OGC – Current Activities

Bart De Lathouwer
Open Geospatial Consortium
29 October 2015, FOSS4G Belgium

OGC®
Making location count.

Agenda

- Introductie OGC
- OGC standaarden voor overheden en bedrijven
- OGC en trends
- Nieuwe initiatieven bij de OGC

OGC®

OGC

- **The Open Geospatial Consortium (OGC)**
  - Not-for-profit, international consortium of 500 industry, government, and university members
- Founded in 1994
- Work is based on collaboration and consensus!

OGC Mission

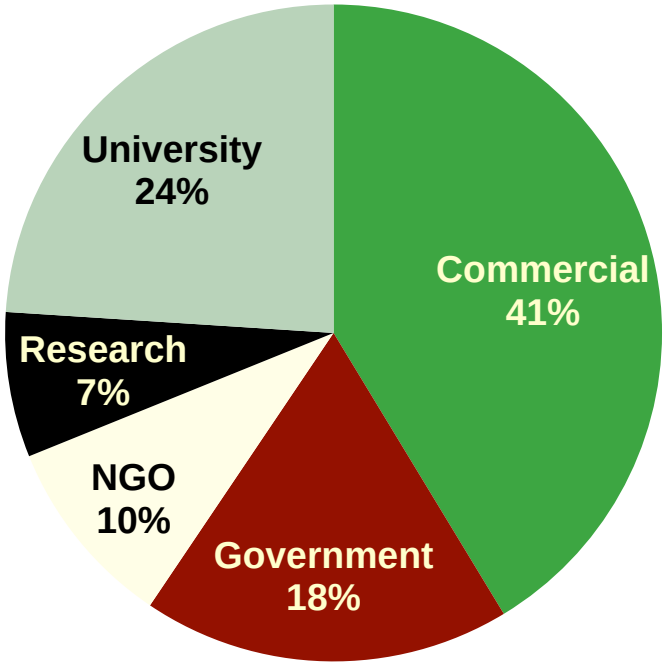
Our core mission is to deliver interface specifications that are openly available for global use, and which are used by Geospatial data producers and software transparently to the users.

OGC®

OGC overzicht

Not-for-profit, international voluntary consensus standards organization; leading development of geospatial standards

- **Founded in 1994.**
- **500 members and growing**
- **38 standards**
- **Hundreds of product implementations**
- **Broad user community implementation worldwide**
- **Alliances and collaborative activities with ISO and many other SDO's**

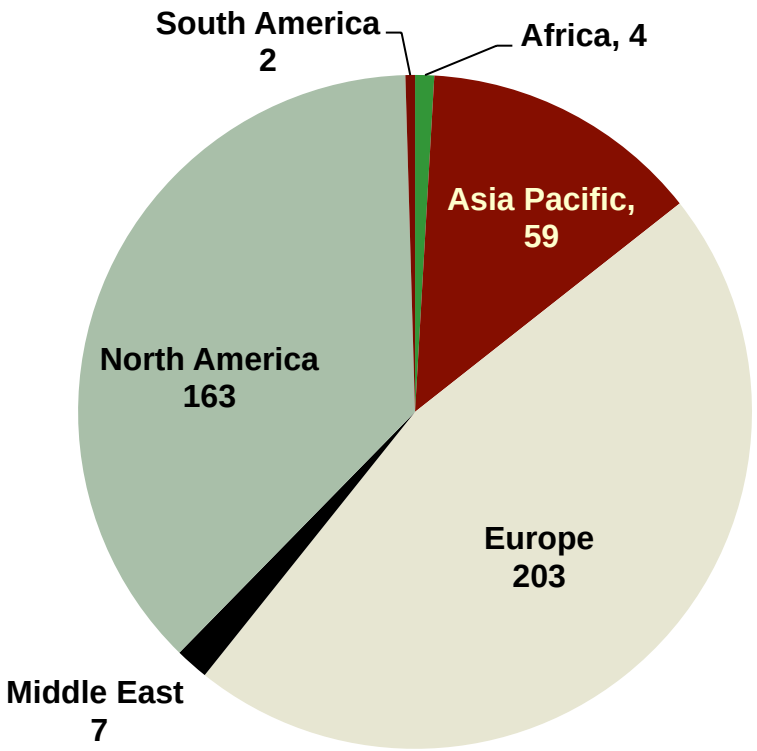


OGC®

OGC overzicht

Not-for-profit, international voluntary consensus standards organization; leading development of geospatial standards

- **Founded in 1994.**
- **500 members and growing**
- **38 standards**
- **Hundreds of product implementations**
- **Broad user community implementation worldwide**
- **Alliances and collaborative activities with ISO and many other SDO's**



OGC®

OGC, wat standardiseren we?

$$f(x)=y$$

OGC, wat standardiseren we?

- Standardisatie van de gegevens (incl. metadata)
  - Abstract specifications, encodings, profiles, …
  - Eg: GML, KML

$$f(x)=y$$

OGC®

OGC, wat standardiseren we?

- Standardisatie van toegang tot de gegevens
  - Web Services,
    - WMS, WFS, WPS, …

$$f(x)=y$$

OGC®

Open Standards – Business Value

- **Prevents a single, self-interested party from controlling a standard**
- **Lower systems and life cycle costs**
- **Encourage market competition**
- **Choose based on functionality desired**
- **Avoid “lock in” to a proprietary architecture**
- **Play in similar markets worldwide, beyond ‘home’ market**

Source: Open Standards, Open Source, and Open Innovation: Harnessing the Benefits of Openness, April 2006. Committee For Economic Development. www.ced.org

OGC®

Open Standards - Business Value

- **Stimulates innovation beyond the standard by companies that seek to differentiate themselves.**
- **Focus on solving business problem, not the technical foundation**
- **Help standards development – be a thought leader**

Source: Open Standards, Open Source, and Open Innovation: Harnessing the Benefits of Openness, April 2006. Committee For Economic Development. www.ced.org

OGC®

OGC STANDAARDEN VOOR OVERHEDEN EN BEDRIJVEN

OGC®

Herken je deze situatie?

