

## EXPLANATORY REPORT

OASIS Submission of OData v4.0 and OData JSON Format v4.0 to ISO/IEC JTC 1

OASIS (the Organization for the Advancement of Structured Information Standards) respectfully submits the following two OASIS Standards to ISO/IEC Joint Technical Committee 1, for transposition into two International Standards under its Publicly Available Specifications (PAS) disposition process:

Open Data Protocol (OData) v4.0

Open Data Protocol (OData) JSON Format v4.0

The relevant documentation is enclosed (in a ZIP file) with this communication. OData v4 and OData JSON Format v4 are eligible Publicly Available Specifications as defined by JTC 1. OASIS is a Recognized PAS Submitter, having been approved by JTC 1 national bodies originally in 2004. As noted below, OASIS requests that OASIS, as the submitter, be designated as the maintenance organization for the resulting International Standard.

## INTRODUCTION

*Draft SD 9, Annex B, Excerpt: JTC 1 PAS and Fast Track Explanatory Report Template*

The Submitter is further invited to comment on the following items in the Explanatory Report:

a) Clearly define the technical concepts used in the submission (see the definition of Explanatory Report in JTC 1 Supplement F.3.1 and SD9 clause 5) \* \* \*

OData is a Web protocol for querying and updating data. It provides a uniform way to unlock your data and free it from silos that exist in applications today. OData is the equivalent of ODBC (Open Database Connectivity) for the Web. It allows creation of data services on the Web and consuming from them using REST principles [1] and (Universal Resource Identifiers) URI conventions. OData represents an important step in the direction towards a more open, programmable web, and is especially important in our rapidly growing cloud-computing marketplace.

[1] For more on REST (Representational State Transfer) architectural principles, see: <http://www.computerworld.com/article/2552929/networking/representational-state-transfer--rest-.html>

OData enables the creation of REST-based data services, which allow resources, identified using Uniform Resource Identifiers (URLs) and defined in a data model, to be published and edited by Web clients using simple HTTP messages. It enables information to be accessed from a variety of sources including (but not limited to) relational databases, file systems, content management systems, and traditional Web sites.

OData provides a way to break down data silos and increase the shared value of data by creating an ecosystem in which data consumers can interoperate with data producers in a way that is far more powerful than currently possible, enabling more applications to make sense of a broader set of data. Every producer and consumer of data that participates in this ecosystem increases its overall value.

OData began as an open cooperative project on the public (<http://www.odata.org> site) in 2009, and migrated to OASIS in 2012. OData v4.0 was approved as an OASIS Standard by the membership of OASIS in February 2014 at (<https://www.oasis-open.org/committees/ballot.php?id=2568>).

OData JSON Format v4.0 extends the core OData specification by defining representations for OData requests and responses using a JSON format. OData JSON Format v4.0 was approved as an OASIS Standard by the membership of OASIS in February 2014 at (<https://www.oasis-open.org/committees/ballot.php?id=2569>).

Following those approvals as OASIS Standards in February 2014, non-substantive errata to the published OASIS standards were approved in September 2014 (<https://lists.oasis-open.org/archives/odata/201410/msg00014.html>) and in October 2014 (<https://lists.oasis-open.org/archives/odata/201412/msg00055.html>). Those errata are incorporated into the normative copies enclosed with this submission.

The two specifications submitted here also are available in various formats at the following publicly-accessible locations:

## **1. OData v4.0 OASIS standard incorporating approved errata**

Part 1 (in HTML, PDF, DOC formats):

<http://docs.oasis-open.org/odata/odata/v4.0/errata02/os/complete/part1-protocol/>

Part 2 (in HTML, PDF, DOC formats):

<http://docs.oasis-open.org/odata/odata/v4.0/errata02/os/complete/part2-url-conventions/>

Part 3 (in HTML, PDF, DOC formats):

<http://docs.oasis-open.org/odata/odata/v4.0/errata02/os/complete/part3-csdl/>

ABNF components:

<http://docs.oasis-open.org/odata/odata/v4.0/errata02/os/complete/abnf/>

Vocabulary components:

<http://docs.oasis-open.org/odata/odata/v4.0/errata02/os/complete/vocabularies/>

XML schemas:

<http://docs.oasis-open.org/odata/odata/v4.0/errata02/os/complete/schemas/>

Metadata Service Entity Model:

<http://docs.oasis-open.org/odata/odata/v4.0/errata02/os/complete/models/>

## **2. OData JSON Format v4 OASIS standard incorporating approved errata**

HTML format:

<http://docs.oasis-open.org/odata/odata-json-format/v4.0/errata02/os/odata-json-format-v4.0-errata02-os-complete.html>

PDF format:

<http://docs.oasis-open.org/odata/odata-json-format/v4.0/errata02/os/odata-json-format-v4.0-errata02-os-complete.pdf>

Editable source format:

<http://docs.oasis-open.org/odata/odata-json-format/v4.0/errata02/os/odata-json-format-v4.0-errata02-os-complete.doc>

Copies of the specification are enclosed with this submission. Reviewers may also wish to review the following non-normative informational materials:

OASIS release on issuance of the OASIS Standards: statements from BlackBerry, CA Technologies, Citrix, IBM, Microsoft, Progress Software, Red Hat, SAP and SDL:

<https://www.oasis-open.org/news/pr/oasis-approves-odata-4-0-standards-for-an-open-programmable-web>

Virtual Global Taskforce (VGT) recommendation for worldwide adoption of Open Data Protocol to help combat online child sexual abuse material:

<http://www.virtualglobaltaskforce.com/2013/vgt-recommends-worldwide-adoption-open-data-protocol/>

OData Community of implementers (<http://odata.org>), including:

Short video overview of OData:

<http://youtu.be/wH5TUwzlaWl>

Short tutorial:

<http://www.odata.org/getting-started/basic-tutorial/>

Interoperability is facilitated through various open-source libraries including:

C++:

<https://github.com/OData/odatacpp>

.NET:

<http://odata.codeplex.com/>

Java:

<http://olingo.apache.org/>

JavaScript:

<http://olingo.apache.org/>

## **ORGANIZATIONAL CRITERIA**

### *SD 9 Excerpt: JTC 1 PAS and Fast Track Explanatory Report Template*

Once a PAS originator has been recognised, a PAS submission to the JTC 1 Secretariat may occur within the technical scope identified in the PAS submitter application. This PAS submission must be accompanied by an Explanatory Report produced by the Submitter, and a statement that the conditions for recognition of the PAS submitter have not changed, or an indication of the nature of changes that have occurred (see SD9 clause 6.2.2). \* \* \*

The conditions for PAS submitter recognition of OASIS that were in place at the time of our last reaffirmation of PAS recognition, and this year's application for reaffirmation, have not changed. The material below is simply a summary.

-- Cooperative stance

OASIS, as a consortium, interoperates and liaises, broadly and productively, with international de jure standards organizations and many relevant industry consortia of various types, and has working relationships with:

- ISO-IEC-ITU-UN MoU for E-Business (<http://www.itu.int/en/ITU-T/ebusiness/Pages/mou/default.aspx>)
- The European Commission MultiStakeholder Panel on open ICT standardization (<http://ec.europa.eu/digital-agenda/en/european-multi-stakeholder-platform-ict-standardisation>)
- ISO/IEC JTC 1 SC34, SC38, SC40 and ISO TC 154 (category A liaison)
- ITU-T (A.4 and A.5 recognition)
- ANSI, CalConnect, CEN, CSCC, ETSI, HL7, Kantara Initiative, NAESB, NSTIC IDESG, OpenGeoSpatial Consortium, ODCA, OI DF, OMG, PSLX, SWIFT, UPU and W3C, among other standards consortia.

