<subject1 typeCode="SBJ">	[1..1]	[1..1]	
<patient classCode="PAT">	[1..1]	[1..1]	
<id extension="PIX10515W3"	[1..1]	[1..1]	Patient ID shall have extension. Patient ID shall have either a root or an assigning authority.
root="1.3.6.1.4.1.21367.2005.1.1"	-	[0..1]	Shall be an OID pre-configured in MPI/MSB.
assigningAuthorityName="HIMSS2005"/>	-	[0..1]	Shall be an assigning authority string pre-configured in MPI/MSB.
<statusCode code="active"/>	[1..1]	[1..1]	
<veryImportantPersonCode code="true"/>	[0..1]	[1..1]	
<patientPerson>	[1..1]		

<name use="L">	[1..1]	[1..1]	Legal name of the patient.
<prefix qualifier="AC">Dr.</prefix>	[0..1]	-	
<given>MARY</given>	[0..1]	-	First given name.
<given>ROSE</given>	[0..1]	-	Middle name as second occurence of <given>.
<family>WASHINGTON</family>	[1..1]	-	
<suffix>II</suffix>	[0..1]	-	
</name>	-	-	
<name>	[0..1]	-	Birthname.
<family qualifier="BR">DEAN</family>	[1..1]	-	
</name>	-	-	
<telecom use="HP" value="tel:012-0001"/>	[0..1]	[1..1]	Home telephone number.
<telecom use="WP" value="tel:012-0002"/>	[0..1]	[1..1]	Workplace phone number.
<telecom use="MC" value="tel:012-0003"/>	[0..1]	[1..1]	Mobile phone number.
<telecom use="H" value="fax:012-0004"/>	[0..1]	[1..1]	Fax number.
<telecom value="mailto:marywash@gmx.de"/>	[0..1]	[1..1]	e-mail.
<administrativeGenderCode code="F"/>	[1..1]	[1..1]	
<birthTime value="19771208"/>	[0..1]	[1..1]	Value format: YYYYMMDD.
<addr>	[0..*]	-	Only one address is evaluated.

<streetAddressLine>100 JORIE BLVD</streetAddressLine>	[0..1]	-	
<city>CHICAGO</city>	[0..1]	-	
<state>IL</state>	[0..1]	-	
<postalCode>60523</postalCode>	[0..1]	-	
<country>US</country>	[0..1]	-	Value set: configurable in the MPI backend. By default ISO 3166-1 alpha 2.
</addr>	-	-	
<maritalStatusCode code="M"/>	[0..1]	[1..1]	
<asOtherIDs classCode="PAT">	[0..1]	[1..1]	
<id root="2.16.840.1.113883.4.1" extension="100-09-1234"/>	[1..1]	[1..1] [1..1]	
<scopingOrganization classCode="ORG" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="2.16.840.1.113883.4.1"/>	[1..1]	[1..1]	Shall have no extension. root hall be identical with id/@root.
</scopingOrganization>	-	-	
</asOtherIDs>	-	-	
</patientPerson>	-	-	
<providerOrganization classCode="ORG" determinerCode="INSTANCE">	[1..1]	[1..1]	Not evaluated.
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1] nf	[1..1]	
<contactParty classCode="CON"/>	[1..1]	[1..1]	

</providerOrganization>	-	-	
</patient>	-	-	
</subject1>	-	-	
<custodian typeCode="CST">	[1..1]	[1..1]	Not evaluated.
<assignedEntity classCode="ASSIGNED">	[1..1]	[1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1] nf	[1..1]	
</assignedEntity>	-	-	
</custodian>	-	-	
</registrationEvent>	-	-	
</subject>	-	-	
</controlActProcess>	-	-	
</PRPA_IN201302UV02>	-	-	

4.3.1.3 Commented ITI-44 request example: Patient Registry Duplicates Resolved PRPA_IN201304UV02

XML	Element	Attributes	Comment
<PRPA_IN201304UV02 ITSVersion="XML_1.0" xmlns:urn="urn:hl7-org:v3" xmlns="urn:hl7-org:v3">	[1..1]	[1..1] for all	
<id root="52918b99-dc72-4d17-8714-f39b9b6f16e8"/>	[1..1]	[1..1]	
<creationTime value="20091112115139"/>	[1..1]	[1..1]	
<interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201304UV02"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	

<acceptAckCode code="AL"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.4567"/>	[1..1]	-	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.1234"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	[1..1]	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</sender>	-	-	

<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<code code="PRPA_TE201304UV02" codeSystem="2.16.840.1.113883.1.6"/>			
<subject typeCode="SUBJ">	[1..1]	[1..1]	
<registrationEvent classCode="REG" moodCode="EVN">	[1..1]	[1..1]	
<id nullFlavor="NA"/>	[1..1] nf		
<statusCode code="active"/>	[1..1]	[1..1]	
<subject1 typeCode="SBJ">	[1..1]	[1..1]	
<patient classCode="PAT">	[1..1]	[1..1]	
<id extension="1004" root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>	[1..1]	[1..1] [0..1]	
<statusCode code="active"/>	[1..1]	[1..1]	
<patientPerson determinerCode="INSTANCE">	[1..1]	[1..1]	
<name/>	[1..1] nt		
</patientPerson>	-	-	
</patient>	-	-	
</subject1>	-	-	
<custodian typeCode="CST">	[1..1]	[1..1]	
<assignedEntity classCode="ASSIGNED">	[1..1]	[1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	[1..1]	
</assignedEntity>	-	-	
</custodian>	-	-	
<replacementOf typeCode="RPLC">	[1..1]	[1..1]	

<priorRegistration classCode="REG" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<statusCode code="obsolete"/>	[1..1]	[1..1]	
<subject1 typeCode="SBJ">	[1..1]	[1..1]	
<priorRegisteredRole classCode="PAT">	[1..1]	[1..1]	
<id extension="1005" root="2.16.840.1.113883.3.37.4.1.1.2.411.1" assigningAuthorityName="PKLN"/>	[1..1]	[1..1] [0..1] [0..1]	At least one of the attributes assigningAuthorityName, root shall be populated. If both are populated, then they shall denote the same object.
</priorRegisteredRole>	-	-	
</subject1>	-	-	
</priorRegistration>	-	-	
</replacementOf>	-	-	
</registrationEvent>	-	-	
</subject>	-	-	
</controlActProcess>	-	-	

4.3.2 Structure of PIX ITI-44 response

Refer to the Supplement, section *O.1.1 „Send Message Payload Information Model“*.

4.3.2.1 Commented ITI-44 response example

XML	Element	Attributes	Comment
<MCCI_IN000002UV01 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">	[1..1]	[1..1] for all	
<id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="205080"/>	[1..1]	[1..1]	

<creationTime value="20101223175010"/>	[1..1]	[1..1]	
<interactionId root="2.16.840.1.113883.1.6" extension="MCCI_IN000002UV01"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="NE"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	-	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.4567"/>	[1..1]	[1..1]	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.1234"/>	[1..1]	[1..1]	

</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</sender>	-	-	
<acknowledgement>	[1..1]	-	
<typeCode code="CA"/>	[1..1]	[1..1]	Acknowledgement code configurable.
<targetMessage>	[1..1]	[1..1] [1..1]	
<id root="21acf7be-007c-41e6-b176-d0969794983b"/>	[1..1]	[1..1]	
</targetMessage>	-	-	
</acknowledgement>	-	-	
</MCCI_IN000002UV01>	-	-	

4.3.2.2 Further ITI-44 response examples

Negative acknowledgement example. Error description in `acknowledgementDetail/text` refers to the PIX (HL7 2.x) interface, which is being used internally.

```
<MCCI_IN000002UV01 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
         <id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="15"/>
         <creationTime value="20110127095347"/>
         <interactionId root="2.16.840.1.113883.1.6" extension="MCCI_IN000002UV01"/>
         <processingCode code="P"/>
         <processingModeCode code="T"/>
         <acceptAckCode code="NE"/>
         <receiver typeCode="RCV">
            <device determinerCode="INSTANCE" classCode="DEV">
               <id root="1.2.840.114350.1.13.99998.8734"/>
               <asAgent classCode="AGNT">
                  <representedOrganization determinerCode="INSTANCE" classCode="ORG">
                     <id root="1.2.840.114350.1.13.99998"/>
                  </representedOrganization>
               </asAgent>
            </device>
         </receiver>
         <sender typeCode="SND">
            <device determinerCode="INSTANCE" classCode="DEV">
```

```
               <id root="1.2.840.114350.1.13.99999.4567"/>
               <asAgent classCode="AGNT">
                  <representedOrganization determinerCode="INSTANCE" classCode="ORG">
                     <id root="1.2.840.114350.1.13.99999.1234"/>
                  </representedOrganization>
               </asAgent>
            </device>
         </sender>
         <acknowledgement>
            <typeCode code="CR"/>
            <targetMessage>
               <id root="21acf7be-007c-41e6-b176-d0969794983b"/>
            </targetMessage>
            <acknowledgementDetail typeCode="E">
               <code code="INTERR" codeSystem="2.16.840.1.113883.5.1100"/>
               <text>PIXv2 Interface Reported [207; Application internal error; HTTP operation failed invoking http://localhost:8080/mpi/exporter with
statusCode: 500]</text>
            </acknowledgementDetail>
         </acknowledgement>
      </MCCI_IN000002UV01>
```

4.3.3 Structure of PIX ITI-45 request

Refer to the Supplement, section *3.45.4.1.2 „Message Semantics“.*

4.3.3.1 Commented ITI-45 request example

XML	Card. Element	Card. Attributes	Comment
<PRPA_IN201309UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3">	[1..1]	[1..1] for all	
<id root="4a8aa794-b703-401c-8677-cca493c22d14"/>	[1..1]	[1..1]	
<creationTime value="20090821104213"/>	[1..1]	[1..1]	
<interactionId extension="PRPA_IN201309UV02" root="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="AL"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	