- Waar heb ik mijn bestanden gezet op de server?
- In welke folder staan de bestemmingplannen van…
- Wat is de Url van de service voor …

- Een beetje zoals in de bib:
  - Waar staat dat boek van …
- Waar ga je dan naartoe?
  - De Index!
  - Geeft aan waar boek staat!

OGC®

Catalog

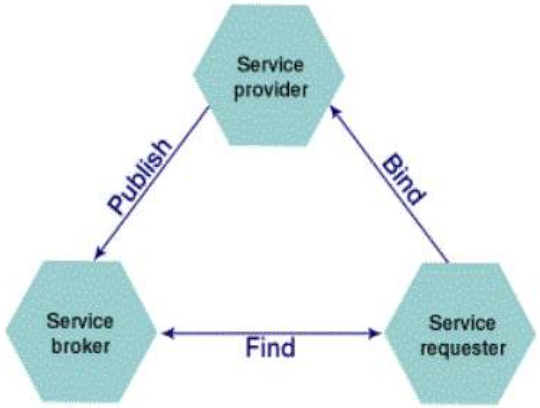
- Index kaart in bib = Metadata

- Database van Metadata = Cataloog
- In OGC termen een CSW
  - Catalog Service for Web

OGC®

OGC Architecture

- Most OGC standards can be integrated into a web service or some other distributed architecture / platform so that:
  - Resource providers can advertise their resources **(publish)**
  - End users can discover resources that they need at run-time **(find)**
  - End users and their applications can access and exercise resources at run-time **(bind)**
  - **=> naar een SDI**



OGC Web Services Standards

The GeoWeb is enabled by OGC standards:

Web Map Service (WMS)
Web Feature Service (WFS)
Web Coverage Service (WCS)
Web Map Context
Catalogue (CSW)
Web Processing Service (WPS)
Sensor Observation Service (SOS)
Others…

The Geospatial Web is about the complete integration and use of location at all levels of the internet and the web.

OGC®

Een SDI

- "An SDI is a coordinated series of agreements on technology standards, institutional arrangements, and policies that enable the discovery and use of geospatial information by users and for purposes other than those it was created for."

- Een SDI kan ook voor uw gemeente of departement!
  - De kans is groot dat je de componenten reeds in huis hebt, maar dat we niet zijn geactiveerd.
  - Spreek met je software leverancier
  - Laat "in je cataloog kijken"
    - Cascading Catalogs

