




NGEO

**ICD - NGEO BROWSE REPORT FILE
GENERIC INTERFACE**

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Document reference:	ngEO-13-ICD-MFR-059
Issue.Revision:	1.5
Date:	2013-01-14
Customer:	ESRIN
Ref., Tender:	4000103273/11/I-LG

Document Change Record

Iss.	Rev.	Date	Reason	Comments
0	1	01/07/2011	First draft for SRR	
1	0	05/09/2011	Release for PDR data package	
1	1	17/11/2011	PDR-078 (RID 618)	Added the Projection attribute to the schema in section 4.1.4.2 and a corresponding description
1	1	17/11/2011	PDR-175 (RID 492)	Added section 4.1.4.1.2 to describe these aspects
1	1	17/11/2011	PDR-249 (RID 304)	Sections completed, or justifications added for sections not filled
1	1	17/11/2011	PDR-291 (RID 226)	Removed the disposition field from the schema in section 4.1.4.2
1	1	17/11/2011	PDR-293 (RID 222)	Provided explanation of time attribute semantics in table 5
1	1	17/11/2011	PDR-294 (RID 221)	Added a full description of the Footprint element in sections 3.1.1 and 4.1.4.2
1	1	17/11/2011	PDR-413 (RID 563)	Renamed section 3.1 to "Generic Browse Report"
1	1	17/11/2011	PDR-566 (RID 51)	Added section 2.5.2.3 to briefly summarise some product facility "tailoring" aspects
1	1	17/11/2011	Creation of section 2.3	To explain the static nature of the generic interface described herein
1	1	21/11/2011	Consolidated section 2.2	To make clear, amongst other aspects, that BRGICD does not define dynamic aspects of the interface, nor tailoring aspects for the product facilities.
1	1	21/11/2011	Updated document tree and system context	These figures have been updated as part of a general post-PDR action
1	1	21/11/2011	Need to summarise tailoring considerations for Browse	Added section 2.5.2

			Report	
1	1	21/11/2011	Clean up reference documents	Modified Table 3
1	1	21/11/2011	Explanation of browse georeferencing information	Added explanation of georeferencing metadata in section 3.1.1
1	1	21/11/2011	Clarify in-basket / plugin associations	Added description of mechanism in section 3.1.2
1	2	17/03/2011	PPDR-63	Clarified in Table 5 that for some PDGS, start and end time of browse may be the same
1	2	17/03/2011	PPDR-64	Updated filename field in Table 5 to clarify that the ZIP format is mandatory
1	2	17/03/2011	PPDR-65	Updated section 2.5.2.3 to correct the description of EarthCARE browse
1	2	17/03/2011	PPDR-66	Section 2.5.2.3 updated to align with description in EICD-S2.
1	2	17/03/2011	PPDR-170	PDR-295 (RID 217) BrowseType semantic clarified in section 3.1.2 PDR-413 (RID 563) Section 3.1 renamed appropriately Interface for browse image supply fully described (section 4.1.4.1.2) Supported browse image format described (section 2.5.2.3 and Table 5)
1	2	17/03/2011	PPDR-171	REJECTED: PDR RID 618 was implemented, see top of present change log
1	2	17/03/2011	PPDR-172	All empty rows in tables have been removed
1	3	17/07/2012	S2-81366/489/SB-01	Removed section 2.5.2.3 as all tailoring information is present in the corresponding tailored ICD.
1	4	23/11/2012	NGEOD-175	Clarification of referenceSystemIdentifier and the choice of the

				georeferencing
1	4	23/11/2012	NGEOD-22	Removed tailoring for the sentinels from this document as it shall only be in the corresponding EICD.
1	4	23/11/2012	NGEOD-29	Updated the description of the rep:RectifiedBrowse element. Added clarification on the units and range of lon/lat values.
1	5	13/12/2012	Missing enumeration element	ImageType "TIFF" added to Table 5 (section 4.1.4.2)
1	5	14/01/2013	NGEOD-22	Updated the description of footprint, rectifiedBrowse and regularGrid subelements in section 4.1.4.2

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1 Introduction

1.1 Purpose

This document is the **ngEO Generic Browse Report File** Interface Control Document [**ngEO-BRGICD**]. It defines the object to be used between Product Facilities and ngEO to feed the ngEO Browse Server with browse images.

It is a purely static description of the interface object (the Browse Report file) and as such does not address any of the dynamic interface aspects, which are all addressed in the external ICD for the Feed subsystem [ngEO-EICD-F].

It is a document that captures specific aspects of the ngEO system, and as such does not have meaning in isolation. For its relation to other ngEO documents, and its place within the ngEO system, please refer to section 2 of this document.

1.2 Document structure

This document is structured in the following way:

Section 1 Introduction

Section 2 System Context

Provides the context for the interface in the ngEO project, placing the interface in relation to ngEO subsystems and other ngEO interfaces. This contextual description is achieved through the customisation of a standard system schematic and a discursive presentation.

Section 3 Interface Description

Detailed description of the identified interfaces. This description is at a semantic level and explains the interface within its wider system context, giving examples of system scenarios that use the interface.

Section 4 Interface Specification

Here the interfaces are formally described in formal terms, this description consisting in the specification of the interface content (the exchanged objects).

1.3 Related documents

1.3.1 Applicable documents

The following documents are applicable. For dated or versioned references, subsequent revisions do not apply.

Code	Reference	Title
[ngEO-SRD]	ngEO-13-SRD-MFR-004	ngEO System Requirement Document Issue 1.4
[ngEO-GLOSS]	ngEO-02-TN-MFR-013	ngEO Glossary Issue 1.1

Table 1 : List of applicable documents

1.3.2 Reference documents

The following documents are referenced for supporting information

Code	Reference	Title
[ngEO-TN-EC]	ngEO-12-TN-MUK-044	Technical Note, Inputs to external ICD for EarthCare [TN-EC]
[ngEO-TN-S123]	ngEO-12-TN-TPZ-042	Technical note, Inputs to external ICDS for Sentinel-1, -2, -3 [TN-S123]
[ngEO-MICD]	ngEO-13-ICD-MFR-019	Master Interface Control Document [MICD] Issue 1.2
[ngEO-EICD-MDGICD]	ngEO-13-ICD-MFR-021	ngEO Metadata Report File Generic Interface [MDGICD] Issue 1.2
[ngEO-EICD-S1]	ngEO-13-ICD-DLR-065	External ICD for Sentinel-1 [EICD-S1] Issue 1.3
[ngEO-EICD-S2]	ngEO-13-ICD-DLR-066	External ICD for Sentinel-2 [EICD-S2] Issue 1.2
[ngEO-EICD-S3]	ngEO-13-ICD-DLR-067	External ICD for Sentinel-3 [EICD-S3] Issue 1.2
[ngEO-EICD-EC]	ngEO-13-ICD-DLR-068	External ICD for EarthCare PDGSs [EICD-EC]
[ngEO-EICD-CDS]	ngEO-13-ICD-DLR-069	External ICD for CDS [EICD-CDS] Issue 1.2
[ngEO-EICD-VA]	ngEO-13-ICD-DLR-071	External ICD for Virtual Archive [EICD-VA]
[ngEO-EICD-F]	ngEO-14-ICD-TPZ-086	External ICD for ngEO Feed [EICD-F]
[ngEO-SSRD-B]	ngEO-14-SRD-SPM-088	Subsystem Requirement Document for ngEO Browse Server [SSRD-B] Issue 1.2
[ngEO-IICD-B-F]	ngEO-14-ICD-TPZ-085	Internal ICD Browse / Feed Issue 1.2

Table 2 : List of reference documents

1.4 Applicable Standards

A number of standards are applicable to the browse metadata which is the subject of this document:

- XML : eXtended Markup Language – the basis for all data organization schemas in this document

- GML : Geographic Markup Language – the source for many of the geographical objects presented in this document
- HMA : Heterogeneous Missions Accessibility – this project led by ESA defined various cross-platform specifications for catalogue search, product ordering and satellite tasking. The model defined in the context of the catalogue search is used for product metadata. For product and browse metadata consistency sake, some of its definitions are re-used in this document.

