Part I: Technical Document

Documentation of the DDI specification is provided in three ways:

## Field Level Documentation

AUDIENCE: Developers, database developers, mappings, base level for content providers (what an object is in relation to parent and child elements)

This documentation is found within the DDI Schemas and displayed in the HTML documentation. It provides a brief description of the purpose and content of the object. Documentation found in the complex Type description will provide more detail than the element documentation. Within a complex type, the additional documentation of sub-elements will focus on its purpose within the context of the complex type.

# Part I - Technical Documentation

AUDIENCE: Developers, integrated usage and applications for content providers

Organized by related sets of objects, e.g. Question Item, Question Grid, and Question Block, this documentation provides details of the structure and its intended application. Each set contains examples of usage. It contains information on the relationship of DDI to other standards, common XML structures used by DDI, design and consistency rules, description of major structural types (modules and schemes), technical features for identification and reference, basic types for dates and strings, and all major complex elements. The complex element content is organized alphabetically by set and an index is provided for all elements. This documentation also contains lists of: 3.1 to 3.2 changes, all unique element and attribute names, and elements by extension base (Identifiable, Versionable, Maintainable, Reference, CodeValue, etc.).

## Part II - User Guide

AUDIENCE: Content providers, those focusing on specific applied uses of DDI

Provides instructions for navigating the HTML Field Level Documentation and reviews basic structural features focusing on their usage, such as exchange structures, organizing publication package content, managing data over time, common structure like strings, controlled vocabularies, dates, citation and coverage, notes and other material. This general section is followed by a set of user stories (applying DDI). The focus is on how the parts of DDI work together to describe the metadata and data for particular functions such as documenting a longitudinal study or developing a questionnaire. Wherever appropriate, Part I will reference the more detailed technical documentation in Part I.

# - Coverage of DDI [for additional background information see Part II]

## 1.1 - Purpose of Part I Technical document

The intent of the Part I: Technical Document is to provide implementers with additional information on major complex elements and their components. For each complex object set this includes its namespace, parent maintainable, extension base, required referenced objects, optionally referenced objects, a brief layout of content and object cardinalities, detailed description, and example. An appendix is provided covering changes between 3.1 and 3.2 including backward compatibility and update processing as well as an index of all complex elements with a reference to the section and page number providing coverage of the element.

Users interested in the application of DDI to various Use Cases should see Part II: User Guide. Part II will provide references to technical features described in Part I.

## 1.2 - Organization of Part I

Part I: Technical Documentation is organized into four major areas, general description of DDI and the Part I technical document, relationship of DDI to other standards, general structures within DDI, and specific structures (complex element sets). Internal reference will be found in-line using the section number and title of the section placed within square brackets, i.e. [3.1 Identification and Reference Structures].

# 2.0 - Relationship to Other Standards –

## 2.1 - DDI-C

## 2.2 - ISO/IEC 11179 – elements in ISO/IEC 11179 and DDI – use of ISO/IEC 1179-5 profile

## 2.3 - ISO 19115

## 2.4 - SDMX

## 2.5 - GSIM

# 3.0 - General Structures

## 3.1 - Identification and Reference Structures

## 3.2 - Maintainable Objects: Modules and Schemes

## 3.3 - Name, Label, and Description

## 3.4 - Controlled Vocabularies

# 4.0 - Specific Structures in Alphabetical Order:

## 4.1 - Archive

## 4.2 - Category

## 4.3 - Citation

## 4.4 - Code List

## 4.5 - Code Value

## 4.6 - Collection Event

## 4.7 - Comparison

## 4.8 - Concept, Universe and Conceptual Variable

## 4.9 - Conceptual Component

## 4.10 - Control Construct

## 4.11 - Coverage

## 4.12 - Data Collection

## 4.13 - Data Relationship

## 4.14 - Date

## 4.15 - DDI Instance

## 4.16 - DDI Profile

## 4.17 - Delineation Structures

## 4.18 - Embargo

## 4.19 – Ex-Post Evaluation

## 4.20 - Fragment Instance

## 4.21 - Funding Information and Budget

## 4.22 - Geographic Location

## 4.23 - Geographic Structure

## 4.24 - Group

## 4.25 - Image

## 4.26 - In / Out Parameter, Binding and Command Code

## 4.27 - Instrument

## 4.28 - Interviewer Instruction

## 4.29 - Local Holding Package

## 4.30 - Logical Product

## 4.31 - Methodology

## 4.32 - NCube

## 4.33 - Note

## 4.34 - Organization and Individual

## 4.35 - Other Material

## 4.36 - Physical Data Product

## 4.37 - Physical Instance

## 4.38 - Physical Structure

## 4.39 - Processing Event

## 4.40 - Processing Instruction

4.41 Quality Descriptions

DDI addresses descriptions of quality at three levels, the quality of the metadata as captured, means of ensuring policy for processing, and the quality of the data. Statements regarding the quality standards used for processing or measuring the quality of the data related to the metadata may be referenced from the following areas: study unit, group, sub-group, resource package, methodology, various descriptions of data processing, data file creation or copying, and archival processing.

# Metadata Quality

Metadata quality is captured at the level of the Maintainable object and refers to the metadata contained in that object. It is held in the complex element MetadataQuality which is found in AbstractMaintainable. It is a relatively simple statement of quality such as completeness, transcription of content from the original source, level of review or verification, etc.

MetadataQuality

TypeOfMetadataQuality (1..1)

MeasurePurpose (0..1)

MeasureValue (0..1)

Description (0..1)

Both TypeOfMetadataQuality and MeasureValue are CodeValueType and support the use of an external controlled vocabulary. These are the two primary pieces of information needed to track metadata quality internally within an organization. TypeOfMetadataQuality identifies the measure being tracked and MeasureValue provides a specific value for that measure. For example, an organization may have a number of measures one of which rates its transcription quality. It may have various values for this including: 1) Tagging and transfer of a digital content, 2) double entry, 3) single entry direct transcription, 4) selected transcription, and 5) summarization. The purpose for capturing the measure is held in MeasurePurpose (StructuredStringType) and other descriptive information that is useful to the organization or in particular a user, is held in Description (StructuredStringType).

EXAMPLE:

<r:MetadataQuality>

<r:TypeOfMetadataQuality codeListName=”MPCQualityTracking”>

Transcription

</r:TypeOfMetadataQuality>

<r:MeasurePurpose>

<r:Content>To identify the transcription method used for the metadata in this section</r:Content>

</r:MeasurePurpose>

<r:MeasureValue codeListName=”MPCTranscriptionType”>1</r:MeasureValue>

<r:Description>

<r:Content>Content was original digital text. Content was tagged and processed through an XSLT to transform it to DDI structure.</r:Content>

</r:Description>

</r:MetadataQuality>

# Quality Statement

Quality statements are compiled in a QualityStatementScheme which may be published within a StudyUnit, Group, or ResourcePackage. Quality statements primarily address processes and steps that are taken to ensure quality within those processes. A QualityStatement allows for either the identification of an external standard plus a statement regarding compliance with that standard, or a general statement of steps taken to ensure quality for a given process or activity. A QualityStatement is attached to a processing area by reference from the description of the process/activity itself.

QualityStatement

Extension base: Versionable

CHOICE: (0..n)

StandardsCompliance

Standard (1..1)

ComplianceDescription (0..1)

OtherQualityStatement

ENDCHOICE

StandardsCompliance consists of a reference to the Standard using the structure of OtherMaterial. This could reference a document, web site, or other source containing a formal standard for processing, best practice, internal protocol, or other statement of quality. ComplianceDescription (StructuredStringType) provides details on how this standard or protocol was applied, in particular noting any deviations or issues that would have an impact on the quality factors being assessed. When no formal standard or protocol exists, use OtherQualityStatement (StructuredStringType) to describe steps taken to ensure quality. Quality statements can be referenced from the following locations and should relate quality assessment information focused on the process, activity or general coverage area where the reference is included:

|  |  |
| --- | --- |
| a:ArchiveSpecific/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to the monitoring of the Archive's activities and operations. For example: TRAC certification using the reference to the TRAC standard and noting the Archive's certification dates in the compliance section |
| d:Methodology/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to overall methodology, i.e., overall scientific method followed, statistical standards, |
| d:CollectionEvent/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to a specific collection event, i.e., respondent confidentiality protocol, use of human subjects protocol |
| d:ProcessingEvent/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to the specific processing event, i.e., best practices for data cleaning in a specific area |
| g:ResourcePackage/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to the specific activities surrounding the creation of the resource package, i.e., criteria for selecting the schemes to include, review processes, modification, etc. |
| g:ResourcePackage/r:QualityStatementScheme | The inline content of a publication package not related to a specific study (payload) |
| g:ResourcePackage  /r:QualityStatementSchemeReference | The referenced content of a publication package not related to a specific study (payload) |
| g:Group/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to the specific activities surrounding the creation of the Group, i.e., grouping, selection, or organizational policies. |
| g:Group/r:QualityStatementScheme | The scheme of QualityStatements shared by the Group included in-line |
| g:Group/r:QualityStatementSchemeReference | The scheme of QualityStatements shared by the Group included by reference |
| g:SubGroup/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to the specific activities surrounding the creation of the SubGroup, i.e., grouping, selection, or organizational policies. (Allowing for the later subordination of a Group thereby turning it into a SubGroup) |
| g:SubGroup/r:QualityStatementSchemeReference | The scheme of QualityStatements shared by the sub-group included by reference |
| pi:PhysicalInstance/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to the data file, i.e., a statement regarding data lost during rescue from an old media, the use of standards protocols in verification that this is a valid copy of another file |
| s:StudyUnit/r:QualityStatementReference | In this location the QualityStatement being referenced should relate to the specific activities surrounding the creation of the StudyUnit, i.e., coverage, purpose, organization, etc. |
| s:StudyUnit/r:QualityStatementScheme | The scheme of QualityStatements shared by the StudyUnit included in-line |
| s:StudyUnit/r:QualityStatementSchemeReference | The scheme of QualityStatements shared by the StudyUnit included by reference |

EXAMPLES:

<r:QualityStatementScheme isMaintainable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:QScheme\_1:1</r:URN>

<r:QualityStatement isVersionable=”true” ” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:QScheme\_1.QS\_1:1</r:URN>

<r:StandardsCompliance>

<r:Standard isIdentifiable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:QScheme\_1.Standard\_a:1</r:URN>

<r:TypeOfMaterial>Standard</r:TypeOfMaterial>

<r:Citation>

<r:Title>Reference Model for an Open Archival Information System (OAIS): Recommended Practice CCSDS 650.0-M-2</r:Title>

</r:Citation>

<r:ExternalURNReference> http://public.ccsds.org/publications/archive/650x0m2.pdf