<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.4567"/>	[1..1]	-	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.1234"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	[1..1]	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</sender>	-	-	
<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]		
<code code="PRPA_IN201309UV02" codeSystem="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	

<queryByParameter>			
<queryId root="2.25" extension="4a8aa794-b703-401c-8677-cca493c22d78"/>	[1..1]	[1..1] [0..1]	
<statusCode code="new"/>	[1..1]	[1..1]	
<responsePriorityCode code="I"/>	[1..1]	[1..1]	
<parameterList>	[1..1]	[1..1]	
<dataSource>	[0..*]		„What domains“ filter.
<value assigningAuthorityName="HZLN" root="2.16.840.1.113883.3.37.4.1.1.2.511.1"/>	[1..1]	[0..1] [0..1]	At least one of the attributes assigningAuthorityName, root shall be populated. If both are populated, then they shall denote the same object.
<semanticsText>DataSource.id</semanticsText>	[1..1]		
</dataSource>	-	-	
<patientIdentifier>	[1..1]		
<value root="2.16.840.1.113883.3.37.4.1.1.2.411.1" extension="12345678X"/>	[1..1]	[1..1] [1..1]	Patient identifier queried by.
<semanticsText>Patient.id</semanticsText>	[1..1]	[1..1]	
</patientIdentifier>	-	-	
</parameterList>	-	-	
</queryByParameter>	-	-	
</controlActProcess>	-	-	
</PRPA_IN201309UV02>	-	-	

4.3.3.2 Commented ITI-45 response example

XML	Card.	Card.	Comment
<PRPA_IN201310UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">	[1..1]	[1..1] for all	
<id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="205143"/>	[1..1]	[1..1]	
<creationTime value="20101230114445"/>	[1..1]	[1..1]	
<interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201310UV02"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="NE"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	-	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	

<id root="1.2.840.114350.1.13.99998"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.4567"/>	[1..1]	[1..1]	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.1234"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	

</device>	-	-	
</sender>	-	-	
<acknowledgement>	[1..1]	[1..1]	
<typeCode code="AA"/>	[1..1]		
<targetMessage>	[1..1]		
<id root="2.25" extension="4a8aa794-b703-401c-8677-cca493c22d14"/>	[1..1]	[1..1] [1..1]	
</targetMessage>	-	-	
</acknowledgement>	-	-	
<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<code code="PRPA_TE201310UV02" codeSystem="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	
<effectiveTime value="20101230114445"/>	[1..1]	[1..1]	
<queryAck>	[1..1]		
<queryId root="2.26"extension="4a8aa794-b703-401c-8677-cca493c22d78"/>	[1..1]		

<queryResponseCode code="NF"/>	[1..1]		Value set: AA, NF, AE
</queryAck>	-	-	
<queryByParameter>	[1..1]		
<queryId root="2.26"extension="4a8aa794-b703-401c-8677-cca493c22d78"/>	[1..1]	[1..1] [1..1]	
<statusCode code="new"/>	[1..1]	[1..1]	
<responsePriorityCode code="I"/>	[1..1]	[1..1]	
<parameterList>	[1..1]		Copied from request. See request description.
<dataSource>			
<value assigningAuthorityName="KHKN"/>			
<semanticsText>DataSource.id</semanticsText>			
</dataSource>			
<dataSource>			

<value root="2.16.840.1.113883.3.37.4.1.1.2.411.1" assigningAuthorityName="HZLN"/>			
<semanticsText>DataSource.id</semanticsText>			
</dataSource>			
<patientIdentifier>			
<value extension="12345678X" root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>			
<semanticsText>Patient.id</semanticsText>			
</patientIdentifier>			
</parameterList>			
</queryByParameter>	-	-	
</controlActProcess>	-	-	
</PRPA_IN201310UV02>	-	-	

4.3.4 Structure of PIX ITI-45 response

XML	Card.	Card.	Comment
<PRPA_IN201310UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">	[1..1]	[1..1] for all	

<id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="205143"/>	[1..1]	[1..1]	
<creationTime value="20101230114445"/>	[1..1]	[1..1]	
<interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201310UV02"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="NE"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998.8734"/>	[1..1]	-	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99998"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id root="1.2.840.114350.1.13.99999.4567"/>	[1..1]	[1..1]	
<asAgent classCode="AGNT">	[1..1]	[1..1]	
<representedOrganization determinerCode="INSTANCE" classCode="ORG">	[1..1]	[1..1] [1..1]	

<id root="1.2.840.114350.1.13.99999.1234"/>	[1..1]	[1..1]	
</representedOrganization>	-	-	
</asAgent>	-	-	
</device>	-	-	
</sender>	-	-	
<acknowledgement>	[1..1]		
<typeCode code="AA"/>	[1..1]	[1..1]	
<targetMessage>	[1..1]	-	
<id root="2.25" extension="4a8aa794-b703-401c-8677-cca493c22d14"/>	[1..1]	[0..1] [1..1]	
</targetMessage>	-	-	
</acknowledgement>	-	-	
<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<code code="PRPA_TE201310UV02" codeSystem="2.16.840.1.113883.1.6"/>	[1..1]	[1..1] [1..1]	
<effectiveTime value="20101230114445"/>	[1..1]	[1..1]	
<queryAck>	[1..1]		
<queryId root="2.25"extension="4a8aa794-b703-401c-8677-cca493c22d78"/>	[1..1]	[1..1] [0..1]	
<queryResponseCode code="NF"/>	[1..1]	[1..1]	
</queryAck>	-	-	
<queryByParameter>	[1..1]	[1..1] [0..1]	
<queryId root="2.25"extension="4a8aa794-b703-401c-8677-cca493c22d78"/>	[1..1]	[1..1]	
<statusCode code="new"/>	[1..1]	[1..1]	

<responsePriorityCode code="I"/>	[1..1]	[1..1]	
<parameterList>	[1..1]		Copied from original request. See request description.
<dataSource>			
<value assigningAuthorityName="KHKN"/>			
<semanticsText>DataSource.id</semanticsText>			
</dataSource>			
<dataSource>			
<value root="2.16.840.1.113883.3.37.4.1.1.2.411.1" assigningAuthorityName="HZLN"/>			
<semanticsText>DataSource.id</semanticsText>			
</dataSource>			
<patientIdentifier>			
<value extension="12345678X" root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>			
<semanticsText>Patient.id</semanticsText>			
</patientIdentifier>			
</parameterList>			
</queryByParameter>			
</controlActProcess>	-	-	
</PRPA_IN201310UV02>	-	-	

4.3.5 Further interaction examples

Query error case 3 . Refer to the *Supplement, Section 3.45.4.2.3 „Expected Actions - Patient Identifier Cross-reference Manager“.*

```
<PRPA_IN201310UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">

  <id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="205147"/>
  <creationTime value="20101230120049"/>
  <interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201310UV02"/>
  <processingCode code="P"/>
  <processingModeCode code="T"/>
  <acceptAckCode code="NE"/>
  <receiver typeCode="RCV">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99998.8734"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
          <id root="1.2.840.114350.1.13.99998"/>
        </representedOrganization>
      </asAgent>
    </device>
  </receiver>
  <sender typeCode="SND">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99999.4567"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
          <id root="1.2.840.114350.1.13.99999.1234"/>
        </representedOrganization>
      </asAgent>
    </device>
  </sender>
  <acknowledgement>
    <typeCode code="AA"/>
    <targetMessage>
      <id root="4a8aa794-b703-401c-8677-cca493c22d14"/>
    </targetMessage>
  </acknowledgement>
  <controlActProcess classCode="CACT" moodCode="EVN">
    <code code="PRPA_TE201310UV02" codeSystem="2.16.840.1.113883.1.6"/>
    <effectiveTime value="20101230120049"/>
    <queryAck>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <queryResponseCode code="NF"/>
    </queryAck>
    <queryByParameter>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <statusCode code="new"/>
      <responsePriorityCode code="I"/>
      <parameterList>
        <dataSource>
          <value assigningAuthorityName="KHKN"/>
          <semanticsText>DataSource.id</semanticsText>
        </dataSource>
        <dataSource>
          <value root="2.16.840.1.113883.3.37.4.1.1.2.411.1" assigningAuthorityName="PKLN"/>
          <semanticsText>DataSource.id</semanticsText>
```

```
        </dataSource>
        <patientIdentifier>
          <value extension="12345678X" root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>
          <semanticsText>Patient.id</semanticsText>
        </patientIdentifier>
      </parameterList>
    </queryByParameter>
  </controlActProcess>
</PRPA_IN201310UV02>
```

