What was I thinking?

Relevant Advances in Sensor Web Enablement and Semantic Mediation Standards

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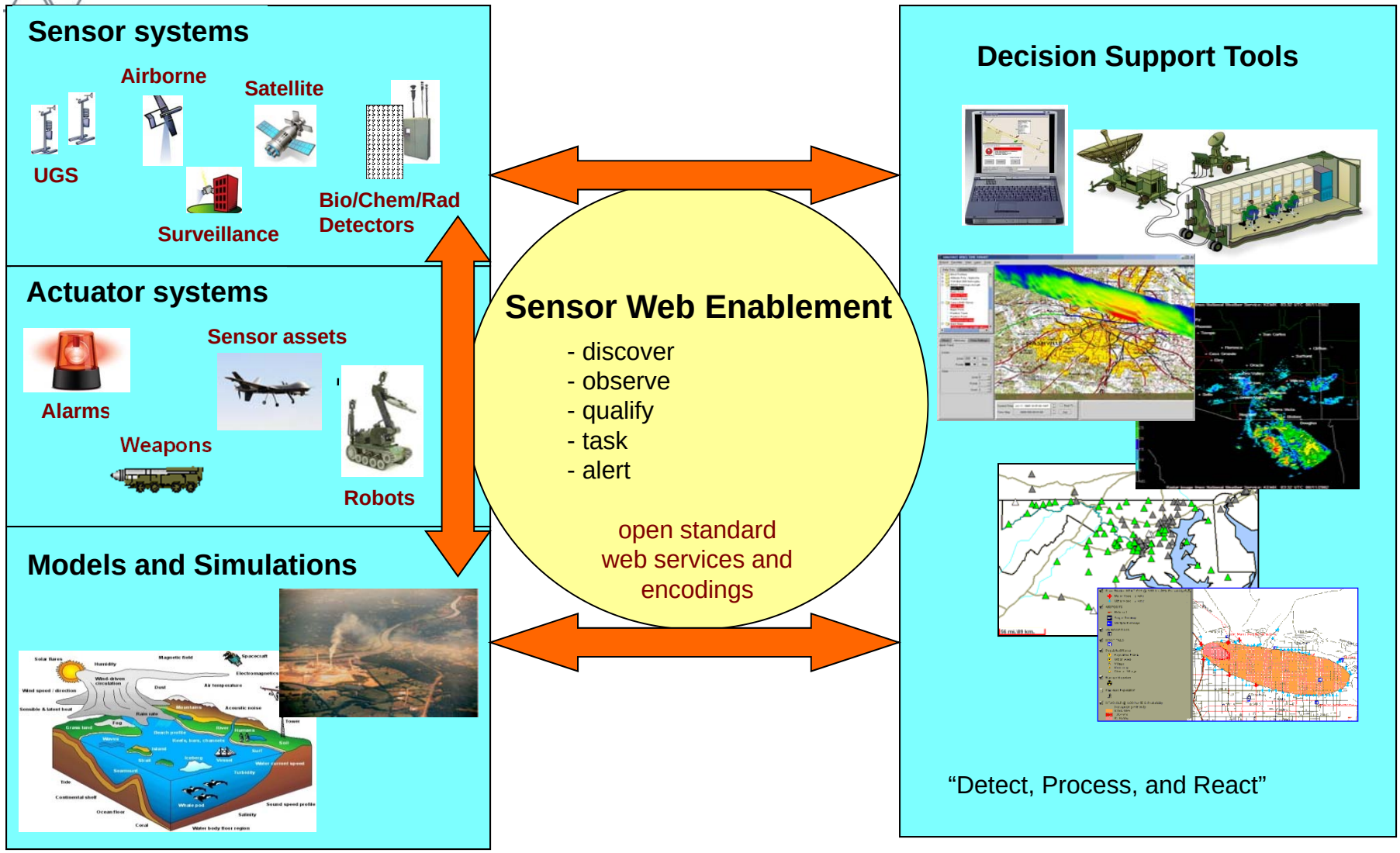
NOAA EDM Virtual Workshop
June 26, 2013

Sensor Web Enablement (SWE)



