

OData Version 4.0 Errata 03

OASIS Approved Errata

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Additional artifacts:

This prose specification is one component of a Work Product that also includes:

- *OData Version 4.0. Part 1: Protocol Plus Errata 03*. Edited by Michael Pizzo, Ralf Handl, and Martin Zurmuehl. 02 June 2016. OASIS Standard incorporating Approved Errata 03. <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/part1-protocol/odata-v4.0-errata03-os-part1-protocol-complete.html>.
- *OData Version 4.0. Part 2: URL Conventions Plus Errata 03*. Edited by Michael Pizzo, Ralf Handl, and Martin Zurmuehl. 02 June 2016. OASIS Standard incorporating Approved Errata 03. <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/part2-url-conventions/odata-v4.0-errata03-os-part2-url-conventions-complete.html>.
- *OData Version 4.0. Part 3: Common Schema Definition Language (CSDL) Plus Errata 03*. Edited by Michael Pizzo, Ralf Handl, and Martin Zurmuehl. 02 June 2016. OASIS Standard incorporating Approved Errata 03. <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/part3-csdl/odata-v4.0-errata03-os-part3-csdl-complete.html>.

- ABNF components: OData ABNF Construction Rules Version 4.0 and OData ABNF Test Cases. <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/abnf/>.
- Vocabulary components: OData Core Vocabulary, OData Measures Vocabulary and OData Capabilities Vocabulary. <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/vocabularies/>.
- XML schemas: OData EDMX XML Schema and OData EDM XML Schema. <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/schemas/>.
- OData Metadata Service Entity Model: <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/models/>.
- Change-marked (redlined) versions of OData Version 4.0 Part 1, Part 2, and Part 3. OASIS Standard incorporating Approved Errata 03. <http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/redlined/>.

Related work:

This specification lists Errata for:

- *OData Version 4.0*, a multi-part Work Product which includes:
 - *OData Version 4.0. Part 1: Protocol*. 24 February 2014. <http://docs.oasis-open.org/odata/odata/v4.0/os/part1-protocol/odata-v4.0-os-part1-protocol.html>.
 - *OData Version 4.0. Part 2: URL Conventions*. 24 February 2014. <http://docs.oasis-open.org/odata/odata/v4.0/os/part2-url-conventions/odata-v4.0-os-part2-url-conventions.html>.
 - *OData Version 4.0. Part 3: Common Schema Definition Language (CSDL)*. 24 February 2014. <http://docs.oasis-open.org/odata/odata/v4.0/os/part3-csdl/odata-v4.0-os-part3-csdl.html>.
 - ABNF components: *OData ABNF Construction Rules Version 4.0* and *OData ABNF Test Cases*. <http://docs.oasis-open.org/odata/odata/v4.0/os/abnf/>.
 - Vocabulary components: *OData Core Vocabulary*, *OData Measures Vocabulary* and *OData Capabilities Vocabulary*. <http://docs.oasis-open.org/odata/odata/v4.0/os/vocabularies/>.
 - Schema components: *edm.xsd* and *edmx.xsd*. <http://docs.oasis-open.org/odata/odata/v4.0/os/schemas/>.
 - Model components: *MetadataService.edmx*. <http://docs.oasis-open.org/odata/odata/v4.0/os/models/>.

This specification is related to:

- *OData Atom Format Version 4.0*. Edited by Martin Zurmuehl, Michael Pizzo, and Ralf Handl. Latest version. <http://docs.oasis-open.org/odata/odata-atom-format/v4.0/odata-atom-format-v4.0.html>.
- *OData JSON Format Version 4.0*. Edited by Ralf Handl, Michael Pizzo, and Mark Biamonte. Latest version. <http://docs.oasis-open.org/odata/odata-json-format/v4.0/odata-json-format-v4.0.html>.

Abstract:

This document lists Errata for *OData Version 4.0*.

Status:

This document was last revised or approved by the OASIS Open Data Protocol (OData) TC on the above date. The level of approval is also listed above. Check the “Latest version” location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Technical Committee (TC) are listed at https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=odata#technical.

