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Data management - Perspectives from the Dutch Dredging industry

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Building with Nature - Management Team Member EcoShape

Topsector Water - Secretary Topteam Water

MODEG Meeting, 01 october 2014

Dredging and Marine Contractors

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Orientation on Darwin, Australia – the Ichthys project

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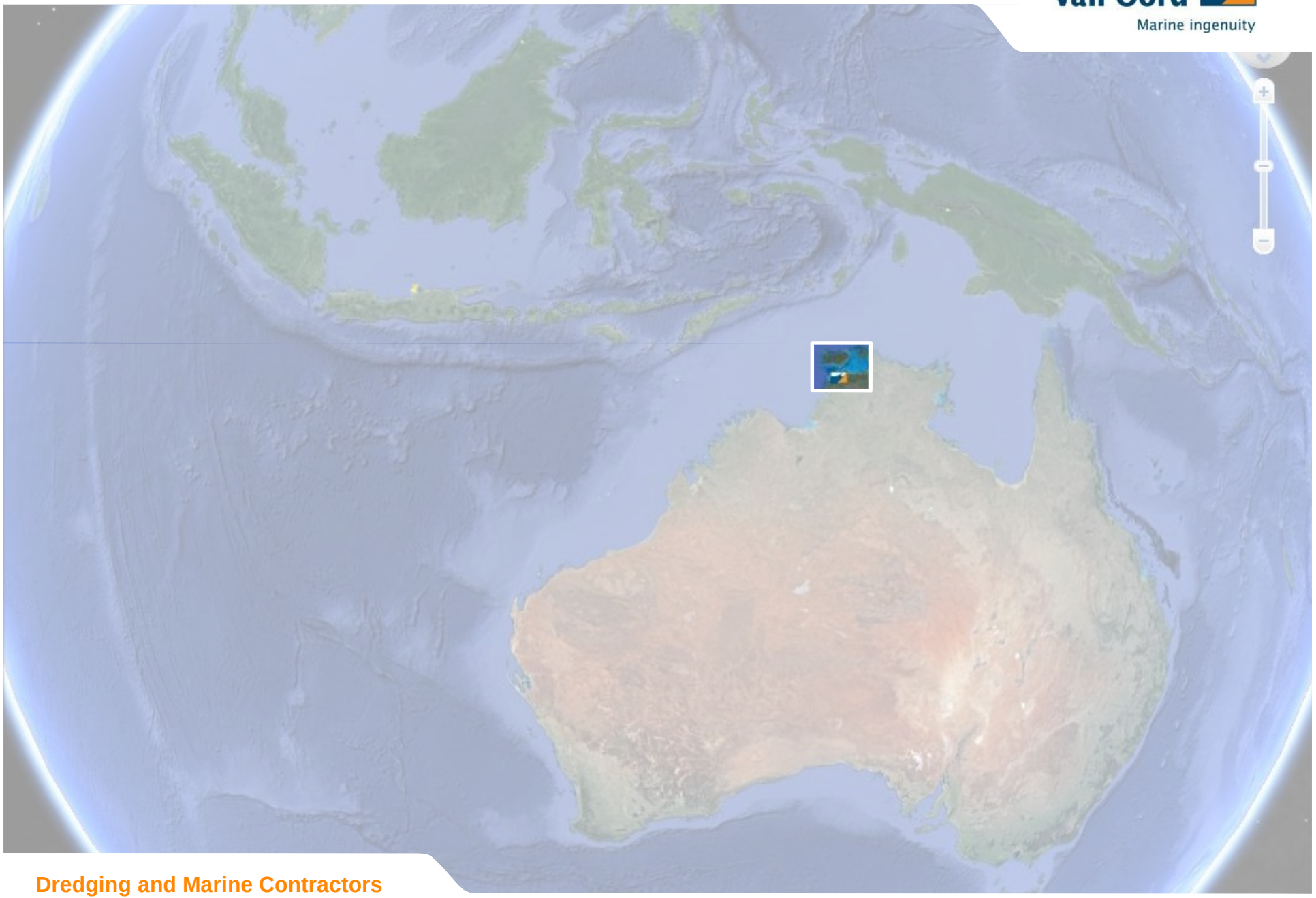

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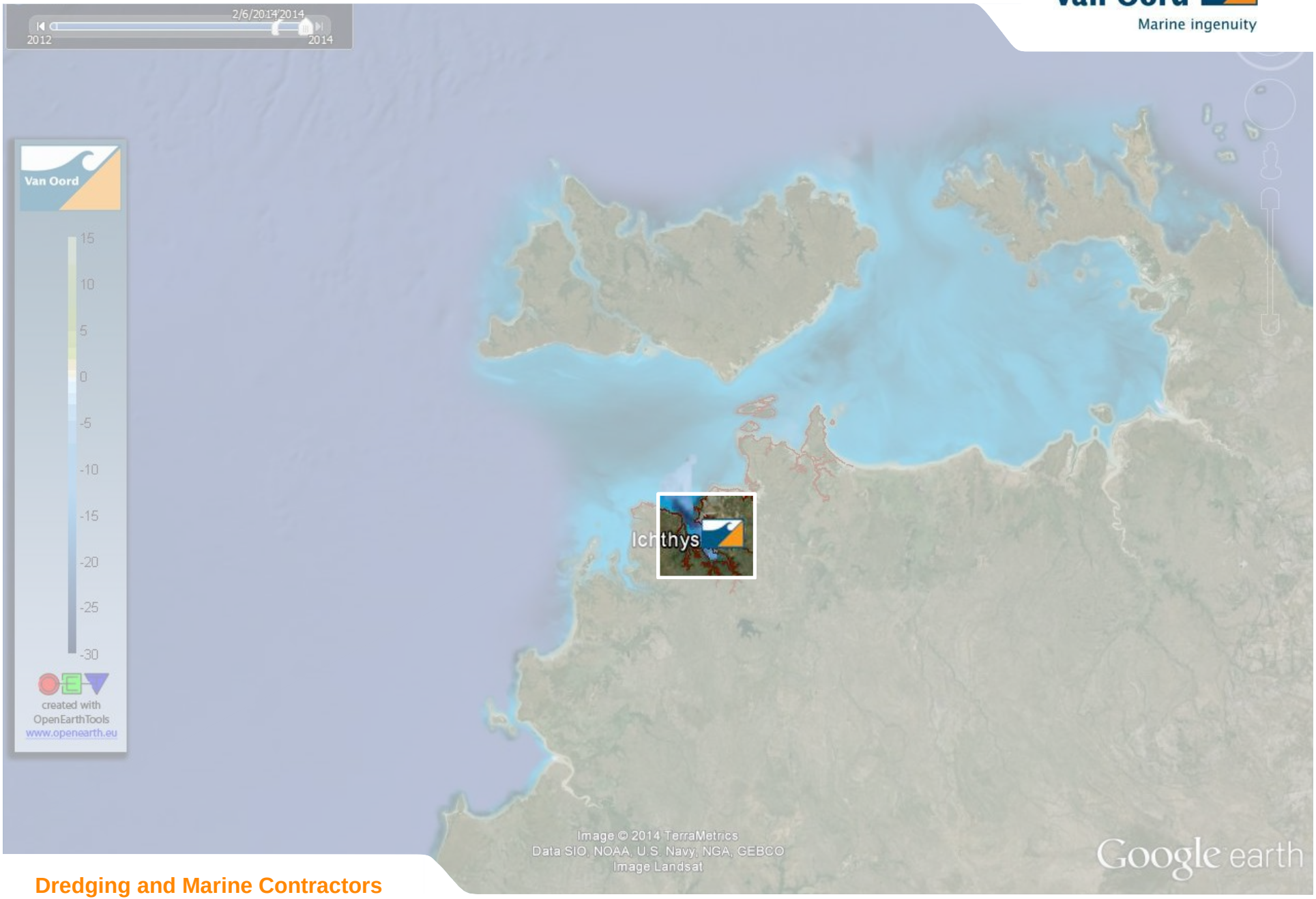

