

Bringing service to life



EO Data Portal Case Studies

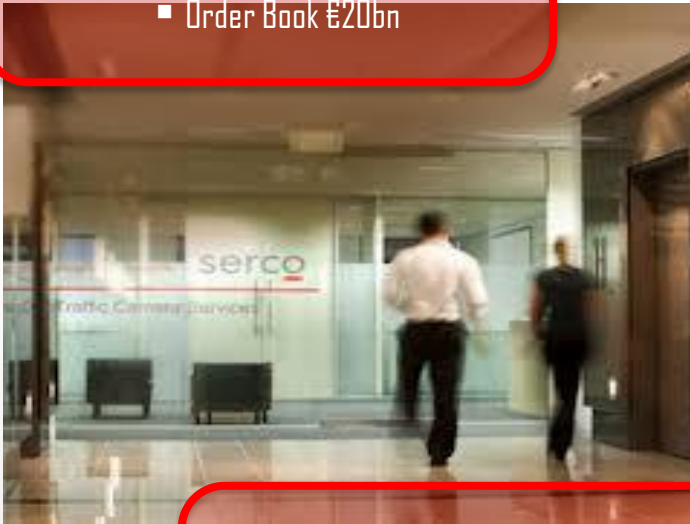
Serco

Richard Campbell rich.campbell@serco.com

Copernicus Climate Data Store Workshop 3 – 6 March 2015

Delivering Essential Services Worldwide

- Sales €6bn
- Profit €300m
- Order Book €20bn



- Over 140,000 employees
 - 50 countries
 - 700 contracts

Europe
60%



Africa, Middle East & Asia
18%

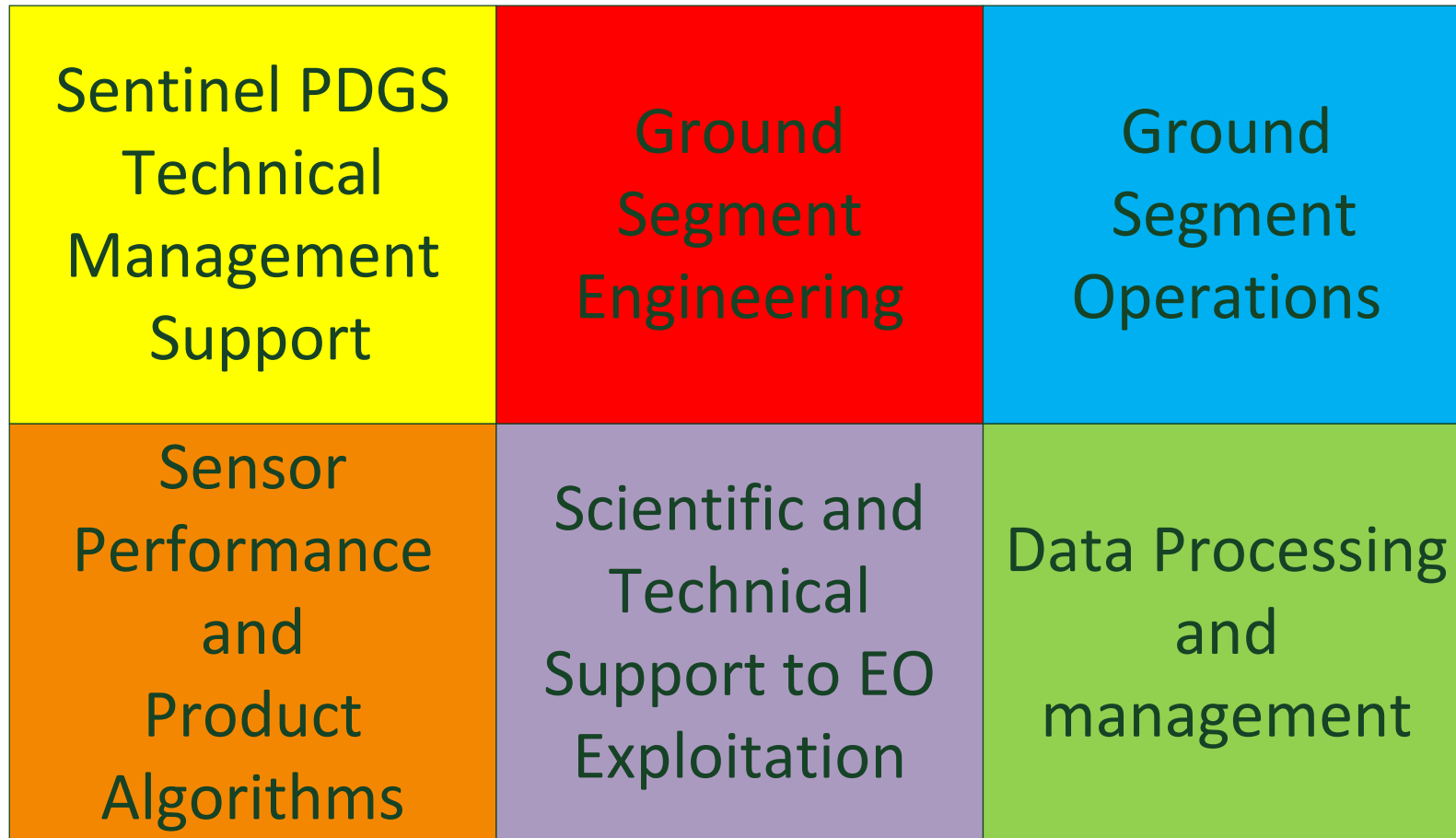


The Americas
22%



- 420 Space staff in UK
- 370 Space staff in Europe
- 500 Space staff in US

EO Capability



Sentinel-1 Scientific Data Hub



sentinel-1

→ RADAR VISION FOR COPERNICUS

Mission Status Report 43

Reference Period: 17 February 2015 – 23 February 2015

Mission status

- The Sentinel-1A operational qualification phase is on-going. The first yearly Routine Operations Review is planned end May 2015
- The opening of the Sentinel-1 data flow to all users took place on 3rd October. Data can be accessed from: <https://sentinel.esa.int>
- The implementation of the ramp-up observation scenario is on-going, including in particular the coverage of a first set of Copernicus Services areas of interest, of European land and coastal waters, of a set of global tectonic/volcanic areas, as well as of other specific targets worldwide for various applications. The observation plan is gradually complemented with observations outside the above areas to achieve a full mapping of all land areas worldwide before the end of the ramp-up phase. See an overview at: <https://sentinel.esa.int/web/sentinel/missions/sentinel-1/observation-scenario>
- The use of Sentinel-1A data by the pre-operational precursor of the Copernicus Marine Environment Monitoring Service MyOcean for sea-ice and iceberg monitoring activities is on-going

Specific actions have been taken to support two activations from the International Charter Space and Major Disasters for floods in Australia following Cyclones Marcia and Lam

- The Sentinel-1A spacecraft is in a stable state, operating in Nominal Mission Mode (NMM), with all sub-systems working on prime units
- An unplanned unavailability of the satellite occurred on 19 February at 13:29 UTC. Nominal satellite operations were resumed on 20 February at 09:22 UTC
- The Flight Operations Segment (FOS) ensuring the monitoring, control and commanding of the satellite is operating nominally. Orbit control manoeuvres are performed once a week
- X-Band data acquisitions are routinely performed over Matera, Svalbard and Maspalomas X-band core stations
- The acquired data are circulated within the PDGS, systematically processed to Level-0 and Level-1 products and archived. Level-2 operations qualification has started and Sentinel-1 operational products qualification is being pursued as planned
- Operations are performed regularly at the DLR Processing and Archiving Centres (PAC) and at the UK PAC. All other PDGS operational services (i.e. Mission Performance, Precise Orbit Determination, Wide Area Network) are operating nominally
- The distribution of generated SAR SM, IW and EW L0 & L1 user products is on-going. The regular products flow is available for download by any user. With the automatic query and download capability offered to users, the number of search and download has drastically increased, occasionally affecting the data access operations. Few actions have been identified to further protect the service and ensure reliable performances. Implementation of these actions may lead to few limited interruptions of the service in the coming days (see <https://sci-hub.esa.int/wiki/doi/view/SciHubNews/News00015>).

By 19 February:

- a total of 5284 users have self-registered
- Since the opening of the regular data flow on 3 October:
 - about 47000 products currently available on-line for download
 - 316104 product download have been made by users, corresponding to about 430 TB of data

- 10 5000+ users
- 10 Rolling Archive ~40000 products
- 10 400+ TB of data downloaded by the users
- 10 Maximum of 2 concurrent downloads per user

Ref: <https://sentinel.esa.int/web/sentinel/missions/sentinel-1/mission-status>



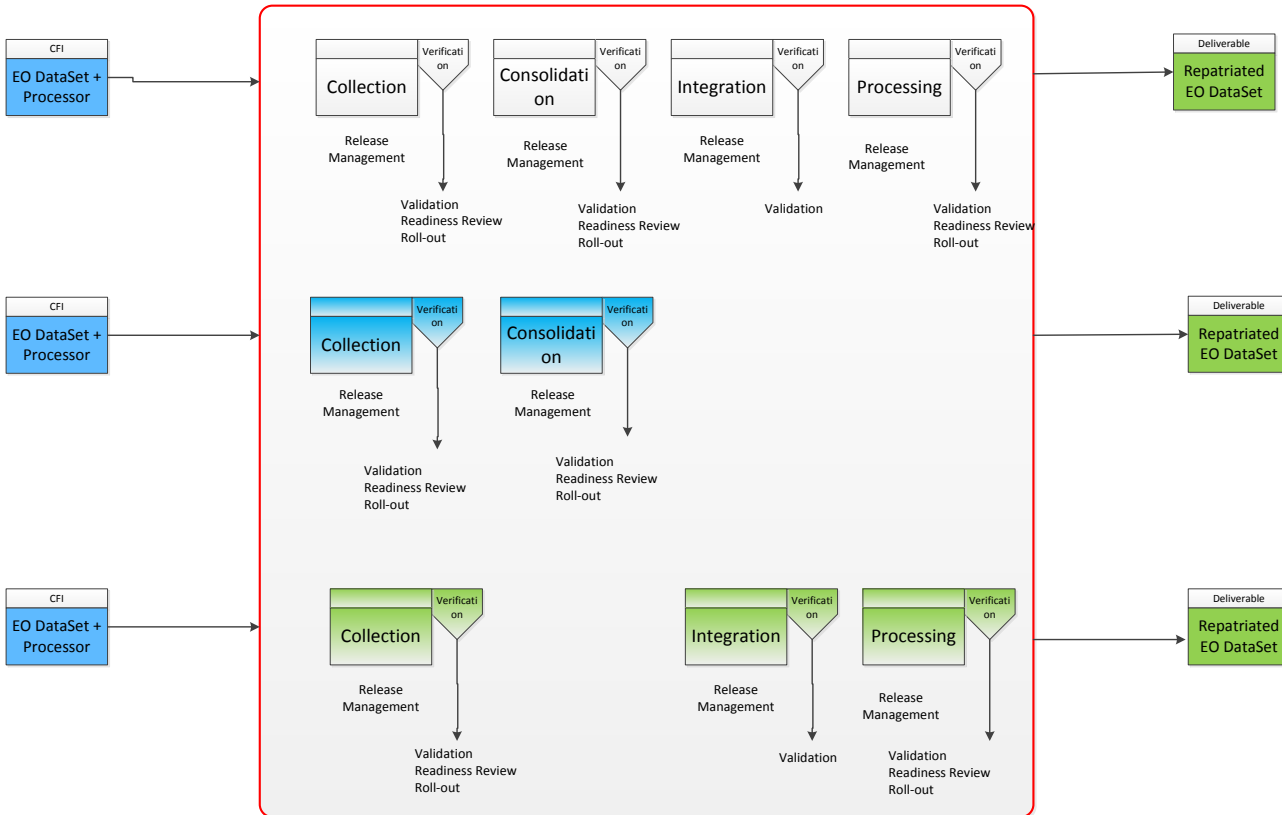
DHuS Core Main Features

- ⑩ **Online Access to EO Satellites products**
- ⑩ **Optimised and Scalable architecture for Big EO Data management and bulk dissemination**
 - Optimised DB design and access to data
 - Optimised for managing a huge number of concurrent users requests
- ⑩ **User Management supporting different scenarios:**
 - Open and Free access via self registration
 - Restricted access
 - Users Quota Management (e.g. maximum number of concurrent downloads per user)
- ⑩ **Datasets Access Management**
 - Public collections management
 - Restricted collection management
- ⑩ **EO Products Search, Preview, Inspection and Download**
- ⑩ **Intuitive Web and Scripting Interface for bulk download via http open data (Odata) protocol**
- ⑩ **Customisable Statistics and reporting modules**

EO Portal Studies - Data Service Initiative – Data Management

Data Service Initiative in one Slide – the need for data management

DSI Service

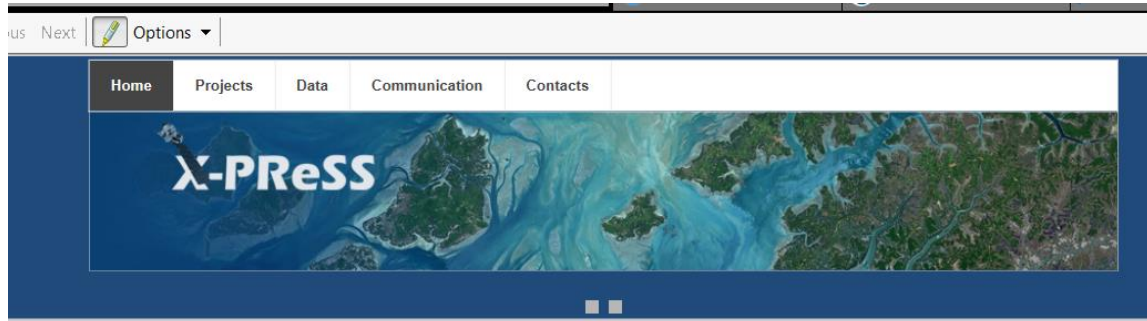


Data Management Requirements

- ✓ Maintain configuration information on CIs at product level
- ✓ Concurrent project capability
- ✓ Visibility of projects at all stages
- ✓ Mechanisms to manage change to data
- ✓ Traceability and history of all activities
- ✓ Ability to distinguish between different product groups of the same type (i.e. Master data set)
- ✓ Manage assets associated with the project

- -> ESA contributes process and product requirements not solutions / technical CFIs
- -> Serco as Prime has the full technical responsibility
- -> financial aspects managed through a cost model for costing of new projects based on already settled parameters
- -> overall competence includes IT skills, EO data management skills, service management skills

Project reporting and Monitoring



About the X-PreSS website

This is the web portal for the DSI (Data Service Initiative), which is a strategic service-oriented approach to provide reprocessed and bulk-processed data to help meet the increas

[Read more](#)

DSI website migration 15.1.2015

The X-PreSS Web Site <http://xpress-serco.eu/> has been migrated to a new Site <http://xpress.sp.serco.eu>, in order to imp

Category: [News](#)

[Read more](#)

Projects Status

Project	Collection	Consolidation	Integration	Processing	Repatriation
Landsat MSS AUX SV generation for gap filling	N/A	N/A	80%	0%	N/A
ASAR Wave mode new improvement loop	0%	0%	N/A	N/A	0%
ERS EGH Master Dataset Generation	100%	0%	N/A	N/A	0%
ERS PRARE Master Dataset Generation	0%	0%	N/A	N/A	0%
ERS ATSR Master Dataset Generation	0%	0%	N/A	N/A	0%
ERS-2 GOME Master Dataset Generation	100%	0%	N/A	N/A	0%
ERS Altimeter Consolidated Archive	100%	0%	N/A	N/A	0%

User login

Username *

Password *

[Request new password](#)

Search

You are not logged in!

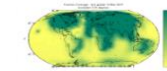
- [Site Map](#)
- [Service Management](#)



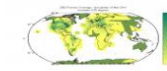
Spatial Coverage

Created By xpress On Monday, 9 February 2015

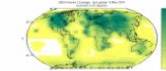
Page:



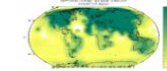
dmap



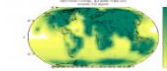
dmap2002



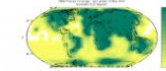
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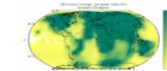
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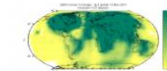
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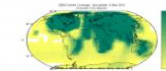
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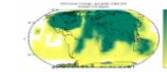
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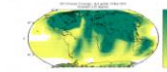
dmap2008



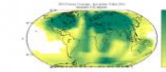
dmap2009



dmap2010



dmap2011



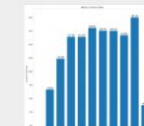
dmap2012

- [My account](#)
- [Log out](#)

Project Plan Schedule



Repatriation



Data Configuration and Change Management Requirements

■ Broad requirements fall largely into 2 categories

- Answer operational questions
 - ▶ Which dataset has been used in the last reprocessing campaign for a specific mission/instrument?
 - ▶ Which IPF has been used to generate this set of data? Which characteristics? Which auxiliary? What documents are related to?....
 - ▶ How many failures have been encountered during last reprocessing campaign?
- Support managerial decision making
 - ▶ How many entities/users requested a dataset?
 - ▶ does it warrant a project ?
 - ▶ What type of data is most in demand by the community ?
 - ▶ Which is the best dataset to use for further investigation/ science activities?

Operational decision Support

Auxiliary File

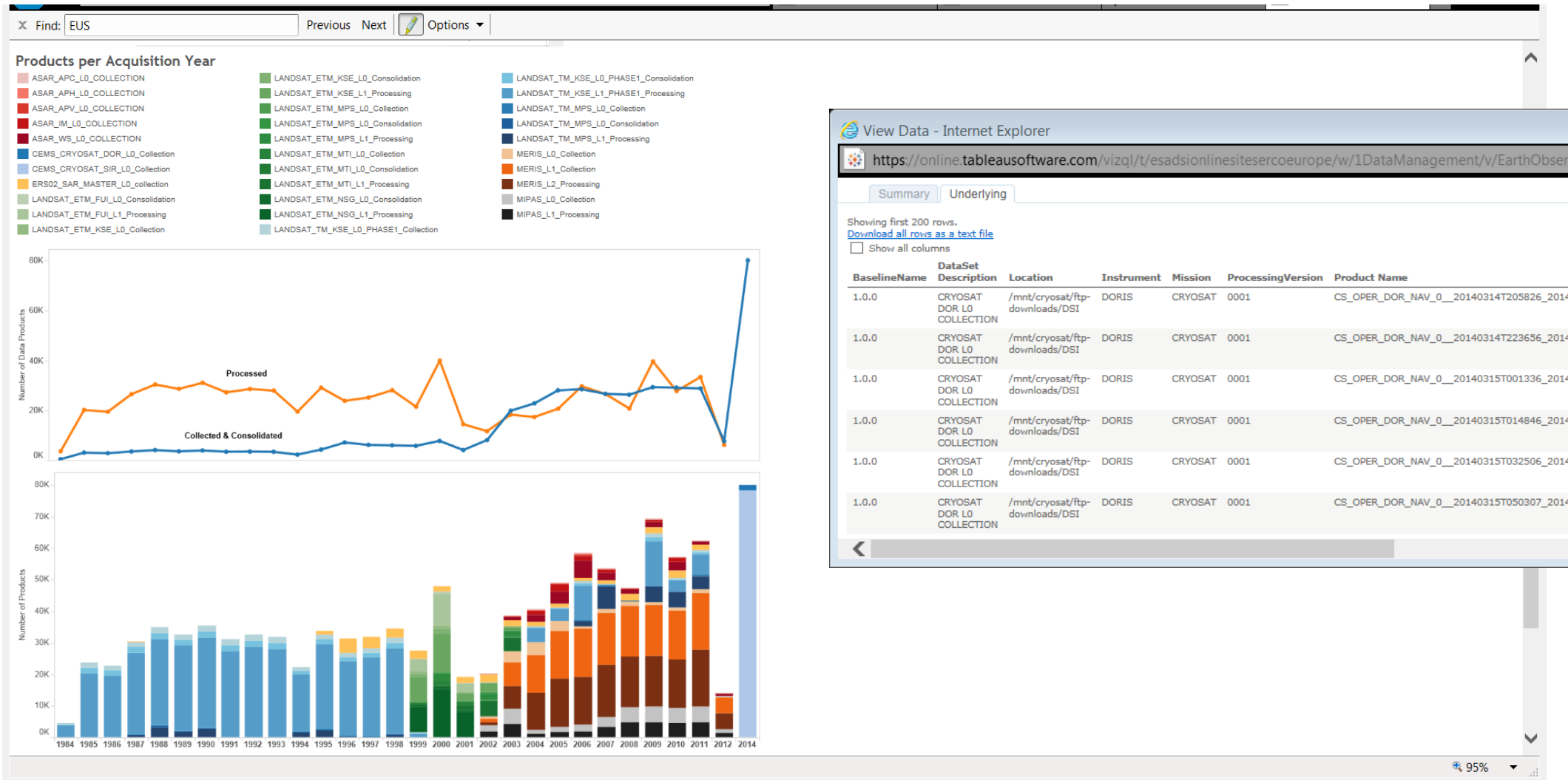
DOR_VOR_AXVF-P2012

DOR_VOR_AXVF-P20120222_161200_20120124_215526_20120126_002326

Auxiliary Files

Aux Dataset	Auxiliary File	Product Name	Total
MERIS L1 COLLECTION	DOR_VOR_AXVF-P20120222_161200_20120124_215526_20120126_002326	MER_FRS_1PPEPA20120125_012024_000002503111_00060_51798_6963.N1	1
		MER_FRS_1PPEPA20120125_015121_000000143111_00060_51798_6964.N1	1
		MER_FRS_1PPEPA20120125_015338_000000193111_00060_51798_6965.N1	1
		MER_FRS_1PPEPA20120125_025158_000001853111_00061_51799_6966.N1	1
		MER_FRS_1PPEPA20120125_025456_000005123111_00061_51799_6967.N1	1
		MER_FRS_1PPEPA20120125_030325_000005123111_00061_51799_6968.N1	1
		MER_FRS_1PPEPA20120125_031155_000002843111_00061_51799_6969.N1	1
		MER_FRS_1PPEPA20120125_031812_000000193111_00061_51799_6970.N1	1
		MER_FRS_1PPEPA20120125_043154_000005123111_00062_51800_6971.N1	1
		MER_FRS_1PPEPA20120125_044023_000005123111_00062_51800_6972.N1	1
		MER_FRS_1PPEPA20120125_044854_000001293111_00062_51800_6973.N1	1
		MER_FRS_1PPEPA20120125_061208_000005123111_00063_51801_6974.N1	1

Data Management - presentation layer



DSI - Data Information System – Serco's Solution

- Integrated to support data Configuration as well as data change management

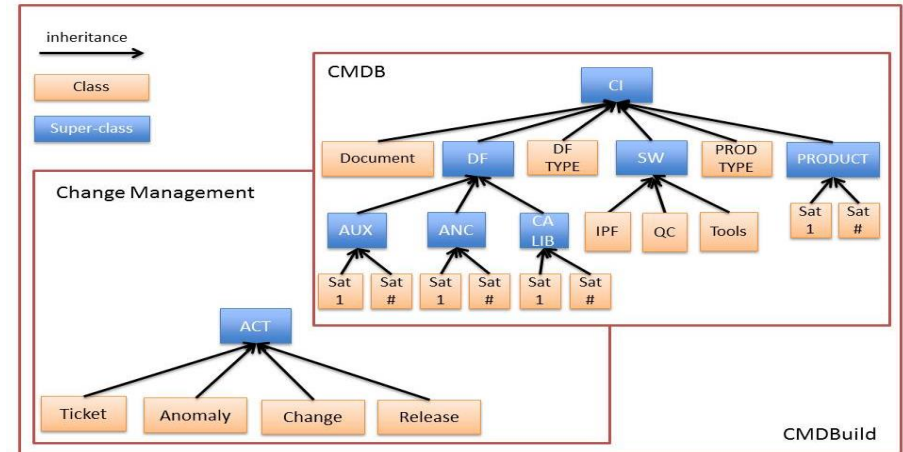
- Data Model based on

- Data Items

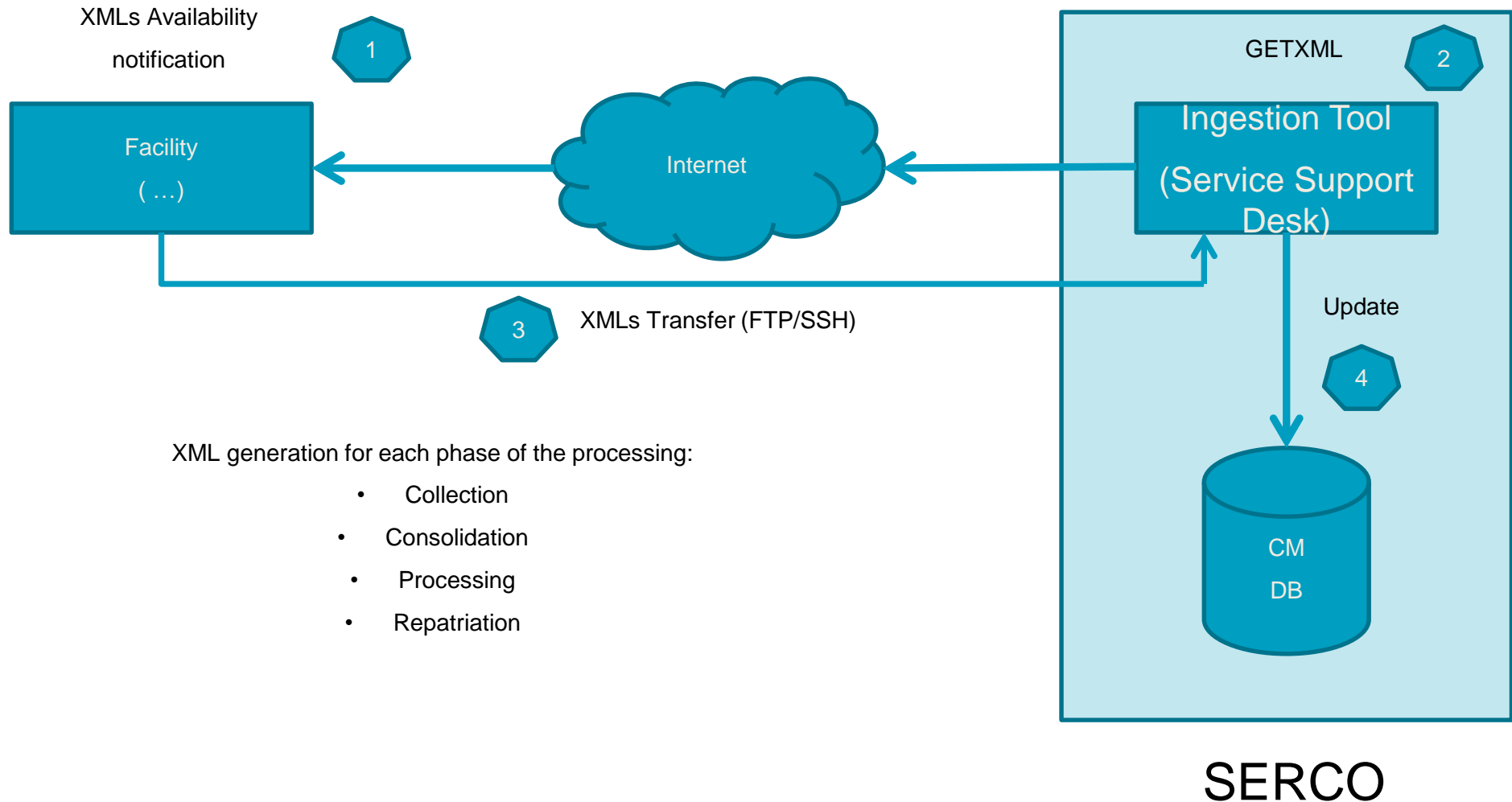
- Dataset
- Product
- File
- Transformation
- Change Request
- Processor/tool
- Input Data

- Attributes

- Mission/Instruments/Temporal and Geographical coverage
- Quality
- Origin
- Product Dependency
- Other (e.g. volume, cloud cover...)



Population of DSI Data Information System



EO Portal Studies – Conclusions

Lessons learnt

- **The information retained is only as good as the underlying data model**
- **Attention needs to be given to making the relevant data available to users in their required format**
- **Ingestion – still needs specific verification and adaption**
- **The system requires Clarity and definition of interfaces, processes and workflows**

Benefits and Value of this approach

⑩ Control of key asset and their attributes : Datasets

- Better data management and control
- Better identified / higher quality inputs to scientific activities
 - ▶ Allows data to be archived in an known state
- more intensive use of the data
- Facilitates simulation and multi-version dataset management

⑩ Ease of which data can be amended

- Areas for change are easily identified and ring-fenced
- Creation of logical datasets i.e. for Geography or sensor characteristic etc.

Questions ? (and Answers)

Thanks for you attention

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