

Init1pm16.pm4 - 21090 Datatype Support

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Init1pm16.1 - 21090 Datatype Support - Import Datatypes

Use Case Number	Init1pm16.1
Brief Description	ISO 21090 defines a set of datatypes for reuse within healthcare applications. When developing a new information model for sharing healthcare data, the first step is to choose a set of datatypes to "import" or "derive from". Being able to select which datatypes you will reuse forms the basis of interoperating at the basic (datatype) level.
Actor(s) for this particular use case	Information Modeler
Pre-condition The state of the system before the user interacts with it	ISO 21090 datatypes are registered in a metadata repository
Post condition The state of the system after the user interacts with it	ISO 21090 datatypes are available within the Information Modeler's UML modeling tool. This means that that the ISO 21090 datatypes have the following properties in the modeling tool: • Available as the type for an attribute • Represented fully as complex types (classes) with generalizations, attributes, and associations
Steps to take The step-by-step description of how users will interact with the system to achieve a specific business goal or function	1. Information Modeler opens modeling tool 2. Information Modeler searches metadata repository for ISO 21090 datatypes 3. Information Modeler imports ISO 21090 datatypes into his modeling tool
Alternate Flow Things which would prevent the normal flow of the use case	An alternate flow to this use case is that the Information Modeler imports datatypes from another information model (which may be localized rather than the vanilla ISO 21090 datatypes). This is a highly desirable flow because it will greatly speed the adoption of ISO 21090 datatypes and interoperability.
Priority The priority of implementing the use case: High, Medium or Low	High
Associated Links The brief user stories, each describing the user interacts with the system for the one function only of the use case. There would potentially be a number of user stories that make up the use case.	Init1pm16 - 21090 Datatype Support • Init1pm16.1 - 21090 Datatype Support - Import Datatypes • Init1pm16.2 - 21090 Datatype Support - Localize Datatypes • Init1pm16.3 - 21090 Datatype Support - Generate XML Mapping • Init1pm16.4 - 21090 Datatype Support - Register Datatypes • Init1pm16.5 - 21090 Datatype Support - Interoperate on Datatypes • Init1pm16.6 - 21090 Datatype Support - Translation Services
Fit criterion/Acceptance Criterion How would actor describe the acceptable usage scenarios for the software or service that meets the actor's requirement?	The Information Modeler must be able to import datatypes into his UML modeling tool, these must be represented fully (so that they can be localized), and they must be able to be made the types of attributes within the information model itself.

Init1pm16.2 - 21090 Datatype Support - Localize Datatypes

Use Case Number	Init1pm16.2
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Brief Description	A key aspect of ISO 21090 datatypes is that they can be localized for use within a specific information model. The datatypes themselves define a number of optional attributes and associations, and the actual behavior of the datatypes in some cases can be modified. Specifically, ISO 21090 has two types of conformance: Direct Conformance and Indirect Conformance. Indirect conformance is defined as: • Provide mappings between internal datatypes and the healthcare datatypes • Specify for which of the datatypes an inward mapping is provided, for which an outward mapping is provided, and for which no mapping is provided This use case describes the steps that an Information Modeler takes to localize the datatypes in alignment of Indirect Conformance.
Actor(s) for this particular use case	Information Modeler
Pre-condition The state of the system before the user interacts with it	ISO 21090 datatypes have been imported in the model (see use Init1pm16.1 above)
Post condition The state of the system after the user interacts with it	The ISO 21090 datatypes have been localized within the Information Modeler's information model (in UML). By value of having imported the datatypes from the metadata repository and following ONLY the below steps, the resulting localized ISO 21090 datatypes are in Indirect Conformance with the specification.
Steps to take The step-by-step description of how users will interact with the system to achieve a specific business goal or function	1. The Information Modeler localizes enumerations a. The Information Modeler specifies which enumerations are omitted b. The Information Modeler specifies which enumerated values are omitted 2. The Information Modeler localizes classes (types) a. The Information Modeler specifies which attributes are omitted b. The Information Modeler specifies which classes (types) are omitted 3. The Information Modeler annotates any special considerations, rules, mappings, etc.
Alternate Flow Things which would prevent the normal flow of the use case	The steps above do not preclude the creation of ECCF documents or other mappings/specification documents. However, this use case does ease the creation of such documents because the ISO 21090 datatypes are derived directly from the metadata repository (meaning they have the appropriate level of specification/documentation already) and the localizations are made in conformance with the metadata repository conventions.
Priority The priority of implementing the use case: High, Medium or Low	High
Associated Links The brief user stories, each describing the user interacts with the system for the one function only of the use case. There would potentially be a number of user stories that make up the use case.	Init1pm16 - 21090 Datatype Support
Fit criterion/Acceptance Criterion How would actor describe the acceptable usage scenarios for the software or service that meets the actor's requirement?	The datatypes should be localized using the conventions of the UML modeling tool. That is, it is highly desirable that user actions be constrained by what will be conformant when the localized datatypes are registered and shared. It is absolutely critical that the resulting localized datatypes be in conformance with the conformance metrics defined in the ISO 21090 specification.