Query error case 4. Refer to the *Supplement, Section 3.45.4.2.3 „Expected Actions - Patient Identifier Cross-reference Manager“.* Error description in `acknowledgementDetail/text` refers to the PIX (HL7 2.x) interface, which is being used internally.

```
<PRPA_IN201310UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">

  <id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="205145"/>
  <creationTime value="20101230115847"/>
  <interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201310UV02"/>
  <processingCode code="P"/>
  <processingModeCode code="T"/>
  <acceptAckCode code="NE"/>
  <receiver typeCode="RCV">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99998.8734"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
          <id root="1.2.840.114350.1.13.99998"/>
        </representedOrganization>
      </asAgent>
    </device>
  </receiver>
  <sender typeCode="SND">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99999.4567"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
          <id root="1.2.840.114350.1.13.99999.1234"/>
        </representedOrganization>
      </asAgent>
    </device>
  </sender>
  <acknowledgement>
    <typeCode code="AE"/>
    <targetMessage>
      <id root="4a8aa794-b703-401c-8677-cca493c22d14"/>
    </targetMessage>
    <acknowledgementDetail typeCode="E">
      <code code="INTERR" codeSystem="2.16.840.1.113883.12.357"/>
      <text>PIXv2 Interface Reported [Unknown patient ID]</text>
      <location>/PRPA_IN201309UV02/controlActProcess/queryByParameter/parameterList/patientIdentifier/value</location>
    </acknowledgementDetail>
  </acknowledgement>
```

```
  <controlActProcess classCode="CACT" moodCode="EVN">
    <code code="PRPA_TE201310UV02" codeSystem="2.16.840.1.113883.1.6"/>
    <effectiveTime value="20101230115847"/>
    <queryAck>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <queryResponseCode code="AE"/>
    </queryAck>
    <queryByParameter>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <statusCode code="new"/>
      <responsePriorityCode code="I"/>
      <parameterList>
        <dataSource>
          <value assigningAuthorityName="KHKN"/>
          <semanticsText>DataSource.id</semanticsText>
        </dataSource>
        <dataSource>
          <value root="2.16.840.1.113883.3.37.4.1.1.2.411.1" assigningAuthorityName="HZLN"/>
          <semanticsText>DataSource.id</semanticsText>
        </dataSource>
        <patientIdentifier>
          <value extension="12345678Z" root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>
          <semanticsText>Patient.id</semanticsText>
        </patientIdentifier>
      </parameterList>
    </queryByParameter>
  </controlActProcess>
</PRPA_IN201310UV02>
```

Query error case 5. Refer to the *Supplement, Section 3.45.4.2.3 „Expected Actions - Patient Identifier Cross-reference Manager“.* Error description in `acknowledgementDetail/text` refers to the PIX (HL7 2.x) interface, which is being used internally.

```
<PRPA_IN201310UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="171"/>
  <creationTime value="20101230115556"/>
  <interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201310UV02"/>
  <processingCode code="P"/>
  <processingModeCode code="T"/>
  <acceptAckCode code="NE"/>
  <receiver typeCode="RCV">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99998.8734"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
          <id root="1.2.840.114350.1.13.99998"/>
        </representedOrganization>
      </asAgent>
    </device>
  </receiver>
  <sender typeCode="SND">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99999.4567"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
```

```
          <id root="1.2.840.114350.1.13.99999.1234"/>
        </representedOrganization>
      </asAgent>
    </device>
  </sender>
  <acknowledgement>
    <typeCode code="AE"/>
    <targetMessage>
      <id root="4a8aa794-b703-401c-8677-cca493c22d14"/>
    </targetMessage>
    <acknowledgementDetail typeCode="E">
      <code code="INTERR" codeSystem="2.16.840.1.113883.12.357"/>
      <text>PIXv2 Interface Reported [Unable to resolve requested domains in QPD-4: ^^^HZLN&amp;amp;2.16.840.1.113883.3.37.4.1.1.2.911.1&amp;amp;ISO; Unknown key
identifier]</text>
      <location>/PRPA_IN201309UV02/controlActProcess/queryByParameter/parameterList/dataSource[2]/value</location>
    </acknowledgementDetail>
  </acknowledgement>
  <controlActProcess classCode="CACT" moodCode="EVN">
    <code code="PRPA_TE201310UV02" codeSystem="2.16.840.1.113883.1.6"/>
    <effectiveTime value="20101230115556"/>
    <queryAck>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <queryResponseCode code="AE"/>
    </queryAck>
    <queryByParameter>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <statusCode code="new"/>
      <responsePriorityCode code="I"/>
      <parameterList>
        <dataSource>
          <value assigningAuthorityName="KHKN"/>
          <semanticsText>DataSource.id</semanticsText>
        </dataSource>
        <dataSource>
          <value root="2.16.840.1.113883.3.37.4.1.1.2.911.1" assigningAuthorityName="HZLN"/>
          <semanticsText>DataSource.id</semanticsText>
        </dataSource>
        <patientIdentifier>
          <value extension="12345678X" root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>
          <semanticsText>Patient.id</semanticsText>
        </patientIdentifier>
      </parameterList>
    </queryByParameter>
  </controlActProcess>
</PRPA_IN201310UV02>
```

Query error: unknown assigning authority in `parameterList/patientIdentifier`. Error description in `acknowledgementDetail/text` refers to the PIX (HL7 2.x) interface, which is being used internally.

```
<PRPA_IN201310UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <id root="2.16.840.1.113883.3.37.4.1.1.2.1.4" extension="173"/>
  <creationTime value="20101230115758"/>
  <interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201310UV02"/>
  <processingCode code="P"/>
```

```
  <processingModeCode code="T"/>
  <acceptAckCode code="NE"/>
  <receiver typeCode="RCV">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99998.8734"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
          <id root="1.2.840.114350.1.13.99998"/>
        </representedOrganization>
      </asAgent>
    </device>
  </receiver>
  <sender typeCode="SND">
    <device determinerCode="INSTANCE" classCode="DEV">
      <id root="1.2.840.114350.1.13.99999.4567"/>
      <asAgent classCode="AGNT">
        <representedOrganization determinerCode="INSTANCE" classCode="ORG">
          <id root="1.2.840.114350.1.13.99999.1234"/>
        </representedOrganization>
      </asAgent>
    </device>
  </sender>
  <acknowledgement>
    <typeCode code="AE"/>
    <targetMessage>
      <id root="4a8aa794-b703-401c-8677-cca493c22d14"/>
    </targetMessage>
    <acknowledgementDetail typeCode="E">
      <code code="INTERR" codeSystem="2.16.840.1.113883.12.357"/>
      <text>PIXv2 Interface Reported [Unknown assigning authority in QPD-3: ^2.16.840.1.113883.3.37.4.1.1.2.911.1^ISO; Unknown key identifier; Unknown
assigning authority in QPD-3: ^2.16.840.1.113883.3.37.4.1.1.2.911.1^ISO]</text>
      <location>/PRPA_IN201309UV02/controlActProcess/queryByParameter/parameterList/patientIdentifier/value</location>
    </acknowledgementDetail>
  </acknowledgement>
  <controlActProcess classCode="CACT" moodCode="EVN">
    <code code="PRPA_TE201310UV02" codeSystem="2.16.840.1.113883.1.6"/>
    <effectiveTime value="20101230115758"/>
    <queryAck>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <queryResponseCode code="AE"/>
    </queryAck>
    <queryByParameter>
      <queryId root="4a8aa794-b703-401c-8677-cca493c22d78"/>
      <statusCode code="new"/>
      <responsePriorityCode code="I"/>
      <parameterList>
        <dataSource>
          <value assigningAuthorityName="KHKN"/>
          <semanticsText>DataSource.id</semanticsText>
        </dataSource>
        <dataSource>
          <value root="2.16.840.1.113883.3.37.4.1.1.2.411.1" assigningAuthorityName="HZLN"/>
          <semanticsText>DataSource.id</semanticsText>
        </dataSource>
        <patientIdentifier>
          <value extension="12345678X" root="2.16.840.1.113883.3.37.4.1.1.2.911.1"/>
          <semanticsText>Patient.id</semanticsText>
        </patientIdentifier>
```

```
      </parameterList>
    </queryByParameter>
  </controlActProcess>
</PRPA_IN201310UV02>
```

4.4 Special features of the PIX/PIXv3 implementation

4.4.1 Shortcomings of the update notification transaction

ITI-10/ITI-47 transactions as specified by IHE ([7], [9]) show several serious limitations:

- Only patient identifiers are exported. Human readable demographic data such as patient name, phone number or address are explicitly excluded from the message ([6], section 3.10.4.1.2.3).
- The ITI-10/ITI-44 transactions are not designed to communicate the removal of a patient identifier. As a result, a PIX Consumer drawing its information exclusively from a stream of subscribed ITI-10/ITI-44 messages, will experience increasing inconsistency towards the PIX Manager.

Note: As the limitations described above significatntly reduce the practical value of the ITI-10/ITI-44 transaction, the use of update notification is strongly discouraged. The recommended alternative is a pull approach: PIX Consumer regularly triggers PIX queries .

5 Interfaces supporting IHE profiles PDQ and PDQv3

5.1 Overview

5.2 Special features of the PDQ/PDQv3 implementation

This section treats issues, where PDQ needs clarification.

5.2.1 Index patient as source of demographic data

The role of the actor „Patient Demographics Supplier“ of the PDQ/PDQv3 profiles may be assumed by applications managing multiple patient identities with multiple sets of demographic data per patient, such as a master patient index, but also by applications maintaining just a single set of demographics per patient, such as a department information system. The technical framework leaves the extent of the exposed demographic data up to the implementor. See the IHE technical framework (ITI-TF Rev. 7, Vol. 2x, Section M) for the overview of various supplier scenarios.

Note: PDQ query interface of the MPI exposes only the demographic data of the index patient. For individual facility patients, retrieval of demographic data such as patient name, date of birth or address is not supported. However, facility patient identifiers are both supported as query parameters and included in the response data.

5.2.2 Standard Search and Extended Search

The MPI supports two search modes and several matching algorithms.

Prior to the version 2.8.1, MPI supports a single search algorithm, which does not quantify the similarity between the query parameters and the patient records in an explicit and analogue manner. The match quality in this legacy algorithm may be considered 100% for patient records selected into the result set and 0% for patient records excluded from it.

Starting with the version 2.8.1, MPI offers a refined matching method called *extended search*. Like standard search, the MPI compares the query parameters against the corresponding attributes of index patients. The extended search provides two additional search modes, that may be used individually or combined: "fuzzy" and "phonetic". The match degree quantifies the similarity between search parameters and the corresponding attributes of the found index patients. The match degree does not describe the similarity between index patients and facility patients.

"Fuzzy" mode search is tolerant with respect to typographic errors. Typographic errors are missing characters, additional characters, wrong characters, or swapped characters. Depending on the length of the search string, zero, one or two errors are tolerated. E.g. a search for "Smith" also finds "smth", "smithe", "smyth", or "simth". Fuzzy search is applied on given, family and middle name, birth date, and person IDs (e.g. SSN). Fuzzy birth date matching recognizes day and month figures being swapped.