OASIS enters into working agreements (as contemplated by JTC 1 criteria) with each organization to which it submits OASIS Standards, pursuant to our Liaison Policy, posted at:

<https://www.oasis-open.org/policies-guidelines/liaison>

The submission terms applicable to this submission by OASIS of OData are attached as Annex A to this report. These terms are consistent with the applicable rules of OASIS, and comply with the criteria established by JTC 1's PAS Disposition process..

OASIS technical committees continue to actively produce ICT specifications that may, over time, provide additional opportunities for convergence, or feature expansion of this work, towards related domains of activity.

-- Characteristics of the Organization

OASIS is a member-led, international standards consortium, incorporated as a Section 501(c)(6) not-for-profit corporation under the law of the State of Pennsylvania in the United States, concentrating on structured information and global e-business standards, and organized in 1993. As of 2014, approximately 50% of the over 550 members are technology providers, 35% are technology users and influencers, and 15% are government and academic entities. As verified during our PAS recognition applications and reaffirmations, OASIS is one of the largest and most widely recognized open standards consortia developing data and methodology specifications for e-business and public administration. All organizational members of OASIS may vote on OASIS standards (and on governance issues such as election of the Board of Directors); and any member (including Associate and Individual members) may join any OASIS technical committee as a voting member.

-- Intellectual Property Rights

The OASIS IPR Policy imposes a clear set of disclosure and license-notification procedures that ensures predictable detection and resolution of claims from contributors to OASIS work. It is posted here:

<https://www.oasis-open.org/policies-guidelines/ipr>

In this submission, OASIS is willing to comply with the ISO/IEC Common Patent Policy, and the disclosures in this report comply with its disclosure requirements.

Under the OASIS IPR Policy, members actively participating in the development of the OData TC's work are obligated to disclose any intellectual property rights they hold in the approved standard, and to provide license rights to implementers of the standard, in the manner described in the policy. All declared claims of rights in the OData v4.0 and OData JSON Format v4.0 standards are required to be posted here:

<https://www.oasis-open.org/committees/odata/ipr.php>

No claims have been made as of the date of this submission. However, any later-claimed rights held by OASIS members actively participating in the OData TC's work will be licensed to implementers on the terms set forth in the OASIS IPR Policy.

Additionally, OASIS holds a copyright in the submitted specification. Under the terms of its liaison policy (above), OASIS will agree either (a) to have its copyright notice and associated disclaimers retained on a JTC 1 print of the transposed work, or (b) to have only the ISO/IEC copyright notice appear, so long as OASIS' retention of its independent copyright is properly memorialized in the working agreement referenced above. OASIS has no objection to joint or dual distribution of the transposed standard.

OASIS holds a trademark in the name of the specification, but otherwise knows of no claimed trademark rights in the normative elements of the submitted specification. OASIS will grant such permissions to refer to that name, if any, as might be necessary for joint or dual distribution of the transposed standard.

Under the OASIS IPR Policy referenced above, all contributions provided by members into its technical committees are made with the assurance that they are freely available for incorporation, derivation and republication into the committee's output.

#### **DOCUMENT RELATED CRITERIA**

*Draft SD 9, Annex B, Excerpt: JTC 1 PAS and Fast Track Explanatory Report Template*

Please be sure to address the following Document Related Criteria when making any PAS or Fast Track submission to JTC 1. The paragraphs follow the clause numbering in SD 9 section 7.4.

-- 7.4.1.1. Quality: Completeness

*a) How well are all interfaces specified?*

The submitted specifications clearly describe all the functionality needed to create independent interoperable implementations. The specifications build upon earlier contributed work which was already in production use. The specifications clearly define the interfaces using normative language, conformance levels, and examples. The submitted specifications have undergone multiple public reviews (according to established OASIS specification development process).

*b) How easily can implementation take place without need of additional descriptions?*

Feedback from multiple independent implementations contributed to the development of the submitted specifications. Hence, it is possible to create independent implementations based on existing specification descriptions and without need for additional descriptions.

