

Part Compliance in PDX 2.0

Proposed

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August 31, 2004

Before We Begin

▶ Comparison to RosettaNet

- RosettaNet messages can be compared to a **certified letter** being sent to a correspondent.
 - Chatty (Hi Sam, I am Mark, Hi Mark, Sam I am ;-)
 - Lots of individual messages going back and forth because of the choreography (RNIF)
- A PDX message can be compared to a **box containing multiple letters** that is mailed to a correspondent.
 - Modeled after the paper based product design package containing the BOM, AML information, AVL information, manufacturing instructions etc., that was sent to a contract manufacturer in the past.
 - Easier to implement than RosettaNet (no choreography requirements)

What does it cover?

- ▶ PDX has the notion of sections for different types of information
 - Parts and BOMs
 - AMLs and Manufacturer Parts
 - Suppliers and Supplier Parts
 - Product Changes
 - As Built Product Configuration
 - Quality

Supported Use Cases

- ▶ Request for Information (RFI) process
 - Sender requests information from the receiver.
 - Sender determines the information that is sent and the information that is required back from the receiver.
- ▶ Communicate part level information to the receiver.
 - Different from RFI process
 - Sender determines the information that is sent.
 - Typically used when downloading data from a content data base
- ▶ Specification management
 - Communicate a specification or a change to a specification to a receiver.

New Section: Declarations

- ▶ Contains Requests for Declaration
- ▶ Child element of the ProductDataeXchangePackage element
- ▶ Supports different types of Declarations
 - **Supplier Compliance Survey**

Company sends out a questionnaire to assess **supplier compliance** with specifications from customers and government bodies.

 - Does not require any part level disclosure
 - E.g. Are you ISO 9001 certified? Do you have a RoHS compliance program in place?
 - **Part Compliance Survey**

Company sends out a questionnaire to assess **part compliance** with specifications from customers and government bodies.

 - Does not require any material or substance level disclosure
 - E.g. Is your product Milspec XYZ compliant? What FCC class does your product belong to (in case of EM radiation)? IS your product radioactive? How much Becquerel?
 - **Material Compliance Declaration (Yes/No Declaration)**

Company sends out a questionnaire to assess part compliance with individual substances on specifications from customers and government bodies.

 - Does not request any weight nor PPM information
 - E.g. Is the lead in your product RoHS compliant?
 - **Partial Material Disclosure**

Company sends out a questionnaire requesting Mass and/or PPM information from on individual substances selected by the company.

 - Sender determines the scope of the substances to report against based on the specifications the sender tracks.
 - **Full Material Disclosure**

Company sends out a questionnaire requesting Mass and/or PPM information on all substances contained within the part

 - Supplier is required to disclose any substance within the product.
- ▶ Combination of the different types of Declarations should be permitted.
 - E.g. a Yes/No declaration requesting material disclosure if the supplier declares the part to be non-compliant.

Requirements for a Declaration

- ▶ Modeled after other workflow based entities in PDX (Change, Quality Incident, ...)
- ▶ Declaration level header information including flex fields
- ▶ Affected Parts
 - Either Items, Mfr Parts, Supplier Parts or Part Families
 - Part Level information
 - Weight
 - Flex fields for part level information
 - Part Level Material Composition Information
 - Materials
 - Substance Groups (JGPSSI)
 - Substances
- ▶ Specifications
- ▶ Approvers
- ▶ File attachments to the Declaration that can contain e.g. instructions on how to fill out the declaration.
- ▶ History level information

Declaration Header Section

▶ Contains the following fields

• Identifier	Mandatory	Declaration identifier
• Description	Optional	Description
• Note	Optional	Comments (JIG)
• Create Date	Mandatory	Date the declaration was created (JIG)
• Due Date	Optional	Requested return date of the declaration
• Compliance Manager	Optional	Who to contact if there are questions
• Originator	Optional	Who created the declaration
• Supplier	Optional	Which supplier this is intended for
• Declaration Type	Optional	
• Declaration Subtype	Optional	
• Workflow	Optional	
• Status	Optional	
• Flex fields	Optional	Sender defined fields