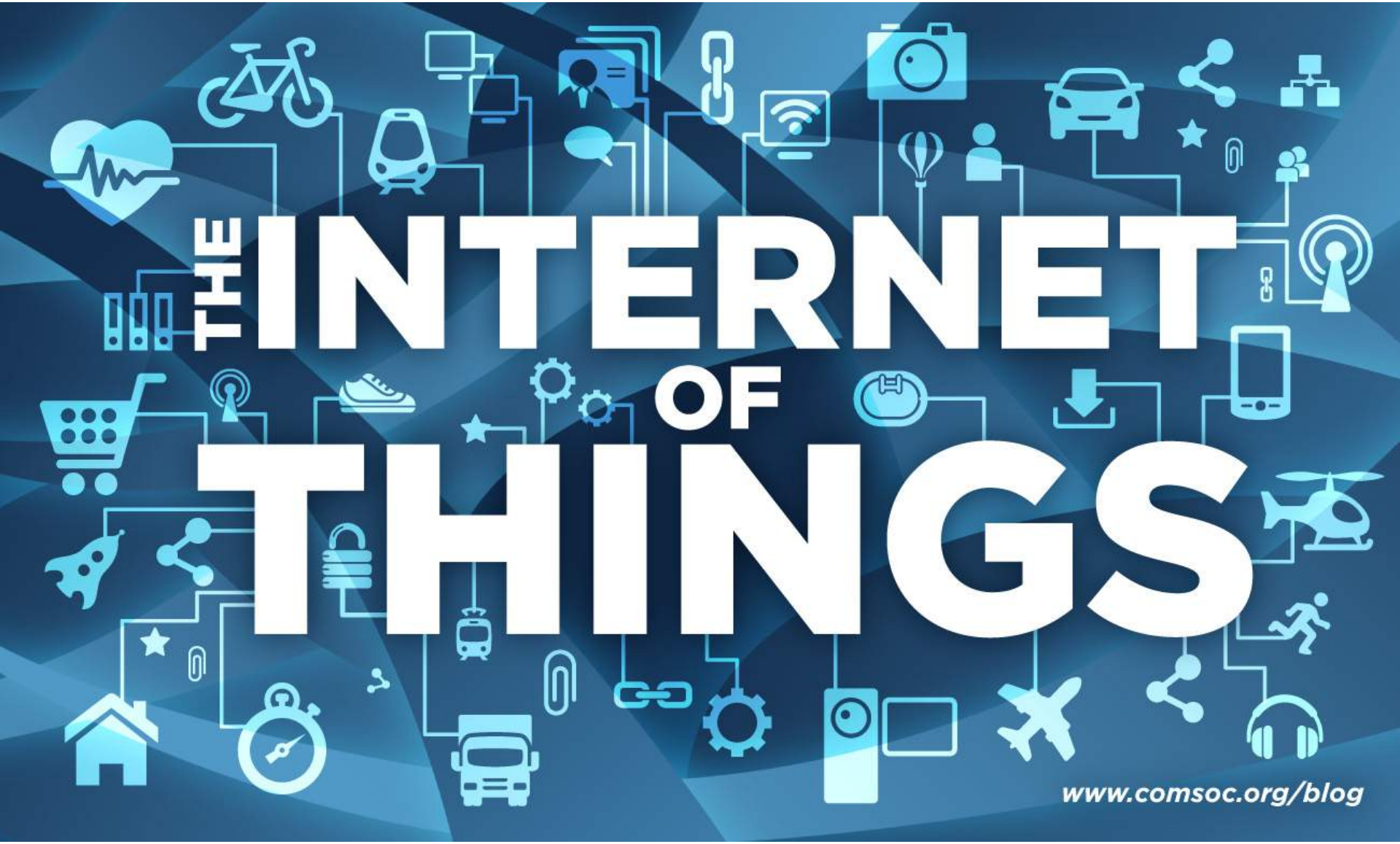
OGC®

OGC EN TRENDS

OGC®

OGC EN TRENDS

OGC®

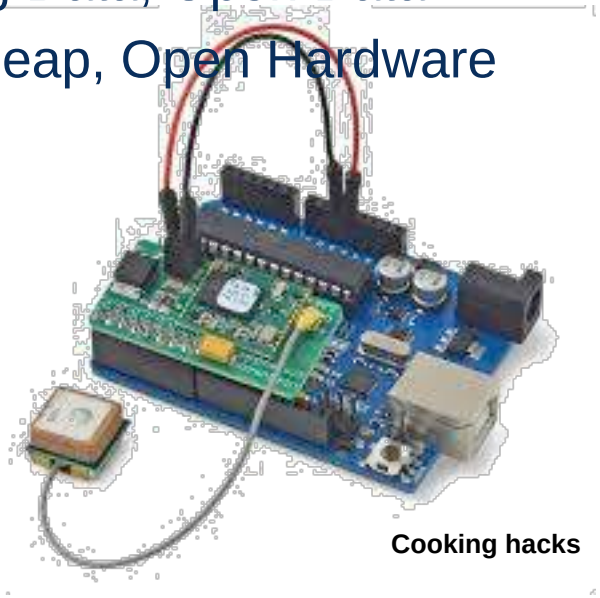


Google pictures

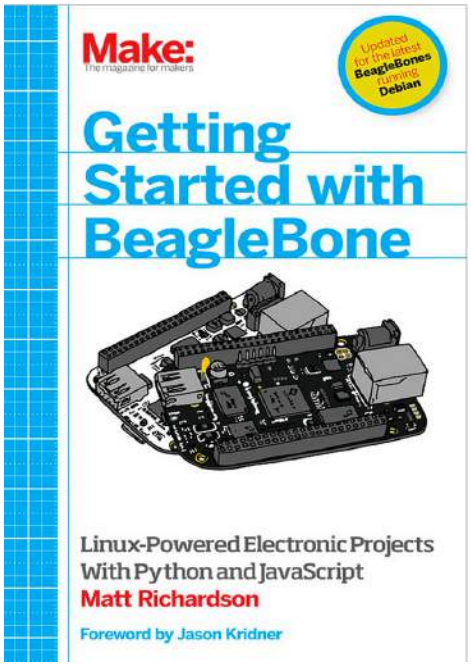
OGC®

Internet of Things

- Interconnection of uniquely identifiable embedded computing devices on the internet
  - "Maker" Community
    - Developers are the kingmakers of the IoT, not through the boardroom
  - Big Data, Open Data
  - Cheap, Open Hardware