TC members should send comments on this specification to the TC’s email list. Others should send comments to the TC’s public comment list, after subscribing to it by following the instructions at the “Send A Comment” button on the TC’s web page at <https://www.oasis-open.org/committees/odata/>.

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1 Introduction

This document lists the approved changes to the OData Version 4.0 specification and contains one chapter per changed part of the specification.

Additional documents containing the final specification text with these changes applied are also available and linked in section "[Additional artifacts](#)" on the title page.

1.1 Normative References

- [**OData-Protocol**] *OData Version 4.0 Part 1: Protocol.*
See link in "Related work" section on cover page.

2 Part 1: Protocol

Section	Issue	Comment
All sections	668	Replaced "ATOM" with "Atom"
5.2 Model Versioning	769	Term was missing in list of model elements
6.6 Format Extensibility	768	Removed superfluous text that was added by broken bookmark
7 Formats	861, 913	Clarified behavior if no format is explicitly requested
	768	Removed superfluous text that was added by broken bookmark
8.1.1 Header Content-Type	908	Align with RFC7231
	916	Clarify format parameter is significant
8.2.1 Header Accept	916	Service should not add format parameter to response
8.2.4 Header If-Match	766	Reference changed from RFC7230 to RFC7232
8.2.5 Header If-None-Match	766	Reference changed from RFC7230 to RFC7232
8.2.8.4 Preference odata.include-annotations	788	Clarified precedence rules for patterns in the header value
	774	Pattern syntax now covers full annotation syntax
8.3.1 Header ETag	852	Removed leftover fragment from previous edit
8.3.3 Header OData-EntityId	830	Clarified when header is required
	853	Corrected typo
9.1.6 Response Code 304 Not Modified	766	Reference changed from RFC7230 to RFC7231
9.2.4. Response Code 412 Precondition Failed	766	Reference changed from RFC7230 to RFC7232
10.4 Singleton	742	Adapted non-normative example
10.17 Delta Response	837	Adapted non-normative example
11.2 Requesting Data	861, 913	Clarified behavior if no format is explicitly requested
11.2.3 Requesting the Media Stream of a Media Entity	882	Added missing section.
11.2.5.1 System Query Option \$select	847	Clarified use of namespace aliases
11.2.5.2.1.1 Expand Option \$levels	742	Adapted non-normative example

Section	Issue	Comment
11.2.6.1.3 Parameter Alias	775	Clarified use of parameter aliases
11.2.6.2 System Query Option \$orderby	791	Clarified sorting of Boolean and Geo values
	668	Corrected typo in non-normative example
11.2.8 Requesting Entity References	882	Note that services may return 204 for reference to single valued nav prop whose value is null
11.3.1 Delta Links	837	Clarified use of \$deltatoken
	877	Clarified tracking of orphaned entities
11.4.2.2 Create Related Entities When Creating an Entity	870 , 794	Referenced to relevant related sections instead of incompletely citing them
11.4.3 Update an Entity	893	Clarified when @odata.id and @odata.type are required
11.4.6.1 Add a Reference to a Collection-Valued Navigation Property	749	Clarified behavior when reference already exists
11.5.1 Binding an Operation to a Resource	790	Corrected typo in non-normative example
11.5.3.1 Invoking a Function	776	Clarified rules for function invocation
11.5.4.1 Invoking an Action	761	Clarified rules for Location header
	765	Extended non-normative example
11.6 Asynchronous Requests	766	Corrected reference to RFC7230
11.7.2 Batch Request Body	823	Clarified use of Content-Transfer-Encoding header
	668	Corrected non-normative example
	778	Changed non-normative example
11.7.3 Change Sets	869	Clarified placement of Content-ID header
11.7.3.1 Referencing New Entities in a Change Set	479	Clarified use of content-id referencing
	668	Adapted non-normative example
11.7.4 Responding to a Batch Request	668	Corrected non-normative example
11.7.5 Asynchronous Batch Requests	822	Corrected non-normative example
13.1 OData Service Conformance Levels	668	Corrected typo
13.1.1 OData Minimal Conformance Level	830	Clarified use of OData-EntityId header
Appendix A. Acknowledgments	767	Completed list of contributors