Source: M. Botts

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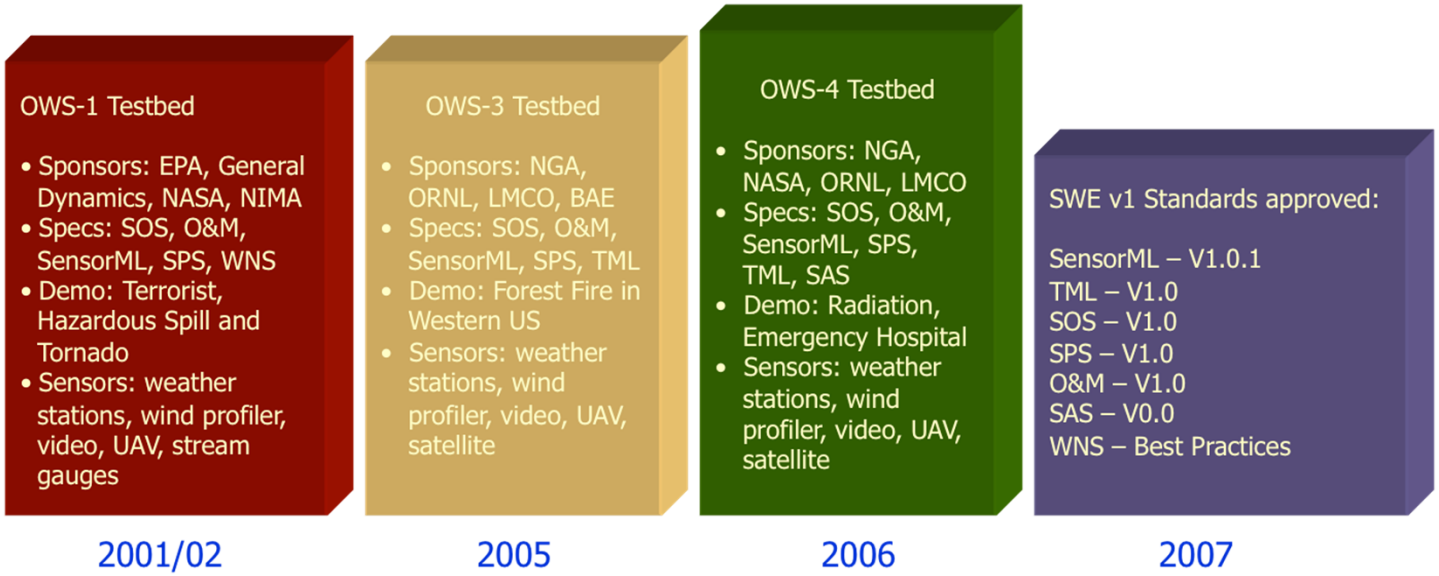
SWE Maturity

- **SWE Encodings**:
  - SWE Common
  - SensorML
  - Observations and Measurements (O&M)
- **SWE Services:**
  - Sensor Observation Service (SOS)
  - Sensor Planning Service (SPS)
  - SWE Service Model
  - PUCK



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SWE Maturity

- **Many implementations**
  - US NASA SensorWeb
  - US NOAA IOOS
  - ESA SPS satellite tasking
  - UK Sensor Web Infrastructure Mgmt(SWIMA)
  - EU SANY
  - GITEWS
  - EEA SOS
  - SoKNOS
  - OSIRIS
  - INCOIS Tsunami Early Warning System
  - etc

