Open Data eXchange Query Specification 2010B

Version 1.0
22 October 2010

Open Data eXchange Workgroup

About HTNG

Hotel Technology Next Generation (HTNG) is a non-profit association with a mission to foster, through collaboration and partnership, the development of next-generation systems and solutions that will enable hoteliers and their technology vendors to do business globally in the 21st century; to be recognized as a leading voice of the global hotel community, articulating the technology requirements of hotel companies of all sizes to the vendor community; and to facilitate the development of technology models for hospitality that will foster innovation, improve the guest experience, increase the effectiveness and efficiency of hotels, and create a healthy ecosystem of technology suppliers.

Table of Contents

1 Document History

1.1 Functional Change Log

Version	Date	Comments
1.0	22 October 2010	Generic Query-Based Reporting

2 Document Information

2.1 Document Purpose

There is a need to share on demand data between systems. Often, the requirements for what data is needed changes rapidly over time, as end users adjust the information they wish to have available, such as with a dashboard system. This specification provides messages that are designed to be flexible with query/response type data requests, and permit easy modification to accommodate new data requests.

This specification differs from the ODX Basic Specification 1.0 (see section "2.6 Referenced Documents" below for the URL), in that the Basic Specification is based on file transport rather than query based requests.

2.2 Scope

The scope of the ODX Query Specification promotes a flexible communication mechanism that allows vendors to define queries and responses in a flexible fashion. The base messages are defined using WSDLs and schemas, however, the payloads are left for the vendors to negotiate.

2.3 Audience

The primary intended audience of this document is a developer or system designer seeking to implement the interface specifications within their products.

2.4 Overview

This is a document that provides an overview of the messages.

2.5 Document Terms

For the purpose of this document the following terms have been defined as follows:

Term	Definition
Key Value Item	A parameter name, or a parameter value
Key Value Pair	The combination of a parameter name and parameter value
Response Parameters	Defines the size, type, and format of resulting payloads

2.6 Referenced Documents

The following table shows the documents upon which this document depends:

Document Title	Location / URL
HTNG Web Services Framework 2.1.1	http://collaboration.htng.org/specs/
HTNG Open Data eXchange Basic Specification 1.0	http://collaboration.htng.org/specs/

3 Business Process

3.1 Overview

The specification describes the messages that enable systems to share on demand data. The Requester and Responder system vendors have agreed about the available requests and have defined the following:

- Key for Request (StoredQueryName)
- Key Value Pairs (parameter element names and parameter element values)
- The Provider response payload structure (XML, CSV, Text, etc.)
- The unit of measure that provides a scope plus sort parameter
- The method of response (Synchronous/Asynchronous)

This permits a standardized, flexible means of requesting and receiving data within available requests. It also permits adding new requests more easily by negotiation of additional query names, parameters, and processing without re-addressing the structure and architecture of the query/response mechanism, or adding new messages.

3.2 Roles

This specification defines the following roles:

3.2.1 Requester System

A system that requires on demand data.

3.2.2 Provider System

A system that provides the on demand data which may include in-line calculations.

3.3 Behavior

These messages are intended to provide the structure for the queries and responses, but do not pose restrictions on the processing choices by the requester and provider systems. Processing considerations are agreed upon by the trading partners.

4 Use Cases

4.1 Query Use Case

4.1.1 Use Case Description

A user has a need to obtain a set of data from a provider system. They need a mechanism to be able to vary the breadth of scope of requests in a flexible manner without going through a major development cycle. ODX V2 provides a template that allows for flexibility with queries whilst still maintaining a standard structure and output mechanism.
The Requester system constructs an on demand information request. This includes the population of mandatory elements. The StoredQueryName, along with the Key Value Pairs, define the breadth of the request.
The Responding system constructs a payload that is in the format defined by the request. These requests are for on demand data and may require the following:

- Processing the query in an Asynchronous manner due to the effort involved in obtaining the data
- Reducing/Governing the scope of the query
- Providing appropriate processing/error information via execution notes and/or fault responses

The payload is then constructed in the appropriate format and issued back to the Requester system
This operation may be symmetrical where systems may swap roles of being Requestor or Responder.
This methodology is primarily designed as a request/response query mechanism and not an update mechanism.

4.1.2 Data Element Table – Request

Element | @Attribute	Num	Description/Contents
HTNG_StatisticsRQ	1	The root element of the message.
@EchoToken	0..1	A reference for additional message identification, assigned by the requesting host system. When a request message includes an echo token, the corresponding response message MUST include an echo token with an identical value.
@TimeStamp	1	Indicates the creation date and time of the message in UTC using the following format specified by ISO 8601; YYYY-MM-DDThh:mm:ssZ with time values using the 24-hour clock (e.g. 20 November 2003, 1:59:38 pm UTC becomes 2003-11-20T13:59:38Z).
@Version	1	For all OpenTravel versioned messages, the version of the message is indicated by a decimal value.
@Target	0..1	Used to indicate whether the request is for the Test or Production system.
HTNG_StatisticsRQ \ RequestorID	1	An identifier of the entity making the request (e.g. ATA/IATA/ID number, Electronic Reservation Service Provider (ERSP), Association of British Travel Agents (ABTA)).
@Type	1	A reference to the type of object defined by the UniqueID element. Refer to OTA Code List Unique ID Type (UIT).
@ID_Context	0..1	A unique identifying value assigned by the creating system. The ID attribute may be used to reference a primary-key value within a database or in a particular implementation.
@ID	1	Used to identify the source of the identifier (e.g., IATA, ABTA).
HTNG_StatisticsRQ \ Queries	1	A collection of Query entities.
HTNG_StatisticsRQ \ Queries \ Query	1..n	An entity representing the necessary parameters for obtaining data.
@StoredQueryName	1	A key to a stored query shared between systems.
@QueryTrackingID	1	Used to match the originating query in the collection with the corresponding query item in the response.

