

# Public Query Interface Version 1.0

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#### Related work:

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- *Roles, Principles, and Ecosystem Version 1.0*. Edited by Matthew Reed. Latest version: <http://docs.oasis-open.org/coel/RPE/v1.0/RPE-v1.0.html>.
- *Behavioural Atom Protocol Version 1.0*. Edited by Joss Langford. Latest version: <http://docs.oasis-open.org/coel/BAP/v1.0/BAP-v1.0.html>.
- *Minimal Management Interface Version 1.0*. Edited by David Snelling. Latest version: <http://docs.oasis-open.org/coel/MMI/v1.0/MMI-v1.0.html>.
- *Identity Authority Interface Version 1.0*. Edited by Paul Bruton. Latest version: <http://docs.oasis-open.org/coel/IDA/v1.0/IDA-v1.0.html>.

#### Abstract:

This document describes the minimum synchronous query interface that will be provided by a Data Engine. Individual implementations of a Data Engine can provide further capabilities.

#### Status:

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# 1 Introduction

This document describes the minimum synchronous query interface that **MUST** be provided by a Data Engine. Individual implementations of a Data Engine can provide further capabilities.

## 1.1 Terminology

The key words “**MUST**”, “**MUST NOT**”, “**REQUIRED**”, “**SHALL**”, “**SHALL NOT**”, “**SHOULD**”, “**SHOULD NOT**”, “**RECOMMENDED**”, “**MAY**”, and “**OPTIONAL**” in this document are to be interpreted as described in [RFC2119].

## 1.2 Normative References

- [RFC2119] Bradner, S., “Key words for use in RFCs to Indicate Requirement Levels”, BCP 14, RFC 2119, March 1997. <http://www.ietf.org/rfc/rfc2119.txt>.
- [RFC4627] D. Crockford, The application/json Media Type for JavaScript Object Notation (JSON), July 2006, <http://www.ietf.org/rfc/rfc4627.txt>.
- [COEL\_RPE-1.0] *Roles, Principles, and Ecosystem Version 1.0*. Latest version: <http://docs.oasis-open.org/coel/RPE/v1.0/RPE-v1.0.docx>.
- [COEL\_IDA-1.0] *Identity Authority Interface Version 1.0*. Latest version: <http://docs.oasis-open.org/coel/IDA/v1.0/IDA-v1.0.docx>
- [COEL\_BAP-1.0] *Behavioural Atom Protocol Version 1.0*. Latest version: <http://docs.oasis-open.org/coel/BAP/v1.0/BAP-v1.0.docx>

## 1.3 Non-Normative References

- [Coelition] <http://www.coelition.org>
- [Data to Life] Reed, M. & Langford, J. (2013). Data to Life. Coelition, London. ISBN 978-0957609402

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## 2 Interface Specification

The query interface SHALL have one method POST. The body of the request SHALL contain the query. The response to a successful query SHALL be a list of JSON Atoms that are the results of the query OR the result of an aggregation.

### 2.1 Authentication and Authorisation

To access the Query API, callers need API Credentials with two components:

- A userid to identify the caller.
- A password to authenticate the caller.

HTTP basic authentication SHALL be used to authenticate calls to the API. Passwords SHOULD be 64 bytes in length and MUST be supplied as an ASCII string. This MUST be prefixed with the userid followed by a colon to form the token passed in the HTTP Authorisation Header.

Example:

```
"9abf5386-2ac6-4e61-abc4-6b809a85d6cb:J1dOeWJJ0kd3akhnSn4ma007M  
DtUMVAXISgyOn9jI2U9NHNdRi4hfiw9c2I8PURcVltNMWQkamsrfGR4T24vKA=="
```

If the userid is unrecognized, or the wrong password is supplied a HTTP status code *401 Invalid username or password* SHALL be returned.

### 2.2 Query Operation

Initiate the query contained in the body of the request and return the result of the query.

---

API	Description
POST query	Send a query to the Data Engine and wait for the response containing the result.

---

#### 2.2.1 Request

---

Parameter Name	Description	Type
ConsumerID	Pseudonymous Key representing the requesting Consumer who is the subject of the query (REQUIRED).	<b>String:</b> Format defined in [COEL_IDA-1.0].

