



Business Message Standard (BMS)

Use of Attribute Value Pairs to Transmit Attributes in GDSN

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25-Jan- 2006	0.0.2	M. Kudela	Editorial	Editorial	
9-Feb-1 2006	0.0.3	M. Kudela	Public Review Comments	Use Case moved to Implementation Concerns; GDD Report added; optional value added validation text added.	
15-Oct-2008	0.0.4	E.Kauz	Template Update		

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1. Business Domain View

The GS1 community understands that there are business practices data, local data and specific trading partner data needs that are not supported in the global standard today. However, the sharing of this data is essential to the trading partner community. In order for the GDSN to realize the value of an in-teroperable network, the policy of "embracing the chaos" has been established in which a standardized process for sharing non-standard data is being defined. While the goal of the GDSN Network is the "sharing of standardized" data, the short term practicality of developing a global network requires a realistic migration plan. The purpose of this document is to document the standardized process for sharing non-standard data.

1.1. Problem Statement / Business Need

The business need is to deliver a simple technical solution to transport non-standard attributes in the GDSN using standard messages.

1.2. Objective

The objective is to introduce Attribute / Value Pairs (A/VP) as the solution to the business problem and to describe the benefits of using A/VPs. A/VPs are a single schema "template" of data structures. A/VPs provide a user with the ability to exchange new attributes and their values in XML through the use of the template. Suppliers, retailers and other sending part-ners now have the capability to include high-priority attributes in transmitted XML documents immediately upon approval – without waiting on the development and approval of attribute-specific schemas to be finalized through the standards process. Recipient data pools and trading partners may pull expected attribute names and their value pairs from the GDD and use the template to parse their XML documents.

1.3. Audience

The audience of this document would be any participant in the Global Data Synchronization Network (GDSN), including retailers, manufacturers, data pools, service providers, Member Organizations and third parties. This document will be particularly of interest to members and participants of the:

- GS1 GDSN Business Users Group
- GS1 GDSN Task Group
- GDSN Extended Attributes Team
- GS1 New Item Forms Automation Team
- GS1 Extended Attributes / New Item Forms Team and
- Any other member and participant working with A/VPs.

1.4. References

Reference Name	Description
BMS Package AVP Model. zip	Aug. 1 Schema sample, schema, and model for review
Attribute Value Pairs – Continuation of the Technical Implementation Considerations	Physical Meeting presentation June 6, 2005
Attribute Value Pairs 15062005	A/VP presentation June 16, 2005
BCD GDSN Extended Attributes	Business Communication authored by GDSN Extended Attribute Team

1.5. Acknowledgements

The following is a list of individuals (and their companies) who participated in the creation, review and approval of this BMS.

1.5.1. BRG Work Group

Function	Name	Company / organisation
Chair	Barb Munro Marcel Yska	Kraft Royal Ahold
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Member	Angelo, Kerry	1SYNC
Participant	Della Mora, Lina	GS1 Canada
Member	D'Hondt, Jean-Nicolas	DelHaize
Member	Edison, Carol	General Mills
Member	Etrie, John	IDEA
Participant	Hughes, Chris	1SYNC
Participant	Kauz, Eric	GS1
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Member	Robba, Steven	J&J
Member	Sobrinho, Gabriel	GS1 Mexico
Participant	Spooner, Karen	Kraft
Member	Vantine, Chrystopher	GXS
Participant	Vazzano, Steve	1SYNC

1.5.2. Design Team Members

Function	Name	Organisation
Modeller	Eric Kauz	GS1
XML Technical Designer	Dipan Anarkat	GS1
EANCOM Technical Designer	NA	NA
Peer Reviewer	Eric Kauz	GS1
Business Case Team Manager	Ben Steinberg	GDSN Inc.
Work Group Manager	Melanie Kudela	GS1

2. Business Context

Context Category	Value(s)
Industry	All
Geopolitical	All
Product	All
Process	All
System Capabilities	All
Official Constraints	None

3. Additional Technical Requirements Analysis

This section documents the analysis of additional technical requirements.

3.1. Technical Requirements (optional)

Not Applicable

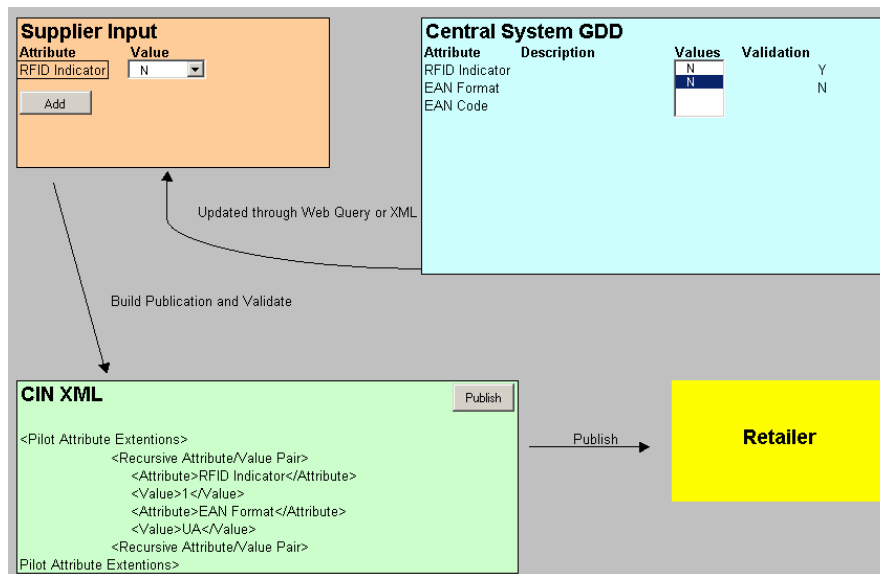
4. Business Transaction View

This Business Transaction View is described by the business requirements of a business practice between trading partners needing to exchange attributes that have not completed the full standardization process. For business reasons, these attributes need to be exchanged in a quick and flexible method. In the future, these attributes may be passed in the GDSN in a standard format. For each retailer's attribute, the attribute name and definition are provided as well as additional detail as found in the GDD Fast Track Attributes, namely:

Attribute Name	Rationale	Business Purpose Rule Rationale
Definition	Field Length Min	Validation Rules
Example	Field Length Max	Level of Item Hierarchy Effected
Data Type	Maximum Usage	Existing GDD Equivalent NOT IN Catalog Item Notification

An A/VP is a single schema “template” of data structures allowing for the parsing of new attributes and their values in XML. In Figure 1, the blue area represents the FT attributes already approved and located on the GDD FT site. These attributes – RFID Indicator, EAN Format and EAN Code – are now ready to be transmitted in the Global Data Synchronization Network (GDSN) as A/VPs. The Supplier’s application, shown in the orange area, makes use of one of these attributes – RFID Indicator. The application uses the A/VP schema template to create the extension to the Catalogue Item Notification (CIN) message, rendered in green. In the XML instance of the extension, the Supplier populates the Attribute tag with the attribute name – “RFID Indicator” – and the Value tag with the value they wish to send for the RFID Indicator – “1”. The CIN with the RFID Indicator is published to the Retailer. The retailer, shown in yellow, receives the CIN data along with the RFID Indicator and its’ value.

Figure 4-1 What are A/VPs?



4.1. Business Transaction Use Case Diagram

(Readers interested in a Use Case applying A/VPs in a specific example are referred to the Implementation Concerns Section of this document.)

4.2. Use Case Description

Not Applicable

4.3. Business Transaction Activity Diagram(s)

Not Applicable

4.4. Business Transaction Sequence Diagram(s) (optional)

Not Applicable

5. Information Model (Including GDD Report)

5.1. Data Description:

CLASS (ABIE)	ATTRIBUTE (BBIE)	ASSOCIATION (ASBIE)	SECONDARY CLASS	Related Requirements
AttributeValuePairExtension				7.2.1
		value	AttributeValue	7.2.1
AttributeValue				7.2.1
	name			7.2.1
	attributeValueContent			7.2.1

5.2. GDD Report

CLASS (ABIE)	ATTRIBUTE (BBIE)	ASSOCIATION (ASBIE)	SECONDARY CLASS	Definition	Multiplicity	Data Type Components
AttributeValuePairExtension				The transmission of non-standard data done in a simple, flexible, and easy to use method.		
		value	AttributeValu e	Provides the assigned amount, quantity, detail or description of the named business content that fulfils the current context of a message exchange between business partners.	1..*	
AttributeValue					1..1	

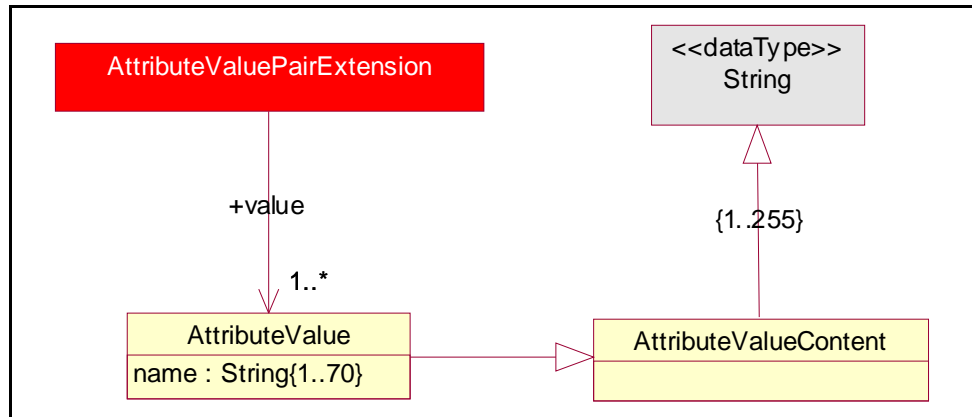
CLASS (ABIE)	ATTRIBUTE (BBIE)	ASSOCIATION (ASBIE)	SECONDARY CLASS	Definition	Multiplicity	Data Type Components
	name			This is a textual identification of the business content transported using the Attribute/Value Pair methodology.	1..1	String
	attributeValueContent			This is the business content transported using the Attribute/Value Pair methodology.	1..1	String

5.3. Class Diagrams

The Class model for the Attribute/Value Pair is the following:

There is one generic structure to the A/VP. The data model of the A/VP schema is the following:

Figure 5-1 The A/VP data model.



In the above model, the name of the attribute, indicated by the tag “name” may have a length from 1 to 70 characters. The attribute value, indicated by the Attribute Value Content tag, may have a length from 1 to 255 characters. The schema is created from this data model.

5.4. Code Lists

Not Applicable

6. Business Document Example

Not Applicable

7. Implementation Considerations

The A/VP schema is shown in Figure 3:

Figure 7-1 The A/VP Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema targetNamespace="urn:ean.ucc:gdsn:2" xmlns:gdsn="urn:ean.ucc:gdsn:2"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="unqualified" attributeFormDefault="unqualified"
version="2.0.2">
  <xsd:annotation>
    <xsd:documentation>
      -----
      © Copyright GS1, 2005
      GS1 is providing this XML Schema Definition file and resultant XML file as a service to interested industries.
      This XML Schema Definition file and resultant XML file were developed through a consensus process of interested parties.
      Although efforts have been made to ensure that the XML Schema Definition file and resultant XML file are correct, reliable, and
      technically
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      BE SUITABLE FOR
      ANY PURPOSE OR WORKABLE IN ANY APPLICATION, OR OTHERWISE. Use of the XML Schema Definition file and resultant
      XML
      file are with the understanding that GS1 has no liability for any claim to the contrary, or for any damage or loss of any kind or nature.
      Version Information:
      Version Number: 2.0.2
      Date of creation: August 2005

      The schema and subsequent updates will be provided on the GS1 websites.

      -----
    </xsd:documentation>
  </xsd:annotation>
  <xsd:complexType name="AttributeValueType">
    <xsd:simpleContent>
      <xsd:extension base="gdsn:AttributeValueContentType">
        <xsd:attribute name="name" use="required">
          <xsd:simpleType>
            <xsd:restriction base="xsd:string">
              <xsd:maxLength value="70"/>
              <xsd:minLength value="1"/>
            </xsd:restriction>
          </xsd:simpleType>
        </xsd:attribute>
      </xsd:extension>
    </xsd:simpleContent>
  </xsd:complexType>
  <xsd:complexType name="AttributeValuePairExtensionType">
    <xsd:sequence>
      <xsd:element name="value" type="gdsn:AttributeValueType" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:simpleType name="AttributeValueContentType">
    <xsd:restriction base="xsd:string">
      <xsd:maxLength value="255"/>
      <xsd:minLength value="1"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:element name="attributeValuePairExtension" type="gdsn:AttributeValuePairExtensionType"/>
</xsd:schema>
```

A sample XML instance document follows in Figure 4:

Figure 7-2 The instance document snippet of the CIN based on the A/VP schema.

```
<extension>
  <gdsn:attributeValuePairExtension xsi:schemaLocation="urn:ean.ucc:2
    ../Schemas/AttributeValuePairExtensionProxy.xsd">
    <value name="packagingWeightValue">15</value>
    <value name="packagingWeightUnitOfMeasure">kg</value>
  </gdsn:attributeValuePairExtension>
</extension>
```

Table 7-1 Data Exchanged between trading partners using the A/VP

attributeName	packagingWeightValue	attributeValue	15
attributeName	packagingWeightUnitOfMeasure	attributeValue	kg

8. Testing

This section describes the testing criteria for business solutions.

8.1. Pass / Fail Criteria

Not Available

8.2. Test Data

Attribute	Value
packagingWeightValue	15
packagingWeightUnitOfMeasure	kg

9. Appendices

This technical document reflects the generic usage of the Attribute / Value Pair extension. However, for those readers interested in an implementation example describing the Use Case for applying A/VPs in an administrative process for transporting non-standard attributes, the following use case has been provided. This use case is for illustrative purposes and transporting of non-standard attributes should not be construed as the only application of A/VPs in GDSN.

Use Case ID	UC-1 for the Use of A/VPs to Transmit Non-Standard Attributes in a Standard Message
Use Case Name	The Transmission of Non-Standard Attributes in a Standard Message Use Case
Use Case Description	This use case describes how to implement the transmission of non-standard attributes within the GDSN in an approved standard manner, using standard messages.
Actors (Goal)	Supplier Retailer

	Recipient Data Pool Source Data Pool																					
Performance Goals	To make possible the sending of new non-standard attributes through the GDSN.																					
Preconditions	The trading partners and certified data pools are capable of transmitting a Catalogue Item Notification (CIN) message. The Retailer trading partner has posted their valid retailer specific attributes, definitions and other critical information on their part of the retailer specific page.																					
Post conditions																						
Scenario	<p>Begins when...</p> <p>A supplier is exchanging a CIN message with the retailer and needs to know what additional non-standard information the retailer requires to fulfil the function. For example, the supplier maybe exchanging new product information and has included the attribute names and their values for the GDD Fast Track New Item Forms. Now the supplier needs to know whether there are additional retailer specific attributes that the retailer needs to successfully automate the New Item Form with complete data.</p> <p>Continues with...</p> <table><tr><th>Step #</th><th>Actor</th><th>Activity Step</th></tr><tr><td>1</td><td>Supplier</td><td>The Supplier accesses the link at: http://gdd.gs1.org/GDD/public/default.asp and navigates to the part of the page dedicated to the retailer the supplier is working with. The supplier scans the list of attributes and navigates to the spreadsheet containing the definitions and details.</td></tr><tr><td>2</td><td>Supplier</td><td>The supplier selects the attributes which are key to the information to be exchanged or which are noted as key attributes by the retailer and creates a communication to the data pool including these attribute names and their values. The communication between the supplier and the data pool may be in any format: manual or automatic; EDI, XML, or any other technical format already in use between the supplier and their certified data pool.</td></tr><tr><td>3</td><td>Supplier or Data Pool</td><td>Either the supplier or the receiving Source Data Pool needs to format the communication into a valid GS1 A/VP. One of them will create an XML CIN message containing the Retailer Specific Attributes. This portion of the XML message must successfully validate against the CIN schema and must be located in the extension part of the CIN. .