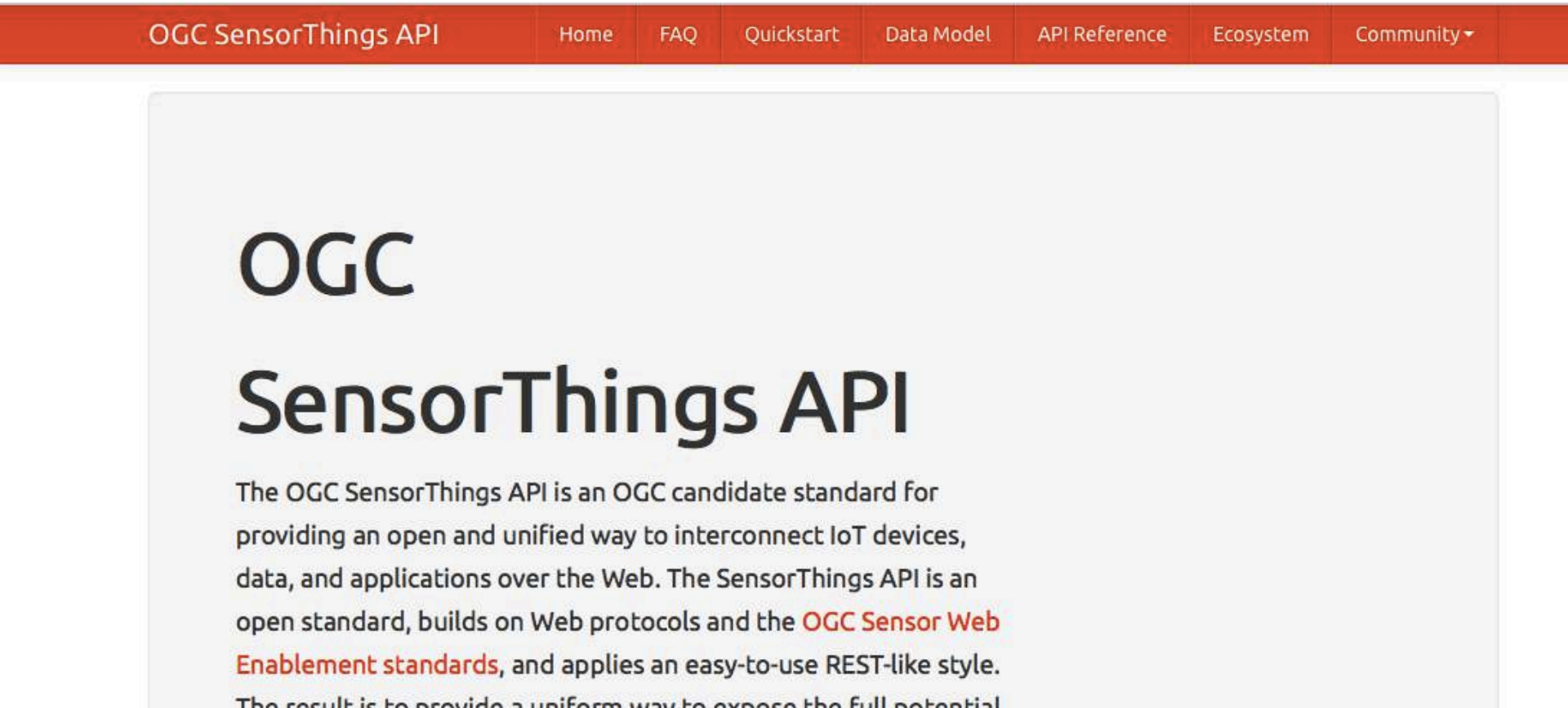
Cooking hacks



OGC®

Internet of Things

- Sensor Web Enablement
  - WaterML2 (Profile of O&M)
- SensorThings API



Big-Data

Ben Chams Fotolia

OGC®

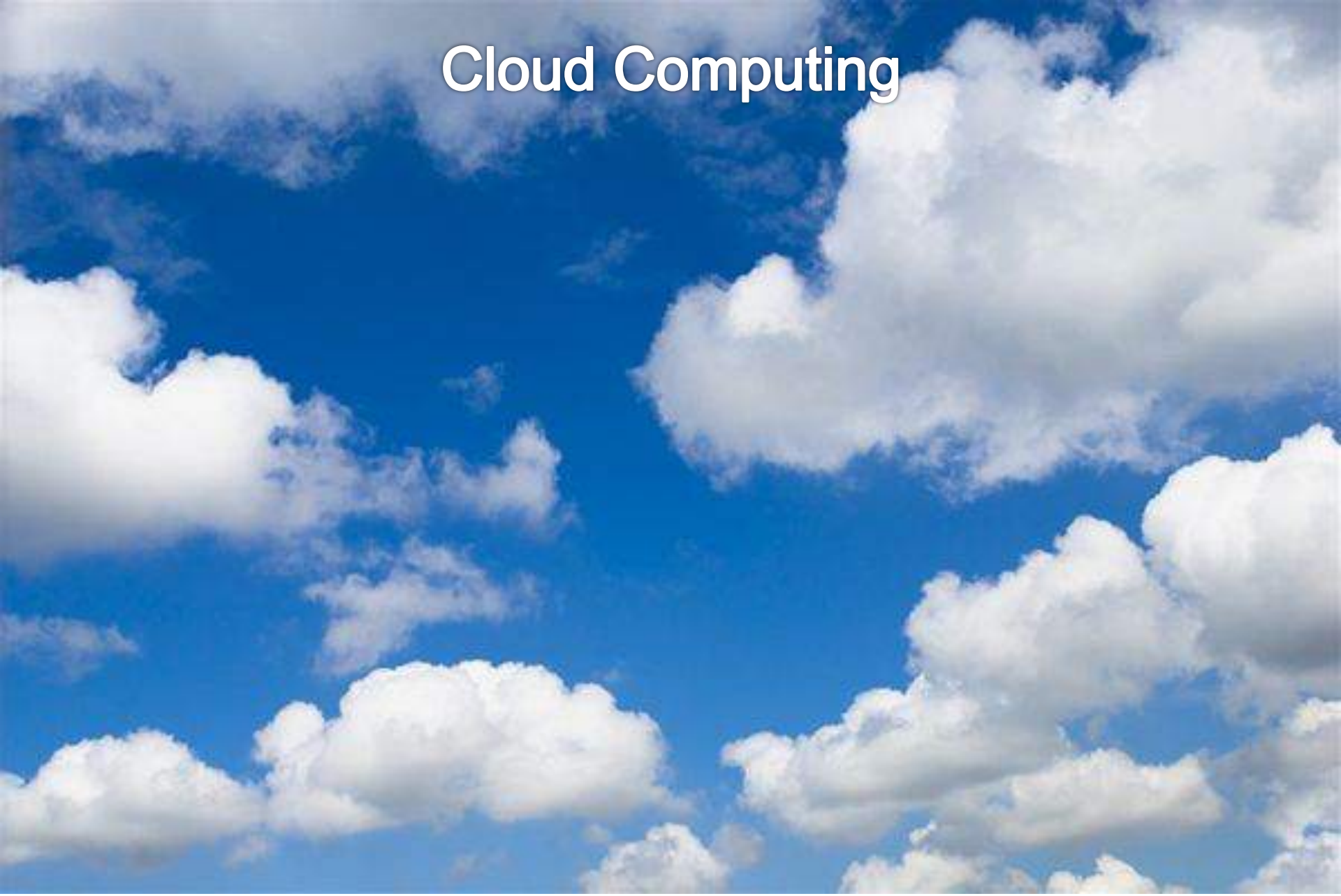
Big Data (Doug McLaney and IBM)

- 4 V's
  - Volume, Velocity, Variety, Veracity
- (Geospatial data has always been big data)
- Big Data coming from Mobile
  - Design for Mobile, Web
- (Geospatial) Moving into the Cloud
  - WPS
- Trend towards Open Data

Unknown source

OGC®

Cloud Computing



UK Metoffice

OGC®

Cloud Computing

- For Storage
- For Virtualisation (Infrastructure as a service - IaaS)
- For Computation (Platform as a Service – PaaS)
- For Software (Software as a Service – SaaS)

- New approaches
  - Do not download your data from the cloud to process locally, upload your algorithms to the cloud and download the result!
  - Upload f() and download y (x is already in the cloud where bandwidth is high)
  - WPS - OpenMI

OGC®

Crowd-Sourcing / Citizen Science

- Citizens become more ‘vocal’ and participatory
- Citizens have the hardware – the SmartPhone
- Human as a Sensor

- Additional source of information – not replacing official sources
  - Quality control and conflation to CS data using official authoritative data
  - E.g. Open Street Map

- SWE Profile for Crowd-Sourcing
  - FP7 “COBWEB” research (Citizen Science – Citizen Obs)

OGC®

Open and Open-Data

- Trend towards “Open”
  - GitHub, PSI-directive, Arduino
  - PSI-Share, SmartOpenData, …
  - Hackathons, Appathon, …

Share-PSI 2.0

- Necessity to agree on standards
- What license do you chose for your Open Data?