3 Part 2: URL Conventions

Section	Issue	Comment
All sections	668	Replaced “ATOM” with “Atom”
1.2 Normative References	917	Copied reference to XML Schema from Part 3 CSDL
2 URL Components	903	Clarified precedence of prose specification over ABNF
4.3.1 Canonical URL	755	Clarified key representation in canonical URLs
5.1 System Query Options	835	Completed list of HTTP verbs
5.1.1.2.1 Addition	917	Clarified rules for time-related operands
	784	Clarified rules for decimal operands
5.1.1.2.2 Subtraction	917	Clarified rules for time-related operands
	784	Clarified rules for decimal operands
5.1.1.2.4 Multiplication	777	Clarified behavior with duration operand
	784	Clarified rules for decimal operands
5.1.1.2.5 Division	777	Clarified behavior with duration operand
	784	Clarified rules for decimal operands
	785	Clarified rules for integer division
5.1.1.2.6 Modulo	784	Clarified rules for decimal operands
5.1.1.2.7 Arithmetic Operator Examples	785	Add example for integer division
5.1.1.5 String Functions	850	Added section header
5.1.1.5.4 indexof	780	Clarified result if no occurrence is found
5.1.1.5.7 substring	781	Clarified result for edge cases
5.1.1.11.2 Complex and Collection Literals	758	Corrected non-normative example
5.1.1.15 Numeric Promotion	785	Clarified rules for numeric promotion
5.1.2 System Query Option \$expand	793	Clarified use of * for complex properties
	892	Clarified behavior for dynamic properties
	840	Added example
	741	Corrected non-normative example
5.1.3 System Query Option \$select	891	Clarified behavior for dynamic properties

Section	Issue	Comment
5.3 Parameter Aliases	775	Clarified use of parameter aliases

4 Part 3: Common Schema Definition Language

Section	Issue	Comment
All sections	668	Replaced “ATOM” with “Atom”
3.5 Element edmx:IncludeAnnotations	742	Adapted non-normative example
6.2.1 Attribute Nullable	803	Clarified default and use of Nullable for collections
6.2.2 Attribute MaxLength	858	Clarified meaning of MaxLength for Binary values
6.2.3 Attribute Precision	668	Replaced “allowed” with “significant”
6.2.4 Attribute Scale	789	Clarified behavior for Precision equal to Scale
	801	Clarified behavior for of negative Scale
6.2.5 Attribute Unicode	734	Clarified behavior for Unicode=false
10.2.2 Attribute Value	819	Clarified behavior for multiple enumeration members with same value
11.1.3 Type Definition Facets	936	Fix typo in Example 27
12.2.3 Attribute IsComposable	746	Clarified allowed subsequent path segments and query options
13 Entity Container	742	Adapted non-normative example
	931	Fix example to use correctly qualified target paths
13.1.2 Attribute Extends	733	Clarified treatment of cycles introduced by Extends
14 Vocabulary and Annotation	912	Clarified treatment of unknown and invalid annotations
14.1.5 Attribute AppliesTo	810	Corrected non-normative example
14.2.1 Attribute Target	865	Completed list of possible targets
	821	Clarified targeting of nested properties
14.4.6 Expression edm:Duration	752	Corrected non-normative example
14.5.2 Expression edm:AnnotationPath	825	Clarified traversal of multi-valued properties
14.5.3.1.2 Function odata.fillUriTemplate	782	Changed non-normative example
14.5.10 Expression edm:Null	880	Clarified that edm:Null can be annotated
14.5.11 Expression edm:NavigationPropertyPath	751	Clarified meaning of edm:NavigationPropertyPath and edm:PropertyPath
14.5.13 Expression edm:PropertyPath	751	Clarified meaning of edm:NavigationPropertyPath and edm:PropertyPath
15.6 Entity Container	832	Corrected typo in diagram

Section	Issue	Comment
	878	Adapted non-normative example
16.1 Products and Categories Example	742	Adapted non-normative example

5 ABNF Construction Rules

Note: line numbers are for the new Errata03 revision of the document.