</r:ExternalURNReferenc>

</r:Standard>

<r:ComplianceDescription>

<r:Content>The archive complies with the OAIS model regarding the tracking of information from SIP through data processing and archival management to the creation of the AIP and assembly of the DIP.</r:Content>

</r:ComplianceDescription>

</r:StandardsCompliance>

</r:QualityStatement>

<r:QualityStatement isVersionable=”true” ” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:QScheme\_1.QS\_2:1</r:URN>

<r:StandardsCompliance>

<r:Standard isIdentifiable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:QScheme\_1.Standard\_b:1</r:URN>

<r:TypeOfMaterial>Policy</r:TypeOfMaterial>

<r:Citation>

<r:Title>Univerity Of Minnesota Board Of Regents Policy: Reserch Involving Human Subjects</r:Title>

</r:Citation>

<r:ExternalURNReference>

http://www1.umn.edu/regents/policies/academic/HumanSubjects.pdf

</r:ExternalURNReferenc>

</r:Standard>

<r:ComplianceDescription>

<r:Content>Policy strictly complied to.</r:Content>

</r:ComplianceDescription>

</r:StandardsCompliance>

</r:QualityStatement>

<r:QualityStatement isVersionable=”true” ” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:QScheme\_1.QS\_3:1</r:URN>

<r:OtherQualityStatement>

<r:Content>As data is ported from one format to another, the following checks are made to verify the accurate transfer of the data items. Record Count and frequency count on all data items at the category level. A random sample of records is pulled from each file for item by item comparison. </r:Content>

</r: OtherQualityStatement >

</r:QualityStatement>

</r:QualityStatementScheme>

<a:Archive isMaintainable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:Archive\_1:1</r:URN>

<a:ArchiveSpecific>

<r:QualityStatementReference isReference=”true” isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.archive:QScheme\_1.QS\_1:1</r:URN>

<r:TypeOfObject>QualityStatement</r:TypeOfObject>

</r:QualityStatementReference>

<a:ArchiveSpecific>

</a:Archive>

<d:DataCollection isMaintainable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:DataColl\_1:1</r:URN>

<d:CollectionEvent isIdentifiable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:DataColl\_1.CE\_1:1</r:URN>

<r:QualityStatementReference isReference=”true” isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.archive:QScheme\_1.QS\_2:1</r:URN>

<r:TypeOfObject>QualityStatement</r:TypeOfObject>

</r:QualityStatementReference>

</d:CollectionEvent>

</d:DataCollection>

<pi:PhysicalInstance isMaintainable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Maintainable”>

<r:URN>urn:ddi:us.archive:PhysInst\_1:1</r:URN>

<r:QualityStatementReference isReference=”true” isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.archive:QScheme\_1.QS\_3:1</r:URN>

<r:TypeOfObject>QualityStatement</r:TypeOfObject>

</r:QualityStatementReference>

</pi:PhysicalInstance>

# Data Quality

The quality of the data collected is addressed in the ProcessingEvent containing DataAppraisalInformation. This contains two common measures of data quality from survey methodology, ResponseRate and SamplingError. It also allows for the description of other quality measures in OtherAppraisalProcess. Note that ProcessingEvent also contains a QualityStatementReference. This should be used to relay information on process quality. DataAppraisalInformation is used primarily to capture the results of data appraisal measures.

DataAppraisal

ResponseRate (0..n)

SampleSize (0..1)

NumberOfResponses (0..1)

SpecificResponseRate (0..1)

r:Description (0..1)

SamplingError (0..n)

OtherAppraisalProcess (0..n)

The response rate can be repeated to express differing response rates by mode of deliver, location, etc. The individual response rates may be expressed as a total sample size with number of responses and/or as a specific response rate. The description should be used to differentiate when multiple response rates are provided. SamplingError (StructuredStringType) is intended to contain a discussion of the sampling error. It may be structured to differentiate between the statement of the error itself, how it was calculated, etc. OtherAppraisalProcess allows for the description of other measures of data appraisal as needed.

Example:

<d:DataAppraisal>

<d:ResponseRate>

<d:SampleSize>5000</d:SampleSize>

<d:NumberOfResponses>3768</d:NumberOfResponses>

<d:SpecificResponseRate>.7536</d:SpecificResponseRate

</d:ResponseRate>

<d:SamplingError><r:Content><xhtml:b>Calculation of Standard Errors <xhtml:br/>Totals and percentages. </xhtml:b>Tables A through C in this chapter contain the necessary information for calculating the standard errors of sample estimates in this data product. To calculate the standard error, it is necessary to know:<xhtml:ul><xhtml:li>The unadjusted standard error for the characteristic (given in Table A for estimated totals or Table B for estimated percentages) that would result under a simple random sample design of people, housing units, households, or families.</xhtml:li><xhtml:li>The design factor for the particular characteristic estimated (given in Table C) based on the sample design and estimation techniques employed to produce long form data estimates. </xhtml:li><xhtml:li>The number of people, housing units, households, or families in the publication area. </xhtml:li><xhtml:li>The observed sampling rate.</xhtml:li></xhtml:ul>

The design factor is the ratio of the estimated standard error to the standard error of a simple random sample. The design factors reflect the effects of the actual sample design and the complex ratio estimation procedure used for Census 2000….</r:Content><d:SamplingError>

</d:DataAppraisal>

4.43 - Questions – Item, Grid, and Block

As the complexity of question structures increase, three general question structures have been identified within DDI and are addressed by the following structures: QuestionItem, QuestionGrid, and QuestionBlock. Note that all three structures reflect the reusable structure of various question types and do not relay any information on the applied use of the question within an instrument. The applied information, including question order, is captured by the ControlConstruct structures used by the Instrument. All question structures are maintained within a QuestionScheme and can be further organized for administrative purposes by QuestionGroup (a standard grouping structure available in most schemes). Only QuestionItem, QuestionGrid, and QuestionBlock may be referenced by a QuestionConstruct. A Sequence (type of ControlConstruct) is used to order questions within an instrument and is maintained separately as a reusable object. All question structures are versionable and contain a name for the question. All response domains may be described inline while a set of commonly used structures may be captured as managed representations and be reused by reference. These include Missing Values, Text, Numeric, DateTime, and Scale (see Section 4.51 for details on all value representations and response domains).

|  |  |
| --- | --- |
| **QuestionItem** | |
| *Namespace:* **d**  *Parent Maintainable:* **QuestionScheme** | **Versionable** |
| *Required Referenced Objects:* | *Optionally Referenced Objects:*  Category  Code  Concept  Delineation  InterviewerInstruction  ManagedMissingValuesRepresentation  ManagedTextRepresentation  ManagedNumericRepresentation  ManagedDateTimeRepresentation  ManagedScaleRepresentation |
| QuestionItem  Extension base: Versionable  QuestionItemName (0..n)  r:InParameter (0..n)  r:OutParamter (0..n)  r:Binding (0..n)  QuestionText (0..n)  QuestionIntent (0..1)  CHOICE (0..1)  CHOICE  ResponseDomain  ResponsedomainReference  ENDCHOICE  StructuredMixedResponseDomain  CHOICE (2..n)  ResponseText  ResponseDomainInMixed  CHOICE (1..1)  ResponseDomain  ResponseDomainReference  ENDCHOICE  AttachementLocation (0..1)  CHOICE (1..n)  r:CodeReference  r:CategoryReference  DomainSpecificValue  r:Value (1..n)  @attachementDomain (optional)  ENDCHOICE  @attachementBase (optional)  ENDCHOICE  ENDCHOICE  ResponseCardinality (0..1)  @minimumResponses  @maximumResponses  r:ConceptReference (0..n)  ExternalAid (0..n)  CHOICE (0..n)  ExternalInterviewerInstruction  InterviewerInstructionReference  ENDCHOICE  @estimatedMinutesResponseTime (optional) | |

A QuestionItem is a basic question containing a QuestionIntent, the concept being measured by the question, text for the question, response domain information, clarifying instructions, external aids (clarifying objects used in presenting the question to the respondent), Input and Output Parameters and Bindings, allowed response cardinality and an estimation of the time required to respond. The QuestionText is a DynamicTextString. Note that due to the variation of content in the QuestionText that is required to illicit equivalent responses in different languages, QuestionText is repeatable. A StructuredMixedResponseDomain supports situations where a response may include more than one type of response domain. This could be the inclusion of a set of Missing Values (responses that capture non-response and other values to be treated as invalid during analysis), or the commonly used addition of a text response to capture specific information when the code or category response is “Other”. StructuredMixedResponse allows for the addition of text and/or another response domain to be attached to one or more values of the primary response domain as well as stacking combinations of response options with intervening text.

### QuestionItem Examples:

1. A generic simple QuestionItem managed within a QuestionScheme (link)
2. A question with a StructuredMixedResponseDomain (link)

|  |  |
| --- | --- |
| **QuestionGrid** | |
| *Namespace:* **d**  *Parent Maintainable:* **QuestionScheme** | **Versionable** |
| *Required Referenced Objects:* | *Optionally Referenced Objects:*  Category  Code  Concept  Delineation  InterviewerInstruction  ManagedMissingValuesRepresentation  ManagedTextRepresentation  ManagedNumericRepresentation  ManagedDateTimeRepresentation  ManagedScaleRepresentation |
| QuestionGrid  Extension base: Versionable  QuestionGridName (0..n)  r:InParameter (0..n)  r:OutParamter (0..n)  r:Binding (0..n)  QuestionText (0..n)  QuestionIntent (0..1)  GridDimension (0..n)  CHOICE (1..1)  CodeDomain  Roster  r:Label (0..1)  ConditionForContinuation (0..1)  @baseCodeValue (required)  @codeInterationValue (required)  @minimumRequired default=”1”  @maximumAllowed default=”1”  ENDCHOICE  @rank (required)  @displayCode default=”true”  @displayLabel default=”true”  CHOICE (0..1)  CHOICE  ResponseDomain  ResponsedomainReference  ENDCHOICE  StructuredMixedGridResponseDomain  CHOICE (0..n)  GridResponseDomain  CHOICE (1..1)  ResponseDomain  ResponseDomainReference  ENDCHOICE  GridAttachement (0..n)  CHOICE (0..n)  SpecificCellCoordinate  CellCoordinatesAsDefined  SelectDimension (0..n)  @rank (required)  @allValues  @specificValue  @rangeMinimum  @rangeMaximum  ENDCHOICE  @allCells default=”false”  NoDataByDefinition  ENDCHOICE  ENDCHOICE  CellLabel (0..n)  Extension base: r:LabelType  Attachement (0..n)  CHOICE (0..n)  SpecificCellCoordinate  CellCoordinatesAsDefined  SelectDimension (0..n)  @rank (required)  @allValues  @specificValue  @rangeMinimum  @rangeMaximum  ENDCHOICE  @allCells default=”false”  r:ConceptReference (0..n)  ExternalAid (0..n)  CHOICE (0..n)  ExternalInterviewerInstruction  InterviewerInstructionReference  ENDCHOICE  @estimatedMinutesResponseTime (optional) | |

A QuestionGrid provides a multidimensional structure used to capture a complex response. In many cases these are simple structures, for example a question regarding an assessment of each of a list of candidates for political office. However, some grids are complex and capture different responses for each of a list of items. In addition, the list may be provided by the question or by the respondent (indicated by the use of a “roster” of blank text items). A QuestionGrid contains the basic elements of the QuestionItem but rather than a ResponseDomain or StructuredMixedResponseDomain contains a GridDimension that sorts one or more ResponseDomains or StructuredMixedGridResponseDomains into a specific dimension of the grid. The structure is similar to the NCube dimensional structure using code domain or roster rather than variables to structure the dimension, and then providing a response domain for each cell in the grid. A single ResponseDomain indicates that this is the response domain for each cell in the grid. Note that an internal cell label may be added to any cell for clarification purposes.

