OASIS

Format of Automotive Repair Information

Architecture and Specifications

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Abstract:

> *The objective of the Technical Committee, as stated in its Charter is:*

> *To develop a standard format to enable access to emission-related repair, diagnostic and technical information with respect to the vehicles covered by the scope of Directive 70/220/EEC, i.e. passenger cars and light commercial vehicles.*

> *The purpose of this deliverable is to specify the standard format referred to in the Charter.*

Status:

> *This version of the document was discussed at the Technical Committee meeting on 28-05-2003 and agreed as the final version.*

Table of Contents

1 Introduction

This document defines the technical specification for a standard format of emission-related repair, diagnostic and technical information developed by the OASIS Technical Committee for the Format of Automotive Repair Information (OASIS Autorepair).

The objective of the Technical Committee, as stated in its Charter [1], is:

> *"To develop a standard format to enable access to emission-related repair, diagnostic and technical information with respect to the vehicles covered by the scope of Directive 70/220/EEC, i.e. passenger cars and light commercial vehicles."*

The purpose of this deliverable is to specify the standard format referred to in the Charter.

Development of the Specification was achieved with the co-operation of many parties active in the automotive industry in Europe. Members of the Technical Committee worked in their capacity as individuals, in many cases with the support of the organisations with whom they were employed. Some of those organisations have made statements regarding their position in relation to the publication of this Specification, which are included in Appendix C.

The Specification relates to ways of describing packages of emission-related repair, diagnostic and technical information, using defined types of meta data, so that those packages can be located and accessed through the Internet. These information types are divided into eight namespaces (related to information classes such as vehicle identification, components, training). Overall, fewer than one hundred meta data items are defined, which are sufficient to describe the information packages.

Also specified is a technical framework for representing the meta data, based on the existing recommendation from the World Wide Web Consortium (W3C) known as the Resource Description Framework (RDF) [N3,N4]. Using this framework for describing Internet resources, it is possible to envisage efficient implementations using standard, possibly open source, tools and methods.

Accompanying this document, and forming part of the Technical Specification is a set of RDF Schema definitions which specify formally the classes of resources, the properties (meta data) they may take and the relationships between them.

The Specification does not specify the structure of the information itself, except to define a set of preferred electronic formats (e.g. XML, HTML, PDF) for online delivery. It is not intended that manufacturers should change the structure of the technical information they produce, except to ensure that it is available as discrete information packages.

Although the Specification includes some examples of how the meta data could be used to implement information systems, it does not prescribe the way in which such systems should operate. Neither does it address the timescale or responsibility for implementation of compliant systems.

99 2 Terminology

100 The key words *must*, *must not*, *required*, *shall*, *shall not*, *should*, *should not*, *recommended*, *may*, and
101 *optional* in this document are to be interpreted as described in IETF RFC 2119 [N1].

102 The following definitions provide the basis of the understanding of various terms used in this document.

103

104 *Content* - The text, graphics and other multimedia data that forms the body of information about a
105 particular domain (in our case Automotive Repair Information).

106

107 *Information Package (package)* - A self-contained unit of content. The characteristics of an
108 information package are described in the Autorepair Requirements Specification [3] Ref 2.5.2:

109   *"Information must be available in chargeable units which are reasonable in comparison*
110   *to the nature of the repair. When the manufacturer only holds historical information in*
111   *hard copy format or (for example) a large PDF file, it may be reasonable to only provide*
112   *the whole document."*

113

114 *Meta Data* - Meta data are data about data. That is:

115 Data that describe other data

116 Data that describe content

117 The term may also refer to any file or database that holds information about another database's
118 structure, attributes, processing or changes.

119

120 *Namespace* - An XML namespace is a collection of names, identified by a URI reference [N2], which
121 are used in XML documents as element types and attribute names. (Definition taken from Namespaces
122 in XML [2].

123

124 *Vocabulary* - A vocabulary is a fixed set of names (terms), with a fixed meaning, that are used to
125 describe a particular domain (in our case Automotive Repair Information).

126 When used in the context of XML, a vocabulary can be:

127 A namespace

128 The elements and attributes in an XML DTD or Schema

129 The properties in an RDF collection

130 In this sense a vocabulary can be viewed as the terms used for meta data, rather than content.

131

132 *Terminology* - A set of terms (words and phrases), with an agreed definition for a domain, used in
133 content or meta data. A full terminology may consist of a set of related entities:

134 The base term

135 A definition

136 Synonyms (allowable alternative words or phrases for the same base term)

137 Translations

138 Variations (allowable in different contexts, eg parts of speech)

139

140   ***Ontology*** - An ontology is a shared set of terms describing an application domain which has a common
141   understanding by agents in that domain.

142   Ontologies establish a joint terminology between members of a community of interest. These members
143   can be human or automated agents.

144   An ontology consists of a vocabulary to represent the terms and a set of relationships between those
145   terms which define the common understanding.

146

147   ***Taxonomy*** - A hierarchical classification of terms in a domain. A taxonomy can be viewed as a
148   specialisation of an ontology in which the relationship defined between terms is class/sub-class.

149 3 Usage

150 The architecture specified here assumes that there are three types of 'actor' involved:

151 Information Producers

152   Are the original creators of emissions-related repair information. They are the manufacturers
153   themselves.

154 Information Consumers

155   Any aftermarket organisation that requires access to emissions-related repair information and
156   person entitled to see it.

157 Information Providers

158   Any party which takes original emissions-related repair information from Information Producers
159   and delivers it on to Consumers, perhaps adding some value along the way (eg by putting all
160   information into a common format).

161 Some manufacturers could be both Producers and Providers.

162 There are two main ways in which it is envisaged that the meta data described in this could be used:

163 Use Case One

164   *To describe the information sought by Information Consumers in order to make a*
165   *repair. This includes information about the vehicle given its VIN.*

166 Use Case Two

167   *To describe information packages made available by Information Producers and*
168   *Providers.*

169

170 Further use cases are described in the document SC1-D4 Use Cases – for the OASIS Autorepair
171 Specification [4].

172   4 Technical Framework
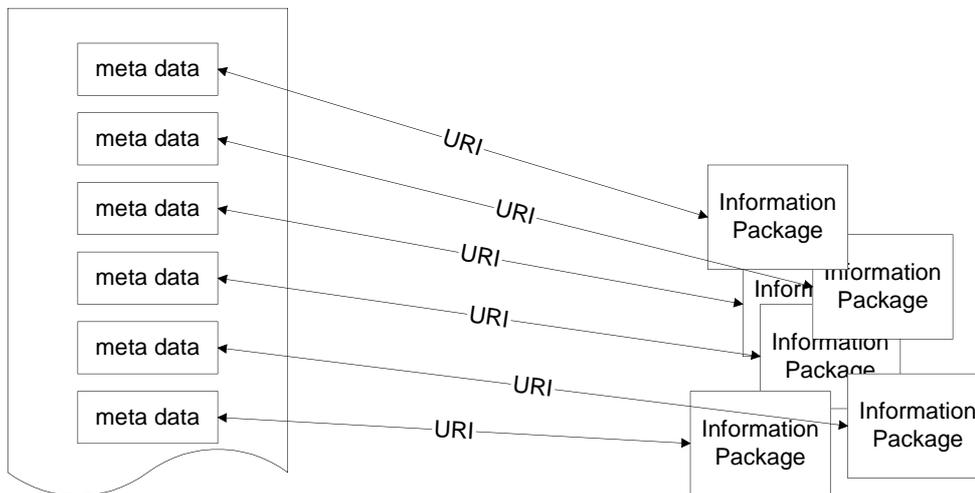
173   4.1 Overview

174 This Specification defines the framework for a common meta data format, based on agreeing a
175 terminology and representation, whereby all information content within the scope of the Specification
176 can be *described* in a common way.

177

178 The content is split into a series of information packages which are described by collections of meta
179 data.

180   4.2 Information Packages

181 The only requirement of the content is that each package must be uniquely identified by a URI and
182 must be in one of the content formats defined in this specification (the properties core:textFormat and
183 core:graphicFormat) or be viewable using a freely available browser plug-in as specified by core:plugIn.

184 The use of a URI to identify each information package does not imply that each package is freely
185 available on the Internet.

186   4.3 Meta Data Framework

187 The technical framework used to express meta data for OASIS AutoRepair is based on the W3C's
188 Resource Description Framework (RDF) [N3,N4]. RDF defines a framework by which *resources* can be
189 described by *meta data*. A resource is defined as any discrete object that can be referenced by a URI.
190 The main type (class) of resource described in this Specification is the Information Package.

191 Using RDF, an item of meta data (the value of a property) can be expressed as a triple:

192

193
```
<schema:property>Value</schema:property>
```

194

195 The schema prefix indicates a namespace in which a collection of properties and resources are
196 defined. This Specification defines a number of such namespaces. The properties defined in a

197 namespace may be used to describe the information packages themselves, or other resources defined
198 in the namespace.

199 For example, the property textFormat specifies the text format of an information package – it is a
200 property of the package itself. That package may also be applicable to a vehicle of a particular model.
201 In this case *Vehicle* is a resource with a property *model*.

202 For the sake of consistency, the Specification defines a resource called Info, which represents an
203 information package, so that all the meta data associated with an information package are properties of
204 a resource.

205 Meta data describing a resource is contained in the RDF Description element, whose about attribute
206 specifies the URI of the resource being described.

207

```
<rdf:Description
   rdf:about="https://erwin.volkswagen.de/en/docs/bPAS53202020.pdf">
   <dc:Title>Body Repairs</dc:Title>
   <dc:Language>EN</dc:Language>
   <core:textFormat>PDF</core:textFormat>
   <core:Vehicle rdf:resource="#passat97"/>
   <access:Channel rdf:resource="#VW001"/>
   <dcterms:isPartOf
   rdf:resource="https://erwin.volkswagen.de/en/docs/bPAS5320.pdf"/>
</rdf:Description>
```

218

219 This meta data describes the package identified by the URI
220 `https://erwin.volkswagen.de/en/docs/bPAS53202020.pdf`.