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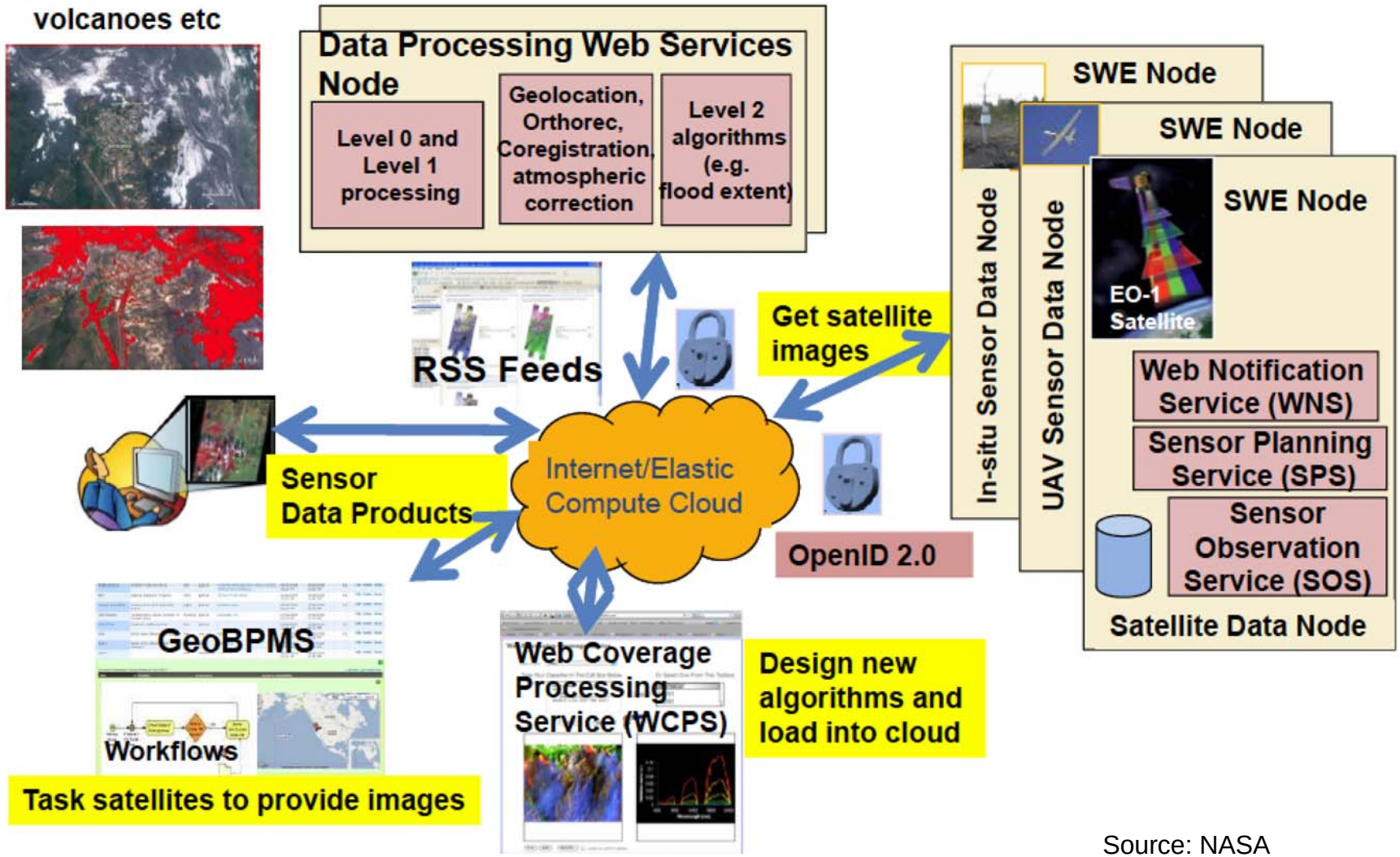
NASA SensorWeb High Level Architecture



Source: NASA

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NOAA IOOS

Data Type	Web Service	Encoding
In-situ data (buoys, piers, towed sensors)	OGC Sensor Observation Service (SOS)	XML based on OGC Observations and Measurements (O&M)
Gridded data (model outputs, satellite)	OPeNDAP with Climate and Forecast Conventions	DAP using Climate and Forecast (CF) conventions
Images of data	OGC Web Map Service (WMS)	GeoTIFF, PNG etc. -possibly with standardized styles

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Mid-Atlantic Coastal Ocean Observing System

