

Annex C (informative)

Guidance on integrated discovery and viewing of EO Products (linking the WMS, CS-W and GML EOP extensions)

C.1 Introduction

This annex considers different scenarios for the discovery and viewing of EO products. Based on this context, it provides guidance to facilitate the integration of EOP Catalogue Service Web (CS-W) and Web Map Service instances.

C.2 EOP discovery and viewing scenarios

Three scenarios for the discovery and viewing of EO products are introduced and discussed (see Figure C.1 below).

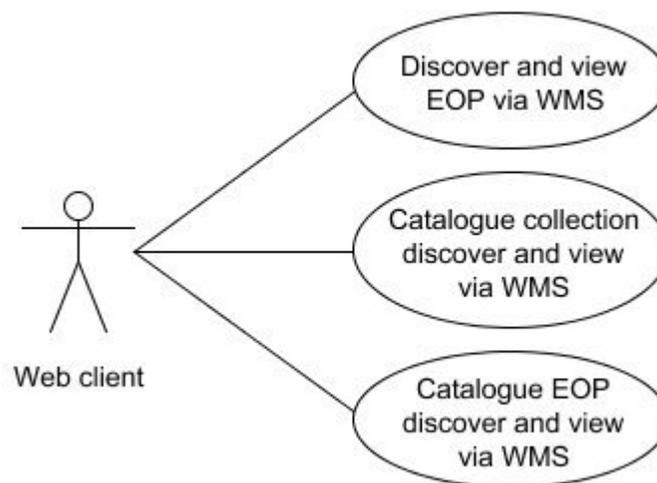


Figure C.1: UML diagram showing three use cases through which a catalogue and WMS client may be used to discover and view EO products

C.2.1 Discovery and viewing via an EOP WMS

This scenario allows the discovery of EO products using only the host Web Map Service however this architectural simplicity is offset by:

1. added WMS client complexity;
2. isolation of each Web Map Service instance from a wider, federated set of geographic Web services.

With reference to Figure C.2 below, it can also be seen that the search procedure is quite iterative, involving four request-response interactions between use (client) and WMS server.

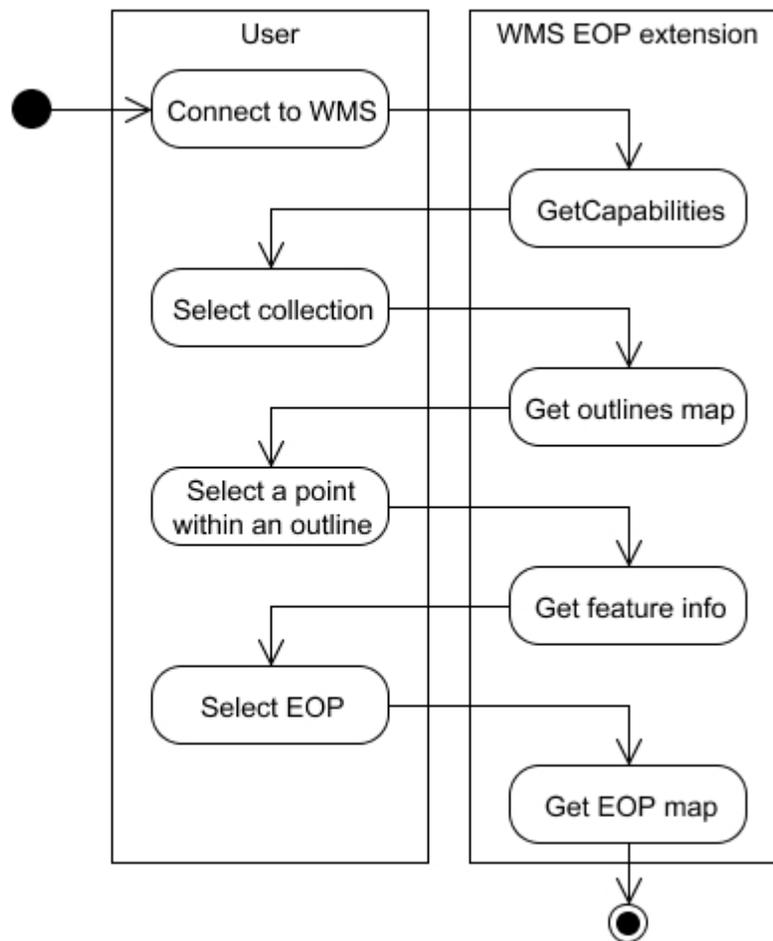


Figure C.2: UML diagram showing the flow of activity between the WMS user and a WMS instance extended for EO product viewing.

