

Exploiting Oceans of Data for Maritime Applications



BIG DATA OCEAN

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Project Director

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<http://www.bigdataocean.eu/>

BigDataOcean Factsheet

BigDataOcean Exploiting Oceans of Data for Maritime Applications

Project Number

732310

Starting Date

01/01/2017

Project Duration

30 months

Call (part) Identifier

H2020-ICT-2016-1

Topic

ICT-14-2016-2017 Big Data PPP: cross-sectorial and cross-lingual data integration and experimentation

BigDataOcean Consortium

Pilot



MarineTraffic



universität bonn

Semantics

Coordination & Development



dss lab
Decision Support Systems Laboratory
NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Pilot



FOINIKAS SHIPPING COMPANY

Pilot



hcmr
ΕΛΚΕΘΕ

Pilot



R&D NESTER

Exploitation



I S M B
Istituto Superiore Mario Boella



ANEK

Pilot



UNINOVA

Requirements



UBITECH
ubiquitous solutions

Development

BigDataOcean Challenges

- Undeveloped Blue Data sharing and linking between enterprises and entities of the maritime domain and other domains
- Lack of agreed standards and formats
- Huge potential from cross-sectorial and cross-domain blue data applications – still unexploited
- Lack of out-of-the-box Big Data services, advanced queries and analytics

There is a need to build an open ecosystem of innovation and Maritime data sharing principles

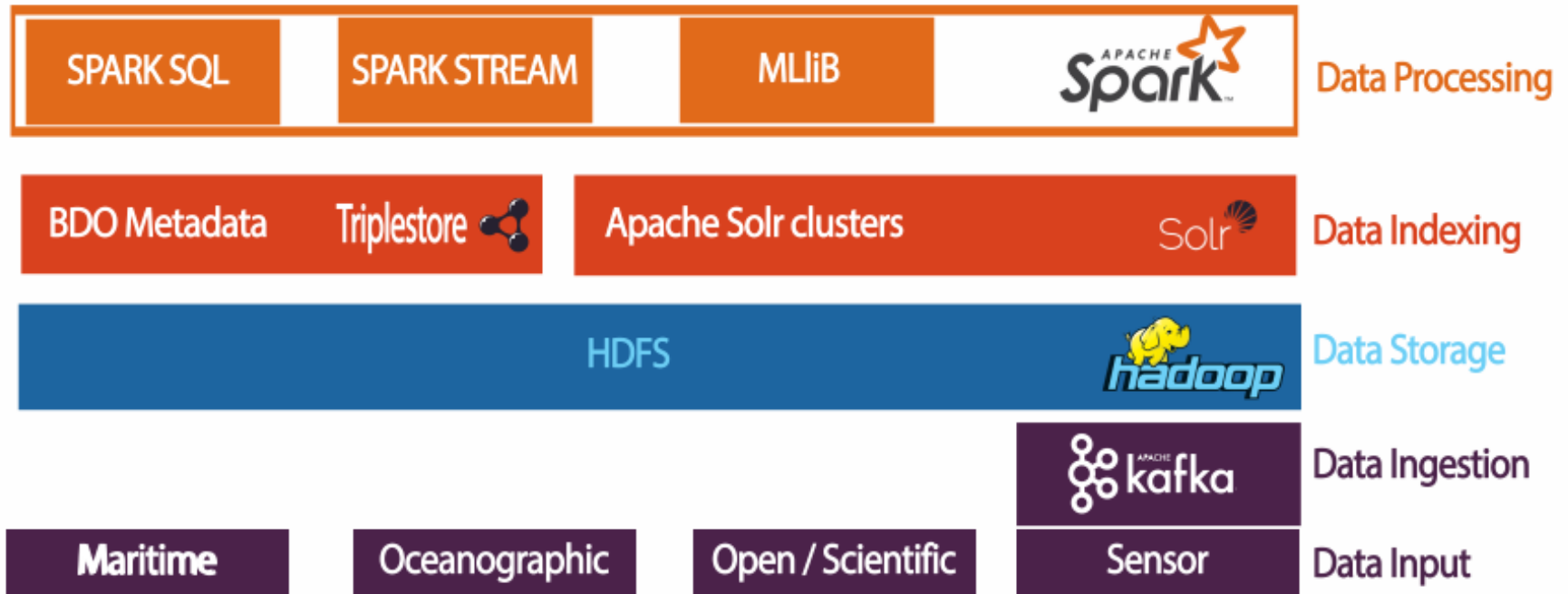
BigDataOcean Objective

Develop a Maritime Big Data Solution

that delivers out-of-the-box, value-added analytic services for maritime applications