Element | @Attribute	Num	Description/Contents
HTNG_StatisticsRQ \ Queries \ Query \ RequestParameters	1	A collection of comparison operations.
HTNG_StatisticsRQ \ Queries \ Query \ RequestParameters \ KeyValueItem	1..n	An entity representing a simple comparison operation.
@Operator	0..1	The comparison operator used to control the relationship between the Key and Value attributes. The possible values are: • Equals • Does Not Equal • Contains • Does Not Contain • Begins With • Does Not Being With • Ends With • Does Not End With • Contains Data • Does Not Contain Data • Is Greater Than • Is Greater Than or Equal To • Is Less Than • Is Less Than or Equal To The default value is Equals.
@Key	1	A trading partner agreed reference to a data field.
@Value	1	The value to test for or look for.
HTNG_StatisticsRQ \ Queries \ Query \ ResponseParameters	1	Used to dictate how the data should be retrieved and packaged in the response.
@UnitOfMeasure	0..1	An enumeration to control the ordering of the set of data. Possible values are: • All Ascending • All Descending • Top Ascending • Top Descending • Bytes The default is All Ascending.
@Size	0..1	Used in conjunction with the UnitOfMeasure, this attribute dictates how much data should be returned.
@ResultFormat	0..1	An enumeration of output formats. Possible values are: • XML • CSV • Plain Text • Base64Binary The default value is XML.

4.1.3 Sample Request Message

```
<?xml version="1.0" encoding="UTF-8"?>
<HTNG_StatisticsRQ EchoToken="a" TimeStamp="2001-12-17T09:30:47Z" Version="0.0" Target="Test"
xmlns="http://htng.org/2010B" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
        <RequestorID Type="0" ID_Context="a" ID="a"/>
        <Queries>
                <Query StoredQueryName="String" QueryTrackingID="String">
                        <RequestParameters>
                                <KeyValueItem Operator="Equals" Key="String" Value="String"/>
                        </RequestParameters>
                        <ResponseParameters UnitOfMeasure="All Ascending" Size="1"
ResultFormat="XML"/>
                </Query>
        </Queries>
</HTNG_StatisticsRQ>
```

4.1.4 Data Element Table – Response

Element | @Attribute	Num	Description/Contents
HTNG_StatisticsRS	1	The root element of the message.
@EchoToken	0..1	A reference for additional message identification, assigned by the requesting host system. When a request message includes an echo token, the corresponding response message MUST include an echo token with an identical value.
@TimeStamp	1	Indicates the creation date and time of the message in UTC using the following format specified by ISO 8601; YYYY-MM-DDThh:mm:ssZ with time values using the 24-hour clock (e.g. 20 November 2003, 1:59:38 pm UTC becomes 2003-11-20T13:59:38Z).
@Version	1	For all OpenTravel versioned messages, the version of the message is indicated by a decimal value.
@Target	0..1	Used to indicate whether the request is for the Test or Production system.
HTNG_StatisticsRS \ RequestorID	1	An identifier of the entity making the request (e.g. ATA/IATA/ID number, Electronic Reservation Service Provider (ERSP), Association of British Travel Agents (ABTA)).
@Type	1	A reference to the type of object defined by the UniqueID element. Refer to OTA Code List Unique ID Type (UIT).
@ID_Contect	0..1	A unique identifying value assigned by the creating system. The ID attribute may be used to reference a primary-key value within a database or in a particular implementation.
@ID	1	Used to identify the source of the identifier (e.g., IATA, ABTA).
HTNG_StatisticsRS \ Queries	1	A collection of Query entities.
HTNG_StatisticsRS \ Queries \ Query	1..n	An entity representing the necessary parameters for obtaining data.
@ResultTrackingID	0..1	A key to assist in debugging for servers that log queries executed against their own databases.
@StoredQueryName	1	A key to a stored query shared between systems.
@QueryTrackingID	1	Used to match the originating query in the collection with the corresponding query item in the response.
HTNG_StatisticsRS \ Queries \ Query \ RequestParameters	1	A collection of comparison operations.
HTNG_StatisticsRS \ Queries \ Query \ RequestParameters \ KeyValueItem	1..n	An entity representing a simple comparison operation.
@Operator	0..1	The comparison operator used to control the relationship between the Key and Value attributes. The possible values are: • Equals • Does Not Equal • Contains • Does Not Contain • Begins With • Does Not Being With • Ends With • Does Not End With • Contains Data • Does Not Contain Data • Is Greater Than • Is Greater Than or Equal To • Is Less Than • Is Less Than or Equal To The default value is Equals.
@Key	1	A trading partner agreed reference to a data field.