#### QuestionGrid Examples:

1. A simple QuestionGrid capturing a scale response for each of 3 candidates (link)
2. A QuestionGrid using a roster to capture the categories for which responses are gathered (link)
3. A complex QuestionGrid with cell labels and secondary responses for specific responses (link)

|  |  |
| --- | --- |
| **QuestionBlock** | |
| *Namespace:* **d**  *Parent Maintainable:* **QuestionScheme** | **Versionable** |
| *Required Referenced Objects:* | *Optionally Referenced Objects:*  Concept  Delineation  InterviewerInstruction  QuestionItem  QuestionGrid |
| QuestionBlock  Extension base: Versionable  QuestionBlockName (0..n)  r:InParameter (0..n)  r:OutParamter (0..n)  r:Binding (0..n)  QuestionBlockIntent (0..1)  CHOICE (0..n)  StimulusMaterial  QuestionItemReference  QuestionGridReference  ENDCHOICE  QuestionSequence (0..n)  ResponseCardinality (0..1)  @minimumResponses  @MaximumResponses  r:ConceptReference (0..n)  ExternalAid (0..n)  CHOICE (0..n)  ExternalInterviewerInstruction  InterviewerInstructionReference  ENDCHOICE  @estimatedMinutesResponseTime (optional) | |

A QuestionBlock is intended to bundle together a set of questions (items and/or grids) that have meaning only in relation to a specified object expressed as the stimulus material. This form of question set is common in educational testing where a text, image, or other material is provided and the respondent is asked questions specific to the material. For example, a portion of a play script is provided and the respondent is asked question concerning the dialog and/or stage directions provided in the script. Note that the intent of QuestionBlock is NOT to bundle together a set of questions that are commonly used together or used in a specified order. A Sequence (type of control construct) is the appropriate way to manage this type of set relationship. It is assumed that one or more StimulusMaterial objects will be used. The 0..n cardinality of the CHOICE of StimulusMaterial, QuestionItemReference, and QuestionGridReference is provided simply to support the use of DDI during the development process when this piece of information may be unavailable. StimulusMaterial is part of this choice to allow for its insertion at any location before, after, or in the midst of the referenced Questions.

QuestionBlock contains the standard elements of QuestionItem and QuestionGrid and then structures any combination of StimulusMaterial with referenced QuestionItems and QuestionGrids. It allows for an indication of QuestionSequence (i.e., a means of declaring the sequence is important or that it can be randomized or otherwise altered).

#### QuestionBlock Examples:

1. A QuestionBlock organizing QuestionItems and QuestionGrids managed within a QuestionScheme. The example reflects the contents of a question block from PISA (educational test: TAKE THE TEST: SAMPLE QUESTIONS FROM OECD’S PISA ASSESSMENTS - ISBN 978-92-64-05080-8 - © OECD 2009) depicting an extract from a script, a list of technical terms, and a drawing of a stage set along with questions related to the activities and positions of actors during the play. The related category, code and delineation information is provided for clarity. (link)

EXAMPLE:

<g:ResourcePackage isMaintainable="true" versionDate="2012-09-18" scopeOfUniqueness="Maintainable">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:ResourcePkg\_QBlock:1</r:URN>

<d:QuestionScheme scopeOfUniqueness="Maintainable" isMaintainable="true">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:PISA\_QS:1</r:URN>

<d:QuestionSchemeName><r:String xml:lang="en-us">Questions for PISA</r:String></d:QuestionSchemeName>

<r:Description><r:Content xml:lang="en-us"></r:Content></r:Description>

<d:QuestionItem isVersionable="true" scopeOfUniqueness="Maintainable">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:PISA\_QS.QI\_1:1</r:URN>

<d:QuestionText><d:LiteralText><d:Text>What is the extract from the play about? The duchess thinks of a trick</d:Text></d:LiteralText></d:QuestionText>

<d:CodeDomain>

<r:CodeDelineationReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>CodeDelineation</r:TypeOfObject>

<r:URN>urn:ddi:us.mpc:CodeDS\_PISA.Del\_1:1</r:URN>

</r:CodeDelineationReference>

</d:CodeDomain>

</d:QuestionItem>

<d:QuestionItem isVersionable="true" scopeOfUniqueness="Maintainable">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:PISA\_QS.QI\_2:1</r:URN>

<d:QuestionText><d:LiteralText><d:Text><xhtml:div><xhtml:p>A. In the script of the play, in addition to the words to be spoken by the actors, there are directions for the actors and theatre technicians to follow.</xhtml:p><xhtml:p>B. How can these directions be recognized in the script?</xhtml:p></xhtml:div></d:Text></d:LiteralText></d:QuestionText>

<d:TextDomain>

<r:TextDelineationReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>TextDelineation</r:TypeOfObject>

<r:URN>urn:ddi:us.mpc:TextDS\_PISA.Del\_1:1</r:URN>

</r:TextDelineationReference>

</d:TextDomain>

</d:QuestionItem>

<d:QuestionItem isVersionable="true" scopeOfUniqueness="Maintainable">

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<r:URN>urn:ddi:us.mpc:PISA\_QS.QI\_3:1</r:URN>

<d:QuestionText><d:LiteralText><d:Text><xhtml:div><xhtml:p>The director positions the actors on the stage. On a diagram, the director represents Amanda with the letter A and the Duchess with the letter D.</xhtml:p><xhtml:p>Put an A and a D on the following diagram of the set to show approximately where Amanda and the Duchess are when the Prince arrives.</xhtml:p></xhtml:div></d:Text></d:LiteralText></d:QuestionText>

<d:LocationDomain>

<r:LocationDelineationReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>LocationDelineation</r:TypeOfObject>

<r:URN>urn:ddi:us.mpc:LocationDS\_PISA.Del\_1:1</r:URN>

</r:LocationDelineationReference>

</d:LocationDomain>

<d:ExternalAid isIdentifiable="true" scopeOfUniqueness="Maintainable">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:PISA\_QS.EXT\_1:1</r:URN>

<r:TypeOfMaterial>Image</r:TypeOfMaterial>

<r:ExternalURNReference>stageimage.pdf</r:ExternalURNReference>

</d:ExternalAid>

</d:QuestionItem>

<d:QuestionItem isVersionable="true" scopeOfUniqueness="Maintainable">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:PISA\_QS.QI\_4:1</r:URN>

<d:QuestionText><d:LiteralText><d:Text>Towards the end of the extract from the play, Amanda says, "He didn't recognise me...". What does she mean by that?</d:Text></d:LiteralText></d:QuestionText>

<d:CodeDomain>

<r:CodeDelineationReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>CodeDelineation</r:TypeOfObject>

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</r:CodeDelineationReference>

</d:CodeDomain>

</d:QuestionItem>

<d:QuestionGrid isVersionable="true" scopeOfUniqueness="Maintainable">

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<r:URN>urn:ddi:us.mpc:PISA\_QS.QG\_1:1</r:URN>

<d:QuestionText><d:LiteralText><d:Text>The table below lists theatre technicians involved in staging this extract from Léocadia. Complete the table by indicating one stage direction from Text 1 which would require the involvement of each technician. The first one has been done for you.</d:Text></d:LiteralText></d:QuestionText>

<d:GridDimension rank="1" displayCode="false" displayLabel="true">

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<r:CodeDelineationReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>CodeDelineation</r:TypeOfObject>

<r:URN>urn:ddi:us.mpc:CodeDS\_PISA.Del\_2:1</r:URN>

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</d:CodeDomain>

</d:GridDimension>

<d:GridDimension rank="2">

<d:Roster baseCodeValue="1" minimumRequired="1" maximumAllowed="1" codeIterationValue="1">

<r:Label><r:Content xml:lang="en-us">Stage direction</r:Content></r:Label>

</d:Roster>

</d:GridDimension>

<d:StructuredMixedGridResponseDomain>

<d:NoDataByDefinition>

</d:NoDataByDefinition>

<d:GridResponseDomain>

<d:TextDomain>

<r:TextDelineationReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>TextDelineation</r:TypeOfObject>

<r:URN>urn:ddi:us.mpc:TextDS\_PISA.Del\_1:1</r:URN>

</r:TextDelineationReference>

</d:TextDomain>

<d:Attachment>

<d:CellCoordinatesAsDefined>

<d:SelectDimension rank="1" rangeMinimum="2" rangeMaximum="4"/>

<d:SelectDimension rank="2" allValues="true"/>

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</d:Attachment>

</d:GridResponseDomain>

</d:StructuredMixedGridResponseDomain>

<d:CellLabel>

<r:Content xml:lang="en-us">A circular bench around a small obelisk</r:Content>

<d:Attachment>

<d:SpecificCellCoordinate>1,1</d:SpecificCellCoordinate>

</d:Attachment>

</d:CellLabel>

</d:QuestionGrid>

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</d:StimulusMaterial>

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</d:StimulusMaterial>

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<l:CategoryName><r:String xml:lang="en-us">Attract Prince</r:String></l:CategoryName>

<r:Label><r:Content xml:lang="en-us">to get the Prince to come and see her more often.</r:Content></r:Label>

</l:Category>

<l:Category isVersionable="true" scopeOfUniqueness="Maintainable">

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<r:URN>urn:ddi:us.mpc:CS\_PISA\_1.Cat\_2:1</r:URN>

<l:CategoryName><r:String xml:lang="en-us">Prince Decision</r:String></l:CategoryName>