"Phonetic" mode search translates the search string into its phonetic representation and searches for matching phonetic names of index patients. The phonetic algorithm is configurable at deploy time (by default Soundex).

"fuzzyAndPhonetic" combines both search modes.

Note: Extended search algorithm is applied to a query only if it is explicitly specified.
- for PDQ : @QRI.3.1 in `QPD-4`,
- for PDQv3: `matchCriterionList/matchAlgorithm/value`.
Otherwise, standard search is applied.

Refer to section ... for the description of query parameter syntax.

Refer to the MPI System Administration Manual ([1],) for details on the parametrization of the matching process.

5.2.2.1 Use of Wildcards

While standard search uses wildcard characters („*“) to represent an unexact matching expression, the extended search inherently includes „fuziness“ in the algorithm -wildcard characters are not being resolved. Use wildcards for standard search only. Avoid wildcards in the extended search, as this will deliver distorted results.

Note: The use of wildcards in combination with the extended search is strongly discouraged.

5.2.2.2 Calculating match degree

To calculate the match degree, the MPI executes its standard scoring algorithm to quantify the similarity. However, only attributes of the search parameters are compared. When searching for a family name, only the family name attribute is compared. The comparison mode for names in the MPI's scoring configuration should bet set to fuzzy. The comparisons for the common PDQ search attributes must not be disabled.

The MPI sorts the index patients to be returned in the PDQ response by its match degree (descending), family and given name (ascending). All hits with a match degree of less than the minimum match degree specified in the query are removed from the result set. If no minimum match degree was given, all results are returned.

5.2.2.3 Summary of search modes

The properties of the standard and extended search mode are summarized below.

	Standard Search	Extended Search

Supported Algorithm(s)	- single legacy algorithm	- fuzzy, - phonetic, - fuzzy & phonetic
Supports wildcards	yes	no
Supported on the graphical user interface	yes	no
Supported on the messaging interface	yes	yes
Supports match quality limit	no	yes
Relevant message fields in PDQ	`QPD-3`	`QPD-3`, `QPD-4`
Relevant elements/attributes in PDQv3	`/PRPA_IN201305UV02/controlActProces/queryByParameter/parameterList`	`/PRPA_IN201305UV02/controlActProces/queryByParameter/parameterList`, `/PRPA_IN201305UV02/controlActProces/queryByParameter/matchCriterionList`

5.2.3 Query continuation

Unlike a PIX query response, a PDQ query response may contain multiple matches and may include lengthy textual data, which leads to extensively large result sets. To deal with bulky responses, IHE specificies a mechanism called *query continuation* for splitting a response into multiple messages. Continuation is required for a PDQ Supplier and optional for a PDQv3 supplier.

5.2.3.1 Continuation in PDQ

Please observe the following:

- Each partial result is based on the momentary status of the PXS database at the time the query was made. Consistency cannot be ensured because of the time difference between partial results. Changes to the database occurring between two partial results may alter the data in the set of result set. This may cause a patient record to occur in more than one partial result, or cause is to be completely omitted.

  Note: Minimize this risk of inconsistencies by short intervals between individual partial queries.

- When “What domain” filtering (QPD-8) is used, number of results in a response may not be consistent with the quantity indicated in the query request. There is now interference between those two features, when they are employed separately, i. e. only filtering or only continuation. This limitation originates from the interplay between the MPI backend and the MSB integration component.

  Note: Avoid combination of domain filtering and continuation in one deployment scenario.

- The final partial result may be empty. When for example the size of the partial result is limited to 10 datasets and the result contains exactly 10 datasets, the first partial response will contain besides the 10 datasets an reference (query continuation pointer) to a second partial result. But this second partial result will contain 0 datasets.

  Note: Consider that the last result set may be empty.

- Query cancellation is not supported.

> Note: Consumer shall not send a query cancellation message (QCN^J01^QCN_J01) to the MPI Supplier.

5.2.3.2 Continuation use examples

```
MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Han*|
RCP|I|1^RD

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229104932||RSP^K22^RSP_K21|205096|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|OK
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Han*
PID|1||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI~12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO^PI||Hansen^Peter^Sven^^^^L~Johannsen^^^
^^^B||19630429|M|||650 E Swedesford Road Suite 180^^Wayne^PA^19087^USA||012-0001^PRN^PH~peter@myprovider.com^PRN^Internet^peter@myprovider.com~012-
0004^PRN^FX~012-0003^PRN^CP|012-0002^WPN^PH||W|||444-555-666
DSC|1|I

MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Han*|
RCP|I|1^RD
DSC|1|I

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229105014||RSP^K22^RSP_K21|205097|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|OK
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Han*
PID|1||305008^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI~12345678Y^^^PKLN&2.16.840.1.113883.3.37.4.1.1.2.511.1&ISO^PI||Hanson^Pete^^^^^L||19630429|M|||151
East Wacker^^Chicago^IL^60601^USA||012-0001^PRN^PH~pete1963@gmx.de^PRN^Internet^pete1963@gmx.de|||U
DSC|2|I

MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Han*|
RCP|I|1^RD
DSC|2|I

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229105026||RSP^K22^RSP_K21|205098|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|NF
```

```
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Han*
```

5.3 PDQ query parameters

For PDQ queries, parameters are given in the QPD-3 field, represented in an IHE-specific syntax: <code1>^<value1>~< code2>^<value2>~... etc. *pixpdq* does allow for using one parameter more than once – this will cause the query to be rejected. The parameter code uses HL7 syntax to refer to patient attributes, for example "@PID.7" designates the field 7 of the PID segment, which means the patient's date of birth.

Some of the patient attributes may be expressed in several synonymous ways. For instance both "@PID.5.1" and "@PID.5.1.1" refers to the patient's family name. The relation between parameter codes and the semantics is controlled by the mapping map-queryParam-synonym.

The below table summarizes the PDQ query parameters supported by the pixpdq interface. When not noted otherwise, a simple string comparison i. e. exact match is applied. However, some of the text fields support the wildcard character "*", which represents a string of any characters, including an empty string.

5.3.1 Required PDQ parameters

Search parameter	**Parameter code** „=" separates equivalent alternative notations; „,"separates parameters forming one logical group	**Wildcards** (not for extended search)	**Example**	**Comment**

patient identifier	@PID.3.1, @PID.3.4.1, @PID.3.4.2, @PID.3.4.3	<none>	@PID.3.1^12345678~@PID.3.4.2^NMS1 @PID.3.1^12345678~@PID.3.4.2^1.2.3~@PID.3.4.3^ISO	Following combinations supported a) @PID.3.1 contains an ID string and @PID.3.4.2 contains an OID and @PID.3.4.3 equals „ISO“ b) @PID.3.1 contains an ID string and @PID.3.4.1 contains a namespace ID c) Fallback: @PID.3.1 contains an ID string and no assigning authority is supplied (no @PID.3.4... parameter). In this case, the sender information in MSH-3, MSH-4 and the mapping ‚‘ are used to determine the default assigning authority. Each of the parameters shall occure at most once. See message examples.
patient name – family name	@PID.5.1.1 = @PID.5.1	„*“	@PID.5.1^Hansen @PID.5.1^H*	Parameter shall occure at most once.
patient name – given name	@PID.5.2	„*“	@PID.5.2^Peter	Parameter shall occure at most once.

			@PID.5.2^P*	
patient name – middle name(s)	@PID.5.3	„*“	@PID.5.1^Hanson~@PID.5.2^Peter~@PID.5.3^Sven	Parameter shall occure at most once.
patient's date of birth	@PID.7.1 = @PID.7	<none>	@PID.7.1^20041231	Parameter shall occure at most once.
patient's gender	@PID.8	<none>	@PID.8^M	Possible codes: „M“, „F“. Parameter shall occure at most once.
patient address – street line	@PID.11.1 .1= @PID.11.1	„*“	@PID.11.1.1^Hauptstrasse 22	Parameter shall occure at most once.
patient address - city	@PID.11.3	„*“	@PID.11.3^Berlin @PID.11.3^*e*	Parameter shall occure at most once.
	@PID.11.4			
patient address – postal code/zip	@PID.11.5	„*“	@PID.11.5^69124	No wildcards supported. Parameter shall occure at most once.
patient address – country	@PID.11.6	<none>	@PID.11.6^DE	Codes drawn from ... Parameter shall occure at most once.

patient account number	@PID.18.1 , @PID.18.4.1 , @PID.18.4.2 , @PID.18.4.3 ,	<none>	`@PID.3.1^AN87654321~@PID.3.4.2^NMS2`	The handling and restrictions are analogue to those of „@PID.3.*“ parameters – see above.

5.3.2 Additional PDQ parameters

Search parameter	Parameter Xpath relative to `/PRPA_IN201305UV02/controlActProces/queryByParameter`	Wildcard (not for extended search)	Example	Comment
extended search – algorithm	@QRI.3.1, @QRI.3.3	<none>	`@QRI.3.1^fuzzy~` `@QRI.3.3^HL70393`	If used, both @QRI.3.1 and @QRI.3.3 shall be indicated.
extended search – minimal degree	@QRI.1	<none>	`@QRI.1^70`	If used, search algorithm (@QRI.3.1, @QRI.3.3) shall be indicated.

5.4 PDQv3 query parameters

5.4.1 Required PDQv3 parameters

The Supplier actor implementation does not support the Continuation option for PDQv3.

NullFlavors as values of query parameters and patient data items are not supported.