*c) What proof exists for successful implementations (e.g. availability of test results for media standards)?*

In addition to written specifications, the OASIS OData Technical Committee has produced machine readable ABNF (Augmented Backus-Naur Form), XSD (XML Schema Definition), and test cases to validate URL patterns and XML payloads used in implementing the specifications. The approval process for OASIS Standards also requires that multiple OASIS members publicly acknowledge successful implementation of the specification. In this case those acknowledgments were provided by:

IBM:

<https://lists.oasis-open.org/archives/odata/201310/msg00253.html>

Microsoft:

<https://lists.oasis-open.org/archives/odata/201310/msg00261.html>

SAP:

<https://lists.oasis-open.org/archives/odata/201311/msg00002.html>

The approved OASIS Standard has a growing ecosystem of open source libraries, products, and tools, many of which are described or referenced at <http://odata.org>. OData interoperability also is facilitated by the multiple open-source libraries noted above.

-- 7.4.1.2. Quality : Clarity

*a) What means are used to provide definitive descriptions beyond straight text?*

In addition to written specifications, the OASIS OData Technical Committee has produced machine readable ABNF (Augmented Backus-Naur Form) and XSD (XML Schema Definition), which provide definitive descriptions of the structure of URIs and metadata descriptions.

*b) What tables, figures and reference materials are used to remove ambiguity?*

The submitted specifications includes numerous tables as well as examples to illustrate the protocol.

*c) What contextual material is provided to educate the reader?*

The submitted specifications includes numerous examples to demonstrate individual concepts as well as comprehensive end-to-end examples to demonstrate overall use.

-- 7.4.1.3. Quality : Testability

The OData specifications provide detailed textual description, explanation and examples of the various features as well as explicit conformance clauses, which provide readily testable indicia of interoperability. In addition, there is an open source OData service validation tool for testing conformance to the specification here (<http://odatavalidation.codeplex.com/>) with a live version of the service hosted here (<http://services.odata.org/validation/>).

-- 7.4.1.4. Quality : Stability

*a) How long has the specification existed, unchanged, since some form of verification (e.g. prototype testing, paper analysis, full interoperability tests) has been achieved?*

The specification has not changed substantively since its last public review in October 2013. Prior to that, in terms of verification, three implementers provided statements of use (as required by the OASIS Standard approval process): See Section 7.4.1.1. above.

*b) To what extent and for how long have products been implemented using the specification?*

Product implementations have existed alongside specification development. The products implement varying levels of conformance to the specification (minimal, intermediate, and advanced) as defined by the specification. The original OData specifications, on which the OASIS Standards are based, were developed, tested and proven by implementations since early 2009, as an open collaborative project on the original OData project site since 2009. See (<http://www.odata.org>).

*c) What mechanisms are in place to track versions, fixes and addenda?*

The submitted document adheres to the OASIS defined policies on document naming and versioning:

<http://docs.oasis-open.org/specGuidelines/ndr/namingDirectives.html>

-- 7.4.1.5. Quality: Availability

*a) Where is the specification available (e.g. one source, multinational locations, what types of distributors)?*

*b) How long has the specification been available?*

*c) Has the distribution been widespread or restricted? (describe the situation)*

The progressive versions of the specifications have been publicly-available from OASIS's Internet portals since July 2012. Prior versions were posted and available since 2009. The current form of the specifications have been posted and available since they were finalized for final OASIS approval in August of 2014.

*d) What are the costs associated with specification availability?*

There are no required costs associated with OASIS specification availability. Distribution of the OData specifications from OASIS is unlimited and free of charge, from the public OASIS web links provided above, and OASIS requests that the transposed ISO/IEC International Standard also be offered at no charge.

Under the OASIS IPR Policy referenced above, users are unqualifiedly permitted to implement the submitted OASIS Standard without any requirement of a license, permission or royalty from OASIS; other parties with claims are permitted to assert those claims and make any license terms known. All participants in the OASIS OData TC have agreed, under the terms set forth in the OASIS IPR Policy, to make any licensed rights available as needed to permit royalty-free licenses to any implementer of the OData OASIS standards, under the terms provided in the "RF on RAND" IPR mode as defined in that policy.