by exploiting cross-sector data streams

BigDataOcean Architecture



BigDataOcean Services



Find Maritime Data & Services



Create (real-time)
dashboards / Reports



Query / Interlink Datasets



Service Composition



Visualise Datasets



Templated Service
Parameterisation



Analyse Datasets



On - demand Services

Case 1 - Fault Prediction & Proactive Maintenance

FOINIKAS SHIPPING
COMPANYNE



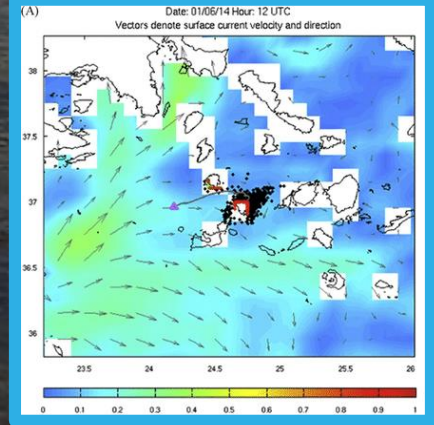
**ANEK LINES**



Expected Benefits

- Shipping companies
 - Data use and exploitation
 - Minimum repairs and maintenance
 - Maximum vessels' use and financial benefit
 - Reliability and innovation
- Indirect positive environmental impact
 - Less resources/ machinery stock needed for unplanned maintenance
 - Reduction of pollution risk in marine environment
- Potential commercialisation of enriched data and prediction model in more ship types and other industries

Case 2 – Mare protection – Oil Spill dispersion forecast



Expected Benefits

- Extended knowledge, models and enriched datasets
- Improved / new products addressed to environment protection organisations and maritime authorities for rapid intervention against oil spills in the sea
- Control and limit impact and damage on the coast and on essential resources and structures.
- Efficiency in the protection of the marine environment and of the marine life.

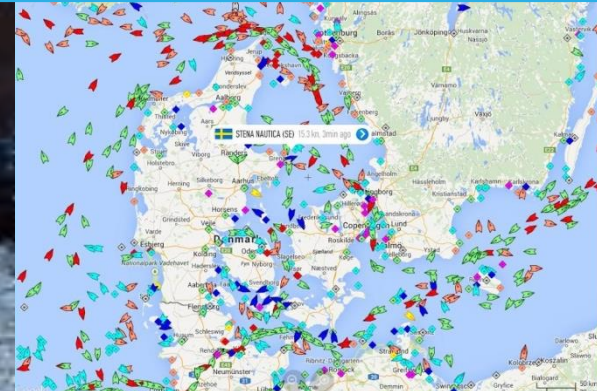
Case 3 – Wave Power as Clean Energy Source



Expected Benefits

- Wave Energy becomes more predictable and reliable (compared e.g. to wind and solar)
- Data integration from multiple sources
- Increase data capacity accessed
- Calculate more efficiently the potential for wave power production
- Assess environmental impact of wave power plants
- Assess equipment impact reports on the effects of the ocean on the wave power equipment, which can define the success of any wave power plant project

Case 4 – Security and anomaly path detection



Expected Benefits

- Effectively handle the information volume from tracking technologies
- perform automated analysis
- identify patterns
- proactively minimise the impact of possible threats
- impact on global safety, economic activity or the environment

BigDataOcean contribution to EC Infrastructures (EOSC, Copernicus, DIAS) (1/2)

- BigDataOcean Use Cases and their underlying algorithms
- Network of stakeholders including national data infrastructures
- BigDataOcean approach to different schemas / metadata
- Ontology - Schema / Vocabularies / Semantic enrichment framework
 - superset of NetCDF - NetCDF CF Metadata Conventions
- Data Provision of open BigDataOcean data (original as well as semantically enriched datasets)

BigDataOcean contribution to EC Infrastructures (EOSC, Copernicus, DIAS) (2/2)

- BigDataOcean architecture (storage + processing) / Lessons learned on:
 - Scalability / Performance
 - Security
 - Maintenance / extensibility
- BigDataOcean Service provision workflow
- Querying (especially interlinking) and Visualization workflow
- Open-source Components developed: BigDataOcean core infrastructure, Query Builder, Analytics, On-demand Services, Service Composition

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for Maritime Applications



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