WP10 – Virtual Research Environment Progress – SDC plenary

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Outline

- Background: VRE in SeaDataCloud

- Approach and current status

- Workplan how to proceed

SeaDataClouds VRE needs to:

- facilitate collaborative and individual research: Using, handling, analysing and processing ocean and marine data into value-added data products which can be integrated, visualised and published using high level visualisation services.

- combine data with subsets from other data resources, such as the ingested collections

- Have a high capacity and performance for big data processing and state-of-the-art web visualisation services

- <..>

- Respect privacy of users and differences in data policies. Differentiated users, different access to data and data products.

- Be possible to configure virtual work spaces for individuals or groups to work on specific projects, including setting up of dedicated pools of data

- Allow producers to decide whether their outcomes will be shared in the public domain or stay private

- Be based and hosted on EUDAT's infrastructure based on it B2-… service platforms

This is an ambitious challenge

- High ambitions, many expectations now and near future

- It needs a solid architecture, ready to be expanded over time

- But: The EUDAT platform is strong and already partly operational

- And: We can learn from existing architectures from other projects

2. Approach for VRE and architecture specification

As in latest version D10.1 specs document

- Background, expectation from DOW

- Analysis of existing VRE's

- SeaDataCloud use cases

- Requirements from use cases and beyond
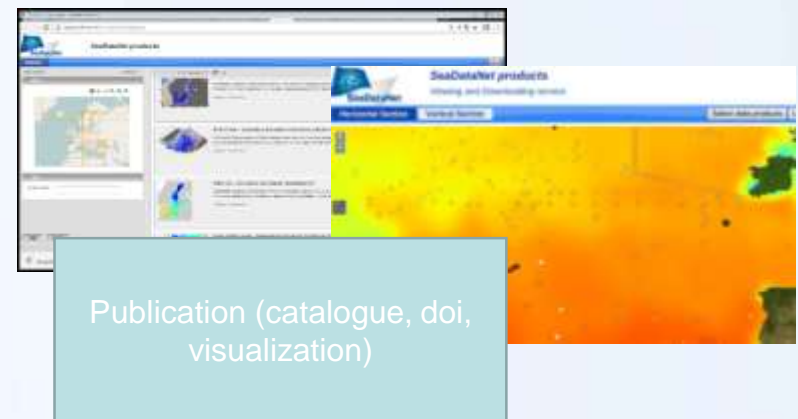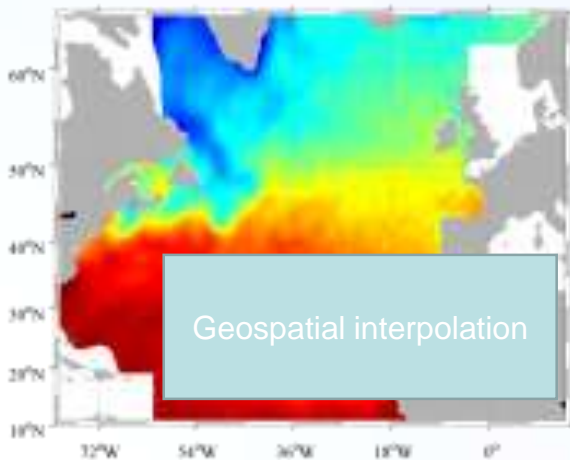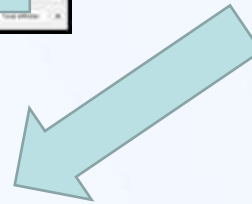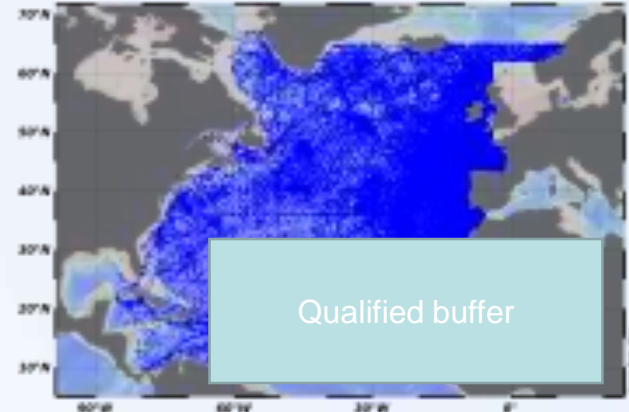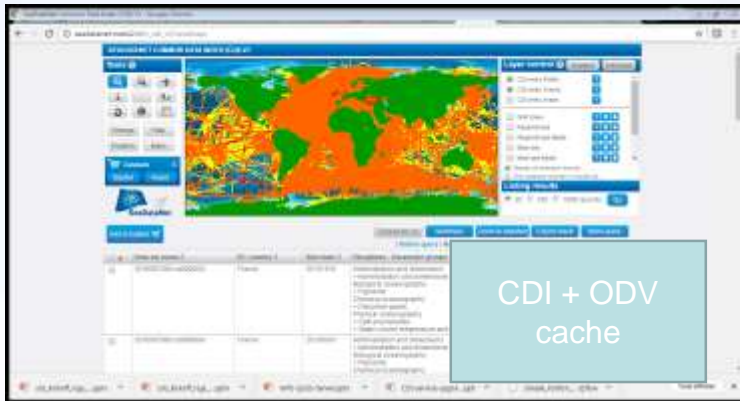
- Architecture

- Development plan

Conclusions of analysis other VRE's

- Mostly the same expectations with respect to community building, data sharing, processing and analysis tools

- Authorisation/Authentication layer both in portal layer as well as on top of service layer

- API's for each (processing) service

- Communication and (meta)data standards are key to success

- Front end applications are various: From self created workflows, to VRE virtual labs, to dedicated user interfaces. But all run on same set of services and data.

- We need to distinguish well between typical VRE modules (communication, GUI, etc) and the fundamental architecture

A flexible framework for versatile use cases

- **SeaDataNet**, T/S qualification and optimal interpolation, biology statistical control
- **EMODNET-Chemistry**, same for bio-geo-chemistry
- **EMODNET-Bathymetry**, DTM processing
- **EMODNET-Ingestion**, convert files
- **Marinet2**, Marine Renewable Energies prototype test analysis
- And much more, Research is innovation…

First use case: SeaDataCloud T/S products

CDI + ODV cache

Qualified buffer

Geospatial interpolation

Publication (catalogue, doi, visualization)

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# First functions targeted (abstract of total use case!)

log in with single sign on	B2ACCESS + Marine-ID
integration GUI development	Javascript library
apply water column obs quality control with friendly data editor and save result,	webODV
advise data centre of the regional quality control	
be advised of quality control result (email of log of changes/anomalies sorted per DC)	email
configure DIVA interpolation	Jupyter + DIVA library
apply DIVA interpolation, send notification (email) when processing is completed	
visualize interpolation result together with original observations of other observations	
extract and view profiles, time series, hovmuller out of the interpolation result	
publish dataset results (metadata and data), get a DOI	oceanBrowser+oceanotron+sextant-dataCite

Requirements

- Functional requirements: To be extracted from the use cases

- Non functional requirements: To be extracted from users (performance, layout etc), and other stakeholders

=> To be done soon! (and checked against first ideas of Architecture)

SDC VRE Architecture on top of EUDATs infrastructure (latest draft)

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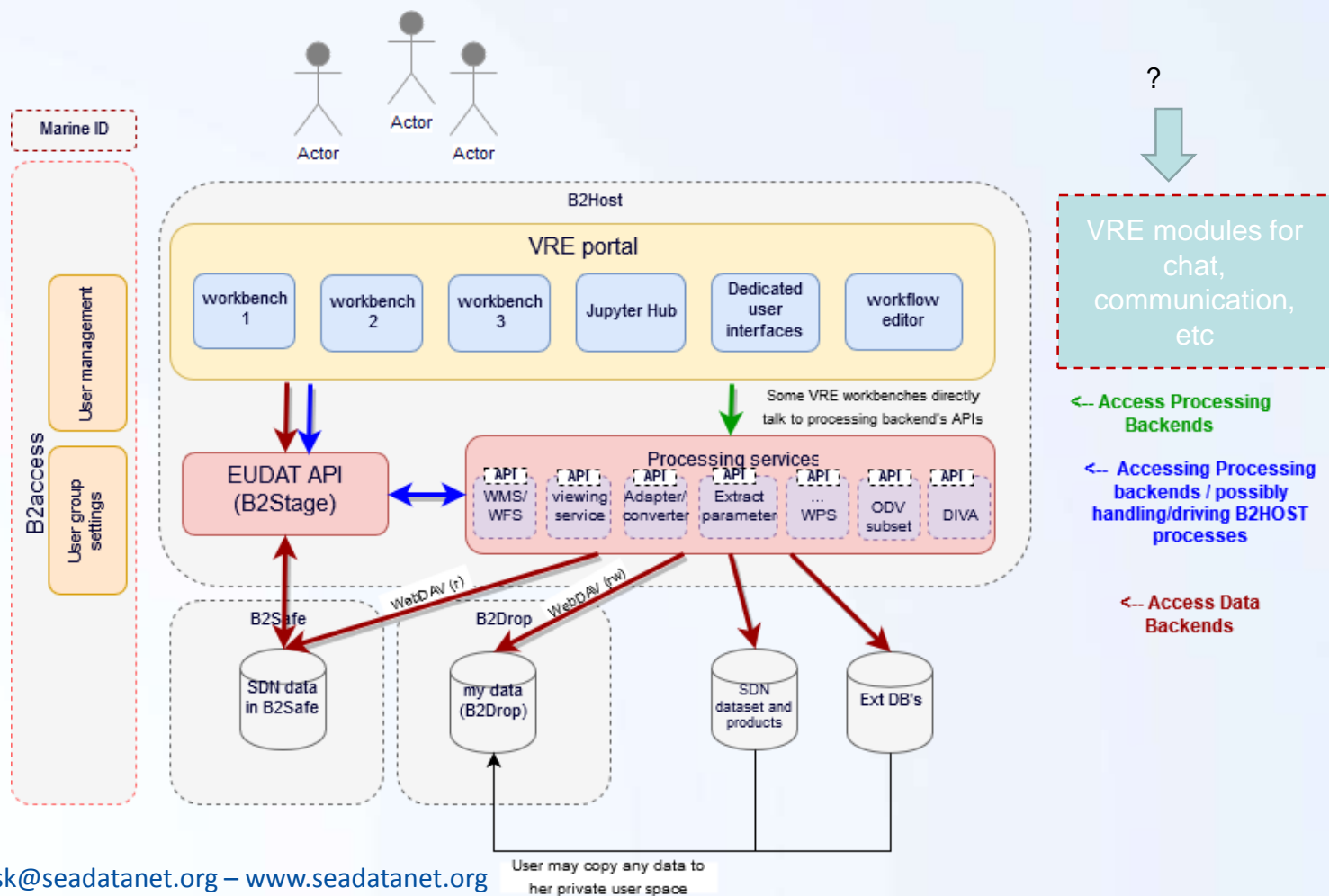
Ideas for technical solutions

- Authentication: Oauth2 protocol (B2ACCESS + Marine-ID)

- Integrated menu: Application in php + Javascript library

- Private file system, sharing: B2DROP (Owncloud/NextCloud)

- Write, execute code: Jupyter notebook

- Predefined processing: OGC/WPS

- Workbenches, ie applications fit for a specific purpose: web applications deployed with VM or docker, e.g. webODV

- Reference datasets

- Communication (chat, forum…)

=> Separate fundamental components, from dedicated VRE applications

Workplan how to proceed

- D10.1 release
  - Deadline M12 => M14
  - Finalise requirements, architecture, and
- Work on development plan:
  - Start small but having the end goal in sight
  - Work in several development runs ending in a code sprint
- Start as soon as possible after M14 with first development cycle.

End..