<r:Label><r:Content xml:lang="en-us">to get the Prince to make up his mind finally to get married</r:Content></r:Label>

</l:Category>

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<r:Label><r:Content xml:lang="en-us">to get Amanda to make the Prince forget his grief.</r:Content></r:Label>

</l:Category>

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<l:CategoryName><r:String xml:lang="en-us">Amanda move to castle</r:String></l:CategoryName>

<r:Label><r:Content xml:lang="en-us">to get Amanda to come and live at the castle with her.</r:Content></r:Label>

</l:Category>

</l:CategoryScheme>

<l:CategoryScheme scopeOfUniqueness="Maintainable" isMaintainable="true">

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</l:Category>

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<l:CategoryName><r:String xml:lang="en-us">Props manager</r:String></l:CategoryName>

<r:Label><r:Content xml:lang="en-us">Props manager</r:Content></r:Label>

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</l:Category>

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<r:Label><r:Content xml:lang="en-us">Lighting technician</r:Content></r:Label>

</l:Category>

</l:CategoryScheme>

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</l:Category>

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<r:Label><r:Content xml:lang="en-us">That the Prince didn't realise that Amanda was a shop assistant.</r:Content></r:Label>

</l:Category>

<l:Category isVersionable="true" scopeOfUniqueness="Maintainable">

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<r:Label><r:Content xml:lang="en-us">That the Prince didn't realise that he'd already met Amanda.</r:Content></r:Label>

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<l:CategoryName><r:String xml:lang="en-us">Didn't see resemblance</r:String></l:CategoryName>

<r:Label><r:Content xml:lang="en-us">That the Prince didn't notice that Amanda looked like Léocadia.</r:Content></r:Label>

</l:Category>

</l:CategoryScheme>

<l:CodeListScheme scopeOfUniqueness="Maintainable" isMaintainable="true">

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<r:URN>urn:ddi:us.mpc:PISA\_CL\_1:1</r:URN>

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</l:CategoryReference>

<r:Value>A</r:Value>

</l:Code>

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<r:Value>C</r:Value>

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</l:CategoryReference>

<r:Value>D</r:Value>

</l:Code>

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<r:Label><r:Content xml:lang="en-us">Theatre technicians</r:Content></r:Label>

<r:RecommendedDataType>Integer</r:RecommendedDataType>

<r:CategorySchemeReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>CategoryScheme</r:TypeOfObject>

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</l:CategoryReference>

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</l:Code>

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<r:CategorySchemeReference>

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</l:CategoryReference>

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<r:TypeOfObject>Category</r:TypeOfObject>

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<r:TypeOfObject>Category</r:TypeOfObject>

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</l:CategoryReference>

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</l:Code>

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</l:CodeListScheme>

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<r:URN>urn:ddi:us.mpc:TextDS\_PISA:1</r:URN>

<r:TextDelineationSchemeName><r:String xml:lang="en-us">PISA Text Delineations</r:String></r:TextDelineationSchemeName>

<r:TextDelineation isVersionable="true" scopeOfUniqueness="Maintainable" maxLength="250">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:TextDS\_PISA.Del\_1:1</r:URN>

<r:TextDelineationName><r:String xml:lang="en-us">0 min to 250 max length response.</r:String></r:TextDelineationName>

</r:TextDelineation>

</r:TextDelineationScheme>

<r:CodeDelineationScheme scopeOfUniqueness="Maintainable" isMaintainable="true">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:CodeDS\_PISA:1</r:URN>

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<r:URN>urn:ddi:us.mpc:CodeDS\_PISA.Del\_1:1</r:URN>

<r:CodeDelineationName><r:String xml:lang="en-us">Trick List</r:String></r:CodeDelineationName>

<r:CodeListReference>

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<r:TypeOfObject>CodeList</r:TypeOfObject>

<r:URN>urn:ddi:us.mpc:PISA\_CL\_1:1</r:URN>

</r:CodeListReference>

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<r:CodeDelineationName><r:String xml:lang="en-us">Theatre Technicians</r:String></r:CodeDelineationName>

<r:CodeListReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

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<r:URN>urn:ddi:us.mpc:CodeDS\_PISA.Del\_3:1</r:URN>

<r:CodeDelineationName><r:String xml:lang="en-us">Amanda Intent</r:String></r:CodeDelineationName>

<r:CodeListReference>

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:TypeOfObject>CodeList</r:TypeOfObject>

<r:URN>urn:ddi:us.mpc:PISA\_CL\_3:1</r:URN>

</r:CodeListReference>

</r:CodeDelineation>

</r:CodeDelineationScheme>

<r:LocationDelineationScheme scopeOfUniqueness="Maintainable" isMaintainable="true">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:LocationDS\_PISA:1</r:URN>

<r:LocationDelineationSchemeName><r:String xml:lang="en-us">PISA Location Delineations</r:String></r:LocationDelineationSchemeName>

<r:LocationDelineation isVersionable="true" scopeOfUniqueness="Maintainable">

<r:TypeOfIdentifier>Canonical</r:TypeOfIdentifier>

<r:URN>urn:ddi:us.mpc:LocationDS\_PISA.Del\_1:1</r:URN>

<r:LocationDelineationName><r:String xml:lang="en-us">Stage Directions - Amanda and the Duchess</r:String></r:LocationDelineationName>

<r:Object>Image</r:Object>

<r:Action>

<r:RegionOfAction>

<r:ImageArea>

<r:Shape>Rectangle</r:Shape>

<r:Coordinates>[define the coordinate points of the response area]</r:Coordinates>

</r:ImageArea>

</r:RegionOfAction>

<r:Description><r:Content xml:lang="en-us">Place the letter A within the defined Image Area</r:Content></r:Description>

</r:Action>

<r:Action>

<r:RegionOfAction>

<r:ImageArea>

<r:Shape>Rectangle</r:Shape>

<r:Coordinates>[define the coordinate points of the response area]</r:Coordinates>

</r:ImageArea>

</r:RegionOfAction>

<r:Description><r:Content xml:lang="en-us">Place the letter D within the defined Image Area</r:Content></r:Description>

</r:Action>

</r:LocationDelineation>

</r:LocationDelineationScheme>

</g:ResourcePackage>

## 4.43 - Record Layout

## 4.44 – Represented Variable

## 4.45 - Resource Package

## 4.46 - Series Statement

## 4.47 - Software

4.48 - Statistical Summary

StatisticalSummary provides a set of summary statistics calculated for the variables in a data set and is located in PhysicalInstance as it reflects the contents of a specific data file. The summary statistics may be provided in one of three ways; in-line using the VariableStatistics, by referencing a related PhysicalInstance containing the VaraibleStatistics for the same data file content, or by referencing a related PhysicalInstance for a data file that contains the summary statistics as a separate object set. The second two options use the structure StatisticalDataLocation which is a reference to the PhysicalInstance plus a Boolean attribute “isInline”. If set to “true” this indicates that the summary statistics are contained in the data file associated with the referenced PhysicalInstance.

VariableStatistics supports the following information for any variable: the total responses, a choice of weights applied when calculating the summary statistics, identification of missing values, the summary statistics for the variable, and category statistics with an optional filter. Category statistics may be filtered by a single variable (i.e., filtering the category statistics in a multinational data file by country) using FilteredCategoryStatistics. Expressing statistics that require the use of multiple filters should be handled as a cross-tabulation and captured in an NCube structure.

Note that while a number of statistical summaries may be included within a single VariableStatistics object, you cannot use more than a single weight (either a standard weight or a weight variable). However you are able to provide both weighted and unweighted values for each statistic. If a complex weighting structure is used based on multiple weights, a virtual variable should be created that expresses the combined use of the weights involved. The virtual variable would reference a generation instruction containing the process.

StatisticalSummaryType

StatisticalDataLocation (0..n)

r:PhysicalInstanceReference (1..1)

@isInline

VariableStatitics (0..n)

Extension base: Identifiable

VariableReference (1..1)

TotalResponses (0..1)

CHOICE (0..1)

StandardWeightReference

WeightVaraibleReference

ENDCHOICE

MissingValuesReference (0..1)

SummaryStatistic (0..n)

TypeOfStatistic (1..1)

Statistic (0..1)

@isWeighted

@computationBase

UnfilteredCategoryStatistics (0..n)

VariableCategory (0..n)

CategoryValue (1..1)

CategoryStatistic (0..n)

TypeOfCategoryStatistic (1..1)

Statistic (0..1)

@isWeighted

@computationBase

FilteredCategoryStatistics (0..n)

FilterVariableReference (0..1)

FilterVariableCategory (0..n)

FilterCategoryValue (1..1)

VariableCategory (0..n)

CategoryValue (1..1)

CategoryStatistic (0..n)

TypeOfCategoryStatistic (1..1)

Statistic (0..1)

@isWeighted

@computationBase

The example is for the following summary and category statistics. The general contents of the referenced items are provided.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Summary Statistics** | | | | | **Standard Weight** |
| V1 | count = 100 | | | | ID=SW |
|  | weighted count = 1000 | | | | Value = 10 |
| ***Unfiltered Category Statistics*** | | | | | **Variable Gender** |
|  | wtCount | weighted % | |  | ID=V1 |
| Male | 450 | 0.45 |  |  | 1=Male |
| Female | 550 | 0.55 |  |  | 2=Female |
|  |  |  |  |  |  |
| V2 | count = 100 | |  |  |  |
|  | weighted count = 1000 | | |  |  |
| ***Unfiltered Category Statistics*** | | | | | **Variable Region** |
|  | wtCount | weighted % | |  | ID=V2 |
| North | 500 | 0.5 |  |  | a=North |
| South | 500 | 0.5 |  |  | b=South |
| ***Gender (V1) Filtered by Region (V2)*** | | | | |  |
|  | North | | South | |  |
|  | count | col % | count | col % |  |
| Male | 20 | 0.4 | 25 | 0.5 |  |
| Female | 30 | 0.6 | 25 | 0.5 |  |
|  |  |  |  |  |  |

EXAMPLE:

<StatisticalSummary>

<VariableStatistics isIdentifiable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency">

<r:URN>urn:ddi:us.mpc:VS\_2:1</r:URN>

<r:VariableReference>

<r:URN>urn:ddi:us.mpc:V1:1</URN>

<r:TypeOfObject>Variable</r:TypeOfObject>

</r:VariableReference>

<StandardWeightReference>

<r:URN>urn:ddi:us.mpc:SW:1</r:URN>

<r:TypeOfObject>StandardWeight</r:TypeOfObject>

</StandardWeightReference>

<MissingValuesReference>

<r:URN>urn:ddi:us.mpc:MV\_1:1</r:URN>

<r:TypeOfObject>MissingValuesDelineation</r:TypeOfObject>

</MissingValuesReference>

<TotalResponses>100</TotalResponses>

<SummaryStatistic>

<TypeOfSummaryStatistic>wtCount</TypeOfSummaryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>1000</Statistic>