Line	Issue	Comment
121-124	903	Type-cast segment after collection of complex type <pre> / complexColFunctionImportCall [collectioncomplexColPath] / complexFunctionImportCall [complexPath] / primitiveColFunctionImportCall [collectionprimitiveColPath] / primitiveFunctionImportCall [singleprimitivePath] </pre>
126	899	Type-cast segment after \$all <pre> / '\$all' ["/" qualifiedEntityTypename] </pre>
129-132	903	Type-cast segment after collection of complex type <pre> collectionNavPath = keyPredicate [singleNavigation] / collectionPathboundOperation / count / ref </pre>
134-137	775	Parameter aliases in key segment <pre> simpleKey = OPEN (parameterAlias / keyPropertyValue) CLOSE compoundKey = OPEN keyValuePair *(COMMA keyValuePair) CLOSE keyValuePair = (primitiveKeyProperty / keyPropertyAlias) EQ (parameterAlias / keyPropertyValue) </pre>
150-168	903	Type-cast segment after collection of complex type <pre> propertyPath = entityColNavigationProperty [collectionNavigation] / entityNavigationProperty [singleNavigation] / complexColProperty [collectioncomplexColPath] / complexProperty [complexPath] / primitiveColProperty [collectionprimitiveColPath] / primitiveProperty [singleprimitivePath] / streamProperty [boundOperation] collectionprimitiveColPath = count / boundOperation singleprimitivePath = value / boundOperation complexColPath = ["/" qualifiedComplexTypeName] [count / boundOperation] complexPath = ["/" qualifiedComplexTypeName] +["/" propertyPath / boundOperation +] </pre>

Line	Issue	Comment
177-184	753 903	Replaced “Func” with “Function in rule names Type-cast segment after collection of complex type <pre> boundOperation = "/" (boundActionCall / boundEntityColFunc<u>tion</u>Call [collectionNavigation] / boundEntityFunc<u>tion</u>Call [singleNavigation] / boundComplexColFunc<u>tion</u>Call [collection<u>complexCol</u>Path] / boundComplexFunc<u>tion</u>Call [complexPath] / boundPrimitiveColFunc<u>tion</u>Call [collection<u>primitiveCol</u>Path] / boundPrimitiveFunc<u>tion</u>Call [single<u>primitive</u>Path]) </pre>
191-201	753	Replaced “Func” with “Function in rule names ; The following boundXxxFunc<u>tion</u>Call rules have the added restrictions that ; - the function MUST support binding, and ; - the binding parameter type MUST match the type of resource identified by the ; URI immediately preceding (to the left) of the boundXxxFunc<u>tion</u>Call, and ; - the functionParameters MUST NOT include the bindingParameter. <pre> boundEntityFunc<u>tion</u>Call = namespace "." entityFunction functionParameters boundEntityColFunc<u>tion</u>Call = namespace "." entityColFunction functionParameters boundComplexFunc<u>tion</u>Call = namespace "." complexFunction functionParameters boundComplexColFunc<u>tion</u>Call = namespace "." complexColFunction functionParameters boundPrimitiveFunc<u>tion</u>Call = namespace "." primitiveFunction functionParameters boundPrimitiveColFunc<u>tion</u>Call = namespace "." primitiveColFunction functionParameters </pre>
239-241	793	Reserve \$deltatoken <pre> systemQueryOption = <u>deltatoken</u> _____ / expand _____ / filter </pre>
259-261	793	Expand * on complex type <pre> expandPath = [(qualifiedEntityTypename / qualifiedComplexTypeName) "/"] *((complexProperty / complexColProperty) "/" [qualifiedComplexTypeName "/"]) (<u>STAR</u> / navigationProperty ["/" qualifiedEntityTypename] <u>_)</u> </pre>
334-335	793	Reserve \$deltatoken <pre> <u>deltatoken = '\$deltatoken' EQ 1*(qchar-no-AMP)</u> </pre>