---

Parameter Name	Description	Type
<b>OperatorID</b>	Pseudonymous Key representing the consumer's Operator (OPTIONAL).	<b>String:</b> Format defined in [COEL_IDA-1.0].
<b>TimeWindow</b>	Represents the time window(s) for the query (OPTIONAL).	<b>Object:</b> Composed of StartTime, EndTime, and BlockBy.
<b>StartTime</b>	Start of time interval to be included in the query. Time in seconds since 1/1/1970 UTC (OPTIONAL). If absent, 1/1/1970 is assumed. Atoms will be included if their start time comes after this time.	<b>Integer:</b> Seconds since 1/1/1970 UTC.
<b>EndTime</b>	End of time interval to be included in the query. Time in seconds since 1/1/1970 UTC (OPTIONAL). If absent, infinity is assumed. Atom will be excluded if their start time comes after this time.	<b>Integer:</b> Seconds since 1/1/1970 UTC.
<b>BlockBy</b>	If present the number of seconds in each block returned (OPTIONAL). If absent all Atoms in the time window are returned as a single block or used in the aggregation computation.	<b>Integer:</b> Block length in seconds.
<b>Query</b>	The query for this request. (OPTIONAL)	<b>JSON Object:</b> Format defined in Section 2.2.1.1

#### Media type:

`application/json, text/json`

#### 2.2.1.1 Query Object

The query object has the following JSON structure.

- Query: (OPTIONAL)
  - Filter:

- ColName: column name
- Comparator: one of "=", ">", ">=", "<", "<=", "!="
- Value: comparison value
- AND (list of length > 0) (OPTIONAL)
  - Filter, AND, OR
- OR (list of length > 0) (OPTIONAL)
  - Filter, AND, OR
- NOT (OPTIONAL)
  - Filter, AND, OR
- Aggregate (OPTIONAL)
  - Columns (list)
    - ColName: column name, see below
    - Aggregator: aggregator function, one of AVG, SUM, COUNT, MIN, MAX, STDDEV
  - GroupBy (list) (OPTIONAL)
    - ColName: column name
- Project (OPTIONAL)
  - Include (list)
    - ColName: column name
  - Exclude (list)
    - ColName: column name

### 2.2.1.2 Column Names

The following table contains the column names that MUST be used in in queries and that the Data Engine has used to map the corresponding tag values from the Atoms posted.

Name	Data type
HEADER_VERSION	short
WHEN_TIMEZONE	int
WHEN_ACCURACY	int
WHEN_DURATION	int
WHAT_CLUSTER	short
WHAT_CLASS	short
WHAT_SUBCLASS	short
WHAT_ELEMENT	short
HOW_HOW	int
HOW_CERTAINTY	int
HOW_RELIABILITY	int
CONTEXT_SOCIAL	int
CONTEXT_WEATHER	int
CONTEXT_CONTEXTTAG	int
CONTEXT_CONTEXTVALUE	int
WHERE_EXACTNESS	int
WHERE_LATITUDE	double



WHERE_LONGITUDE	double
WHERE_MCC	int
WHERE_MNC	int
WHERE_LCA	int
WHERE_CID	int
WHERE_PLACE	int
WHERE_POSTCODE	String
EXTENSION_INTTAG	int
EXTENSION_INTVALUE	int
EXTENSION_FLTTAG	int
EXTENSION_FLTVALUE	double
EXTENSION_STRTAG	int
EXTENSION_STRVALUE	string

## 2.2.2 Response

Returns the result of the query.

Parameter Name	Description	Type
<b>QueryResult</b>	The query result is a list of JSON objects that match the query.	<b>JSON Object:</b> Format defined in Section 2.2.2.1

### Media type:

`application/json, text/json`

### 2.2.2.1 QueryResult Object

For a simple filter the result is a JSON list of Atoms, see [COEL\_BAP-1.0]. If a projection is specified only requested fields of the matching Atoms are included.

For aggregates, the result objects contain a list of aggregated columns, described by column name and aggregator (as specified in the query), with the result of the aggregate function. If a grouping is specified the object contains a list of column names and their groups for each aggregation.

When BlockBy is absent, all results are returned as the only element in the Blocks list.

Blocks: (list)

Aggregate: (list)

ColName: column name

Aggregator: aggregate function

Value: aggregate function value

Group: (list)

ColName: grouping column  
Value: group

## 2.3 Segment Data

Request segment data for a Consumer.

API	Description
POST segment	Send a copy of all available segment data for the given consumer.

### 2.3.1 Request

Parameter Name	Description	Type
ConsumerID	Pseudonymous Key representing the requesting Consumer who is the subject of the query (REQUIRED).	<b>String:</b> Format defined in [COEL_IDA-1.0].

#### Media type:

application/json, text/json

### 2.3.2 Response

Returns the segment data for the Consumer.

Parameter Name	Description	Type
SegmentData	An OPTIONAL object containing (OPTIONALLY) residential time zone and latitude, gender, and year of birth.	<b>Object:</b> Composed of ResidentTimeZone, ResidentLatitude, Gender, and YearOfBirth.

Parameter Name	Description	Type
<b>ResidentTimeZone</b>	The time zone in which the Consumer generally resides.	<b>TimeZoneString:</b> As +/- hh:mm from UTC.
<b>ResidentLatitude</b>	The latitude (rounded to an integer) at which the Consumer generally resides.	<b>Integer:</b> Representing latitude rounded to an integer.
<b>Gender</b>	The gender of the Consumer.	<b>String:</b> One of "Male" or "Female"
<b>YearOfBirth</b>	Year in which the Consumer was born.	<b>Integer:</b> Representing year of birth.

**Media type:**

application/json, text/json

**Sample:**

```
{ "SegmentData":
  { "ResidentTimeZone": "+03:00",
    "ResidentLatitude": 51,
    "Gender": "Female",
    "YearOfBirth": 1993
  }
}
```

---

## 3 Conformance

Any implementation **MUST** accept queries in the form described in section 2 of this document **AND** the conformance criteria in [COEL\_RPE-1.0], however only a minimum functionality **MUST** be supported.

- A Data Engine **MUST** return raw atoms within a time window for a given ConsumerID.
- A Data Engine **MUST** return the number of atoms held in a time window for a given ConsumerID.

The following is the first of the two minimum queries that a Data Engine implementation **MUST** support. The result of this query is a list of all Atoms with a start time within the time window.

**Sample:**

```
{ "ConsumerID" : "ed58fc40-a866-11e4-bcd8-0800200c9a66",
  "Timewindow" : {
    "StartTime" : 1415145600,
    "EndTime" : 1415232000
  }
}
```

The following is the second of the two minimum queries that a Data Engine implementation **MUST** support. The result of this query is the number of Atoms with a start time within the time window.

**Sample:**

```
{ "ConsumerID" : "ed58fc40-a866-11e4-bcd8-0800200c9a66",
  "Timewindow" : {
    "StartTime" : 1415145600,
    "EndTime" : 1415232000},
  "Query" : {
    "Aggregate" : {
      "Columns" : {
        "ColName" : "WHAT_CLUSTER",
        "Aggregator" : "COUNT"}}}
}
```

---

## Appendix A. Acknowledgments

The following individuals have participated in the creation of this specification and are gratefully acknowledged:

**Participants:**

Paul Bruton, Individual Member  
Joss Langford, Activinsights  
Matthew Reed, Coelition  
David Snelling, Fujitsu

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## Appendix B. Revision History

Revision	Date	Editor	Changes Made
1	22/09/2105	David Snelling	Initial inclusion of submission material.
2	25/09/2105	Paul Bruton	Added review comments
3	25/09/2105	Joss Langford	Review, spelling correct.
4	11/10/2015	David Snelling	Reviewed in document comments and fixed or created issues. Fixed issue: COEL-9
5	11/10/2015	David Snelling	Removed tracking
6	11/10/2015	David Snelling	Added column names table.
7	13/10/2015	Paul Bruton	Conformance includes reference to RPE document.
8	19/10/2015	David Snelling	Fixed silly quotes and general tidy up.
9	31/10/2015	Joss Langford	Accept all changes, track changes off, check references and style consistency.
10	02/11/2015	David Snelling	Final Data Change
11	03/11/2015	Paul Bruton	Added normative terms in 1 <sup>st</sup> paragraph of section 2, corrected text in description of password encoding
12	24/11/2015	Paul Bruton	Addressing issues COEL-43 and COEL-44
13	25/11/2015	David Snelling	Set date for CD publication