</SummaryStatistic>

<UnfilteredCategoryStatistics>

<VariableCategory>

<CategoryValue>1</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>wtCount</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>450</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>weightedPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.45</Statistic>

</CategoryStatistic>

</VariableCategory>

<VariableCategory>

<CategoryValue>2</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>wtCount</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>550</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>weightedPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.55</Statistic>

</CategoryStatistic>

</VariableCategory>

</UnfilteredCategoryStatistics>

<FilteredCategoryStatistics>

<FilterVariableReference>

<r:URN>urn:ddi:us.mpc:V2:1</URN>

<r:TypeOfObject>Variable</r:TypeOfObject>

</FilterVariableReference>

<FilterVariableCategory>

<FilterCategoryValue>a</FilterCategoryValue>

<VariableCategory>

<CategoryValue>1</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>Count</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>20</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>colPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.4</Statistic>

</CategoryStatistic>

</VariableCategory>

<VariableCategory>

<CategoryValue>2</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>Count</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>30</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>colPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.6</Statistic>

</CategoryStatistic>

</VariableCategory>

</FilterVariableCategory>

<FilterVariableCategory>

<FilterCategoryValue>b</FilterCategoryValue>

<VariableCategory>

<CategoryValue>1</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>Count</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>25</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>colPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.5</Statistic>

</CategoryStatistic>

</VariableCategory>

<VariableCategory>

<CategoryValue>2</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>Count</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>25</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>colPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.5</Statistic>

</CategoryStatistic>

</VariableCategory>

</FilterVariableCategory>

</FilteredCategoryStatistics>

</VariableStatistics>

<VariableStatistics isIdentifiable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency">

<r:URN>urn:ddi:us.mpc:VS\_2:1</r:URN>

<r:VariableReference>

<r:URN>urn:ddi:us.mpc:V2:1</URN>

<r:TypeOfObject>Variable</r:TypeOfObject>

</r:VariableReference>

<StandardWeightReference>

<r:URN>urn:ddi:us.mpc:SW:1</r:URN>

<r:TypeOfObject>StandardWeight</r:TypeOfObject>

</StandardWeightReference>

<MissingValuesReference>

<r:URN>urn:ddi:us.mpc:MV\_1:1</r:URN>

<r:TypeOfObject>MissingValuesDelineation</r:TypeOfObject>

</MissingValuesReference>

<TotalResponses>100</TotalResponses>

<SummaryStatistic>

<TypeOfSummaryStatistic>wtCount</TypeOfSummaryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>1000</Statistic>

</SummaryStatistic>

<UnfilteredCategoryStatistics>

<VariableCategory>

<CategoryValue>a</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>wtCount</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>500</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>weightedPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.50</Statistic>

</CategoryStatistic>

</VariableCategory>

<VariableCategory>

<CategoryValue>b</CategoryValue>

<CategoryStatistic>

<TypeOfCategoryStatistic>wtCount</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>500</Statistic>

</CategoryStatistic>

<CategoryStatistic>

<TypeOfCategoryStatistic>weightedPct</TypeOfCategoryStatistic>

<Statistic isWeighted="true" computationBase=“validOnly”>0.50</Statistic>

</CategoryStatistic>

</VariableCategory>

</UnfilteredCategoryStatistics>

</VariableStatistics>

</StatisticalSummary>

## 4.49 - Study Unit

4.51 – Variable Value Representation and Question Response Domain

Representations describe the structure and content of data as it is captured from the population and held within a data file. They share common category schemes and code list as well as the means of defining numeric ranges and text content. DDI begins by defining the core descriptive content for a wide range of representations and then adds a set of common objects used by all Value Representations (Variables) or Response Domains (Questions) in their applied use. A number of these representations also have a Managed version which allows a single description of a Representation to be reused within and between studies. Some Representations reference reusable structures (Category Schemes, Code Lists, etc.) and are already reusable. Others such as Numeric Representations have a Managed Representation contained in a ManagedRepresentationScheme located in Logical Product. This Scheme contains all forms of Managed Representations and supports the standard Scheme organizational objects that allow for grouping and classification according to Subjects, Keywords, Concept, and Universe.

This section describes the types of Representation available for use along with the added content for use as a Value Representation or Response Domain. This is followed by a full description each Representation Base type and a description of Managed Representation types. Note that wherever the substitution base ValueRepresentation or ResponseDomain is used there is also an option for a ValueRepresentationReference or ResponseDomainReference. Only Representations containing managed content (ManagedRepresentation types, CategoryScheme, CodeList, GeographicStructureCode, and GeographicLocationCode) can be mapped for comparison purposes. This excludes most Representation types that are used solely as Response Domains.

ValueRepresentation and ResponseDomain are the applied uses of Representations.

## ValueRepresentation (abstract)

ValueRepresentation serves as the abstract head of a substitution group ValueRepresentation. Any member of the substitution group can be used as a substitution for r:ValueRepresentation wherever it occurs. All members of this group use r:RepresentationType as their extension base thereby providing a standard set of objects for each ValueRepresentation.

RepresentationType

RecommendedDataType (0..1)

GenericOutputFormat (0..1)

ContentDateOffset (0..1)

@missingValue optional

@blankIsMissingValue optional

@classificationLevel optional

[Nominal|Ordinal|Interval|Ratio|Continuous]

All ValueRepresentations contain a base set of objects describing its applied use. The RecommendedDataType is of type CodeValue and should contain a value reflecting a data type value (recommended: W3C XML Schema Part 2, but excluding string sub-types, QNAME, and NOTATION). The actual data type of the stored data content may vary (for example be of a broader type), but the purpose of this element is to capture the data type intended by the originator of the data. Likewise GenericOutputFormat allows the originator to provide guidance regarding the displayed format of the variable content. ContentDateOffset provides an alternate referent date for the variable content. For example, in a population survey the data may generally be collected for a particular date but some items such as the response to “Where did you live 5 years ago?” refers to a negative offset of 5 years from the general referent date. The attribute classificationLevel allows for definition of the variable content as Nominal, Ordinal, Interval, Ratio, or Continuous in nature.

Note that the two attributes @missingValue and @blankIsMissingValue have been retained from DDI 3.1 to support users for whom the shift to the new separation of missing (invalid) values from valid values would be problematic. Best practice strongly encourages the use of the separate MissingValueRepresentation to differentiate valid from invalid values.

ValueRepresentation substitutions

All value representation substitutions contain the basic ValueRepresentation objects plus a reference to one or more of the specific delineation of the same type. Note that if multiple representations are referenced they must not have duplicated values. These include:

* CodeRepresentation
* DateTimeRepresentation
* GeographicLocationRepresentation
* GeographicStructureRepresentation
* NumericRepresentation
* TextRepresentation

Within a Variable the representation of missing values is handled separately as a direct reference to a MissingValuesDelineation structure. This may also be declared as a default MissingValues within a LogicalRecord or within a PhysicalInstance.

## ResponseDomain (abstract)

Response Domain serves as an abstract head of the substitution group Response Domain. Any member of the substitution group can be used as a substitution for d:ResponseDomain wherever it occurs. All members of this group use a specified Representation Base Type (ex. NumericRepresentationBaseType) as their extension base thereby providing the same set of content as contained in related Value Representation. All members of the substitution group ResponseDomain also provide the following objects.

r:Label (0..n)

r:Description (0..1)

r:OutParameter (0..1)

r:ResponseCardinality (0..1)

@maxResponses

@minResponses

r:ContentDateOffset (0..1)

All Response Domains can designate the intended cardinality of responses as a statement of minimum and maximum number of allowed responses. The OutParameter provides an ID for the response (or response array) so that it can be bound to the InParameter of an instruction or command (see Input/Output Parameters and Command Code for usage details). ContentDateOffset provides an alternate referent date for the question response content.

ResponseDomain substitutions

All response domain substitutions contain the basic ResponseDomain objects plus the contents of one of the specific Representation Base of the same type. Note that when using multiple domains in the StructuredMixedResponseDomain the multiple domains must not have duplicated values. Available Response Domains include:

* CategoryDomain
* CodeDomain
* DateTimeDomain
* DistributionDomain
* GeographicDomain
* GeographicStructureDomain
* GeographicLocationDomain
* LocationDomain
* MissingValuesDomain
* NominalDomain
* NumericDomain
* RankingDomain
* ScaleDomain
* TextDomain

## Representation Base Types

A range of Representation Base Types are available. Each type is described as a specified Representation Base Type. All of these have related specific Response Domains, but not all have specific Value Representations. This reflects the way that the data captured by a question is represented within a data set. For example, a question may ask for a check mark to be made next to a category value which is later coded to a value which represents the category such as, M=Male. The ValueRepresentation would use the CodeRepresentation to define the valid values entered in the data file. The following list of Representation Base Types defines the usage options for each type:

|  |  |
| --- | --- |
| **Representation Base Types** | Usage options |
| CodeRepresentationBaseType | ValueRepresentation or ResponseDomain |
| DateTimeRepresentationBaseType | ValueRepresentation or ResponseDomain |
| GeographicLocationCodeRepresentationBaseType | ValueRepresentation or ResponseDomain |
| GeographicStructureCodeRepresentationBaseType | ValueRepresentation or ResponseDomain |
| NumericRepresentationBaseType | ValueRepresentation or ResponseDomain |
| TextRepresentationBaseType | ValueRepresentation or ResponseDomain |
| CategoryRepresentationBaseType | ResponseDomain only |
| DistributionRepresentationBaseType | ResponseDomain only |
| GeographicRepresentationBaseType | ResponseDomain only |
| LocationRepresentationBaseType | ResponseDomain only |
| NominalRepresentationBaseType | ResponseDomain only |
| RankingRepresentationBaseType | ResponseDomain only |
| ScaleRepresentationBaseType | ResponseDomain only |
| MissingValuesRepresentationBaseType | MissingValueRepresentation or ResponseDomain |

Note that all Representation Base Types are never used directly (i.e. there is no “CodeRepresentationBase” but a “CodeRepresentation” of type “CodeRepresentationBaseType”). All Representation Base Types have an extension base of Representation Type and therefore all contain the following objects preceding any specific content:

RecommendedDataType (0..1)

GenericOutputFormat (0..1)

ContentDateOffset (0..1)

@missingValue optional

@blankIsMissingValue optional

@classificationLevel optional

[Nominal|Ordinal|Interval|Ratio|Continuous]

**CodeRepresentationBase**

Defines a CodeRepresentation by referencing a CodeList and describing the valid code subset used. For example, the complete CodeList, a specified level or range, or only the most discrete codes in the list.