1.5 Glossary

The [ngEO-GLOSS] document provides a general glossary for definitions and acronyms used in all the ngEO project documentation.

2 Overview

2.1 The ngEO project

The objective of the ngEO project is to design the next generation of ESA online user services, where the main focus will be on an operational data access service across GMES and non GMES missions.

In a first phase, the architecture will be designed, the output being a full set of specifications for the implementation of the ngEO system components and its instances.

The present Interface Control Document is one of many technical deliverables that form part, or contribute to, the overall specification of the ngEO system and subsystems. Its precise role in the overall ngEO context is given in section 2.1 above, while its location in the ngEO documentation hierarchy is defined in section 2.3 below.

The ngEO system will be implemented in a second phase, which will be initiated through a Best Practice ITT to select the best offers for the implementation and configuration of the ngEO instances.

2.2 Role of this ICD in the ngEO System

The role of this ICD is to define, in a generic manner and across all possible sources (Product Facilities), the browse metadata which is collected by the Feed component for input into the ngEO system.

What this document does:

- It defines the Browse Metadata generically, in a way that is applicable and implementable by all ngEO Product Facilities (in the case that such facilities have not already defined their Browse Report format).
- It defines the expected metadata attributes in the Browse Metadata message sent by the Facilities.
- It defines the supported formats for the Browse Images
- It defines the supported georeferencing information objects that can optionally be supplied by the Facilities
- It defines the mechanism for associating Browse Images with available Browse Layers and Browse Types
- It defines the Browse Metadata that shall be ingested by the Browse Server, after collection and processing by the ngEO Feed
- It identified (but does not define) the tailoring elements that are expected to be provided for each Product Facility via their external / tailoring ICD

What this document does not do:

- Define or specify **dynamic aspects** of the Product Facility / ngEO interface
- Define Browse Image converters or plugins
- Define the Browse Layers themselves
- Define Browse Layer access restriction policies

- Define the rules that associate Browse Layers with Datasets
- Define the internal format of the metadata in the Browse Server
- Define the query interface of the Browse Server
- Describe in detail the functionality of the Feed
- Formally describe the Interfaces of the Feed

It has an impact on a number of documents (shown in green in the figure below) within the ngEO system:

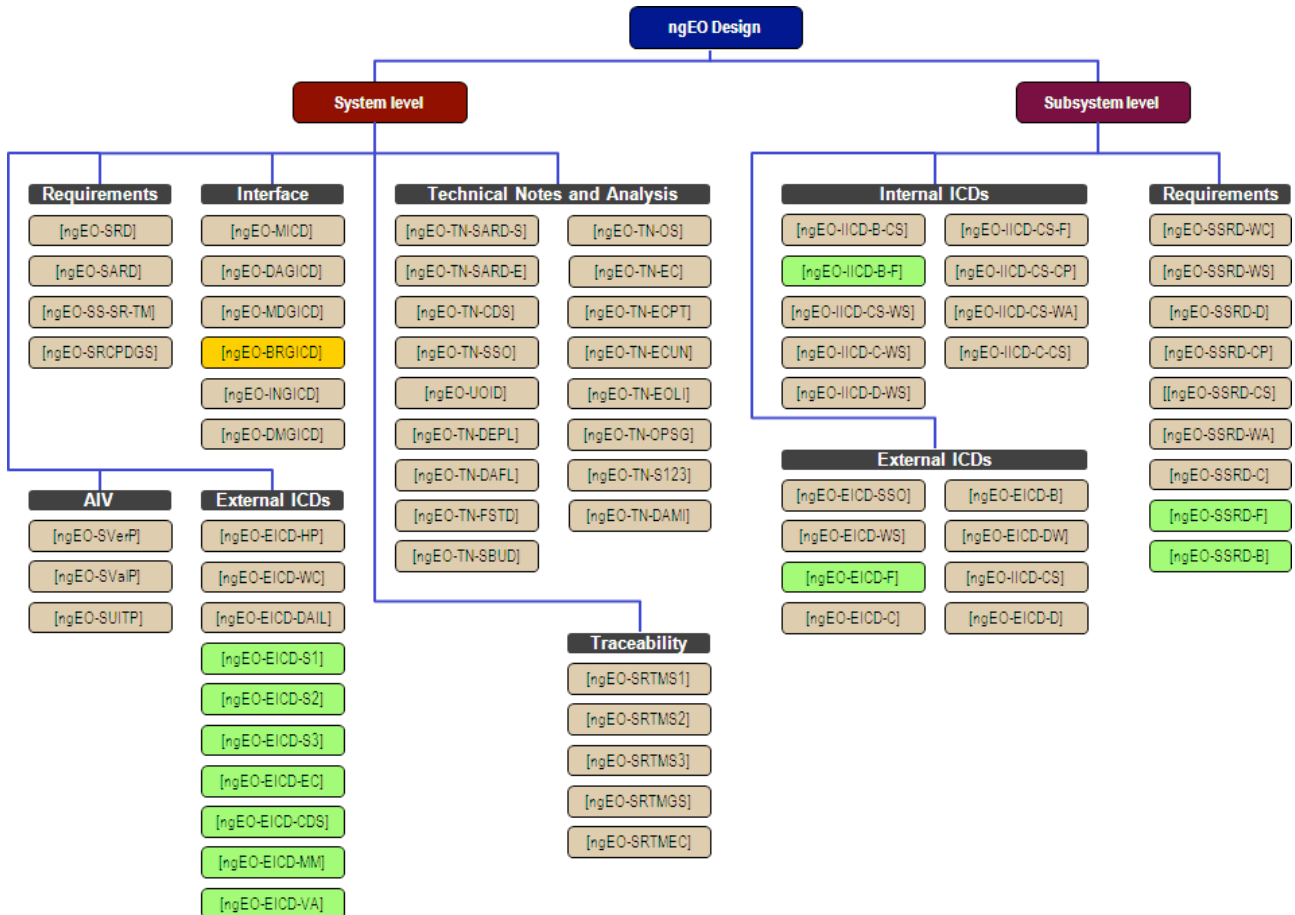


Figure 1 - Place of this ICD in the ngEO documentation Tree

2.3 Relationship with other ngEO documents

It is important to realise that the BRGICD specifies a static interface, namely the common (generic) format for ingestion of Browse information into the various instances of the Browse Server.

All dynamic aspects of the data flow between Product Facilities and ngEO Browse Server instances are described in the external ICD for the Feed Subsystem [ngEO-EICD-F] and in the specific ICD between the Feed and Browse Subsystems [ngEO-IICD-B-F].

All aspects related to tailoring of the Product Facility interface for the purposes of filling the Browse Generic Report are described in the various “external”, or tailoring ICDs, for each Product Facility.

It is not the task of the present BRGICD to specify the browse formats expected from each of the customer Product Facilities. This is the task of the Tailoring ICDs, which are listed in section 2.4 below.