Init1pm16.3 - 21090 Datatype Support - Generate XML Mapping

Use Case Number	Init1pm16.3
Brief Description	In addition to providing a platform independent UML representation of healthcare datatypes, ISO 21090 defines an XML binding of those datatypes to be used when exchanging data between physical systems. Specifically, ISO 21090 requires the following for Indirect Conformance: • Specify whether the XML representation described herein is used when the datatypes are represented in XML, or optionally to provide an alternative namespace for the XML representation This use case describes the generation of an XML Mapping including an XML Schema.
Actor(s) for this particular use case	Information Modeler
Pre-condition The state of the system before the user interacts with it	The ISO 21090 datatypes have been localized in the Information Modelers UML modeling tool using the necessary metadata repository conventions.
Post condition The state of the system after the user interacts with it	An XML Schema and mapping guide are generated.

Steps to take The step-by-step description of how users will interact with the system to achieve a specific business goal or function	1. The Information Modeler makes whatever manual markup of the model is necessary to generate an XML Schema 2. The Information Modeler generates an XML Schema and mapping document derived directly from the localized ISO 21090 datatypes in his UML model
Alternate Flow Things which would prevent the normal flow of the use case	The Information Modeler manually creates XML Schema, a mapping document, and annotates the model accordingly with the UML-to-XML Schema mapping information.
Priority The priority of implementing the use case: High, Medium or Low	High
Associated Links The brief user stories, each describing the user interacts with the system for the one function only of the use case. There would potentially be a number of user stories that make up the use case.	Init1pm16 - 21090 Datatype Support
Fit criterion/Acceptance Criterion How would actor describe the acceptable usage scenarios for the software or service that meets the actor's requirement?	1. The model has the necessary annotations/information to tie XML Schema types to UML types, which will be registered in the metadata repository. 2. An XML Schema is produced that conforms to the ISO 21090 specifications 3. A document is produced describing the mapping from UML to XSD (not strictly necessary, but desirable)