CodeRepresentation

Extension base: RepresentationType

CodeListReference (0..1)

CodeSubsetInformation (0..1)

IncludedLevel (0..n)

IncludedCode (0..1)

CodeReference (0..n)

Range (0..n)

RangeUnit (0..1)

MinimumValue (0..1)

MaximumValue (0..1)

DataExistence (0..1)

CHOICE (1..1)

LevelNumber

DiscreteCategory fixed=”true”

ENDCHOICE

References the CodeList used by the Representation and defines the portion of the CodeList used by the CodeSubsetInformation. CodeSubsetInformation allows for the specification of a level number from the CodeList to be included in the RepresentationBase, included codes defined as a range, or the specification of the just the most discrete data codes. The Range specifies the unit of the range specification as well as a minimum and maximum value. Note that these values use and extended form of Value which allows for the declaration of significant leading or trailing white space within the value as well an attribute noting if the value is inclusive (i.e., included as a valid value in the range specification). DataExistence is specified by the lowest level number for regular hierarchies or by selecting those Code items with the attribute isDiscrete=”true” from the CodeList for irregular hierarchies.

EXAMPLE:

<r:CodeRepresentation classificationLevel=”Nominal”>

<r:RecommendedDataType>String</r:RecommendedDataType>

<r:CodeListReference isReference="true" isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.mpc:SIC:1.0</r:URN>

<r:TypeOfObject>CodeList</r:TypeOfObject>

</r:CodeListReference>

<r:CodeSubsetInformation>

<r:DataExistence>

<r:DiscreteCategory>true</r:DiscreteCategory>

</r:DataExistence>

</r:CodeSubsetInformation>

</r:CodeRepresentationBase>

**DateTimeRepresentation**

Defines a DateTimeRepresentation by prescribing its structure and content coverage.

DateTimeRepresentation

Extension base: RepresentationType

DateTimeFieldFormat (0..1)

DateTimeCode (1..1)

The DateTimeFieldFormat is a CodeValue which describes the format of the date field, in formats such as YYYY/MM or MM-DD-YY, etc. If this element is omitted, then the format is assumed to be the XML Schema format corresponding to the type attribute value. The use of an external controlled vocabulary is strongly recommended. The DateTimeCode is a CodeValue and is required. This is a standard XML date type code for example date, dateTime, gYearMonth, gYear, and duration. The use of an external controlled vocabulary is strongly recommended.

EXAMPLE:

<r:DateTimeRepresentation>

<r:DateFieldFormat>MM/YYYY</r:DateFieldFormat>

<r:DateTypeCode>gYearMonth</r:DateTypeCode>

</r:DateTimeRepresentationBase>

**GeographicLocationCodeRepresentation**

This Representation allows for the direct use of the contents of a Geographic Location Value as a GeographicLocationCodeRepresentation or a GeographicLocationCodeDomain. This relieves the user of creating a secondary Code List reflecting the same information and retains contextual information in the use of Geographic Locations as response domains or representations. References the GeographicLocation used, identifies which code is being used based on the AuthorizationSouce and allows specifying which codes to exclude from a set, similar to specific object exclusion from a Scheme Reference.

GeographicLocationCodeRepresentation

Extension base: RepresentationType

IncludedGeographicLocationCodes (0..1)

AuthorizedSourceReference (0..1)

GeographicLocationReference (0..1)

ExcludedLocationValueReference (0..n)

LimitedCodeSegmentCaptured (0..n)

Description (0..1)

@arrayBase required [0|1]

@startPosition required

@length required

Note that the Representation references a single location type. The use of the Representation as a response domain or value representation may include the complete code or a component segment of the complete code. When used for a Response Domain if the full unique hierarchical string (i.e. State—County—Tract) is being collected as a single object then a single Representation can be used. However, if the captured data will be stored as separate variables use a StructuredMixedResponseDomain in a Question using one GeographicLocationCodeRepresentation for each segment of the complete code.

GeographicLocationCodeRepresentation provides a LimitedCodeSegmentCapture which is used to identify the segment of a Geographic Location Code which is captured in this domain. For example, a County’s unique location code may be a composite of a State code (2 characters) + County code (3 characters). LimitedCodeSegmentCapture provides a description of the code segment captured in the response and specifies it through the following attributes: arrayBase (clarifying the array based used when determining the start position in the code), startPosition (the first character of the captured code), and the length (the number of characters making up the captured code). Using the above example this would be expressed as:

<LimitedCodeSegmentCapture arrayBase=”1” startPosition=”3” length=”3”>

<Description><Content xml:lang=”eng”>Unique code is a composite of a 2 character State code and 3 character Country code. This response domain captures ONLY the county code portion of the unique code</Content></Description>

</LimitedCodeSegmentCapture>

GeographicLocationRepresentation also provides a LimitedCodeSegmentCapture which is used to identify the segment of a Geographic Location Code which is captured in this domain. See Response Domain section above for description of its use.

Example 1: <link to text>

This shows a GeographicLocationCodeRepresentation that contains the full required code for the unique identification of a county, both State and County codes. If the example also contained the LimitedCodeSegmentCapture described above the ValueRepresentation or ResponseDomain using this description would capture ONLY the 3 character County Code portion of the unique string. It would have to be paired with a State code in order to uniquely identify the County.

EXAMLE 1: (externalize to text)

<r:GeographicLocationCodeRepresentation>

<r:RecommendedDataType>String</r:RecommendedDataType>

<r:IncludedGeographicLocationCodes>

<r:AuthorizedSourceReference isReference="true" isExternal="true" lateBound="false">

<r:URN typeOfIdentifier="Canonical>urn:ddi:us.mpc:FIPS:1.0</r:URN>

<r:TypeOfObject>AuthorizedSource</r:TypeOfObject>

</r:AuthorizedSourceReference>

<r:GeographicLocationReference isReference="true" isExternal="true" lateBound="false">

<r:URN typeOfIdentifier="Canonical">urn:ddi:us.mpc:CNTY:1.0</r:URN>

<r:TypeOfObject>GeographicLocation</r:TypeOfObject>

</r:GeographicLocationReference>

<r:ExcludedLocationValueReference isReference="true" isExternal="true" lateBound="false">

<r:URN typeOfIdentifier="Canonical">urn:ddi:us.mpc:ALASKA\_CNTY:1.0</r:URN>

<r:TypeOfObject>LocationValue</r:TypeOfObject>

</r:ExcludedLocationValueReference>

<r:ExcludedLocationValueReference isReference="true" isExternal="true" lateBound="false”>

<r:URN typeOfIdentifier="Canonical">urn:ddi:us.mpc:HAWAII\_CNTY:1.0</r:URN>

<r:TypeOfObject>LocationValue</r:TypeOfObject>

</r:ExcludedLocationValueReference>

</r:IncludedGeographicLocationCodes>

</r:GeographicLocationCodeRepresentationBase>

**GeographicStructureCodeRepresentationBase**

RepresentationBase for the direct use of a GeographicStructureCode as a GeographicStructureRepresentation or GeographicStructureDomain. This relieves the user of creating a secondary Code List reflecting the same information and retains contextual information in the use of Geographic Structures as response domains or representations. References the GeographicStructure used, identifies which code is being used based on the AuthorizationSouce and allows specifying which codes to exclude from a set, similar to specific object exclusion from a Scheme Reference.

GeographicStructureCodeRepresentationBase

Extension base: VersionableType

GeographicStructureCodeRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

IncludedGeographicStructureCodes (0..1)

AuthorizedSourceReference (0..1)

GeographicStructureReference (0..1)

ExcludedGeographicLevelReference (0..n)

Note that a single value representation or response domain can contain only a single code set for the structure which is identified by its Authorization Source. If a single agency manages several code types they should be clearly differentiated with separate Authorization Source identifiers (i.e., specified down to the specific coding list).

EXAMPLE:

<r:GeographicStructureCodeRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency">

<r:URN>urn:ddi:us.mpc:GLocDel:2</r:URN>

<r:GeographicStructureCodeRepresentationBaseName><r:String xml:lang="en">US Geographic Structure Codes</r:String></r:GeographicStructureCodeRepresentationBaseName>

<r:Label><r:String xml:lang="en">US Geographic Structure Codes from the 1990 U.S. Census</r:String></r:Label>

<r:Description><r:Content xml:lang="en">Contains geographic structure codes used by the U.S. Census Bureau in compiling the 1990 Census of Population and Housing. Includes only US, State and County level structures. Excludes Regions and Divisions.</r:Content></r:Description>

<r:IncludedGeographicStructureCodes>

<r:AuthorizedSourceReference isReference="true" isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.mpc:US\_Census:1.0</r:URN>

<r:TypeOfObject>AuthorizedSource</r:TypeOfObject>

</r:AuthorizedSourceReference>

<r:GeographicStructureReference isReference="true" isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.mpc:US\_1990:1.0</r:URN>

<r:TypeOfObject>GeographicStructure</r:TypeOfObject>

</r:GeographicStructureReference>

<r:ExcludedGeographicLevelReference isReference="true" isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.mpc:REGION:1.0</r:URN>

<r:TypeOfObject>GeographicLevel</r:TypeOfObject>

</r:ExcludedGeographicLevelReference>

<r:ExcludedGeographicLevelReference isReference="true" isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.mpc:DIVISION:1.0</r:URN>

<r:TypeOfObject>GeographicLevel</r:TypeOfObject>

</r:ExcludedGeographicLevelReference>

</r:IncludedGeographicStructureCodes>

</r:GeographicStructureCodeRepresentationBase>

**NumericRepresentationBase**

Defines a NumericRepresentationBase by describing the valid numeric range, expressing top or bottom codes, and the valid type for the content.

NumericRepresentationBase

Extension base: VersionableType

NumericRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

NumericRange (0..1)

NumericTypeCode (1..1)

Provides the valid numeric range in terms of a High and Low number, TopCode or Bottom code, as well as constraining the content through use of a controlled vocabulary. The NumericTypeCode provides definition of the W3C XML numeric type such as integer, decimal, etc.

EXAMPLE:

<r:NumericRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency" scale="1" decimalPostions="0" interval="1">

<r:URN>urn:ddi:us.mpc:NumRange\_1\_10:1</r:URN>

<r:NumericRepresentationBaseName><r:String xml:lang="en">Range 1-10+</r:String></r:NumericRepresentationBaseName>

<r:Label><r:String xml:lang="en">Number Range covering 1 through 10 plus</r:String></r:Label>

<r:Description><r:Content xml:lang="en">Defines the allowed content for a number range of 1 - 10 where 10 is topcoded to imply 10 or more</r:Content></r:Description>

<r:NumberRange>

<r:Low isInclusive="true">1</r:Low>

<r:High isInclusive="true">10</r:High>

<r:TopCode>10</r:TopCode>

</r:NumberRange>

<r:NumericTypeCode>Integer</r:NumericTypeCode>

</r:NumericRepresentationBase>

**TextRepresentationBase**

Defines a TextRepresentationBase used by a TextRepresentation or TextDomain, describing the maximum and minimum length of the text string, and providing a regular expression to further constrain the content.