221

222 4.4 RDF and RDF Schema

223 This Specification defines, in a formal way, the resources and properties that can be used to describe
224 information packages. In RDF, such a formal specification is made using RDF Schema [N4]. The
225 following is an extract from the specification of RDF Schema;

226 "The RDF data model, as specified in [N3] defines a simple model for describing interrelationships
227 among resources in terms of named properties and values. RDF properties may be thought of as
228 attributes of resources and in this sense correspond to traditional attribute-value pairs. RDF properties
229 also represent relationships between resources. As such, the RDF data model can therefore resemble
230 an entity-relationship diagram. The RDF data model, however, provides no mechanisms for declaring
231 these properties, nor does it provide any mechanisms for defining the relationships between these
232 properties and other resources. That is the role of RDF Schema."

233 A set of RDF Schema definitions is provided as part of this OASIS TC Specification.

234 4.5 Resources with Properties

235 Resources within the Specification are described in Appendix A. Each resource has a number of
236 properties available for use within a metadata instance. A resource in RDF is defined in the schema file
237 as a Class, the example below shows the schema Class for the *core:Info* resource.

238

```
<rdfs:Class rdf:ID="Info">
       <rdfs:label>Top class for information about a resource</rdfs:label>
</rdfs:Class>
```

242

243

244 From this top level Class other classes or properties are attached. The example below shows how the
245 *TextFormat* Class and Property are defined within the *Info* Class.

246

```
247     <rdfs:Class rdf:ID="TextFormat">
248             <rdfs:label xml:lang="en">The format of the resource</rdfs:label>
249             <rdfs:subClassOf rdf:resource="#Info"/>
250     </rdfs:Class>
251
252     <rdfs:Property rdf:ID="textFormat">
253             <rdfs:label xml:lang="en">the text format type
254  property</rdfs:label>
255             <rdfs:domain rdf:resource="#Info"/>
256             <rdfs:range rdf:resource="#TextFormat"/>
257     </rdfs:Property>
```

258

259 The above example states that *TextFormat* Class is a subClass of *Info* and the property *textFormat*
260 (notice the case change) has a *domain* of *Info.* This means that the property belongs as a child of *Info*
261 and its *range* is an Instance of the Class *TextFormat.*

262 In the example the range for the property *textFormat* should be an instance of the Class TextFormat. In
263 the specification, only a curtain number of text formats have been approved. In the schema, all the valid
264 instances of the Class *TextFormat* have been created. The next example shows two valid instances for
265 the *TextFormat* Class.

266

```
267  <TextFormat rdf:ID="HTML">
268     <rdfs:label xml:lang="en">This document is in HTML format</rdfs:label>
269     <dc:format>text/html</dc:format>
270  </TextFormat>
271
272  <TextFormat rdf:ID="PDF">
273     <rdfs:label xml:lang="en">This document is in PDF format</rdfs:label>
274     <dc:format>application/pdf</dc:format>
275  </TextFormat>
```

276

277 These two instances have some simple explanations in English to describe what they are. Other
278 language variant descriptions can be added to these Class instances by adding another *rdfs:label* with
279 a different *xml:lang* attribute to describe the language used (ISO639-1 codes are used for language
280 variant descriptions).

281 The other element used in the instance is *dc:format* which describes the MIME type of the instance.
282 This has been added to the Class instance to relay more meaning about the instance. The use of the
283 Dublin Core namespace is an example of where it is best practice to use existing and authoritative
284 metadata where possible, rather than create new terms.

285 Finally the next example shows how the Class instance is referenced from within a metadata
286 description of a document.

287

```
288  <core:Info rdf:ID="PAS.5320.20.20">
289     <core:infoType rdf:resource="&core;Repair"/>
290     <core:textFormat rdf:resource="&core;PDF"/>
291  </core:Info>
```

292

293 This explains that the document being described has a text format of PDF. Referencing externally
294 described instances lessens the ambiguity in the description. Although it would be possible to have the

295 text format described as a string literal (plain text), referencing out allows for less human errors, typos
296 etc. which would reduce the quality of the overall metadata.

297 The following section contains more information on literals.

298 4.6 Literals and Units

299 A literal is a metadata value that doesn't reference an existing piece of information. Instead the value is
300 specified directly, either through manual keying by a user or through the use of a client application. The
301 example below shows a value as a literal.

302

```
303      <core:numberOfPages>5</core:numberOfPages>
```

304

305 The example shows that the number of pages in this document is equal to 5.

306 This information is valid, and in the case of a property of integer data type, can be used accurately.
307 However, in the case of string literals, with a constrained set of values, it is better practice to use
308 references rather than literals as this reduces the scope for error – an RDF parser can check that the
309 reference is valid and that the value of the property is in fact one of the constrained string values.

310 An example of a reference is shown below.

311

```
312      <fordLex:bodyAndInteriorTerm rdf:resource="&fordLex;BodyRepair"/>
```

313

314 This describes a property value that the document in question relates to the term BodyRepair. The
315 reference bodyRepair is shown below.

316

```
317      <BodyAndInterior rdf:ID="BodyRepair">
318      <rdfs:label xml:lang="en">body repair</rdfs:label>
319      </BodyAndInterior>
```

320

321 In this reference, more information could be added, such as language variants of the term.

322 Another example of a string literal:

323

```
324      <core:validFrom>1999-06-01T09:00:00+01:00</core:validFrom>
325      <core:validTo>2005-06-01T09:00:00+01:00</core:validTo>
```

326

327 Although these values are string literals, the schema for this term has been set to the W3C date and
328 time format (W3CDTF) and must comply with this standard. The schema is shown for reference below.

329

```
330      <rdfs:Property rdf:ID="validFrom">
331         <rdfs:label xml:lang="en">The starting validity of this
332      resource</rdfs:label>
333         <rdfs:domain rdf:resource="#Info"/>
334         <rdfs:range rdf:resource="&dcterms;W3CDTF"/>
335      </rdfs:Property>
336
337      <rdfs:Property rdf:ID="validTo">
338         <rdfs:label xml:lang="en">The ending validity of this
339      resource</rdfs:label>
340         <rdfs:domain rdf:resource="#Info"/>
```

```
341          <rdfs:range rdf:resource="&dcterms;W3CDTF"/>
342      </rdfs:Property>
```

343

344 The schema range for these properties has been set to *&dcterms;W3CDTF* and the value must
345 conform to this standard.

346 Where a literal has both a value and units of measurement it is specified as follows:

347

```
348      <vid:horsePower rdf:parseType="Resource">
349                      <rdf:value>90</rdf:value>
350                      <measure:unit rdf:resource="&measure;PS"/>
351      </vid:horsePower>
```

352

4.7 Terminology

354 As well as the string literals defined in the RDF Schema in this Specification, there are meta data
355 properties that can take values from a lexicon of terms. Typically these properties are the dc:subject
356 properties that represent general meta data describing the subject matter of an information package.

357 The string literals for these meta data could come from any suitably referenced lexicon. As part of the
358 work of this Technical Committee, lexicons have been made available by Ford Motor Company for use
359 as a reference for such string literals. An example of the usage of such as lexicon in meta data is
360 shown below:

361

```
362      <dc:Subject rdf:parseType="Resource">
363         <fordLex:bodyAndInteriorTerm rdf:resource="&fordLex;BodyRepair"/>
364      </dc:Subject>
```

365

366 *fordLex* is the namespace; this describes the lexicon in use. *bodyAndInteriorTerm* property describes
367 the subgroup for the final term. This allows implementations to break down the large vocabulary. Finally
368 the *rdf:resource* references a term from within the lexicon, in this instance *BodyRepair*.

369 Any other lexicon that is used in conjunction should follow the same standards. Below shows the
370 schema Class, Property and Instance being referenced in the above example.

371

```
372      <!-- Top Class, a container -->
373      <rdfs:Class rdf:ID="FordLexicon">
374      <rdfs:label xml:lang="en">This is the ford lexicon top class</rdfs:label>
375      </rdfs:Class>
376
377      <!-- Subdomain: Body & Interior -->
378
379      <rdfs:Class rdf:ID="BodyAndInterior">
380         <rdfs:label xml:lang="en">Body &amp;amp; Interior</rdfs:label>
381         <rdfs:subClassOf rdf:resource="#FordLexicon"/>
382      </rdfs:Class>
383
384      <rdfs:Property rdf:ID="bodyAndInteriorTerm">
385         <rdfs:label xml:lang="en">The Body &amp;amp; Interior Class</rdfs:label>
386         <rdfs:domain rdf:resource="#FordLexicon"/>
387         <rdfs:range rdf:resource="#BodyAndInterior"/>
388      </rdfs:Property>
389
390      <!-- Term: body repair -->
```

```
391
392    <BodyAndInterior rdf:ID="BodyRepair">
393       <rdfs:label xml:lang="en">body repair</rdfs:label>
394    </BodyAndInterior>
```

395

396   The example shows two Classes, the container Class *FordLexicon*, and the *BodyAndInterior* Class
397   which is used for creating instances of that subClass. The property *bodyAndInteriorTerm*, is what will be
398   used when adding terms from this lexicon in metadata. It has a domain of *FordLexicon* and the range
399   must be an instance of the *BodyAndInterior* Class. Finally, the instance has also been shown, this is
400   what must be referenced from the main metadata.

401

4.8 Languages

403   This specification covers the use of string literals in multiple languages. When creating any string
404   literals or an instance of a Class, the attribute *xml:lang* should be used. The following example shows
405   this usage.

