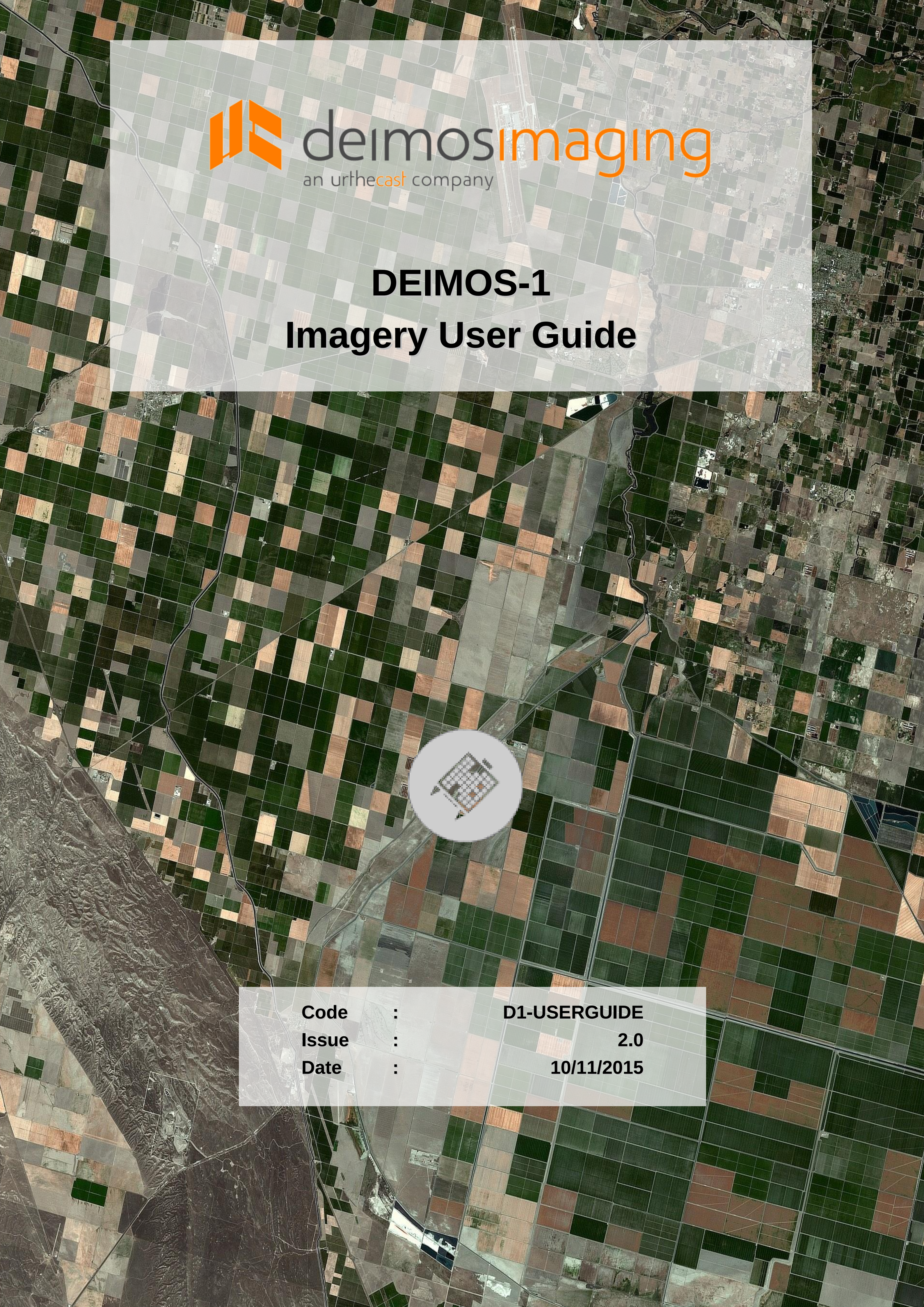

deimosimaging
an urthecast company

DEIMOS-1
Imagery User Guide

Code	**:**	**D1-USERGUIDE**
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Table of Contents

1. INTRODUCTION

This DEIMOS-1 Imagery User Guide provides the essential information about DEIMOS-1 products and services to its users.

It is organized as follows:

- **The DEIMOS-1 System** provides background information about the satellite and the mission, with details on spatial and temporal resolution, spectral bands, acquisition modes and system capacity.
- **Products and Services** describe DEIMOS-1 standard products and the available processing levels, providing further details on the main production processes: orthorectification and radiometric calibration.
- **Product Ordering** explains how to access the DEIMOS-1 on-line catalogue to explore archive data, and how to order New Programming imagery through DEIMOS-1 Customer Service.
- **Data Package** details the format and file naming conventions of DEIMOS-1 standard products.
- **Product Delivery** explains delivery terms and methods.
- Finally, an **Appendix** contains examples of DEIMOS-1 DIMAP metadata.

2. THE DEIMOS-1 SYSTEM

2.1. Satellite and Mission

The DEIMOS-1 Earth Observation satellite is fully owned and operated by Deimos Imaging (DMI), an UrtheCast company. The DEIMOS-1 satellite, built by SSTL, was successfully launched on July 29th 2009 from the Baikonur Launch Complex (Kazakhstan) in the Russian-Ukrainian Dnepr launcher.

The DEIMOS-1 payload is a three-band multispectral imager system with 22m Ground Sample Distance (GSD) at nominal altitude (660 km) with 650 km swath and 10 bits radiometric depth. DEIMOS-1 delivers data in three spectral bands, very close to the Near-Infrared (NIR), Red (R) and Green (G) bands in the Landsat series of US satellites. The satellite payload is a dual bank linear CCD push broom imager, so that banks are mounted at an angle to provide a wide imaging swath, one of the most characteristics DEIMOS-1 features.

The satellite works by storing all its imagery in internal memory and downloading at properly equipped ground stations. In addition to the main memory unit, the High-Speed Data Recorder, two additional recorders are available as backup elements. Currently, two ground stations are regularly used (Boecillo in Spain and Svalbard in Norway) and one may be used in emergency (the manufacturer’s station in UK).

On-board data storage capacity (up to 8 GBytes) and downlink speed rate (40 Mbits/s) allows for the generation of coverages of wide areas in short time periods. Besides, power system allows downlinking in every orbit at least once, and taking imagery in every orbit to the full memory capacity.

Figure 1: Artistic view of the DEIMOS-1 satellite

The SLIM6-22 optical imager, the main payload of DEIMOS-1, is a dual bank linear CCD push broom imager utilizing the orbital motion of the satellite to capture radiation reflected from the Earth's surface within its 650 km swath.

Each SLIM6-22 channel has a solid state detector in the focal plane. The spectral filters for the bands are located in front of each lens of the channel. A fused silica window is placed above the filter to protect the filter of the radiation. Regarding cameras relative location, imager is formed by two banks, each bank consisting of three channels (NIR, R, G spectral bands). The two imager banks are mounted at an angle to provide a total imaging swath of 650 km and an overlap between the simultaneously acquired images of about 10 km. Banks are referred to as "starboard" (s) or "port" (p).

The detector output is digitized to 14 bits and subsequently converted to 10 bits or 8-bits radiometric resolution by means of an analog-to-digital converter. The radiometric depth (8 or 10 bits) can be defined by means the DEIMOS-1 mission planning tool. The system is capable of providing continuous images in the direction of the flight path. The source data are stored in a solid state on board memory with 8 GB capacity. SLIM6 has capacity for windowing and capture fractions of the swath. This function is crucial in order to optimize data acquisition, thus preventing saturation of the storage units, and to add more flexibility for satellite operations. Table below details the main features of the DEIMOS-1 imager.

Table 1: Main parameters of DEIMOS-1 payload

SLIM6-22	
Sensor Model	Eastman Kodak KLI linear CCD sensor.
Number of detectors	14,436 detectors per bank
Pixel array dimension	5.0 x 5.0 µm
Spectral bands	0.520-0.600µm (G), 0.630-0.690µm (R), 0.770-0.900µm (NIR)
Spatial resolution	22 m GSD (for NADIR pixels)
IFOV	32.07 µrad (or 0.00184º or 6.62 arcsec)
FOV per bank	26.01º
Swath per bank	325 km
Total swath	650 km considering the two banks
Data quantization	8 or 10 bits (configurable)
Vertical angle	25.17º between banks
Focal distance	31,200 detector units
Overlapping among banks	461 detectors

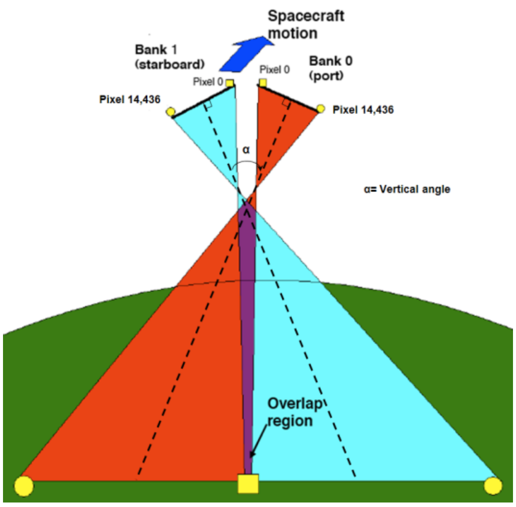


Figure 2: sensor model of the instrument on-board DEIMOS-1 satellite

The following instrument features can be parameterized in order to optimize the quality of the obtained image:

- Radiometric depth (8 or 10 bits)
- Digital gains
- Analogical gains
- Exposure time
- Scanning time per line

2.2. Spatial Resolution

The Ground Sampling Distance (GSD) is 22 m for all three Multispectral channels.

DEIMOS-1 standard bundle product (ortho) has a pixel size of 22m.

All resolutions refer to Nadir observation conditions.

Products with other spatial resolutions at resampling are available under request.

2.3. Temporal Resolution: Revisit Time

One of the key advantages of DEIMOS-1 is merging short revisit times and high spatial resolution.

DEIMOS-1 with its very-wide-swath imagery allows an average revisit time of 2-3 days worldwide and 1-2 days at mid latitude.

The figure below shows an example over the US of the DEIMOS-1 coverage capacity:

Figure 3: DEIMOS-1 capacity: 15 days coverage of US (~1 million km2 per day)

2.4. Spectral Bands

The spectral bandwidth and profiles of DEIMOS-1 imager, equivalent to those of Landsat ETM+ instrument, are outlined in the next table.

Table 2: SLIM-6 Sensor characteristics

SLIM-6 Sensor characteristics		
Bands	**Spectral Range (µm)**	**Spatial Resolution (m)**
Green	0.52 – 0.60	22
Red	0.63 – 0.69	22
Near Infra-Red	0.77 – 0.90	22

2.5. Acquisition Mode

DEIMOS-1 acquisition mode is adaptive and flexible, not systematic (i.e. scene-based). This on-demand system has the following characteristics:

- Minimum area for new programming: 10,000 km2
- Maximum area for new programming: up to 700,000 km2 in a single image
- Maximum AoI width: 650 km
- Maximum AoI length: depending on the AoI width, for example 650 x 800 km, 400 x 1200 km, etc.

2.6. System Capacity

DEIMOS-1 has capacity to capture more than **5,000,000 Km^2 per day**.

This data volume is managed thanks to an on-board data storage capacity of 8 GBytes. Besides, power system allows downlinking in every orbit at least once with a downlink speed rate of 40 Mbits/s and taking imagery in every orbit to the full memory capacity.

3. PRODUCTS AND SERVICES

3.1. Processing Levels

The DEIMOS-1 commercially available processing levels are:

- **Level 1R:** All 3 Spectral channels combined into a band-registered image. Geopositioned product based on sensor model. Coefficients derived from satellite orientation parameters coming from telemetry and appended to metadata.
- **Level 1T:** data orthorectified to sub-pixel accuracy (10 meters RMS error approximately) with respect to Landsat ETM+ reference data and hole-filled seamless SRTM DEM data V3, 2006 (90 m).

By default, DEIMOS1 imagery is delivered in L1T (ortho) processing level. L1R products can be delivered if requested by the customer.

By default, DEIMOS-1 imagery products have a **radiometric depth of 8 bits**. Nonetheless, it is possible to generate imagery products with 10 bits if requested by the customer.

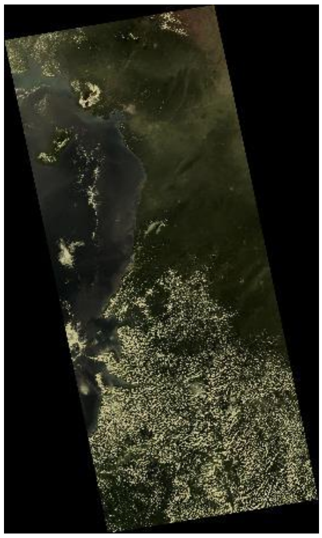
L1R	L1T	L1T (RGB)
		

Figure 4: DEIMOS-1 processing levels

DEIMOS-1 L1T products might be provided in the following spatial configurations:

Table 3: Consideration of the imager banks by DEIMOS-1 image products

Image acquisition	Image product
Single Bank	Stand-alone bank image
Dual Bank	Stand-alone bank image
	Merged banks image

3.2. Orthorectification

The orthorectification process is a three-stage process: Ground Control Points (GCP) collection, image rectification and validation.

The first stage involves manual **GCP collection** by human operators in L1T, against a standard reference data set and DEM using an application called *GCP Tools*, developed by Deimos Imaging. Each GCP refines the sensor model's coefficients and includes the height information from the DEM, thus correcting image distortions due to the Earth's topography and sensor characteristics. The output from the GCP collection is a rigorous image model to pass on to the next stage of the process.

Deimos Imaging manages an internal GCP database, storing those GCPs used in the orthorectification process regardless of the involved project. This database has been used operationally with DEIMOS-1 since 2009. Features defining the GCP (id of the subject and reference image, location of the GCP in each image, processing date, etc.) are stored in a geodatabase and delivered as a text file facilitating the activity of the operators.

In addition to storing and managing GCPs, Deimos Imaging' orthorectification tools allow the human operator to spatially check the expected shift for each GCP associated with the geometric fit to be applied.

The second stage of the process is **image rectification**; the L1R product is projected using the updated image model produced in the first stage.

Finally, **validation** is performed by calculating the geometric error relating the rectified image and a set of independent validation points defined by human operators. Quality assurance and monitoring is of prime importance for Deimos Imaging. Thus, for each orthorectified image a dedicated report is generated and stored. This report is informative about:

- Error rate at the GCP level, measured as Root Mean Square Error (RMSE) in X and Y spatial dimensions.
- Error rate at the image level, accounting for general in X and Y, as well as radial RMSE. In addition the mean and standard deviation of the observed RMSE values at pixel level are provided.

The final output from the orthorectification process is the L1T product rectified to the defined projection. The orthorectification process is a flexible process whereby GCP collection can be performed using any reference data set and DEM provided, and the final L1T product can be rectified to any projection requested.

DEIMOS-1 ortho L1T products are projected to WGS84 UTM by default. In any case, the image products can be tailored to the specific requirements for projection. The table below summarizes some of the options available.

Table 4: DEIMOS-1 Geographic and Map Projections

Mapping Projection (Default)	WGS84 / UTM (EPSG)
Mapping Projection (On demand)	Most of the projections registered by the EPSG
Geographic Projection (On demand)	WGS84 – latitude / longitude sampling
Ground Control Points (GCP)	Landsat by default; other reference datasets can be used as reference if available
Digital Elevation Model (DEM)	SRTM DEM data V3, 2006 (90 m) by default. The vertical error of the DEM is reported to be less than 16m. Other DEMs can be integrated into the processing chain if available

3.3. Radiometric calibration

Images shall be radiometrically calibrated by using the gain and bias coefficients when converting Digital Numbers (DN) into radiance values. Retrieved radiance units are as follows:

$$\frac{W}{m^2 \mu m Str}$$

Gain and bias coefficients shall be used in accordance to the following equation. Both gain and bias coefficients values can be found in the metadata files (.sip file following DIMAP standard or .htm file).

$$RADIANCE = \left[\frac{DN}{RESCALEGAIN}\right] + RESCALEBIAS$$

DEIMOS-1 instrument is calibrated by DEIMOS in cooperation with DMCii. Absolute and relative calibrations are performed yearly, whereas trend monitoring and analysis are undertaken every fifteen days against Landsat reference and using CEOS pseudo-invariant sites. If an anomaly is detected, a new calibration would be scheduled.

Regarding instrument calibration, and in order to obtain the absolute radiometric calibration parameters, we used the CEOS procedure with data from 2009 Tuz Golu (Turkey) and Railroad Valley (Nevada). The calibration parameters were calculated using images from DEIMOS-1, Beijing 1, UK-DMC, and UK-DMC2 taken at the end of August 2009. Before starting the absolute calibration process, we performed the equalization of all SLIM6 sensor detectors, characterizing their response on bright target images acquired over Dome-C (Antarctica) and dark target nighttime images over the Pacific Ocean.

4. PRODUCT ORDERING

4.1. Archive Data. DEIMOS-1 Catalogue

The catalogue allows consulting the availability of DEIMOS-1 images. The user can select an area of interest, a time window and/or a cloud coverage threshold and perform a tailored search. The results are represented as footprints in a world map, including a list of quicklooks and metadata on the right side.

The functionality of this tool allows downloading a quicklook or a set of quicklooks in several formats, including KMZ, which allows the representation in Google Earth or in the "Image requests" function. It is also possible to configure the access to the catalogue, in order to filter the results depending on the user for instance. The following figure is an example of the tool accessing the DEIMOS-1 catalogue:

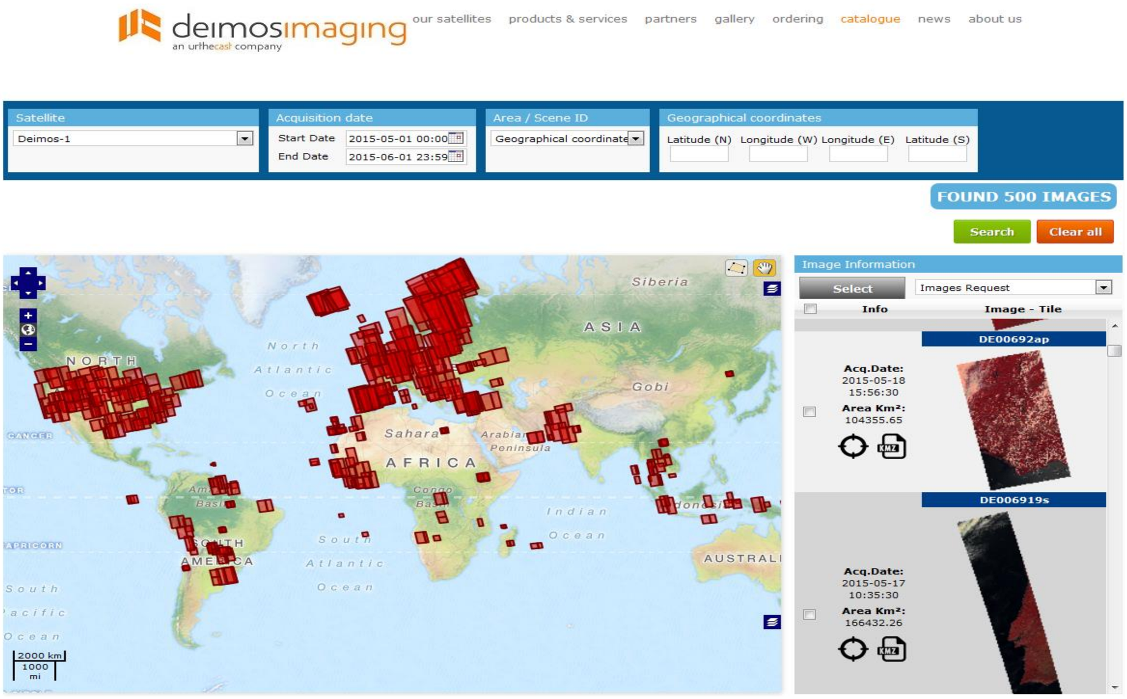


Figure 5: Catalogue, visualization of DEIMOS-1 acquisitions on map (left) and its details (right).

The catalogue performs visualization and dissemination of datasets. The following points can be highlighted:

- Information sets can be browsed according to (i) sensor acquiring the image, (ii) acquisition date and (iii) acquisition area (Geographical coordinate, Country name, Shape File/KML and scene id).
- Map browsing is enabled by means of a 2D approach. Thanks to direct link between designers, developers and final users, an iterative definition process has led to a flexible and highly useful tool.
- For each image, a polygon is drawn in the 2D map. User can navigate through this map with an iterative zoom, a movement "hand" tool and a coordinate locator. For a given image, the acquisition date and time, the total area (km^2), sun azimuth angle, sun elevation angle and the image id are provided. Besides, a quicklook of the original set is provided in KMZ or TIFF format, as well as the metadata in a standard format. This flexibility is warmly welcomed by final users due to simplicity in the access to geographical information.
- Massive imagery search can be performed jointly or separately considering:
  - **Spatial framework**. A polygon can be drawn on-screen defining the searching area. Positive matching elements are shown with the footprints.
  - **Temporal window.** Start date and end date are defined by the user, so that they system shows on-screen the available images within that temporal window. Again, individual information of each image can be easily accessed by the final user.

The catalogue allows selecting images for a specific area of interest and creating a Request for Quotation for the Customer Service.

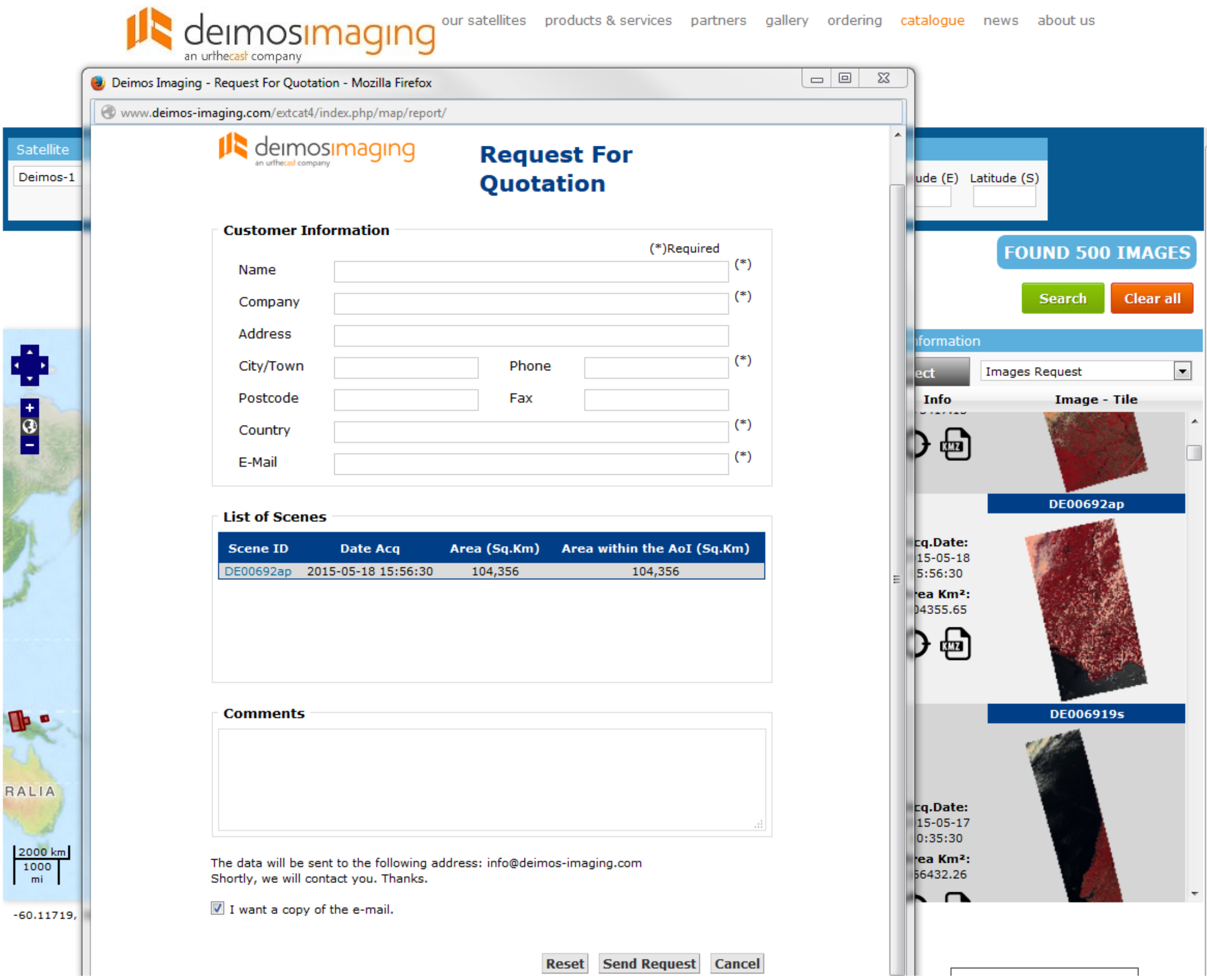


Figure 6: Request for Quotation for Archive data

4.2. New Programming: DEIMOS-1 Customer Service

4.2.1. *Order Desk Availability*

Deimos Imaging runs an order desk during office hours. On weekdays is available during the following hours (CET time):

- ***Monday to Thursday: 9h to 18h***
- ***Friday: 9h to 15h***

Help and order desk will not available on Spanish holidays.

4.2.2. *Emergency Service 24/7*

Deimos Imaging is also offering an emergency service on a 24/7/365[1] basis.

The 24/7 emergency service is offered only to selected customers. If interested, please contact comercial@deimos-imaging.com.

The following tasks are included in the 24/7 emergency service:

- Request acknowledge: Request acknowledgement is sent back to the client as soon as Deimos Imaging receives an image request
- Feasibility study: Upon reception of an imaging request, Deimos Imaging will perform the corresponding feasibility study, and will send it to the customer asking for an order confirmation.
- System programming: Once the potential capture is formally accepted by the customer, system programming is performed.
- Command compilation: the mission planning software automatically prepares and compiles the uplink command to be transferred and sends it to the satellite control facility.
- Command uplink: The updated schedule is uploaded to the satellite.
- Image acquisition: The time elapsed between command uplink and image capturing, depends on the image target and the reception time of the request.
- Data download: The download is performed during the same orbit after the capture has been performed.
- Data processing: This part of the process ends with a product ready on the ground station. Processing level depends on user request.
- Product delivery: The final product is sent to the client through the specified channel (usually, FTP).

[1] 24 hours, 7 days a week, 365 days a year.

5. DATA PACKAGE

5.1. Format

DEIMOS-1 products are provided in DIMAP format. The image products for DEIMOS-1 are delivered in the TIFF and GeoTIFF image formats by default

DEIMOS-1 products are provided as datasets of several files summarized in the following table:

Table 5: DEIMOS-1 product dataset files

File extension	Description
dim	DIMAP file contains all information about the image, such as date and time of the acquisition, geolocation information, etc. The L1R product level tie-point used as the model transformation approach to provide a geographic image extension.
htm	HTML file easy to read using a web browser and contains most of the information stored in the DIMAP.
jpg	It is an image of small size, which provides a quick overview of the product shown in htm file.
sip	The SIP is the primary file metadata file of the image. It contains all the information stored in the DIMAP and rigorous adjustment model coefficients for the image. SIP is a proprietary format developed by Spacemetric AB, SE.
tif	The data of the actual product.
tfw	ESRI Worldfile. Not included in L1R products.

5.2. File Naming Convention

Image files are provided with a standard file naming convention explained below by means of an example.

Example:

DE01_SL6_22P_1T_20110616T092316_20110616T092427_DMI_0_2e9d

Convention meaning:

- DE01: Mission
- SL6: Instrument
- 22: resolution
- P: imager bank. Can take the following values: P (bank p), S (bank s) or T (two banks merged together)
- 1T: processing level
- 20110616T092316: date and hour of the beginning of the image capture
- 20110616T092427: date and hour of the end of the image capture
- DMI: Company
- 0: internal code

- 2e9d: Image Identification Code

5.3. DEIMOS-1 DIMAP

The metadata for image products are contained within the DIMAP (.dim) files. DMI DIMAP is based upon the DIMAP generic profile version 1.1 developed by SpotImage and CNES, and is implemented through the use of XML. A detailed description is provided in Appendix I.

Some elements of the DIMAP are not clearly defined and open for data providers to define their own parameters. For such elements used in the DMC DIMAP, a description of these elements and examples will be given in this section.

Documentation on DIMAP version 1.1 and the DIMAP XML implementation can be found at the following URL: http://www.spotimage.fr/dimap/spec/documentation/refdoc.htm. The DIMAP elements and their implementation are described in documents RD#02 and RD#03, which can be found at the following URL:http://www.spotimage.fr/dimap/spec/dictionary/dictionary.htm

6. PRODUCT DELIVERY

6.1. Delivery Methods

Deimos Imaging offers a wide variety of delivery methods for DEIMOS-1 products, to better suite the Customer's needs:

- FTP Pull (default method)
- FTP Push
- USB memory stick
- USB hard disk
- DVD

Usually, products are delivered via FTP Pull, being placed in an FTP hosted by Deimos Imaging.

On Customer's request, data can be delivered via FTP Push (i.e. on an FTP set up by the Customer), or via a physical mean sent by courier (USB stick, hard disk or DVD).

6.2. Delivery terms

Delivery terms are agreed with the Customer depending on its needs. Typically three types of delivery terms are used:

- **Once off:** single products (or batch of products) are delivered once off after single requests.
- **Stream:** products are made available to the clients as a repetitive and regular flow of data delivered with regular frequency. A typical example is the systematic provision of products for monitoring a given area.
- **Cumulative:** products are created during a given time window, and are delivered only after the completion of the window. A typical example is the gap-free coverage of given geographical areas.

APPENDIX I – DEIMOS-1 DIMAP METADATA

<Quality_Assessment>

The following elements and sub-elements DIMAP have values and attributes that are unique to products DMI.

<Quality_Assessment>
<QUALITY_TABLES>
<Quality_Parameter>

<QUALITY_PARAMETER_DESC>
<QUALITY_PARAMETER_CODE>
<QUALITY_PARAMETER_VALUE>

Details about the values and attributes of the elements and sub elements that are unique to the DMI data are shown below.

Element	Element Value	Attribute	Attribute Value
<QUALITY_TABLES>	SPACEMETRIC	version	1.0
Description			
Quality assessment table labelled as “SPACEMETRIC” – version 1.0.			

Element	Element Value	Attribute	Attribute Value
<QUALITY_PARAMETER_DESC>	Number of control points	N/A	N/A
<QUALITY_PARAMETER_CODE>	SPACEMETRIC:NGCP	N/A	N/A
<QUALITY_PARAMETER_VALUE>	*variable*	N/A	N/A
Description			
Describes the number of GCPs collected to derive the model for the data product.			

Element	Element Value	Attribute	Attribute Value
<QUALITY_PARAMETER_DESC>	Root Mean Square residual error X component	N/A	N/A
<QUALITY_PARAMETER_CODE>	SPACEMETRIC:RMSX	N/A	N/A
<QUALITY_PARAMETER_VALUE>	*variable*	unit	• DEG • M

Description
Describes the RMS error in the xdirection of the data product. The units will depend upon the GCS and projection used. “DEG” – Decimal Degrees “M” – Metres Typical units for DMC data products are decimal degrees for CS of type “GEOGRAPHIC” and metres for CS of type “PROJECTED”, but others are available.

Element	Element Value	Attribute	Attribute Value
<QUALITY_PARAMETER_DESC>	Root Mean Square residual error Y component	N/A	N/A
<QUALITY_PARAMETER_CODE>	SPACEMETRIC:RMSY	N/A	N/A
<QUALITY_PARAMETER_VALUE>	*variable*	unit	• DEG • M

Description
Describes the RMS error in the ydirection of the data product. The units will depend upon the GCS and projection used. “DEG” – Decimal Degrees “M” – Metres Typical units for DMC data products are decimal degrees for CS of type “GEOGRAPHIC” and metres for CS of type “PROJECTED”, but others are available.

Element	Element Value	Attribute	Attribute Value
<QUALITY_PARAMETER_DESC>	Scene altitude (meter)	N/A	N/A
<QUALITY_PARAMETER_CODE>	SPACEMETRIC:ALTITUDE	N/A	N/A
<QUALITY_PARAMETER_VALUE>	*variable*	N/A	N/A
Description			
Describes the altitude (in metres) of the satellite when the image was acquired.			

Element	Element Value	Attribute	Attribute Value
<QUALITY_PARAMETER_DESC>	Sensor azimuth at scene center (deg)	N/A	N/A
<QUALITY_PARAMETER_CODE>	SPACEMETRIC:SENSOR_AZIMUTH	N/A	N/A
<QUALITY_PARAMETER_VALUE>	*variable*	N/A	N/A
Description			
Describes the sensor azimuth (in decimal degrees) at scene centre.			

Element	Element Value	Attribute	Attribute Value
<QUALITY_PARAMETER_DESC>	Sensor elevation at scene center (deg)	N/A	N/A
<QUALITY_PARAMETER_CODE>	SPACEMETRIC:SENSOR_ELEVATION	N/A	N/A
<QUALITY_PARAMETER_VALUE>	*variable*	N/A	N/A
Description			
Describes the sensor elevation (in decimal degrees) at scene centre.			

```
<Quality_Assessment>
      <QUALITY_TABLES version="1.0">SPACEMETRIC</QUALITY_TABLES>
      <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Number of control
points</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:NGCP</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE>28</QUALITY_PARAMETER_VALUE>
      </Quality_Parameter>
      <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Root Mean Square residual error X
component</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:RMSX</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE unit="M">13.2</QUALITY_PARAMETER_VALUE>
      </Quality_Parameter>
      <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Root Mean Square residual error Y
component</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:RMSY</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE unit="M”>10.5</QUALITY_PARAMETER_VALUE>
      </Quality_Parameter>
</Quality_Assessment>
```


Figure A1-1: Example 1: <Quality_Assessment> RMS Error in Metres


```
<Quality_Assessment>
      <QUALITY_TABLES version="1.0">SPACEMETRIC</QUALITY_TABLES>
      <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Number of control
points</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:NGCP</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE>0</QUALITY_PARAMETER_VALUE>
      </Quality_Parameter>
      <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Root Mean Square residual error X
component</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:RMSX</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE
unit="DEG">0.28647889756541156</QUALITY_PARAMETER_VALUE>
      </Quality_Parameter>
      <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Root Mean Square residual error Y
component</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:RMSY</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE
unit="DEG">0.20970255301788127</QUALITY_PARAMETER_VALUE>
      </Quality_Parameter>
</Quality_Assessment>
```


Figure A1-2: Example 2: <Quality_Assessment> ¬RMS Error in Decimal Degrees

<Coordinate_Reference_System>

The following DIMAP elements and sub¬elements have values and attributes that are unique to DMC data products.

<Coordinate_Reference_System>

<GEO_TABLES>

<Horizontal_CS>

<HORIZONTAL_CS_CODE>

<HORIZONTAL_CS_TYPE>

Details about the values and attributes of the elements and sub elements that are unique to the DMI data are shown below.

Element	Element Value	Attribute	Attribute Value
<GEO_TABLES>	• EPSG • CUSTOM	version	*variable*
Description			
System used to identify the geodetic parameters. "EPSG" parameters are defined in the EPSG database version 6.13. "CUSTOM" user specified parameters.			

Element	Element Value	Attribute	Attribute Value
<HORIZONTAL_CS_CODE>	*variable*	N/A	N/A
Description			
Unique identification code that defines the horizontal CS used by the data product. This code relates to the geodetic table defined by the element <GEO_TABLES>. The code is variable, but it is prefixed by the geodetic table used followed by ":", i.e. "EPSG:4258" or "CUSTOM:50008". To avoid overlapping of the horizontal CS codes from the EPSG database, all CUSTOM horizontal CS codes (i.e. not defined in the EPSG database) will start at 50001.			

Element	Element Value	Attribute	Attribute Value
<HORIZONTAL_CS_TYPE>	• GEOGRAPHIC • PROJECTED	N/A	N/A
Description			
Describes the type of horizontal CS used. "GEOGRAPHIC" – Horizontal CS is not projected. "PROJECTED" – Horizontal CS is a cartographic projection.			

Element	Element Value	Attribute	Attribute Value
<HORIZONTAL_CS_NAME>	*variable*	N/A	N/A
Description			
Name of the horizontal CS used by the data product.			

```
<Coordinate_Reference_System>
      <GEO_TABLES>EPSG</GEO_TABLES>
      <Horizontal_CS>
            <HORIZONTAL_CS_CODE>EPSG:4258</HORIZONTAL_CS_CODE>
            <HORIZONTAL_CS_TYPE>GEOGRAPHIC</HORIZONTAL_CS_TYPE>
            <HORIZONTAL_CS_NAME>ETRS89</HORIZONTAL_CS_NAME>
            ...
      </Horizontal_CS>
</Coordinate_Reference_System>
```

Figure A1-3: Example 3: <Coordinate_Reference_System> EPSG Geodetic Parameters

```
<Coordinate_Reference_System>
      <GEO_TABLES>CUSTOM</GEO_TABLES>
      <Horizontal_CS>
            <HORIZONTAL_CS_CODE>CUSTOM:50008</HORIZONTAL_CS_CODE>
            <HORIZONTAL_CS_TYPE>PROJECTED</HORIZONTAL_CS_TYPE>
            <HORIZONTAL_CS_NAME>ED50 / Turkish Lambert 2007</HORIZONTAL_CS_NAME>
            ...
      </Horizontal_CS>
</Coordinate_Reference_System>
```

Figure A1-4: Example 4: <Coordinate_Reference_System> Custom Geodetic Parameters

<Image_Display>

The following DIMAP elements and sub¬elements have values and attributes that are unique to DMC data products.

<Image_Display>

<Special_Value>

<SPECIAL_VALUE_INDEX>

<SPECIAL_VALUE_TEXT>

Details on the values and attributes of the elements and sub¬elements that are unique to DMC data products can be found in the tables below.

Element	Element Value	Attribute	Attribute Value
<SPECIAL_VALUE_INDEX>	0	N/A	N/A
<SPECIAL_VALUE_TEXT>	nodata	N/A	N/A

Description
Data points in the product that have a DN value of 0 are described as being data points of no significance and should be ignored in any analysis performed.

```
<Image_Display>
      ...
      <Special_Value>
            <SPECIAL_VALUE_INDEX>0</SPECIAL_VALUE_INDEX>
            <SPECIAL_VALUE_TEXT>nodata</SPECIAL_VALUE_TEXT>
      </Special_Value>
      ...
</Image_Display>
```

Figure A1-5: Example 5: <Image_Display> No Data Value

<Dataset_Sources>

Due to the nature of the DIMAP format, there is the potential for data to be duplicated under different elements. In the case of the <Dataset_Sources> element there is a subelement called <Coordinate_Reference_System>, which contains the same information as the <Coordinate_Reference_System> element that preceded it. Information about this element has been documented for completeness.

The following DIMAP elements and sub-elements have values and attributes that are unique to DMC data products.

<Dataset_Sources>

<Coordinate_Reference_System>

<GEO_TABLES>

<Horizontal_CS>

<HORIZONTAL_CS_CODE>

<HORIZONTAL_CS_TYPE>

Details about the values and attributes of the elements and sub elements that are unique to the DMI data are shown below.

Element	Element Value	Attribute	Attribute Value
<GEO_TABLES>	• EPSG • CUSTOM	version	*variable*
Description			
System used to identify the geodetic parameters. “EPSG” parameters are defined in the EPSG database version 6.13. “CUSTOM” user specified parameters.			

Element	Element Value	Attribute	Attribute Value
<HORIZONTAL_CS_CODE>	*variable*	N/A	N/A
Description			
Unique identification code that defines the horizontal CS used by the data product. This code relates to the geodetic table defined by the element <GEO_TABLES>. The code is variable, but it is prefixed by the geodetic table used followed by “:”, i.e. “EPSG:4258” or “CUSTOM:50008”. To avoid overlapping of the horizontal CS codes from the EPSG database, all CUSTOM horizontal CS codes (i.e. not defined in the EPSG database) will start at 50001.			

Element	Element Value	Attribute	Attribute Value
<HORIZONTAL_CS_TYPE>	• GEOGRAPHIC • PROJECTED	N/A	N/A
Description			
Describes the type of horizontal CS used. “GEOGRAPHIC” – Horizontal CS is not projected. “PROJECTED” – Horizontal CS is a cartographic projection.			

Element	Element Value	Attribute	Attribute Value
<HORIZONTAL_CS_NAME>	*variable*	N/A	N/A
Description			
Name of the horizontal CS used by the data product.			

```
<Dataset_Sources>
      ...
      <Coordinate_Reference_System>
            <GEO_TABLES>EPSG</GEO_TABLES>
            <Horizontal_CS>
                  <HORIZONTAL_CS_CODE>EPSG:4258</HORIZONTAL_CS_CODE>
                  <HORIZONTAL_CS_TYPE>GEOGRAPHIC</HORIZONTAL_CS_TYPE>
                  <HORIZONTAL_CS_NAME>ETRS89</HORIZONTAL_CS_NAME>
                  ...
            </Horizontal_CS>
      </Coordinate_Reference_System>
      ...
</Dataset_Sources>
```

Figure A1-6: Example 6: <Dataset_Sources> Custom Geodetic Parameters

```
<Dataset_Sources>
      ...
      <Coordinate_Reference_System>
            <GEO_TABLES>CUSTOM</GEO_TABLES>
            <Horizontal_CS>
                  <HORIZONTAL_CS_CODE>CUSTOM:50008</HORIZONTAL_CS_CODE>
                  <HORIZONTAL_CS_TYPE>PROJECTED</HORIZONTAL_CS_TYPE>
                  <HORIZONTAL_CS_NAME>ED50 / Turkish Lambert
2007</HORIZONTAL_CS_NAME>
                  ...
            </Horizontal_CS>
      </Coordinate_Reference_System>
      ...
</Dataset_Sources>
```

Figure A1-7: Example 6: <Dataset_Sources> Custom Geodetic Parameters

DIMAP SAMPLE – L1R PRODUCT


```
<?xml version="1.0" encoding="ISO-8859-1"?>
<?xml-stylesheet type="text/xsl" href="DU000b63T_L1R.xsl"?>
<Dimap_Document xmlns:dim="http://www.spotimage.fr/Dimap"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
    <Metadata_Id>
        <METADATA_FORMAT version="1.1">DIMAP</METADATA_FORMAT>
    </Metadata_Id>
    <Dataset_Id>
        <DATASET_NAME>DU000b63T_L1R</DATASET_NAME>
        <COPYRIGHT>DMC International Imaging Ltd.</COPYRIGHT>
        <DATASET_QL_PATH href="DU000b63T_L1R_ql.jpg"/>
    </Dataset_Id>
    <Production>
        <DATASET_PRODUCER_NAME>DMC International Imaging
Ltd.</DATASET_PRODUCER_NAME>
        <DATASET_PRODUCER_URL href="http://www.dmcii.com"/>
        <DATASET_PRODUCTION_DATE>2007-09-20</DATASET_PRODUCTION_DATE>
        <PRODUCT_TYPE/>
        <JOB_ID/>
    </Production>
    <Quality_Assessment>
        <QUALITY_TABLES version="1.0">SPACEMETRIC</QUALITY_TABLES>
        <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Number of control
points</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:NGCP</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE>0</QUALITY_PARAMETER_VALUE>
        </Quality_Parameter>
        <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Root Mean Square residual error X
component</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:RMSX</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE
unit="DEG">0.27616565725305675</QUALITY_PARAMETER_VALUE>
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        <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Root Mean Square residual error Y
component</QUALITY_PARAMETER_DESC>
            <QUALITY_PARAMETER_CODE>SPACEMETRIC:RMSY</QUALITY_PARAMETER_CODE>
            <QUALITY_PARAMETER_VALUE
unit="DEG">0.2125673419935354</QUALITY_PARAMETER_VALUE>
        </Quality_Parameter>
    </Quality_Assessment>
    <Dataset_Use>
        <DATASET_CONTENT>Texas, USA</DATASET_CONTENT>
    </Dataset_Use>
    <Data_Processing>
        <GEOMETRIC_PROCESSING>1R</GEOMETRIC_PROCESSING>
        <RADIOMETRIC_PROCESSING>Cubic convolution</RADIOMETRIC_PROCESSING>
    </Data_Processing>
    <Coordinate_Reference_System>
        <GEO_TABLES>EPSG</GEO_TABLES>
        <Horizontal_CS>
            <HORIZONTAL_CS_CODE>EPSG:4326</HORIZONTAL_CS_CODE>
```

```
            <HORIZONTAL_CS_TYPE>GEOGRAPHIC</HORIZONTAL_CS_TYPE>
            <HORIZONTAL_CS_NAME>WGS 84</HORIZONTAL_CS_NAME>
            <Geographic_CS>
                <GEOGRAPHIC_CS_NAME>WGS 84</GEOGRAPHIC_CS_NAME>
                <GEOGRAPHIC_CS_CODE>EPSG:4326</GEOGRAPHIC_CS_CODE>
                <Horizontal_Datum>
                    <HORIZONTAL_DATUM_NAME>World Geodetic System
1984</HORIZONTAL_DATUM_NAME>
                    <HORIZONTAL_DATUM_CODE>EPSG:6326</HORIZONTAL_DATUM_CODE>
                    <Ellipsoid>
                        <ELLIPSOID_NAME>WGS 84</ELLIPSOID_NAME>
                        <ELLIPSOID_CODE>EPSG:7030</ELLIPSOID_CODE>
                        <Ellipsoid_Parameters>
                            <ELLIPSOID_MAJOR_AXIS
unit="M">6378137.0</ELLIPSOID_MAJOR_AXIS>
                            <ELLIPSOID_MINOR_AXIS
unit="M">6356752.31424518</ELLIPSOID_MINOR_AXIS>
                        </Ellipsoid_Parameters>
                    </Ellipsoid>
                    <Prime_Meridian>
                        <PRIME_MERIDIAN_NAME>Greenwich</PRIME_MERIDIAN_NAME>
                        <PRIME_MERIDIAN_CODE>EPSG:8901</PRIME_MERIDIAN_CODE>
                        <PRIME_MERIDIAN_OFFSET
unit="DEG">0.0</PRIME_MERIDIAN_OFFSET>
                    </Prime_Meridian>
                </Horizontal_Datum>
            </Geographic_CS>
        </Horizontal_CS>
    </Coordinate_Reference_System>
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        <Geoposition_Points>
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                <TIE_POINT_DATA_X>0.0</TIE_POINT_DATA_X>
                <TIE_POINT_DATA_Y>0.0</TIE_POINT_DATA_Y>
                <TIE_POINT_CRS_X unit="DEG">-100.36121700237744</TIE_POINT_CRS_X>
                <TIE_POINT_CRS_Y unit="DEG">31.35796462327202</TIE_POINT_CRS_Y>
            </Tie_Point>
            <Tie_Point>
                <TIE_POINT_DATA_X>3977.0</TIE_POINT_DATA_X>
                <TIE_POINT_DATA_Y>0.0</TIE_POINT_DATA_Y>
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                <TIE_POINT_CRS_Y unit="DEG">31.543096941217634</TIE_POINT_CRS_Y>
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            <Tie_Point>
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                <TIE_POINT_DATA_Y>0.0</TIE_POINT_DATA_Y>
                <TIE_POINT_CRS_X unit="DEG">-97.6886624143706</TIE_POINT_CRS_X>
                <TIE_POINT_CRS_Y unit="DEG">31.72922176530387</TIE_POINT_CRS_Y>
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            <Tie_Point>
                <TIE_POINT_DATA_X>11930.999999999998</TIE_POINT_DATA_X>
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            <Tie_Point>
                <TIE_POINT_DATA_X>0.0</TIE_POINT_DATA_X>
                <TIE_POINT_DATA_Y>2577.0</TIE_POINT_DATA_Y>
```

```
        <TIE_POINT_CRS_X unit="DEG">-100.16271084681733</TIE_POINT_CRS_X>
        <TIE_POINT_CRS_Y unit="DEG">30.612565439414062</TIE_POINT_CRS_Y>
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    <Tie_Point>
        <TIE_POINT_DATA_X>3977.0</TIE_POINT_DATA_X>
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        <TIE_POINT_CRS_X unit="DEG">-98.88843259962778</TIE_POINT_CRS_X>
        <TIE_POINT_CRS_Y unit="DEG">30.796339165565442</TIE_POINT_CRS_Y>
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    <Tie_Point>
        <TIE_POINT_DATA_X>7954.0</TIE_POINT_DATA_X>
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        <TIE_POINT_CRS_X unit="DEG">-97.51068361773663</TIE_POINT_CRS_X>
        <TIE_POINT_CRS_Y unit="DEG">30.98141363769206</TIE_POINT_CRS_Y>
    </Tie_Point>
    <Tie_Point>
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        <TIE_POINT_CRS_Y unit="DEG">30.04937964001442</TIE_POINT_CRS_Y>
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    <Tie_Point>
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        <TIE_POINT_DATA_Y>5154.0</TIE_POINT_DATA_Y>
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        <TIE_POINT_CRS_Y unit="DEG">30.233452960067293</TIE_POINT_CRS_Y>
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    <Tie_Point>
        <TIE_POINT_DATA_X>11930.999999999998</TIE_POINT_DATA_X>
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        <TIE_POINT_CRS_X unit="DEG">-95.79065045117527</TIE_POINT_CRS_X>
        <TIE_POINT_CRS_Y unit="DEG">30.423520707812283</TIE_POINT_CRS_Y>
    </Tie_Point>
    <Tie_Point>
        <TIE_POINT_DATA_X>0.0</TIE_POINT_DATA_X>
        <TIE_POINT_DATA_Y>7731.0</TIE_POINT_DATA_Y>
        <TIE_POINT_CRS_X unit="DEG">-99.77255901774444</TIE_POINT_CRS_X>
        <TIE_POINT_CRS_Y unit="DEG">29.121014990107515</TIE_POINT_CRS_Y>
    </Tie_Point>
    <Tie_Point>
        <TIE_POINT_DATA_X>3977.0</TIE_POINT_DATA_X>
        <TIE_POINT_DATA_Y>7731.0</TIE_POINT_DATA_Y>
        <TIE_POINT_CRS_X unit="DEG">-98.51675287257412</TIE_POINT_CRS_X>
        <TIE_POINT_CRS_Y unit="DEG">29.30222566977647</TIE_POINT_CRS_Y>
    </Tie_Point>
    <Tie_Point>
```

```
                <TIE_POINT_DATA_X>7954.0</TIE_POINT_DATA_X>
                <TIE_POINT_DATA_Y>7731.0</TIE_POINT_DATA_Y>
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                <TIE_POINT_CRS_Y unit="DEG">29.485345633894866</TIE_POINT_CRS_Y>
            </Tie_Point>
            <Tie_Point>
                <TIE_POINT_DATA_X>11930.999999999998</TIE_POINT_DATA_X>
                <TIE_POINT_DATA_Y>7731.0</TIE_POINT_DATA_Y>
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                <TIE_POINT_CRS_Y unit="DEG">29.67484446319718</TIE_POINT_CRS_Y>
            </Tie_Point>
        </Geoposition_Points>
    </Geoposition>
    <Raster_CS>
        <RASTER_CS_TYPE>POINT</RASTER_CS_TYPE>
    </Raster_CS>
    <Dataset_Frame>
        <Vertex>
            <FRAME_X unit="DEG">-100.36121700237744</FRAME_X>
            <FRAME_Y unit="DEG">31.35796462327202</FRAME_Y>
        </Vertex>
        <Vertex>
            <FRAME_X unit="DEG">-99.77248418945639</FRAME_X>
            <FRAME_Y unit="DEG">29.120725520370257</FRAME_Y>
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        </Vertex>
        <Vertex>
            <FRAME_X unit="DEG">-96.12077738816531</FRAME_X>
            <FRAME_Y unit="DEG">31.920565627568482</FRAME_Y>
        </Vertex>
    </Dataset_Frame>
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        <DATA_TYPE>BYTE</DATA_TYPE>
        <BYTEORDER>M</BYTEORDER>
    </Raster_Encoding>
    <Data_Access>
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        <Data_File>
            <DATA_FILE_PATH href="DU000b63T_L1R.tif"/>
        </Data_File>
    </Data_Access>
    <Raster_Dimensions>
        <NCOLS>11932</NCOLS>
        <NROWS>7733</NROWS>
        <NBANDS>3</NBANDS>
    </Raster_Dimensions>
    <Image_Interpretation>
        <Spectral_Band_Info>
            <BAND_INDEX>1</BAND_INDEX>
            <BAND_DESCRIPTION>NIR</BAND_DESCRIPTION>
            <PHYSICAL_GAIN>1.0749817168185152</PHYSICAL_GAIN>
            <PHYSICAL_BIAS>13.31323795165322</PHYSICAL_BIAS>
            <PHYSICAL_UNIT>W/m2/sr/m-6</PHYSICAL_UNIT>
        </Spectral_Band_Info>
```

```
        <Spectral_Band_Info>
            <BAND_INDEX>2</BAND_INDEX>
            <BAND_DESCRIPTION>Red</BAND_DESCRIPTION>
            <PHYSICAL_GAIN>0.8908284414984867</PHYSICAL_GAIN>
            <PHYSICAL_BIAS>5.724840466729124</PHYSICAL_BIAS>
            <PHYSICAL_UNIT>W/m2/sr/m-6</PHYSICAL_UNIT>
        </Spectral_Band_Info>
        <Spectral_Band_Info>
            <BAND_INDEX>3</BAND_INDEX>
            <BAND_DESCRIPTION>Green</BAND_DESCRIPTION>
            <PHYSICAL_GAIN>1.172234734653645</PHYSICAL_GAIN>
            <PHYSICAL_BIAS>10.417201834872332</PHYSICAL_BIAS>
            <PHYSICAL_UNIT>W/m2/sr/m-6</PHYSICAL_UNIT>
        </Spectral_Band_Info>
    </Image_Interpretation>
    <Image_Display>
        <Band_Display_Order>
            <RED_CHANNEL>1</RED_CHANNEL>
            <GREEN_CHANNEL>2</GREEN_CHANNEL>
            <BLUE_CHANNEL>3</BLUE_CHANNEL>
        </Band_Display_Order>
        <Special_Value>
            <SPECIAL_VALUE_INDEX>0</SPECIAL_VALUE_INDEX>
            <SPECIAL_VALUE_TEXT>nodata</SPECIAL_VALUE_TEXT>
        </Special_Value>
        <Band_Statistics>
            <BAND_INDEX>1</BAND_INDEX>
            <STX_LIN_MIN>-32.36799891064808</STX_LIN_MIN>
            <STX_LIN_MAX>254.185048069092</STX_LIN_MAX>
            <STX_STDV>57.31060939594801</STX_STDV>
            <STX_MEAN>110.90852457922196</STX_MEAN>
            <STX_MIN>10.0</STX_MIN>
            <STX_MAX>243.0</STX_MAX>
        </Band_Statistics>
        <Band_Statistics>
            <BAND_INDEX>2</BAND_INDEX>
            <STX_LIN_MIN>-75.53120332858349</STX_LIN_MIN>
            <STX_LIN_MAX>255.0</STX_LIN_MAX>
            <STX_STDV>72.20814583034952</STX_STDV>
            <STX_MEAN>104.98916124729031</STX_MEAN>
            <STX_MIN>12.0</STX_MIN>
            <STX_MAX>228.0</STX_MAX>
        </Band_Statistics>
        <Band_Statistics>
            <BAND_INDEX>3</BAND_INDEX>
            <STX_LIN_MIN>-58.367896778413666</STX_LIN_MIN>
            <STX_LIN_MAX>255.0</STX_LIN_MAX>
            <STX_STDV>75.99178728851398</STX_STDV>
            <STX_MEAN>131.61157144287128</STX_MEAN>
            <STX_MIN>2.0</STX_MIN>
            <STX_MAX>245.0</STX_MAX>
        </Band_Statistics>
    </Image_Display>
    <Dataset_Sources>
        <Source_Information>
            <SOURCE_ID>DU000b63T</SOURCE_ID>
            <Coordinate_Reference_System>
                <GEO_TABLES>EPSG</GEO_TABLES>
```

```
                <Horizontal_CS>
                    <HORIZONTAL_CS_CODE>EPSG:4326</HORIZONTAL_CS_CODE>
                    <HORIZONTAL_CS_TYPE>GEOGRAPHIC</HORIZONTAL_CS_TYPE>
                    <HORIZONTAL_CS_NAME>WGS 84</HORIZONTAL_CS_NAME>
                </Horizontal_CS>
            </Coordinate_Reference_System>
            <Source_Frame>
                <Vertex>
                    <FRAME_LON unit="DEG">-96.12077740664937</FRAME_LON>
                    <FRAME_LAT unit="DEG">31.920565629599768</FRAME_LAT>
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                </Vertex>
                <Vertex>
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                </Vertex>
                <Vertex>
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                    <FRAME_LAT unit="DEG">31.449295800260668</FRAME_LAT>
                </Vertex>
            </Source_Frame>
            <Scene_Source>
                <MISSION>UK-DMC</MISSION>
                <INSTRUMENT>SLIM-6</INSTRUMENT>
                <IMAGING_DATE>2007-07-30</IMAGING_DATE>
                <IMAGING_TIME>16:14:39</IMAGING_TIME>
                <VIEWING_ANGLE unit="DEG">1.70751061117751</VIEWING_ANGLE>
                <SUN_AZIMUTH unit="DEG">101.74181569705586</SUN_AZIMUTH>
                <SUN_ELEVATION unit="DEG">55.227078071950686</SUN_ELEVATION>
            </Scene_Source>
        </Source_Information>
    </Dataset_Sources>
</Dimap_Document>
```

DIMAP SAMPLE – L1T PRODUCT


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<?xml version="1.0" encoding="ISO-8859-1"?>
<?xml-stylesheet type="text/xsl" href="DU000b63T_L1T.xsl"?>
<Dimap_Document xmlns:dim="http://www.spotimage.fr/Dimap"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
    <Metadata_Id>
        <METADATA_FORMAT version="1.1">DIMAP</METADATA_FORMAT>
    </Metadata_Id>
    <Dataset_Id>
        <DATASET_NAME>DU000b63T_L1T</DATASET_NAME>
        <COPYRIGHT>DMC International Imaging Ltd.</COPYRIGHT>
        <DATASET_QL_PATH href="DU000b63T_L1T_ql.jpg"/>
    </Dataset_Id>
    <Production>
        <DATASET_PRODUCER_NAME>DMC International Imaging
Ltd.</DATASET_PRODUCER_NAME>
        <DATASET_PRODUCER_URL href="http://www.dmcii.com"/>
        <DATASET_PRODUCTION_DATE>2007-09-20</DATASET_PRODUCTION_DATE>
        <PRODUCT_TYPE/>
        <JOB_ID/>
    </Production>
    <Quality_Assessment>
        <QUALITY_TABLES version="1.0">SPACEMETRIC</QUALITY_TABLES>
        <Quality_Parameter>
            <QUALITY_PARAMETER_DESC>Number of control
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