In-Situ Buoys

HF Radar

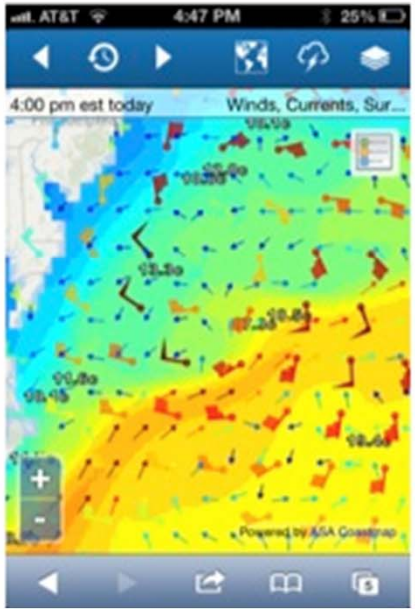
Satellite

Gliders

Models

GIS

Web Services MiddleWare



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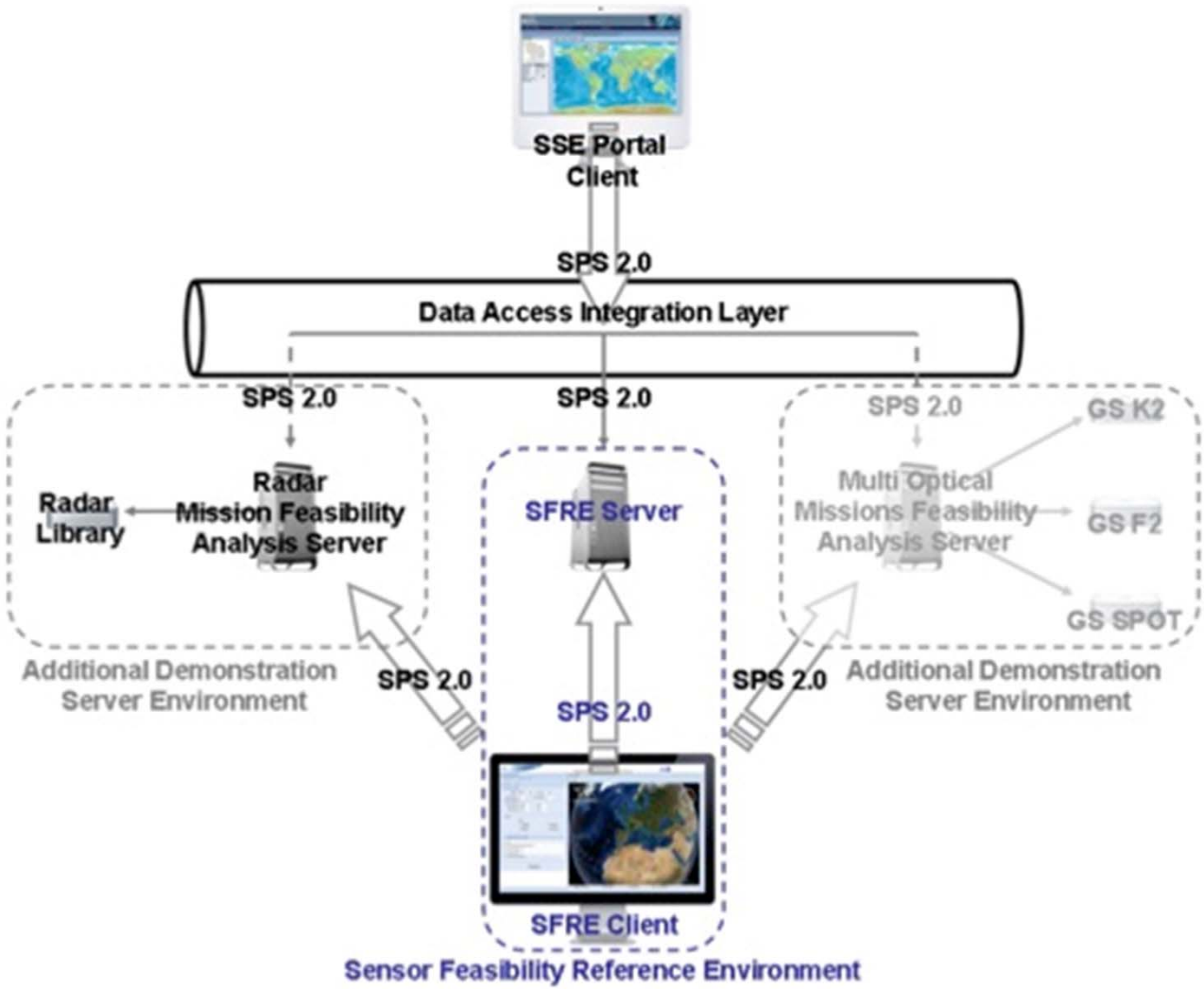
European Space Agency (ESA) Heterogeneous Missions Accessibility (HMA)



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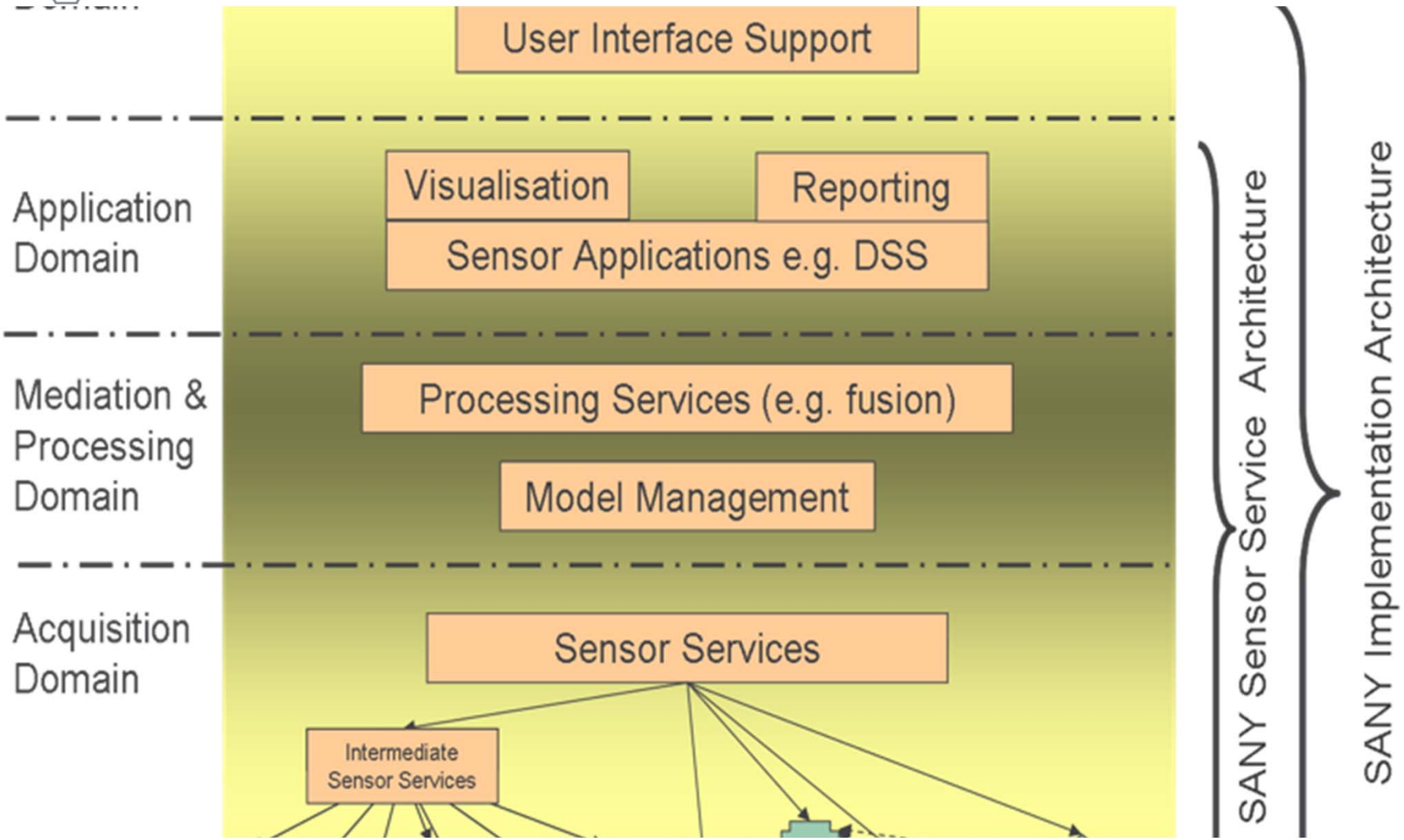
Sensors Anywhere SANY



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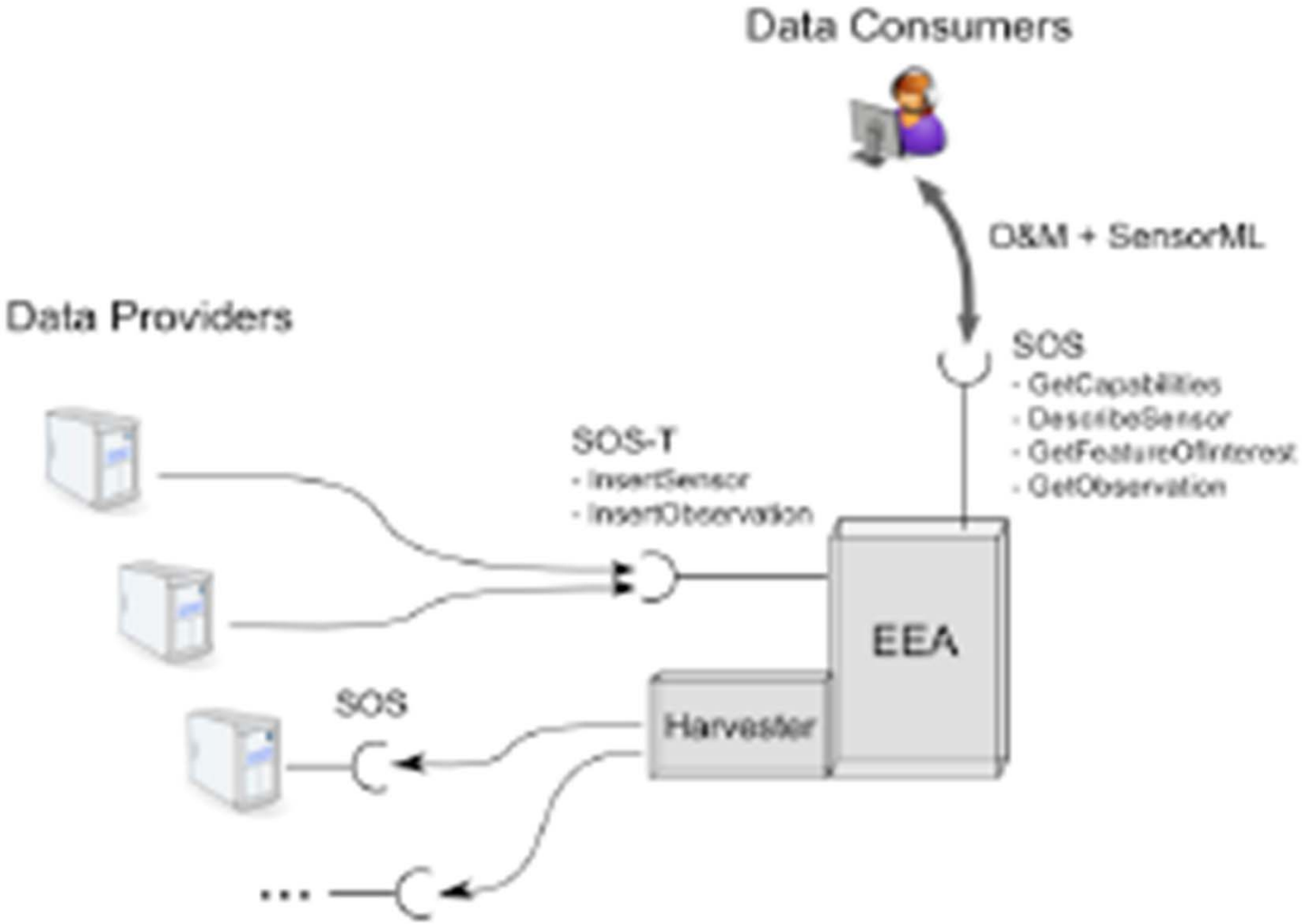
European Environment Agency and Environmental Data



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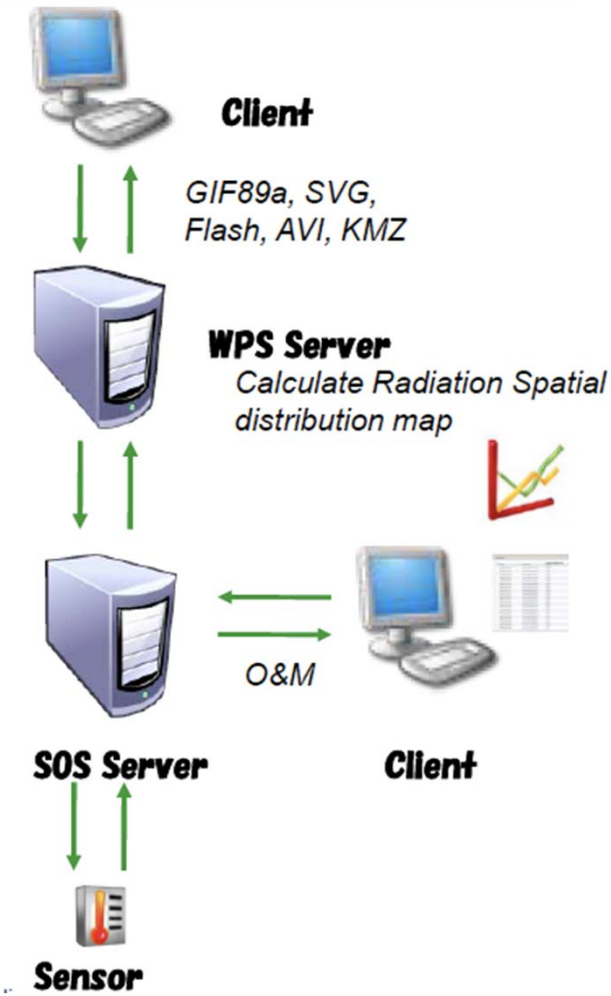
Japan Atomic Energy Agency



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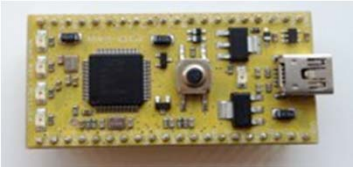
SWE for Internet of Things

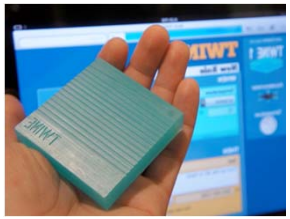
- “In 2008, the number of devices connected to the Internet exceeded the number of people on Earth. By 2020, there will be 50 billion devices connected” - CISCO

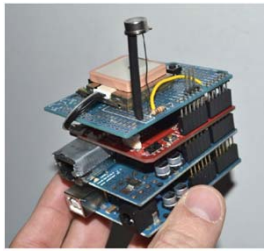


ARM® Cortex™-M0

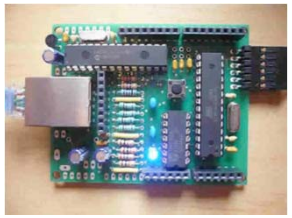
NEST

Koubachi

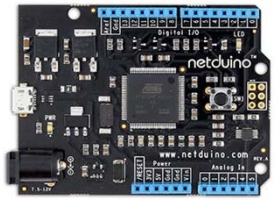




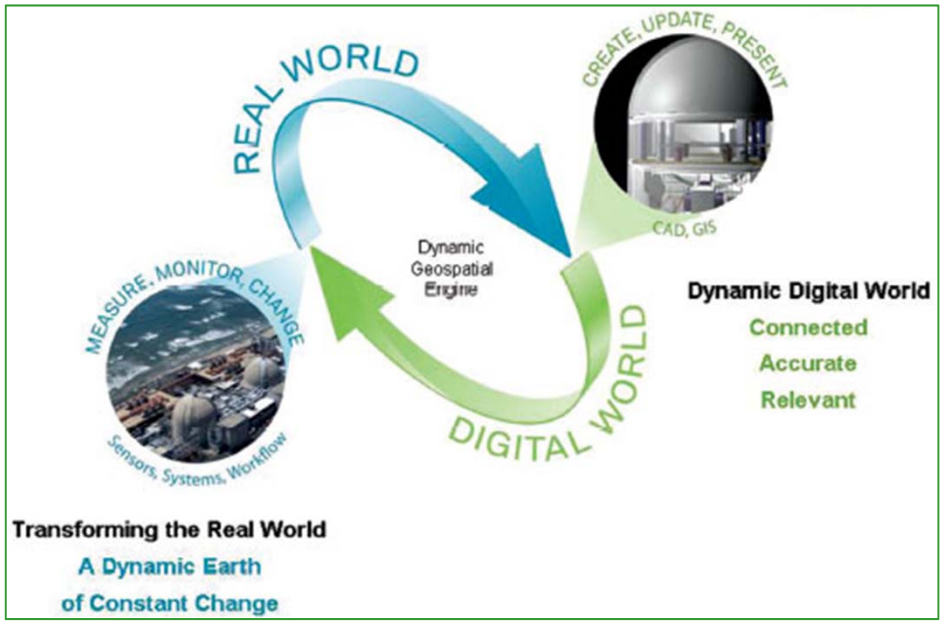
52North SenseBox



Nanode



Netduino



"Redefining the language of geospatial industry"
Ola Rollen, President and CEO, Hexagon AB.

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SWE Profiling

WaterML

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Compliance Testing

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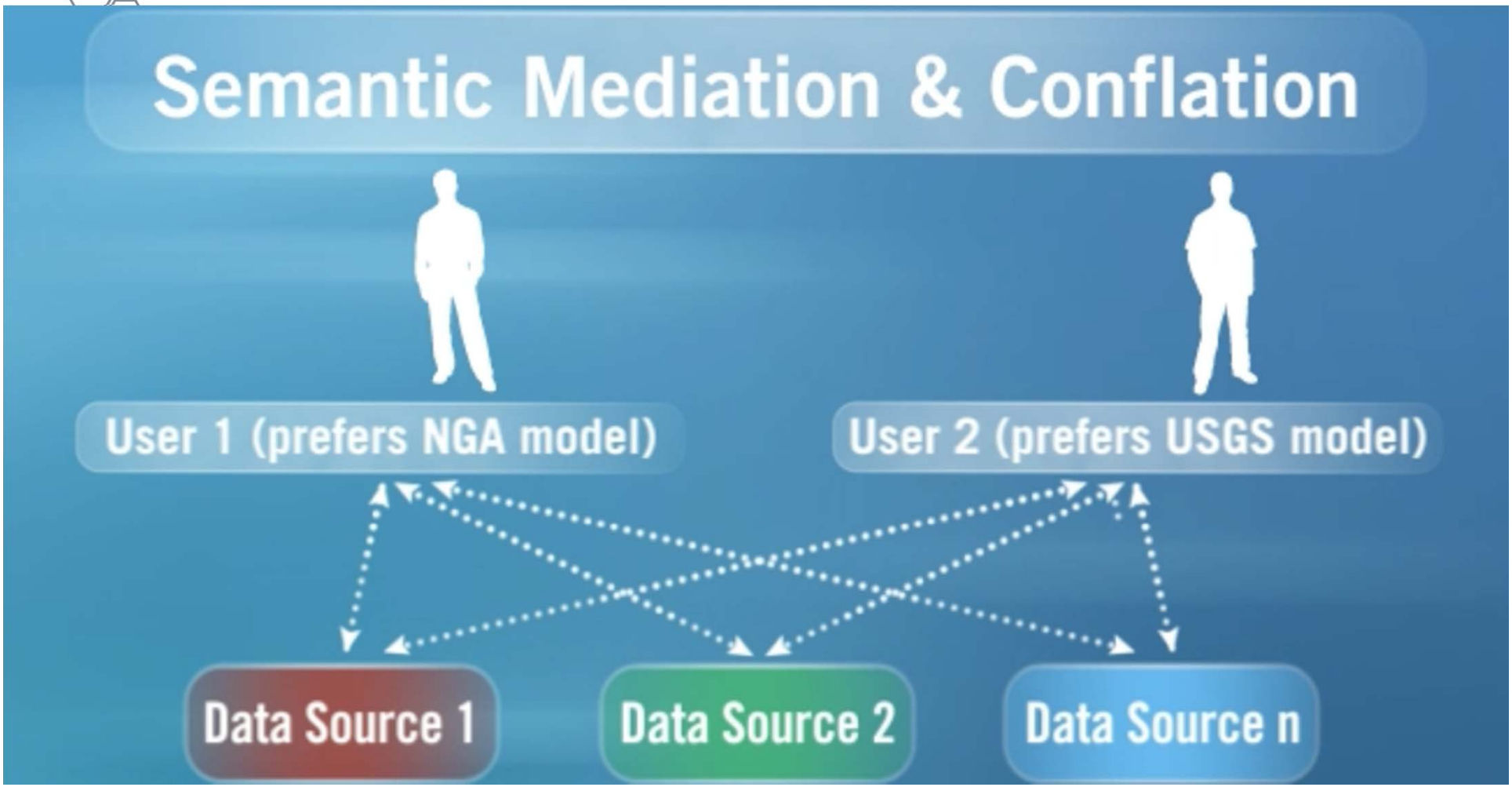
Billions of sensors

Improved Discovery



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Semantic Mediation

GeoSPARQL

http://www.w3.org/DesignIssues/diagrams/lod/480759174v0_350x350_Back.jpg

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Cross Community Interoperability

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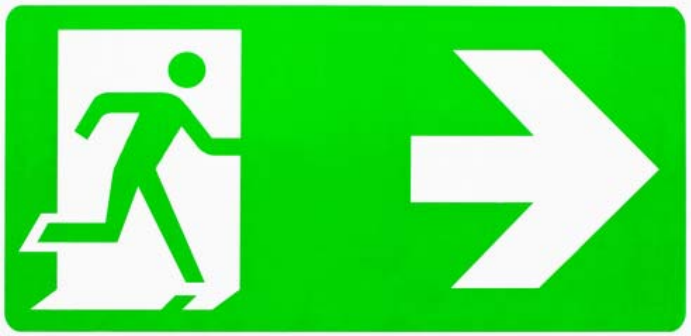
Relevant Advances in Sensor Web and Semantic Mediation Standards



- SWE Maturity Engineering Report
- OWS-9 Semantic Mediation Engineering Report

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