</td></tr><tr><td>4</td><td>Source Data Pool</td><td>The Source Data Pool ensures that the CIN XML message is valid and passes through Retailer Specific Attributes to the Recipient Data Pool without validating them. Validation of the A/VP can optionally be done as a value added service by the Source Data Pool should a specific attribute be owned by a member of the Source Data Pool.</td></tr><tr><td>5</td><td>Recipient Data Pool</td><td>The Recipient Data Pool passes through Retailer Specific Attributes to the Retailer without validating them. Validation of A/VPs can optionally be done as a value added service by the Recipient Data Pool should specific attributes be owned by a member of the Recipient Data Pool.</td></tr><tr><td>6</td><td>Retailer</td><td>The Retailer accepts the CIN and processes it along with the non-standard attributes.</td></tr></table> <p>Ends when... The Retailer has successfully received the non-standard attributes in the CIN and in the case of the New Item Forms example, the New Item Form has been successfully automatically populated using data from the GDSN.</p>	Step #	Actor	Activity Step	1	Supplier	The Supplier accesses the link at: http://gdd.gs1.org/GDD/public/default.asp and navigates to the part of the page dedicated to the retailer the supplier is working with. The supplier scans the list of attributes and navigates to the spreadsheet containing the definitions and details.	2	Supplier	The supplier selects the attributes which are key to the information to be exchanged or which are noted as key attributes by the retailer and creates a communication to the data pool including these attribute names and their values. The communication between the supplier and the data pool may be in any format: manual or automatic; EDI, XML, or any other technical format already in use between the supplier and their certified data pool.	3	Supplier or Data Pool	Either the supplier or the receiving Source Data Pool needs to format the communication into a valid GS1 A/VP. One of them will create an XML CIN message containing the Retailer Specific Attributes. This portion of the XML message must successfully validate against the CIN schema and must be located in the extension part of the CIN. .	4	Source Data Pool	The Source Data Pool ensures that the CIN XML message is valid and passes through Retailer Specific Attributes to the Recipient Data Pool without validating them. Validation of the A/VP can optionally be done as a value added service by the Source Data Pool should a specific attribute be owned by a member of the Source Data Pool.	5	Recipient Data Pool	The Recipient Data Pool passes through Retailer Specific Attributes to the Retailer without validating them. Validation of A/VPs can optionally be done as a value added service by the Recipient Data Pool should specific attributes be owned by a member of the Recipient Data Pool.	6	Retailer	The Retailer accepts the CIN and processes it along with the non-standard attributes.
Step #	Actor	Activity Step																				
1	Supplier	The Supplier accesses the link at: http://gdd.gs1.org/GDD/public/default.asp and navigates to the part of the page dedicated to the retailer the supplier is working with. The supplier scans the list of attributes and navigates to the spreadsheet containing the definitions and details.																				
2	Supplier	The supplier selects the attributes which are key to the information to be exchanged or which are noted as key attributes by the retailer and creates a communication to the data pool including these attribute names and their values. The communication between the supplier and the data pool may be in any format: manual or automatic; EDI, XML, or any other technical format already in use between the supplier and their certified data pool.																				
3	Supplier or Data Pool	Either the supplier or the receiving Source Data Pool needs to format the communication into a valid GS1 A/VP. One of them will create an XML CIN message containing the Retailer Specific Attributes. This portion of the XML message must successfully validate against the CIN schema and must be located in the extension part of the CIN. .																				
4	Source Data Pool	The Source Data Pool ensures that the CIN XML message is valid and passes through Retailer Specific Attributes to the Recipient Data Pool without validating them. Validation of the A/VP can optionally be done as a value added service by the Source Data Pool should a specific attribute be owned by a member of the Source Data Pool.																				
5	Recipient Data Pool	The Recipient Data Pool passes through Retailer Specific Attributes to the Retailer without validating them. Validation of A/VPs can optionally be done as a value added service by the Recipient Data Pool should specific attributes be owned by a member of the Recipient Data Pool.																				
6	Retailer	The Retailer accepts the CIN and processes it along with the non-standard attributes.																				

Alternative Scenario	<i>(any alternatives to the above scenario)</i>		
	Step #	Actor	Activity Step
Related Requirements	1		
Related Rules			

10. Summary of Changes

Change	BSD Version	Associated CR Number