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OGC Health Summit

OGC Health DWG

99th OGC Technical Committee

Dublin, Ireland

Eddie Oldfield, Kym Watson

21 June 2016

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Agenda

Item #	Item	Person / Organization	Duration
4	Networking Break / Poster Presentations		30 minutes
5	Panel Presentations Theme: Updates from OGC / Standards in Action	1. Scott Cadzow – Standards in action for e-health (e.g. HL7, ISO, OGC…) 2. Denise McKenzie, OGC – update on work of UNGGIM Expert Group 3. John Herring, Oracle, Urban Planning DWG 4. Bart de Lathouwer, TestBed 11 results pertaining to health	40 minutes Includes short presentations, Q&A
6	Co-Chair Guidance	Co-Chairs	5 minutes
7	Discussion - General	Summit Outcomes / Take-aways / Actions Discussion: 1. Key requirements / OGC Standards in service of health applications 2. Interoperability Experiments, Pilots, Projects 3. Funding Opportunities	30 minutes
8	Interview Matrix	Interview Matrix - Participants	15 minutes
9	Plenary / Roundtable	Participants Share Highlights/Recommendations/Feedback	10 minutes
10	Close	Co-Chairs	5 minutes

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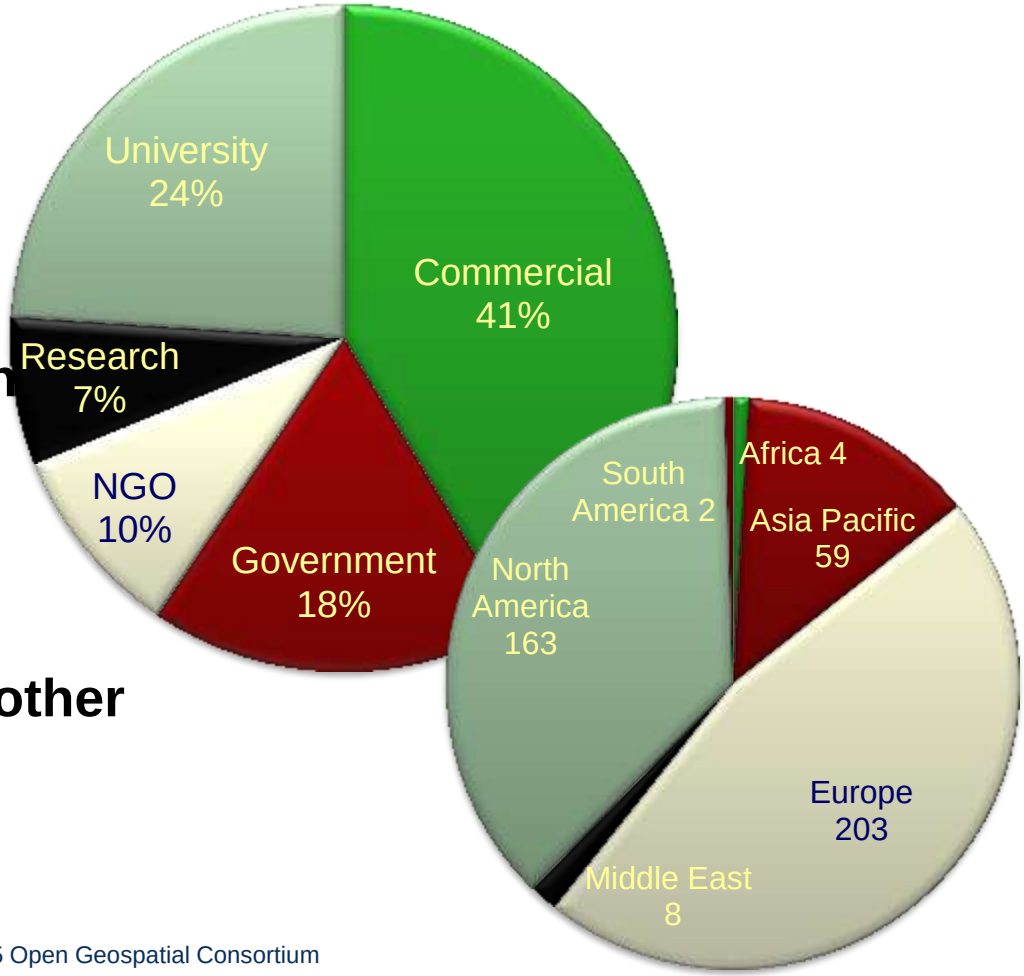
Introduction

Making location count.

The Open Geospatial Consortium

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

- **Founded in 1994.**
- **520+ members and growing**
- **48 Standards**
- **Thousands of implementation**
- **Broad user community implementation worldwide**
- **Alliances and collaborative activities with ISO and many other SDO's**



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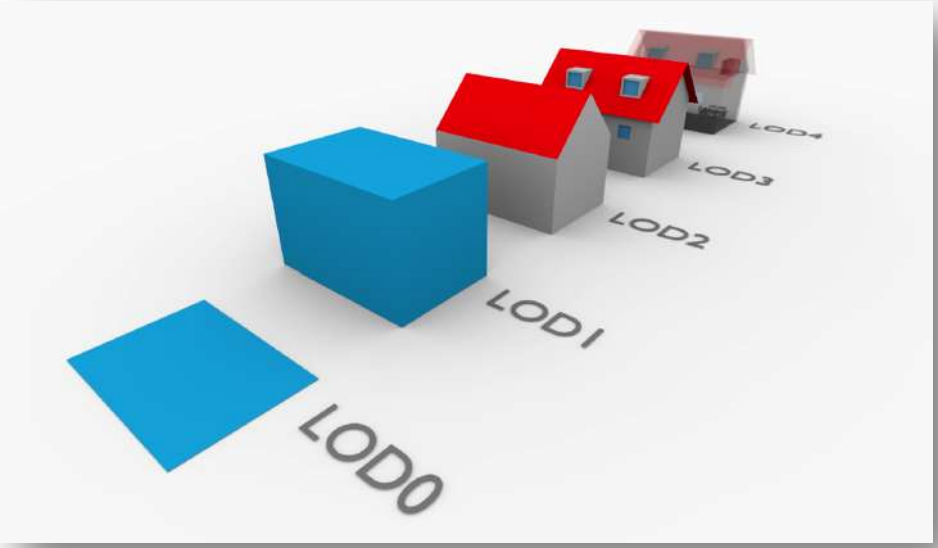
Global challenges

OGC Activities Driven by Community Needs

What is an OGC Standard?

A document, established by consensus and approved by the OGC Membership, that provides rules and guidelines, aimed at the optimum degree of interoperability in a given context.

- **Community requirements**
- **Member requirements**
- **Market trends**
- **Technology trends**



CityGML Levels of Detail

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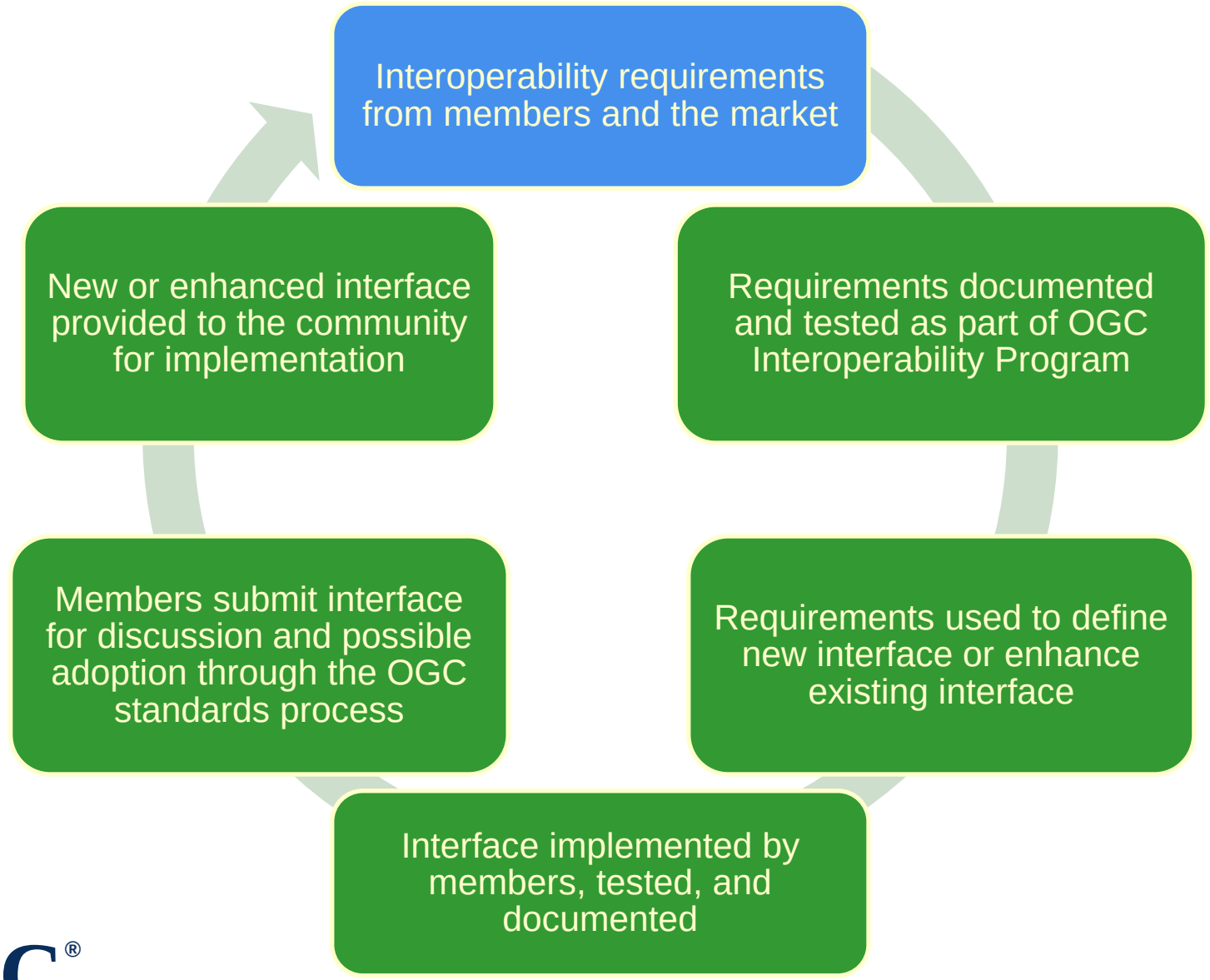
The OGC process – continuous evolution



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Example: 3D Information Management

- Integration of 3D Built / Geospatial Worlds
- Interoperation across the AEC / CAD / Geospatial domains
  - 3D City Models
  - 3D Visualization and Portrayal Services
  - Location Services
  - Indoor Location / Navigation
  - CityGML Discussions

Adapted from BuildingSmart Alliance presentation

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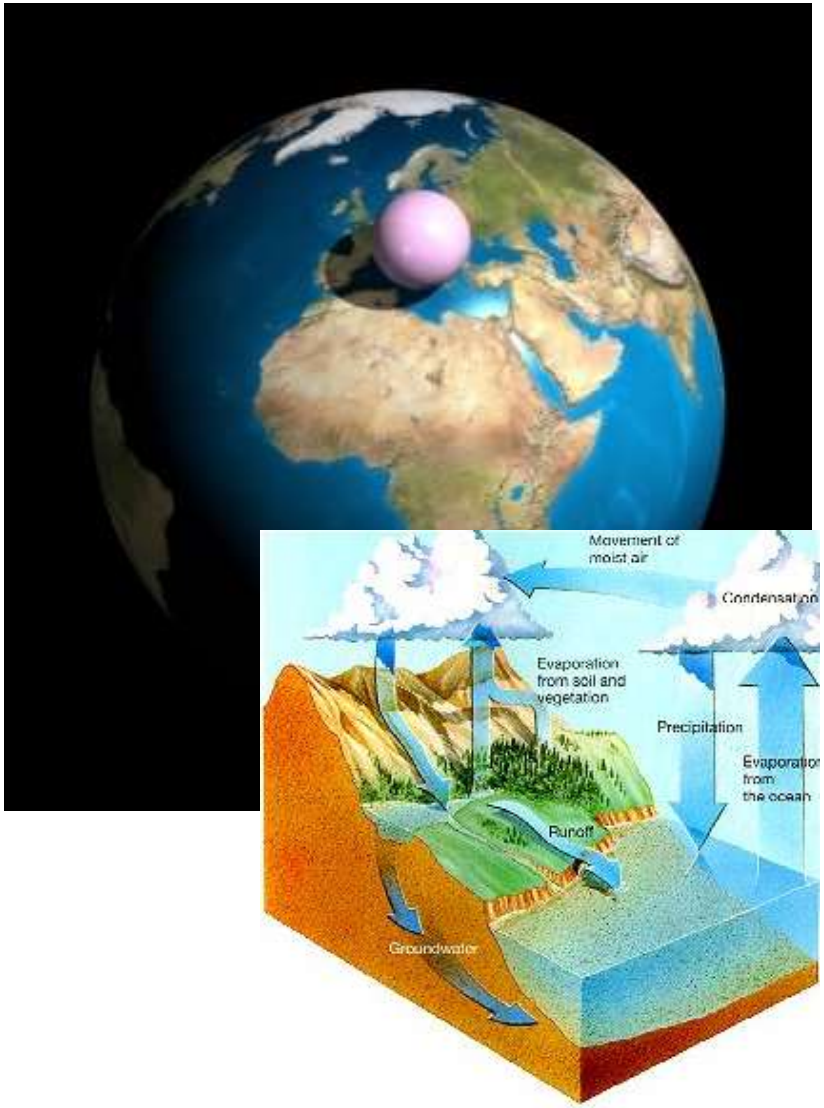
Example: Earth System Science (ESS)

- Coordination point for multiple DWGs working geosciences, environmental, and other activities related to the use of OGC standards

- Very recent: GeoSciML Discussions



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Example: Emergency and Disaster Management

- Forum for uniting communities of users including government agencies, industry, research organizations, non-governmental organizations and others. Promotes dialog, collaboration and innovation concerning interoperability and standards harmonization within the EDM community.

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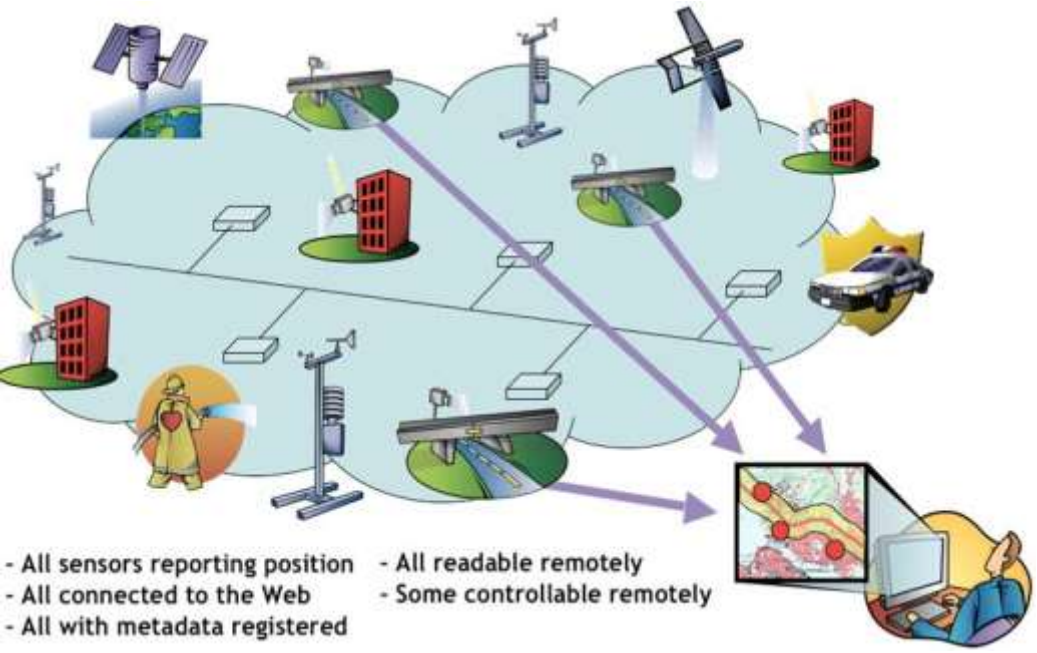
Example: Sensor Web Enablement (SWE)

- Enable discovery and tasking of sensor assets, and the access and application of sensor observations for enhanced situational awareness



✓Sensor Model Language (SensorML)

✓Observations & Measurements (O&M)

✓Sensor Planning Service (SPS)

✓Sensor Observation Service (SOS)

✓Catalogue Service

✓Sensor Alert Service (SAS)

--Complementary Standards--

✓IEEE 1451 smart sensor standard

✓OASIS (alert) standards

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OGC Health Domain Working Group

Standards enabling interoperability of geospatial data and web services in support of health related applications

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Domain Working Groups

Name	Lead **
3DIM DWG (3DIM DWG)	Carsten Roensdorf, Ordnance Survey
Agriculture DWG (Agriculture DWG)	Joshua Lieberman, Harvard University
Architecture DWG (Arch DWG)	Carl Reed III, Reed, Carl
Aviation DWG (Aviation DWG)	Navin Vembar, FAA System Operations Airspace and AIM Office
Big Data DWG (BigData DWG)	Peter Baumann, Jacobs University Bremen GmbH
Catalog DWG (Cat DWG)	Doug Nebert, US Geological Survey (USGS)
Coordinate Reference System DWG (CRS DWG)	Victor Minor, Blue Marble Geographics
Coverages DWG (Coverages DWG)	Peter Baumann, Jacobs University Bremen GmbH
Data Preservation DWG (PreservDWG)	Steve Morris, North Carolina State University
Data Quality DWG (DQ DWG)	Matt Beare, Beare, Matthew
Defense and Intelligence DWG (D and I DWG)	Lucio Colaiacomo, European Union Satellite Centre
Earth Systems Science DWG (ESS WG)	Stefano Nativi, CNR Institute for Atmospheric Pollution Research
Emergency & Disaster Management DWG (EDM DWG)	Jacqueline (Jaci) Knudson, US Dept. of Defense/DISA
Energy and Utilities DWG (EnergyUtilities)	Renee Bogle Hughes, Hughes, Renee Bogle
Geography Markup Language (GML) DWG (GML DWG)	Ron Lake, Galdos Systems Inc.
Geosemantics DWG (Semantics)	Joshua Lieberman, Harvard University
Health DWG (Health DWG)	Eddie Oldfield, Oldfield, Eddie
Hydrology DWG (Hydrology DWG)	Tony Boston, Australian Bureau of Meteorology
Land and Infrastructure DWG (LandInfraDWG)	Paul Scarponcini, Bentley Systems, Inc.
Law Enforcement And Public Safety DWG (LEAPS DWG)	Mohammed Saleh Al Mansoori, GIS Center for Security
Metadata DWG (Metadata DWG)	David Danko, Esri
Meteorology & Oceanography DWG (Met Ocean DWG)	Chris Little, UK Met Office
Mobile Location Services DWG (MLSDWG)	Giuseppe Conti, Trilogis Srl
Security DWG (SecurityDWG)	Andreas Matheus, University of the Bundeswehr - ITIS
Sensor Web Enablement DWG (SensorWeb DWG)	Mike Botts, Botts Innovative Research
Temporal DWG (Temporal DWG)	Chris Little, UK Met Office
University DWG (Univ DWG)	Chris Higgins, Open Grid Forum
Urban Planning DWG (Urban Planning)	John Herring, Oracle USA
Web Feature Service DWG (WFS DWG)	Martin Daly, cadcorp (Computer Aided Development Corp.) Ltd.
Workflow DWG (Workflow DWG)	Stan Tillman, Intergraph Corporation

** - There may be Co-Chairs or Vice-Chairs that are not listed in this table

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OGC Health DWG - Background

- **Established the OGC Health Domain Working Group – see webpage** http://www.opengeospatial.org/projects/groups/healthdwg

- Health DWG **Charter** approved by TC: OGC Doc. Number: 13-009 - https://portal.opengeospatial.org/files/?artifact_id=56013&version=1

- Brings together geospatial vendors, researchers, and end-users

- **Aims to articulate spatial interoperability requirements** in a wide range of health applications.
- **Helps to cultivate technical solutions** which support interoperable concepts, data definitions, formats and services for exchange of geospatial information
- **80+ Participants** (OGC Members and non-members) globally, including governments, private sector, academic/research institutes, health sector.

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Areas of Interest

- Key Areas of interest identified:
  - **Best practices** for implementing existing OGC standards in support of health end-use requirements (various)
  - **Environment – health** application areas (various)
  - **Other application areas** such as care for ageing population, healthy built environments, vector-borne disease monitoring, epidemiology, medical imaging, asset/resource management, etc.
    Full list of topics;
    http://external.opengeospatial.org/twiki_public/pub/HealthDWG/WebHome/Topic_List_with_Action_Responsibilities.docx
  - **Health info privacy** (best practices using OGC standards)

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From OGC Health DWG session, 2014

Standardization & Interoperability

"The use of eHealth and mHealth should be strategic, integrated and support national health goals. In order to capitalize on the potential of ICTs, it will be critical to agree on standards and to ensure interoperability of systems. Health Information Systems must comply with these standards at all levels, including systems used to capture patient data at the point of care."

"Common terminologies and minimum data sets should be agreed on so that information can be collected consistently, easily and not misrepresented. In addition, national policies on health-data sharing should ensure that data protection, privacy, and consent are managed consistently."

Source: United Nations, 2011. Keeping promises, measuring Results, First report of the COIA, p14.

Interoperability Pilot / Projects

Benefit of interoperability pilots which address specific requirements for geospatial data integration, exchange, visualization:

- OGC pilots are **part of OGC's Interoperability Program**, a global, hands-on collaborative prototyping program designed to rapidly develop, test and deliver proven candidate specifications into OGC's Specification Program, where they are formalized for public release.
- OGC Interoperability Initiatives are designed to encourage **rapid development, testing, validation and adoption** of OGC standards. Interoperability pilots can lead to documentation of outcomes during and after the pilot.
- The use of the standards means that all of the stakeholders' **costs decrease** while the benefits of the communication are realized quickly.
- Can be driven by participants and/or sponsor requirements

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OSTP – Data and Innovation at the Climate-Health Nexus

- OGC participated in a recent OSTP event exploring data and innovation at the **climate-health** nexus.
- The Whitehouse issued the following fact sheet:
  - https://www.whitehouse.gov/the-press-office/2015/04/07/fact-sheet-administration-announces-actions-protect-communities-impacts-

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Application Examples next…

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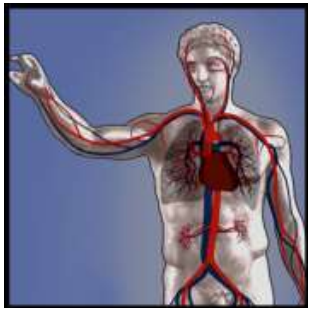
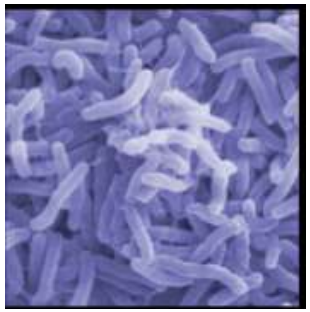
www.eo2heaven.org

Health Case Studies for GEOSS



Environmental effects on allergies and cardiovascular diseases in Dresden and the Free State of Saxony, Germany

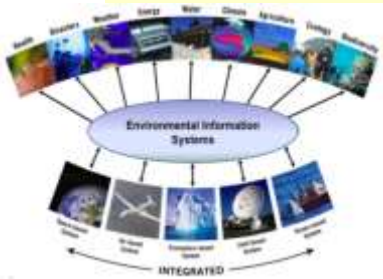
Environmental challenges to health in South Durban, South Africa, due due to human exposure on atmospheric pollution



Investigating the impact of environmental and climatic variables on the cholera outbreaks in Uganda

GEO GROUP ON EARTH OBSERVATIONS

GEOSS AIP Architecture



Community Objectives

Enterprise Viewpoint

GEOSS Vision and Targets
Societal Benefit Areas
System of Systems/ Interoperability

Abstract/Best Practices

Information Framework

Earth Observations
Geographic Features
Spatial Referencing
Metadata and Quality
GEOSS Data-CORE

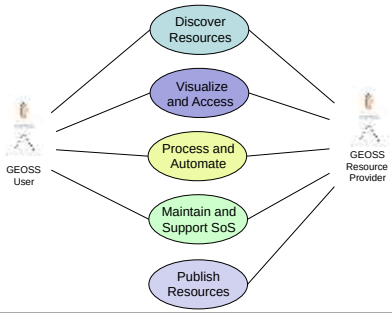
Information Viewpoint ↔ **Computational Viewpoint**

Services

Catalog/Registry
Access and Order
Processing Services
Sensor Web
User Identity

Optimized Design/Development

Use Cases



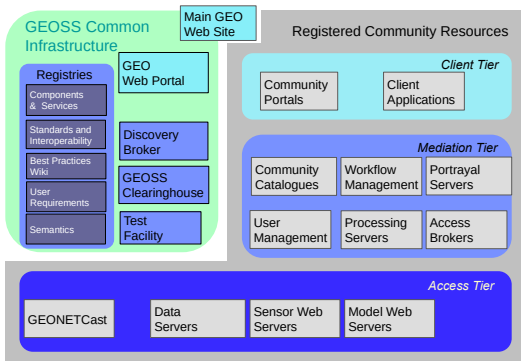
Tutorials

Engineering Viewpoint

↕

Technology Viewpoint

Component Types



RM-ODP Viewpoints

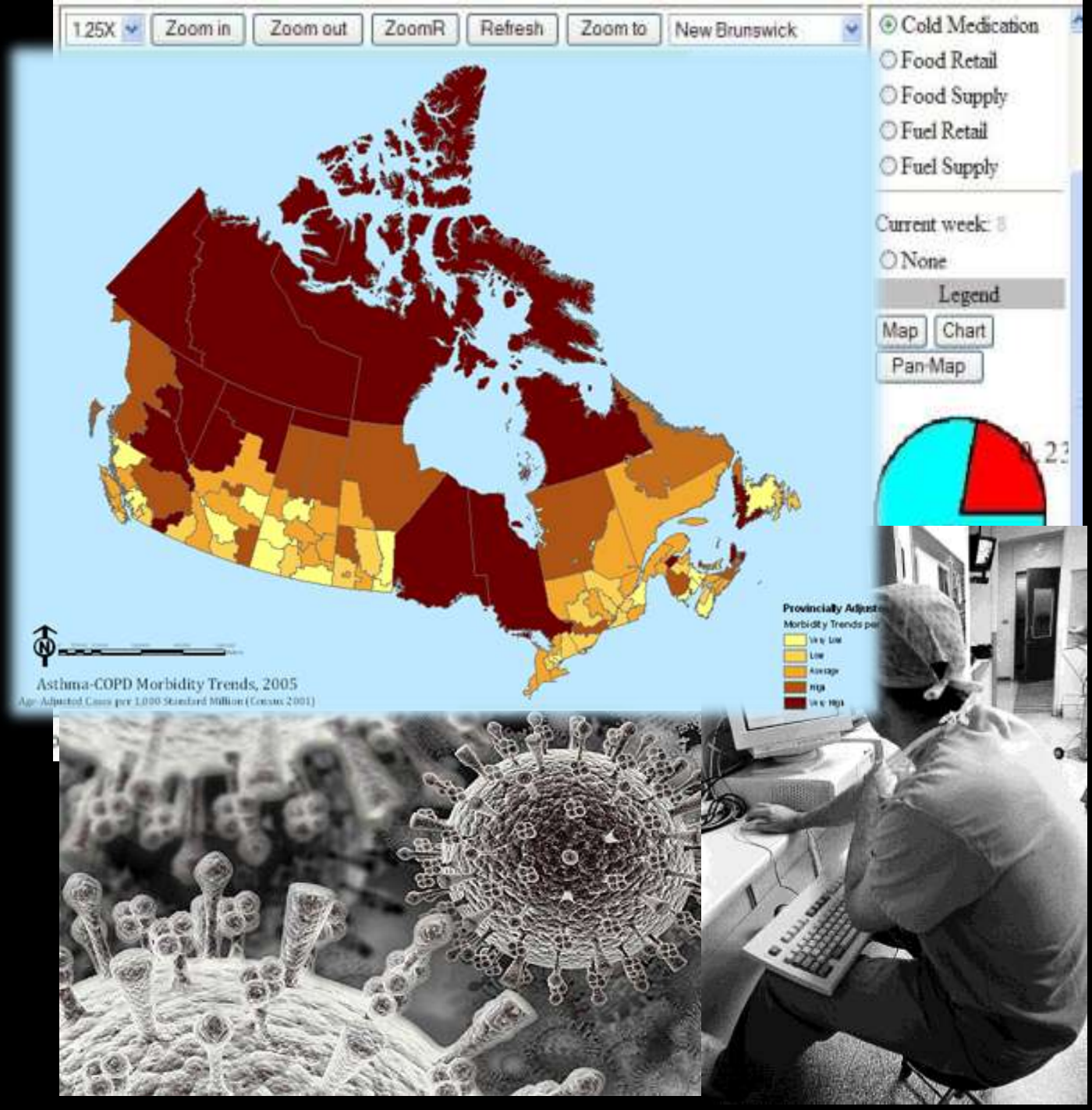
Pandemic Flu Exercise

What health data will be available?

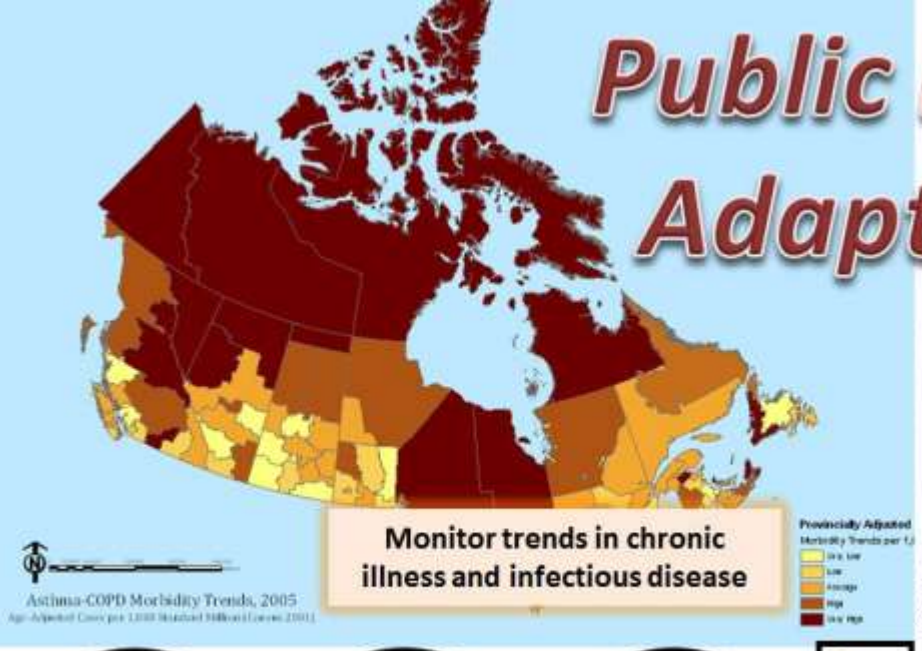
What health indicators will be available?

What specific end-products will result?

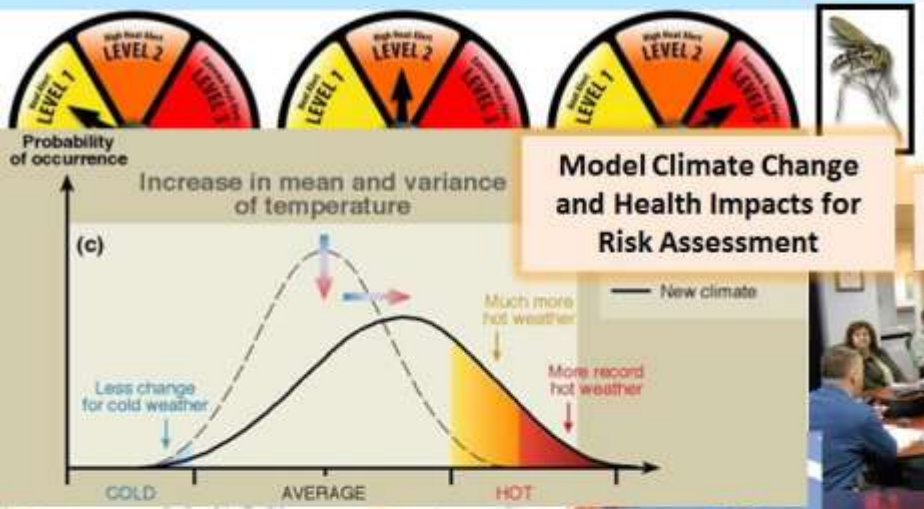
How will this benefit decision-making?


1.25X
Zoom in
Zoom out
ZoomR
Refresh
Zoom to
New Brunswick
Cold Medication
Food Retail
Food Supply
Fuel Retail
Fuel Supply
Current week:
None
Legend
Map
Chart
Pan-Map
Asthma-COPD Morbidity Trends, 2005

Public Health Adaptation

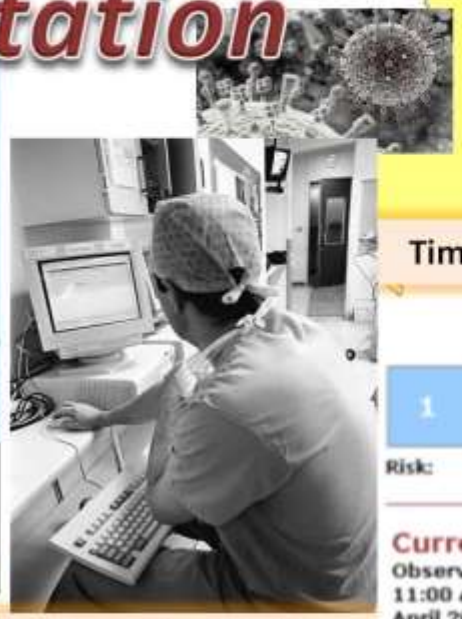


Monitor trends in chronic illness and infectious disease



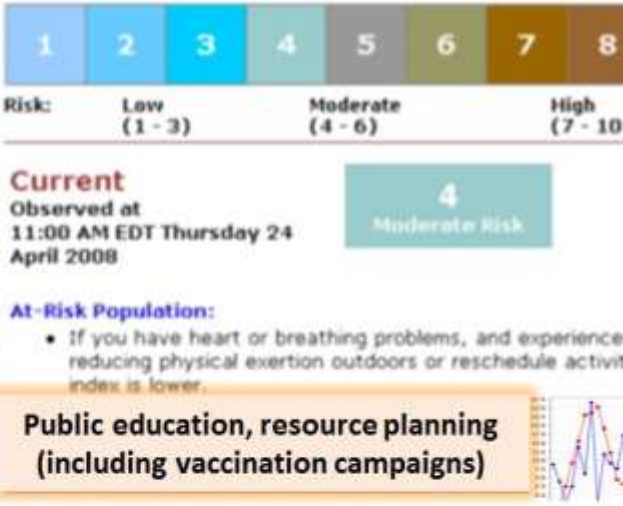
Model Climate Change and Health Impacts for Risk Assessment

Assess Vulnerable Populations / Zones

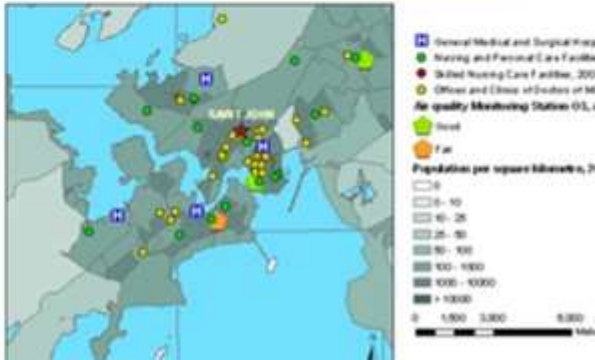


Prevention, Alerting, Response, Recovery

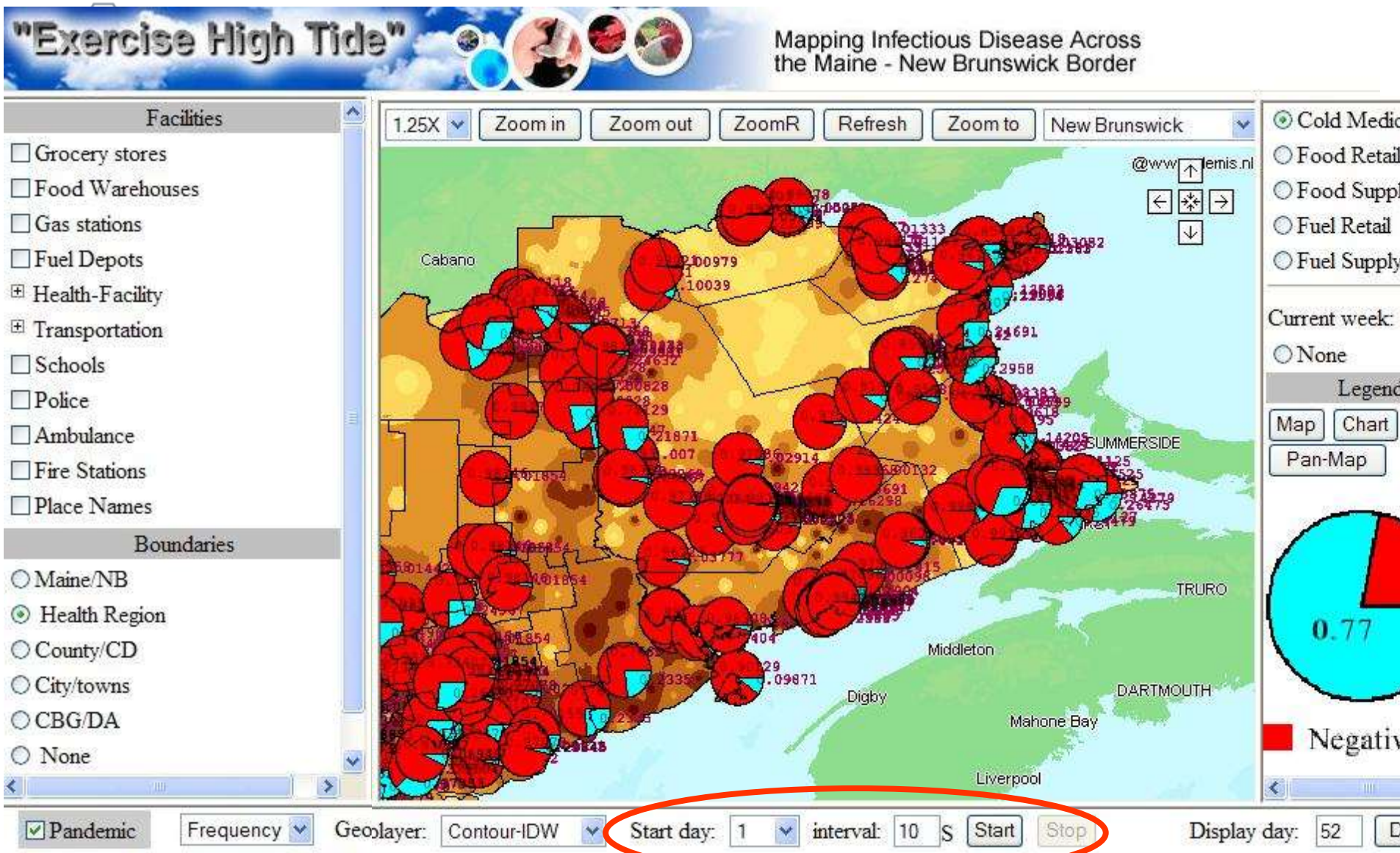
Time series pandemic surveillance



Public education, resource planning (including vaccination campaigns)



Quick Web Map Viewer (to consume WMS, WFS, WPS)
Operations Center / Remote Participants



Time series automation with time-tag in WMS

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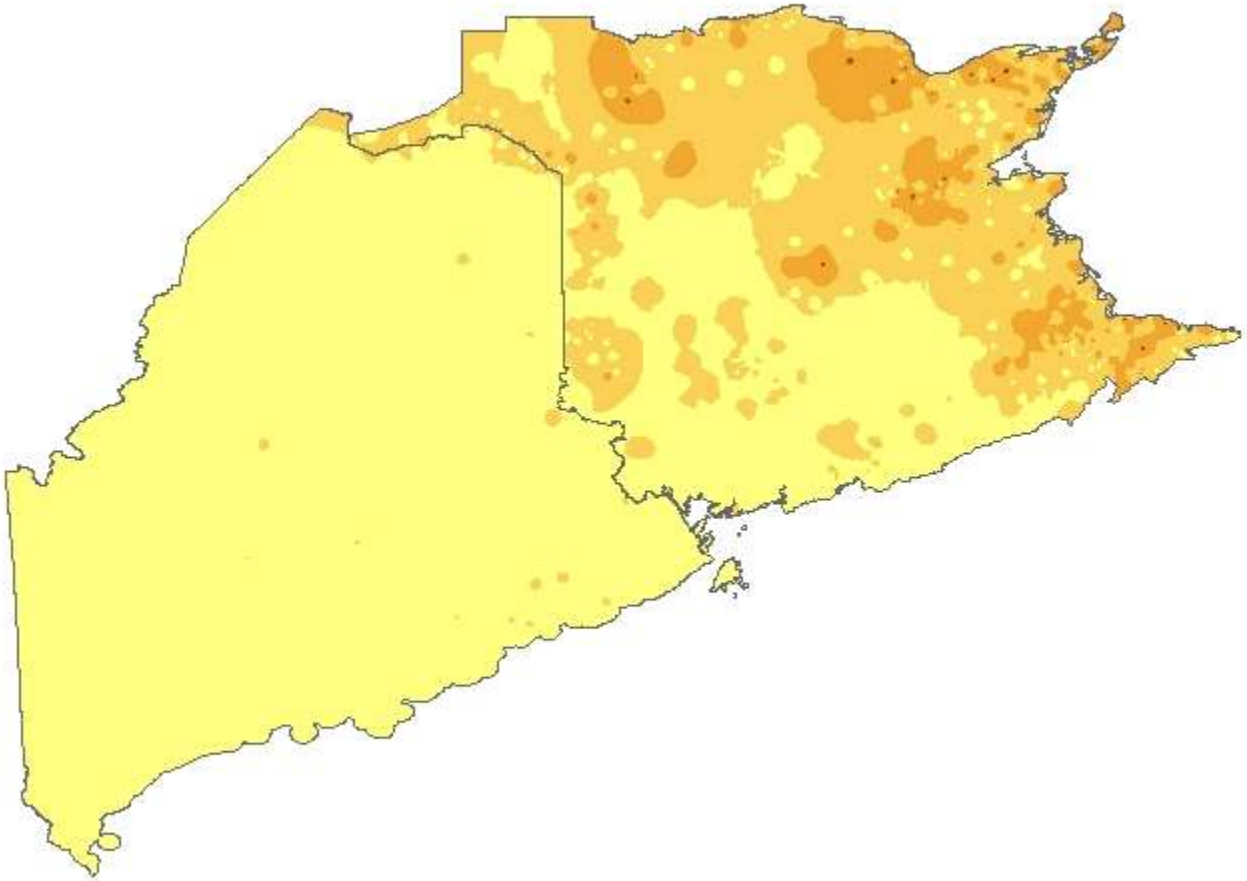
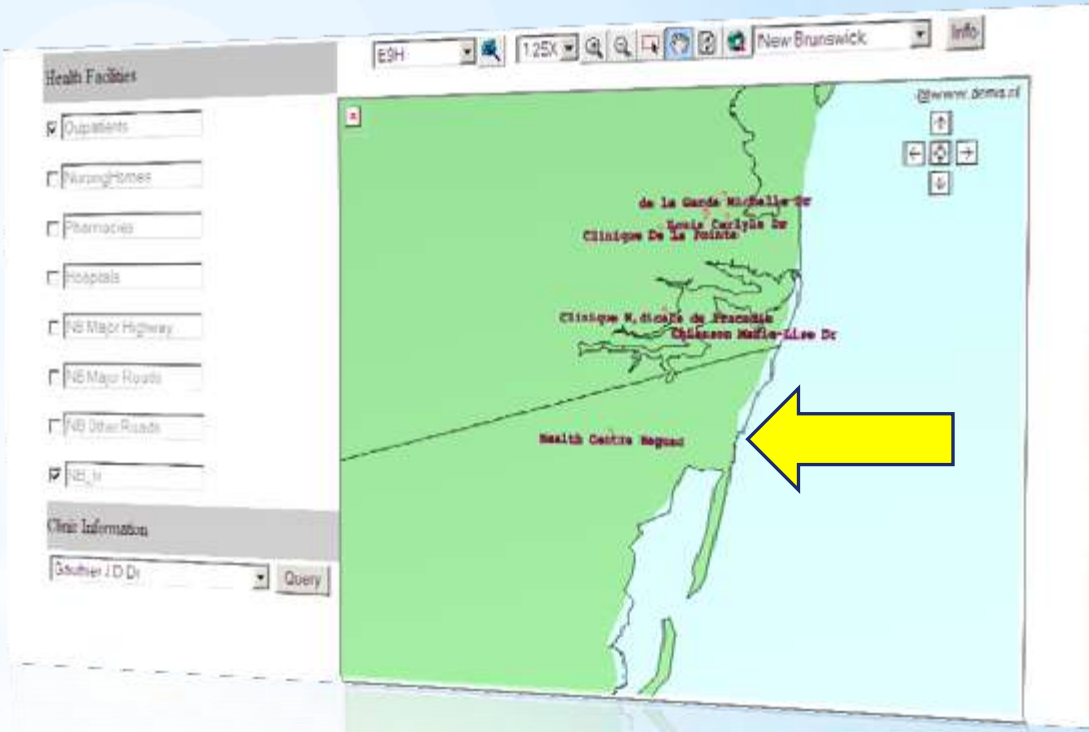
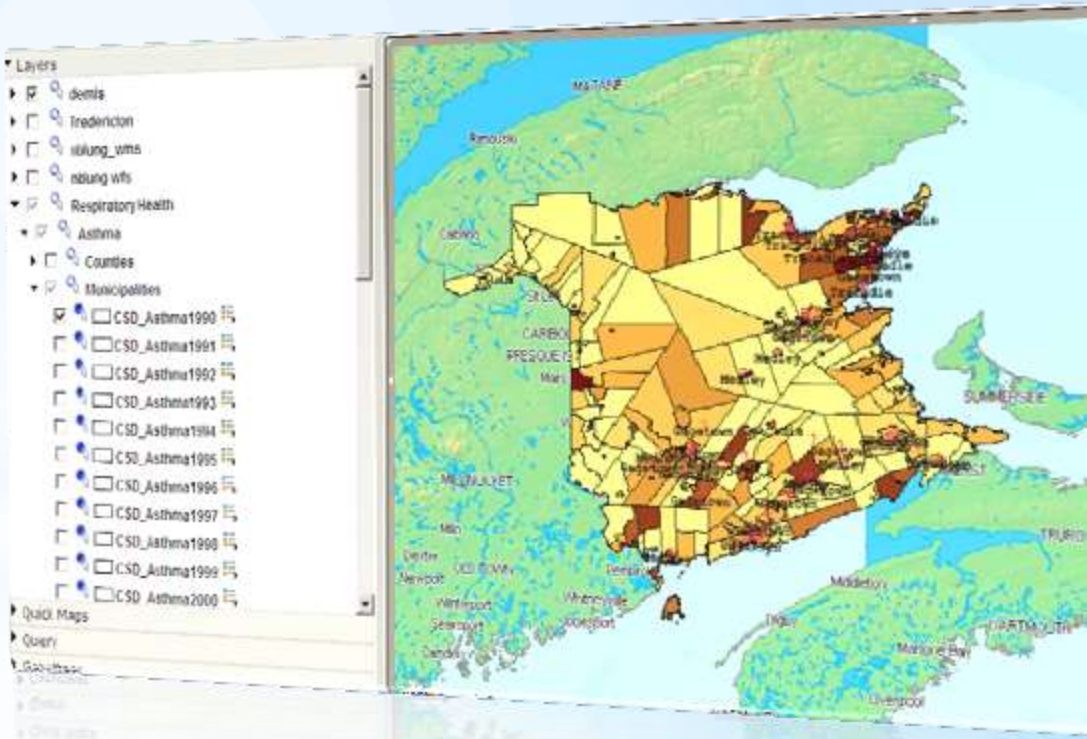