Element | @Attribute	Num	Description/Contents
@Value	1	The value to test for or look for.
HTNG_StatisticsRS \ Queries \ Query \ ResponseParameters	1	Used to dictate how the data should be retrieved and packaged in the response.
@UnitOfMeasure	0..1	An enumeration to control the ordering of the set of data. Possible values are: • All Ascending • All Descending • Top Ascending • Top Descending • Bytes The default is All Ascending.
@Size	0..1	Used in conjunction with the UnitOfMeasure, this attribute dictates how much data should be returned.
@ResultFormat	0..1	An enumeration of output formats. Possible values are: • XML • CSV • Plain Text • Base64Binary The default value is XML.
HTNG_StatisticsRS \ Queries \ Query \ QueryResult	1	The payload of the query result in the format dictated by ResultFormat.
HTNG_StatisticsRS \ Queries \ Query \ ExecutionTime	0..1	The amount of time the server took to execute the query.
HTNG_StatisticsRS \ Queries \ Query \ ExecutionNotes	0..1	Any free-form information the server would like to return to the client. For instance, the database execution plan.

4.1.5 Sample Response Message

```
<?xml version="1.0" encoding="UTF-8"?>
<HTNG_StatisticsRS EchoToken="a" TimeStamp="2001-12-17T09:30:47Z" Version="0.0" Target="Test"
xmlns="http://htng.org/2010B" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
        <RequestorID Type="0" ID_Context="a" ID="a"/>
        <Queries>
                <Query ResultTrackingID="String" StoredQueryName="String" QueryTrackingID="String">
                        <RequestParameters>
                                <KeyValueItem Operator="Equals" Key="String" Value="String"/>
                        </RequestParameters>
                        <ResponseParameters UnitOfMeasure="All Ascending" Size="1"
ResultFormat="XML"/>
                        <QueryResult>String</QueryResult>
                        <ExecutionTime>P1Y2M3DT10H30M</ExecutionTime>
                        <ExecutionNotes>String</ExecutionNotes>
                </Query>
        </Queries>
</HTNG_StatisticsRS>
```

5 Appendix

5.1 Additional Sample Message

Frequently, it is useful to know what the top <n> selling products are. Here is one way of obtaining such data. In the example below, the user is requesting the top three selling items.

5.1.1 Request

```
<?xml version="1.0" encoding="UTF-8"?>
<HTNG_StatisticsRQ EchoToken="66086d60-1df3-421e-83f2-db36579ea68c" TimeStamp="2010-09-
16T16:11:47Z" Version="1.0" Target="Production" xmlns="http://htng.org/2010B"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <RequestorID Type="10" ID_Context="SYSABC" ID="SYS101"/>
      <Queries>
            <Query StoredQueryName="TopSellingItems" QueryTrackingID="cb2bca98-4e28-4a19-978b-
a4e1a9e50011">
                  <RequestParameters>
                        <KeyValueItem Operator="Is Greater Than" Key="Quantity" Value="5"/>
                  </RequestParameters>
                  <ResponseParameters UnitOfMeasure="Top Descending" Size="3" ResultFormat="XML"/>
            </Query>
      </Queries>
</HTNG_StatisticsRQ>
```

5.1.2 Response

```
<?xml version="1.0" encoding="UTF-8"?>
<HTNG_StatisticsRS EchoToken="66086d60-1df3-421e-83f2-db36579ea68c" TimeStamp="2010-09-
16T16:11:52Z" Version="1.0" Target="Production" xmlns="http://htng.org/2010B"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <RequestorID Type="10" ID_Context="SYSABC" ID="SYS101"/>
      <Queries>
            <Query ResultTrackingID="e9d3315b-f514-4234-9e23-43f52fc02c42"
StoredQueryName="TopSellingItems" QueryTrackingID="cb2bca98-4e28-4a19-978b-a4e1a9e50011">
                  <RequestParameters>
                        <KeyValueItem Operator="Is Greater Than" Key="Quantity" Value="5"/>
                  </RequestParameters>
                  <ResponseParameters UnitOfMeasure="Top Descending" Size="3" ResultFormat="XML"/>
                  <QueryResult><![CDATA["<?xml version="1.0" encoding="UTF-8"?><ListItem><Item
ID="cbb93093" Description="Top Flite D2 Distance Golf Balls (15 Pack)" Price="15.99"
Quantity="9"/><Item ID="adcf35d4" Description="Foot Joy SciFlex Golf Glove (Right)" Price="16.99"
Quantity="8"/><Item ID="a5f2b0e4" Description="Izod Men's Polo Shirt (XL)" Price="47.99"
Quantity="6"/></ListItem>"]]></QueryResult>
                  <ExecutionTime>P0Y0M0DT0H0M3S</ExecutionTime>
                  <ExecutionNotes>Query executed successfully.</ExecutionNotes>
            </Query>
      </Queries>
</HTNG_StatisticsRS>
```