2.4 Documents with an impact on Generic Browse Metadata

The following documents are considered to have an impact, or at any rate significant input, on the generic definition of browse metadata:

Document full title	Impact on Generic Browse Definition
Master Interface Control Document [ngEO-MICD]	Correct identification of all interfaces
ngEO Metadata Report File Generic Interface [ngEO-MDGICD]	Access to the definition of product (catalogue) metadata for re-use in browse context
External ICD for Sentinel-1 [ngEO-EICD-S1]	Actual definition of the S1::ngEO browse interface
External ICD for Sentinel-2 [ngEO-EICD-S2]	Actual definition of the S2::ngEO browse interface
External ICD for Sentinel-3 [ngEO-EICD-S3]	Actual definition of the S3::ngEO browse interface
External ICD for EarthCare PDGSs [ngEO-EICD-EC]	Actual definition of the EC::ngEO browse interface
External ICD for CDS [ngEO-EICD-CDS]	Actual definition of the CDS::ngEO browse interface
External ICD for Virtual Archive [ngEO-EICD-VA]	Actual definition of the VA::ngEO browse interface
External ICD for ngEO Feed [ngEO-EICD-F]	Definition of the ingestion interface for the generic browse metadata; definition of any required plugins / converters
Subsystem Requirement Document for ngEO Browse Server [ngEO-SSRD-B]	Functional approach to the handling of generic browse metadata, e.g. implementation of browse layers through metadata filters or in-basket selection

Table 3 - Area covered by this ICD

Note that the “impact” is not necessarily one-way only: it is expected, for example, that there will be some iteration between the Generic Browse definition, the External ICDs to the missions and the mission PDGS themselves.

An assumption made here is that the PDGS have not finalised their browse metadata interfaces and are waiting for input from ngEO.

An exception to this is Sentinel-1, which has already designed this product facility interface. The generic Browse Report format defined herein cannot be imposed on the S1 PDGS at this stage, so a specific plugin for Sentinel-1 will have to be used by the Feed.

2.5 ICD Summary

2.5.1 Context Diagram

The present ICD covers the Browse Report that is exchanged between the subsystems (ngEO and external), as shown in the figure 2 below.

Important points to note:

1. The Product Facilities are invited to use the Browse Report format described herein, but this may not apply if the facilities have already defined this prior to ngEO phase 1
2. The Feed verifies and reformats (if necessary) the Browse Reports received from the Product Facilities into the generic Browse Report format described herein
3. Only the object schema and element semantics are described in the present document; for all dynamic aspects of the dialogue please refer to [ngEO-EICD-F].

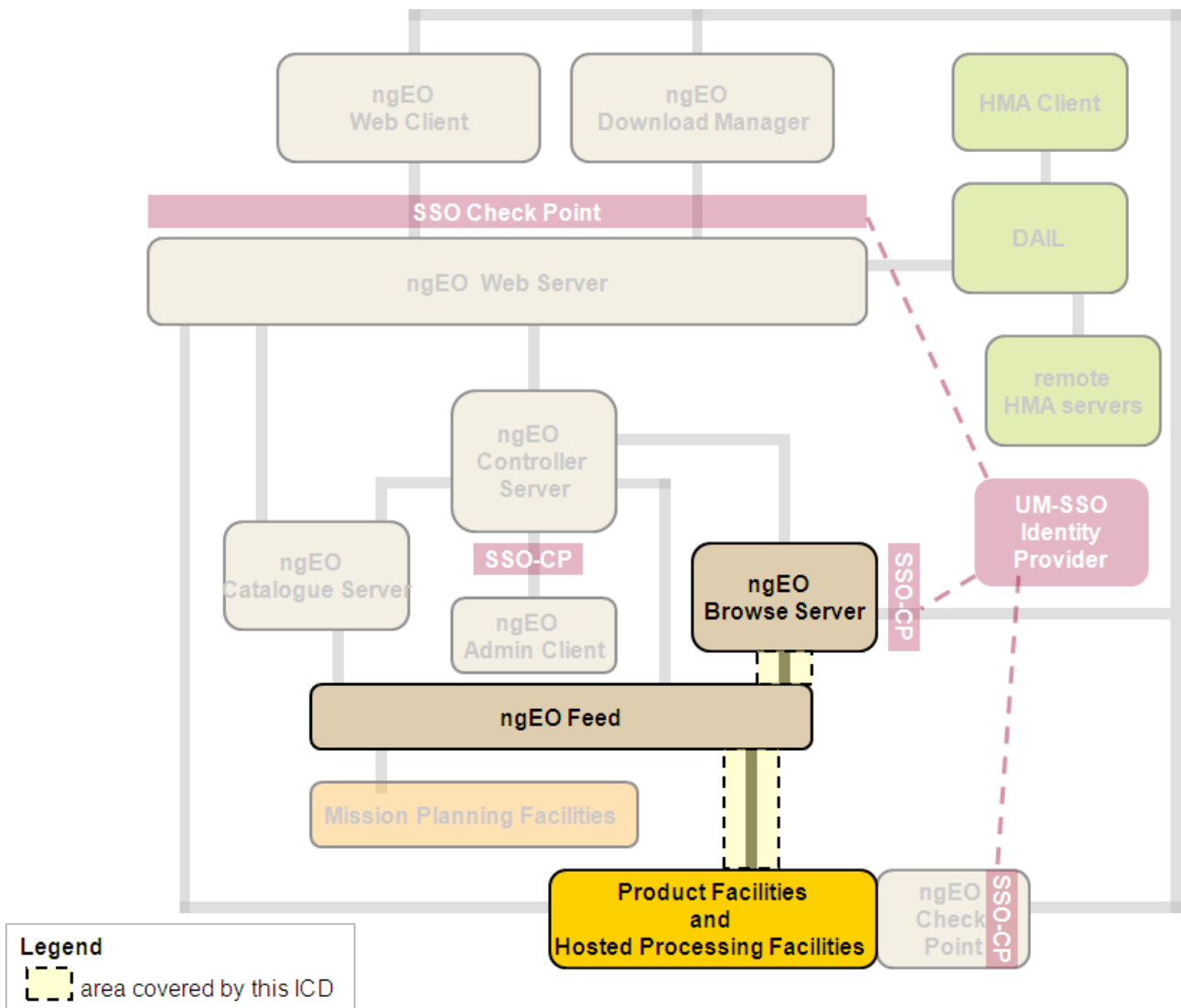


Figure 2 - Area covered by this ICD

In explanation of the above figure, we should stress that the present ICD **does not cover** the dynamics or the specification of the following interfaces:

- between the Product Facilities and the Feed (see [ngEO-EICD-F])
- between the ngEO Feed and the ngEO Browse Server (see [ngEO-IICD-B-F])

Some comments:

- The Product Facilities all generate a Browse Report file, which is the focus of the present ICD
- This Browse Report file contains the minimum metadata needed for two main purposes:
 - To provide sufficient browse metadata to the Browse Server to allow it to correctly manage the corresponding browse layer (e.g. georeferencing, start / stop time of the browse images, etc)
 - To select the Browse Layer to which the browse image will be assigned (simple 1:1, configurable association between BrowseType and BrowseLayer). This configuration is done centrally via the ngEO Controller Server.

- The Browse Report file is processed by the Feed in order to determine, from theBrowseType, , which Browse Layer the corresponding Browse Images shall be assigned to
- The Browse Report file, and associated Browse Images (if already delivered in the generic format), are not modified in any way by the Feed prior to forwarding to the Browse Server
- If the incoming reports from the Facilities are not in the generic format, the Feed converts these reports (via plugins associated to the in-baskets) to the generic format.

2.5.2 Tailoring Considerations

2.5.2.1 Format of Browse Report File from Product Facilities

Sentinel-1 has already defined its interface for sending browse data to ngEO. Therefore, the Feed Subsystem shall provide a plugin for Sentinel-1 to handle mapping (conversion) of the native Browse Report File to the Generic Browse Report File defined by the present document.

As far as other missions are concerned, these will adopt the format defined in the present document, i.e. the Generic Browse Report format.

This aspect is stated here for clarity, though the formal definition of the individual format of the Browse Report File for each facility is given in the appropriate External (Tailoring) ICD for the facility in question.

2.5.2.2 Browse Image format and georeferencing information

We distinguish two fundamental aspects of the browse images supplied by the facilities, although these may in certain cases be intertwined (e.g. GeoTIFF):

- The graphical format of the actual image file
- The georeferencing information that accompanies the browse image

Handling of full-resolution browse images in the Browse Server places a strong requirement for accurate georeferencing information for browse products. When the ngEO web client requests several overlapping / neighbouring browse products, and the resolution is very high, the accuracy of the geo information must also be high if these products are to overlay / mesh in a visually acceptable manner.