#### -- 7.4.2.1. Consensus : Development Consensus

OData v4.0 and OData JSON Format v4.0 were developed by the multi-national and cross-industry membership of the OASIS Open Data Protocol Technical Committee, whose roster can be seen here:

<http://www.oasis-open.org/committees/odata>

They were approved by that committee, and then approved by the OASIS membership at OASIS' highest level of approval, under the OASIS IPR Policy (see above) and the OASIS TC Process rules:

<http://www.oasis-open.org/committees/process.php>

The above OASIS rules, as previously confirmed during JTC 1's examinations of OASIS' PAS eligibility, assure transparent public feedback; broad quality review under a consensual process; and a declared and clear regime for the resolution of any intellectual property rights claims (although none have been asserted against this work).

#### -- 7.4.2.2. Consensus : Response to User Requirements

OASIS policies require that each technical committee maintains a public, transparent record of all comments received to a proposed standard, as well as acknowledgment of their resolution. As a result, the course of development in OASIS technical committees always is open to input from the needs of user communities. The development and approval of the OData specifications complied with our open process methods and requirements, as evidenced by the enclosed notices. The successful use statements referenced above, from OASIS member implementers, evidence user satisfaction with the work.

#### -- 7.4.2.3. Consensus : Market Acceptance

Multiple software toolmakers, open source platforms and institutional end-users have announced their implementations of OData, in a variety of applications and vertical domains. See the Statements of Use and informational statements above, the ecosystem described at (<http://www.odata.org/ecosystem/>), and the announcements found at (<http://www.odata.org/blog/>).

#### -- 7.4.2.4. Consensus : Credibility

The OData specifications provide detailed textual description, explanation and examples of the various features as well as explicit conformance clauses, which provide readily testable indicia of interoperability. In addition, there is an open source OData Service Validation Tool for testing conformance to the specification at (<http://odatavalidation.codeplex.com/>), with a live version of the service hosted at (<http://services.odata.org/validation/>).

#### – 7.4.3.1. Alignment : Relationship to Existing Standards

OData is a REST-based Web protocol. It builds on HTTP and JSON using URIs to address and access data feed resources. It enables information to be accessed from a variety of sources including (but not limited to) relational databases, file systems, content management systems, and traditional web sites. OASIS is unaware of any conflicts of alignment or relationships with other JTC 1 standards, and does not believe that there are any open standards with similar functionality.



#### -- 7.4.3.2. Alignment : Adaptability and Migration

Although a number of systems profitably can use OData, there appears to be no need for a migration path or defined relationship with existing International Standards. The OData specifications are stable and in production use. Any further work on the specifications by OASIS is expected to be additive, and not to substantially change the base specifications' methods.

#### -- 7.4.3.3. Alignment : Substitution and Replacement

The OData standards do not replace any existing International Standard. Each of the OASIS standards in this submission is an integrated package. OData v4.0 and OData JSON Format v4.0 should be transposed and published as two parts (-1 and -2) of an ISO/IEC standard: for example:

"ISO/IEC XXXXX:2015 Information Technology – Open Data Protocol (OData) v4.0 – Part 1 Core",  
and  
"ISO/IEC XXXXX:2015 Information Technology – Open Data Protocol (OData) v4.0 – Part 2 OData JSON Format".

#### -- 7.4.3.4. Alignment: Document Format and Style

As in past OASIS PAS submissions, it is the expectation of OASIS and the OASIS TC to present these original versions for transposition in the document style and format finally adopted by OASIS; and after their first transposition, to conform any future versions submitted to JTC 1 to ISO/IEC Style according to the ISO/IEC Directives Part 2.

#### -- 7.4.4. Maintenance

The OASIS rules and practices for maintenance of specifications have not changed since our last reaffirmation of PAS recognition nor this year's application for reaffirmation. OASIS and its OData Technical Committee will conduct the ongoing maintenance and revisions of the submitted specifications. The OASIS OData TC will continue to collect errata, implementation experience, and possible feedback towards future improvements from the public, according to our policies:

<https://www.oasis-open.org/policies-guidelines/liaison#submitwork>

OASIS welcomes input from any defect reports which may be submitted via JTC 1 National Bodies. OASIS will work with the JTC 1 Secretariat to respond to Systematic Reviews, and evaluate needs for future revisions.