Line	Issue	Comment
435-442	903	Type-cast segment after collection of complex type <pre> propertyPathExpr = (entityColNavigationProperty [collectionNavigationExpr] / entityNavigationProperty [singleNavigationExpr] / complexColProperty [collectioncomplexColPathExpr] / complexProperty [complexPathExpr] / primitiveColProperty [collectionPathExpr] / primitiveProperty [singleprimitivePathExpr] / streamProperty [singleprimitivePathExpr]) </pre>
449-469	903	Type-cast segment after collection of complex type <pre> collectionNavigationExpr = ["/" qualifiedEntityTypeName] +[keyPredicate [singleNavigationExpr] / collectionPathExpr +] singleNavigationExpr = "/" memberExpr complexColPathExpr = ["/" qualifiedComplexTypeName] [collectionPathExpr] collectionPathExpr = count / "/" boundFunctionExpr / "/" anyExpr / "/" allExpr complexPathExpr = ["/" + qualifiedComplexTypeName] +["/" propertyPathExpr / "/" boundFunctionExpr +] singleprimitivePathExpr = "/" boundFunctionExpr </pre>

Line	Issue	Comment
474-481	903	Type-cast segment after collection of complex type <pre> functionExpr = namespace "." (entityColFunction functionExprParameters [collectionNavigationExpr] / entityFunction functionExprParameters [singleNavigationExpr] / complexColFunction functionExprParameters [collectioncomplexColPathExpr] / complexFunction functionExprParameters [complexPathExpr] / primitiveColFunction functionExprParameters [collectionPathExpr] / primitiveFunction functionExprParameters [singleprimitiveExpr]) </pre>
545-547	783	Allow percent-encoded parentheses <pre> minDateTimeMethodCallExpr = 'mindatettime' OPEN BWS CLOSE)+ maxDateTimeMethodCallExpr = 'maxdatettime' OPEN BWS CLOSE)+ nowMethodCallExpr = 'now' OPEN BWS CLOSE)+ </pre>
1020-1025	774	Qualifier for annotations missing: <pre> annotationIdentifier = [excludeOperator] (STAR / namespace "." (termName / STAR)) ["#" odataIdentifier] excludeOperator = "-" </pre>

6 ABNF Test Cases

Note: line numbers are for the new Errata03 revision of the document.

Line	Issue	Comment
234-243	668	Additional constraints for rule checking <u><Constraint Rule="parameterAlias"></u> <u><Match>@c</Match></u> <u><Match>@cat</Match></u> <u><Match>@color</Match></u> <u><Match>@expression</Match></u> <u><Match>@key</Match></u> <u><Match>@ref</Match></u> <u><Match>@title</Match></u> <u><Match>@word</Match></u> <u></Constraint></u>
580	668	<TestCase Name="2 URL Components - key with <u>key property</u> alias" Rule="resourcePath">
583-588	775	Key with parameter alias <u><TestCase Name="2 URL Components - key with parameter alias - short form" Rule="odataRelativeUri"></u> <u><Input>Categories (@key) ?@key=1</Input></u> <u></TestCase></u> <u><TestCase Name="2 URL Components - key with parameter alias - long form" Rule="odataRelativeUri"></u> <u><Input>Categories (ID=@key) ?@key=1</Input></u> <u></TestCase></u>

Line	Issue	Comment
914-931	903	Type-cast with complex type <pre> <TestCase Name="4.9 Inheritance - complex type" Rule="odataRelativeUri"> <Input>Products (1) /Address/Model.AddressWithLocation</Input> </TestCase> <TestCase Name="4.9 Inheritance - complex type with property" Rule="odataRelativeUri"> <Input>Products (1) /Address/Model.AddressWithLocation/Street< /Input> </TestCase> <TestCase Name="4.9 Inheritance - collection of complex type" Rule="odataRelativeUri"> <Input>Products (1) /Addresses/Model.AddressWithLocation</Inpu t> </TestCase> <TestCase Name="4.9 Inheritance - expressions: complex type" Rule="propertyPathExpr"> <Input>Address/Model.AddressWithLocation</Input> </TestCase> <TestCase Name="4.9 Inheritance - expressions: complex type with path" Rule="propertyPathExpr"> <Input>Address/Model.AddressWithLocation/Street</Input> </TestCase> <TestCase Name="4.9 Inheritance - expressions: collection of complex type" Rule="propertyPathExpr"> <Input>Addresses/Model.AddressWithLocation</Input> </TestCase> </pre>
950-955	899	\$all with type-cast <pre> <TestCase Name="4.12 Addressing All Entities in a Service" Rule="odataRelativeUri"> <Input>\$all?\$search=red</Input> </TestCase> <TestCase Name="4.12 Addressing All Entities in a Service - with type cast" Rule="odataRelativeUri"> <Input>\$all/Model.Customer?\$filter=contains (Name, 'red')</Inp ut> </TestCase> </pre>