OGC®

Smart Cities

- Smart Infrastructure (> SmartGrid, ITS)
  - "Self reporting" infrastructure
- Knowledge communication
- Intellectual Capital – Social Capital (Internet of People)
- Inclusive and sustainable cities
  - Standards for the Anthropocene

- Address Aging Society – link with City Planners

- Need for City Models (CityGML – IFC)
  - BIM, bSI, …

buildingSMART International home of openBIM

OGC®

Semantic - Semantic Web

- Web 3.0, LinkedData

- Beyond model
- Semantic interoperability

"Now! ... *That* should clear up a few things around here!"

FarSide - Larson

OGC®

Semantic - Semantic Web

- Web 3.0, LinkedData

- Beyond model
- Semantic interoperability
  - Computer systems to exchange information with unambiguous, shared meaning (wikipedia)
  - Semantic Mediation
  - Need to form a foundation ontology (‘upper ontologies’)

- OGC – W3C MoU
  - Workshop in March 2014 in London – hosted by Google

OGC®

NIEUWE INITIATIEVEN BIJ DE OGC

OGC®

Urban Planning DWG

- An open forum for the discussion and presentation of interoperability requirements, use cases, pilots, and implementations of OGC standards in Urban Planning.

- Heavy emphasis will be on system issues of:
  - Interoperability between disparate applications, sharing data models and processing models
  - Smooth transitions and process flows including planning, execution of changes and maintenance of the running ICT system that will support Smart Cities, Sustainable Cities, Smart Grid and continuous indoor/outdoor navigation

OGC®

Urban Planning DWG, Purpose

- Facilitate how human activity affects or is influenced by the geography of urban space, including urban mobility, communication and utility networks, to ensure the orderly development and optimal use of urban space. (cfr Health and Silver Economy)

- In today's world this also means to understand and facilitate the communication of information about the urban space with the users of that space. (Manage complexity)

- To optimize those interactions and potentially adjust the designs of that space to better serve those who related to that space (e.g. people living, working or visiting a given space).

OGC®

UP, Crowd Sourced decisions

- The public, in general, are no longer pleased to be passive in acceptance of authority. Because of this, and other societal trends, the future of Urban Planning will depend on "crowd sourcing" decisions and plans that effect residents.

- The planning, execution, and maintenance of the urban infrastructure in the purposes to which it is involved will have to balance:
  - Communitarian goals ("the common good") with individual rights (e.g. privacy)

OGC®

GEO EN BIM

OGC®

3DIM Charter

- The 3D Information Management (3DIM) Domain Working Group is facilitating the definition and development of interface and encoding standards that enable software to develop solutions that allow infrastructure owners, builders, emergency responders, community planners, and the traveling public to better manage and navigate complex built environments.

OGC®

And then the 3DIM DWG – History

Formed as **CAD/GIS**
Domain Working Group

Initiated **CityGML**
Standards Working Group

3D Portrayal
Interoperability
Experiment (3DPIE)

Initiated **Oblique Imagery**
Domain Working Group

today!

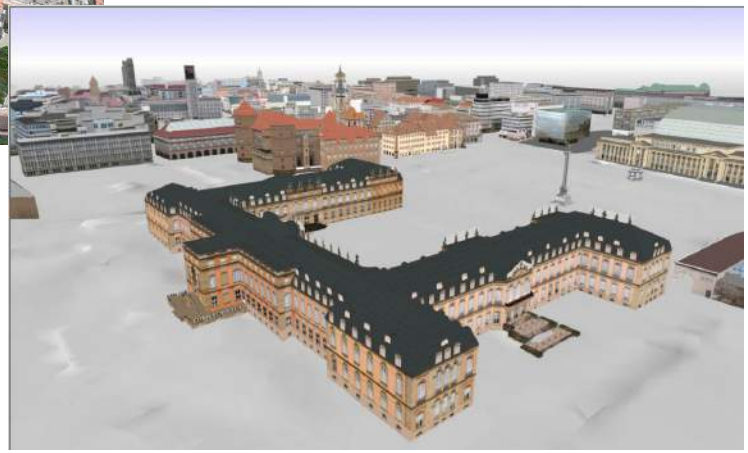
Changed name to
3D Information Management
Domain Working Group in 2007 to better reflect the diversity of work in the group

ARML and IndoorGML
Standards Working Groups

OGC®

CityGML

- Application independent geospatial information model and exchange format for 3D city models comprising different thematic areas (buildings, vegetation, water, terrain, traffic etc.) and dimensions . . .
- With semantics!
- LOD's