406

```
407    <rdfs:label xml:lang="en">body repair</rdfs:label>
```

408

409   The value for *xml:lang* must come from the ISO standard: 639-1 [N8] where two letter codes describe
410   the language in use. On this occasion *en* states the language in use is English. Qualifiers are also
411   allowed, so *en-US* describes that the language in use is American English. If no *xml:lang* attribute is
412   set, then the literal is available for any language, for example:

413

```
414    <rdfs:label>GlobalBrand</rdfs:label>
```

415

416   In this case, since As the *GlobalBrand* is an internationally known vehicle name, there is no need for
417   the *xml:lang* attribute to be set.

418   The use of *xml:lang* means that Class Instances like the example below can be used internationally
419   from one reference.

420

```
421    <Fuel rdf:ID="Petrol">
422       <rdfs:label xml:lang="en">Petrol</rdfs:label>
423       <rdfs:label xml:lang="fr">Gaz De Petrole Liquefie</rdfs:label>
424    </Fuel>
```

425

426   The example shows that although the reference is:

427

```
428    <vid:fuelType rdf:resource="&vid;Petrol"/>
```

429

430   The implementation could easily pick up and use the French variant.

4.9 Navigation and Relationships between Packages

Navigation and relationships between documents play a large part in metadata discovery. Where information packages are presented through a Web site, there will be relationships (both implicit and explicit) between the packages and the way in which users can navigate between them.

Once packages are removed from the context of the Web site, those relationships can be preserved through the use of meta data that describe the relationships. A full set of meta data that capture such relationships has been developed by the Dublin Core Metadata Initiative [N5]. It is recommended that these Dublin Core meta data be used wherever it is necessary to describe the relationships between information packages.

The example below shows how relationship navigation metadata can be added to a description.

```
<dcterms:isPartOf
rdf:resource="https://erwin.volkswagen.de/en/docs/bPAS5320.pdf"/>
```

In this case, the information package with which this item of meta data is associated is part of a larger package of information (e.g. it may be a section in a repair manual) identified by the rdf:resource attribute.

The above explains that the document being describe is part of another document (in this case fictional). The full set of Dublin Core relationship metadata terms for use with this Specification can be found in Appendix A.

451 **5 Namespaces**

452 The following namespaces are defined in this Specification. The reference to the requirements covered
453 is to sections in the document SC1-D2 Autorepair Requirements Specification [3].

454

Namespace	Description	Requirements Covered
Core	Base information about the information packages, their format, language and information type.	2.1, 2.2, 3.9, (3.3, 3.4, 3.5.4 to 3.5.8)
Access	How to subscribe to and access the information packages	2.3 2.5, (3.4)
VehicleID	Meta data to identify the vehicle	3.1
Component	Meta data describing information on a component	3.5.1
Training	Meta data describing training information	3.6
Tools	Meta data describing special tools	3.7, 3.8
Diagnosis, repair, service	Pass-through programming, Symptoms, DTC.	3.2.1 to 3.2.3, 3.5.2
Terminology	Lexicons, representing terminology in multiple languages, covering standard terminology recommended by the OASIS TC and non-standard terminology.	3.9

455

456 The Autorepair Specification also uses metadata terms from three other vocabularies:

457

458 1. Dublin Core (dc & dcterms) [N5]
459 *Used for navigation and the most common descriptive types: Title, Description,*
460 *Source.*
461 2. UBL (Universal Business Language) [N6]
462 *Used for common commerce types: Cost, CurrencyID*
463 3. Contact (W_3C Contact Information) [N7]
464 *Used for common contact types: Street, City, PostalCode.*

465

466 The full definition of meta data in each namespace is included in Appendix A.

6 Information Package Collections

468 A key factor in making this Specification implementable, is that information packages should be
469 described usefully without an undue burden on the organisation producing the meta data. Key to this is
470 that there should be some mechanism whereby meta data can be described for a collection of
471 information packages, without having to be repeated for each one.

472 Where the same meta data can be attributed to more than one information package, this Specification
473 follows the RDF standard, with a recommendation on how the standard can be used in practice.

474 To illustrate the concepts of information package collections we will use six information sample
475 packages from BMW. The first three packages have information on the engine coolant for all BMW
476 vehicles; the other three packages have information on Car and Key Memory for E46 series vehicles.

477 All packages are available by subscription from BMW in HTML format in the English language. (The
478 URIs used are for the purposes of illustration only).

479

Package URI	Description
www.bmw.de\USP-EU-SBS\SBS1996-170196140_A3	Approved anti-freezing and anti-corrosive agents
www.bmw.de\USP-EU-SBS\SBS1996-170196140_A2	Change interval, changing and testing coolant, disposal, cleaning the cooling system
www.bmw.de\USP-EU-SBS\SBS1996-170196140_A1	Requirements concerning engine coolant
www.bmw.de\USP-EU-SBT\SBT1998-610198293	Car and Key Memory
www.bmw.de\USP-EU-SBT\SBT1998-610198293_ANL1	Summary of "Car and Key Memory" functions for E46 vehicles
www.bmw.de\USP-EU-SBT\SBT1998-610198293_ANL2	Explanatory notes for the "Car and Key Memory"

480 The meta data associated with these information packages is split into four sets, which can be
481 associated with each relevant package, with repeating the meta data on each:

482 Meta data associated with any BMW information package

483 Meta data associated with E46 vehicles

484 Meta data associated with packages about "Car Key and Memory"

485 Meta data associated with packages about "Engine Coolant"

486

```
487   <rdf:Description rdf:about="http://www.bmw.de/USP-EU-SBS/SBS1996-
488   170196140_A1">
489      <dc:Title>Requirements concerning engine coolant</dc:Title>
490      <dc:Subject rdf:parseType="Resource">
491           <fordLex:engineTerm rdf:resource="&fordlex;coolent"/>
492      </dc:Subject>
493      <core:Info rdf:resource="#bmwE46"/>
494   </rdf:Description>
495
496   <rdf:Description rdf:about="http://www.bmw.de/USP-EU-SBS/SBS1996-
497   170196140_A2">
```

```
498        <dc:Title>Change interval, changing and testing coolant, disposal,
499   cleaning the cooling system</dc:Title>
500        <dc:Subject rdf:parseType="Resource">
501              <fordLex:engineTerm rdf:resource="&fordlex;coolent"/>
502        </dc:Subject>
503        <core:Info rdf:resource="#bmwE46"/>
504   </rdf:Description>
505
506   <rdf:Description rdf:about="http://www.bmw.de/USP-EU-SBS/SBS1996-
507   170196140_A3">
508        <dc:Title>Approved anti-freezing and anti-corrosive agents</dc:Title>
509        <dc:Subject rdf:parseType="Resource">
510              <fordLex:engineTerm rdf:resource="&fordlex;coolent"/>
511        </dc:Subject>
512        <core:Info rdf:resource="#bmwE46"/>
513   </rdf:Description>
514
515   <rdf:Description rdf:about="http://www.bmw.de\USP-EU-SBT\SBT1998-610198293">
516        <dc:Title>Car and Key Memory</dc:Title>
517        <dc:Subject rdf:parseType="Resource">
518              <fordLex:miscTerm rdf:resource="&fordlex;ignitionKey"/>
519              <fordLex:electrialTerm rdf:resource="&fordlex;readOnlyMemory"/>
520        </dc:Subject>
521        <core:Info rdf:resource="#bmwE46"/>
522   </rdf:Description>
523
524   <rdf:Description rdf:about="http://www.bmw.de\USP-EU-SBT\SBT1998-
525   610198293_ANL1">
526        <dc:Title>Summary of "Car and Key Memory" functions for E46
527   vehicles</dc:Title>
528        <dc:Subject rdf:parseType="Resource">
529              <fordLex:miscTerm rdf:resource="&fordlex;ignitionKey"/>
530              <fordLex:electrialTerm rdf:resource="&fordlex;readOnlyMemory"/>
531        </dc:Subject>
532        <core:Info rdf:resource="#bmwE46"/>
533   </rdf:Description>
534
535   <rdf:Description rdf:about="http://www.bmw.de\USP-EU-SBT\SBT1998-
536   610198293_ANL2">
537        <dc:Title>Explanatory notes for the "Car and Key Memory"</dc:Title>
538        <dc:Subject rdf:parseType="Resource">
539              <fordLex:miscTerm rdf:resource="&fordlex;ignitionKey"/>
540              <fordLex:electrialTerm rdf:resource="&fordlex;readOnlyMemory"/>
541        </dc:Subject>
542        <core:Info rdf:resource="#bmwE46"/>
543   </rdf:Description>
544
545   <core:Info rdf:ID="bmwE46">
546        <core:textFormat rdf:resource="&core;HTML"/>
547        <dc:Language>EN</dc:Language>
548        <access:Channel rdf:resource="#bmwSubs"/>
549        <vid:Vehicle rdf:resource="#E46"/>
550   </core:Info>
551
552   <access:Channel rdf:ID="bmwSubs">
553        <access:channelMedium rdf:resource="&access;Internet"/>
554        <access:chargingmodel rdf:resource="&access;Subscription"/>
555   </access:Channel>
556
557
558   <vid:Vehicle rdf:ID="E46">
559        <vid:Model rdf:resource="#E46"/>
560        <vid:Body rdf:resource="#E46.Body"/>
```

```
561         <vid:Engine rdf:resource="#E46_Engine"/>
562    </vid:Vehicle>
```

In this example, references to the meta data collections are to resources in the same file, but in practice
the rdf:resource attributes can reference a URI, so that the collections can be held in separate resource
files.

567 7 Implementation

568 7.1 An Implementation Scenario

569 Any vehicle can be uniquely identified by a Vehicle Identification Number (VIN). The unique identifier
570 may be different in different markets within the EU.