Declaration Affected Parts Section (1)

▶ Part Information (JIG Product/Sub Part Category)

• Contains the following fields:

– Part Type	Mandatory	Assembly, Subassembly, Component, Raw Material (JIG), Part Family
– Part Identifier	Mandatory	(JIG)
– Part Identifier Type	Mandatory	IPN, MPN, SPN, Part Family
– Alternate Part Identifier	Optional	(JIG, JGPSSI)
– Alternate Part Identifier Type	Optional	(JIG, JGPSSI)
– Part Total Mass	Mandatory	in grams, should become UOM based!! Why is this mandatory in JIG? Move to Characteristics section?
– Flex fields	Optional	Sender defined fields

• Contains a Characteristics section to capture parameters of the part

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

- ▶ Note: all this information needs to become part of the Item, Mfr Part and Supplier Part element as well to cover use case 2.

Declaration Affected Parts Section (2)

- ▶ Part Composition Information (JIG Material / Substance Category)
- ▶ Part Composition contains one or more Part Composition Items (creates a table)
- ▶ Each Part Composition Item contains the following fields:

<ul style="list-style-type: none"> • Material/Substance/Substance Group Identifier • Unique Identifier • Unique Identifier Type • Material/Substance/Substance Group Mass <i>Move to Characteristics section?</i> • Material/Substance/Substance Group Concentration Optional <i>Characteristics section?</i> • Location • Application • Comment • Required 	<table border="0"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> Mandatory Optional Optional Mandatory Optional Optional Optional Optional </td> <td style="vertical-align: top; padding-left: 20px;"> <ul style="list-style-type: none"> (JIG) Name of the Material/Substance (JIG) ISO or CAS-Number ISO, CAS, other? (JIG) in grams, <i>should become UOM based!!</i> (JIG) in PPM or %, <i>should become UOM based!! Move to</i> (JIG) (JIG) (JIG) Yes/No. Makes it mandatory to the supplier to respond to this Part Composition Item. </td> </tr> </table>	<ul style="list-style-type: none"> Mandatory Optional Optional Mandatory Optional Optional Optional Optional 	<ul style="list-style-type: none"> (JIG) Name of the Material/Substance (JIG) ISO or CAS-Number ISO, CAS, other? (JIG) in grams, <i>should become UOM based!!</i> (JIG) in PPM or %, <i>should become UOM based!! Move to</i> (JIG) (JIG) (JIG) Yes/No. Makes it mandatory to the supplier to respond to this Part Composition Item.
<ul style="list-style-type: none"> Mandatory Optional Optional Mandatory Optional Optional Optional Optional 	<ul style="list-style-type: none"> (JIG) Name of the Material/Substance (JIG) ISO or CAS-Number ISO, CAS, other? (JIG) in grams, <i>should become UOM based!!</i> (JIG) in PPM or %, <i>should become UOM based!! Move to</i> (JIG) (JIG) (JIG) Yes/No. Makes it mandatory to the supplier to respond to this Part Composition Item. 		
- ▶ Contains an optional Characteristics section to capture parameters of the material/substance
 - Radioactivity, toxicity, ...
- ▶ Contains an optional Bill of Substances section to capture Substances within a Material (RoHS) or Substances within a Substance Group (JGPSSI).
- ▶ Note: These fields and structures need to become part of a Composition Section on an Item, Mfr Part and Supplier Part as well to cover use case 2.

Declaration Specifications Section

- ▶ Optional section that links a declaration to one or more specifications that may be part of the PDX package as well to indicate which declarations the receiver needs to be compliant with.
- ▶ Fields:
 - Specification Identifier Mandatory
 - Specification Unique Identifier Optional Links to the specification if it is part of the PDX package. Standard PDX construct.

Declaration Approvers, Attachments and History Section

- ▶ Reuse the standard PDX definitions for Approvers, Attachments and History.

New Section: Specifications

- ▶ Child element of ProductDataeXchangePackage element.
- ▶ This optional section contains one or more Specifications.
- ▶ A specification can be a Government regulation, a customer specification or an internal specification.
- ▶ A specification consists of
 - Specification Attributes
 - Specification Identifier Mandatory
 - Specification Type Optional
 - Description Optional
 - Jurisdictions Optional
 - Flex fields Optional
 - A list of substances of concern
 - A threshold value for each of those substances implemented with Characteristics element.
 - Any other characteristics that the sender wants to convey using the Characteristics element.
 - File attachments that can describe the specification, testing method, ...
 - History

New Section: Substance Groups

- ▶ Comes from Japanese Green Procurement Initiative.
- ▶ A Substance Group contains a set of substances that all relate to a base substance.
 - E.g. a substance group could be Cad & Cad Compounds that contains Cad Oxide, Cad Sulfide, Cad Sulfate and Cad Chloride.
- ▶ Supplier can reply at the substance group level or at the individual level within a substance group.
- ▶ There are conversion factors to calculate the weight of Cad in e.g. Cad Sulfide (Cad content by weight). Should not be communicated in PDX, the factors are standardized.
- ▶ At the end all the different Cad contents of the different compounds are summed to get a total Cad within the Substance Group.

Requirements for Substance Groups

- ▶ Substance Group header information including flex fields
 - Substance Group Identifier
 - Application
 - Purposes of Use
- ▶ Bill of Substances
 - Fields at the individual substance level
 - Substance Identifier
 - CAS-Number
 - Compound weight
 - Application
 - Purposes of Use
- ▶ History level information
 - Optional

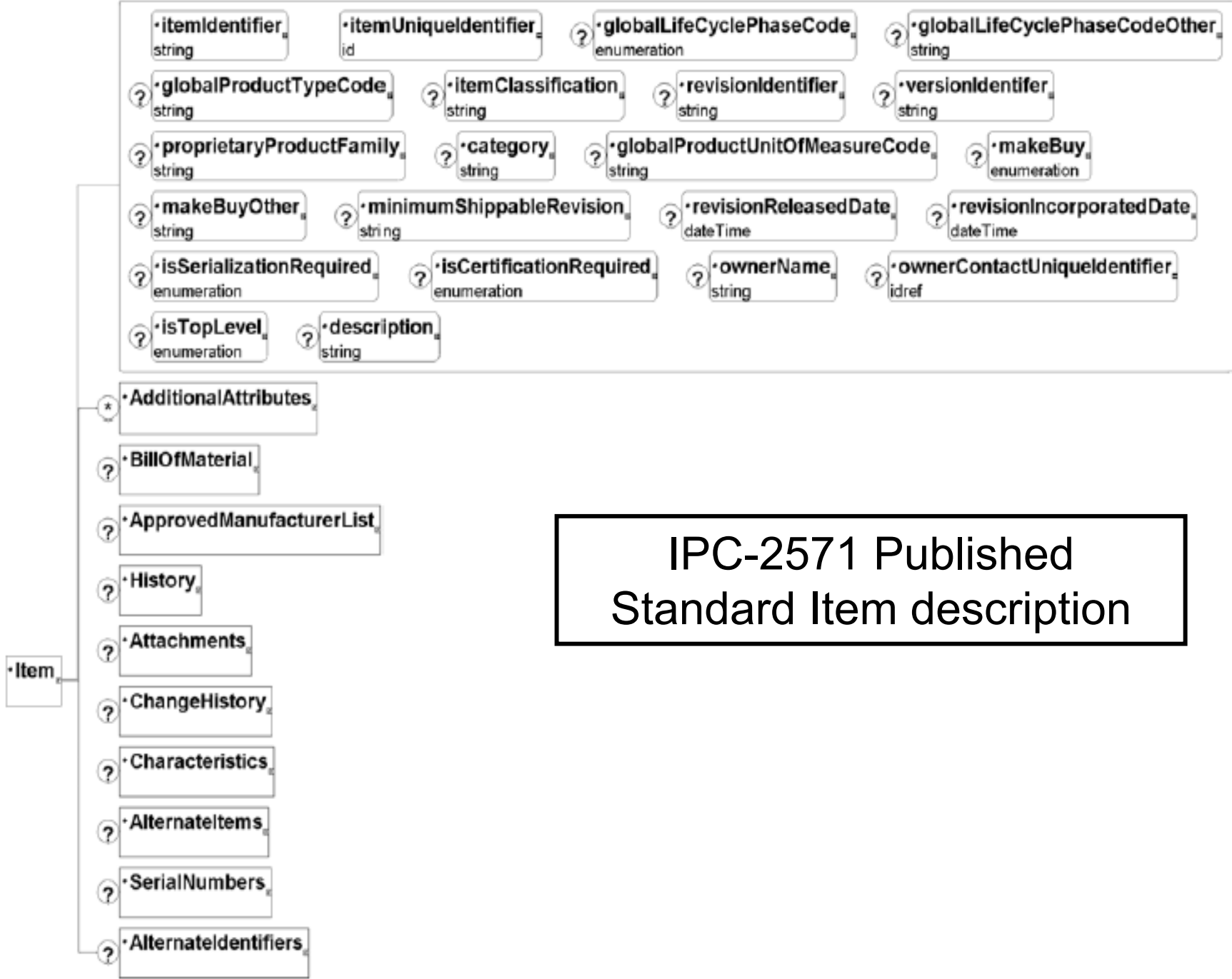
New Section: Part Families

- ▶ Child of PDXPackage
- ▶ Part Families are a way to group parts so that component suppliers can respond at the family level instead of at the individual part level.
 - E.g. A family of Ceramic Capacitors all have the same composition but a different capacitance. From a material composition perspective they are the same.
- ▶ There is a conversion factor from the Part Family to the part. E.g. Ethernet cables
- ▶ Can group internal parts, mfr part or supplier parts.

Addition to Items and Mfr Parts: Composition Section

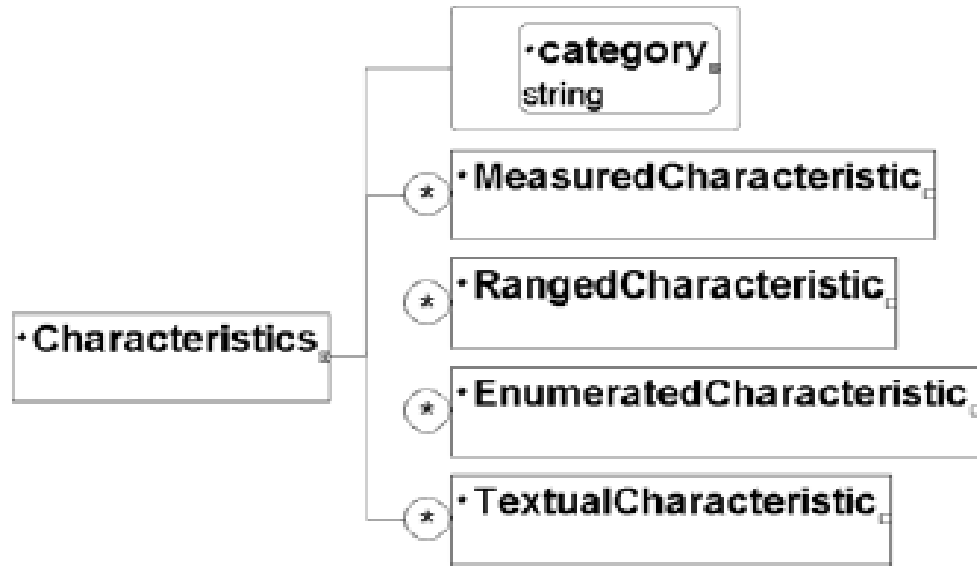
- ▶ Parts need to be able to contain composition information through the use of a Composition section within the item
 - This information is the same as the Part Composition information in the material declaration.
- ▶ Parts need to be able to contain compliance information through the use of a Compliance section within the item.
 - This needs to cover exemptions as well.

For discussion purposes



IPC-2571 Published
Standard Item description

“Characteristics” from IPC-2578



Measured Characteristic Attributes

? definitionSource string	? measuredCharacteristicName string	? measuredCharacteristicValue float	? engineeringUnitOfMeasure string
? engineeringNegativeTolerance float	? engineeringPositiveTolerance float		

Attribute Name	Type	Required?	Description
definitionSource	CDATA	#IMPLIED	A URL pointing to the location which contains a list of allowed values for the this characteristic. Or a string defining the ISBN number, or some other identifier for the source of the definition.
measuredCharacteristicName	CDATA	#IMPLIED	The name of the characteristic, e.g. "leakage current", "breakdown voltage".
measuredCharacteristicValue	CDATA	#IMPLIED	The value of the characteristic expressed as a floating-point number.
engineeringUnitOfMeasure	CDATA	#IMPLIED	The unit of measure of the value. Allowed values for this field are OHM,FARAD,HENRY,VOLT,AMP,WATT,HERTZ, JOULE,LUMEN
engineeringNegativeTolerance	CDATA	#IMPLIED	the negative (minimum) tolerance of the device. The value is expressed as a positive floating-point percentage. (e.g. -15% is expressed as 15.0)
engineeringPositiveTolerance	CDATA	#IMPLIED	the positive (maximum) tolerance of the device. The value is expressed as a positive floating-point percentage. (e.g. 10.3% is expressed as 10.3)

Ranged Characteristic Attributes



Attribute Name	Type	Required?	Description
definitionSource	CDATA	#IMPLIED	A URL pointing to the location which contains a list of allowed values for the this characteristic. Or a string defining the ISBN number, or some other identifier for the source of the definition.
rangedCharacteristicName	CDATA	#IMPLIED	The name of the characteristic, e.g. "leakage current", "breakdown voltage".
rangedCharacteristicLowerValue	CDATA	#IMPLIED	The lower range value of the characteristic expressed as a floating-point number.
rangedCharacteristicUpperValue	CDATA	#IMPLIED	The upper range value of the characteristic expressed as a floating-point number.
engineeringUnitOfMeasure	CDATA	#IMPLIED	The unit of measure of the value. Allowed values for this field are OHM,FARAD,HENRY,VOLT,AMP,WATT,HERTZ, JOULE,LUMEN
engineeringNegativeTolerance	CDATA	#IMPLIED	the negative(minimum) tolerance of the device. The value is expressed as a positive floating-point percentage. (e.g. -15% is expressed as 15.0)
engineeringPositiveTolerance	CDATA	#IMPLIED	the positive(maximum) tolerance of the device. The value is expressed as a positive floating-point percentage. (e.g. 10.3% is expressed as 10.3)

Enumerated and Textual

? **·definitionSource**
string

? **·enumeratedCharacteristicName**
string

? **·enumeratedCharacteristicValue**
string

Attribute Name	Type	Required?	Description
enumeratedCharacteristicName	CDATA	#IMPLIED	The attribute name
enumeratedCharacteristicValue	CDATA	#IMPLIED	The attribute value
definitionSource	CDATA	#IMPLIED	A URL pointing to the location which contains a list of allowed values for the this characteristic. Or a string defining the ISBN number, or some other identifier for the source of the definition.

? **·definitionSource**
string

? **·textualCharacteristicName**
string

? **·textualCharacteristicValue**
string

Attribute Name	Type	Required?	Description	Alias
textualCharacteristicName	CDATA	#IMPLIED	The attribute name	
textualCharacteristicValue	CDATA	#IMPLIED	The attribute value	
definitionSource	CDATA	#IMPLIED	A URL pointing to the location which contains a list of allowed values for the this characteristic. Or a string defining the ISBN number, or some other identifier for the source of the definition.	