There are several ways in which georeferencing information for browse images could be provided to ngEO:

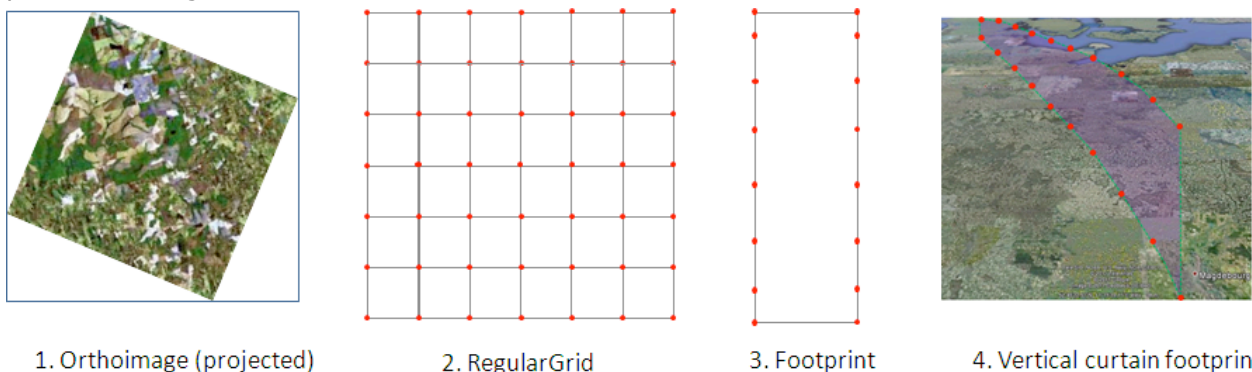


Figure 3 – supported browse georeferencing options

1. Browse images are based on **orthoimages/rectifiedBrowsets** and provided in a specified projection
2. Browse images are provided as native rasters with additional georeferencing information, provided as a **RegularGrid** object (described in section 4.1.4.2 below)
3. Browse images are provided as native rasters with a **Footprint** delimiting their edges (described in section 4.1.4.2 below)
4. 3D browses are provided with a "vertical curtain footprint", the exact nature of which is still the subject of analysis with the relevant missions teams

In the first case, the ngEO Browse Server will need a plugin to handle the inverse projection in order to generate the tiles used by its WMTS.

In the second case, the Feed Subsystem will provide appropriate plugins, where necessary, to map more complex deformation / earth location models to a generic, tie-points based approach. Therefore, all browse images collected by the Feed that are supplied with separate georeferencing models will be converted to a "tie-point" representation in the Generic Browse Report File transferred to the Browse Server.

In the third case, the best that can be done is to make appropriate assumptions about the geometry of the supplied image and use the Footprint as a basis for interpolation. If the image is mapped onto the ground, an interpolation grid will be computed based on the Footprint (generation of a tie-point grid). If the image is in a focal-plane geometry, a plugin based on the sensor model will map this onto the reference ellipsoid. The Footprint will then be used to generate a grid of tie-points.

In the fourth case, further analysis is needed to determine whether the needs of the "vertical curtain" type of browse are sufficiently addressed by the standard footprint object (above), or whether an additional vertical dimension is required. In the present issue of the BRGICD, the two objects are identical, but open to future evolution.

3 Interface Description

3.1 Generic Browse Report

The primary purpose of the Browse Report is to allow insertion, modification and deletion of browse data and metadata in the Browse Server. The operations supported by the Browse Server are the following:

- Browse Data **insertion** (new data is entered into the Browse Server)
- Browse Data **update** (browse data resent by the Product Facility will automatically overwrite any pre-existing browse data that it completely overlaps)

Note that there is no automated deletion of browse products via Browse Reports. .

3.1.1 Interface Logic

As previously stated, the interface described herein is very much a static component of the ngEO system, it is simply the format and content of the Browse Report shared by all ngEO Product Facilities, by the Feed and the Browse Subsystems.

As such, the "interface logic" is limited to specifying the choices that exist for the metadata content and the choices between explicit and implicit selection of the target Browse Layer. This aspect is fully explained below.

Choices in the Browse Report

A Product Facility will be able to choose a method for providing georeferencing information to the ngEO Browse Server. The Browse Server of ngEO is expected to deliver a certain level of performance in georeferencing accuracy – this is described in ngEO-SRD and ngEO-SSRD-B. In order to meet these georeferencing accuracy requirements, the quality of the input georeferencing information for each ingested browse image must be sufficient.

It is therefore expected that browse images will either be delivered in a georeferenced format (e.g. GeoTIFF) or together with additional georeferencing information contained in the Browse Report generated by the facilities.

~~Figure 3 – supported browse georeferencing options~~
~~Figure 3 – supported browse georeferencing options~~, in section 2.5.2.2 illustrates the available options (there are of course more than this, but those presented here will be supported by ngEO).

There are three methods for supplying georeferencing information for browse images:

RegularGrid This is an object contained in the Browse Report which provides latitude / longitude information at regularly spaced points in the source image. In terms of syntax, a step in lines / columns is defined, and two arrays of values, one for latitude, one for longitude, are provided, each containing the right number of grid points resulting from the values of the steps. This effectively generates a grid of squares within which coordinates can be linearly interpolated.

Footprint This is again an object contained in the Browse Report, and is an array of points which define an irregularly spaced polygon delimiting the boundary of the product. As a matter of convention, the lower-left point is given

first, with subsequent points given in clockwise order around the product. In terms of syntax, there will be two arrays: one defining the (line, column) position of the point, and a second defining the corresponding (latitude, longitude). Naturally, there is obvious advantage to making the sides of the footprint symmetric in terms of the number of points, so the "irregular" aspect is there only to take into account that the second and penultimate points on the sides of the polygon may be spaced differently from the others. This allows Footprints from the MUIS/EOLI era to be still valid, as these were generated from points equispaced in time around the sensor swath.

rectifiedBrowse Many Product Facilities (some of the Sentinels, GCMs and Legacy / 3PM) are expected to produce an orthoimage as a browse product (i.e. rectified browse). This may of course be subsampled to whatever extent deemed necessary by the Product Facility, but the rectified browse will be projected to some known projection. As long as the Browse Report contains the projection code and the corner coordinates of the image, there is no need for additional information.

Given any of the above three georeferencing information types, the Browse Server will be able to compute the Earth location of browse tiles to the accuracy required by the customer missions.

Overview of exchanges between subsystems:

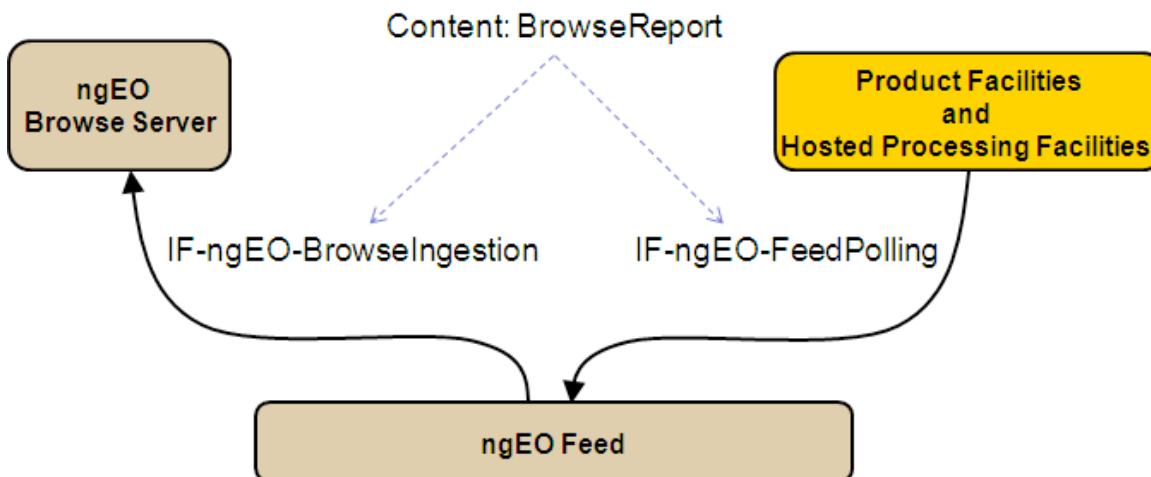


Figure 4 - interfaces involved in browse delivery

There are two interfaces involved in the complete handling of the BrowseReport file:

IF-ngEO-FeedPolling This is the supply of the BrowseReport by the Product Facility to the Feed, with any choices the Facility has decided to apply (covered by this document)

IF-ngEO-BrowseIngestion This is the transfer of BrowseReports by the Feed to the Browse Server, with any additional information required by the Browse Server to properly handle the supplied Browse Images (see [ngEO-IICD-B-F])

On reception of the Browse Report, the Feed will process the Report as follows:

- Unzip the Browse Report
- If the in-basket is associated with a plugin, do the following:
 - Run the corresponding plugin on the received Browse Report.
- Else, if the in-basket is not associated with a plugin do the following:
 - Check compliance of the received Browse Report file against the Schema contained in the present document
- Check the values of the BrowseType(see section 3.1.2 below) against the configured values for the selected in-basket
- Check that all the Browse Image(s) referred to by the XML BrowseReport have been supplied (missing images are not treated as errors which block further processing, but rather as warnings)
- Generate the ngEO-BrowseIngestion message intended for the Browse Server, i.e. regenerate the BrowseReport according to the generic format, reziping the it with all associated browse images.

Note that the Browse Report is **not modified** by the Feed; additional metadata required by the Browse Server is generated according to the rules outlined above and placed in the message of the IF-ngEO-BrowseIngestion interaction.

3.1.2 Interface <MICD_ IF-ngEO-BrowseReport>

The assumption for this interface is that the Browse Report is delivered into a specific in-basket by the Product Facility.

The in-basket for a Product Facility is the drop location for all Browse Reports for the Product Facility concerned. Each in-basket potentially has a plugin associated to it, which is used by the Feed Subsystem to process the incoming data into the required generic format. Of course, if the Product Facility in question already used the generic format, there is no need for an associated plugin. .

The field BrowseType is used to make the association with a BrowseLayer known by the ngEO configuration. BrowseType is an attribute attached to each Browse Product by the Product Facilities, whereas BrowseLayer is the "container" object used by ngEO to manage browse products and identify it a single "layer" for association to relevant datasets.

Association of BrowseType to BrowseLayer is one of the configurations supported by the Controller Server, but this is outside the scope of the present BRGICD.

Configuration of in-baskets

The in-basket that is to be used by each Product Facility must be configured both in the ngEO Controller Server (which propagates this to the Feed) and in the Product Facility. This information is given as an aid to interpretation of the present ICD, but is more clearly in scope of the Feed External ICD, where this configuration mechanism is fully described.

3.1.3 Browse Report Filename convention

Any file naming convention can be used provided that the filename is unique for any given report file and that the file name contains a date/time allowing to sort them.

File naming conventions should be detailed in the missions specific ICDs.

4 Interface Specification

4.1 Flow <IF-ngEOBrowseReport>

4.1.1 Applicable standards

Standards used in the specification of the interface are:

- XML
- GML
- HMA

The reference documents for these standards are listed in section 1.3 of this document.

4.1.2 Reference Documentation

Please refer to section 1.3 of this document.

4.1.3 Protocol

As this ICD only **defines a data model** to be exchanged, the protocol used is outside the scope of the present document.

The protocol used between the Product Facilities and the Feed (**IF-ngEO-FeedPolling**) is defined in [ngEO-EICD-F].

The protocol used between the Feed and the Browse Server (**IF-ngEO-BrowseIngestion**) is defined in [ngEO-IICD-B-F].

4.1.4 Content

4.1.4.1 Multiplicity

4.1.4.1.1 Components

There are two components to the Browse Report interface:

- The Browse Report itself (metadata)
- The Browse Images that are described by this metadata

In order to keep the interface simple, and avoid proliferation of XML instance documents, the Browse Report contains metadata entries for all supplied browse image files.

The Browse Report, and the Browse Image Files it points to, are all contained in a single ZIP file delivered by the facilities. Likewise, the Browse Report transferred by the Feed to the

Browse server will regroup all items (metadata and browse files) in a single zip. This is described in the next section.

4.1.4.1.2 ZIP file structure

The Browse Metadata and Browse Images shall be contained in a ZIP file. There shall be one Browse Metadata file, containing N entries, and N corresponding Browse Images.

It is emphasised here that the requirement is for the file to be in the standard ZIP format, which is not vendor-specific. It is not associated to any ZIP software in particular (e.g. PKZIP), so in principle any file compression software supporting ZIP can be used.

The compression algorithm to be used (i.e. the ZIP package to be used) is not specified here, as the only point of interest is the format of the file archive. The vast majority of ZIP archivers are in any case compatible, being able to read each other's output.

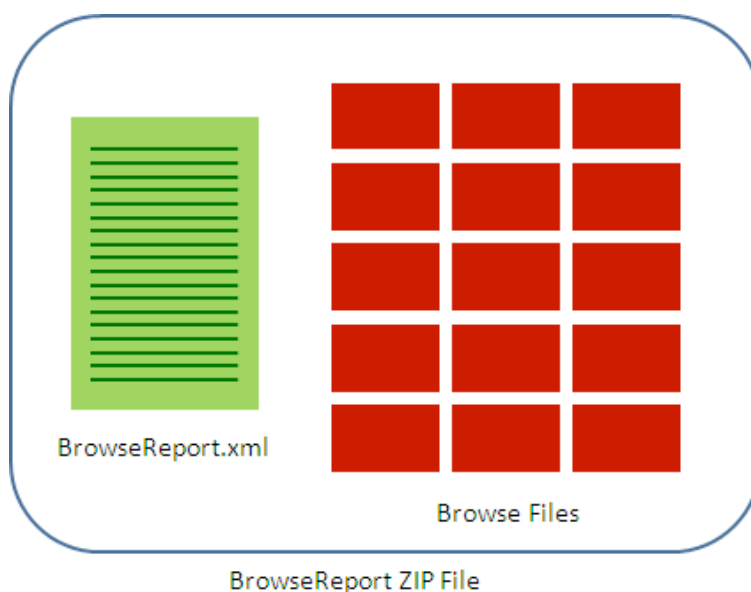


Figure 5 – Contents of "Browse Report" ZIP file

The above schematic shows the mandatory structure of the archive:

- No subfolders, all information at the top level of the ZIP file.
- The ZIP file containing the BrowseReport and Browse Images has a facility-dependent name (see section 3.1.3)
- The file containing the browse metadata is named BrowseReport.xml
- This file contains N entries of type Browse (see section 4.1.4.2 below)
- The ZIP archive contains exactly N Browse Images
- The filename element of each Browse element in the BrowseReport file contains the exact filename of one Browse Image in the archive

4.1.4.2 Elements

The top-level element is the **BrowseReport** itself, described here below:

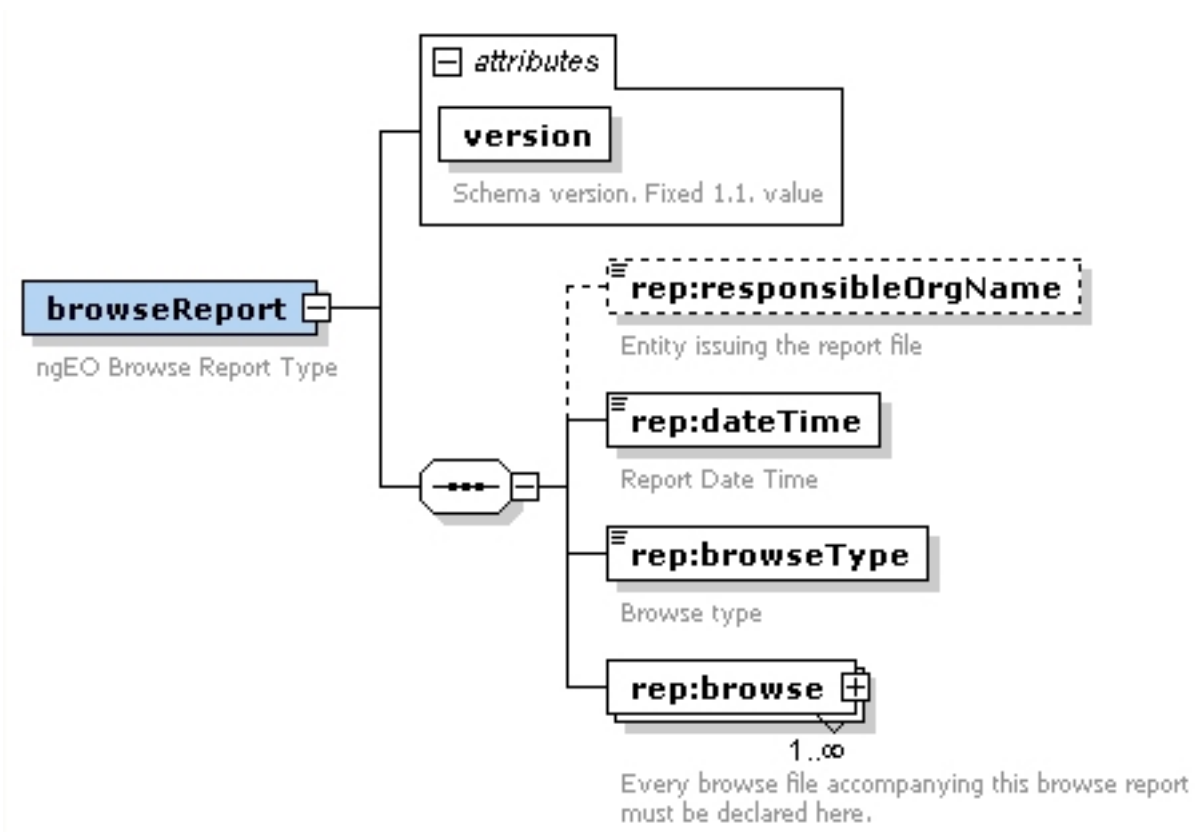


Figure 6 – BrowseReport overall schema

The elements are described in the following table:

Pos	Element	Mandatory / optional	Purpose
1	responsibleOrgName	optional	The name of the organisation producing the Browse Report. This could be omitted, filled as "ESA", "Sentinel 1 PDGS", etc.
2	dateTime	mandatory	The date and time of generation of the Browse Report.
3	browseType	mandatory	The name given to the type of Browse Product, as decided by the Product Facility. The browseType serves to identify a category of browse images (analogously to how a productType identifies a category of products)
4	browse	mandatory	The browse metadata itself. This includes the browse image filename and any additional metadata needed for georeferencing of the Browse Image by the Browse Server.

Table 4 – BrowseReport element descriptions

Note: element names in the above structure have been inspired by the HMA terminology.

The **Browse** element is made up of the following high-level elements:

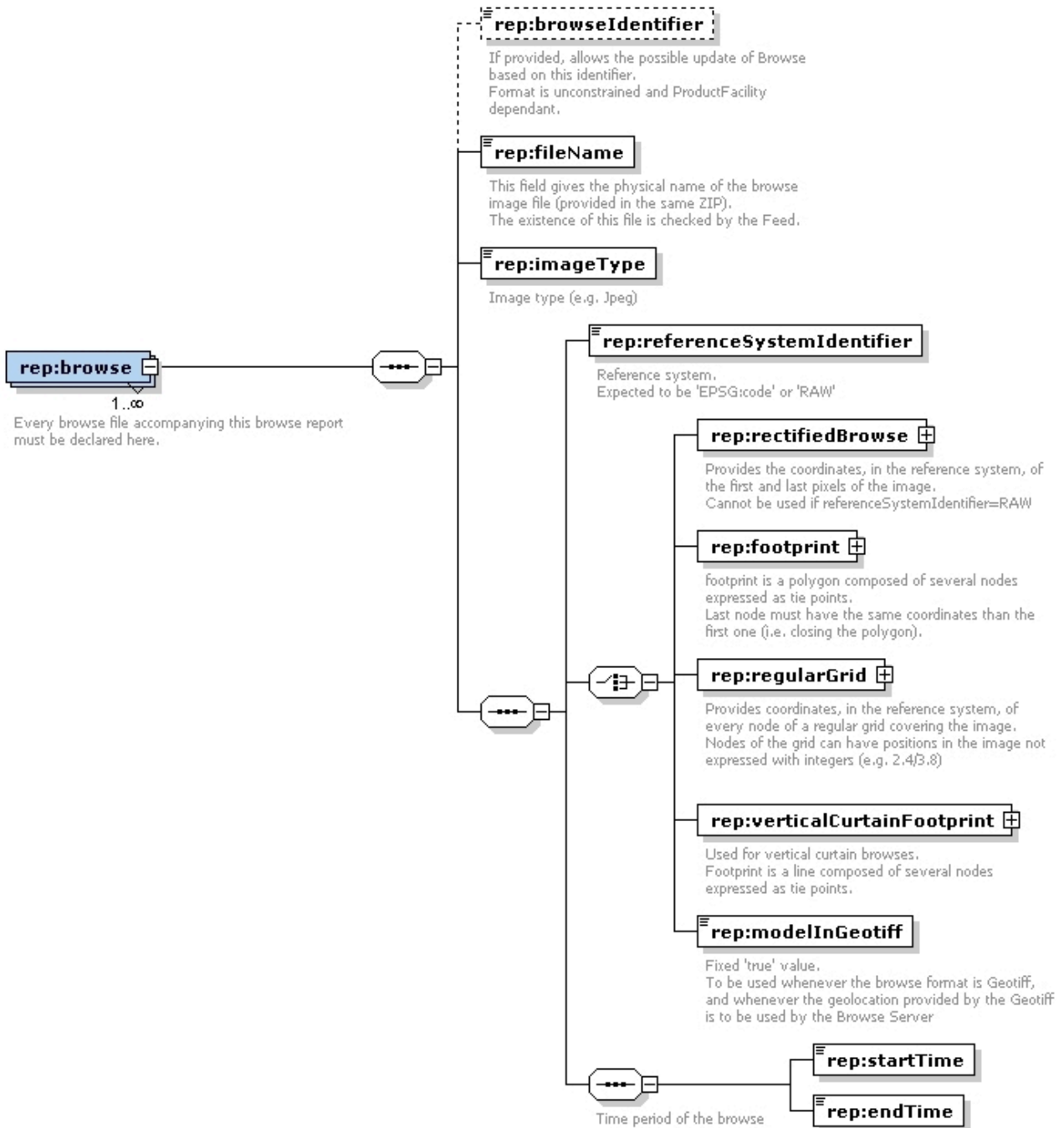


Figure 7 – BrowseReport: Browse element schema

Pos	Element	Mandatory / optional	Purpose
1	browseIdentifier	Optional	This is provided so that Product Facilities can update and delete previously inserted browse images. This field is optional; however, Product Facilities should note that an update