571 It is not expected that information producers (or others) would associate the VIN with each information
572 package as meta data. Instead meta data would describe the vehicle make, model, etc.

573 Hence there is a requirement for a 'VIN resolution' service which returns basic information about a
574 vehicle, given its VIN. This service would be independent of the meta data used to describe information
575 packages, but could use the OASIS Autorepair standard in the way described below.

576 For information packages, a distinction can be made between a *registry* which records the information
577 packages available and the meta data about them, and a *repository* which contains the information
578 packages themselves. There are many scenarios that could be envisaged for the implementation of
579 registries and repositories, but one such scenario is of one or more central registries (ie automotive
580 information portals) and registries run by information producers and information providers, which just
581 served the packages they published.

582 As an example, the diagram shows a sequence of messages between an information consumer and
583 three Internet services:

584 VIN Resolution Service

585   *Returns meta data about a vehicle, given its VIN.*

586 Information Package Registry

587   *Returns meta data about information packages, given a description of the type of*
588   *information being sought.*

589 Information Package Repository

590   *Returns identified information packages, subject to necessary payment and access*
591   *permissions.*

592

593 Details of how these Internet services are implemented and how the messages are formulated,
594 transported and interpreted are outside the scope of this Specification. The scenario here has assumed
595 that the organizations participating in it are using a common lexicon for meta data literals. Please refer
596 to Appendix E for recommendations on lexicons and terminology.

597 Each message that passes may include OASIS autorepair meta data as shown in the table below.

598

Internet

Information Consumer

1. Request with VIN →

VIN Resolution Service

2. Return vehicle id information ←

3. Request with query →

Information Package Registry

4. Return list of packages ←

5. Request information package(s) →

Information Package Repository

6. Return information package(s) ←

599
600
601
602

Step	Meta data passed
1. Information consumer finds VIN and sends request to VIN Resolution Service	`<vid:vin>ABC1234567DEF</vid:vin>`

2. The VIN Resolution Service returns full details of that vehicle, including its make, model, derivative, fuel type, etc	`<rdf:Description rdf:about="ABC1234567DEF">`
	`  <vid:Model rdf:ID="Passat97">`
	`        <vid:modelType rdf:resource="&model;Passat"/>`
	`        <vid:manufacturerType`
	`rdf:resource="&manu;Volkswagen"/>`

Step	Meta data passed
	<pre> <vid:modelYearStart>1997/01</vid:modelYearStart>
                <vid:modelYearEnd>2005/09</vid:modelYearEnd>

        <vid:landOfHomologation>FRA</vid:landOfHomologation>
                <vid:optionalEquipment
rdf:resource="&fordLex;AC"/>
                <vid:optionalEquipment
rdf:resource="&fordLex;ABS"/>
                <vid:optionalEquipment
rdf:resource="&fordLex;airBag"/>
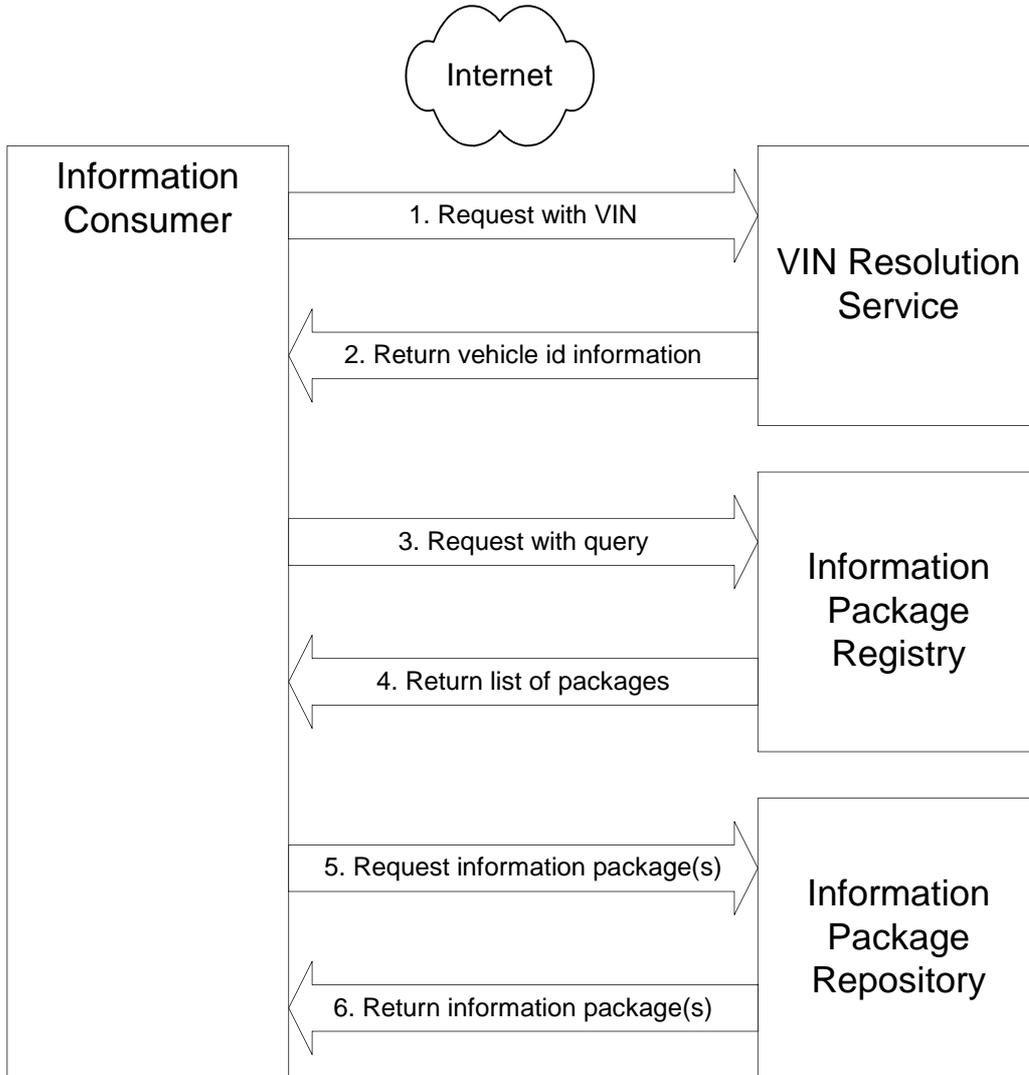   </vid:Model>

        <vid:Body rdf:ID="Passat97.Body">
                <vid:bodyStyle rdf:resource="&vid;Sedan"/>
                <vid:numberOfDoors>5</vid:numberOfDoors>
                <vid:wheelBase>267</vid:wheelBase>

        <vid:grossVehicleWeight>1650</vid:grossVehicleWeight>
        </vid:Body>

        <vid:Engine rdf:ID="Passat97.Engine">
                <vid:engineCode>XUD 19</vid:engineCode>
                <vid:axelRatio>3.55:1</vid:axelRatio>
                <vid:horsePower rdf:parseType="Resource">
                        <rdf:value>90</rdf:value>
                        <measure:unit
rdf:resource="&measure;PS"/>
                </vid:horsePower>
                <vid:camshaft rdf:resource="&vid;DOHC"/>
                <vid:aspiration rdf:resource="&vid;Turbo"/>
                <vid:fuelType rdf:resource="&vid;Petrol"/>
                <vid:driveType rdf:resource="&vid;FWD"/>
                <vid:numberOfgears>6</vid:numberOfgears>
                <vid:transmissionType
rdf:resource="&vid;Manual"/>
                <vid:cylinders>4</vid:cylinders>

        <vid:valvesPerCylinder>4</vid:valvesPerCylinder>
                <vid:catalyst>T</vid:catalyst>
        </vid:Engine>

</rdf:Description></pre> |
| 3. The information consumer describes the information package(s) they are looking for and this data is combined with the data from the VIN Resolution Service and sent to the Information Package Registry. | <pre><dc:Subject rdf:parseType="Resource">
        <fordLex:miscTerm
rdf:resource="&fordlex;ignitionKey"/>
        <fordLex:electrialTerm
rdf:resource="&fordlex;readOnlyMemory"/>
   </dc:Subject></pre> |
| 4. The Information Package Registry matches the | <pre><rdf:Description rdf:about="package-1"></pre> |

Step	Meta data passed
description of the package being sought with meta data describing the available information packages and returns a list to the consumer.	```<dc:Title>Ignition Key</dc:Title>
<access:Channel rdf:ID="VW001">
        <access:channelMedium
rdf:resource="&access;Internet"/>
        <access:channelMedium
rdf:resource="&access;PTP"/>
        <access:chargingmodel
rdf:resource="&access;Subscription"/>
        <access:subscriptionPeriod
rdf:resource="#VWSub001"/>
   </access:Channel>

</rdf:Description>

<rdf:Description rdf:about="package-2">
  <dc:Title>Read Only memory</dc:Title>
<access:Channel rdf:ID="VW001">
        <access:channelMedium
rdf:resource="&access;Internet"/>
        <access:channelMedium
rdf:resource="&access;PTP"/>
        <access:chargingmodel
rdf:resource="&access;Subscription"/>
        <access:subscriptionPeriod
rdf:resource="#VWSub001"/>
   </access:Channel>
</rdf:Description>``` |
| 5. The consumer selects the information package they want, examines the access information and requests the package from the Information Package Repository. | ```<rdf:Description rdf:about="package-2"/>``` |
| 6. The Information Package Repository returns the information package to the consumer. | |

603

604 7.2 Conformance Levels

605 This Specification defines a set of meta data that can be applied to information packages. No
606 assumption is made as to the degree to which future systems may use these meta data. However, it is
607 recognised that not all systems will support the meta data to the same degree.