Init1pm16.4 - 21090 Datatype Support - Register Datatypes

Use Case Number	Init1pm16.4
Brief Description	caBIG compability and ECCF require that semantic metadata be registered and advertised in order to facilitate interoperability. This use case describes the process by which an Information Modeler takes his localized, XML Schema mapped model to the centralized metadata repository.
Actor(s) for this particular use case	Information Modeler
Pre-condition The state of the system before the user interacts with it	A localized ISO 21090 model exists in the Information Modeler's UML modeling tool with all required annotations to be registered, including XML Mappings.
Post condition The state of the system after the user interacts with it	The information model is registered and available in the metadata repository.
Steps to take The step-by-step description of how users will interact with the system to achieve a specific business goal or function	• The Information Modeler selects the information model and datatypes to register • The Information Modeler performs the registration steps directly from his UML modeling tool
Alternate Flow Things which would prevent the normal flow of the use case	None.
Priority The priority of implementing the use case: High, Medium or Low	High
Associated Links The brief user stories, each describing the user interacts with the system for the one function only of the use case. There would potentially be a number of user stories that make up the use case.	Init1pm16 - 21090 Datatype Support
Fit criterion/Acceptance Criterion How would actor describe the acceptable usage scenarios for the software or service that meets the actor's requirement?	The entire information model should be registered, including the localized ISO 21090 datatypes and XML Schema mappings. It should be obvious from which vanilla ISO 21090 datatypes the localized data are derived.

Init1pm16.5 - 21090 Datatype Support - Interoperate on Datatypes

Use Case Number	Init1pm16.5
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Brief Description	The true test of whether the semantic infrastructure is handling ISO 21090 requirements is that it is possible to: - Discover healthcare touchpoints between systems that localize ISO 21090 in different ways - Programmatically interoperate between these systems
Actor(s) for this particular use case	System Architect Software Engineer
Pre-condition The state of the system before the user interacts with it	Two or more systems have correctly imported, localized, generated XML Schema, and registered information models with ISO 21090 datatypes. Furthermore, these information models are implemented by real systems with ECCF compliant APIs.
Post condition The state of the system after the user interacts with it	Touch points are discovered and data is successfully exchanged.
Steps to take The step-by-step description of how users will interact with the system to achieve a specific business goal or function	- The System Architect uses the metadata browser to identify two or more systems with the same ISO 21090 datatypes localized in different ways. - The System Architect documents a data exchange scenario - The Software Engineer uses the metadata, ECCF artifacts, and caBIG compliant APIs to exchange data from one system to another.
Alternate Flow Things which would prevent the normal flow of the use case	None.
Priority The priority of implementing the use case: High, Medium or Low	Medium
Associated Links The brief user stories, each describing the user interacts with the system for the one function only of the use case. There would potentially be a number of user stories that make up the use case.	Init1pm16 - 21090 Datatype Support
Fit criterion/Acceptance Criterion How would actor describe the acceptable usage scenarios for the software or service that meets the actor's requirement?	The documentation and semantic metadata should be sufficient information to determine the mechanism by which data can be exchanged between systems.

Init1pm16.6 - 21090 Datatype Support - Translation Services

Use Case Number	Init1pm16.6
Brief Description	ISO 21090 data types have a specific encoding scheme that is significantly different than what has been used thus far in caBIG services. Rather than reengineering existing services entirely, it may be desirable to have a common translation service interface and implementation toolkit that can be used to "wrap" existing non-compliant services.
Actor(s) for this particular use case	Software Engineer
Pre-condition The state of the system before the user interacts with it	One or more services exist that expose datatypes that are not ISO 21090 compliant.
Post condition The state of the system after the user interacts with it	A new service is implemented that exposes the same semantics but with ISO 21090 datatypes.
Steps to take The step-by-step description of how users will interact with the system to achieve a specific business goal or function	- The Software Engineer enters a service into the toolkit for remapping - The Software Engineer uses the toolkit provided to create mappings from the original datatypes to the ISO 21090 datatypes with minimal coding - The Software Engineer generates the new information model automatically and registers it - The Software Engineer deploys the new and (if necessary) old service
Alternate Flow Things which would prevent the normal flow of the use case	None.
Priority The priority of implementing the use case: High, Medium or Low	Low
Associated Links The brief user stories, each describing the user interacts with the system for the one function only of the use case. There would potentially be a number of user stories that make up the use case.	Init1bes12 - Mapping_transformation support for ISO21090 data types

Fit criterion/Acceptance Criterion
How would actor describe the acceptable usage scenarios for the software or service that meets the actor's requirement?

As little coding as possible should be required.