TextRepresentationBase

Extension base: VersionableType

TextRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

@maxLength optional

@minLength optional

@regExp optional

Text allows for the definition of a minimum and maximum length of the text object as well as constraining the allowed content through use of a regular expression.

EXAMPLE:

<r:TextRepresentationBase isVersionable=”true” scopeOfUniqueness=”Agency” typeOfIdentifier=”Canonical” minLength=”5” maxLength=”5” regExp=”[0-9]{5}”>

<r:URN>urn:ddi:us.icpsr:TD\_1.1</r:URN>

<r:TextRepresentationBaseName isPreferred=”true”><r:String xml:lang=”en”>ZIPCode</r:String></r:TextRepresentationBaseName>

<r:Label><r:String xml:lang=”en”>United States 5-digit ZIP Code</r:String></r:Label>

<r:Description><r:Content isPlain=”true” xml:lang=”en”>The base 5-digit ZIP Code used by the United States Postal Service for mail delivery.</r:Content></r:Description>

</r:TextRepresentationBase>

**CategoryRepresentationBase**

Defines a CategoryRepresentationBase by specifying the Category Scheme used.

CategoryRepresentationBase

Extension base: VersionableType

CategoryRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

CategorySchemeReference (0..1)

References a CategoryScheme allowing for the exclusion of any specified object within the scheme.

EXAMPLE:

<r:CategoryRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency">

<r:URN>urn:ddi:us.mpc:PresCandidates:2</r:URN>

<r:CategoryRepresentationBaseName><r:String xml:lang="en">Presidential Candidates 2000</r:String></r:CategoryRepresentationBaseName>

<r:Label><r:String xml:lang="en">U.S. Presidential Candidates 2000</r:String></r:Label>

<r:Description><r:Content xml:lang="en">Includes all candidates for the office of US President listed on any ballot in the United States in the 2000 National Election.</r:Content></r:Description>

<r:CatagorySchemeReference isReference="true" isExternal="true" lateBound="false" typeOfIdentifier="Canonical">

<r:URN>urn:ddi:us.mpc:PRES2000:1.0</r:URN>

<r:TypeOfObject>CatagorySchemeReference</r:TypeOfObject>

</r:CatagorySchemeReferenceReference>

</r:CategoryRepresentationBase>

**DistributionRepresentationBase**

Defines a distribution structure used as a response domain, indicating the total amount to be distributed among the response objects.

DistributionRepresentationBase

Extension base: VersionableType

DistributionRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

DistributionValue (1..1)

@decimalPositions

The DistributionValue provides the total value (xs:decimal) to be distributed among the response objects. The decimalPositions attribute clarifies the level of detail allowed in terms of the number of decimals accepted within a response.

EXAMPLE:

<r:DistributionRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency" decimalPositions="1">

<r:URN>urn:ddi:us.mpc:DistDel\_1:1</r:URN>

<r:DistributionRepresentationBaseName><r:String xml:lang="en">Distribution 100</r:String></r:DistributionRepresentationBaseName>

<r:Label><r:String xml:lang="en">100% Distribution</r:String></r:Label>

<r:Description><r:Content xml:lang="en">Distribute percentage of total over the allowed items with a .1 precesion.</r:Content></r:Description>

<r:DistributionValue>100</r:DistributionValue>

</r:DistributionRepresentationBase>

**GeographicRepresentationBase**

A specialized RepresentationBase that contains the basic information required to collect geographic information from a GIS or similar system. Provides default values as well as fields to capture case specific deviations from the default.

GeographicRepresentationBase

Extension base: VersionableType

GeographicRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

Datum (1..1)

CoordinateSytem (1..1)

CoordinateZone (1..1)

CoordinateSource (1..1)

ErrorCorrection (1..1)

Offset (1..1)

GeoreferenceObject (1..1)

AddressMatchType (0..1)

CoordinatePairs (1..n)

AlternateOffset (0..1)

AlternateObject (0..1)

AlternateCoordinateSystem (0..1)

@pointFormat required

@spatialPrimitive required

(Point|Polygon|Line|LinearRing)

The following objects define the default values defined for the response domain: Datum identifies the geographic datum type of the object (recommend use of controlled vocabulary), CooridnateSystem identifies the coordinate system used by the response domain, CoordinateZone specifies the geographic coordinate zone used, the source of the coordinate reading is supplied in CoordinateSource, the standard offset is given in Offset, and the object used for identifying the point of the coordinate being collected is listed in the GeoreferenceObject (i.e., front door or centroid). If an address match is used AddressMatchType specifies the type of matching used. CoordinatePairs provides the capture structure for the case content. The attributes pointFormat and spatial primitive specify the format structure of the point and the spatial type being captured (Point, Polygon, Line, or Linear Ring). AltenateOffset, AlternateObject, and AlternateCoordinateSystem provide capture points for case specific information when the default values are not used.

EXAMPLE:

<r:GeographicRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency" pointFormat="DecimalDegrees" spatialPrimitive="point">

<r:URN>urn:ddi:us.mpc:GPS\_1:1</r:URN>

<r:CategoryRepresentationBaseName><r:String xml:lang="en">GPS Front Door</r:String></r:GeographicRepresentationBaseName>

<r:Label><r:String xml:lang="en">GPS for Front Door Positioning</r:String></r:Label>

<r:Description><r:Content xml:lang="en">A standard collection set for GPS positions taken at the front door in the United States.</r:Content></r:Description>

<r:Datum>NAD83</r:Datum>

<r:CoordinateSystem>SPCS</r:CoordinateSystem>

<r:CoordinateZone>2203</r:CoordinateZone>

--> <r:ErrorCorrection></r:ErrorCorrection>

<r:Offset>0</r:Offset>

<r:GeoreferencedObject>Residential Front Door</r:GeoreferencedObject>

<r:CoordinatePairs isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency" maxArray="2" arraySeparator="|">

<r:URN>urn:ddi:us.mpc:CoordPrs:1</r:URN>

<r:TypeOfObject>TextRepresentationBase</r:TypeOfObject>

</r:CoordinatePairs>

<r:AlternateOffset maxLength="15">

<r:URN>urn:ddi:us.mpc:AltOffset:1</r:URN>

</r:AlternateOffset>

<r:AlternateCoordinateSystem maxLength="25">

<r:URN>urn:ddi:us.mpc:AltCoord:1</r:URN>

</r:AlternateCoordinateSystem>

</r:GeographicRepresentationBase>

**LocationRepresentationBase**

Defines a mark and the region within an object (i.e., image, text, etc.) where the mark should occur. Primarily used as a response domain within a QuestionBlock.

LocationRepresentationBase

Extension base: VersionableType

LocationRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

Object (0..1)

Action (0..n)

RegionOfAction (0..1)

Texutal (0..n)

Audio (0..n)

Video (0..n)

XML (0..n)

ImageArea (0..n)

Description (0..1)

Object specifies the object upon which the action takes place. Action describes the action(s) which take place. Action specifies the region within which the action takes place described in terms of a start, stop, or region definition appropriate to each type as well as a description of the action itself.

EXAMPLE:

<r:LocationRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency">

<r:URN>urn:ddi:us.mpc:LocDel\_1:2</r:URN>

<r:LocationRepresentationBaseName><r:String xml:lang="en">Location on Image\_1</r:String></r:LocationRepresentationBaseName>

<r:Label><r:String xml:lang="en">Location on Image</r:String></r:Label>

<r:Description><r:Content xml:lang="en">A location response that requires the letter "D" to be marked on an image.</r:Content></r:Description>

<r:Object>Image</r:Object>

<r:Action regExp="[Dd]">

<r:RegionOfAction>

<r:ImageArea>

<r:Shape>Rectangle</r:Shape>

<r:Coordinates>5,-5 5,-2 2,-2 2,-5</r:Coordinates>

</r:ImageArea>

</r:RegionOfAction>

<r:Description><r:Content xml:lang="en">Mark the letter D (upper or lower case accepted) in the upper left (3x3) section of the 10x10 gridded image.</r:Content></r:Description>

</r:Action>

</r:LocationRepresentationBase>

**NominalRepresentationBase**

Defines a nominal response that is not coded or related to a particular category scheme. Used primarily by QuestionGrid, this defines a response where there is a simple check or other demarcation expressing a binary “yes | no” or “true | false” response.

NominalRepresentationBase

Extension base: VersionableType

NominalRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

@regExp (0..1)

A simple description of a nominal response which may be constrained by a regular express to a specified mark.

EXAMPLE:

<r:NominalRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency" regExp="[Xx]">

<r:URN>urn:ddi:us.mpc:NomDel\_1:2</r:URN>

<r:NominalRepresentationBaseName><r:String xml:lang="en">Nominal X only</r:String></r:NominalRepresentationBaseName>

<r:Label><r:String xml:lang="en">Nominal X only</r:String></r:Label>

<r:Description><r:Content xml:lang="en">A nominal response that accepts ONLY an X mark.</r:Content></r:Description>

</r:NominalRepresentationBase>

**RankingRepresentationBase**

Defines a ranking structure used as a response domain, indicating the ordering options for the response.

RankingRepresentationBase

Extension base: VersionableType

RankingRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

RankingRange (1..1)

RangeUnit (0..1)

MinimumValue (0..1)

MaximumValue (0..1)

@maximumRepetitionOfSingleValue (default=”1”)

The RankingRange is an extension of Range adding the attribute maximumRepetitionOfSingleValue. The RankingRange specified the unit used for expressing the rank, provides a minimum and maximum value for the rank, and specifies how many items may have the same rank (default=”1”). The Range specifies the unit of the range specification as well as a minimum and maximum value. Note that these values use and extended form of Value which allows for the declaration of significant leading or trailing white space within the value as well an attribute noting if the value is inclusive (i.e., included as a valid value in the range specification).

