

Data Elements

A scheme of reusable Data Elements was added to Conceptual Components in order to better support ISO/IEC 11179 as well as the reuse of the basic components of variables. A Data Element consists of a reference to a Concept and a Universe (the components of a Data Element Concept) and a Value Representation expressed as a representation class. This limited structure makes the DDI Data Element more generic than the full ISO/IEC 11179 model as it does not include a Data Element example, derivation, or derivation rule. It also does not go into details for non-enumerated value domains nor enumerated value domains except allowing for a reference to a classification scheme.

```
DataElement
  Extension base: VersionableType
  DataElementName          (0..n)
  r:Label                   (0..n)
  r:Description             (0..1)
  r:UniverseReference       (0..1)
  ConceptReference          (0..1)
  r:CategorySchemeReference (0..1)
  DataElementRepresentation (0..1)
    [Amount | BinaryObject | Code | DateTime | Identifier |
     Measure | Name | Numeric | Text | Value | Percent |
     Quantity | Rate]
```

While a DataElement by definition requires a Universe (Object), Concept, and Representation (Value Domain) these are optional in DDI to support production work during which all references may not be available.

EXAMPLE:

```
<c:DataElement isVersionable="true" typeOfIdentifier="Canonical"
scopeOfUniqueness="Agency">
  <r:URN>urn:ddi:us.mpc:DE_1:1</r:URN>
  <c:DataElementName><r:String xml:lang="en">Household
Type</r:String></c:DataElementName>
  <r:Label><r:String xml:lang="en">Household
Type</r:String></r:Label>
  <r:Description><r:Content xml:lang="en">Defines the type of
household in terms of Non-Family and Family
components</r:Content></r:Description>
  <r:UniverseReference isReference="true isExternal="false"
lateBound="false" typeOfIdentifier="Canonical">
  <r:URN>urn:ddi:us.mpc:Households:1</r:URN>
  <r:TypeOfObject>Universe</r:TypeOfObject>
</r:UniverseReference>
  <r:ConceptReference isReference="true isExternal="false"
lateBound="false" typeOfIdentifier="Canonical">
  <r:URN>urn:ddi:us.mpc:HouseholdType:1</r:URN>
```

```

        <r:TypeOfObject>Concept</r:TypeOfObject>
    </r:ConceptReference>
    <r:CategoryReference isReference="true isExternal="false"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:CatS_HouseholdType:1</r:URN>
        <r:TypeOfObject>CategoryScheme</r:TypeOfObject>
    </r:CategorySchemeReference>
</c:DataElementRepresentation>Code<c:DataElementRepresentation>

```

The Data Element is a conceptual model of the combination of a concept linked to a specific universe or object that is represented in a particular way. A Variable is the applied use of a Data Element where the universe may be further refined and the exact parameters of the representation are defined in greater detail. The DDI DataElement reflects the structure of the ISO/IEC 11179 Data Element. The DDI DataElement is built using a set of references to a previously defined Universe, Concept and optional Category Scheme. The Universe references should reflect the broadest universe applicable, i.e., Persons. If the Concept is represented by a set of categories expressed by a CategoryScheme the scheme may be referenced. DataElementRepresentation is a controlled list that specifies the type of representation as noted in the following table. The exact details and/or content restrictions for the representation are added when referenced by a Variable used within a specific application. The example below shows a DataElement and two Variables which reference it within different contexts.

```

<c:DataElement isVersionable="true" typeOfIdentifier="Canonical"
scopeOfUniqueness="Agency">
    <r:URN>urn:ddi:us.mpc:DE_Age:1</r:URN>
    <c:DataElementName><r:String xml:lang="en">Age of
Person</r:String></c:DataElementName>
    <r:Label><r:String xml:lang="en">Age of Person in
Years</r:String></r:Label>
    <r:Description><r:Content xml:lang="en">Age of Person expressed
as a measure of the number of years of age</r:Content></r:Description>
    <r:UniverseReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:Univ_Persons:1.0</r:URN>
        <r:TypeOfObject>Universe</r:TypeOfObject>
    </r:UniverseReference>
    <r:ConceptReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:Concept_Age:1.0</r:URN>
        <r:TypeOfObject>Concept</r:TypeOfObject>
    </r:ConceptReference>
    <c:DataElementRepresentation>Measure</c:DataElementRepresentation
>
</c:DataElement>