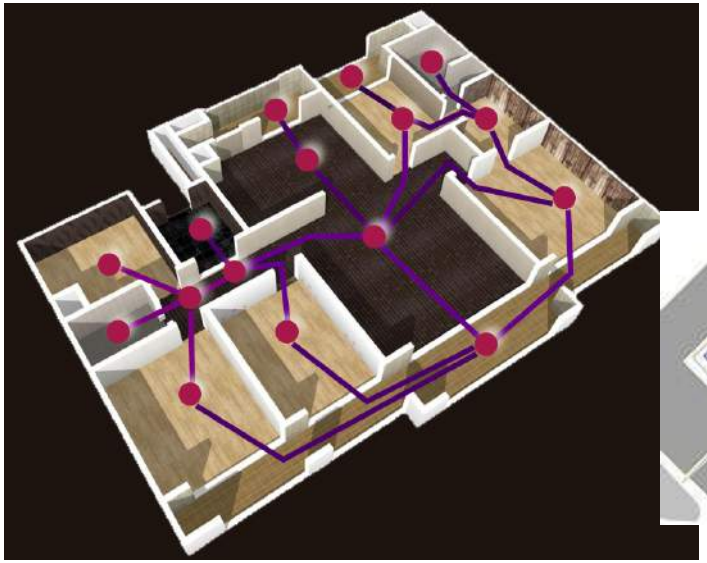


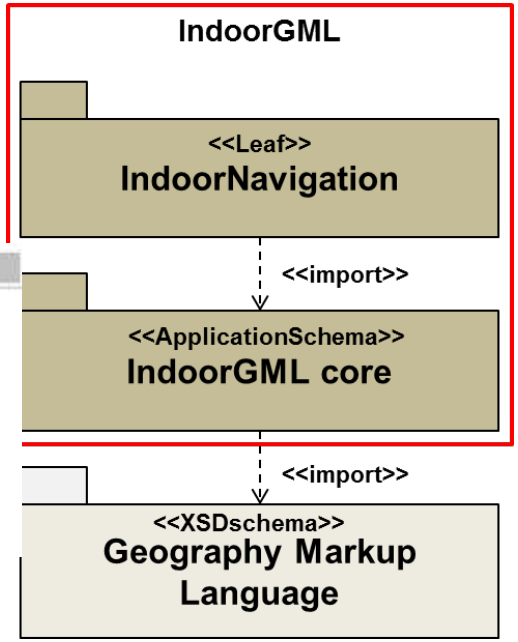
OGC®


Disaster management
Kreis Recklinghausen
Radio network planning
T-Mobile
Noise immision mapping
Stapelfeldt GmbH
CityGML
for 3d city models
Police simulator
Rheinmetall Defence Electronics
Berlin
Business development
& tourism
Google
Kaufhof
Springfield
Leffers
Remigiusstr.
Münsterplatz
Navigation
Facility management
Urban planning
Architecture
Architekturwerkstatt SenStadt Berlin

IndoorGML

- The aim of IndoorGML is to represent and exchange the geoinformation that is required to build and operate indoor navigation systems.
- Not just geometry but a model of the indoor space!

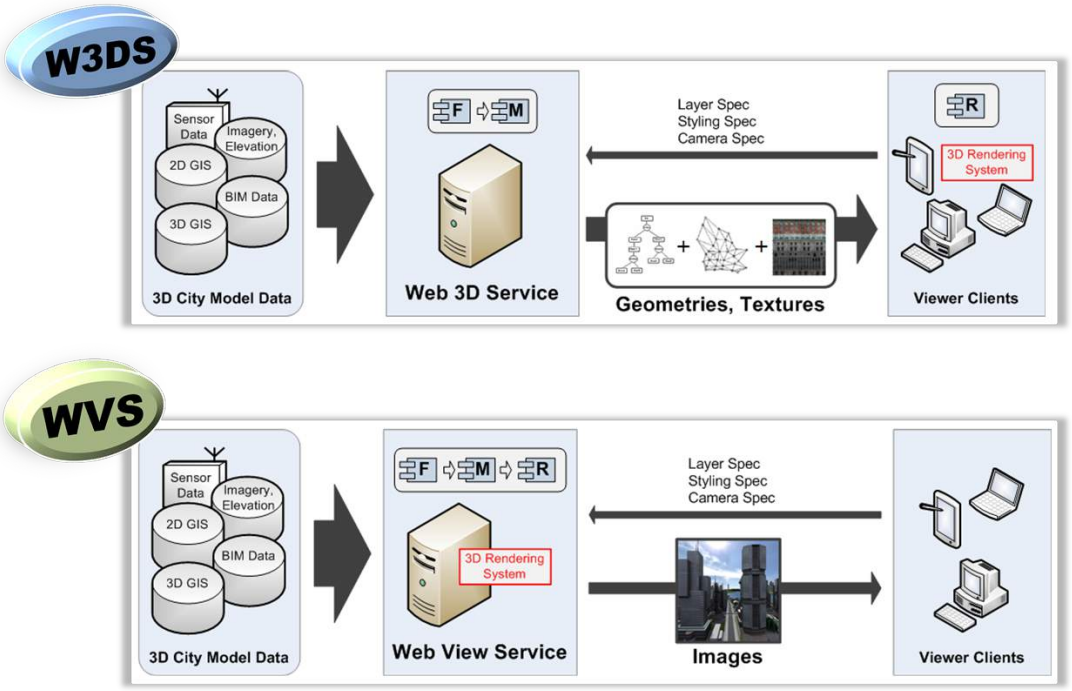




OGC®

3D Portrayal Interoperability Experiment

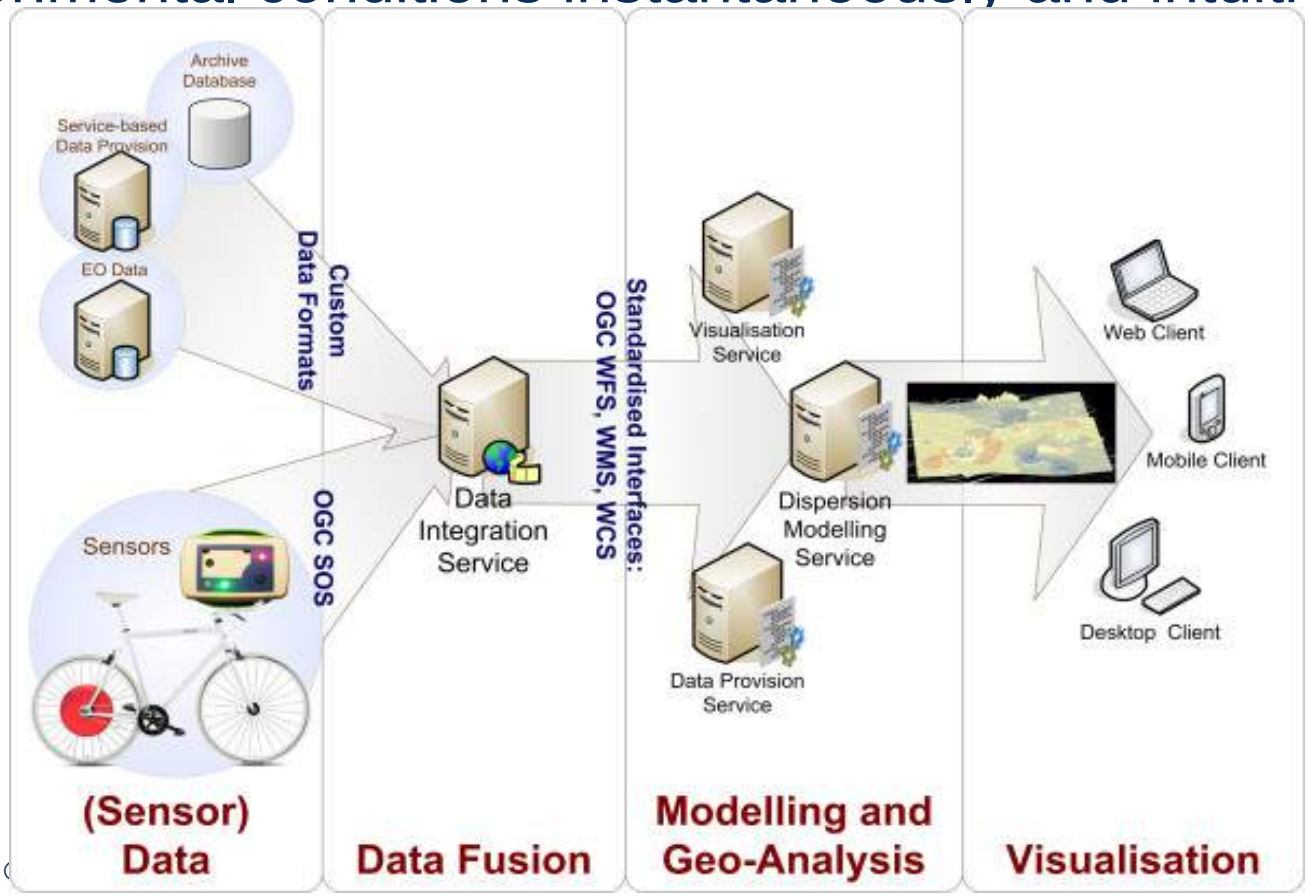
- We need an open 3D portrayal interface
  - https://portal.opengeospatial.org/files/?artifact_id=49068&version=3
  - Candidate Standards
    - Web 3D Service, Web View Service



OGC®

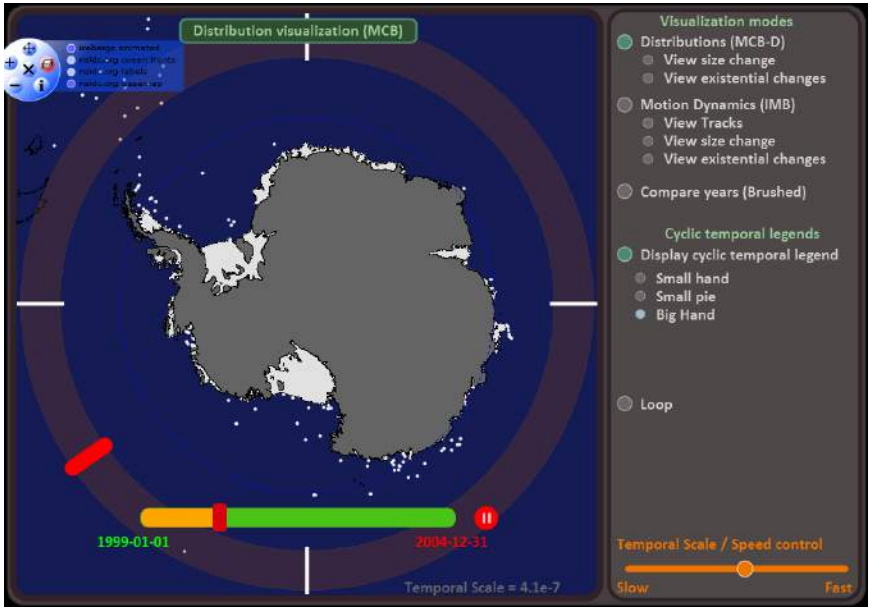
3D and sensors
Common Scents – City Sense

- Aims at providing fine-grained air quality data to allow citizens and urban decision-makers to assess environmental conditions instantaneously and intuitively.



Enter Time

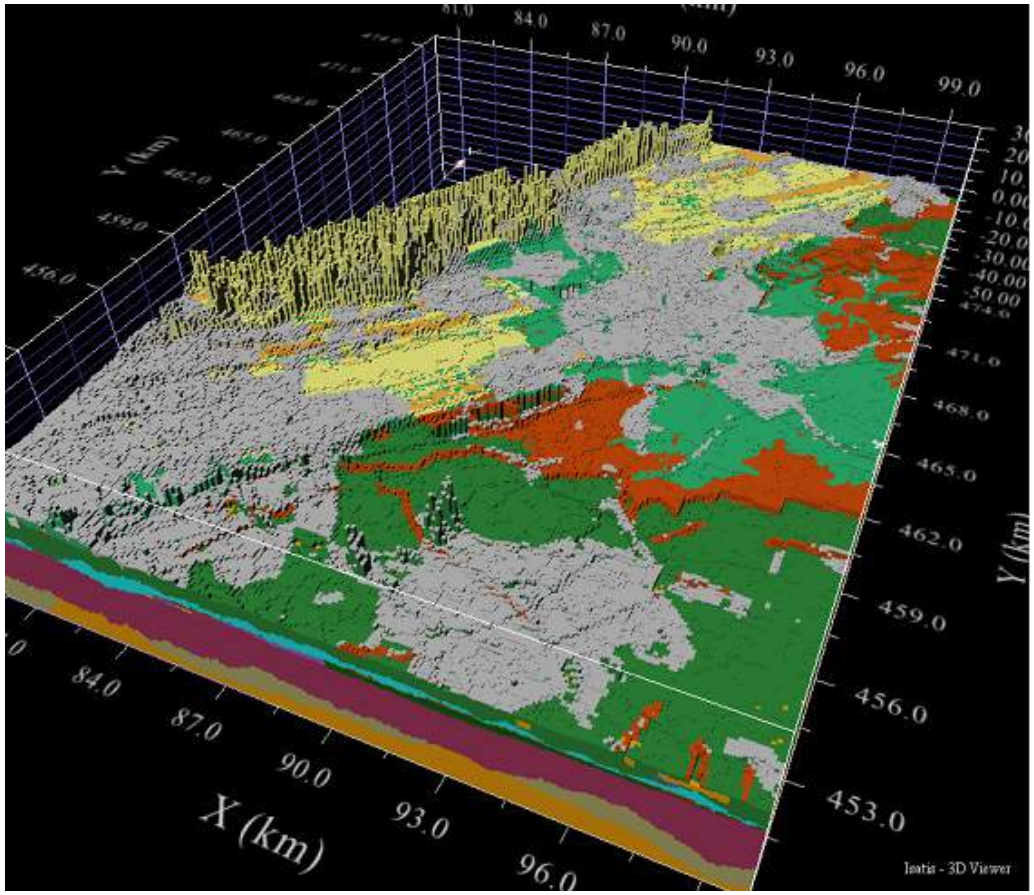
- Over the OGC standards work has touched on 2D/3D and temporal
- Now there is a concerted effort to expand spatio-temporal standards work in the OGC