Search parameter	Parameter Xpath relative to `/PRPA_IN201305UV02/controlActProces/queryByParameter`	Wildcard (not for extended search)	Example (element of <parameterList>)	Comment

patient identifier
 	
(incl. account number, index patient identifer and national identifer)
	`/parameterList/livingSubjectId/value/@root,`
	
	`/parameterList/livingSubjectId/value/@extension`
		<none>	`<livingSubjectId>`
			
			`<value root="2.16.840.1.113883.3.37.4.1.1.2.411.1" extension="12345678X"/>`
			
			`<semanticsText>LivingSubject.id`
			
			`</semanticsText>`
			
			`</livingSubjectId>`
				Both „root“ and „extension“ shall be present.

Patied c nt name – family name	`/parameterList/livingSubjectName/value/family`	„*“	`<livingSubjectName>`
			
			`<value>`
			
			`<family>Hansen</family>`
			
			`</value>`
				Wildcard
				
				(not for extended

			<semanticsText>LivingSubject.name </semanticsText> </livingSubjectName>	search)
patient name – given name	/parameterList/livingSubjectName/value/given	„*“	<livingSubjectName> <value> <given>Peter</given> </value> <semanticsText>LivingSubject.name </semanticsText> </livingSubjectName>	
patient name – middle name(s)	/parameterList/livingSubjectName/value/given	„*“	<livingSubjectName> <value> <given/> <given>Sven</given> </value> <semanticsText>LivingSubject.name </semanticsText> </livingSubjectName>	
patient's date of birth	/parameterList/livingSubjectBirthTime/value/@value	<none>	<livingSubjectBirthTime> <value value="19630429"/>	

			<semanticsText>LivingSubject..birthTime </semanticsText> </livingSubjectBirthTime>	
patient's gender	/parameterList/livingSubjectAdministrativeGender/value/@code	<none>	<livingSubjectAdministrativeGender> <value code="M"/> <semanticsText> LivingSubject.administrativeGender </semanticsText> </livingSubjectAdministrativeGender>	
patient address – street line	/parameterList/patientAddress/value/streetAddressLine	„*“	<patientAddress> <value> <streetAddressLine>*Swedes* </streetAddressLine> </value> <semanticsText>Patient.addr </semanticsText> </patientAddress>	
patient address – city	/parameterList/patientAddress/value/city	„*“	<patientAddress> <value> <city>Way*</city>	

			</value> <semanticsText>Patient.addr </semanticsText> </patientAddress>	
patient address – postal code/zip	/parameterList/patientAddress/value/postalCode	„*“	<patientAddress> <value> <postalCode>19087</postalCode > </value> <semanticsText>Patient.addr </semanticsText> </patientAddress>	
patient address – country	/parameterList/patientAddress/value/country	<none>	<patientAddress> <value> <country>USA</country> </value> <semanticsText>Patient.addr </semanticsText> </patientAddress>	

5.4.2 Additional PDQv3 parameters

Search parameter	Parameter Xpath relative to `/PRPA_IN201305UV02/controlActProces/queryByParameter`	Wildcard (not for extended search)	Example	Comment

extended search – algorithm	`/matchCriterionList/matchAlgorithm/value`	<none>	`<matchCriterionList>`
			`<matchAlgorithm>`
			`<value xsi:type="ST">fuzzy</value>`
			`<semanticsText>Fuzzy search`
			`</semanticsText>`
			`</matchAlgorithm>`
			`<minimumDegreeMatch>`
			`<value xsi:type="INT" value="25"/>`
			`<semanticsText>Degree of match requested`
			`</semanticsText>`
			`</minimumDegreeMatch>`
			`</matchCriterionList>`	

extended search – minimal degree				

5.5 PDQ message structure

Only the transaction ITI-21 supported. Query using visit data (ITI-22) is not supported.

5.5.1 Structure of the PDQ ITI-21 request QBP^Q21

5.5.1.1 Message structure

The structure follows *ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.1.2 „Message Semantics“, Tab. 3.21-1*: MSH QPD RCP[DSC].

5.5.1.2 MSH segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.1.2.1 „MSH Segment“*.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM #	ELEMENT NAME	Comment
1	1	ST	R	[1..1]		00001	Field Separator	
2	4	ST	R	[1..1]		00002	Encoding Characters	
3	180	HD	RE (R+)	[0..1]		00003	Sending Application	Only required, if patient identifiers used without assigning authority. Mapping applied.
4	180	HD	RE (R+)	[0..1]		00004	Sending Facility	
5	180	HD	RE (R+)	[0..1]		00005	Receiving Application	
6	180	HD	RE (R+)	[0..1]		00006	Receiving Facility	
7	26	TS	R	[1..1]		00007	Date/Time Of Message	Format: YYYYMMDDHHMI[SS]

8		40	ST	X (O)			00008	Security	
9		13	CM	R	[1..1]		00009	Message Type	
	1		ID	R	[1..1]	0076		Message Code	Value set: QBP
	2		ID	R	[1..1]	0003		Trigger Event	Value set: Q21
	3		ID	RE (R)	[0..1]	0354		Message Structure	Value set: QBP_Q21. Altough missing MSH-9-3 is tolerated by the interface, the component is required by HL7 2.5 and IHE.
10		20	ST	R	[1..1]		00010	Message Control ID	
11		3	PT	R	[1..1]		00011	Processing ID	
12		60	VID	R	[1..1]	0104	00012	Version ID	
13		15	NM	X (O)			00013	Sequence Number	
14		180	ST	X (O)			00014	Continuation Pointer	
15		2	ID	X (O)		0155	00015	Accept Acknowledgment Type	Original message mode without MSH-15 or MSH-16 is used.
16		2	ID	X (O)		0155	00016	Application Acknowledgment	Original message mode without

							Type	MSH-15 or MSH-16 is used.
17	3	ID	X (O)		0399	00017	Country Code	
18	16	ID	X (O)		0211	00692	Character Set	Character set of incoming messages is determined by configuration rather than by the value of MSH-18.
19	250	CE	X (O)			00693	Principal Language Of Message	
20	20	ID	X (O)		0356	01317	Alternate Character Set Handling Scheme	
21	10	ID	X (O)		0449	01598	Conformance Statement ID #	

5.5.1.3 QPD segment

Refer to *ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.1.2.2 „QPD Segment“*.

SEQ		LEN	DT	Usage	Card.	TBL	ITEM#	Element name	Comment
1			CE	R	[1..1]			Message Query Name	
	1		ST	R				Identifier	
	2		ST	X				Text	
	3		ID	X		0396		Name of Coding System	

	4		ST	X				Alternate Identifier	
	5		ST	X				Alternate Text	
	6		ID	X		0396		Name of Alternate Coding System	
2			ST	R (R+)	[1..1]			Query Tag	Unique Identifier of this query instance.
3			QIP	R	[1..1]			Demographics Fields	
	1		ST	R				Segment Field Name	
	2		ST	R				Values	
8			CX	RE (O)	[0..1]			What Domains Returned	
	1		ST	X				ID	
	2		ST	X (O)				Check digit	
	3		ID	X (O)		0061		Code identifying the check digit scheme employed	
	4		HD	R		0363		Assigning Authority	
		1	IS	RE (O)		0300		Namespace ID	Only following combinations are allowed: „Namespace ID“, „Universal ID + Universal ID type“, „Namespace ID +Universal ID + Universal ID Type“. Universal ID type, if present , is „ISO“. See also ITI-TF Rev. 7, Vol. 2x, Section E.
		2	ST	RE (C)				Universal ID	
		3	ID	RE (C)		0301		Universal ID type	

	5		ID	X (O)		0203		Identifier type code	
	6		HD	X (O)				Assigning facility	
	7		DT	X (O)				Effective date	
	8		DT	X (O)				Expiration date	

5.5.1.4 RCP segment

ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.1.2.3 „RCP Segment“.

SEQ	LEN	DT	Usage	Card.	TBL	ITEM#	Element name	Comment
1		ID	R	[1..1]	0091		Query Priority	
2		CQ	RE (O)				Quantity Limited Request	
1		NM	RE				Quantity	
2		CE	R				Units	
1		ST	R				Identifier	Constant „RD“.
2		ST	X				Text	
3		ID	X		0396		Name of Coding System	
4		ST	X				Alternate Identifier	
5		ST	X				Alternate Text	

		6		ID	X		0396		Name of Alternate Coding System	

5.5.1.5 DSC segment

ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.1.2.4 „DSC Segment“.

SEQ	LEN	DT	Usage	Card.	TBL	ITEM#	Element name	Comment
1		ST	RE (O)	[0..1]			Continuation Pointer	
2		ID	X				Continuation Style	

5.5.2 Structure of the PDQ ITI-21 response RSP^K21

5.5.2.1 Message structure

ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.2.2 „Message Semantics“, Tab. 3.21-6.

RSP Segment Pattern			Usage	Card.	Comment
MSH	Message Header	2	R	[1..1]	
MSA	Message Acknowledgement	2	R	[1..1]	
[{ERR}]	Error	2	RE	[0..1]	Present on error.
QAK	Query Acknowledgement	5	R	[1..1]	
QPD	Query Parameter Definition	5	R	[1..1]	
[{ PID	Patient Identification	3	RE	[0..*]	Present if result set not empty.

[PD1]			X	X	
[QRI] }]	Query Response Instance	5	RE	[0..1]	Present if extended search is being used.
[DSC]	Continuation Pointer	2	RE	[0..1]	Present if continuation is being used.

5.5.2.2 MSH segment

ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.2.2.1 „MSH Segment“.

5.5.2.3 MSA segment

ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.2.2.2 „MSA Segment“.

5.5.2.4 ERR segment

ITI-TF Rev. 7, Vol. 2x, Section C.2.3.2 „ERR - Error segment“.

Contents: ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.2.2.8 „Patient Demographics Supplier Actor Query Response Behavior“.

5.5.2.5 QAK segment

See common elements.

5.5.2.6 QPD segment

ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.2.2.4 „QPD Segment“.

5.5.2.7 PID segment

Refer to ITI-TF Rev. 7, Vol. 2a, Section 3.21.4.2.2.5 „PID Segment“, Tab. 3-21.8.
Fields specifically required by the PDQ profile to be supported are marked **bold**.