Line	Issue	Comment
1226-1228	783	Percent-encoded parentheses <u><TestCase Name="5.1.1.4.22 - non-canonical percent-encoding" Rule="commonExpr"></u> <u><Input>now%28%20%29</Input></u> <u></TestCase></u>
1232-1234	783	Percent-encoded parentheses <u><TestCase Name="5.1.1.4.23 - non-canonical percent-encoding" Rule="commonExpr"></u> <u><Input>maxdatetime%28%20%29</Input></u> <u></TestCase></u>
1238-1240	783	Percent-encoded parentheses <u><TestCase Name="5.1.1.4.24 - non-canonical percent-encoding" Rule="commonExpr"></u> <u><Input>mindatetime%28%20%29</Input></u> <u></TestCase></u>
1421-1426	793	\$expand=* on complex path <u><TestCase Name="5.1.2 Expand - star on complex path" Rule="expand"></u> <u><Input>\$expand=Address/*,Address/Address/*,Addresses/*,Address/Model.AddressWithLocation/*,Model.VipCustomer/Address/*</Input></u> <u></TestCase></u> <u><TestCase Name="5.1.2 Expand - star on complex path with \$ref and \$levels" Rule="expand"></u> <u><Input>\$expand=Address/*/\$ref,Address/*(\$levels=max)</Input></u> <u></TestCase></u>
1508-1510	783	Percent-encoding <u><TestCase Name="5.1.7 Search - implicit AND, encoded" Rule="queryOptions"></u> <u><Input>\$search=blue%20green</Input></u> <u></TestCase></u>
1559-1561	837	Delta-token <u><TestCase Name="Delta Link" Rule="deltatoken"></u> <u><Input>\$deltatoken=A@Lot_Has:Changed?=Here!</Input></u> <u></TestCase></u>
1987-1989	774	Include-annotations with qualifier <u><TestCase Name="Preferences - include annotations - all with a given qualifier" Rule="preference"></u> <u><Input>odata.include-annotations="*#qualified"</Input></u> <u></TestCase></u>

Line	Issue	Comment
1993-1995	774	<u><TestCase Name="Preferences - include annotations - none with a given qualifier" Rule="preference"></u> <u><Input>odata.include-annotations="-*#qualified"</Input></u> <u></TestCase></u>
1999-2001	774	<u><TestCase Name="Preferences - include annotations - all in namespace with given qualifier" Rule="preference"></u> <u><Input>odata.include-annotations="Namespace.*#quali"</Input></u> <u></TestCase></u>
2015-2017	774	<u><TestCase Name="Preferences - include annotations - nothing from namespace" Rule="preference"></u> <u><Input>odata.include-annotations="-Namespace.*#quali"</Input></u> <u></TestCase></u>
2021-2023	774	<u><TestCase Name="Preferences - include annotations - only a special term" Rule="preference"></u> <u><Input>odata.include-annotations="Namespace.SomeTerm#qual"</Input></u> <u></TestCase></u>
2027-2029	774	<u><TestCase Name="Preferences - include annotations - only a special term" Rule="preference"></u> <u><Input>odata.include-annotations="-Namespace.SomeTerm#qual"</Input></u> <u></TestCase></u>

7 MetadataService.edmx

Line	Issue	Comment
102	831	OpenType property is Boolean <code><Property Name="OpenType" Type="Edm.StringBoolean" Nullable="false" /></code>
356	826	Wrong Target attribute value <code><NavigationProperty Name="Target" Type="Edm.EntityType" Nullable="false" Partner="Annotation<u>s</u>" /></code>

Appendix A. Acknowledgments

The contributions of the OASIS OData Technical Committee members, enumerated in **[OData-Protocol]**, are gratefully acknowledged.

Appendix B. Revision History

Revision	Date	Editor	Changes Made
WD01	2016-02-18	Ralf Handl	First version