OGC®

And of course OGC standards can be used together in applications and workflows

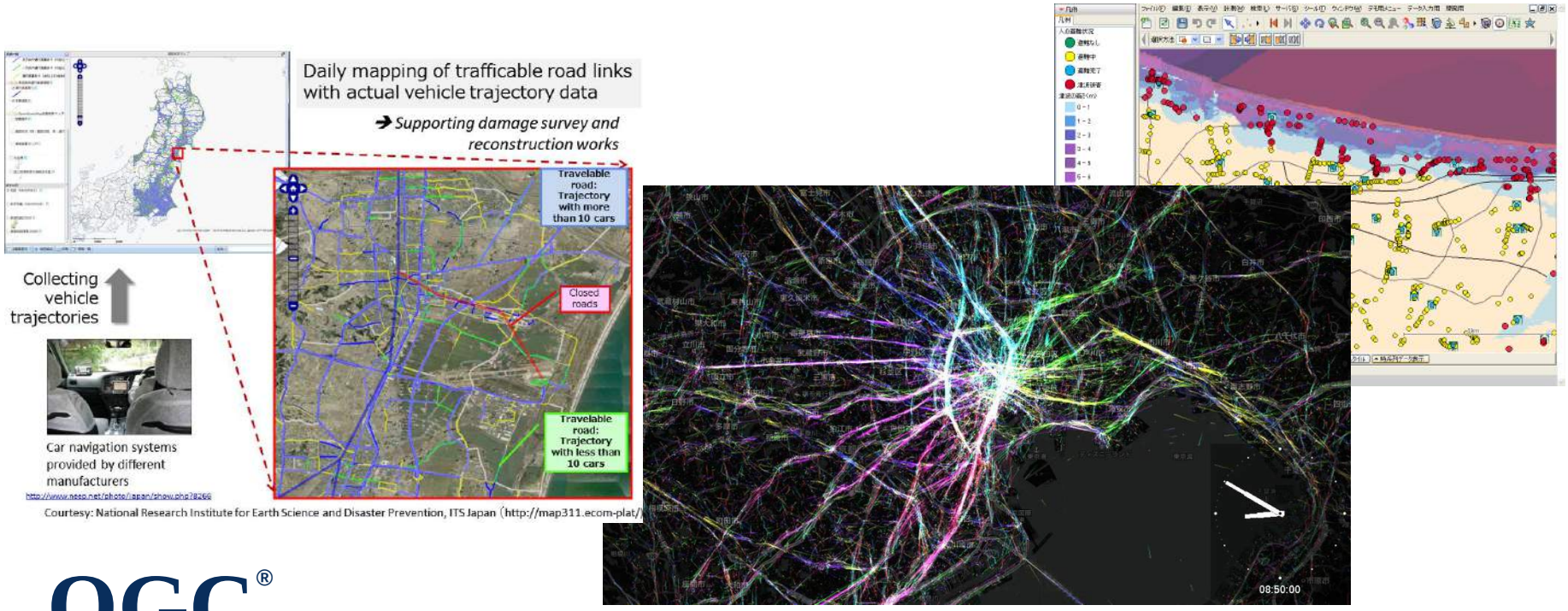
- CityGML & NetCDF for energy neutral cities
  - http://www.3dpilot.nl/?p=92



OGC®

OGC Moving Features

- "Moving features" data describes such things as vehicles, pedestrians, airplanes and ships.
  - This is Big Data – high volume, high velocity.
  - This is 4D with interesting implications for 5D
  - http://www.opengeospatial.org/pressroom/pressreleases/1785



LAND AND INFRA DWG

OGC®

Land & Infra - Learn from past experience

- Reviewing the current LandXML schema and determining how best to continue to support the existing users and engage with them.

- Assessing the current industry support for the LandXML schema and whether multiple, incompatible versions of the schema have evolved.

OGC®

Land & Infra

- Investigating the possibility of moving the LandXML schema into InfraGML (Infrastructure and land use).

- Other efforts to integrate land information contained in various CAD formats into the OGC standards framework.

OGC®

Land & Infra

- Developments
  - MoU between OCG and bSI /bSA
    - ISO/TC 59/SC 13
  - Align activities
  - Jointly develop an abstract specification for Infrastructrue
    - Encodings in GML and IFC
    - Interoperability between the Design and Building environment and the Management environment

OGC®

Land & Infra DWG

- Draft abstract schema for InfraGML
  - Initial focus on Road and Road Alignment
  - Under review by various WG's (OGC and bSI)

OGC®

The OGC Work does not happen in isolation

- The OGC and OGC Members collaborate and participate in numerous other standards organizations and communities that have requirements for 3D/4D/5D encoding, modeling, analysis, and visualization.

KHRONOS GROUP
CONNECTING SOFTWARE TO SILICON

W3C®

web 3D CONSORTIUM

buildingSMART
International home of openBIM

National Institute of BUILDING SCIENCES
An Authoritative Source of Innovative Solutions for the Built Environment

World Meteorological Organization
Weather • Climate • Water

ISO

COLLADA

OGC®

Coming to the end . . .

Zie je wel..

- … dat het ook iets voor U is!
  - SDI voor Gemeenten, lokale besturen, departementen
  - Relevante werkgroepen
  - Doe mee!

OGC®

Thank you! Questions?

- bdelathouwer@opengeospatial.org
  - LinkedIn: Bart De Lathouwer
- atrakas@opengeospatial.org

OGC®