SEQ	LEN	DT	Usage	Card.	TBL#	ITEM#	ELEMENT NAME	Comment

1	4	SI	X (O)			00104	Set ID – Patient ID	Number of the PID segment.
2	20	CX	X (O)			00105	Patient ID	
3	**250**	**CX**	**R**	**1..***		**00106**	**Patient Identifier List**	List of facility patient identifiers, including: - facility patient identifiers (configured by 'bdm-patientOid-serversidePatientOid') - index patient identifer See also ITI-TF Rev. 7, Vol. 2x, Section N.1, N.2.
1		ST	R				ID	
2		ST	X (O)				Check digit	
3		ID	X (O)		0061		Code identifying the check digit scheme employed	
4		HD	R		0363		Assigning Authority	
1		IS	RE (O)		0300		Namespace ID	Only following combinations are allowed: „Namespace ID“, „Universal ID + Universal ID type“, „Namespace ID +Universal ID + Universal ID Type“. Universal ID type, if present , is „ISO“. See also ITI-TF Rev. 7, Vol. 2x, Section E.
2		ST	RE (C)				Universal ID	
3		ID	RE (C)		0301		Universal ID type	
5		ID	RE (O)		0203		Identifier type code	Constant ‚PI‘.
6		HD	X (O)				Assigning facility	
7		DT	X (O)				Effective date	

	8		DT	X (O)				Expiration date	
4			20	CX	X (O)			00107	Alternate Patient ID	
5			**250**	**XPN**	**R**	**1..2**		**00108**	**Patient Name**	First repetition contains legal name. Second (optional) repetition contains the birth name. See also ITI-TF Rev. 7, Vol. 2x, Section N.6.
	1		194	FN	RE	0..1			Family Name	
		1	50	ST	R	1..1			Surname	
		2	20	ST	X (O)				Own Surname Prefix	
		3	50	ST	X (O)				Own Surname	
		4	20	ST	X (O)				Surname Prefix From Partner/Spouse	
		5	50	ST	X (O)				Surname From Partner/Spouse	
	2		30	ST	RE (O)				Given Name	
	3		30	ST	RE (O)				Second and Further Given Names or Initials Thereof	
	4		20	ST	RE (O)	0..1			Suffix (e.g., JR or III)	
	5		20	ST	RE (O)	0..1			Prefix (e.g., DR)	
	6		6	IS	X		0360		Degree (e.g., MD)	

	7	1	ID	R	1..1	0200		Name Type Code	Value set: „L“ (legal) or „B“ (birth).
	8	1	ID	X (O)		0465		Name Representation Code	
	9	483	CE	X (O)		0448		Name Context	
	10	53	DR	X		0444		Name Validity Range	
	11	1	ID	X (O)				Name Assembly Order	
	12	26	TS	X (O)				Effective Date	
	13	26	TS	X (O)				Expiration Date	
	14	199	ST	X (O)				Professional Suffix	
6		250	XPN	X (O)			00109	Mother‟s Maiden Name	
7		**26**	**TS**	**RE (R+)**	**[0..1]**		**00110**	**Date/Time Of Birth**	**Patient’s date of birth. Format: YYYYMMDD. See also ITI-TF Rev. 7, Vol. 2x, Section N.5.**
8		**1**	**IS**	**RE (R+)**	**0..1**	**0001**	**00111**	**Administrative Sex**	**Mapping applied: 'map-administrativeGender-administrativeGender'. Value set: see mapping.**
9		250	XPN	X (O)			00112	Patient Alias	
10		250	CE	X (O)		0005	00113	Race	
11		**250**	**XAD**	**RE (R2)**	**0..***		**00114**	**Patient Address**	At most one address is returned.
	1	184	SAD	RE (O)				Street Address	

	1	120	ST	R (O)				Street or Mailing Address	Street address line.
	2	50	ST	X (O)				Street Name	
	3	12	ST	X (O)				Dwelling Number	
2			ST	X (O)				Other Designation	
3			ST	RE (O)				City	City.
4			ST	RE (O)				State or Province	State or province.
5			ST	RE (O)				Zip or Postal Code	Postal code.
6			ID	RE (O)		0399		Country	Value set: configurable in the MPI backend. By default ISO 3166-1 alpha 2.
7			ID	X (O)		0190		Address Type	
8			ST	X (O)				Other Geographic Designation	
9			IS	X (O)				County/Parish Code	
10			IS	X (O)				Census Tract	
11			ID	X (O)				Address Representation Code	
12			DR	X (B)				Address Validity Range	

	13		TS	X (O)				Effective Date	
	14		TS	X (O)				Expiration Date	
12		4	IS	X (O)		0289	00115	County Code	
13		250	XTN	RE (R2)	[0..*]		00116	Phone Number – Home	Telecom contacts not related to working place. At most one of each type is returned: - home phone number, - business/working place phone number - mobile/cellular phone number - fax number - e-mail address
	1	199	ST	RE (B)				Telephone Number	Telecom information.
	2	3	ID	RE (O)				Telecommunication Use Code	Mapping applied: 'map-AddressUse-telecomUse'. Value set: see mapping.
	3	8	ID	RE (O)				Telecommunication Equipment Type	Mapping applied: 'map-protocolPrefix-telecomEquipment'. Value set: see mapping.
	4	199	ST	RE (O)				Email Address	E-mail address (additionally to component 1).
	5	3	NM	X (O)				Country Code	
	6	5	NM	X (O)				Area/City Code	
	7	9	NM	X (O)				Local Number	
	8	5	NM	X (O)				Extension	
	9	199	ST	X (O)				Any Text	

	10	4	ST	X (O)				Extension Prefix	
	11	6	ST	X (O)				Speed Dial Code	
	12	199	ST	X (C)				Unformatted Telephone number	
14		250	XTN	RE (R2)	[0..*]		00117	Phone Number – Business	Telecom contacts related to working place. At most one of each type is returned: - home phone number, - business/working place phone number - mobile/cellular phone number - fax number - e-mail address
	1	199	ST	RE (B)				Telephone Number	Telecom information.
	2	3	ID	RE (O)				Telecommunication Use Code	Mapping applied: 'map-AddressUse-telecomUse'. Value set: see mapping.
	3	8	ID	RE (O)				Telecommunication Equipment Type	Mapping applied: 'map-protocolPrefix-telecomEquipment'. Value set: see mapping.
	4	199	ST	RE (O)				Email Address	E-mail address (additionally to component 1).
	5	3	NM	X (O)				Country Code	
	6	5	NM	X (O)				Area/City Code	
	7	9	NM	X (O)				Local Number	
	8	5	NM	X (O)				Extension	

	9	199	ST	X (O)				Any Text	
	10	4	ST	X (O)				Extension Prefix	
	11	6	ST	X (O)				Speed Dial Code	
	12	199	ST	X (C)				Unformatted Telephone number	
15		250	CE	RE (O)	1..1	0296	00118	Primary Language	Present only in Swiss edition of MPI/MSB. Value set: configurable in MPI backend, by default „ISO 639-2, Alpha 3“.
16		250	CE	RE (O)		0002	00119	Marital Status	Mapping applied: map-maritalStatus-marital status'. Value set: see mapping.
17		250	CE	O		0006	00120	Religion	
18		**250**	**CX**	**RE (O)**			**00121**	**Patient Account Number**	Present if support for account number configured in MPI/MSB. See also ITI-TF Rev. 7, Vol. 2x, Sections N.1, N.2.
	1		ST	R				ID	
	2		ST	X (O)				Check digit	
	3		ID	X (O)		0061		Code identifying the check digit scheme employed	
	4		HD	R		0363		Assigning Authority	
	1		IS	RE (O)		0300		Namespace ID	Only following combinations are allowed: „Namespace ID“, „Universal ID + Universal ID

		2		ST	RE (C)				Universal ID	type“, „Namespace ID +Universal ID + Universal ID Type“. Universal ID type, if present , is „ISO“. See also ITI-TF Rev. 7, Vol. 2x, Section E.
		3		ID	RE (C)		0301		Universal ID type	
	5			ID	X(O)		0203		Identifier type code	
	6			HD	X (O)				Assigning facility	
	7			DT	X (O)				Effective date	
	8			DT	X (O)				Expiration date	
19			16	ST	RE (B)			00122	SSN Number – Patient	Present only If QPD-4 was not used. Conveys the patient’s national identifer, such as „SSN“ in the USA, „AHV-Nummer“ in Switzerland, „NHS number“ in Great Britain etc. The universal ID of the national identifier is configured in MSB as national.patient.id.root, defaulting to USA SSN, 2.16.840.1.113883.4.1 ‘.
20			25	DLN	X(B)			00123	Driver's License Number – Patient	
21			250	CX	X (O)			00124	Mother's Identifier	
22			250	CE	X (O)		0189	00125	Ethnic Group	
23			250	ST	X (O)			00126	Birth Place	
24			1	ID	X (O)		0136	00127	Multiple Birth Indicator	
25			2	NM	X (O)			00128	Birth Order	

26	250	CE	X (O)		0171	00129	Citizenship	
27	250	CE	X (O)		0172	00130	Veterans Military Status	

5.5.2.8 QRI segment

See common elements.