C.2.2 Viewing following collection level discovery

In this scenario, a user discovers an EOP collection (dataset series) via a CS-W instance that supports the Core ISO Metadata (CIM) mapping to the ebRIM CS-W profile (OGC 07-038). Comparing Figures C.2 and C.3, this scenario shows the same degree of user – Web service iteration because the user is only using the catalogue to carry out collection (dataset series) level discovery. This scenario does have the following advantages compared to the other scenarios considered:

1. the catalogue search is relatively generic as it does not have a dependency on the EOP CS-W extension (OGC 06-131);
2. a user does not need to know, *a priori*, the location of any instances of the WMS EOP viewing service and is able to search from range of registered collections with associated viewing services.

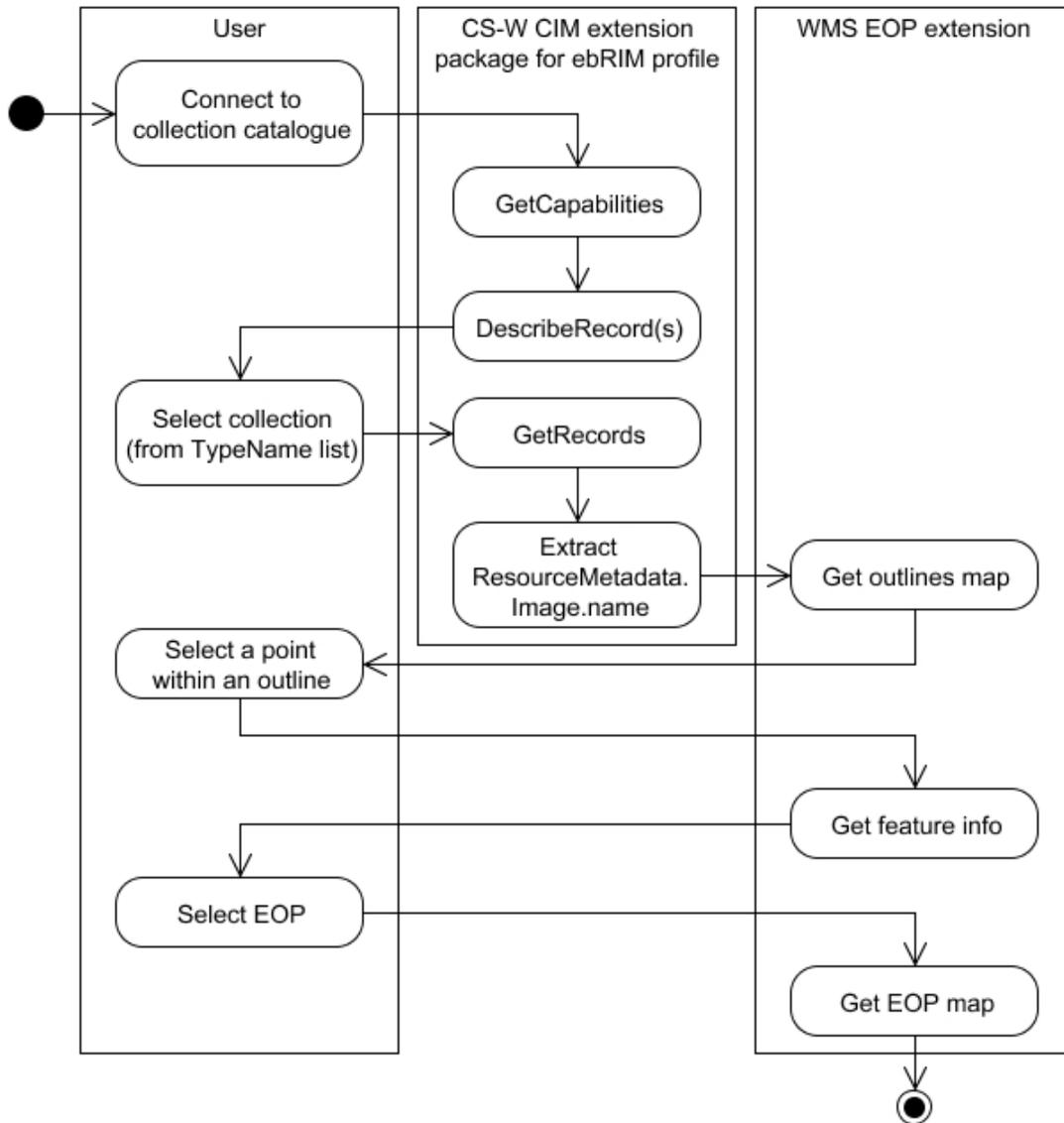


Figure C.3: UML diagram illustrating the flow of activity between a user, dataset series (EOP collection) catalogue and an EOP WMS instance

Note: in this diagram it is assumed that value of the ResourceMetadata.Image.name parameter is a URL containing the GetMap request for the collection outlines map Layer.

C.2.3 Viewing following specific dataset (EOP) discovery

The most user-friendly scenario involves the use of a catalogue service supporting the EO Products extension package for ebRIM 3. In this use case, a number of distributed EOP collections can be searched by data type, times and spatial areas of interest. Ideally this should allow a user to carry out discovery of a specific EOP then select a 'browse' option and seamlessly be provided with a WMS EOP extension view of the product (See Figure C.4 below).