608 Hence the Specification proposes a series of conformance levels, numbered from 1 to 4, where 1 is the
609 lowest level of conformance and 4 the highest. The levels are cumulative, in the sense that
610 conformance at level 2 implies level 1 conformance as well.

611

612 Each item of meta data could be assigned a conformance level, so that a system conforming, say, to
613 level 3 would be able to handle all meta data designated as levels 1, 2 and 3.

614

Conformance Level	Description
1	Meta data that could reasonably be expected to be generated automatically by most information producers and enable them to provide an Information Package Repository service.
2	Meta data considered necessary by information consumers to request information on emissions related repairs. The minimum meta data required to run a VIN Resolution Service and an Information Package Registry service.
3	Additional meta data that would be considered important by producers, consumers or providers to improve the quality or timeliness of repairs and enhance the usefulness of an Information Package Registry service.
4	All other meta data – this category of meta data could be considered 'nice to have'.

615 Support at a particular conformance level does not imply that all information packages must be
616 described by every piece of information at that level.

617 For example, if an information package was applicable to all BMW vehicles it would not be necessary to
618 create meta data listing every model to which that package applied. Similarly, if a package applied to a
619 particular model of vehicle it would not be necessary to list every derivative and trim level.

620 7.3 Combining Meta Data

621 Meta data describing an information package may be combined from multiple sources. This allows
622 many different scenarios for the implementation of this Specification, for example:

623 An information producer provides meta data at conformance level 1 and an information provider
624 implements a registry service by adding meta data at conformance level 2.

625 An information producer supplies OASIS autorepair meta data at conformance level 2, and an
626 information provider enhances those meta data with additional level 3 properties.

627 An information consumer adds their own properties at conformance level 4 which can be accessed and
628 used only by persons authorised by that consumer.

629 This concept can be illustrated by considering in more detail the Information Package Registry
630 introduced earlier.

631 The Registry services queries from consumers who are seeking information packages to help them
632 repair a vehicle. The response to the query is information on how information packages can be
633 accessed from a Repository.

634 The Registry also acts as an aggregation engine, collecting meta data from multiple sources and
635 combining them together to build a complete description of information packages that can then be used
636 to match more accurately the requirements of the consumer.

637 The figure shows a Registry service which aggregates meta data at various conformance levels from
638 producers, providers and consumers.

639

640

641
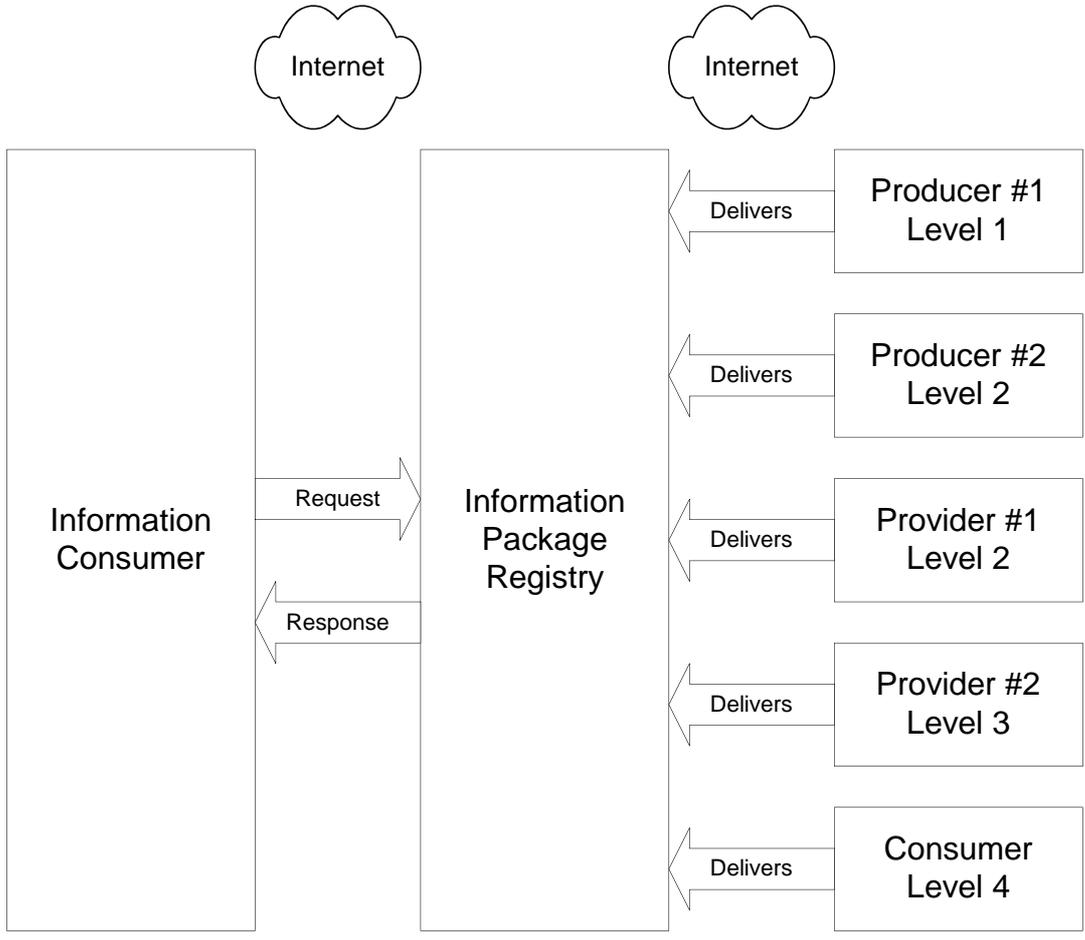
8 References

8.1 Normative

[N1]   S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*, http://www.ietf.org/rfc/rfc2119.txt, IETF RFC 2119, March 1997.

[N2]   IETF (Internet Engineering Task Force) RFC 2396: Uniform Resource Identifiers (URI): Generic Syntax, eds. T. Berners-Lee, R. Fielding, L. Masinter. August 1998.

[N3]   Resource Description Framework (RDF) Model and Syntax Specification. Eds. Ora Lassila, Ralph R. Swick.

http://www.w3.org/TR/1999/REC-rdf-syntax-19990222

[N4]   Resource Description Framework (RDF) Schema Specification 1.0. Eds. Dan Brickley, R.V. Guha http://www.w3.org/TR/rdf-schema

[N5]   The Dublin Core Metadata Initiative

http://dublincore.org

[N6]   UBL (Universal Business Language)

http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ubl

[N7]   Contact (W$_3$C Contact Information)
http://www.w3.org/2000/10/swap/pim/contact

[N8]   ISO standard: 639-1.

http://www.inforterm.org

8.2 Non-normative

[1]   Charter for the Formation of an OASIS Technical Committee - Format of Automotive Repair Information. Version 2.0, 19/06/02. Submitted by Dr John Chelsom, CSW Group Ltd; Mr Takayuki Sakai, JAMA – Japanese Automobile Manufacturers Association; Mr Chris Jones, RAC Motoring Services.
http://www.oasis-open.org/committees/autorepair/charter.php

[2]   Namespaces in XML. Eds Tim Bray, Dave Hollander, Andrew Layman
http://www.w3.org/TR/REC-xml-names

[3]   SC1-D2 Autorepair Requirements Specification. http://www.oasis-open.org/committees/documents.php

[4]   SC1-D4 Use Cases – for the OASIS Autorepair Specification http://www.oasis-open.org/committees/documents.php

677 # Appendix A. Namespace Definitions

678 This Appendix contains a listing of the resources and properties (meta data items) contained iin the
679 Specification. For a formal definition of the resource classes and properties, please refer to the RDFS
680 schema definitions that accompany this document.

681

682 **The core namespace**

683 Base information about the information packages, their format, language and information type.

684 This namespace covers the requirements specified in SC1-D2, sections 2.1, 2.2, 3.9, and the formatting
685 requirements in 3.4.

686

687 **Namespace:**

688 http://www.autorepair.eu.com/2003/05/core#

name	data type	Values/instances	comments
Info	resource		Info resource container class. Holds properties of the information package itself.
infoType	reference	Service Maintenance OBDPlugLoc Recall Repair TTorques TechData TSB Diag Training Tools JobTimes	The type of information contained in the package.
Language	DC	ISO 3166-1-Alpha-2 String	Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Language
Subject	DC	Reference lexicon term or string	Dublin Core namespace term http://purl.org/dc/elements/1.1/Subject
textFormat	reference	ASCII HTML XML PDF	Text format of the package

name	data type	Values/instances	comments
graphicFormat	reference	SVG JPEG GIF TIFF PNG	Graphics format of the package. Note that a package in HTML or XML text format may reference graphics, which should be in one or more of the formats listed as a graphicFormat property
validFrom	W3CDTF	http://www.w3.org/TR/NOTE-datetime	The date from which this information package is valid
validTo	W3CDTF	http://www.w3.org/TR/NOTE-datetime	The date to which this information package is valid
version	float		Version of the Document (optional)
level	Integer	1,2,3,4	The metadata level of OASIS autoRepair conformance for this resource
Title	DC	String	Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Title
Description	DC	String	Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Description
numberOfPages	integer		The number of pages in a page-formatted information package.
fileSize	integer		References units#Kb from the measure namespace
plugInType	reference	acrobatReader	The property that references PlugIn resources
PlugIn	resource		Information about any browser plug-in required to view the information package
Source	DC		Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Source Where to find the plugin
Format	DC		Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Format The mime type for the plugin if available

689

690

690 **The access namespace**

691 **Namespace:**
692 http://www.autorepair.eu.com/2003/05/access#

693 How to subscribe to and access the information packages.

694 This namespace covers the requirements set out in SC1-D2, sections 2.3, 2.5, and the access and
695 charging requirements in section 3.4.