5.5.3 Examples

MSB configured to suppress no IDs. The query specifies no filter for „Domains of interest“ in QPD-8.

```
MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||
RCP|I


MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229170629||RSP^K22^RSP_K21|205135|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|OK
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen
PID|1||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI~12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO^PI||Hansen^Peter^Sven^^^^L~Johannsen^^^
^^^B||19630429|M|||650 E Swedesford Road Suite 180^^Wayne^PA^19087^USA||012-0001^PRN^PH~peter@myprovider.com^PRN^Internet^peter@myprovider.com~012-
0004^PRN^FX~012-0003^PRN^CP|012-0002^WPN^PH||W|||444-555-666
```

MSB configured to suppress no IDs. The query specifies a filter for „Domains of interest“ in QPD-8.

```
MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||^^^MPI
RCP|I

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229170904||RSP^K22^RSP_K21|205137|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|OK
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||^^^MPI
PID|1||305005^^^MPI&2.16.840.1.113883.3.37.4.1.1.2.1.1&ISO^PI||Hansen^Peter^Sven^^^^L~Johannsen^^^^^^B||19630429|M|||650 E Swedesford Road Suite
180^^Wayne^PA^19087^USA||012-0001^PRN^PH~peter@myprovider.com^PRN^Internet^peter@myprovider.com~012-0004^PRN^FX~012-0003^PRN^CP|012-0002^WPN^PH||W
```

MSB configured to suppress index patient identifier, national patient identifier and account number. The query specifies no filter for „Domains of interest“ in QPD-8.

```
MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||
RCP|I

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229170105||RSP^K22^RSP_K21|205132|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|OK
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen
PID|1||12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO^PI||Hansen^Peter^Sven^^^^L~Johannsen^^^^^^B||19630429|M|||650 E Swedesford Road Suite
180^^Wayne^PA^19087^USA||012-0001^PRN^PH~peter@myprovider.com^PRN^Internet^peter@myprovider.com~012-0004^PRN^FX~012-0003^PRN^CP|012-0002^WPN^PH||W|||444-555-
666
```

MSB configured to suppress index patient identifier, national patient identifier and account number. The query specifies a filter for „Domains of interest“ in QPD-8.

```
MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||^^^HZLN
RCP|I

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229170128||RSP^K22^RSP_K21|205133|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|OK
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||^^^HZLN
PID|1||12345678X^^^HZLN&2.16.840.1.113883.3.37.4.1.1.2.411.1&ISO^PI||Hansen^Peter^Sven^^^^L~Johannsen^^^^^^B||19630429|M|||650 E Swedesford Road Suite
180^^Wayne^PA^19087^USA||012-0001^PRN^PH~peter@myprovider.com^PRN^Internet^peter@myprovider.com~012-0004^PRN^FX~012-0003^PRN^CP|012-0002^WPN^PH||W
```

Error Case 2:

```
MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||^^^PKLN
RCP|I

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229171055||RSP^K22^RSP_K21|205138|P
^T|2.5
MSA|AA|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777
QAK|25c4b82d-f4ef-4882-9271-0f08c2ae2586|OK
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||^^^PKLN
```

Error Case 3:

```
MSH|^~\&|1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20090223111005||QBP^Q22^QBP_Q21|607@1.3.
6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|P^T|2.5
QPD|IHE PDQ Query|25c4b82d-f4ef-4882-9271-0f08c2ae2586|@PID.5.1^Hansen|||||^^^PKLX
```

```
RCP|I

MSH|^~\&|102@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||1@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879||20101229171426||ACK^Q22^ACK|123|P^T|2.5
MSA|AR|607@1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777|Unable to resolve requested domains in QPD-8: \S\\S\\S\PKLX
ERR||QPD^1^8^0|204^Unknown key identifier^HL70357|E
```

5.6 PDQv3 interaction structure

Refer to teh Supplement, section *3.47.4.1.2 „Message Semantics“*.

5.6.1 Commented ITI-47 request example

XML	Element	Attributes	Comment
<?xml version="1.0" encoding="UTF-8"?>			
<PRPA_IN201305UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">	[1..1]	[1..1] for all	
<id root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777" extension="607"/>	[1..1]	[1..1] [1..1]	
<creationTime value="20090223111005-0600"/>	[1..1]	[1..1]	
<versionCode code="V3PR1"/>	[0..1]	[1..1]	
<interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201305UV02"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="AL"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879" extension="102"/>	[1..1]	[1..1] [0..1]	
</device>	-	-	

</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device classCode="DEV" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	
<id root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879" extension="1"/>	[1..1]	[1..1] [0..1]	
</device>	-	-	
</sender>	-	-	
<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<queryByParameter>	[1..1]	[1..1]	
<queryId root="25c4b82d-f4ef-4882-9271-0f08c2ae2586"/>	[1..1]	[1..1]	
<statusCode code="new"/>	[1..1]	[1..1] [1..1]	
<responseModalityCode code="R"/>	[1..1]	[1..1]	
<responsePriorityCode code="I"/>	[1..1]	[1..1]	
<initialQuantity value="15"/>	[1..1]	[1..1]	
<matchCriterionList>	[0..1]		Parameter description: See above.
<matchAlgorithm>	[1..1]		
<value xsi:type="ST">fuzzy</value>	[1..1]	[1..1]	
<semanticsText>Fuzzy search	[1..1]		
</semanticsText>	-	-	
</matchAlgorithm>	-	-	
<minimumDegreeMatch>	[0..1]		
<value xsi:type="INT" value="25"/>	[1..1]	[1..1] [1..1]	

<semanticsText>Degree of match requested	[1..1]		
</semanticsText>	-	-	
</minimumDegreeMatch>	-	-	
</matchCriterionList>	-	-	
<parameterList>	[1..1]		At least one parameter element shall be specified. Parameter description: See above.
<livingSubjectAdministrativeGender>	[0..1]		
<value code="M"/>	[1..1]	[1..1]	
<semanticsText>LivingSubject.administrativeGender</semanticsText>	[1..1]		
</livingSubjectAdministrativeGender>	-	-	
<livingSubjectBirthTime>	-	-	
<value value="19630429"/>	[1..1]	[1..1]	
<semanticsText>LivingSubject.birthTime</semanticsText>	[1..1]		
</livingSubjectBirthTime>	-	-	
<livingSubjectName>	[0..1]		
<value>	[1..1]		At least one name part subelement shall be present.
<family>Hansen</family>	[0..1]		
<given>Peter</given>	[0..1] nt		Use empty value for the first element to specify middle name(s) only.
<given>Sven</given>	[0..1]		

</value>	-	-	
<semanticsText>LivingSubject.name</semanticsText>	[1..1]		
</livingSubjectName>	-	-	
<otherIDsScopingOrganization>	[0..1]		„What Domains“ filter.
<value root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>	[1..1]	[1..1]	
<semanticsText>OtherIDs.scopingOrganization.id</semanticsText>	[1..1]		
</otherIDsScopingOrganization>	-	-	
<patientAddress>	[0..1]		
<value>	[1..1]		At least one shall address part subelement be present.
<country>USA</country>	[0..1]		
<state>PA</state>	[0..1]		State accepted but not evaluated.
<postalCode>19087</postalCode>	[0..1]		
<city>Wayne</city>	[0..1]		
<streetAddressLine>650 E Swedesford Road Suite 180</streetAddressLine>	[0..1]		
</value>	-	-	
<semanticsText>Patient.address</semanticsText>	[1..1]	[1..1]	
</patientAddress>	-	-	
</parameterList>	-	-	
</queryByParameter>	-	-	

</controlActProcess>	-	-	
</PRPA_IN201305UV02>	-	-	

5.6.2 Commented ITI-47 response example

XML	Element	Attributes	Comment
<?xml version="1.0" encoding="UTF-8"?>			
<PRPA_IN201306UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">	[1..1]	[1..1] for all	
<id root="1.2.3" extension="205043"/>	[1..1]	[1..1] [1..1]	
<creationTime value="20110126213020"/>	[1..1]	[1..1]	
<interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201306UV02"/>	[1..1]	[1..1] [1..1]	
<processingCode code="P"/>	[1..1]	[1..1]	
<processingModeCode code="T"/>	[1..1]	[1..1]	
<acceptAckCode code="NE"/>	[1..1]	[1..1]	
<receiver typeCode="RCV">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id extension="1" root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879"/>	[1..1]	[1..1] [0..1]	
</device>	-	-	
</receiver>	-	-	
<sender typeCode="SND">	[1..1]	[1..1]	
<device determinerCode="INSTANCE" classCode="DEV">	[1..1]	[1..1] [1..1]	
<id extension="102" root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879"/>	[1..1]	[1..1] [0..1]	

</device>	-	-	
</sender>	-	-	
<acknowledgement>	[1..1]	-	
<typeCode code="CA"/>	[1..1]	[1..1]	Acknowledgement code configurable. Value set: AA, AR, AR, CA, CR, CE.
<targetMessage>	[1..1]		
<id root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777" extension="607"/>	[1..1]	[1..1] [0..1]	
</targetMessage>	-	-	
</acknowledgement>	[1..1]	[1..1] [1..1]	
<controlActProcess classCode="CACT" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<code code="PRPA_TE201306UV02" codeSystem="2.16.840.1.113883.1.6"/>	[1..1]	[1..1]	
<effectiveTime value="20110126213020"/>	[1..1]	[1..1]	
<subject typeCode="SUBJ">	[1..1]	[1..1]	
<registrationEvent classCode="REG" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<statusCode code="active"/>	[1..1]	[1..1]	
<subject1 typeCode="SBJ">	[1..1]	[1..1]	
<patient classCode="PAT">	[1..1]	[1..1]	
<id root="2.16.840.1.113883.3.37.4.1.1.2.411.1" extension="12345678X" assigningAuthorityName="HZLN"/>	[1..1]	[1..1] [1..1] [1..1]	assigningAuthorityName configurable using mappings.
<statusCode code="active"/>	[1..1]	[1..1]	
<patientPerson classCode="PSN" determinerCode="INSTANCE">	[1..1]	[1..1] [1..1]	

<name>	[1..1]		
<family>Hansen</family>	[1..1]		Legal name.
<given>Peter</given>	[0..1]		Family name.
<given>Sven</given>	[0..1]		First given name.
</name>	-		Additional given names.
<name>	[0..1]		
<family>Johannsen</family>	[1..1]		Birth name
</name>	[0..1]		Birth name – family name.
<telecom value="tel: 012-0001" use="H"/>	[0..1]	[1..1] [1..1]	
<telecom value="mailto: peter@myprovider.com" use="H"/>	[0..1]	[1..1] [1..1]	Home phone number.
<telecom value="fax: 012-0004" use="H"/>	[0..1]	[1..1] [1..1]	e-mail.
<telecom value="tel: 012-0003" use="MC"/>	[0..1]	[1..1] [1..1]	Fax number.
<telecom value="tel: 012-0002" use="WP"/>	[0..1]	[1..1] [1..1]	Mobile phone number.
<administrativeGenderCode code="M"/>	[0..1]	[1..1]	Working place phone number.
<birthTime value="19630429"/>	[0..1]	[1..1] [1..1]	Gender.
<addr>	[0..1]		Format: YYYYMMDD
<country>USA</country>	[0..1]		Value set: configurable, by default „“
<state>PA</state>	[0..1]		Value set: configurable in the MPI backend. By default ISO 3166-1 alpha 2.