			functionality on existing browse is not possible
2	fileName	mandatory	<p>The fully-specified filename of the Browse Image on the destination filesystem. This is used by the Feed and Browse Server to associate each Browse Report to a Browse Image, which, being binary, has to reside in a file external to the Browse Report instance document.</p> <p>However, this does not mean that the Browse images and Browse Report arrive at the Feed separately: instead, the Browse Report, and all Browse Images it describes, shall be bundled inside a single zip archive.</p>
3	ImageType	mandatory	<p>A text string identifying, by its commonly approved name, the type of browse image supplied with the report:</p> <ul style="list-style-type: none"> • Jpeg • Jpeg2000 • TIFF • GeoTIFF • PNG • BMP
4.1	referenceSystemIdentifier	mandatory	<p>This identifies the coordinate system / datum used for specifying the georeferencing information supplied with the Browse Image.</p> <p>Examples: EPSG:4326, RAW</p> <p>RAW is used where the browse image is based on a level 0 or level 1A product (i.e. prior to geometric / geolocation processing).</p> <p>The EPSG database version supported by ngEO is version 7.1</p>
4.2	CHOICE	mandatory	<p>One of the following objects shall be supplied, providing georeferencing information for the associated browse</p> <ul style="list-style-type: none"> • rectifiedBrowse – the browse is based on a projected orthoimage and the corner coordinates are given (to be used together with referenceSystemIdentifier) • Footprint – (a polygon delimiting boundary of the browse product is given) • regularGrid – (a grid of tie-points is provided for the image, linking line / pixel to coordinates) • verticalCurtainFootprint – (a suitable footprint object is supplied which

			<p>supports the vertical nature of "curtains")</p> <ul style="list-style-type: none"> modelInGeotiff – (this is simply a boolean flag that says that the georeferencing information is contained in the GeoTIFF file)
4.3	startTime endTime	mandatory	<p>The start and end time of the browse image. The start time is understood as the time of the first observation composing the image, or (to put another way) the time of the first observation in the along-orbit direction.</p> <p><i>Note: in some cases, the start and end time may be the same, as the processing systems in some PDGS does not allow to generate a distinct endTime. However, this will not pose a problem for the Browse Server, as retrieval is in any case based on time range.</i></p>

Table 5 – Browse element descriptions

The coverage element is made up of a number of optional elements. However, if it is present, it must contain one, and only one, of the following:

Sub-element rectifiedBrowse

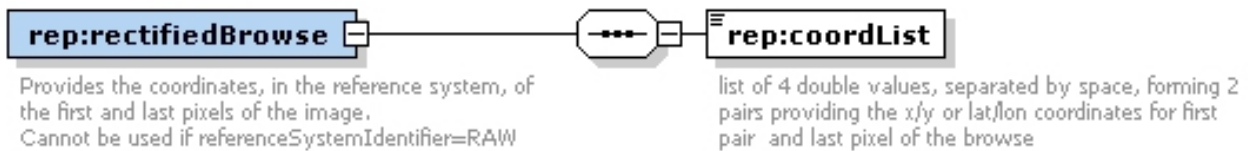


Figure 8 – Browse element: rectifiedBrowse element schema

<u>1</u>	<u>coordList</u>	<u>mandatory</u>	<p>In the <u>rectifiedBrowse</u> element, the first corner coordinate corresponds to the lower/left corner of the lower/left pixel and the second to the upper/right corner of the upper/right pixel. In the case of <u>rectifiedBrowse</u> the coordinate represents the edge of the pixel.</p> <p><u>Coordinates are provided as x/y or lat/lon, depending on the reference system used (defined in referenceSystemIdentifier).</u></p> <p><u>In case of using of lat/lon (the coordinates order is important and has to follow the ordering defined by the referenceSystemIdentifier) The unit of measure is a decimal of degrees.</u></p> <p><u>The range of the Latitude values is: -90+90</u></p>
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			<p><u>The range of the longitude values is: -180+180</u></p> <p><u>An example of using lat/lon is:</u></p> <pre><rep:rectifiedBrowse> <rep:coordList>32.1902500 8.4784500 46.2686450 25.4101500</rep:coordList> </rep:rectifiedBrowse></pre> <p><u>In case of using x/y. The unit of measures is absolute meters.</u></p> <p><u>For additional information on the mapping between UTM codes and EPSG codes please refer to the following link: http://reference.mapinfo.com/common/docs/mapxtend-dev-web-none-eng/miaware/doc/guide/xmlapi/coordsys/systems.htm</u></p>
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Table 6 – rectifiedBrowse element descriptions

Sub-element Footprint

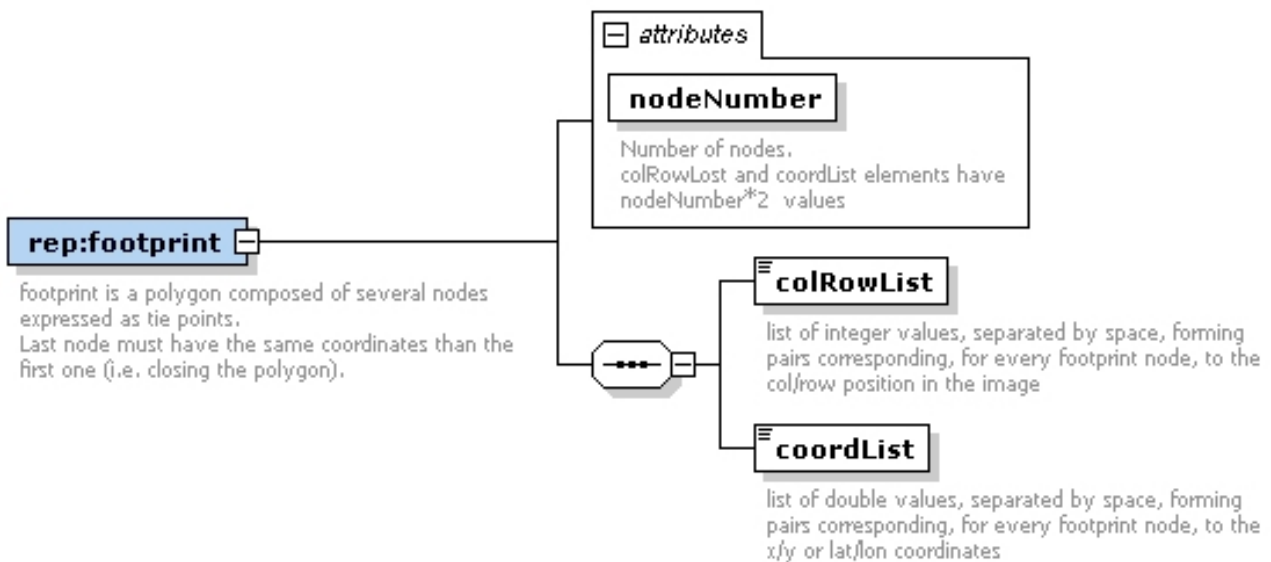


Figure 9 – Browse element: footprint element schema

<u>1</u>	<u>nodeNumber</u>	<u>mandatory</u>	<u>is 4 as a minimum, to provide at least the corner coordinates of the image. Additional nodes may be provided along the edge of the image (along track or across track), but not within the image (in this case, the regularGrid element should be used instead).</u>
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2	colRowList	mandatory	List of integer values, separated by space, forming pairs corresponding, for every footprint node to the col/row position in the image. values are sorted from the top/left and clockwise.
3	coordList	mandatory	gives the coordinates of the pixel referenced in colRowList on the boundary of the image. The coordinate corresponds to the center of the boundary pixel. values are sorted from the top/left and clockwise.

Table 7 – footprint element descriptions

Sub-element regularGrid

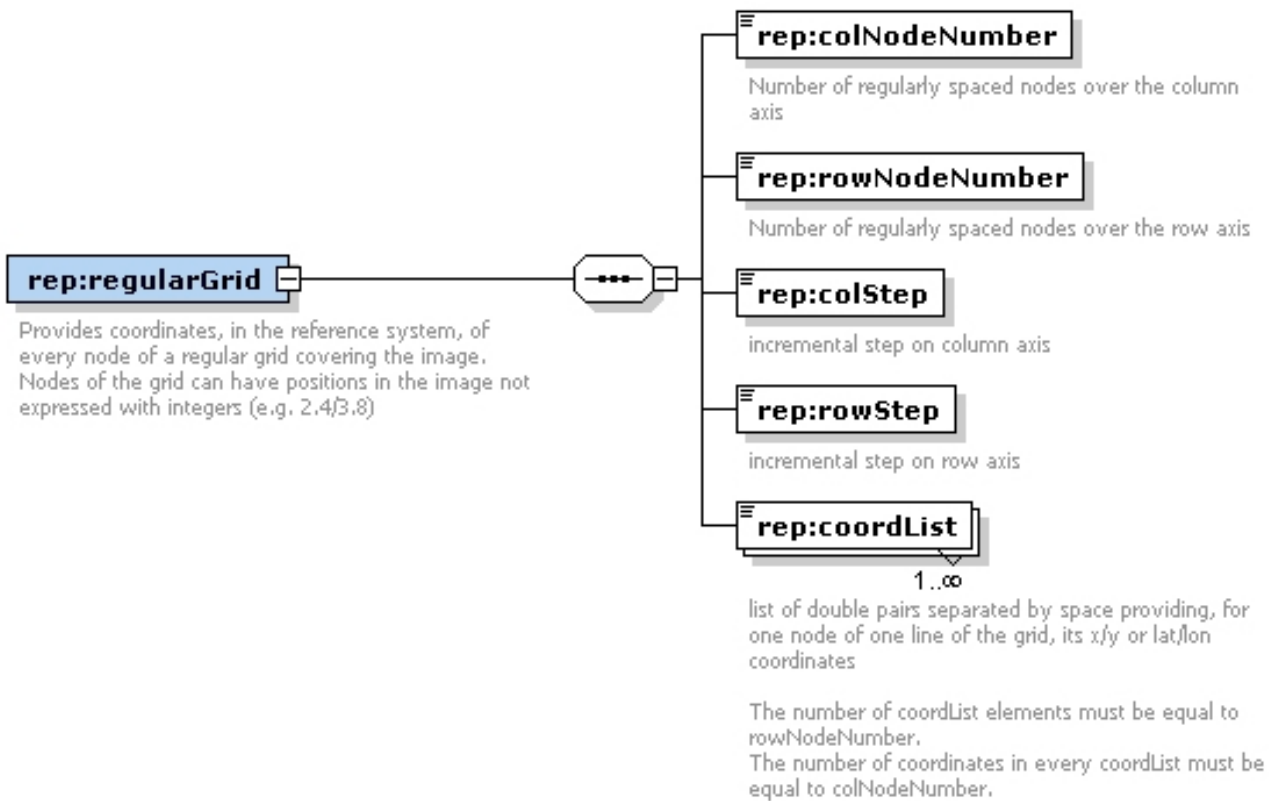


Figure 10 – Browse element: regularGrid element schema

1	colNodeNumber	mandatory	This is an integer value indicating the number of nodes on the Y axis
2	rowNodeNumber	mandatory	This is an integer value indicating the number of nodes on the X axis
3	colStep	mandatory	This a float value indicating the step between two nodes on the Y axis. For example for 5

			nodes on the Y axis of an image of dimensions 10*10 pixels, the colstep = 2.5
4	rowStep	mandatory	This is a float value indicating the step between two nodes on the X axis. For example for 5 nodes on the X axis of an image of dimensions 10*10 pixels, the rowStep = 2.5
5	coordList	mandatory	<p>In the regularGrid element, the first corner coordinate corresponds to the center of the top/left pixel. In the case of regularGrid the coordinate represents the center of the pixel. Coordinates are provided as x/y or lat/lon, depending on the reference system used (defined in referenceSystemIdentifier).</p> <p>In case of using of lat/lon (the coordinates order is important and has to follow the ordering defined by the referenceSystemIdentifier) The unit of measure is a decimal of degrees.</p> <p>The range of the Latitude values is: -90+90</p> <p>The range of the longitude values is: -180+180</p> <p>In case of using x/y. The unit of measures is absolute meters.</p> <p>For additional information on the mapping between UTM codes and EPSG codes please refer to the following link: http://reference.mapinfo.com/common/docs/mapxtend-dev-web-none-eng/miaware/doc/guide/xmlapi/coordsys/systems.htm</p>

Table 87 – regularGrid element descriptions

Sub-element verticalCurtainFootprint

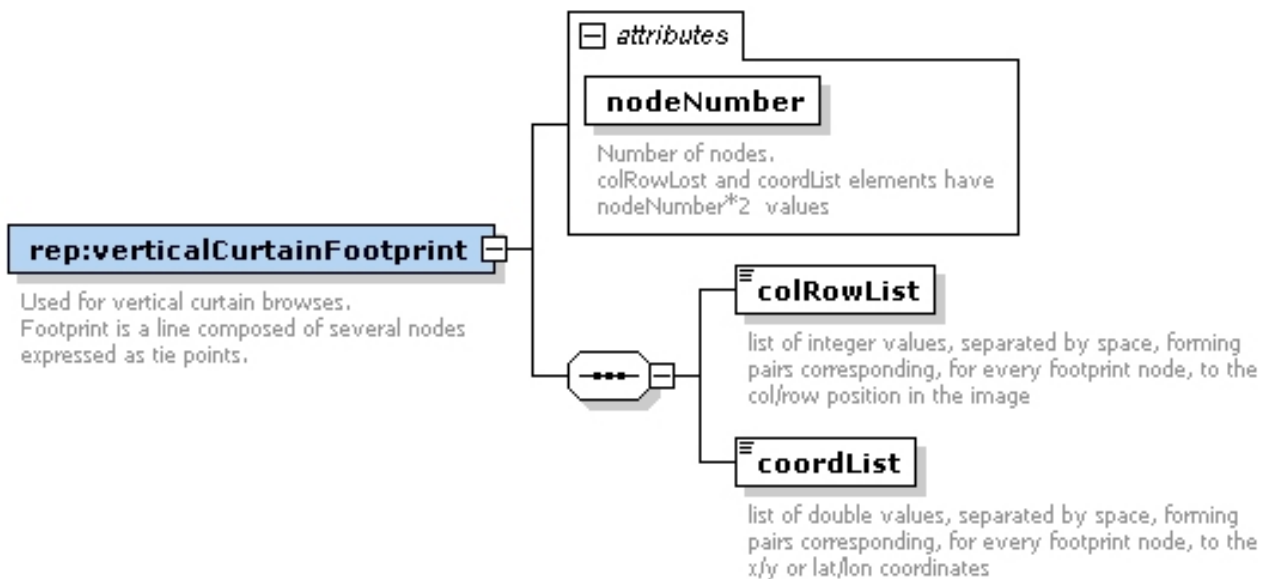


Figure 11 – Browse element: verticalCurtainFootprint element schema

Sub-element modelInGeoTiff

There is no schema provided here, as this is just a Boolean with the value “true” when present. It identifies the case when all browse georeferencing information is actually contained in the supplied GeoTIFF image file.

4.1.4.3 Schema

The schemas for the BrowseReport have been presented in the preceding section. Actual xsd schema documents are provided (in the formal delivery) as separate files in a folder containing the present document, the xsd document, and a set of example instance documents.

4.1.4.4 Instantiation

Example instance documents (.xml) for the BrowseReport are provided (in the formal delivery) in the folder containing present document, the xsd document.

4.1.5 Data volume

Not applicable – this document provides a static model only. All sizing / data volume information can be found in the System Budget and in the Feed EICD.

4.1.6 Behaviour

This is outside the scope of this document.

All dynamic behaviour of the interface is described in the [ngEO-EICD-F], currently under preparation.

- End of document -