INTERPRETATION

FIELDCOMM GROUP™

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Interpretation Resolution – Feature Table for Unit Conversion

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About Interpretation Resolutions

After a Technical Specification has been published, ambiguities/errors may be discovered that need interpretation prior to the next edition. These questions may arise from various sources such working groups, product developers, technology end users or conformity test labs. Interpretation Resolutions provide expedited interpretation to current Technical Specifications prior to the release of the next edition. Interpretation Resolutions are defined in FCG PD10014 Technical Development Policy.

1 Referenced Specification(s)

FCG TS61804-4 EDD Interpretation

2 Background

Especially in offline use cases, users wish to have dependent values recalculated, if they change an engineering unit. FDI and EDDL specifications allow different host behaviours when it comes to unit conversion. If the user changes an engineering unit, an FDI host may recalculate the values depending on that engineering unit. But this behaviour is not mandatory for FDI hosts. On the other hand, FDI Package developers may implement unit conversion in the EDD. Currently, there is neither a way for a host to detect if unit conversion is implemented in the FDI Package. Also, an FDI Package cannot detect if a host performs unit conversion. If unit conversion is done by the FDI host and the FDI Package, this leads to unexpected results.

3 Question

How can an FDI Host adopt its behaviour concerning unit conversion to the FDI Package?

4 Interpretation

4.1 Package Feature Table

This interpretation resolution introduces a feature table as new mandatory part of an FDI Package. The feature table provides information about the features provided by the FDI Package and the features requested by the FDI Package from the FDI Host. This information is used by the FDI Server to interpret the contents of the FDI Package in the correct way. The features and thus the possible entries of the feature table are specified in the following subclauses.

If an FDI Package provides a specific feature, the respective feature shall be listed in the feature table. If a feature is not listed in the feature table, it is assumed that the feature is not provided by the FDI Package.

If an FDI Package requests a specific feature from the FDI Host, the respective feature shall be listed in the feature table.

An FDI Package shall have only one Package Feature Table. The Package Feature Table shall be identified by a single package relationship.

The Package Feature Table part is described in Table 1.

Table 1 – Package Feature Table Part

Part	Content
Content Type	application/vnd.fdi.package.feature-table+xml
Root Namespace	http://fdi-cooperation.com/2010/package-feature-table
Source Relationship	http://fdi-cooperation.com/2010/relationships/package-feature-table
Filename	feature-table.xml

4.2 Feature Unit Conversion

FDI Packages, which implement the Unit Conversion feature, shall provide unit conversion for all units. The unit conversion shall be implemented as specified in FCG TS61804.

The Package Feature Table is an XML file whose schema is defined in the following section.

4.3 FDI Package Feature Table Schema

4.3.1 Target Namespace

The target namespace defined for the feature table document is defined by:

```
<xs:schema xmlns:fdi="http://fdi-cooperation.com/2020/package-features"
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns:xml="http://www.w3.org/XML/1998/namespace"
   targetNamespace="http://fdi-cooperation.com/2020/package-features"
   elementFormDefault="unqualified" version="1.0.0">
```

4.3.2 FeatureTableT

The FeatureTableT defines the type for the root element for the Feature Table of an FDI Package.

The XML schema for the FeatureTableT type is:

```
<xs:complexType name="FeatureTableT">
   <xs:sequence>
      <xs:any namespace="##any" minOccurs="1" maxOccurs="unbounded"
   processContents="lax">
      </xs:any>
   </xs:sequence>
</xs:complexType>
```

An element of type FeatreTableT is expected to have elements based on the abstract types FeatureRequestedbyHost or FeatureProvidedbyPackage. Feature types will be defined in a separate schema file.

4.3.3 Feature

The Feature element is the abstract base element of any feature.

The XML schema for the Feature is:

```
<xs:element name="Feature" abstract="true"/>
```

4.3.4 FeatureRequestedFromHost

The FeatureRequestedFromHost element is the abstract base element of any feature, which requests a functionality from the FDI Host.

The XML schema for the Feature is:

```
<xs:element name="FeatureRequestedFromHost" abstract="true"
   substitutionGroup="fdi:Feature"/>
```

4.3.5 FeatureProvidedbyPackage

The FeatureProvidedbyPackage element is the abstract base element of any feature, which is provided by the FDI Package.

The XML schema for the Feature is:

```
<xs:element name=" FeatureProvidedbyPackage" abstract="true"
   substitutionGroup="fdi:Feature"/>
```

4.3.6 UnitConversion

The UnitConversion element indicates that the FDI Package provides unit conversion for all units within the device description. It is defined in a separate schema file.

The XML schema for the UnitConversion feature is:

```
<xs:element name="UnitConversion"
   substitutionGroup="fdi:FeatureProvidedbyPackage">
```

The target namespace defined for the UnitConversion feature is defined by:

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns:xml="http://www.w3.org/XML/1998/namespace"
   xmlns:fdi="http://fdi-cooperation.com/2020/package-features"
   targetNamespace="http://fdi-cooperation.com/2020/package-feature-
   UnitConversion"
   elementFormDefault="unqualified" version="1.0.0">
```

5 Impact Analysis

FDI Package developers need to add the feature table as new package part to their FDI Packages. To support them, FDI IDE and FDI RRTE have to support this feature. This will be implemented in the FDI RRTE 1.5.

Host applications doing unit conversion need to have their implementations updated to interpret the feature table and adapt their behaviour concerning unit conversion.