

HMA for Science Kickoff Meeting Open Search Download Extension

KO Meeting
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- Open Search Download Extension Overview
- Open Search Download Extension ATS
- Issues

- The scope of this protocol is to provide a simplified “RESTful” version of the HMA Ordering ICD (OGC 06-141r6) allowing accessing to Ordering functions via appropriate URLs and not via SOAP calls.
- In this way Ordering functions will be available to Web browsers without the need of more complex infrastructures based on SOAP.
- This protocol will cover, in RESTful way, the following HMA Ordering ICD operations (currently envisaged list):
 - GetCapabilities
 - GetOptions
 - Submit
 - GetStatus
 - DescribeResultAccess
 - Cancel

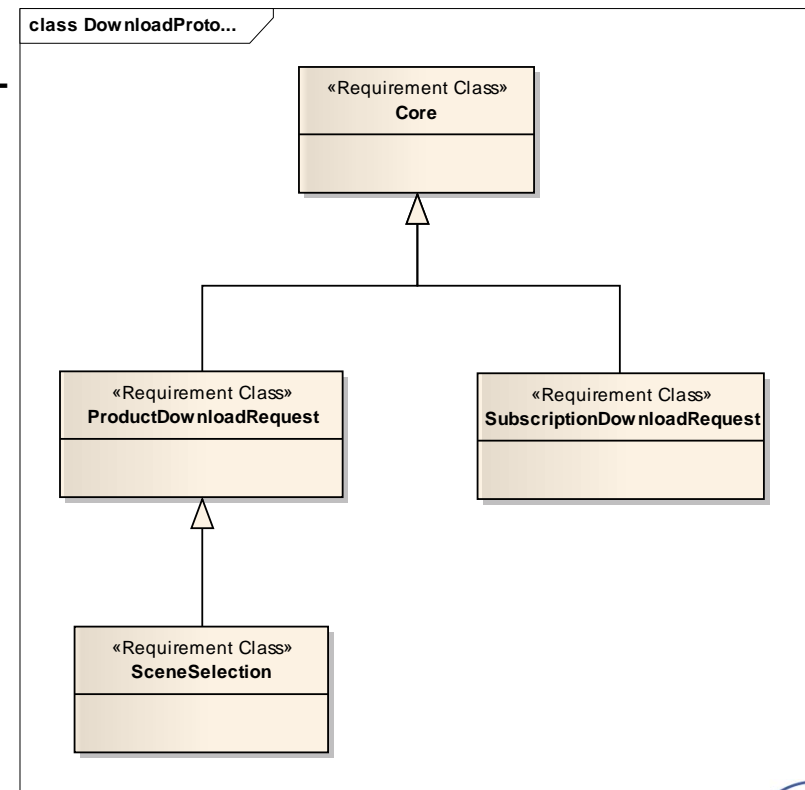
➤ Example RESTful encoding of service operations:

Service Operation	URL format	HTTP Method	Description
GetCapabilities	http://<download_request_server>/capabilities	GET	Returns the list of supported collections and further service metadata: equivalent to Capabilities document.
GetOptions	http://<download_request_server>/options/<product_id>	GET	Returns the list of supported download options for that product. It returns equivalent information with respect to GetOptionsResponse. Download options will be described via Open Search Description Document.
Submit	http://<download_request_server>/downloadRequest/	POST	An “Order” request is created on the server. The server will return the URL for accessing it.
Cancel	http://<download_request_server>/downloadRequest/<order_id>	DELETE	To cancel the specified order.
GetStatus	http://<download_request_server>/downloadRequest	GET	It will return the complete list of download requests belonging to the user. The user is implicitly specified via UM SSO authentication.
GetStatus	http://<download_request_server>/downloadRequest/?time_Range=<start_date_time>,<stop_date_time>	GET	It will return the list of download requests, belonging to the user, issued in the specified time interval.
GetStatus	http://<download_request_server>/downloadRequest/<order_id>	GET	It will return the complete status of the specified order.
GetStatus	http://<download_request_server>/downloadRequest/<order_id>/<item_id>	GET	It will return the complete status of the specified order item.
DescribeResultAccess	http://<download_request_server>/downloadRequest/<order_id>/<item_id>/file	GET	It will return the actual product file(s) according to the EO Data Access Protocol (direct download, multi-file download via Metalink, etc.).

- The document will be prepared as Best Practice, so it will include:
 - Requirements Classes
 - Conformance Classes and Conformance Tests (ATS)
 - Executable test scripts (ETS).

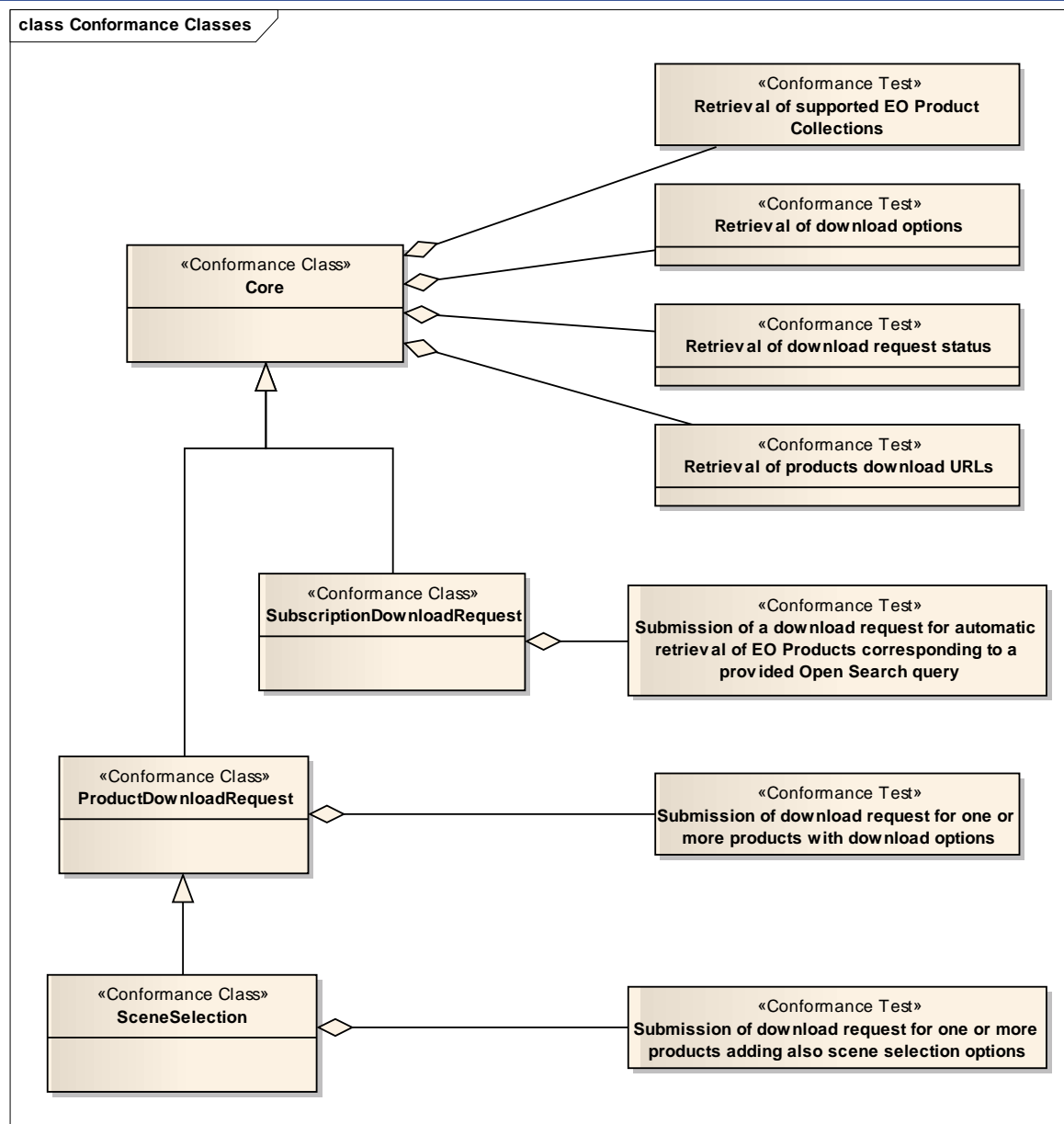
➤ Requirement Classes: a sub-set of HMA
 Ordering ICD requirement classes will be re-used:

- **Core:** regrouping the basic requirements of the specification, including also cancellation and download options;
- **ProductDownloadRequest, SceneSelection:** regrouping the requirements for issuing download requests for EO products including possible scene selection options;
- **SubscriptionDownloadRequest:** regrouping the requirements for automatic download of products subscribed via Open Search query.



- **Conformance Classes:** normally there is a 1:1 mapping between Requirement Classes and Conformance Classes, so we will have:
 - **Core Conformance Class:** a server complying with this class provides support for basic functions of the specification.
 - **ProductDownloadRequest Conformance Class:** a server complying with this class provides full support for download requests including precisely identified EO products with possible download options. SceneSelection adds also the support for scene selection extraction from requested products.
 - **SubscriptionDownloadRequest Conformance Class:** a server complying with this class provides full support for automatic download of products corresponding to a Open Search query.

- **Conformance Tests:** A conformance class is implemented via a set of Conformance Tests, each testing one or more requirements of the corresponding Requirements Class.



- As highlighted in proposal we see a possible risk on adoption as OGC Best Practice:
 - As specified in OGC Policy and Procedures, OGC 05-020r16, the submitters of a BP document shall provide evidence of implementation, which includes: commercial implementations, open sources, deployed applications. Also “**A single research related implementation is not proper evidence of implementation.**”

Download Options - ngEO Scenario

- Download Options are set at the time of building the catalogue query and not at the time of preparing the shop cart (EOLi).
- The OSDD of the queried collection returns a Template URL embedding a single download option parameter [ngEO-IICD-C-WS]:
ngEO_DO={cs:ngEO_DO}

- The parameter is replaced with the user selected download options e.g.:

[http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1?count=20
&bbox=120,10,134,14&startdate=2011-01-12T04:30:02Z&.....&ngEO_DO=processing,GRD,resolution,HR](http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1?count=20&bbox=120,10,134,14&startdate=2011-01-12T04:30:02Z&.....&ngEO_DO=processing,GRD,resolution,HR)

- The catalogue search response will report EO Product Metadata records including the product download URL e.g.:

http://<product-server>/<opaque-path>?<opaque-params>&ngEO_DO=processing,GRD,resolution,HR

- The catalogue has automatically updated original product download URL adding selected options.

- The product is then retrieved by GETting that URL:

`http://<product-server>/<opaque-path>?<opaque-params>&ngEO_DO=processing,GRD,resolution,HR`

- When the server receives that URL, it will manage the ngEO_DO and then it will perform required processing, formatting, etc.

- Comments:

- The client cannot get much information about ngEO_DO from URL Template: it can just understand whether ngEO_DO is there or not.
- It cannot understand the possible options, the type, the allowed values.
- The handling of download option has to be formalized with an Open Search extension.

- In order to harmonize with OGC 06-141r6, which lists a comprehensive set of order options, download options will be handled with dedicated parameters and not with a single ngEO_DO.

- The download options will be likely 1:1 mapping with OGC 06-141r6.
Example:

OGC 06-141 Name	OGC 06-141 Description	Open Search Template URL	Open Search URL example
BitsOutput	Bits per output format Type: integer Possible allowed values: <ul style="list-style-type: none"> • 8 • 16 	do_bitsoutput={oseo:BitsOutput}	http://<download_server>?do_bitsoutput=16
Compression	Type of compression applied to the delivered products. Type: enumerated string E.g.: none, zip, gzip, bzip2, pkzip, comp	do_compression={oseo:Compression}	http://<download_server>?do_compression=bzip2
Consolidation	Allow to define if the processing is consolidated or not. Type: enumerated string Possible allowed values: <ul style="list-style-type: none"> • unconsolidated • consolidated 	do_consolidation={oseo:Consolidation}	http://<download_server>?do_consolidation=consolidated

➤ Example Template URL:

```
<mstns:Url type="application/atom+xml"
  template="http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1?q={searchTerm}&count={count}&startIndex={startIndex?}&startPage={startPage?}&language={language?} .....
  &isn={cseop:instrumentShortName?}&st={cseop:sensorType?}&som={cseop:sensorOperationalMode?}&si={cseop:swathIdentifier?}&do_bitsoutput={oseo:BitsOutput}&do_compression={oseo:Compression}&do_consolidation={oseo:Consolidation}"/>
```

➤ Example Open Search Query:

```
http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1?count=20
&bbox=120,10,134,14&startdate=2011-01-12T04:30:02Z&stopdate=2011-12-11T02:28:00Z
&psn=S1&psi=1A&isn=SAR&som=IW&si=I1,I2,I3&do_bitsoutput=16&do_compression=bzip2&do_consolidation=consolidated
```

➤ Download Options are better structured, but still to be described (allowed values, range of values, ...)

- Download Option description within OSDD:
 - A single Template URL for describing the query and the options is not sufficient.
 - However, the Url syntax of OSDD (http://www.opensearch.org/Specifications/OpenSearch/1.1#The_Url_element) says that:
 - “This element must appear one or more times”
 - **template** and **type** are mandatory attributes
 - **rel** attribute is optional, and if a client does not recognize the value, then it can simply ignore it.
 - Then we suggest using a second Url element with `rel="download_options"` pointing to an XML document reporting name, type, allowed values of the download options.

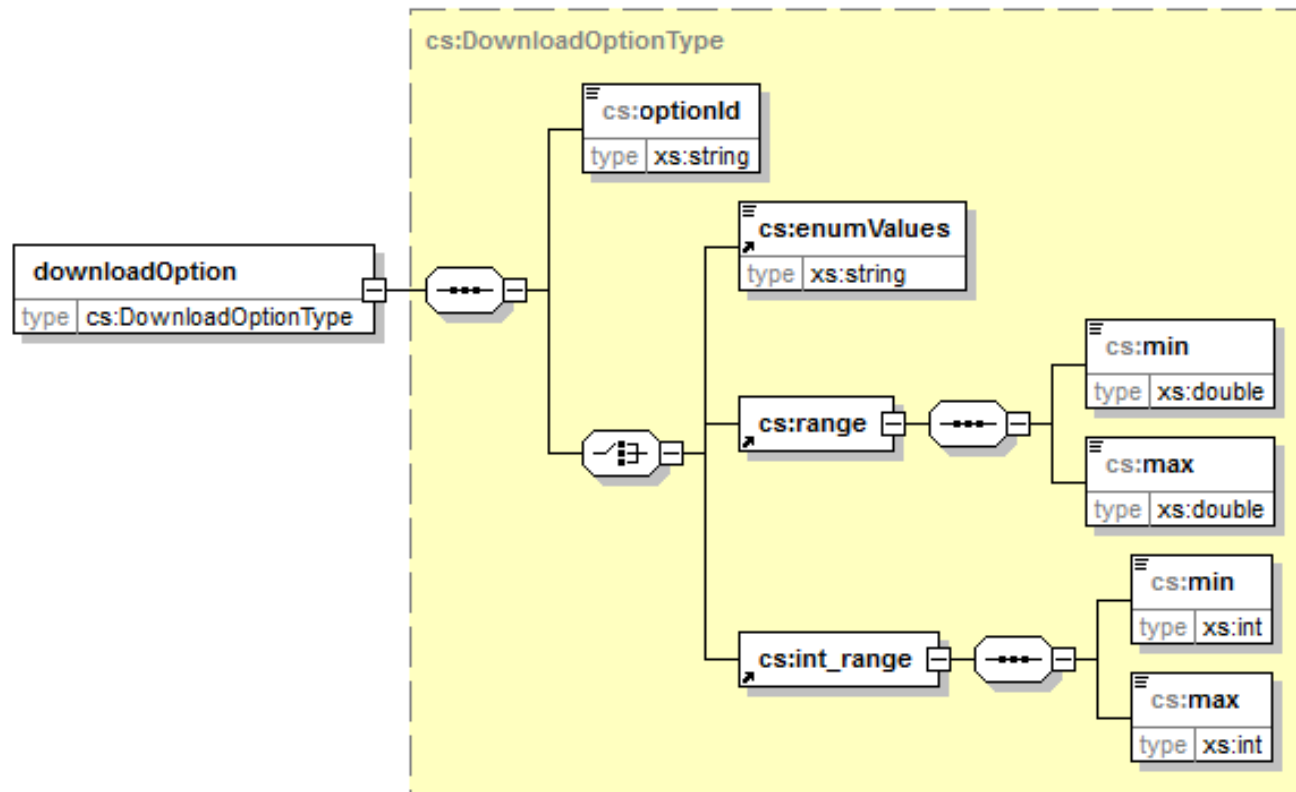
➤ OSDD Example:

```
<mstns:OpenSearchDescription xsi:schemaLocation="http://a9.com/-/spec/opensearch/1.1/
../OpenSearch.xsd" xmlns:mstns="http://a9.com/-/spec/opensearch/1.1/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mstns:ShortName>.....

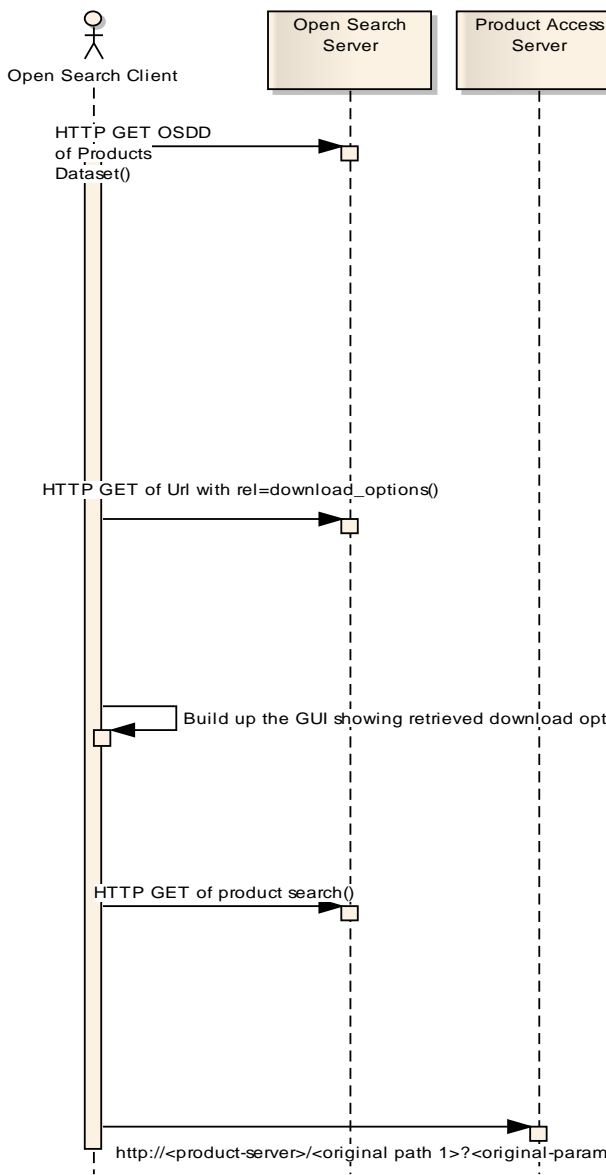
  <mstns:Url type="application/atom+xml"
  template="http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1?q={searchTerm}&co
  unt={count}&startIndex={startIndex}&startPage={startPage}&language={language?}
  .....
  &isn={cseop:instrumentShortName?}&st={cseop:sensorType?}&som={cseop:sensorO
  perationalMode?}&si={cseop:swathIdentifier?}&do_bitsoutput={oseo:BitsOutput}&
  do_compression={oseo:Compression}&do_consolidation={oseo:Consolidation}"/>

  <mstns:Url type="application/xml" rel="download_options"
  template="http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1/download_options"
  />
  <mstns:SyndicationRight>open</mstns:SyndicationRight>
  .....
</mstns:OpenSearchDescription>
```

- GETting the URL marked in blue the server will return an XML document describing the download options (allowed values, ranges) supported for that dataset.
- Example schema:



sd OpenSearch - Download Options - Scena...



The returned OSDD includes 2 Url elements:

- the Url reporting the search template:

```

<msdns:Url type="application/atom+xml"
template="http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1?
q={searchTerm}&count={count}&startIndex={startIndex?}
&startPage={startPage?}
.....
&si={cseop:swathIdentifier?}&som={cseop:sensorOperationalMode?}&si={cseop:swathIdentifier?}
&do_bitsoutput={oseo:BitsOutput}&do_compression={oseo:Compression}&do_consolidation={oseo:Consolidation}"/>
  
```

- the Url with rel="download_options" reporting the URL for getting the description of download options:

```

<msdns:Url type="application/xml" rel="download_options" template="
http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1/download_options"/>
  
```

The returned XML fragment describes the download options for that dataset:

```

<cs:datasetInfo>
  <cs:downloadOption>
    <cs:optionId>oseo:BitsOutput</cs:optionId>
    <cs:enumValues>8</cs:enumValues>
    <cs:enumValues>16</cs:enumValues>
    <cs:enumValues>20</cs:enumValues>
  </cs:downloadOption>
  .....
  
```

GET request:

```

http://localhost:8080/ngEOCatalogue/eoproduct/S1_SLC_DSD1?count=20
&bbox=120,10,134,14&startdate=2011-01-12T04:30:02Z&stopdate=2011-12-11T02:28:00Z
&psn=S1&psi=1A&isn=SAR&som=IW&si=1,12,13
&do_bitsoutput=16&do_compression=bzip2
&do_consolidation=consolidated
  
```

Returned product download URLs within search response:

```

http://<product-server>/<original path 1>?<original-params 1>
&do_bitsoutput=16&do_compression=bzip2
&do_consolidation=consolidated
.....
http://<product-server>/<original path N>?<original-params N>
&do_bitsoutput=16&do_compression=bzip2
&do_consolidation=consolidated
  
```