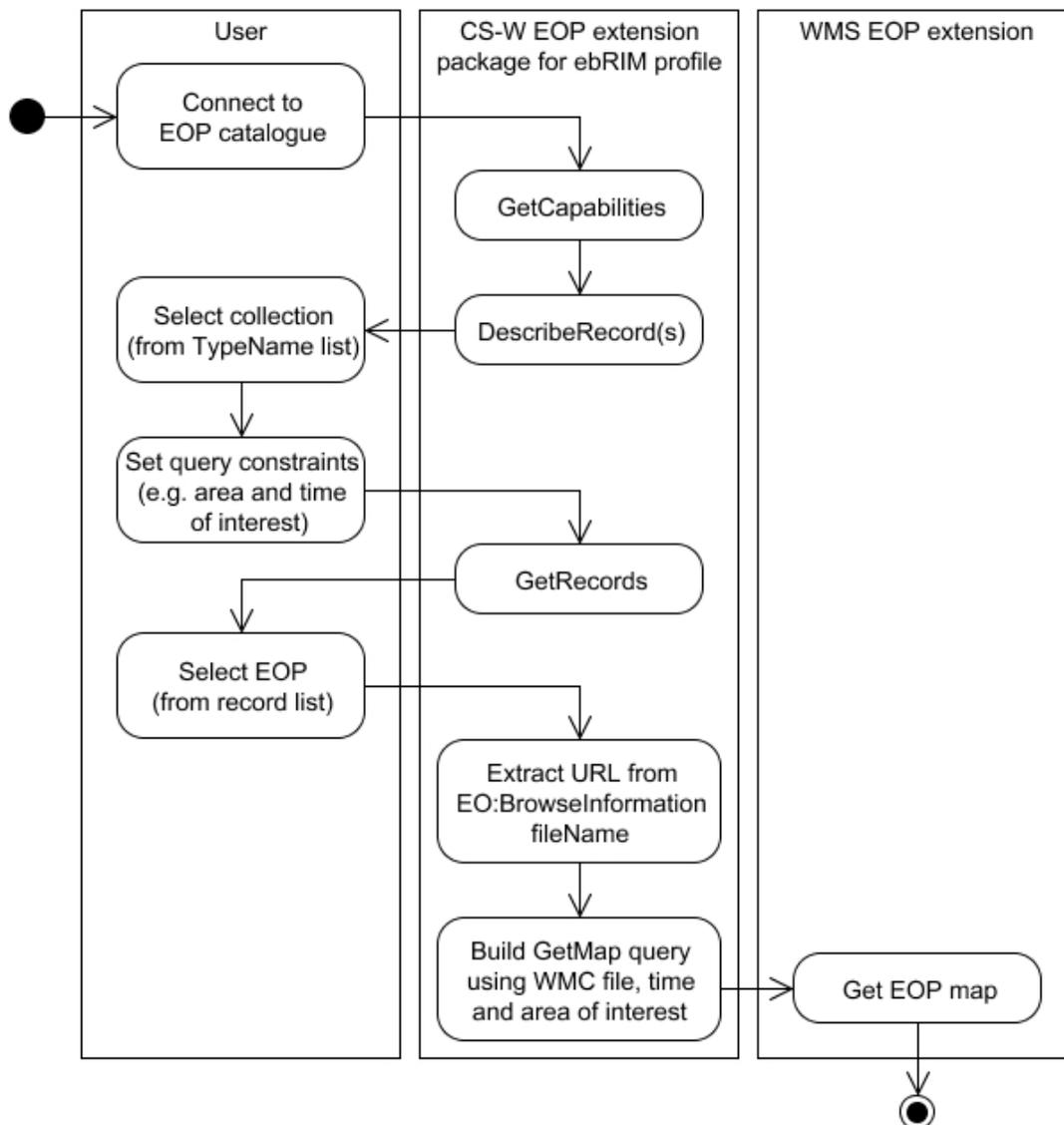


Figure C.4: UML diagram illustrating the flow of activity between a user, EOP extension catalogue and an EOP WMS instance

Note: in this diagram it is assumed that value of the EO:BrowseInformation.fileName parameter contains a URL for a Web Map Context document.

C.3 Guidance on CS-W / WMS EO extension integration

C.3.1 Metadata linkage

The ISO 19115 MD_Metadata.parentIdentifier value for a dataset equates to the parent dataset series i.e. a collection of EO products. The group Layer in the service metadata model of the WMS EO extension also equates to a dataset series and hence, to a collection of EO products. To reflect this equivalence, group Layer names should follow the convention for parentIdentifier naming set out in the EO Products extension to the ebRIM CS Application Profile 3 where the following representation is proposed:

programme.satellite_instrument_processing

Examples of parentIdentifier are:

- urn:ogc:def:EOP:ESA:EECF.ENVISAT_ASA_APx_xS
- urn:ogc:def:EOP:ESA:EECF.ENVISAT_MER_MTCI_FCR_3P

C.3.2 Programmatic linkage

Conceptually, a WMS instance can be thought of as providing either a browse service or a distribution service. In the ISO 19115 metadata model this would equate to either:

- an MD_BrowseGraphic.fileName attribute value
- or an MD_Distribution->transferOptions->MD_DigitalTransferOptions->onLine->CI_OnlineResource definition.

The URI value of an MD_BrowseGraphic.fileName attribute is typically a URL providing the Web address of a browse image, often a thumbnail. A staticGetMap request URL may be provided as a MD_BrowseGraphic.fileName attribute value in order to link a CS-W EOP metadata record directly to a WMS EOP view. This direct approach is appropriate for viewing a thumbnail image but it is inflexible as it provides no context about the host WMS service. Figure C.5 shows the use of EOP service metadata context by a how a WMS client to define the GUI controls required for interactive viewing.