```

```

<l:Variable isVersionable="true" typeOfIdentifier="Canonical"
scopeOfUniqueness="Agency">
    <r:URN>urn:ddi:us.mpc:Var_Age:1</r:URN>

```

```

    <l:VariableName><r:String xml:lang="en">Age of
Person</r:String></l:VariableName>
    <r:Label><r:String xml:lang="en">Age of Person in
Years</r:String></r:Label>
    <r:Description><r:Content xml:lang="en">Age of Person in the
United States expressed as a measure of the number of years of age 0
to 100 with topcode of 100 being "100 or
over"</r:Content></r:Description>
    <l:DataElementReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:DE_Age:1</r:URN>
        <r:TypeOfObject>DataElement</r:TypeOfObject>
    </l:DataElementReference>
    <r:UniverseReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:Univ_PersonsInUS:1.0</r:URN>    <!--
Limited to Persons in US -->
        <r:TypeOfObject>Universe</r:TypeOfObject>
    </r:UniverseReference>
    <r:ConceptReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:Concept_Age:1.0</r:URN>
        <r:TypeOfObject>Concept</r:TypeOfObject>
    </r:ConceptReference>
    <l:VariableRepresentation>
        <l:MeasurementUnit>Years</l:MeasurementUnit>
        <r:NumericRepresentation classificationLevel="interval">
            <r:RecommendedDataType>Integer</r:RecommendedDataType>
            <r:NumericDelineationReference isReference="true"
isExternal="true" lateBound="false" typeOfIdentifier="Canonical">
                <r:URN>urn:ddi:us.mpc:Num_1_100_top:1.0</r:URN>

            <r:TypeOfObject>NumericDelineation</r:TypeOfObject>
        </r:NumericDelineationReference>
        </r:NumericRepresentation>
    </l:VariableRepresentation>
</l:Variable>

```

```

<l:Variable isVersionable="true" typeOfIdentifier="Canonical"
scopeOfUniqueness="Agency">
    <r:URN>urn:ddi:us.mpc:Var_Age_13_19:1</r:URN>
    <l:VariableName><r:String xml:lang="en">Age of
Teenager</r:String></l:VariableName>
    <r:Label><r:String xml:lang="en">Age of Person 13 to 19 years of
age in Years</r:String></r:Label>
    <r:Description><r:Content xml:lang="en">Age of a Teenage Person
expressed as a measure of the number of years of age 13 to
19</r:Content></r:Description>
    <l:DataElementReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:DE_Age:1</r:URN>
    </l:DataElementReference>

```

```

        <r:TypeOfObject>DataElement</r:TypeOfObject>
    </l:DataElementReference>
    <r:UniverseReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:Univ_Persons_Age_13_19:1.0</r:URN>
<!-- Limited to Teenagers -->
        <r:TypeOfObject>Universe</r:TypeOfObject>
    </r:UniverseReference>
    <r:ConceptReference isReference="true" isExternal="true"
lateBound="false" typeOfIdentifier="Canonical">
        <r:URN>urn:ddi:us.mpc:Concept_Age:1.0</r:URN>
        <r:TypeOfObject>Concept</r:TypeOfObject>
    </r:ConceptReference>
    <l:VariableRepresentation>
        <l:MeasurementUnit>Years</l:MeasurementUnit>
        <r:NumericRepresentation classificationLevel="interval">
            <r:RecommendedDataType>Integer</r:RecommendedDataType>
            <r:NumericDelineationReference isReference="true"
isExternal="true" lateBound="false" typeOfIdentifier="Canonical">
                <r:URN>urn:ddi:us.mpc:Num_13_19:1.0</r:URN>

            <r:TypeOfObject>NumericDelineation</r:TypeOfObject>
            </r:NumericDelineationReference>
        </r:NumericRepresentation>
    </l:VariableRepresentation>
</l:Variable>

```