<postalCode>19087</postalCode>	[0..1]		
<city>Wayne</city>	[0..1]		
<streetAddressLine>650 E Swedesford Road Suite 180</streetAddressLine>	[0..1]		
</addr>	-	-	
</patientPerson>	-	-	
<subjectOf1>	[1..1]		
<queryMatchObservation classCode="COND" moodCode="EVN">	[1..1]	[1..1] [1..1]	
<code code="DegOfMatch" codeSystem="1.2.3" codeSystemVersion="1.0" displayName="Degree Of Match"/>	[1..1]	[1..1] [1..1] [1..1] [1..1]	Code and code system configurable.
<value xsi:type="INT" value="100"/>	[1..1]	[1..1] [1..1]	With standard search: Filled by original values. With extended search: Filled by pre-configured constants.
</queryMatchObservation>	-	-	
</subjectOf1>	-	-	
</patient>	-	-	
</subject1>	-	-	
<custodian typeCode="CST">	[1..1]	[1..1]	
<assignedEntity classCode="ASSIGNED">	[1..1]	[1..1]	
<id root="2.16.840.1.113883.3.37.4.1.1.2" extension="1"/>	[1..1]	[1..1] [0..1]	Root and extension configurable.
</assignedEntity>	-	-	
</custodian>	-	-	

</registrationEvent>	-	-	
</subject>	-	-	
<queryAck>	[1..1]		
<queryId root="25c4b82d-f4ef-4882-9271-0f08c2ae2586"/>	[1..1]	[1..1]	
<queryResponseCode code="OK"/>	[1..1]	[1..1]	
<resultTotalQuantity value="1"/>	[1..1]	[1..1]	
<resultCurrentQuantity value="1"/>	[1..1]	[1..1]	
<resultRemainingQuantity value="0"/>	[1..1]	[1..1]	
</queryAck>	-	-	
<queryByParameter>	[1..1]	-	
<queryId root="2.25" extension="25c4b82d-f4ef-4882-9271-0f08c2ae2586"/>	[1..1]		Identical with queryByParameter of the original query.
<statusCode code="new"/>	[1..1]	[1..1]	
<responseModalityCode code="R"/>	[1..1]	[1..1]	
<responsePriorityCode code="I"/>	[1..1]	[1..1]	
<initialQuantity value="15"/>	[1..1]	[1..1]	
<matchCriterionList>	[1..1]		Copied from original query. See request description.
<matchAlgorithm>			
<value ns1:type="ST" xmlns:ns1="http://www.w3.org/2001/XMLSchema-instance">fuzzy</value>			
<semanticsText>Fuzzy search</semanticsText>			

</matchAlgorithm>			
<minimumDegreeMatch>			
<value value="25" ns1:type="INT" xmlns:ns1="http://www.w3.org/2001/XMLSchema-instance"/>			
<semanticsText>Degree of match requested</semanticsText>			
</minimumDegreeMatch>			
</matchCriterionList>	-	-	
<parameterList>			Copied from original query. See request description.
<livingSubjectAdministrativeGender>			
<value code="M"/>			
<semanticsText>LivingSubject.administrativeGender</semanticsText>			
</livingSubjectAdministrativeGender>			
<livingSubjectBirthTime>			
<value value="19630429"/>			
<semanticsText>LivingSubject.birthTime</semanticsText>			
</livingSubjectBirthTime>			
<livingSubjectName>			
<value>			
<family>Hansen</family>			
<given>Peter</given>			
<given>Sven</given>			

</value>			
<semanticsText>LivingSubject.name</semanticsText>			
</livingSubjectName>			
<otherIDsScopingOrganization>			
<value root="2.16.840.1.113883.3.37.4.1.1.2.411.1"/>			
<semanticsText>OtherIDs.scopingOrganization.id</semanticsText>			
</otherIDsScopingOrganization>			
<patientAddress>			
<value>			
<country>USA</country>			
<state>PA</state>			
<postalCode>19087</postalCode>			
<city>Wayne</city>			
<streetAddressLine>650 E Swedesford Road Suite 180</streetAddressLine>			
</value>			
<semanticsText>Patient.address</semanticsText>			
</patientAddress>			
</parameterList>			
</queryByParameter>	-	-	
</controlActProcess>	-	-	
</PRPA_IN201306UV02>	-	-	

5.6.3 Further ITI-47 response examples

Query error case 3, refer to the *Supplement, section 3.47.4.2.3 „Expected Actions“*.

```
<PRPA_IN201306UV02 ITSVersion="XML_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
   <id root="1.2.3" extension="11"/>
   <creationTime value="20110126215203"/>
   <interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201306UV02"/>
   <processingCode code="P"/>
   <processingModeCode code="T"/>
   <acceptAckCode code="NE"/>
   <receiver typeCode="RCV">
      <device determinerCode="INSTANCE" classCode="DEV">
         <id extension="1" root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879"/>
      </device>
   </receiver>
   <sender typeCode="SND">
      <device determinerCode="INSTANCE" classCode="DEV">
         <id extension="102" root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.688879"/>
      </device>
   </sender>
   <acknowledgement>
      <typeCode code="CR"/>
      <targetMessage>
         <id root="1.3.6.1.4.1.21367.2009.1.2.136.1.13.1.1.7.2.696777" extension="607"/>
      </targetMessage>
      <acknowledgementDetail typeCode="E">
         <code code="INTERR" codeSystem="2.16.840.1.113883.12.357"/>
         <text>PDQv2 Interface Reported [Unable to resolve requested domains in QPD-8: ^^^&amp;amp;2.16.840.1.113883.3.37.4.1.1.2.9999.1&amp;amp;ISO; Unknown key
identifier]</text>
         <location>/PRPA_IN201305UV02/controlActProcess/queryByParameter/parameterList/otherIDsScopingOrganization[1]</location>
      </acknowledgementDetail>
   </acknowledgement>
   <controlActProcess classCode="CACT" moodCode="EVN">
      <code code="PRPA_TE201306UV02" codeSystem="2.16.840.1.113883.1.6"/>
      <effectiveTime value="20110126215203"/>
      <queryAck>
         <queryId root="25c4b82d-f4ef-4882-9271-0f08c2ae2586"/>
         <queryResponseCode code="AR"/>
         <resultTotalQuantity value="0"/>
         <resultCurrentQuantity value="0"/>
         <resultRemainingQuantity value="0"/>
      </queryAck>
      <queryByParameter>
         <queryId root="25c4b82d-f4ef-4882-9271-0f08c2ae2586"/>
         <statusCode code="new"/>
         <responseModalityCode code="R"/>
         <responsePriorityCode code="I"/>
         <initialQuantity value="15"/>
         <matchCriterionList>
            <matchAlgorithm>
               <value ns1:type="ST" xmlns:ns1="http://www.w3.org/2001/XMLSchema-instance">fuzzy</value>
               <semanticsText>Fuzzy search</semanticsText>
            </matchAlgorithm>
            <minimumDegreeMatch>
```

```
               <value value="25" ns1:type="INT" xmlns:ns1="http://www.w3.org/2001/XMLSchema-instance"/>
               <semanticsText>Degree of match requested</semanticsText>
            </minimumDegreeMatch>
         </matchCriterionList>
         <parameterList>
            <livingSubjectAdministrativeGender>
               <value code="M"/>
               <semanticsText>LivingSubject.administrativeGender</semanticsText>
            </livingSubjectAdministrativeGender>
            <livingSubjectBirthTime>
               <value value="19630429"/>
               <semanticsText>LivingSubject.birthTime</semanticsText>
            </livingSubjectBirthTime>
            <livingSubjectName>
               <value>
                  <family>Hansen</family>
                  <given>Peter</given>
                  <given>Sven</given>
               </value>
               <semanticsText>LivingSubject.name</semanticsText>
            </livingSubjectName>
            <otherIDsScopingOrganization>
               <value root="2.16.840.1.113883.3.37.4.1.1.2.9999.1"/>
               <semanticsText>OtherIDs.scopingOrganization.id</semanticsText>
            </otherIDsScopingOrganization>
            <patientAddress>
               <value>
                  <country>USA</country>
                  <state>PA</state>
                  <postalCode>19087</postalCode>
                  <city>Wayne</city>
                  <streetAddressLine>650 E Swedesford Road Suite 180</streetAddressLine>
               </value>
               <semanticsText>Patient.address</semanticsText>
            </patientAddress>
         </parameterList>
      </queryByParameter>
   </controlActProcess>
</PRPA_IN201306UV02>
```

6 References

[1] MPI System Administration Manual
[2] MSB System Administration Manual
[3] pxsa message format description
[11] HL7 2.3.1
[12] HL7 2.5
[13] HL7 3.0, Normative Edition 2008
[20] IHE TF Rev. 7, Vol. 1
[21] IHE TF Rev. 7, Vol. 2a
[22] IHE TF Rev. 7, Vol. 2x
[23] IHE Supplement PIXv3/PDQv3