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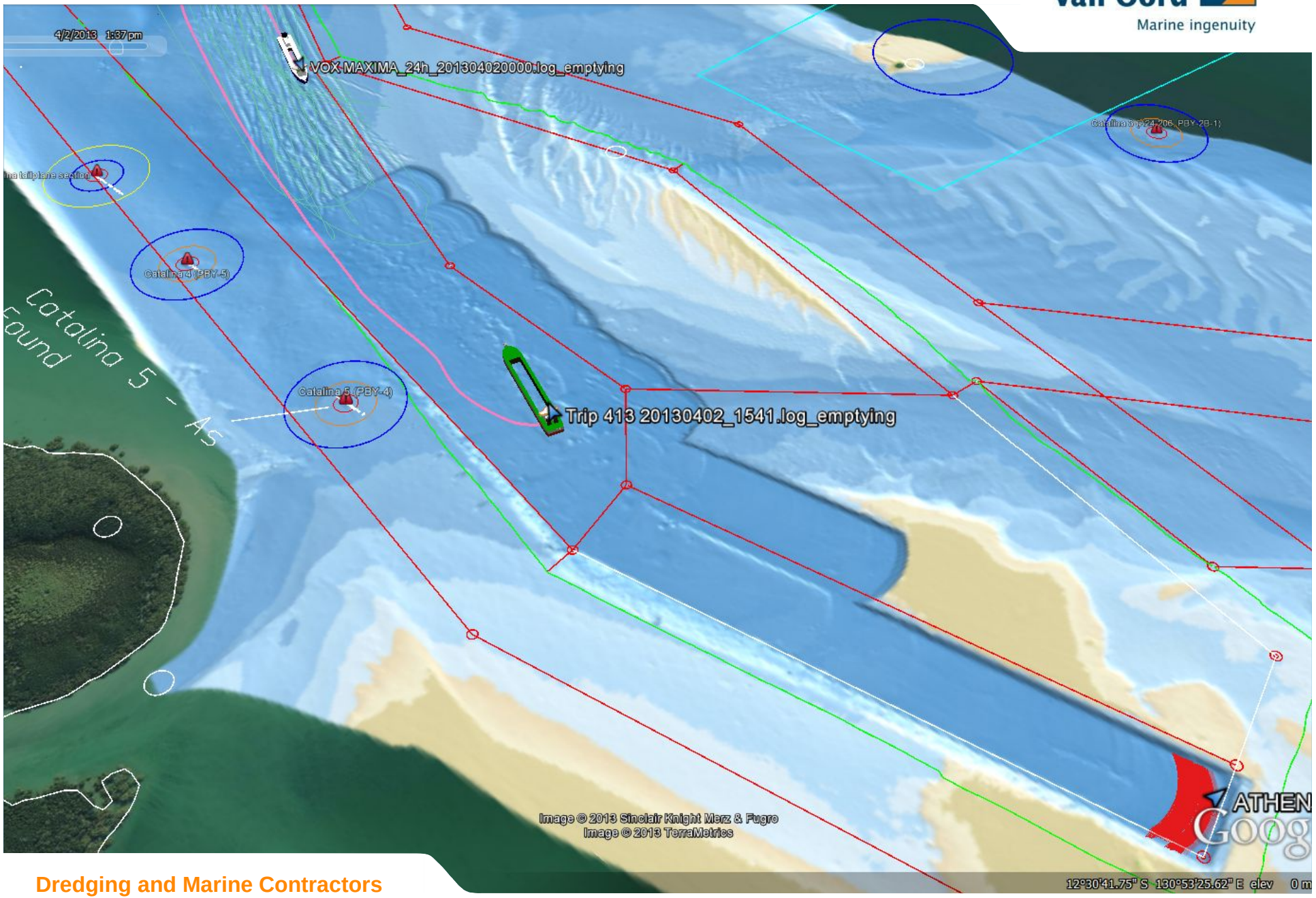

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The Ichthys project – optimizing production & supporting claims

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The Ichthys project – optimizing production & sediment management

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The Ichthys project – keep track of environmental stress

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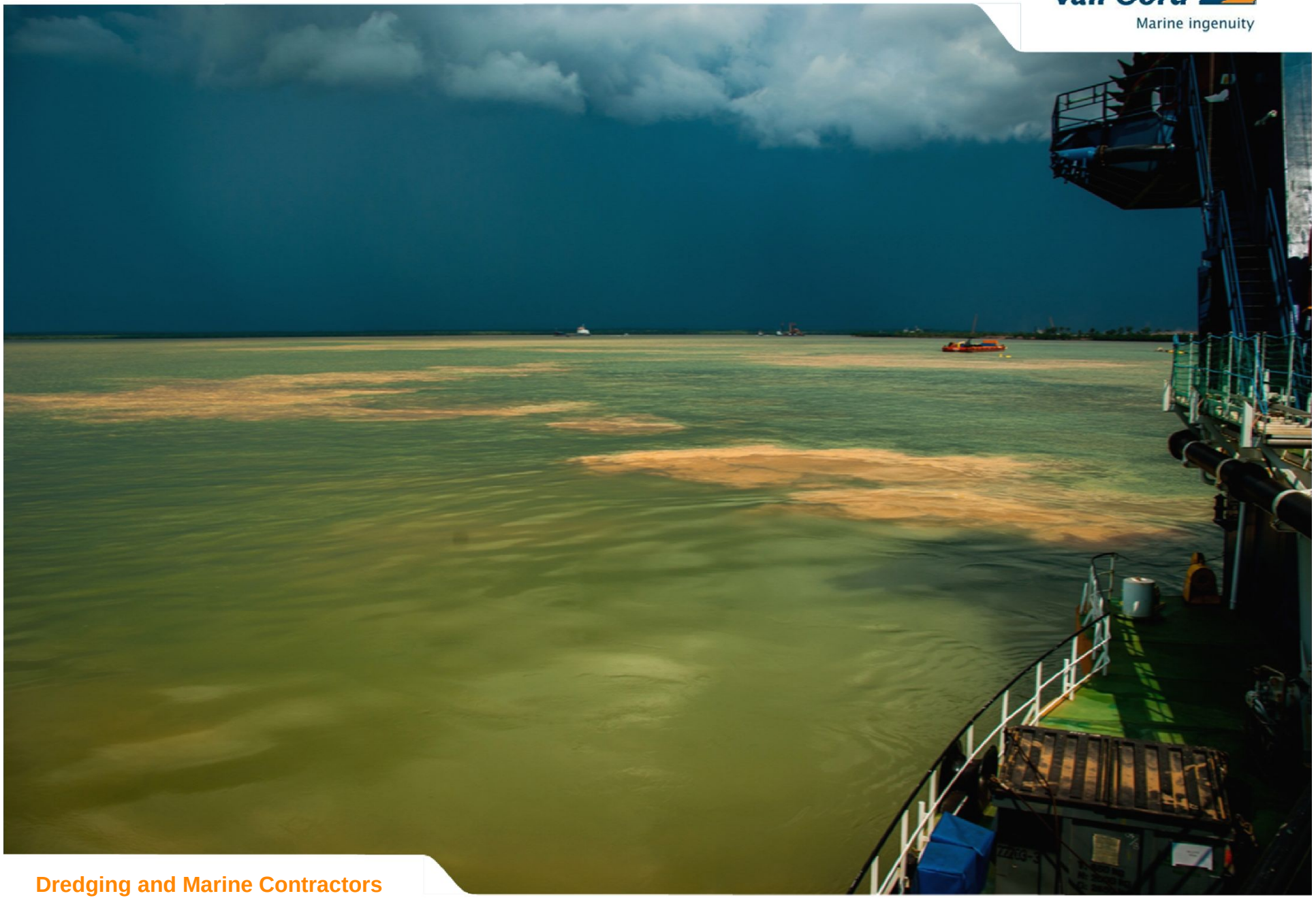

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The Ichthys project – PlumeGuard tracking environmental stress

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Current state

1. We manage to collect all necessary data from project and ships and provide them in various practical ways
2. We manage to do this on site as well as in the Head Office in Rotterdam
3. We manage to produce automated reports that support our own operations and address concerns of the client
4. We managed to make the approach transferable, to the next project as well as beyond Van Oord (OpenEarth workflow)

A true example of succesful 'business' and ICT interaction!

But how did we get here?

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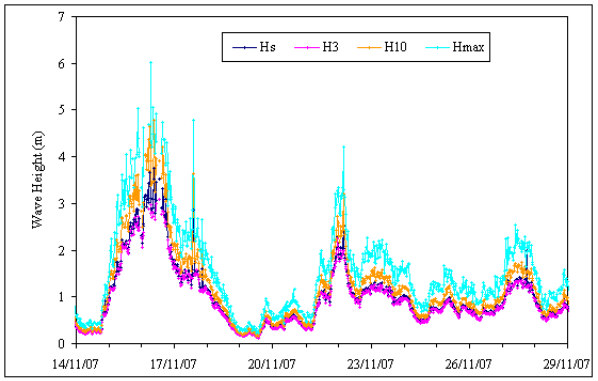
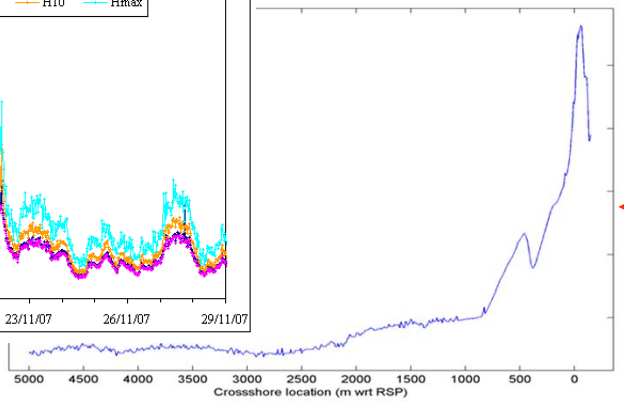
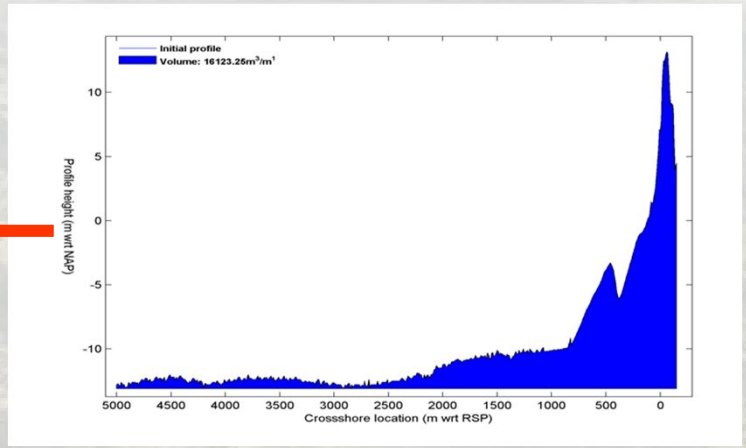
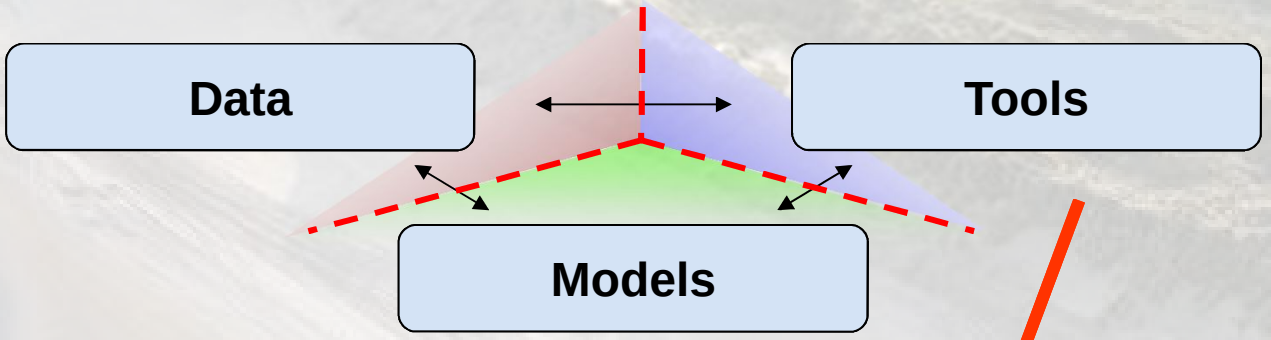
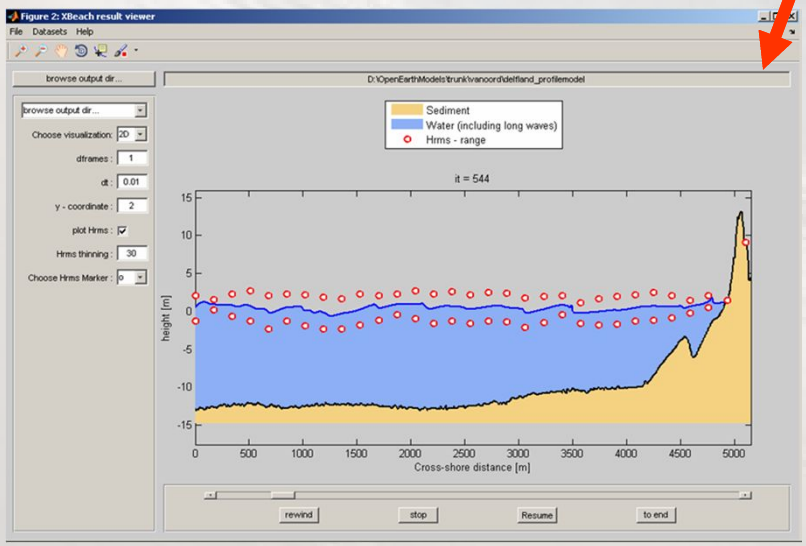










www.openearth.eu

Recognisable frustrations?

- hmm, what was measured here?
- huh, where was it measured exactly?
- oops, when was it measured?
- aarghh, is there still someone around who knows what was done there?

- ohhh, why does it take so long to collect data!
- #$*!, has that data been deleted?!?
- ah yeah, yet another data format … again!!!
- sigh, this problem must have been solved by someone else before me!

- oh oh, I used an old version of this tool!
- euh, what/where is the most recent version of this tool?
- why is everybody using a different tool for the same analysis?
- oh no, we've made the same mistake again!

- WHY CAN'T I BUILD ON THE HERITAGE OF PREVIOUS PROJECTS?

OpenEarth now:

- OpenEarth at its most abstract level represents the **philosophy** that data, models and tools should flow as freely and openly as possible across the artificial boundaries of projects and organisations (or at least departments).
- Put in practice OpenEarth exists only because of a robust user **community** that works according to this philosophy (a bottom-up approach).
- In its most concrete and operational form, OpenEarth facilitates collaboration within its user community by providing an open ICT **infrastructure**, built from the best available open source components, …
- … in combination with a well-defined **workflow**, described in open protocols based as much as possible on widely accepted international standards.

Wikipedia is for knowledge, what OpenEarth is for geo-data
'OpenSource' not necessarily means 'open to everyone'!

Data re-use: trust vs. transparancy

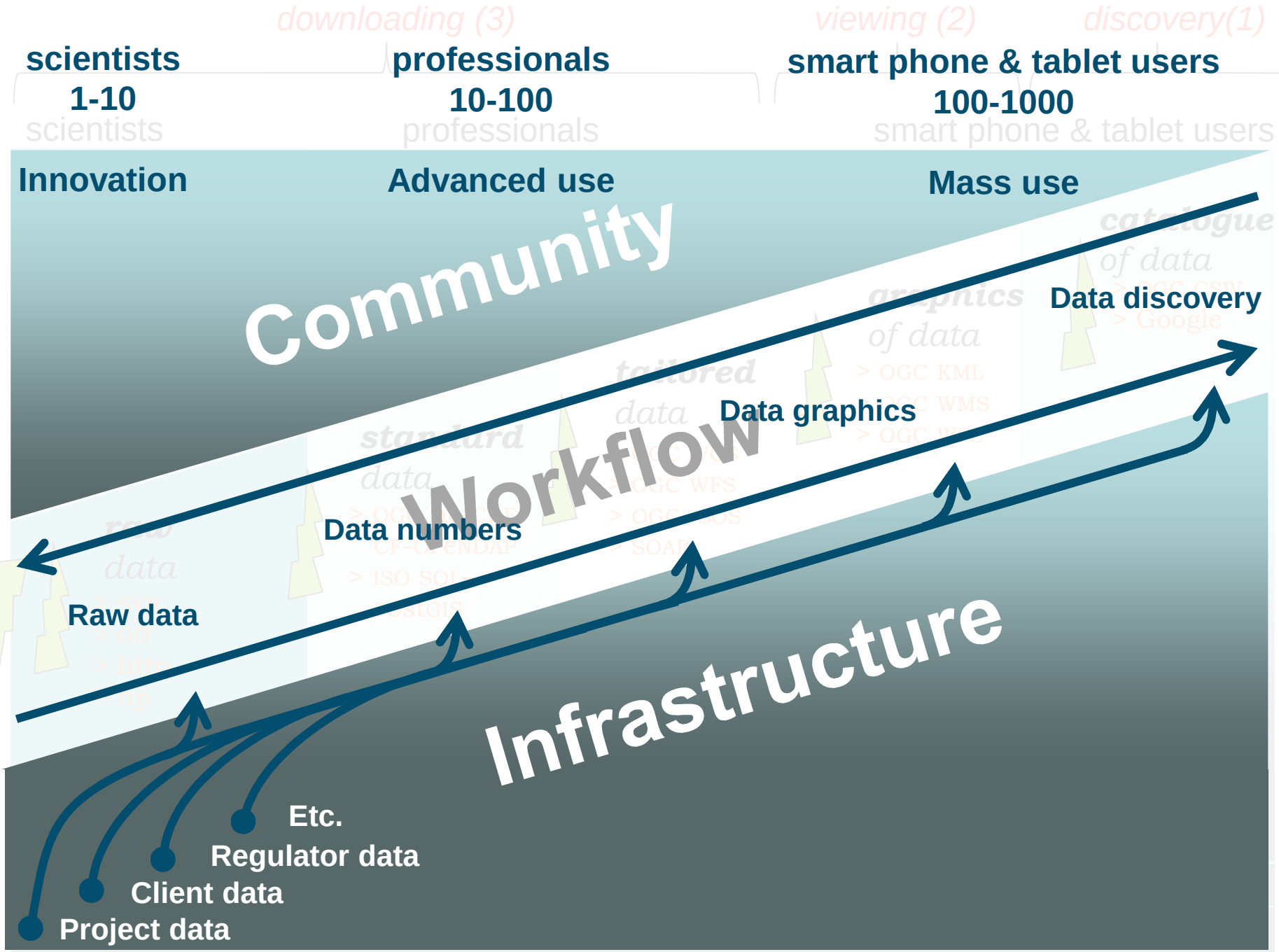
raw
data

scripts

under version control

tailored
data

www.openearth.eu


scientists
1-10
professionals
10-100
smart phone & tablet users
100-1000
Innovation
Advanced use
Mass use
Community
Workflow
Infrastructure
Data discovery
Data graphics
Data numbers
Raw data
Etc.
Regulator data
Client data
Project data

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Now you know how we got there

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OpenEarth stack offered routinely by 3TU.Datacentrum

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Wat wij bieden
Nieuws & Agenda
Nieuws archief
Data Browser ▼

TU Delft Delft University of Technology

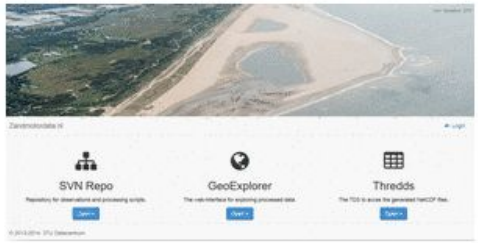
TU/e Technische Universiteit Eindhoven University of Technology

UNIVERSITY OF TWENTE.

09 april 2014

Zandmotor Monitoring data-lab in de lucht

3TU.Datacentrum heeft op 4 april jongstleden de productieomgeving van het Zandmotor Monitoring data-lab succesvol opgeleverd. Onderzoekers van de Zandmotor kunnen nu gebruik maken van de door 3TU.Datacentrum ontwikkelde IT omgeving waarin verzamelde onderzoeksdata veilig bewaard, gedeeld, bewerkt en gevisualiseerd kunnen worden. Hierbij worden zij ondersteund door een speciale helpdesk vanuit 3TU.Datacentrum.



Figuur 1: Portal van Zandmotor Monitoring data-lab

De Zandmotor is een project van Rijkswaterstaat, dat middels de aanleg van een schiereiland voor de kust van Ter Heijde de mogelijkheden van een duurzame en natuurlijke kustbescherming onderzoekt.

In opdracht van EcoShape heeft 3TU.Datacentrum een unieke online omgeving gecreëerd, op basis van het Open Earth platform, waar de verzamelde Zandmotor monitoring data kunnen worden opgeslagen, bewerkt en ontsloten. Alle geschikte data uit het Zandmotor Monitoring project zullen na afloop (1 januari 2017) voor het publieke domein Open Access beschikbaar worden gesteld. Tot die tijd is de data uit het lab alleen toegankelijk voor de bij de Zandmotor betrokken onderzoekspartijen.

Een op maat ontwikkelt data-lab, zoals het Zandmotor Monitoring data-lab ontzorgt onderzoekers door het automatiseren van de werkprocessen rond digitale onderzoeksdata en vereenvoudigt de overgang naar lange termijn opslag na afsluiting van het onderzoeksproces. Het gebruik van een data-lab van 3TU.Datacentrum draagt op deze wijze in belangrijke mate bij aan disseminatie en publicatie van uw onderzoeksdata.

Lees meer over de Zandmotor of over een 3TU.Datacentrum data-lab.

Symposium 2014

Twitter: 3TU.Datacentrum

3TU. Datacentrum Don't forget to nominate your dataset for the Dutch Data Prize! researchdata.nl/en /activities/...

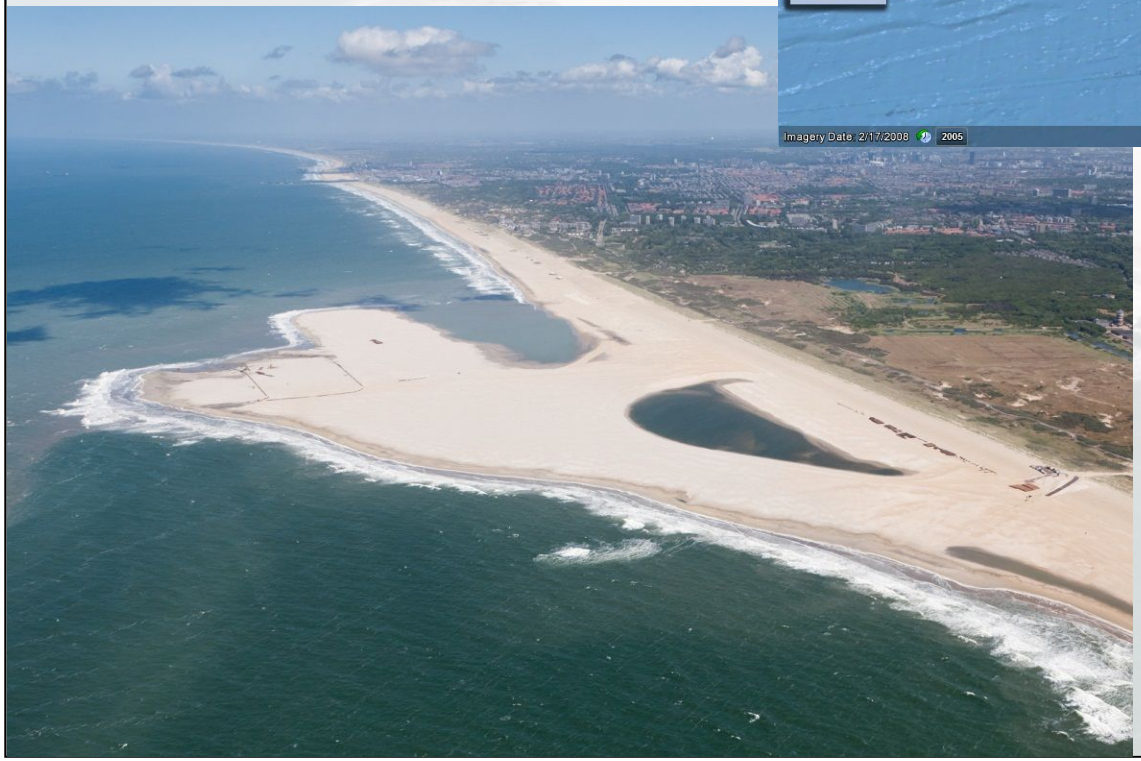
04 June

Populaire datasets

- Majorana fermions
- Cryo-Tem
- Darelux
- CFD
- IDRA
- Motion of surface atoms

OpenEarth

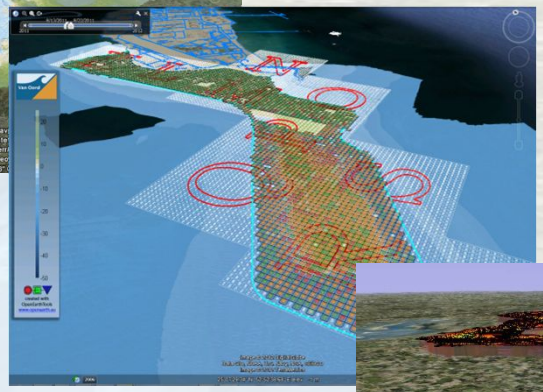
- 3.5 M€ Building with Nature
- 2.5 M€ MER Metingen RWS
- 3 M€ EFRO Zandmotor
- 4 M€ STW NatureCoast
- 3 M€ ERC Grant NEMO
- Now: MEGAPEX 2014

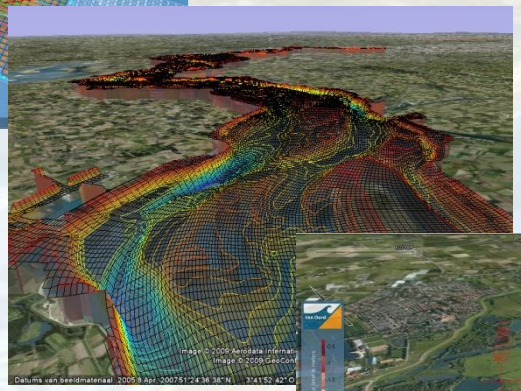


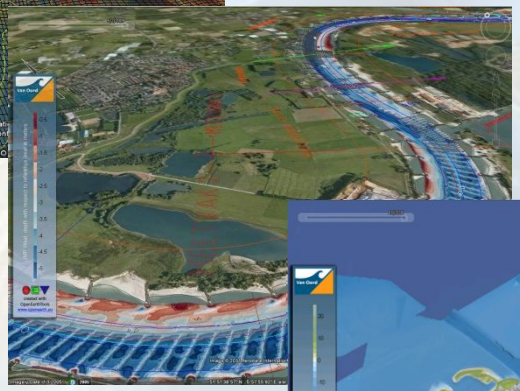
- Governments, companies, research institutes and universities
- Data storage and doi's by 3TU.Datacentre

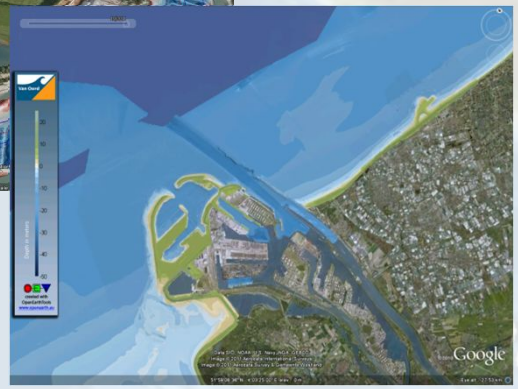
www.openearth.eu

Dienst der Hydrografie
ahn

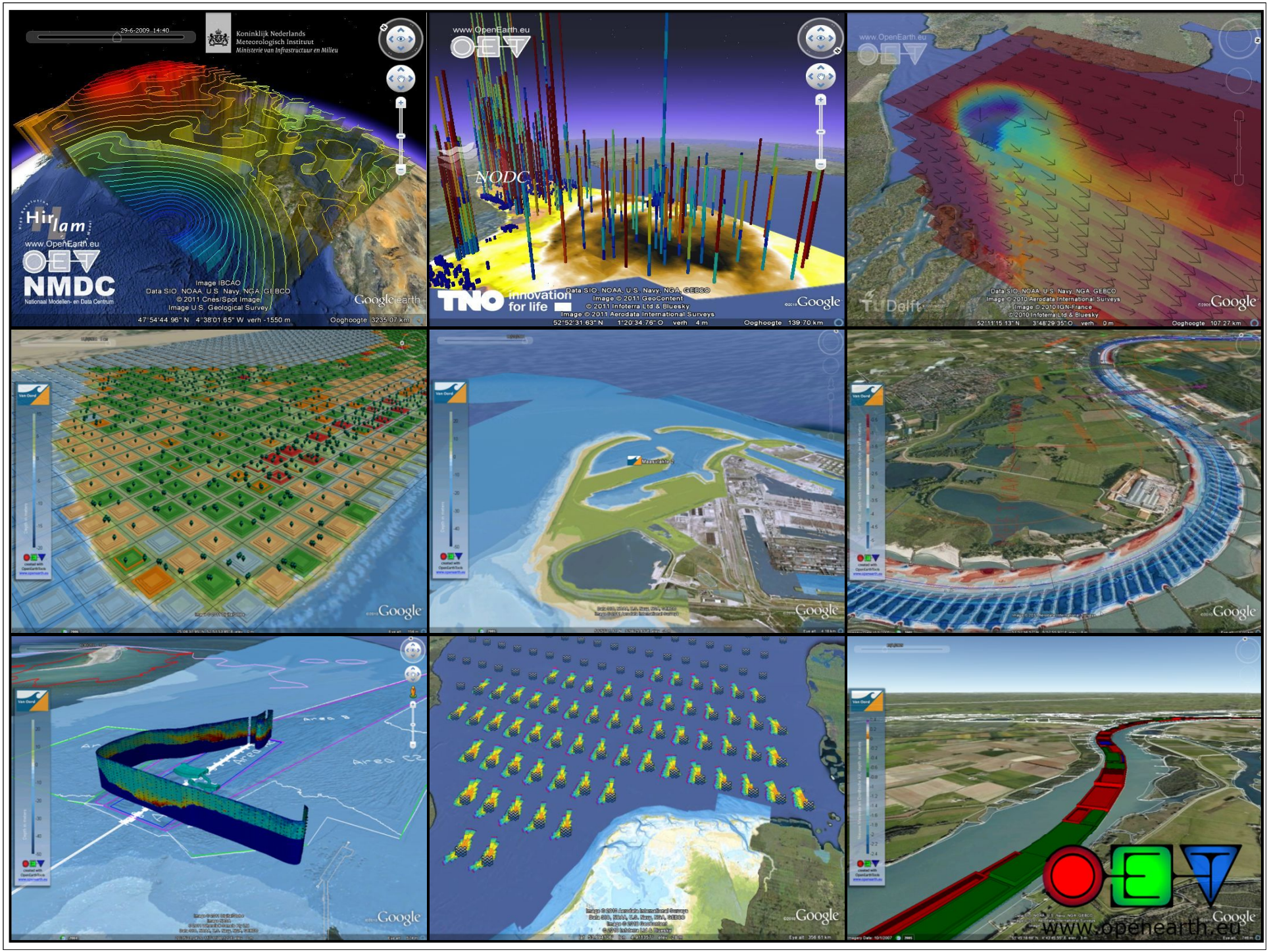








Mei 2004
SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2009 GeoContent
Image © 2009 TerraMetrics
© 2009 Aerodata International Surveys
4°42'55.99" O verh. 0 m
Ooghoogte 4.49 km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Koninklijk Nederlands Meteorologisch Instituut
Ministerie van Infrastructuur en Milieu
Hirlam
www.OpenEarth.eu
NMDC
Nationaal Modellen- en Data Centrum
Image IBCAO
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2011 Ches/Spot Image
Image U.S. Geological Survey
47°54'44.96" N 4°38'01.65" W verh -1550 m
Ooghoogte 3235.07 km
www.OpenEarth.eu
NODC
TNO innovation for life
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2011 GeoContent
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Image © 2011 Aerodata International Surveys
52°52'31.63" N 1°20'34.76" O verh 4 m
Ooghoogte 139.70 km
www.OpenEarth.eu
TU Delft
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2010 Aerodata International Surveys
Image © 2010 IGN-France
© 2010 Infoterra Ltd & Bluesky
52°11'15.13" N 3°48'29.35" O verh 0 m
Ooghoogte 107.27 km
Google
www.openearth.eu

TUDELTA

WEEKBLAD VAN DE TECHNISCHE UNIVERSITEIT DELFT LAATSTE UPDATE 22 OKTOBER 2012 23.17

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19 OKTOBER 2012 DOOR JOS WASSINK AANTAL KEER BEKEKEN: 253

WEB ONLY

Vind ik leuk 2 Tweet 5 +1 0

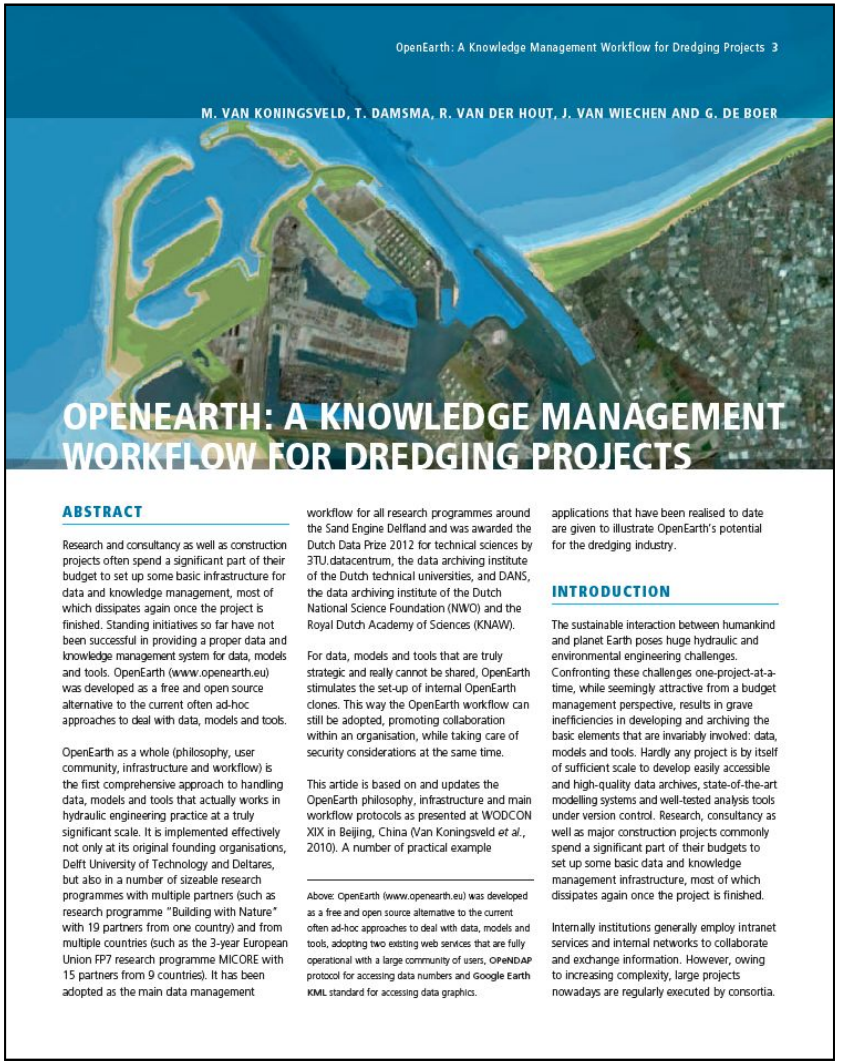
OpenEarth en Political Mashup winnen Dataprijs 2012

De Nederlandse Dataprijs gaat dit jaar naar Political Mashup (Dataprijs humaniora en sociale wetenschappen) en OpenEarth (Dataprijs exacte en technische wetenschappen).

De prijswinnaars vlnr: Maarten Marx (Political Mashup) en Thijs Damsma, Gerben de Boer en Mark van Koningsveld (OpenEarth) – Foto: Bart van Vliet

OpenEarth is een open source initiatief dat data, modellen en gereedschappen in waterbouw wil delen. Een flink deel van het budget van waterbouwkundige en kustverdedigingsprojecten gaat naar het vergaren en het beheren van data over stromingen en waterstanden, zo weten de onderzoekers. Maar als het project eenmaal is afgesloten, gebeurt er meestal verder niets met die gegevens. OpenEarth wil daar verandering in brengen door een onderdak te bieden voor de bestanden. Onderzoekers kunnen hier hun data opslaan, hosten en ter beschikking stellen van anderen.

Terra et Aqua (2013), 131(1), pp. 3 - 14



OpenEarth: A Knowledge Management Workflow for Dredging Projects 3

M. VAN KONINGSVELD, T. DAMSMA, R. VAN DER HOUT, J. VAN WIECHEN AND G. DE BOER

OPENEARTH: A KNOWLEDGE MANAGEMENT WORKFLOW FOR DREDGING PROJECTS

ABSTRACT

Research and consultancy as well as construction projects often spend a significant part of their budget to set up some basic infrastructure for data and knowledge management, most of which dissipates again once the project is finished. Standing initiatives so far have not been successful in providing a proper data and knowledge management system for data, models and tools. OpenEarth (www.openearth.eu) was developed as a free and open source alternative to the current often ad-hoc approaches to deal with data, models and tools.

OpenEarth as a whole (philosophy, user community, infrastructure and workflow) is the first comprehensive approach to handling data, models and tools that actually works in hydraulic engineering practice at a truly significant scale. It is implemented effectively not only at its original founding organisations, Delft University of Technology and Deltares, but also in a number of sizeable research programmes with multiple partners (such as research programme "Building with Nature" with 19 partners from one country) and from multiple countries (such as the 3-year European Union FP7 research programme MICORE with 15 partners from 9 countries). It has been adopted as the main data management workflow for all research programmes around the Sand Engine Delfland and was awarded the Dutch Data Prize 2012 for technical sciences by 3TU.datacentrum, the data archiving institute of the Dutch technical universities, and DANS, the data archiving institute of the Dutch National Science Foundation (NWO) and the Royal Dutch Academy of Sciences (KNAW).

For data, models and tools that are truly strategic and really cannot be shared, OpenEarth stimulates the set-up of internal OpenEarth clones. This way the OpenEarth workflow can still be adopted, promoting collaboration within an organisation, while taking care of security considerations at the same time.

This article is based on and updates the OpenEarth philosophy, infrastructure and main workflow protocols as presented at WODCON XIX in Beijing, China (Van Koningsveld *et al.*, 2010). A number of practical example applications that have been realised to date are given to illustrate OpenEarth's potential for the dredging industry.

Above: OpenEarth (www.openearth.eu) was developed as a free and open source alternative to the current often ad-hoc approaches to deal with data, models and tools, adopting two existing web services that are fully operational with a large community of users, OPeNDAP protocol for accessing data numbers and Google Earth KML standard for accessing data graphics.

INTRODUCTION

The sustainable interaction between humankind and planet Earth poses huge hydraulic and environmental engineering challenges. Confronting these challenges one-project-at-a-time, while seemingly attractive from a budget management perspective, results in grave inefficiencies in developing and archiving the basic elements that are invariably involved: data, models and tools. Hardly any project is by itself of sufficient scale to develop easily accessible and high-quality data archives, state-of-the-art modelling systems and well-tested analysis tools under version control. Research, consultancy as well as major construction projects commonly spend a significant part of their budgets to set up some basic data and knowledge management infrastructure, most of which dissipates again once the project is finished.

Internally institutions generally employ intranet services and internal networks to collaborate and exchange information. However, owing to increasing complexity, large projects nowadays are regularly executed by consortia.

http://www.iadc-dredging.com/ul/cms/terraetaqua/document/3/7/3/373/373/1/article-openeartha-knowledge-management-workflow-for-dredging-projects-terra-et-aqua-131-1.pdf

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Marine data: industry perspectives

- **Industry performance standards might be an example for DG Mare**
  - Inform and invite industry, listen to and use their best practices
- **Approach data systems and standards from a user perspective**
  - Make it all about the user needs (make life easy), usage will follow
  - Provide suitable access to different user types
- **Build on open source components and embrace world standards**
  - Don’t (always) reinvent the wheel, involve existing communities
- **Think beyond individual projects (FP, Horizon2020, etc)**
  - Make data available for the next project. This promotes growth!
- **Address confidentiality concerns, it is a source for opposition**
  - The same workflow for open or closed access

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Data management - Perspectives from the Dutch Dredging industry

dr. Mark van Koningsveld

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Building with Nature - Management Team Member EcoShape

Topsector Water - Secretary Topteam Water

MODEG Meeting, 01 october 2014

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