The OASIS TC and OASIS will bring future major versions of the specification, including each OASIS Standard version and all OASIS Approved Errata, and interim maintenance revisions when feasible, back to JTC 1 for re-transposition. It is OASIS' expectation that the OASIS and JTC 1 publications of any given version of the specification will be identical in all substantive and technical respects, so as not to disrupt or confuse users of the work, nor render their implementations non-interoperable.

If in the future the OASIS TC is closed, or votes to cease its work on the submitted specification, OASIS will then inform JTC 1, and will grant to it the copyright and permission to continue to maintain the work as a

JTC 1 product; provided, however, that the OASIS IPR Policy and its terms thereafter will no longer impose disclosure, licensing or permissions obligations on contributors to new versions of any such work, and OASIS may require that a notice to that effect be included.

## STRATEGIC CHARACTERISTICS

*SD 9 Excerpt: JTC 1 PAS and Fast Track Explanatory Report Template*

The Submitter is further invited to comment on the following items in the Explanatory Report:  
\* \* \* b) Explicitly reference the JTC 1 common strategic characteristics (interoperability, portability, cultural and linguistic adaptability, and accessibility) (see SD9 clause 4).

The proposed transposition also meets the higher-level strategic goals of JTC 1 represented by common strategic characteristics defined for JTC 1's Technical Directions: interoperability, portability, cultural and linguistic adaptability and accessibility.

### -- Interoperability

OData defines common conventions for RESTful services to interoperate with a broad range of client libraries, tools, and applications as described above. OData services are self-describing. The resources and root URLs are exposed through common metadata and service document representations, enabling generic client and tools to support rich interactions against any OData service. In addition, OData defines vocabularies for sharing common annotation terms that can be used to extend data and metadata descriptions.

### -- Portability

OData is an HTTP-based protocol that can be used on any platform or device with a simple HTTP stack. It is explicitly vendor-neutral, device-neutral and language-neutral, and can be used as a lingua franca for describing and interacting with data on the web.

### -- Cultural and linguistic adaptability

OData is a RESTful protocol for sharing data on the web. The data may be represented in any language, and may be annotated to describe locale and other cultural characteristics.

### -- Accessibility

As an HTTP specification for sharing data on the web, the OData specifications do not contain characteristics that are likely to have limiting effects on accessibility.

END OF BODY

## ANNEX A

### **PROPOSED TERMS OF TRANSPOSITION**

OASIS submits its work for transposition with the understanding that the submitted document either will be adopted and transposed in substantially the same form as submitted, or rejected. It is a goal and requirement of both OASIS and JTC 1 that published standards not be forked into multiple conflicting future versions. Comments and suggestions raised during the transposition review process will be fed back to the OASIS TC for review and action in future versions.

Copyright permissions: OASIS, as PAS submitter, grants permission to JTC 1 to cause the submitted textual specification to be re-formatted into JTC 1 document styles as necessary to achieve appropriate transposition, but requests that the specification remain otherwise unchanged throughout the transposition process. OASIS retains its independent copyright in the submitted specification and any related OASIS materials, and may continue to distribute them freely as it has done in the past. Subject to the foregoing, OASIS grants permission to JTC 1 either (a) to have the OASIS copyright notice retained on a JTC 1 document for the transposed work, or (b) to have only the ISO/IEC copyright notice appear on JTC 1's document. OASIS has no objection to dual distribution of the standard, and at JTC 1's option also would be pleased to consider the creation of a jointly-published single document. These are the same permissions and arrangements as have been adopted and accepted in most prior OASIS PAS submissions.

The OASIS OData TC will remain active, drive growth of the specification, and retain the responsibility for its ongoing maintenance and revisions, as set forth in the Explanatory Report.

END OF ANNEX