name	data type	values	comments
Channel	resource		An access channel - may be more than one for any information package
channelMedium	reference	Internet CD PTP RDiag DVD Tele	Used to describe channel delivery for the resource
chargingModel	reference	Free PPV PPU Subscription Order Job	Used to describe channel resource. Order covers an order for CD (or paper-based information)
SubscriptionInfo	resource		Details of the subscription - how to sign up and pay for it
subscriptionPeriod	string		The period that the subscription is available for
costingType	property		The costing type used to access this resource, uses UBL namespace and elements to describe this.
PriceAmount	UBL		Costing information UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
CurrencyID	UBL	USD etc	The currency used for the transaction UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
ID	UBL	Your reference	The reference ID used to cost the resource UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
Source	DC		Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Source
Order	resource		Details of placing an order (for CD, etc)
PriceAmount	UBL		Costing information UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70

name	data type	values	comments
costingType	property		The costing type used to access this resource, uses UBL namespace and elements to describe this.
CurrencyID	UBL	USD etc	The currency used for the transaction UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
ID	UBL	Your reference	The reference ID used to cost the resource UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
Source	DC		Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Source
PayPerView	resource		Details of placing an order (for CD, etc)
costingType	property		The costing type used to access this resource, uses UBL namespace and elements to describe this.
PriceAmount	UBL		Costing information UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
CurrencyID	UBL	USD etc	The currency used for the transaction UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
ID	UBL	Your reference	The reference ID used to cost the resource UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
Source	DC		Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Source
PayPerUse	resource		
costingType	property		The costing type used to access this resource, uses UBL namespace and elements to describe this.
PriceAmount	UBL		Costing information UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
CurrencyID	UBL	USD etc	The currency used for the transaction UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
ID	UBL	Your reference	The reference ID used to cost the resource UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70

name	data type	values	comments
Source	DC		Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Source

696

The VID (Vehicle Identification) Namespace

698 **Namespace:**

699 http://www.autorepair.eu.com/2003/05/vid#

700 Meta data to identify the vehicle

701 This namespace covers the requirements in SC1-D2, section 3.1.

name	data type	values	comments
Vehicle	resource		Resource that represents the vehicle itself
vinStart	string		The vehicle identification number that uniquely defines a vehicle.
vinEnd	string		The vehicle identification number that uniquely defines a vehicle.
manufacturerID	string		Manufacturer specific ID, e.g. oval plate number for Renault ricambi number for Fiat, Alfa Romeo, Lancia
modelType	reference	Manufactures own	Referenced out to manufacturers own Model resource instance
Model	Resource		
derivative	string		Used to describe the derivative
modelYearStart	gMonthYear	YYYY-MM	Used to describe the vehicle resource.
modelYearEnd	gMonthYear	YYYY-MM	can be empty if model is still in production.
landOfHomologation	string	ISO 3166-1	ITA = Italy etc.
optionalEquipment	reference	lexicon term or string	
manufacturerType	reference		References to manufacturers#
vehicleMake	reference		References to manufacturers#
Body	resource		Body resource used to contain body properties
bodyStyle	reference	Sedan Estate Coupe Convertible	References to vin#

name	data type	values	comments
numberOfDoors	integer		Used to describe the body resource. The number of doors.
wheelBase	float		
axleRatio	ratio		
grossVehicleWeight	float		
Engine	resource		
engineCapacity	integer		units - cc, liter from measure namespace
engineCode	integer		
engineType	string		
horsePower	float		units - PS, KW from measure namespace
cylinders	integer		
valvesPerCylinder	integer		
camshaft	reference	DOHC SOHC OHC OHV	
fuelType	reference	Diesel Petrol LPG	
aspiration	reference	Turbo NA Compressor Intercooled	
catalyst	Boolean	T or F	
transmissionType	reference	Manual Auto SemiAuto	
driveType	reference	FWD RWD AWD	
numberOfGears	integer		
ECU	resource		
ECUBrandType	reference		Reference instances of ECUBrand

name	data type	values	comments
ECUTechNameType	reference		Reference instances of ECUTechName
NationalID	resource		Resource container for the National ID of a vehicle
country	string	ISO3166-Alpha1	ISO Country Code for the national ID
name	string		The name of the National ID used
number	string		The National ID

702

The component namespace

Namespace:

705 http://www.autorepair.eu.com/2003/05/components#

706 Meta data describing information on a component

name	data type	values	comments
Component	resource		A component
majorFunctions	string		Describes a component's major functions
auxiliaryFunctions	string		Describes a component's auxiliary functions
manPartNumber	string		Describes a component's part number
manPartName	string		Describes a component's part name
isoPartName	string		Describes a component's ISO part name
componentInfoIncluded	reference	ComponentImage PartLocation CircuitDiagram ConnectionDiagram FuncDesc RemoveAndRefit	References ComponentInfo class instances in the component namespace

name	data type	values	comments
testInfoIncluded	reference	TestDesc TestProc ConnDetails ProtocolInfo TypicalValues TypicalElecValues FailureValues FailureMode ReInitProc	References TestInfo class instances in the component namespace

707

707

The training namespace

Namespace:

http://www.autorepair.eu.com/2003/05/training#

Meta data describing information on training courses, etc.

name	data type	values	comments
CourseInfo			
courseType	reference	Classroom Online HomeStudy	
organiser	string		References or String to describe the organizer of a course
Subject	DC		Dublin Core namespace term
costingType	property		The costing type used to access this resource, uses UBL namespace and elements to describe this.
PriceAmount	UBL		Costing information UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
CurrencyID	UBL	USD etc	The currency used for the transaction UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
ID	UBL	Your reference	The reference ID used to cost the resource UBL Namespace used: urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70
targetAudience	string		The target audience for the course
qualification	string		Qualification/certification/attendance certificate/ resulting from the training (issued by training provider).
certification	string		
attendCertification	string		
ClassroomCourse			

Date	DC		Dublin Core element used: http://purl.org/dc/elements/1.1/Date
duration	integer		minutes or hours or days
vacancies	integer		
courseLocation	property	Use within ClassroomCourse resource	Container Property (uses parseType="Resource")
country	Contact		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#country
city	Contact		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#city
postalCode	Contact		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#postalCode
street (street2, street3)	Contact		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#street
mailbox	Contact		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#mailbox
homepage	string		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#homepage
fax	Contact		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#fax
phone	Contact NS		Contact Namespace Elements Used http://www.w3.org/2000/10/swap/pim/contact#phone
OnlineCourse			
onlineMedia	reference	DVD CDAudio CDROM VHS Internet	

name	data type	values	comments
Source	DC		Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Source
minimumSpeecInternet Connection	string		The minimum speed to be used for this resource.

712

713 The tools namespace

714 Namespace:

715 http://www.autorepair.eu.com/2003/05/toolInfo#

716 Meta data for the description of special tools

name	data type	values	comments
ToolInfo			
toolType	reference	Special Electronic RemoteDiagTool	
purpose	string		The purpose for the tool
Cost	UBL		UBL Namespace elements used
orderInfo	string		Ordering information for the tool
delTimescale	number		Delivery timescale for the tool
instructions	string		Instructions on using the tool
manPartNumber	string		Tool manufactures part number
manPartName	string		Tool manufactures part name

717

718 The diagnosis-repair-service namespace

719 Namespace:

720 http://www.autorepair.eu.com/2003/05/diagnostic#

721 Pass-through programming, symptoms, DTC

name	data type	values	comments
DiagTest	resource		A diagnostic test resource
J2012Code	string		J2012 associated code
manufacturerCode	string		Manufactures Code
testDescription	boolean		Contains a description of the test

connectionDetails	boolean		Contains connection details for the test
Symptom	resource		
symDesc	string		Symptom description
symName	string		Symptom name
hintsTips	string		
JobInfo	resource		
jobDescription	string		Job description information
jobTime	integer		Job timing information

722

The terminology namespace

724 **Namespace:**

725 The namespace will depend on the lexicon, for example

726 http://www.autorepair.eu.com/2003/05/fordLexicon#

727 This example is different to the others; an example of one term from the Ford lexicon is used to
728 illustrate the usage. There are 12 Sub-classes in the Ford lexicon and many hundreds of instances.
729 This example shows one in the same manner as the other namespaces.

name	data type	values	comments
Subject	DC	Property container for lexicon values. Uses parseType="Resource"	Dublin Core Namespace used: http://purl.org/dc/elements/1.1/Subject
fordLex	namespace		Indicates the namespace for the lexicon in use
bodyAndInteriorTerm	reference	B-pillar B-pillarLowerTrimPanel B-pillarTrimPanel B-pillarUpperTrimPanel	References instances of BodyAndInterior class from the fordLex namespace

730

Dublin Core Primary Terms

732 **Namespace:**

733 http://purl.org/dc/elements/1.1/

734 Terms used from this namespace used in the AutoRepair specification.

name	label	definition	uri

name	label	definition	uri
title	Title	Typically, a Title will be a name by which the resource is formally known..	http://purl.org/dc/elements/1.1/title
creator	Creator	Examples of a Creator include a person, an organisation, or a service. Typically, the name of a Creator should be used to indicate the entity.	http://purl.org/dc/elements/1.1/creator
subject	Subject and Keywords	Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme.	http://purl.org/dc/elements/1.1/subject
description	Description	Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content.	http://purl.org/dc/elements/1.1/description
publisher	Publisher	Examples of a Publisher include a person, an organisation, or a service. Typically, the name of a Publisher should be used to indicate the entity.	http://purl.org/dc/elements/1.1/publisher
date	Date	Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and follows the YYYY-MM-DD	http://purl.org/dc/elements/1.1/date

name	label	definition	uri
		format.	
format	Format	Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [MIME] defining computer media formats).	http://purl.org/dc/elements/1.1/format
source	Source	The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.	http://purl.org/dc/elements/1.1/source
language	Language	Recommended best practice is to use RFC 3066 [RFC3066], which, in conjunction with ISO 639 [ISO639], defines two- and three-letter primary language tags with optional subtags. Examples include "en" or "eng" for English	http://purl.org/dc/elements/1.1/language