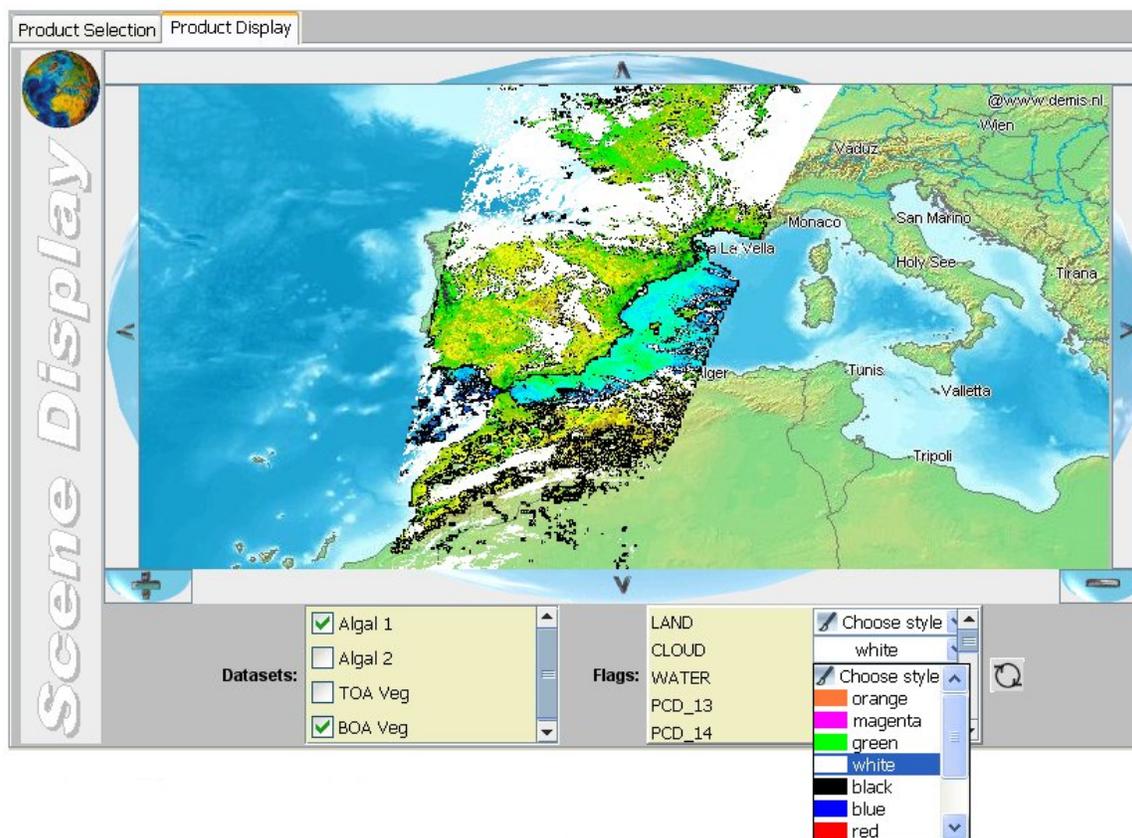


Figure C.5: example of an EOP WMS client configured for the interactive viewing of geophysical parameter and bitmask Layers based on the WMS metadata for a given EO collection

To provide the context necessary to link a catalogue record to a WMS EO extension view, two recommendations are made:

1. Define the WMS EO extension linkage within the ISO 19115 MD_Distribution metadata via the MD_DigitalTransferOptions -> CI_OnlineResource class. The ISO 19115 CI_OnlineResource class augments a URL 'linkage' attribute with optional attributes for service 'protocol' and 'applicationProfile' definition providing a more complete and appropriate way to link a CS-W record to a WMS service (see C.3.2.1 XML snippet for an example).
2. Supply service context via a Web Map Context (WMC) document. Each WMC document should list the WMS metadata for the parentIdentifier (EO collection) identified via a catalogue search. In this scenario, the owner of a WMS instance would publish a WMC document for each group Layer (EO collection) available. A CS-W server would then point to the appropriate WMC file via the MD_DigitalTransferOptions -> CI_OnlineResource.linkage URL attribute value.

Figure C.6 shows how the information obtained from a WMC document could be:

1. used by an EOP WMS client to define the GUI map view selection tools;
2. combined with spatial and temporal catalogue search (or EOP record) parameters to define the GetMap URL needed to request a view of the specific EOP.