EXAMPLE:

<r:RankingRepresentationBase isVersionable="true" typeOfIdentifier="Canonical" scopeOfUniqueness="Agency">

<r:URN>urn:ddi:us.mpc:RankDel\_1:1</r:URN>

<r:RankingRepresentationBaseName><r:String xml:lang="en">Unique Five Point Ranking</r:String></r:RankingRepresentationBaseName>

<r:Label><r:String xml:lang="en">Five Point Ranking with no repetition</r:String></r:Label>

<r:Description><r:Content xml:lang="en">Allows for the ranking of 5 items in order where no two items can be of the same rank.</r:Content></r:Description>

<r:RankingRange maximumRepetitionOfSingleValue="1">

<r:RangeUnit>Integer</r:RangeUnit>

<r:MinimumValue>1</r:MinimumValue>

<r:MaximumValue>5</r:MaximumValue>

</r:RankingRange>

</r:RankingRepresentationBase>

**ScaleRepresentationBase**

Defines a range of scale based responses varying by display, number of dimensions, and anchors.

ScaleRepresentationBase

Extension base: VersionableType

ScaleRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

ScaleDimension (0..1)

Label (0..n)

CHOICE (0..1)

NumberRange

Range

ENDCHOICE

Anchor (0..n)

CategoryReference (0..1)

@value

MarkedIncrement (0..1)

ValueIncrement (0..1)

DimensionIntersect (0..n)

DisplayLayout (0..1)

Scale layouts may affect the validity and comparability of the data captured. ScaleRepresentationBase allows a specific definition of each dimension of the scale, the DimensionIntersect for multi-dimensional scales, and the specific of the scale layout. The ScaleDimension indicates the complete numeric range or textual range, the anchor for the scale expressed as a category and/or value, a label for the dimension, the marked increments of the scale, and the value increment. Both MarkedIncrement and ValueIncrement are described by the attributes increment, startValue, and endValue. The DimensionIntersect is used when the scale contains more than one dimension. In its simplest form the attribute forAllDimensions is left at its default setting of “true” and the intersect point is defined by the attribute intersectValue. DisplayLayout is of CodeValueType and contains a definition of the type of scale such as scale line, value list, outline, etc.

EXAMPLES:

Sample question using the phrase completion method

**I am aware of the presence of God or the Divine**

**Never** **Continually**

0 1 2 3 4 5 6 7 8 9 10

This display has labels at the terminal anchors only and each increment is a Value Increment

<Scale isVersionable=”true” typeOfIdentifier=”Canonical” scopeOfUniquenes=”Maintainable”>

<URN>urn:ddi:us.mpc:ScaleScheme\_1.Scale\_1:1</URN>

<ScaleName><String xml:lang=”en”>Simple Scale</String></ScaleName>

<Label><Content xml:lang=”en”>Simple Scale</Content></Label>

<Description><Content xml:lang=”en”>Example 1</Content></Description>

<ScaleDimension dimensionNumber="1" degreeSlopeFromHorizontal=”0”>

<NumberRange>

<Low included="true">0</Low>

<High included="true">10</High>

</NumberRange>

<Anchor value="0">

<CategoryReference>

<URN>urn:ddi:us.mpc:CatScheme\_1.Never:1</URN>

<CategoryReference>

</Anchor>

<Anchor value="10">

<CategoryReference>

<URN> urn:ddi:us.mpc:CatScheme\_1.Continually:1</URN>

<CategoryReference>

</Anchor>

<ValueIncrement increment="1" startValue="0" endValue="10"/>

</Dimension>

<DisplayLayout>ScaleLine</DisplayLayout>

</Scale>

Likert Item

The format of a typical five-level Likert item is:

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

The above Likert Item is described and displayed as a CodeScheme. However if the display is scalar it could be described by a Scale.

Strongly Neither Agree Strongly

Disagree Disagree Nor Disagree Agree Agree

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

1 2 3 4 5

This display has labels at all anchors and each increment is both a Marked Increment AND a Value Increment

<Scale isVersionable=”true” typeOfIdentifier=”Canonical” scopeOfUniquenes=”Maintainable”>

<URN>urn:ddi:us.mpc:ScaleScheme\_1.Scale\_2:1</URN>

<ScaleName><String xml:lang=”en”>Likert Scale</String></ScaleName>

<Label>><Content xml:lang=”en”>Likert Scale as scale</Content></Label>

<Description>><Content xml:lang=”en”>Example 2</Content></Description>

<ScaleDimension dimensionNumber="1" degreeSlopeFromHorizontal="0">

<NumberRange>

<Low included="true">1</Low>

<High included="true">5</High>

</NumberRange>

<Anchor value="1">

<CategoryReference>

<URN> urn:ddi:us.mpc:CatScheme\_1.StronglyDisagree:1</URN>

<CategoryReference>

</Anchor>

<Anchor value="2">

<CategoryReference>

<URN> urn:ddi:us.mpc:CatScheme\_1.Disagree:1</URN>

<CategoryReference>

</Anchor>

<Anchor value="3">

<CategoryReference>

<URN> urn:ddi:us.mpc:CatScheme\_1.NeitherAgreeNorDisagree:1</URN>

<CategoryReference>

</Anchor>

<Anchor value="4">

<CategoryReference>

<URN> urn:ddi:us.mpc:CatScheme\_1.Agree:1</URN>

<CategoryReference>

</Anchor>

<Anchor value="5">

<CategoryReference>

<URN> urn:ddi:us.mpc:CatScheme\_1.StronglyAgree:1</URN>

<CategoryReference>

</Anchor>

<MarkedIncrement increment="1" startValue="1" endValue="5"/>

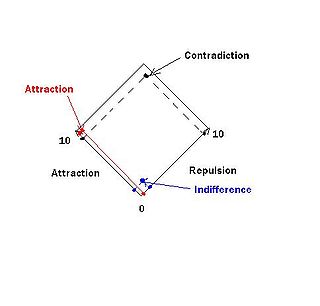
<ValueIncrement increment="1" startValue="1" endValue="5"/>

</ScaleDimension>

<DisplayLayout>ScaleLine</DisplayLayout>

</Scale>

**Diamond of Opposites**

[](http://en.wikipedia.org/wiki/File:Diamondofopposites.JPG)

This particular display is an outline where the ends of the two intersecting scales form the corner points of the outline.

<Scale isVersionable=”true” typeOfIdentifier=”Canonical” scopeOfUniquenes=”Maintainable”>

<URN>urn:ddi:us.mpc:ScaleScheme\_1.Scale\_3:1</URN>

<ScaleName><String xml:lang=”en”>Diamond</String></ScaleName>

<Label><Content xml:lang=”en”>Dimond of Opposites</Content></Label>

<Description><Content xml:lang=”en”>Describes an area within which response is collected against opposing scales. </Content></Description>

<ScaleType>AnchoredScale</ScaleType>

<ScaleDimension dimensionNumber="1" degreeSlopeFromHorizontal="45">

<Label>Repulsion</Label

<NumberRange>

<Low included="true">0</Low>

<High included="true">10</High>

</NumberRange>

<MarkedIncrement increment="10" startValue="0" endValue="10"/>

<ValueIncrement increment="10" startValue="0" endValue="10"/>

</ScaleDimension>

<ScaleDimension dimensionNumber="2" degreeSlopeFromHorizontal="135">

<Label>Attraction</Label

<NumberRange>

<Low included="true">0</Low>

<High included="true">10</High>

</NumberRange>

<MarkedIncrement increment="10" startValue="0" endValue="10"/>

<ValueIncrement increment="10" startValue="0" endValue="10"/>

</ScaleDimension>

<DimensionIntersect forAllDimensions="true" IntersectValue="0">

<IncludeDimension>1</IncludeDimension>

<IncludeDimension>2</IncludeDimension>

</DimensionIntersect>

<DisplayLayout>Outline</DisplayLayout>

</Scale>

**MissingValuesRepresentationBase**

Defines missing values as a numeric or code RepresentationBase which can be used with any other response domain or value representation. When combining a MissingValueRepresentationBase with valid responses or representations the user must take care not to replicate any valid response or representation. This structure allows for specifying missing values, specific definition of missing values through the use of a CodeRepresentationBase, and the definition of a blank (null) as a missing value.

MissingValuesRepresentationBase

Extension base: VersionableType

MissingValueRepresentationBaseName (0..n)

Label (0..n)

Description (0..1)

CHOICE (0..n)

CodeRepresentationBase

NumericRepresentationBase

TextRepresentationBase

ENDCHOICE

GenerationInstructionReference (0..1)

@isBlankMissingValue default=”true”

MissingValueRepresentationBase provides multiple means of describing missing values. They may contain any combination of a CodeRepresentationBase, NumericRepresentationBase, or TextRepresentationBase. In addition, the process of determining the how the missing value is assigned (generation instruction) may be referenced.

EXAMPLE:

A Missing Value RepresentationBase containing a set of coded missing value types, a numeric unlabeled value and information on how to treat a blank (white space).

<r:MissingValuesRepresentationBase isVersionable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Agency” versionDate=”2012-10-16” isBlankMissing=”true”>

<r:URN>urn:ddi:us.mpc:MVD1:1</r:URN>

<r:MaintainableObject>

<r:TypeOfObject>MissingValuesRepresentationBaseScheme</r:TypeOfObject>

<r:MaintainableID>MVDS\_1</r:MaintainableID>

<r:MaintainableVersion>1</r:MaintainableVersion>

</r:MaintainableObject>

<r:MissingValuesRepresentationBaseName isPreferred=”true” context=”ANES”><r:String xml:lang=”en-US”>ANES standard missing values</r:String></r:MissingValuesRepresentationBaseName>

<r:CodeRepresentationBase isVersionable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Agency” versionDate=”2012-10-16”>

<r:URN>urn:ddi:us.mpc:MVD1:1</r:URN>

<r:MaintainableObject>

<r:TypeOfObject>MissingValuesRepresentationBaseScheme</r:TypeOfObject>

<r:MaintainableID>MVDS\_1</r:MaintainableID>

<r:MaintainableVersion>1</r:MaintainableVersion>

</r:MaintainableObject>

<r:CodeListReference isReference=”true”>

<URN>urn:ddi:CodeList\_X:1</URN>

</r:CodeListReference>

</r:CodeRepresentationBase>

<r:NumericRepresentationBase isVersionable=”true” typeOfIdentifier=”Canonical” scopeOfUniqueness=”Agency” versionDate=”2012-10-16”>

<r:URN>urn:ddi:us.mpc:MVD1:1</r:URN>

<r:MaintainableObject>

<r:TypeOfObject>MissingValuesRepresentationBaseScheme</r:TypeOfObject>

<r:MaintainableID>MVDS\_1</r:MaintainableID>

<r:MaintainableVersion>1</r:MaintainableVersion>

</r:MaintainableObject>

</r:NumericRepresentationBase>

</r:MissingValueRepresentationBase>

## 4.52 – Variable

# Appendix: Change List (DDI 3.1 to 3.2)

# Index for all Complex Elements: