Deltares
Enabling Delta Life

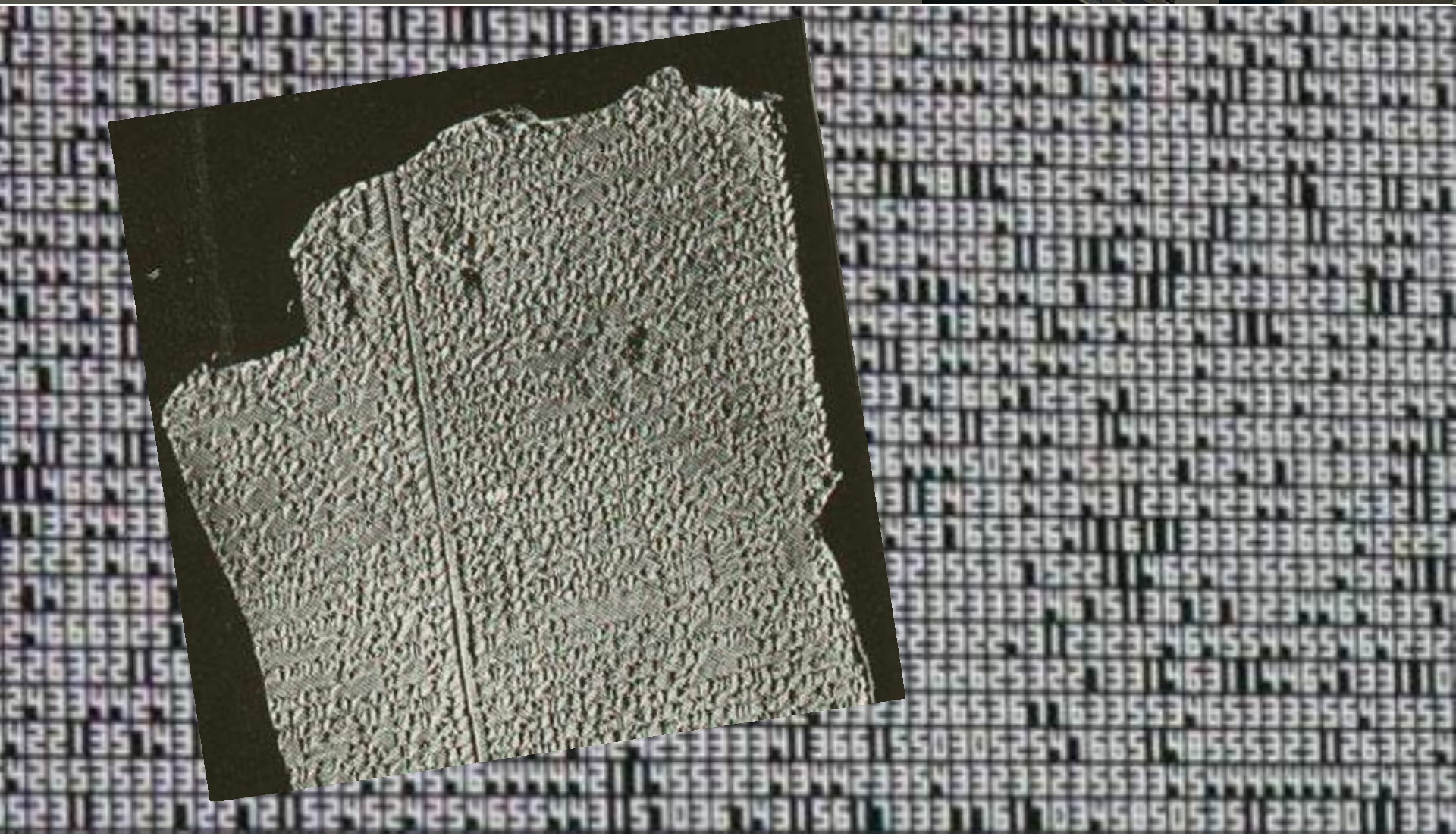
‘Open data’

Noordzeedagen

Gerard van der Kolff

2 oktober 2015

Data growth and -storage, what's new?



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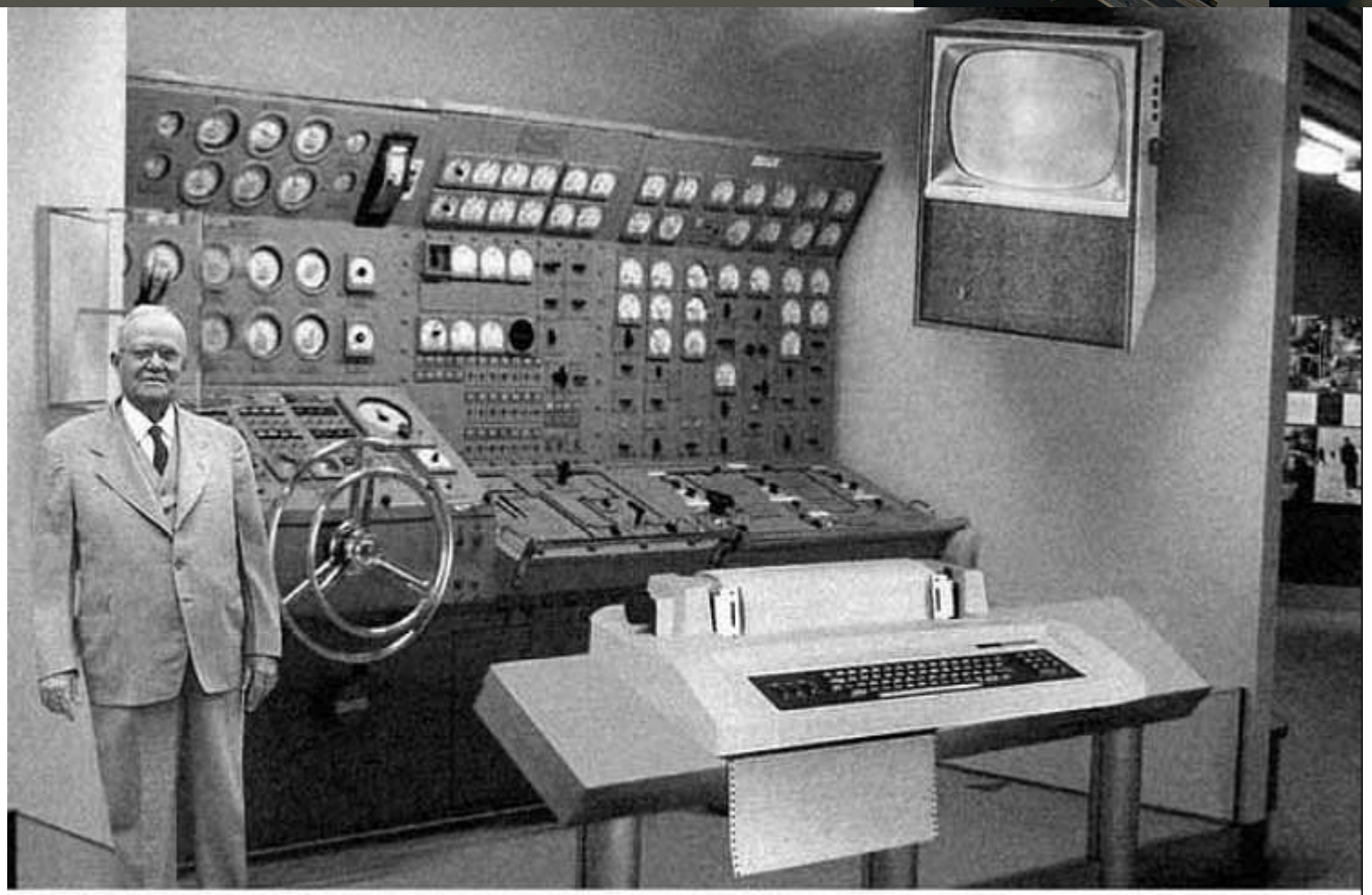
Predicting the future is difficult...



Scientists from the RAND Corporation have created this model to illustrate how a "home computer" could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.

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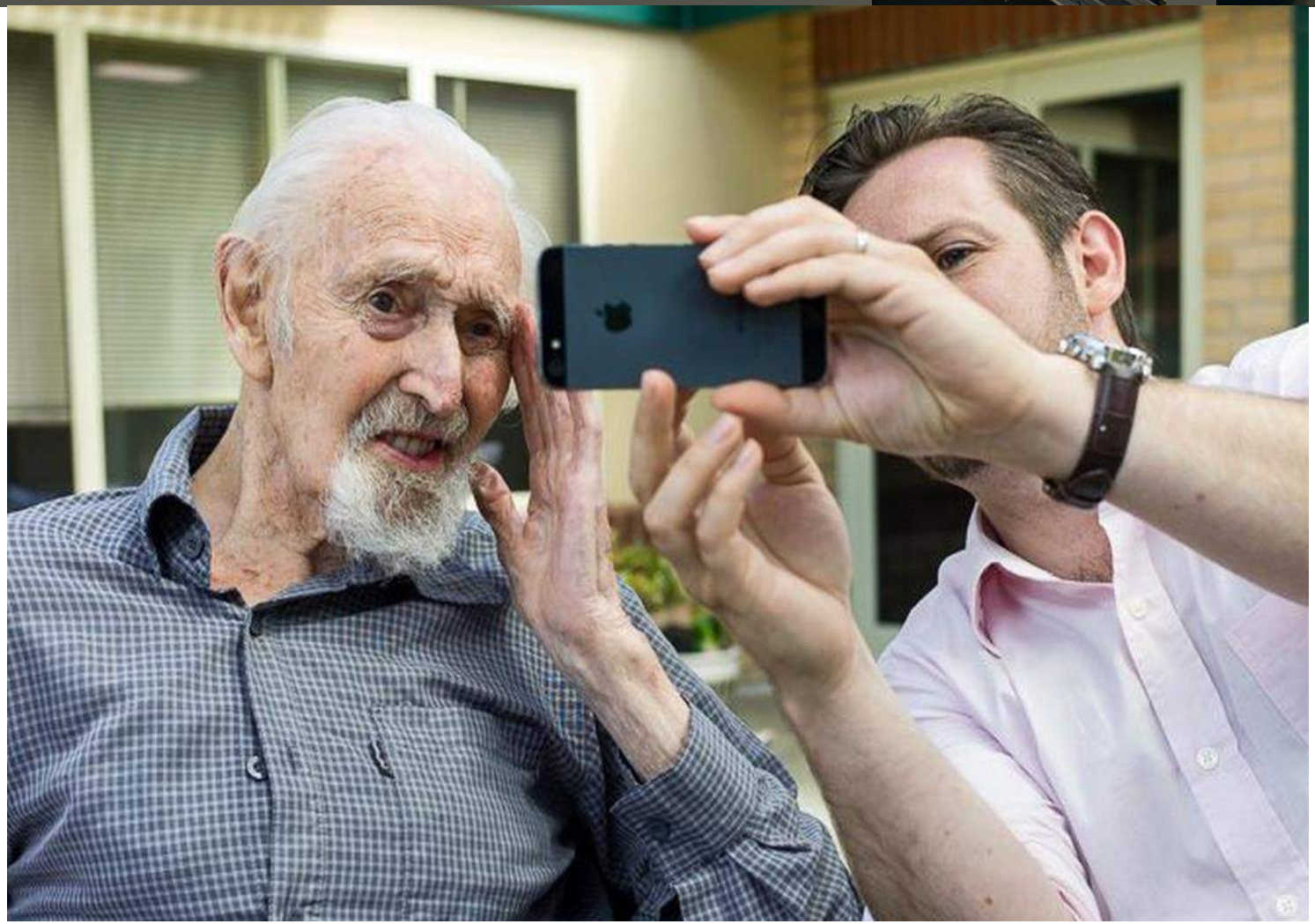
...and mostly fails.



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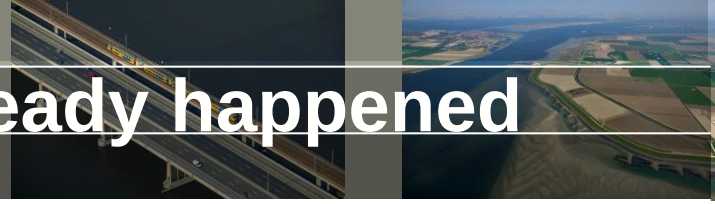
The Digital Disruption has already happened



- Worlds largest taxi company owns no taxis ✓ Uber
- Largest accommodation provider owns no real estates ✓ Airbnb
- Largest phone companies own no telco infra ✓ Skype, WeChat
- Worlds most valuable retailer has no inventory ✓ Alibaba
- Most popular media owner creates no content ✓ Facebook

- Worlds largest movie house owns no cinemas ✓ Netflix
- Largest software vendors don't write the apps ✓ Apple & Google

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Goals fot the Short term and Middle term

i. Reduce amount of active data

ii. Start with data management
(ICT, models and users)

iii. Teach and inform people about data management

iv. Investigate data reduction models

v. Make the right tooling available

vi. Start with a Cloud strategy

vii. Start with grabbing chances and possibilities (Big) Data-analyses

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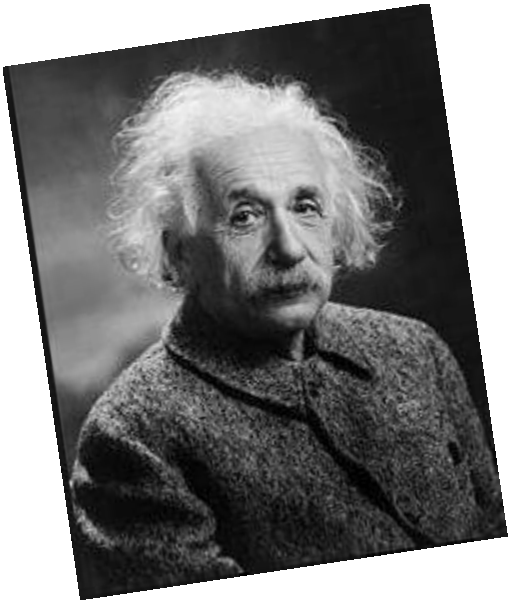
From one-man show...



RELATIVITY

THE SPECIAL AND THE GENERAL THEORY

BY PROFESSOR ALBERT EINSTEIN, PH.D., LL.D.

Translated by Professor Robert W. Lawson, M.Sc.

EINSTEIN'S own explanation of his famous discovery—

THE Einstein law has been accepted by astronomers and physicists as an epoch-making discovery. Up to the present Newton's law of gravitation has been universally accepted, but the new theory goes further, and, apart from supplying the laws of Newtonian mechanics when certain approximations are made, it enables us to predict the exact course of all motions resulting from gravitation. In this book, which is a popular exposition written for the average reader, Professor Einstein explains his famous theory which has so excited the scientific world. This volume is intended primarily for those readers who, though interested in the trend of modern theory, are not conversant with the mathematical analysis used in theoretical physics. The author's aim has been to give an exact insight into the theory of relativity, and to present the main ideas in the clearest and simplest form. He has succeeded admirably, and those who desire an authoritative and understandable explanation of the Einstein theory will find it between the covers of this book.

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... to multi-party, multidisciplinary science

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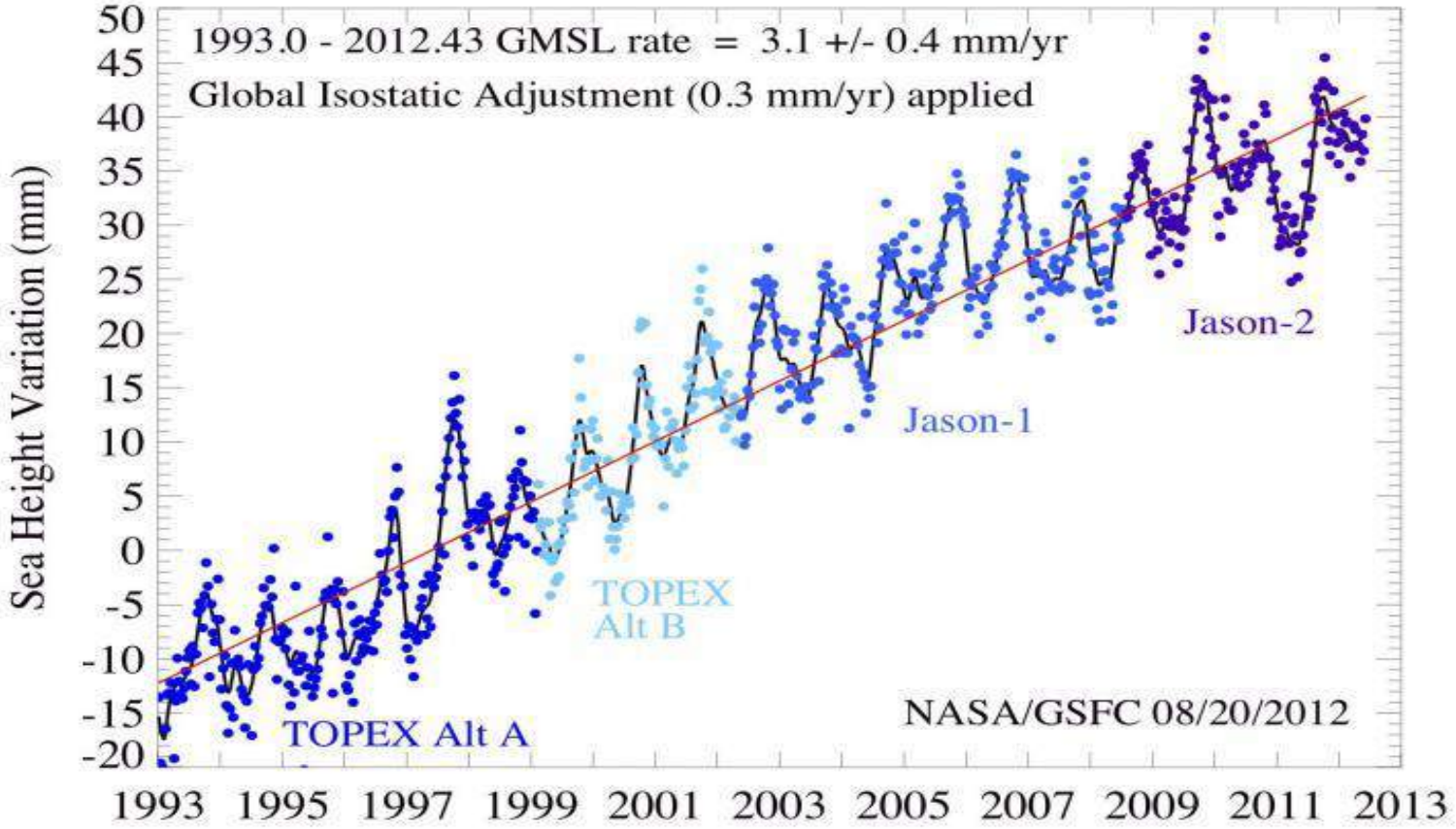
Long term international projects



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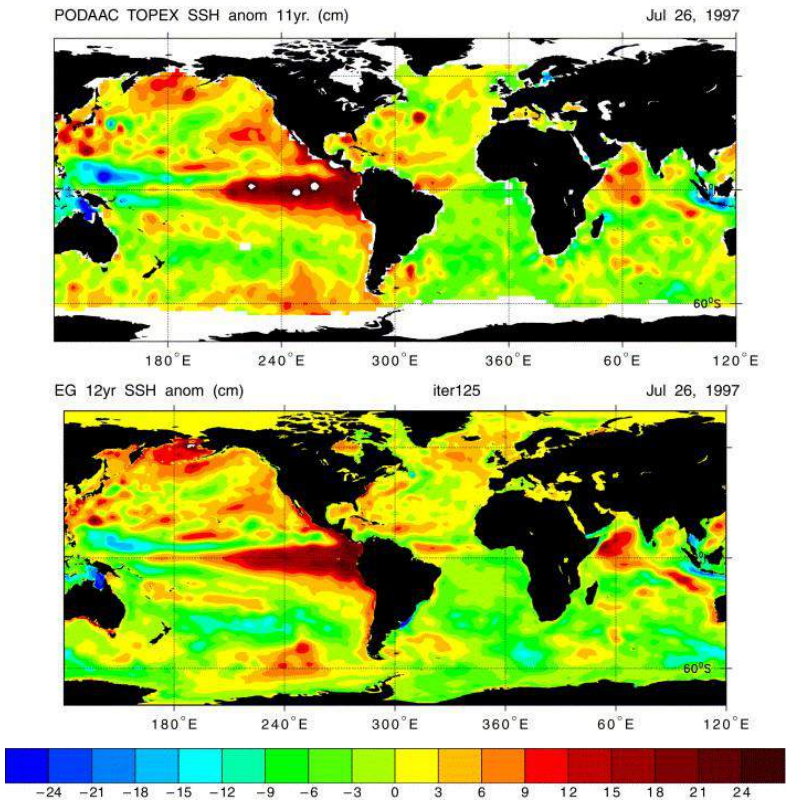
Ocean currents by radar altimetry (SSA)

http://www.youtube.com/watch?v=F8zYKb2GoR4



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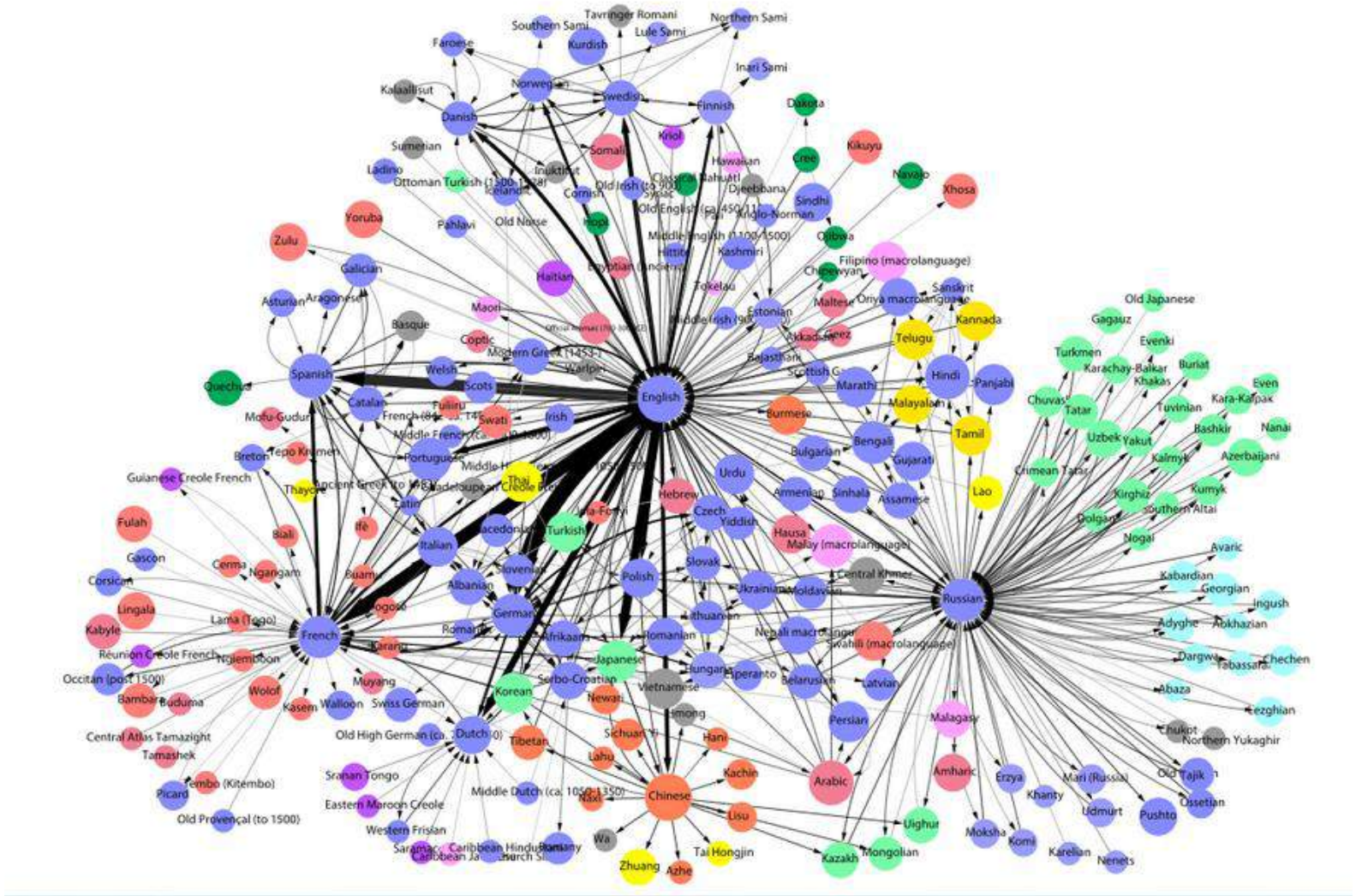
To communicate we need to understand eachother



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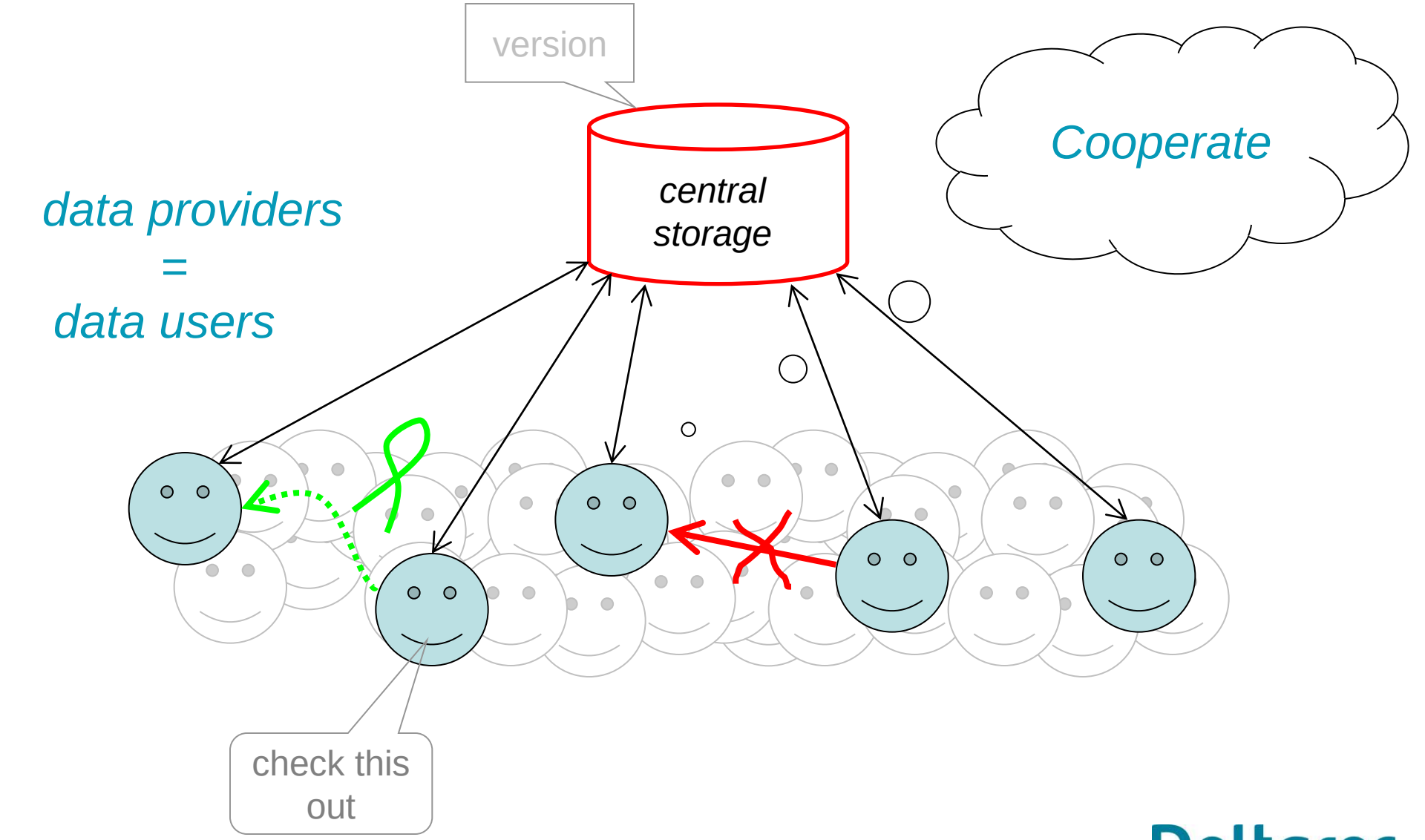
OpenEarth vision!



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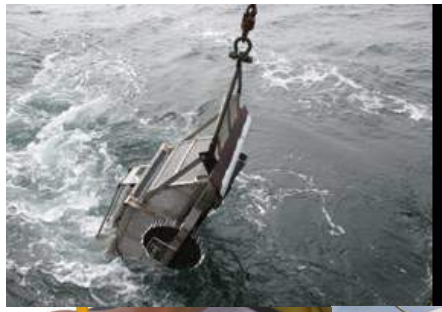
Ecological effects in the Voordelta

- extension occurs in the Voordelta, a protected area (Natura 2000)
- European & national legislation require compensation of the significant effects on nature
  - Loss of 2455 ha marine habitat (“Habitat type 1110” Sandbanks which are slightly covered by sea water all the time)
  - Loss of foraging area for protected bird species (Common scoter, Common tern, Sandwich tern)

Extensive monitoring programme 2009-2013

- Client: Rijkswaterstaat for PoR
- Deltares: Independent projectleader, integration of results, data management
- Consortium (led by IMARES): monitoring, data analysis
- Benthos (IMARES/NIOZ)
- Fish (IMARES)
- Birds (Waardenburg, INBO)
- Abiotic conditions (Arcadis/Alkyon)
- Human activities (CSO)







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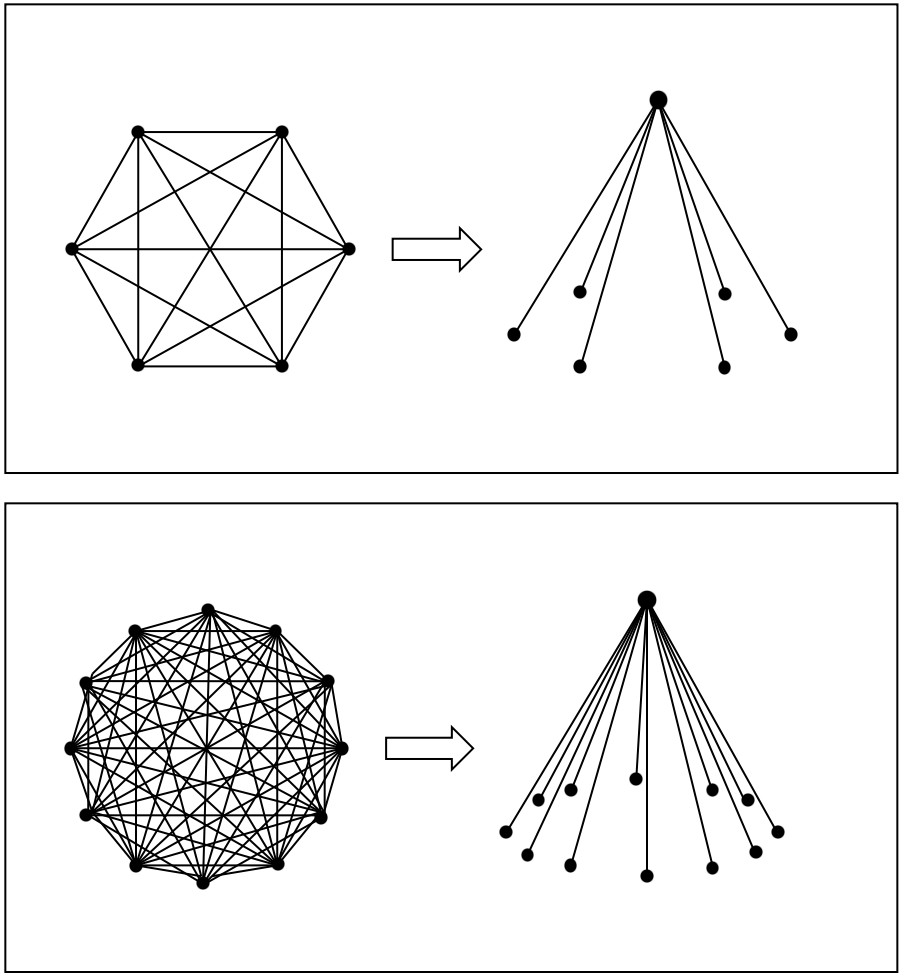
Facilitate exchange



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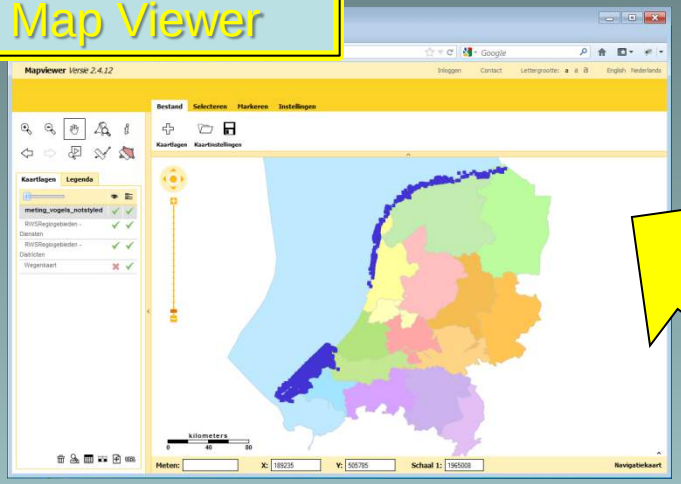
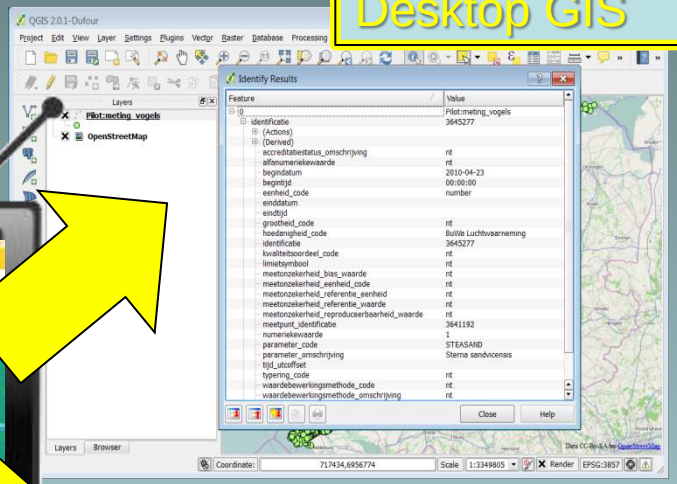
Data management marine monitoring projects

Map Viewer

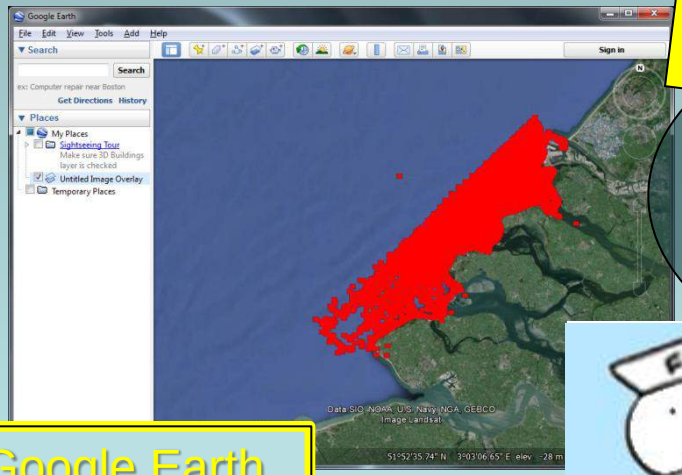


Desktop GIS



OpenEarth Software stack:

éénmaal invoeren, overal ontsloten



Google Earth

EU-portal

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Work on client or server? Invest first, profit later

scientists professionals smart phone & tablet users



work done on client

raw data
> SVN
> GIT
> http
> ftp

standard data
> netCDF-CF-OPeNDAP
> ISO SQL–PostGIS

tailored data
> WCS
> WFS
> SOS
> SOAP

graphics of data
> KML
> WMS
> WFS

catalogue of data
> CSW

ISO standards

what
where
when
who
why
how
…
data URLs

standards

work done on server

database standards (lab and field data)

spatio-temporal

Exchange, develop standards

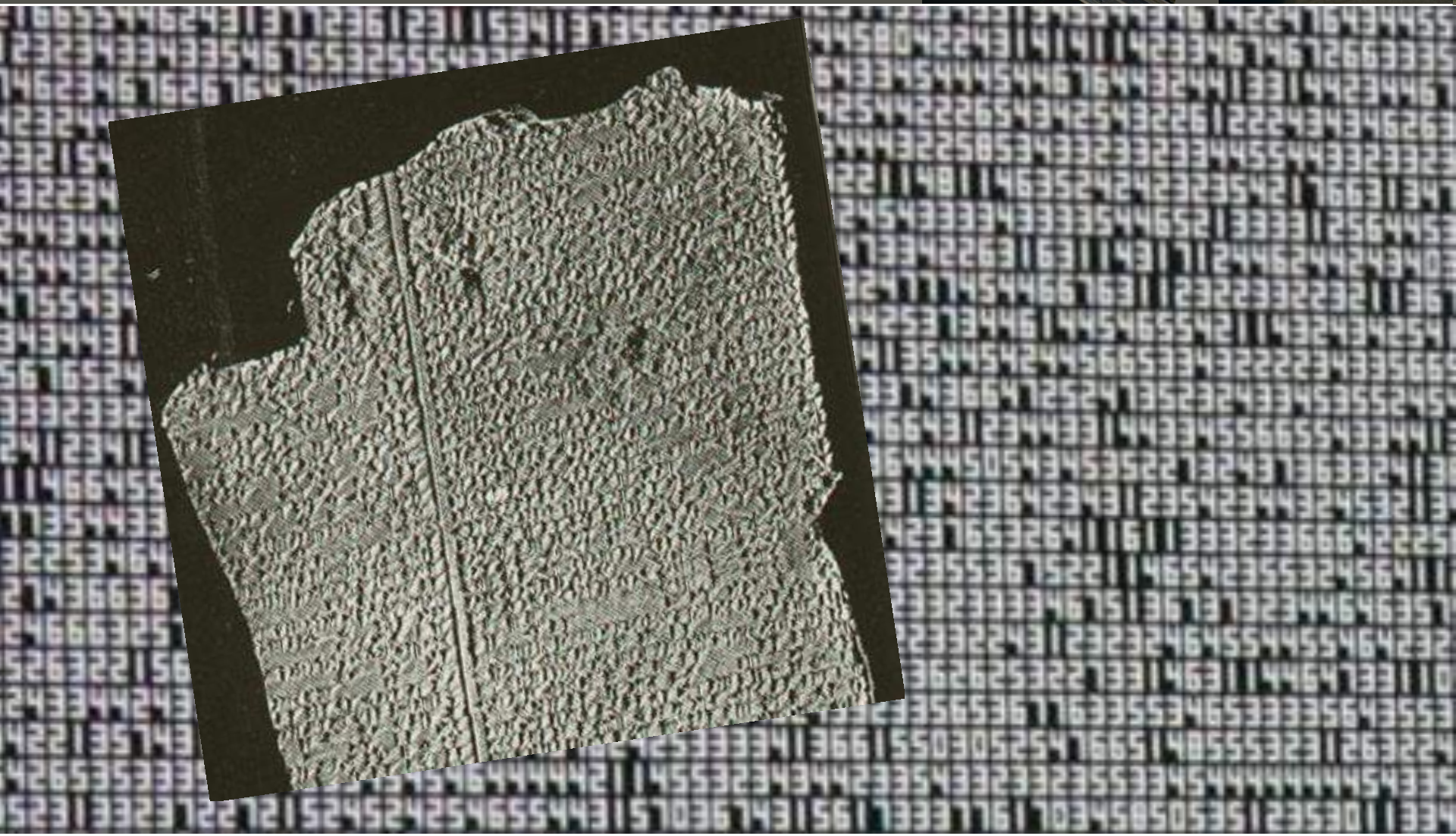






GeoNetwork Opensource Deltares

Data growth and -storage, what's new?



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Data management in steps...

Raw data | Organization | Storage | Documentation | Access

- Data inspection
- Cleaning data
- Quality control

> SVN
> GIT
> http
> ftp

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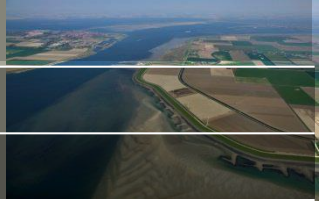
Data management



Raw data | Organization | Storage | Documentation | Access

- Standardization
- Naming conventions

  Directories, Folders, Files, Variables, parameters

> netCDF-CF-OPeNDAP
> ISO SQL–PostGIS

standard data

net-CDF OpenDAP

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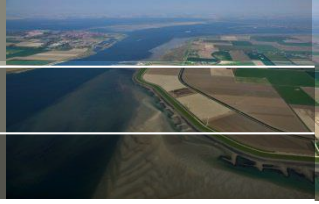
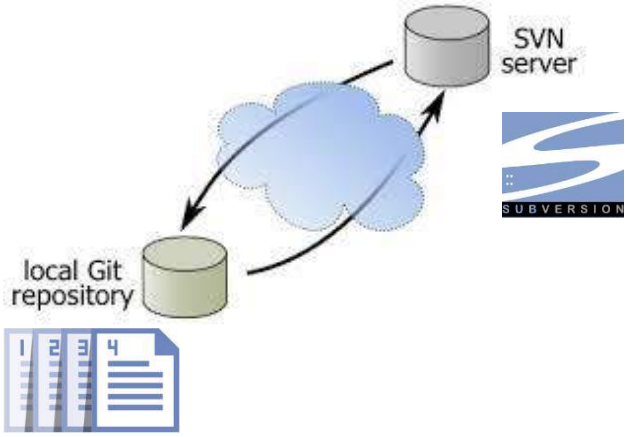
Data management



Raw data | Organization | **Storage** | Documentation | Access

- Version control
- Security
- Back-ups



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Data management

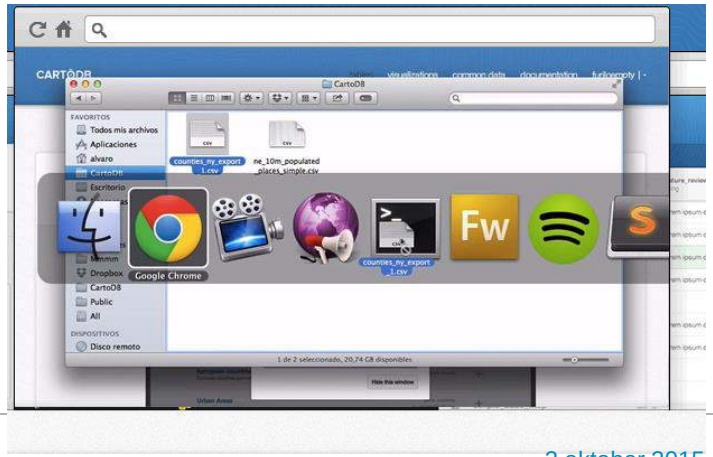
Raw data | Organization | Storage | **Documentation** | Access

- Meta data

  origin, purpose, time, geographic location, creator, access, and terms of use of the data
- Data manipulations from raw data
- Catalogues

Geoserver (OGC WxS)

Catalogue service



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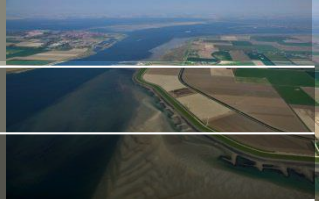
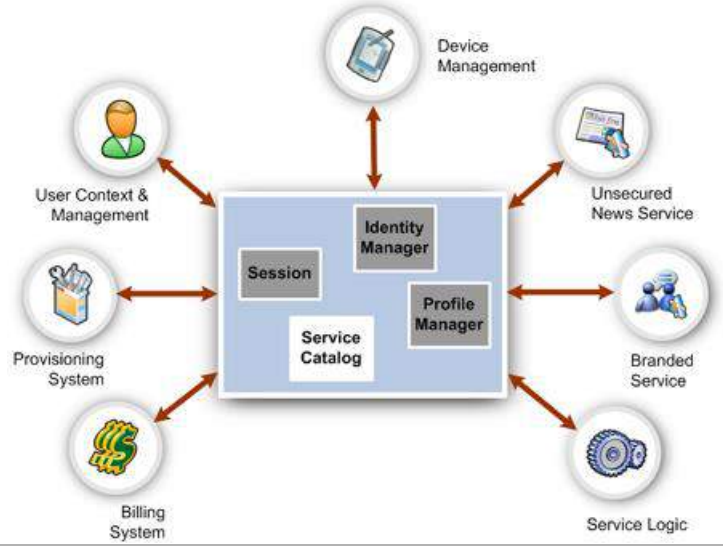
Data management



Raw data | Organization | Storage | Documentation | Access

- User management
- Access control
- Privileges



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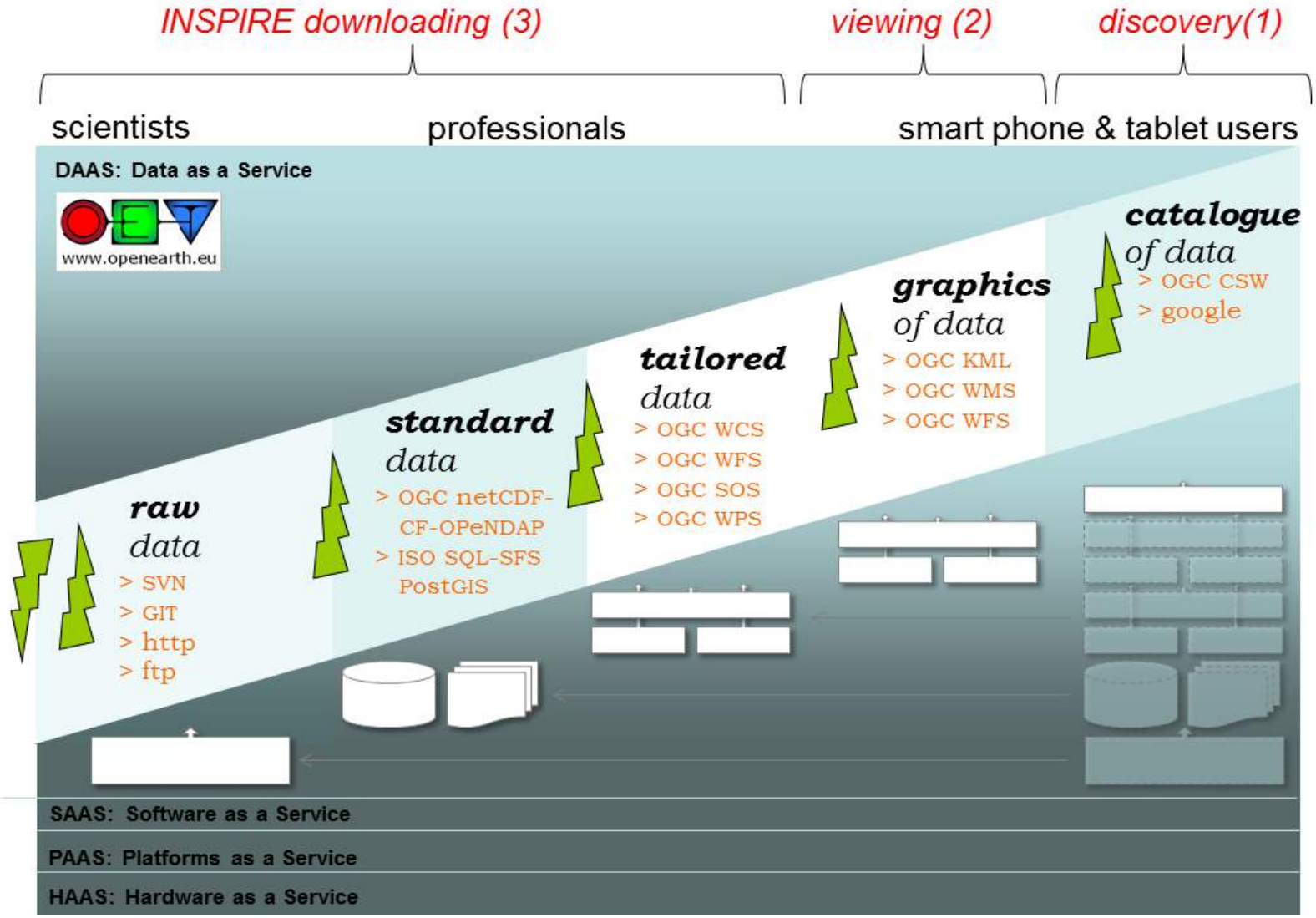
The OpenEarth stack (recap)



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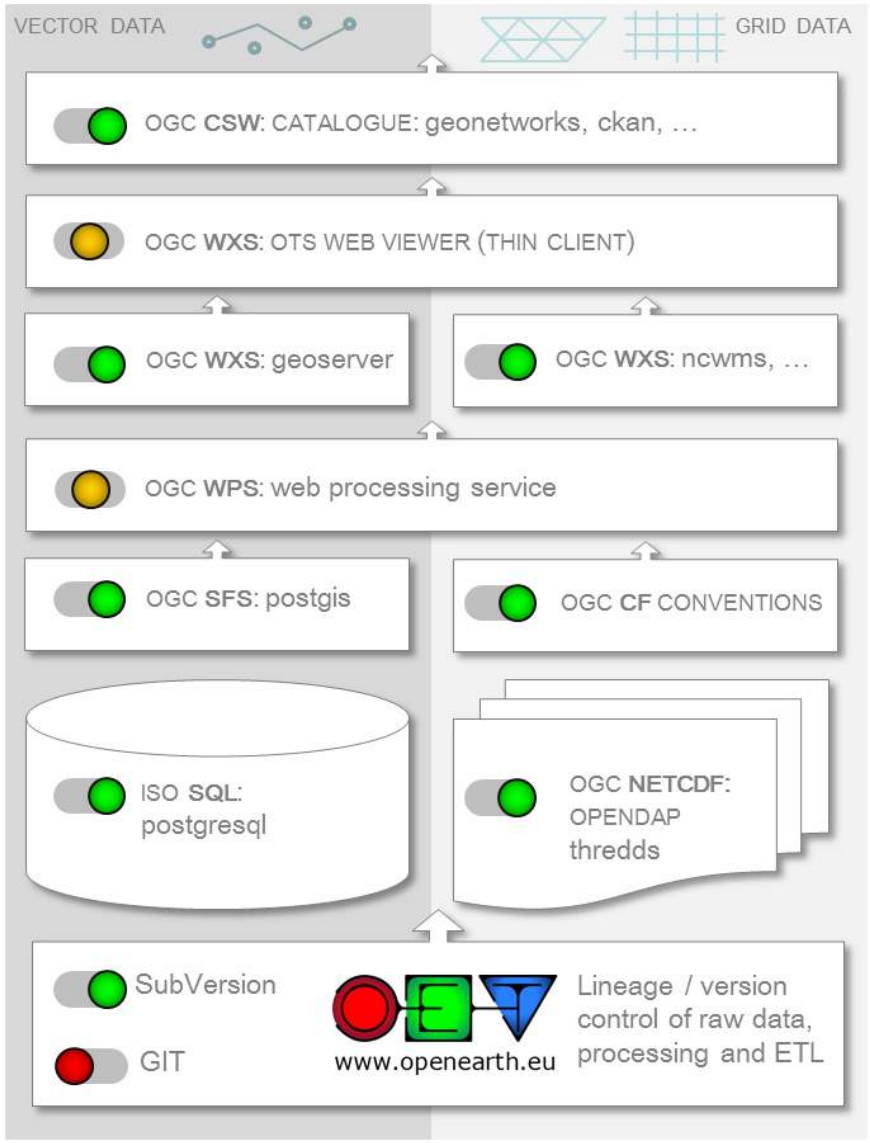
OpenEarth stack – some TechTalk



catalogue of data

graphics of data

tailored data

standard data

raw data

LEGEND:
- ROADMAP
- DEVELOPMENT
- OPERATIONAL

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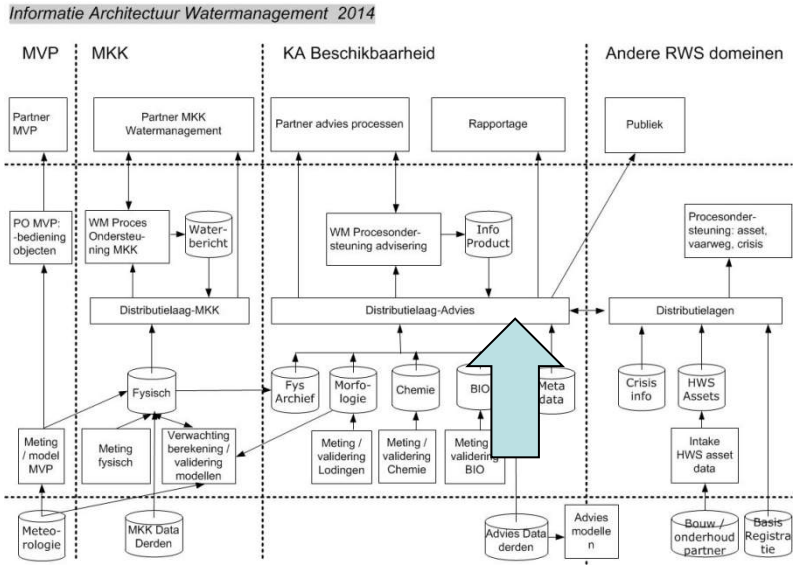
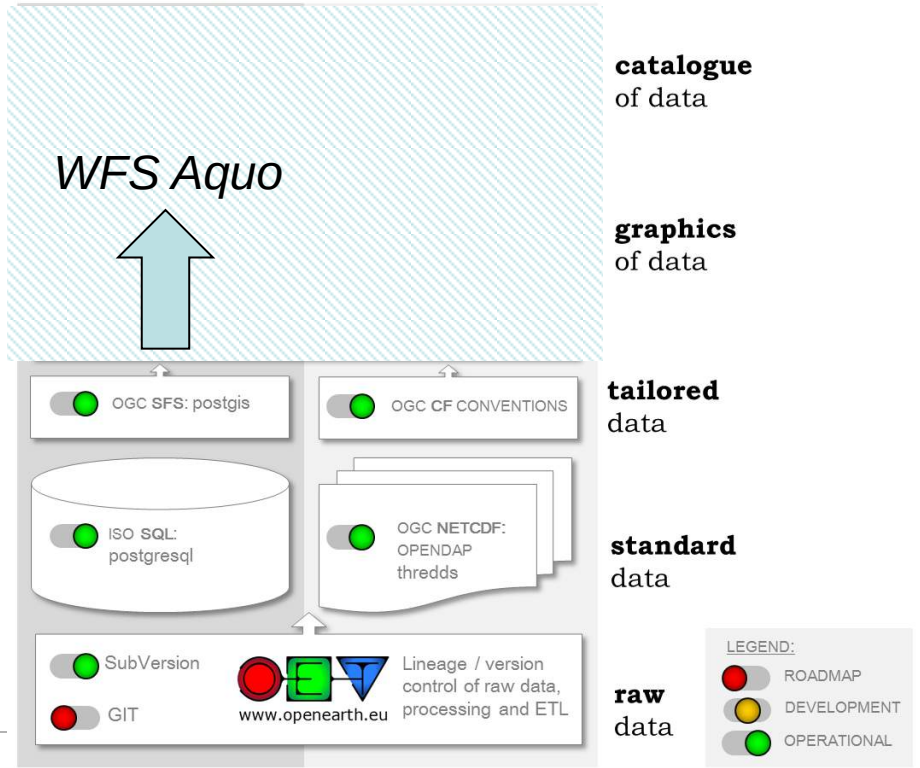
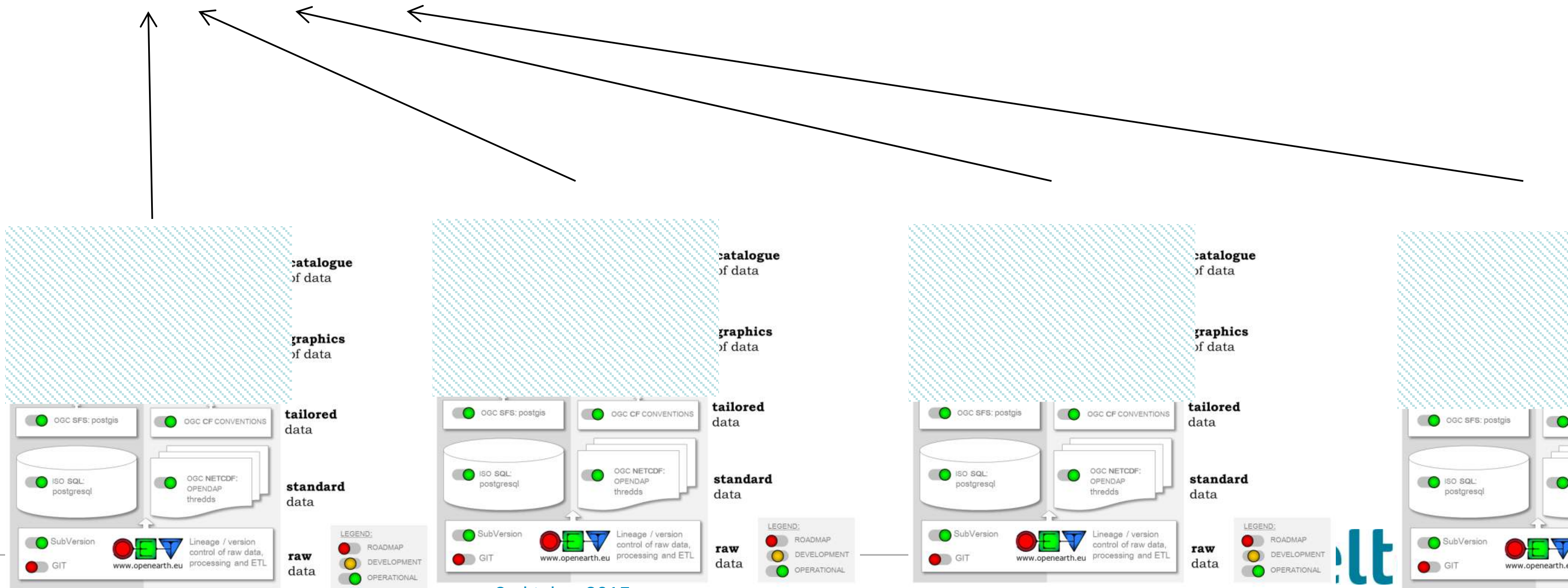
RWS domain architecture <> OpenEarth stack



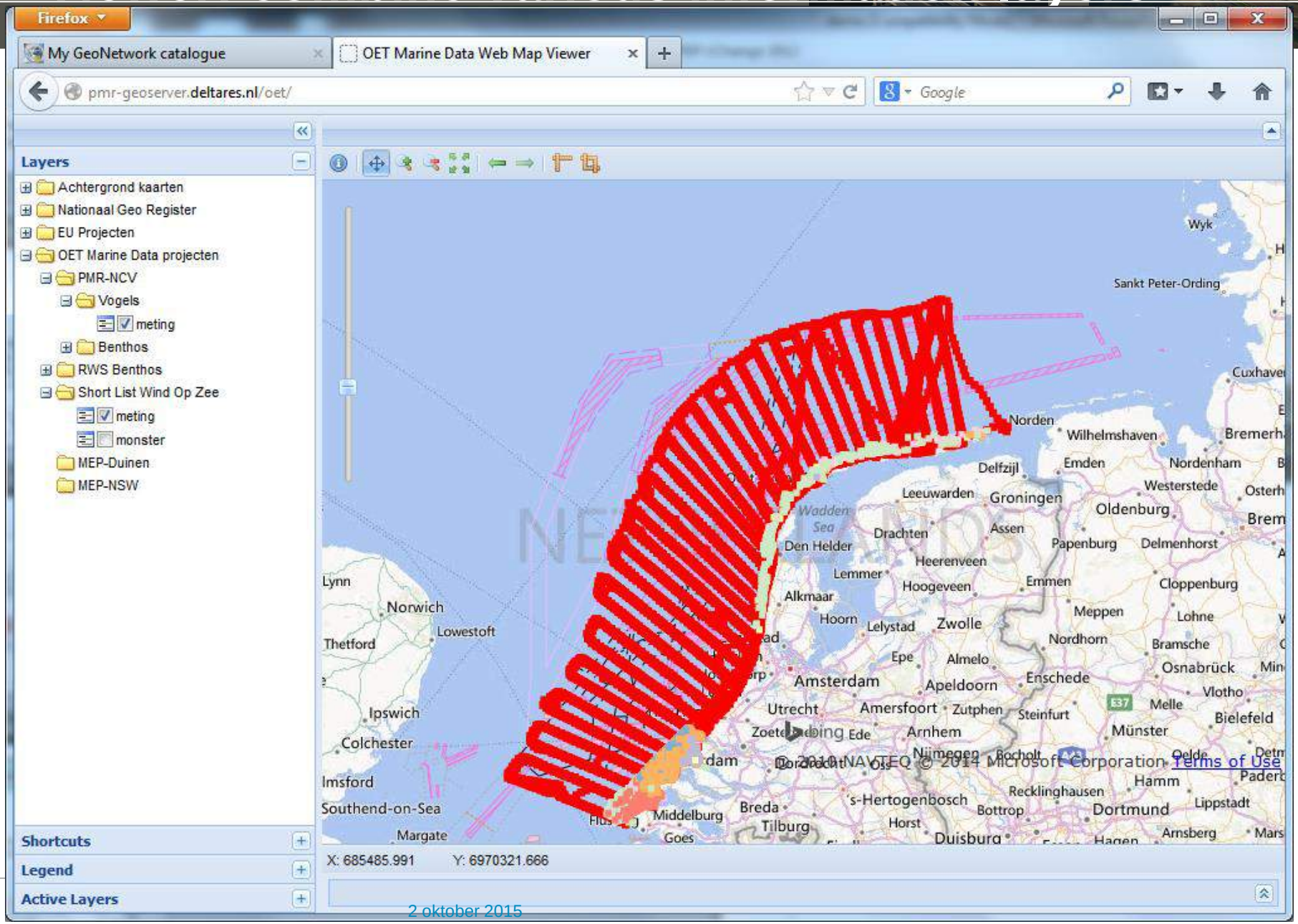


Demo: catalogue + viewer: show potential DL – IHM-viewer

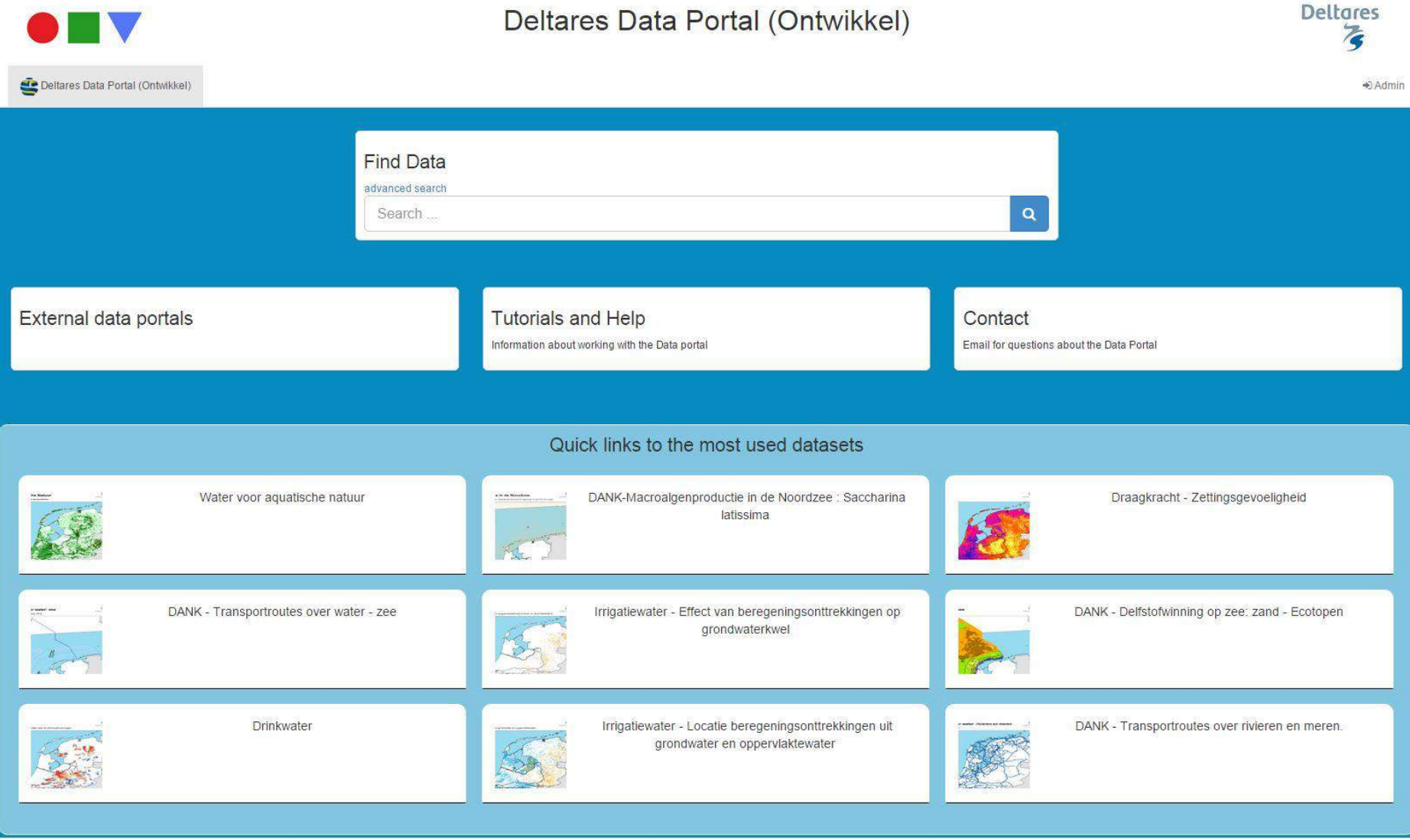
Geonetwork catalogue (same system as nationaalgeoregister)
http://marineprojects.openearth.eu/geonetwork
Temporary viewer http://pmr-geoserver.deltares.nl/oet/



Viewer: combine various information layers



Deltares Data Portal (Deltares public wiki: - projects)



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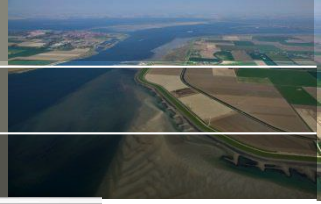
NGR - Nationaal Georegister



nationaalgeoregister.nl/geonetwork/srv/dut/search

Apps http://intranet.delta... Google Google Translate

Afdrukken Feedback RSS Inloggen NGR

NGR Nationaal Georegister

Home Actueel Catalogus PDOK Over NGR Voor ontwikkelaars

Met als resultaat: Online kaarten Downloadbare data Data op aanvraag Toon uitgebreide zoekcriteria

Welkom op het Nationaal Georegister: dé vindplaats van geo-informatie van Nederland. Door een zoekterm in te voeren krijgt u een overzicht van beschikbare datasets en services. Deze datasets kunt u in veel gevallen direct downloaden en de services kunt u bekijken of in uw eigen toepassing gebruiken. Wilt u meer weten over het zoeken in het Nationaal Georegister? bekijk de instructiefilm op Youtube

Hoogte(4791) Nieuwe Waterweg(574)
Vervoersnetwerken(4751)
Wegen(324) aardrijkskunde(4739)
boundaries(383) elevation(5049)
environment(1036) hoogte(4780)
inlandWaters(388) landschap(4746)
location(386) structure(440) transportation(822)
water(4757)

Laatst in het NGR toegevoegde of aangepaste metadata

Geschiktheid Warmte Koude Opslag diep

GeoTOP - gefundeerde geulenkaart

GeoTOP - lagenmodel 14 Stroombaan generatie CFormatie van Echteld

GeoTOP - geologische kaarten

Meest bekeken

de Nieuwe Kaart van Nederland

Actueel Hoogtebestand Nederland 2 0,5 meter maaiveldraster, opgevuld (AHN2)

BRT achtergrondkaart WMTS

Kadastrale Percelen

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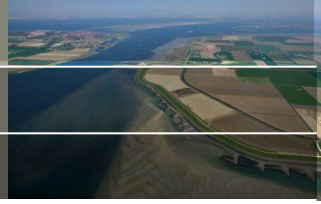
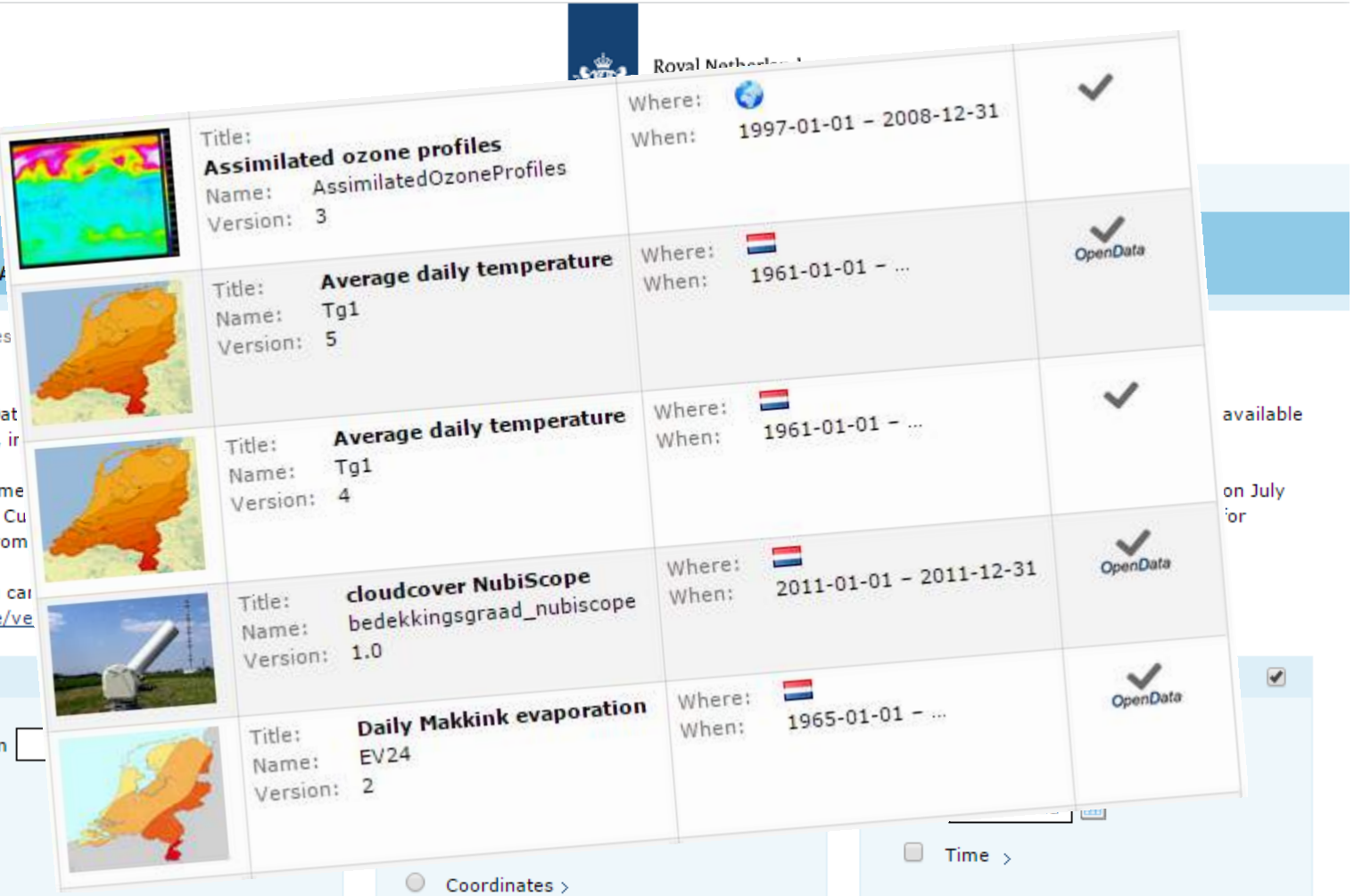
KNMI Data Centre





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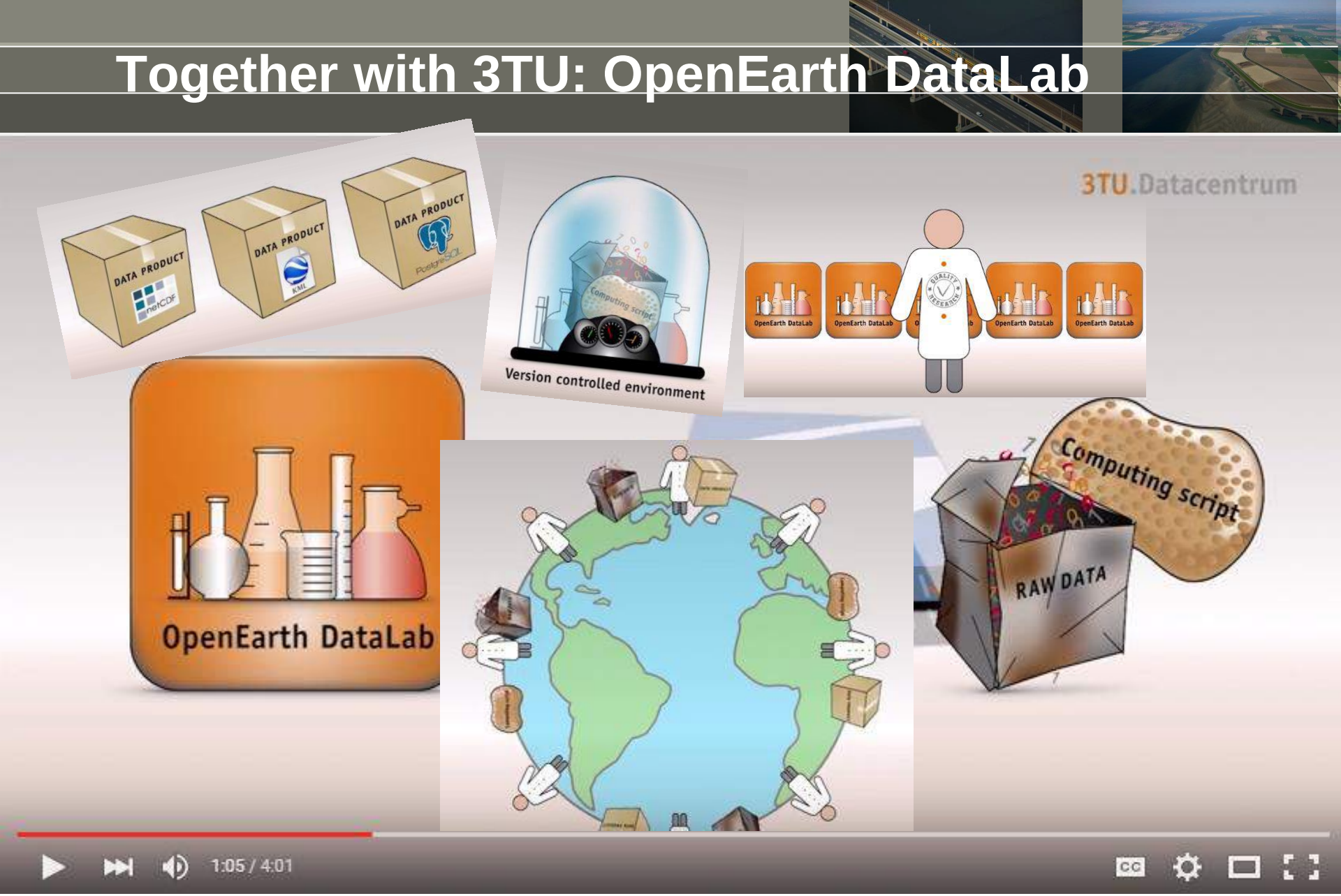
Together with 3TU: OpenEarth DataLab



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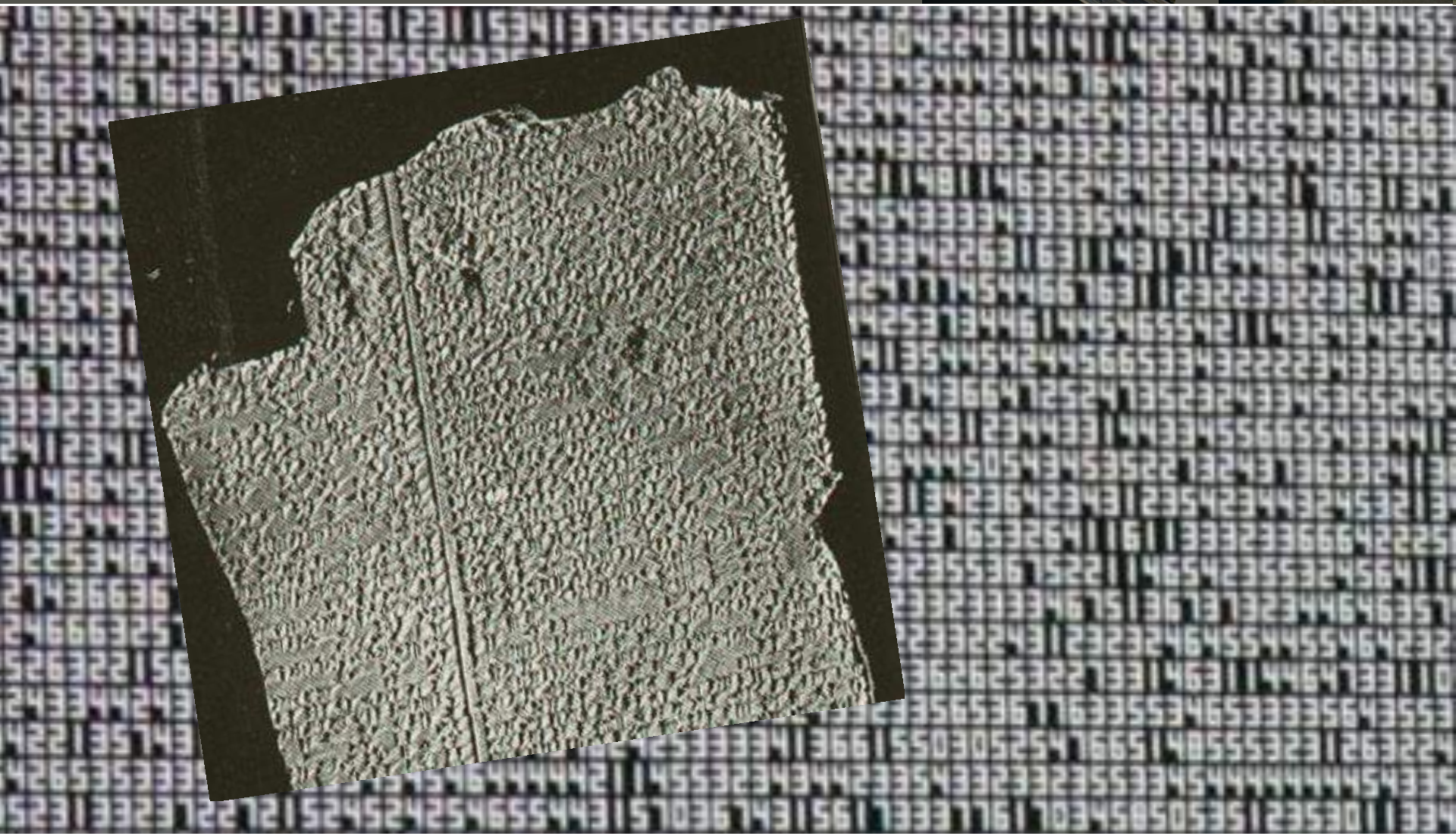
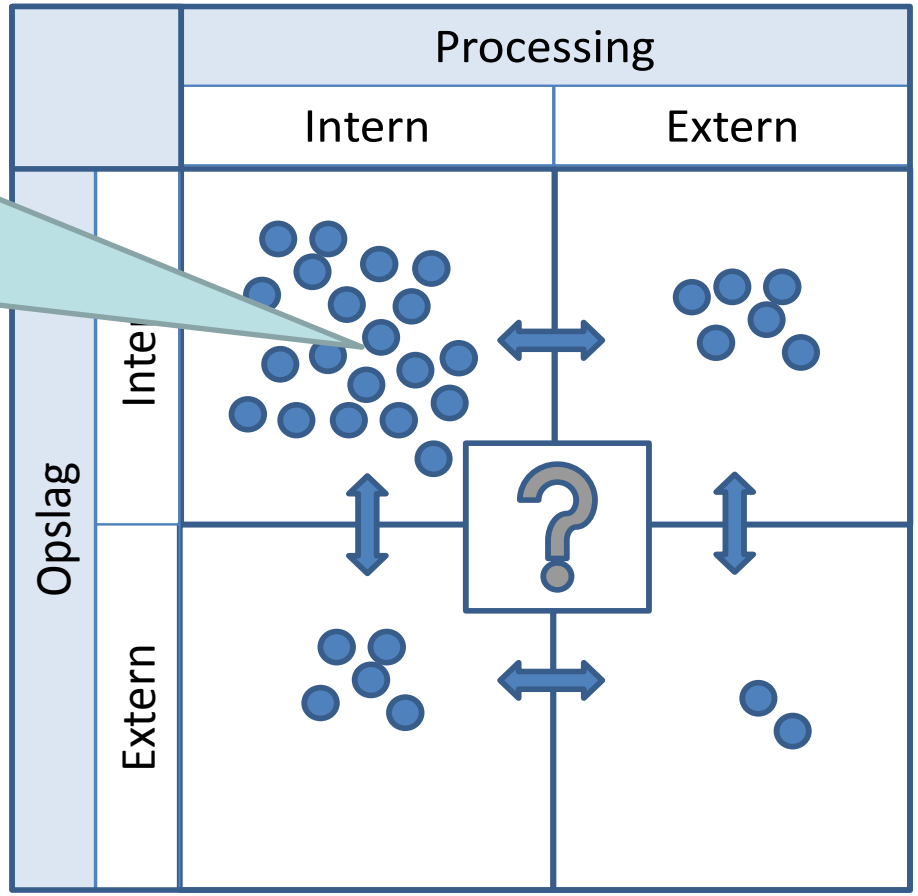
Data growth and -storage, what's new?



Deltares

Four options to carry out projects

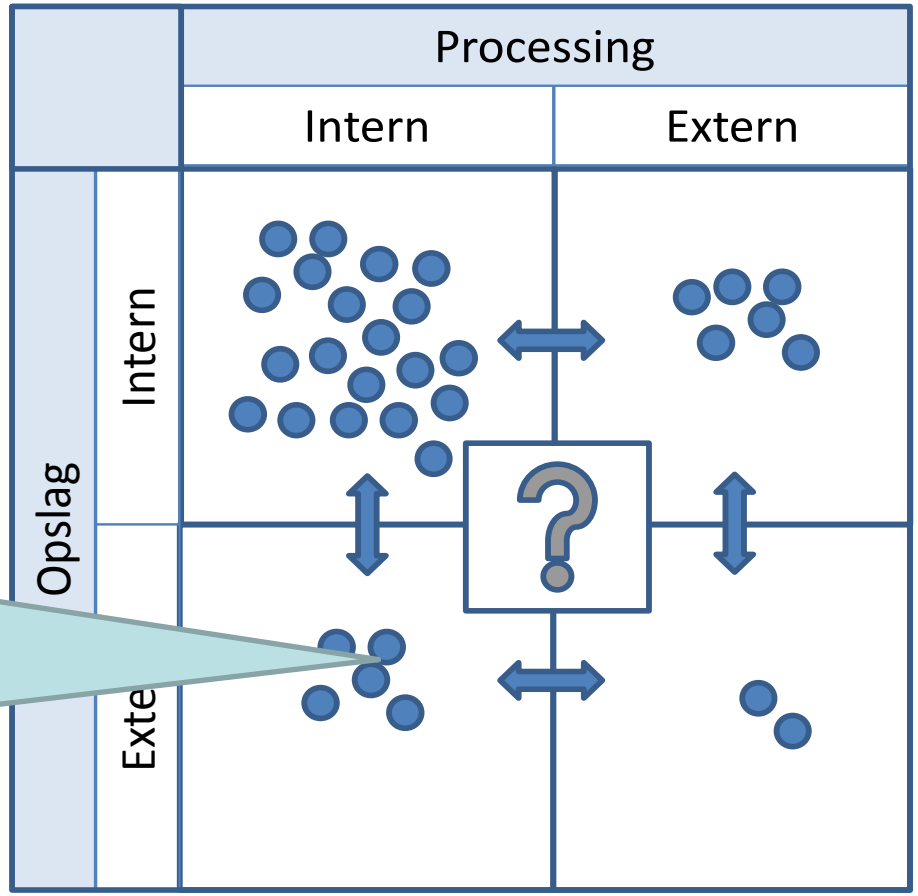
Most conventional Deltares projects: Data storage and processing in house



Deltares

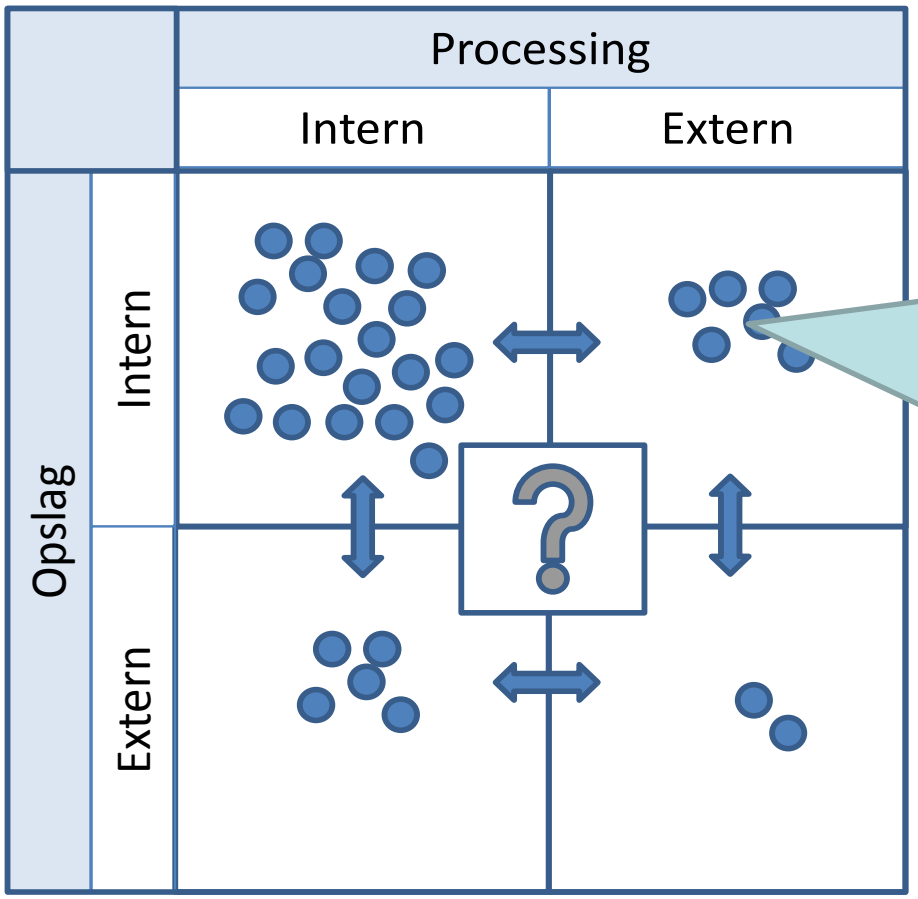
Four options to carry out projects

Fewer Deltares projects using in house processing of externally stored data



Deltares

Four options to carry out projects



Deltares Cloud Scheduler (DCS) to manage processing and needed resources of the Amazon Elastic Compute Cloud (EC2). Thousands of computing hours of the WAQUA model for WTI 2017 have been carried

this way.

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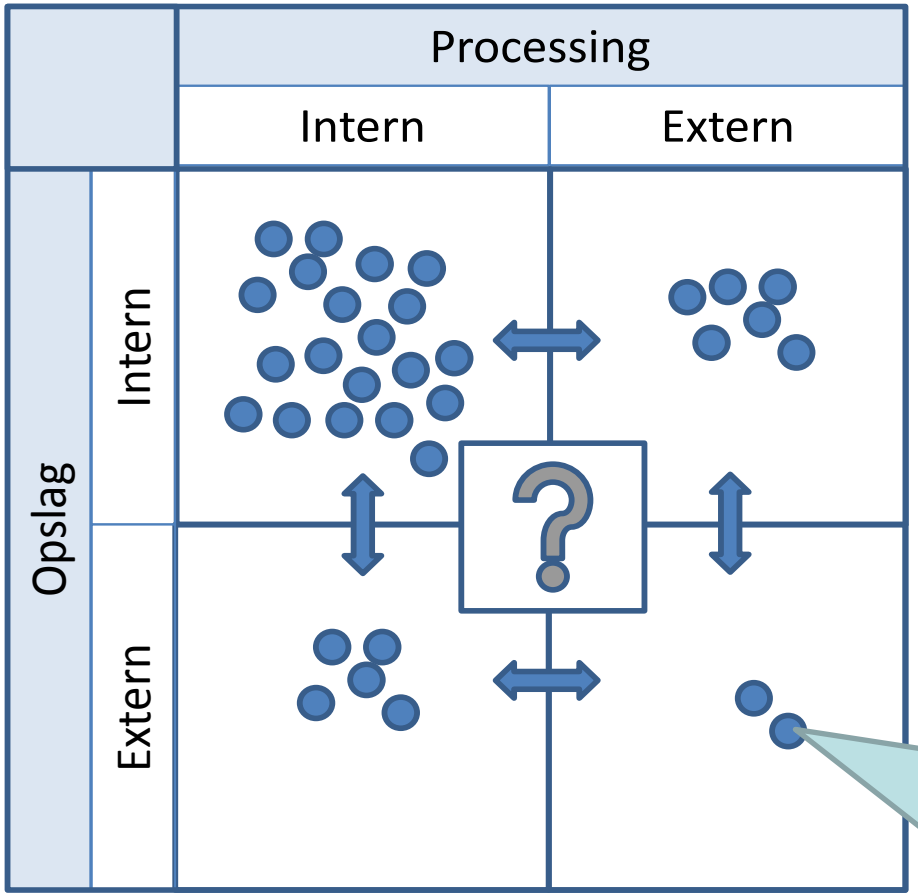
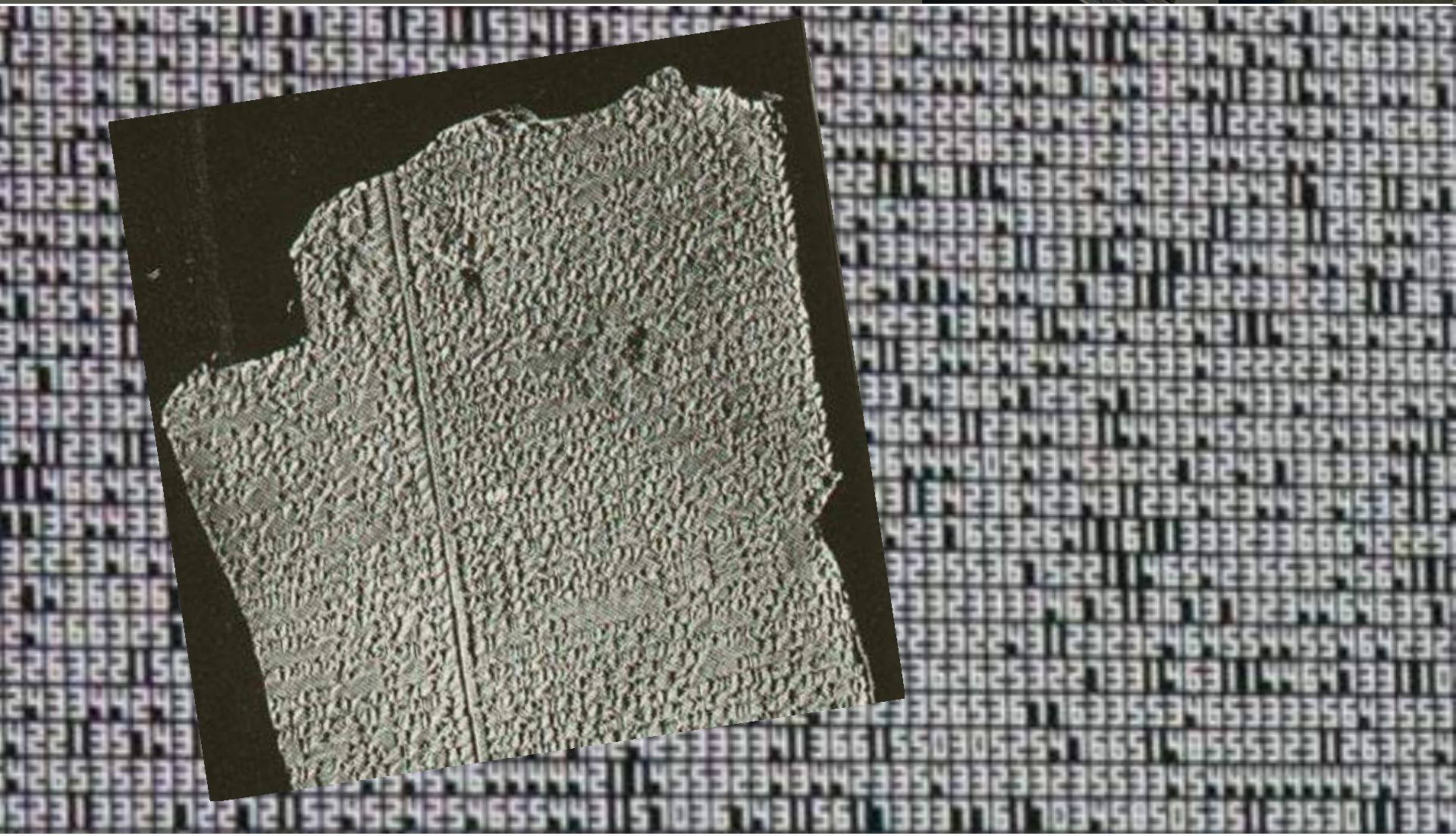
Four options to carry out projects



Experimental projects making use of Google Earth Engine: External processing of external data commanded from your laptop

Deltares

Data growth and -storage, what's new?



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I have a dream...! (Digital Delta)

DIGITAL DELTA & BIG DATA

Imagine all the waterdata of The Netherlands is readily available for everybody…….

- Geo-information: provides the necessary structure
- Automated survey networks: the data-fundament
- New sensors, internet of things: a lot of data
- Real time hydromodels : much more data
- Social media more & more & more

unstructured data

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... data centers on renewable energy...

18 sep 2015, 10:10 economie

Grootste windpark op land van Nederland staat nu in Delfzijl - volledig voor Google

Deltares

As stated before...predicting the future is hard

18 sep 2015, 10:10 economie

Grootste windpark op land van Nederland staat nu in Delfzijl - volledig voor Google

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2065...Whahaha windmills to generate power !

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