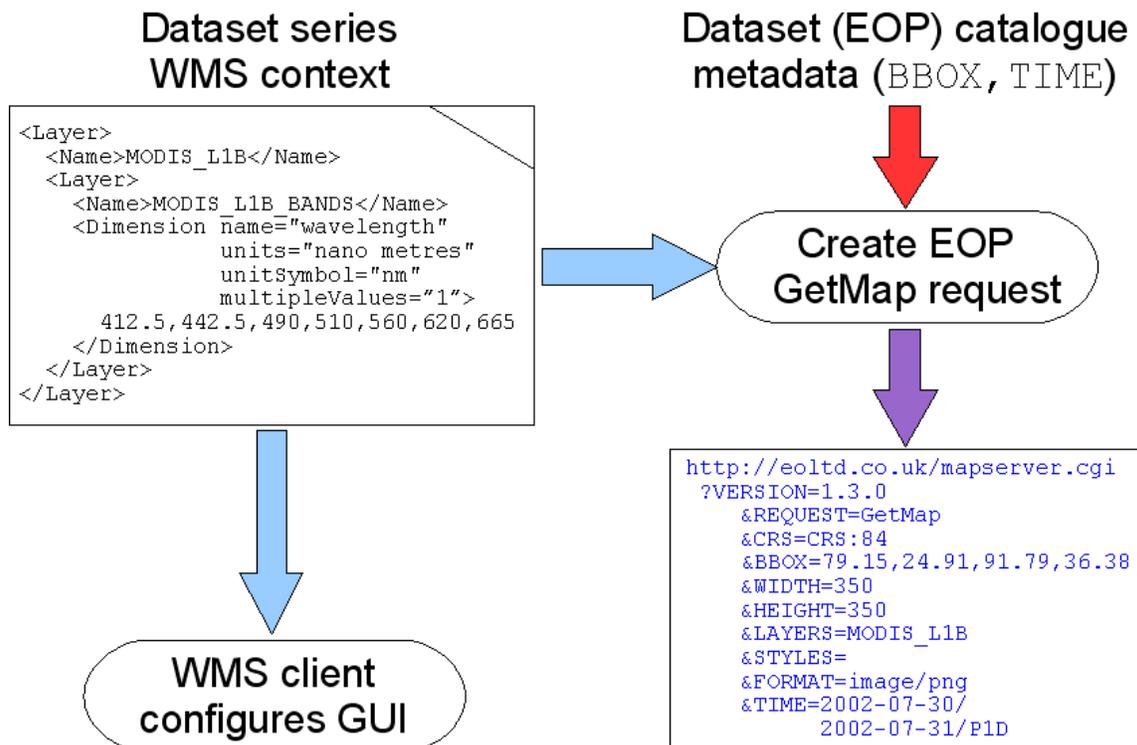


Figure C.6: scenario illustrating the use of a WMC document both to configure a WMS client for interactive browse and to generate the EOP specific GetMap request

Note: this scenario requires the catalogue client to recognise and specifically respond to, a EO:BrowseInformation.fileName URL for a Web Map Context document.

C.3.2.1 Online resource XML example

```
<gmd:distributionInfo>
  <gmd:MD_Distribution>
    <gmd:transferOptions>
      <gmd:MD_DigitalTransferOptions>
        <gmd:onLine>
          <gmd:CI_OnlineResource>
            <gmd:linkage>
              <gmd:URL>
                http://ituk.co.uk/EECF.ENVISAT_MER_MTCI_FCR_3P_WMC.xml
              </gmd:URL>
            </gmd:linkage>
            <gmd:protocol>
              <gco:CharacterString>
                OGC:WMS-1.3.0-http-get-map
              </gco:CharacterString>
            </gmd:protocol>
            <gmd:applicationProfile>
              <gco:CharacterString>
                OGC:EOP-extension-0.3.2
              </gco:CharacterString>
            </gmd:applicationProfile>
            <gmd:name>
              <gco:CharacterString>
                EECF.ENVISAT_MER_MTCI_FCR_3P
              </gco:CharacterString>
            </gmd:name>
            <gmd:description>
              <gco:CharacterString>
                MERIS Terrestrial Chlorophyll Index, Level-3 composite
                using Flux Conserving Resampled
              </gco:CharacterString>
            </gmd:description>
          </gmd:CI_OnlineResource>
        </gmd:onLine>
      </gmd:MD_DigitalTransferOptions>
    </gmd:transferOptions>
  </gmd:MD_Distribution>
</gmd:distributionInfo>
```