735

Dublin Core Extended Terms

Namespace:

http://purl.org/dc/terms/

Terms used from this namespace used in the AutoRepair specification. Please also refer to the next section for relationship metadata from Dublin Core.

name	label	definition	uri
abstract	Abstract	A summary of the content of the resource.	http://purl.org/dc/terms/abstract
created	Created	Date of creation of the resource.	http://purl.org/dc/terms/created
modified	Modified	Date on which the resource was changed.	http://purl.org/dc/terms/modified
medium	Medium	The material or physical carrier of the resource.	http://purl.org/dc/terms/medium

name	label	definition	uri
educationLevel	Audience Education Level	A general statement describing the education or training context. Alternatively, a more specific statement of the location of the audience in terms of its progression through an education or training context.	http://purl.org/dc/terms/educationLevel

741

Dublin Core Relationship Terms

743 **Namespace:**

744 http://purl.org/dc/terms/

name	label	definition	uri
isVersionOf	Is Version Of	The described resource is a version, edition, or adaptation of the referenced resource. Changes in version imply substantive changes in content rather than differences in format.	http://purl.org/dc/terms/isVersionOf
hasVersion	Has Version	The described resource has a version, edition, or adaptation, namely, the referenced resource.	http://purl.org/dc/terms/hasVersion
isReplacedBy	Is Replaced By	The described resource is supplanted, displaced, or superseded by the referenced resource.	http://purl.org/dc/terms/isReplacedBy
replaces	Replaces	The described resource supplants, displaces, or supersedes the referenced resource.	http://purl.org/dc/terms/replaces
isRequiredBy	Is Required By	The described resource is required by the referenced resource, either physically or logically.	http://purl.org/dc/terms/isRequiredBy

name	label	definition	uri
requires	Requires	The described resource requires the referenced resource to support its function, delivery, or coherence of content.	http://purl.org/dc/terms/requires
isPartOf	Is Part Of	The described resource is a physical or logical part of the referenced resource.	http://purl.org/dc/terms/isPartOf
hasPart	Has Part	The described resource includes the referenced resource either physically or logically.	http://purl.org/dc/terms/hasPart
isReferencedBy	Is Referenced By	The described resource is referenced, cited, or otherwise pointed to by the referenced resource.	http://purl.org/dc/terms/isReferenced By
references	References	The described resource references, cites, or otherwise points to the referenced resource.	http://purl.org/dc/terms/references
isFormatOf	Is Format Of	The described resource is the same intellectual content of the referenced resource, but presented in another format.	http://purl.org/dc/terms/isFormatOf
hasFormat	Has Format	The described resource pre-existed the referenced resource, which is essentially the same intellectual content presented in another format.	http://purl.org/dc/terms/hasFormat
conformsTo	Conforms To	A reference to an established standard to which the resource conforms.	http://purl.org/dc/terms/conformsTo

745

746 **W₃C PIM Contact Terms**

747 **Namespace:**

748 http://www.w3.org/2000/10/swap/pim/contact#

749 Contact information used within the AutoRepair specification.

name	label	definition	uri
Address	resource	Address properties container	http://www.w3.org/2000/10/swap/pim/contact#Address
Country	string	Country information Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) or ISO3166	http://www.w3.org/2000/10/swap/pim/contact#Country
City	string	City label	http://www.w3.org/2000/10/swap/pim/contact#City
PostalCode	string	Postal or ZIP code	http://www.w3.org/2000/10/swap/pim/contact#PostalCode
StateOrProvince	string	State, Province or County information	http://www.w3.org/2000/10/swap/pim/contact#StateOrProvince
Street Street2 Street3	string	Street information per line	http://www.w3.org/2000/10/swap/pim/contact#Street http://www.w3.org/2000/10/swap/pim/contact#Street2 http://www.w3.org/2000/10/swap/pim/contact#Street3
fullName	string	Contact name information	http://www.w3.org/2000/10/swap/pim/contact#fullName
fax	string	Fax number	http://www.w3.org/2000/10/swap/pim/contact#fax
phone	string	Telephone number	http://www.w3.org/2000/10/swap/pim/contact#phone
mailbox	string	Email address	http://www.w3.org/2000/10/swap/pim/contact#mailbox
homePage	reference	Relevant homepage reference	http://www.w3.org/2000/10/swap/pim/contact#homePage

750

751 **Universal Business Language Terms (UBL)**

752 **Namespace:**

753 urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70

754 Although not a true RDF namespace, curtain elements have been lifted from the UBL spec and used
755 within the AutoRepair specification.

756

name	label	definition
CostInfo	resource	Cost information container for UBL elements
PriceAmount	decimal	The cost of the resource
CurrencyID	string	The currency ID used to describe the PriceAmount property
ID	string	ID for the resource being costed

757

758 Appendix B. Sample Meta Data

759 This sample shows a full set of meta data for an information package. It does not include every item of
760 meta data in the Specification, but serves as an example of how meta data is structured.

761

```
762   <?xml version="1.0"?>
763   <!DOCTYPE rdf:RDF [
764       <!ENTITY xsd 'http://www.w3.org/2001/XMLSchema-datatypes'>
765       <!ENTITY dcterms 'http://purl.org/dc/terms/'>
766       <!ENTITY access 'http://www.autorepair.eu.com/2003/05/access#'>
767       <!ENTITY core 'http://www.autorepair.eu.com/2003/05/core#'>
768       <!ENTITY manu 'http://www.autorepair.eu.com/2003/05/manufacturers#'>
769       <!ENTITY model 'http://www.autorepair.eu.com/2003/05/models#'>
770       <!ENTITY vid 'http://www.autorepair.eu.com/2003/05/carSchema#'>
771       <!ENTITY measure 'http://www.autorepair.eu.com/2003/05/measure#'>
772       <!ENTITY fordLex 'http://www.autorepair.eu.com/2003/05/fordLexicon#'>
773   ]>
774
775   <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
776      xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
777      xmlns:dc="http://purl.org/dc/elements/1.1/"
778      xmlns:dcterms="http://purl.org/dc/terms/"
779      xmlns:access="http://www.autorepair.eu.com/2003/05/access#"
780      xmlns:vid="http://www.autorepair.eu.com/2003/05/carSchema#"
781      xmlns:manu="http://www.autorepair.eu.com/2003/05/manufacturers#"
782      xmlns:core="http://www.autorepair.eu.com/2003/05/core#"
783      xmlns:ubl="urn:oasis:names:tc:ubl:CommonAggregateTypes:1.0:0.70"
784      xmlns:measure="http://www.autorepair.eu.com/2003/05/measure#"
785      xmlns:contact="http://www.w3.org/2000/10/swap/pim/contact#"
786      xmlns:fordLex="http://www.autorepair.eu.com/2003/05/fordLexicon#"
787      xml:base="http://www.autorepair.eu.com/2003/05/#">
788
789      <rdf:Description
790            rdf:about="https://erwin.volkswagen.de/en/docs/bPAS53202020.pdf">
791            <dc:Title>Body Repairs</dc:Title>
792            <dc:Description>Document Supplement No. 9</dc:Description>
793            <dc:Language>EN</dc:Language>
794            <core:Info rdf:resource="#PAS.5320.20.20"/>
795            <core:Vehicle rdf:resource="#passat97"/>
796            <access:Channel rdf:resource="#VW001"/>
797            <dcterms:isPartOf
798            rdf:resource="https://erwin.volkswagen.de/en/docs/bPAS5320.pdf"/>
799      </rdf:Description>
800
801      <core:Info rdf:ID="PAS.5320.20.20">
802            <core:infoType rdf:resource="&core;Repair"/>
803            <core:textFormat rdf:resource="&core;PDF"/>
804            <fordLex:bodyAndInteriorTerm rdf:resource="&fordLex;bodyRepair"/>
805            <core:validFrom>1999-06-01T09:00:00+01:00</core:validFrom>
806            <core:validTo>2005-06-01T09:00:00+01:00</core:validTo>
807            <core:version>1.0</core:version>
808            <core:numberOfPages>5</core:numberOfPages>
809            <core:fileSize rdf:parseType="Resource">
810                    <rdf:value>100</rdf:value>
811                    <measure:unit rdf:resource="&measure;Kb"/>
812            </core:fileSize>
813            <core:PlugIn rdf:resource="&core;acrobatReader"/>
814      </core:Info>
815
```

```
816   <vid:Vehicle rdf:ID="passat97">
817           <vid:Model rdf:resource="#Passat97"/>
818           <vid:Body rdf:resource="#Passat97.Body"/>
819           <vid:Engine rdf:resource="#Passat97.Engine"/>
820   </vid:Vehicle>
821
822   <vid:Model rdf:ID="Passat97">
823           <vid:modelType rdf:resource="&model;Passat"/>
824           <vid:manufacturerType rdf:resource="&manu;Volkswagen"/>
825           <vid:modelYearStart>1997/01</vid:modelYearStart>
826           <vid:modelYearEnd>2005/09</vid:modelYearEnd>
827           <vid:landOfHomologation>FRA</vid:landOfHomologation>
828           <vid:optionalEquipment rdf:resource="&fordLex;AC"/>
829           <vid:optionalEquipment rdf:resource="&fordLex;ABS"/>
830           <vid:optionalEquipment rdf:resource="&fordLex;airBag"/>
831   </vid:Model>
832
833   <vid:Body rdf:ID="Passat97.Body">
834           <vid:bodyStyle rdf:resource="&vid;Sedan"/>
835           <vid:numberOfDoors>5</vid:numberOfDoors>
836           <vid:wheelBase>267</vid:wheelBase>
837           <vid:grossVehicleWeight>1650</vid:grossVehicleWeight>
838   </vid:Body>
839
840   <vid:Engine rdf:ID="Passat97.Engine">
841           <vid:engineCode>XUD 19</vid:engineCode>
842           <vid:axelRatio>3.55:1</vid:axelRatio>
843           <vid:horsePower rdf:parseType="Resource">
844                   <rdf:value>90</rdf:value>
845                   <measure:unit rdf:resource="&measure;PS"/>
846           </vid:horsePower>
847           <vid:camshaft rdf:resource="&vid;DOHC"/>
848           <vid:aspiration rdf:resource="&vid;Turbo"/>
849           <vid:fuelType rdf:resource="&vid;Petrol"/>
850           <vid:driveType rdf:resource="&vid;FWD"/>
851           <vid:numberOfgears>6</vid:numberOfgears>
852           <vid:transmissionType rdf:resource="&vid;Manual"/>
853           <vid:cylinders>4</vid:cylinders>
854           <vid:valvesPerCylinder>4</vid:valvesPerCylinder>
855           <vid:catalyst>T</vid:catalyst>
856   </vid:Engine>
857
858   <access:Channel rdf:ID="VW001">
859           <access:channelMedium rdf:resource="&access;Internet"/>
860           <access:channelMedium rdf:resource="&access;PTP"/>
861           <access:chargingmodel rdf:resource="&access;Subscription"/>
862           <access:subscriptionPeriod rdf:resource="#VWSub001"/>
863   </access:Channel>
864
865   <access:SubscriptionInfo rdf:ID="VWSub001">
866           <access:subscriptionPeriod rdf:parseType="Resource">
867                   <rdf:value>1</rdf:value>
868                   <measure:unit rdf:resource="&measure;Days"/>
869           </access:subscriptionPeriod>
870           <access:costingType rdf:resource="#VWStdSubCharge"/>
871   </access:SubscriptionInfo>
872
873   <access:Cost rdf:ID="VWStdSubCharge">
874           <ubl:CostInfo rdf:parseType="Resource">
875                   <ubl:PriceAmount>100</ubl:PriceAmount>
876                   <ubl:CurrencyID>USD</ubl:CurrencyID>
877                   <ubl:ID>PAS.5320.20.20</ubl:ID>
878           </ubl:CostInfo>
```

```
879            <contact:ContactLocation rdf:ID="#VWSubscriptionHQ"/>
880        </access:Cost>
881
882        <!-- Addressing information should be held in separate documents shown for
883    example only -->
884
885        <contact:Address rdf:ID="VWSubscriptionHQ">
886            <contact:Street>Head of Corporate Communications</contact:Street>
887            <contact:Street2>Letter box 19700</contact:Street2>
888            <contact:PostalCode>D-38436</contact:PostalCode>
889            <contact:City>Wolfsburg</contact:City>
890            <contact:Country>DEU</contact:Country>
891            <contact:phone>+49 (0)5361 923 155</contact:phone>
892            <contact:fax>+49 (0)5361 921 473</contact:fax>
893            <contact:mailbox rdf:resource="mailto:subs@volkswagen.de"/>
894        </contact:Address>
895    </rdf:RDF>
```