* Flu Clinic Locator enabled a public user to search for the nearest flu clinic in their Forward Sortation Area (first three alphanumeric characters in the 6-digit postal code).
* The map refreshed on the FSA location chosen, with points indicating the location of nearby clinics.



* Flu Clinic Locator

*When the spatial distribution of **Asthma Camp** participants' origins overlays the spatial distribution of Asthma hospitalization outcomes, program directors, project funders, healthcare planners and providers are readily able to determine significant historical gaps and future opportunities for the Program.



*Asthma Camps

OGC Health DWG - Current Activities

- We convene the OGC Health DWG regularly, welcoming presentations on topics of interest / identifying end-use and technical requirements

- We categorized many topic areas which members identified/are working on

- We collect abstracts on topic areas of interest

- Members can advance documents for submission to TC (e.g. best practices, profiles, engineering reports); help to inform or advance interoperability pilots and projects

- We aim to identify possible health industry "profiles" of standards, and also gaps in current standards.

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Example: Document Approval Motion

- The OGC Health DWG recommends that the OGC Technical Committee approve release of Document # 115-16 (AHA O&M Profile) as an OGC Discussion Paper
  - Pending any final edits and review by OGC staff
  - Motion: Eddie Oldfield
  - Second: Kym Watson
  - There was no objection to unanimous consent
  - The proposed AHA-ML “Active and Healthy Ageing Markup Language” has been created as O&M profile specifically targeting the needs of those who need to monitor ageing people. To facilitate exchange of comprehensive data regarding physical and psychophysical conditions, UNCAP has identified a set of comprehensive measurements which have been grouped within a convenient O&M profile. The document shows the first results of the project UNCAP “Ubiquitous iNteroperable Care for Ageing People” (www.uncap.eu), funded by the Horizon 2020 programme of the European Commission.

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Links

- **Upcoming OGC Health DWG Sessions: March 9**

- **You can join the OGC Health DWG List-serve:** https://lists.opengeospatial.org/mailman/listinfo/health.dwg for future updates and knowledge exchange.

- The official OGC Health DWG webpage is: http://www.opengeospatial.org/projects/groups/healthdwg

- The OGC Health DWG Charter Document is available here: https://portal.opengeospatial.org/files/?artifact_id=56013&version=1
- And visit our Wiki page for updates / resources (in development): http://external.opengeospatial.org/twiki_public/HealthDWG/WebHome

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MATRIX

- Identify 1-3 health application areas/scenarios (at a high level). Identify any key problems to be solved / needs in one of these application areas (from a user or technical viewpoint).

- Are there any gaps (in technology, in standardization, in data) / Opportunities where interoperability (with OGC Standards) may be improved? / or demonstrated and replicated.

- For geospatial applications/OGC Standards, who are potential beneficiaries (e.g. patients, elderly, care providers, etc), key stakeholders (e.g. health care providers, governments, pharmaceutical, centres of excellence / research, etc), or key implementation models / elements for success.

- What are some of your (or your client's) key needs/challenges? Do effective solutions currently exist (e.g. technologies, web services, geospatial data, OGC standards), and what would be a desired future state/goal? (e.g. improved standards, services/technologies, wider market adoption / penetration)

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99th OGC Technical Committee

Dublin, Ireland

Eddie Oldfield, Kym Watson

21 June 2016

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