Appendix C. Statements from Participating Organisations

The following statement is made by the Japanese Automotive Manufacturers Association (JAMA), some of whose members contributed to the work of the Technical Committee:

"JAMA and its participating members have greatly appreciated the opportunity to actively participate in the discussion on the distribution of emission-related information. JAMA wishes to reiterate the fact that throughout the process we have sought to emphasize the fact that the aspect of cost should be an essential part of any development planning process.

Since this OASIS Technical Committee has thus far not taken this aspect into account, we feel, we cannot officially endorse the content of this document, which in our view now represents an 'unofficial product of various discussions'".

The following statement is made by the European Automotive Manufacturers Association (ACEA), some of whose members contributed to the work of the Technical Committee:

"ACEA and its participating members have greatly appreciated the opportunity to actively participate in the discussion on the distribution of emission-related information. ACEA wishes to reiterate the fact that throughout the process we have sought to emphasize the fact that the aspect of cost should be an essential part of any development planning process.

Since this OASIS Technical Committee has thus far not taken this aspect into account, we feel, we cannot endorse the content of this document, which in our view now represents an 'unofficial product of various discussions'".

The following statement is made by AIRC some of whose members contributed to the work of the Technical Committee:

"With the establishment of the format of the Auto Repair Information the institutional framework for European cooperation in the field of after sales has been created. AIRC regrets the fact that the (scope of the) directive was not embedded in the in the BER. Nevertheless AIRC emphasizes the fact that the format should constitute a support mechanism for the accomplishment of the AIRC tasks. In this way the format has to become an anchor point in the domain of the after sales industry and those who support better framework conditions for enterprises in the aftermarket."

The following statement is made by AFCAR some of whose members contributed to the work of the Technical Committee:

"AFCAR, representing the aftermarket, also appreciates the co-operation of the participants to the TC. AFCAR is of the opinion that the group has made efforts to avoid an outcome which would cause manufacturers to re-structure their data and has, without conducting a cost study, endeavored to identify a low cost solution by adopting practices common to the documentation industry."

934 # **Appendix D. Revision History**

Rev	Date	By Whom	What
0.1		John Chelsom, CSW	First version – draft for discussion by SC2 prior to TC Meeting on 14th March 2003.
0.2		John Chelsom, CSW	Version approved for discussion by members of the SC2 working group (now identified in the authors section of the document control)
0.3	11 May 2003	Philip Johnstone, CSW	Version produced using OASIS template for review by SC2 and SC1 working groups
0.4	16 May 2003	CSW	For review by the members of the OASIS Auto Repair Technical Committee
0.5	28 May 2003	CSW	Checked and updated the list of meta data in appendix A and the example in Appendix B, in line with comments received on earlier draft. Added example of units of measurement in Section 4.6 Moved navigation meta data in Section 4.9 to Appendix A. Fixed example of information package collections in Section 6. Fixed example meta data in Section 7.1 Notices moved to Appendix G. New Appendix F is a list of RDF and RDFS resources that define the meta data described in this document.
1.0	28 May 2003	CSW	Updated at TC Meeting on 28th May 2003 and agreed as the final version.

935

936 # Appendix E. Vocabulary Recommendations

937 This appendix minutes the recommendations of the SC3 sub committee. This sub committee was
938 concerned with vocabulary, where vocabulary is taken to mean component names and physical
939 attributes of the vehicle.

940

Ref.	Recommendations
1	This subcommittee recommends that ISO standard 15031-2 (SAE J1930) is used as a basis for vocabulary. It covers emissions related components and is available in English and French. Because European manufacturers exporting vehicles to the United States are already required to provide documentation in accordance with this standard, it is difficult to see how any other standard could be acceptable unless it is a superset of this vocabulary and terminology.
2	The ISO 15031-2 emphasis is on gasoline engine emissions. Extensions to cover additional components and others unique to European diesel engines, including pipeline injection and common rail systems, will be required.
3	This subcommittee recommends that ISO standard 15031-6 (SAE J2012) is used for DTC definitions. It is currently available in English and French.
4	The subcommittee recommend that the European Commission identify the languages which will be required.
5	A body needs to be set up and funded to translate the extended set of ISO15031-2 vocabulary and ISO 15031-6 DTC definitions into all the required languages. The first action would be to ask the European Commission to make an application to ISO to ask its national bodies to perform this service. Proposed translations should be verified for acceptability by each manufacturer or their national representatives. The criteria for acceptability will be that in all languages the proposed term must be clear, unambiguous, and not easily confused with a similar term that has been used previously with a different meaning.
6	The manufacturers agree, in principle, to use the new vocabulary for new documentation produced after an agreed date. Individual manufacturers may decide that their vehicles in service can be adequately covered without providing translations in all languages.

941

Appendix F. RDF Resources

942

943 The following list is the full set of RDF resources created or referenced by this Specification. Those
944 created as part of the specification are referenced using the URI http://www.autorepair.eu.com. They
945 are also available as a zip file from the TC pages at www.oasis-open .org, under reference SC2-D6.

946

947 Schema file: CORE
948 http://www.autorepair.eu.com/2003/05/core#

949

950 Schema file: VID
951 http://www.autorepair.eu.com/2003/05/vid#

952

953 Schema file: ACCESS
954 http://www.autorepair.eu.com/2003/05/access#

955

956 Schema file: TRAINING
957 http://www.autorepair.eu.com/2003/05/training#

958

959 Schema file: TOOLS
960 http://www.autorepair.eu.com/2003/05/toolInfo#

961

962 Schema file: COMPONENTS
963 http://www.autorepair.eu.com/2003/05/components#

964

965 Schema file: DIAGNOSTIC
966 http://www.autorepair.eu.com/2003/05/diagnostic#

967

968 Schema file: Dublin Core Element Set 1.1
969 http://purl.org/dc/elements/1.1/

970

971 Schema file: Dublin Core Element Refinements
972 http://purl.org/dc/terms/

973

974 Schema file: Contacts PIM

975 http://www.w3.org/2000/10/swap/pim/contact#

976

977 Schema file: DMOZ

978 http://dmoz.org/rdf

979

980 XML Vocabulary: Universal Business Language
981 http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ubl

982

983 Lexicon file: FORD
984 http://www.autorepair.eu.com/2003/05/fordLexicon#

985

986 Instance file: Manufacturers
987 http://www.autorepair.eu.com/2003/05/manufacturer#

988

989 Instance file: Measurements
990 http://www.autorepair.eu.com/2003/05/measure#

Appendix G. Notices

991

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