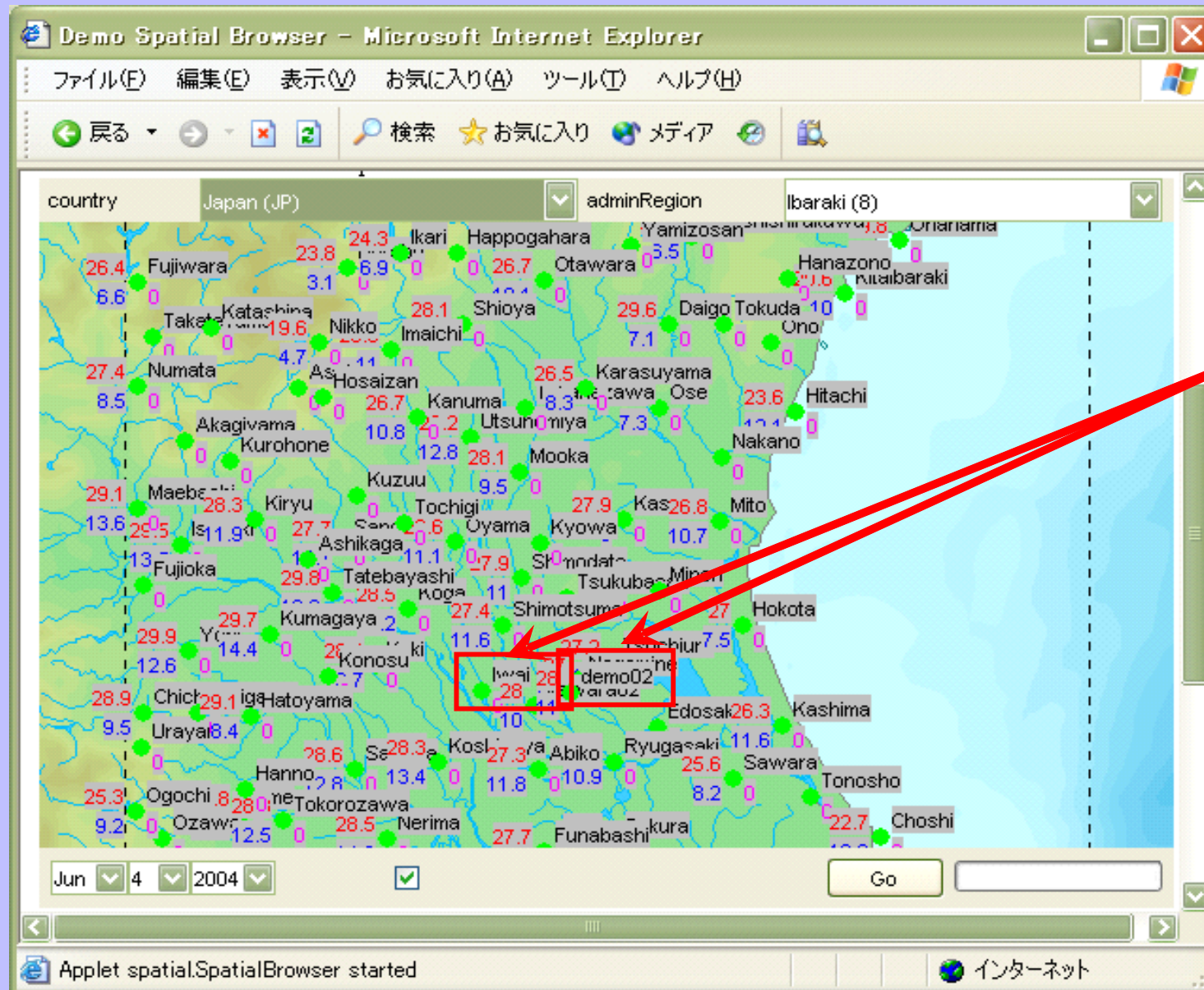


Integrating Field Server Data to Meteorological Data

Takuji Kiura, **Atsushi Yamakawa**, Kei Tanaka,
Masayuki Hirafuji, Seishi Ninomiya

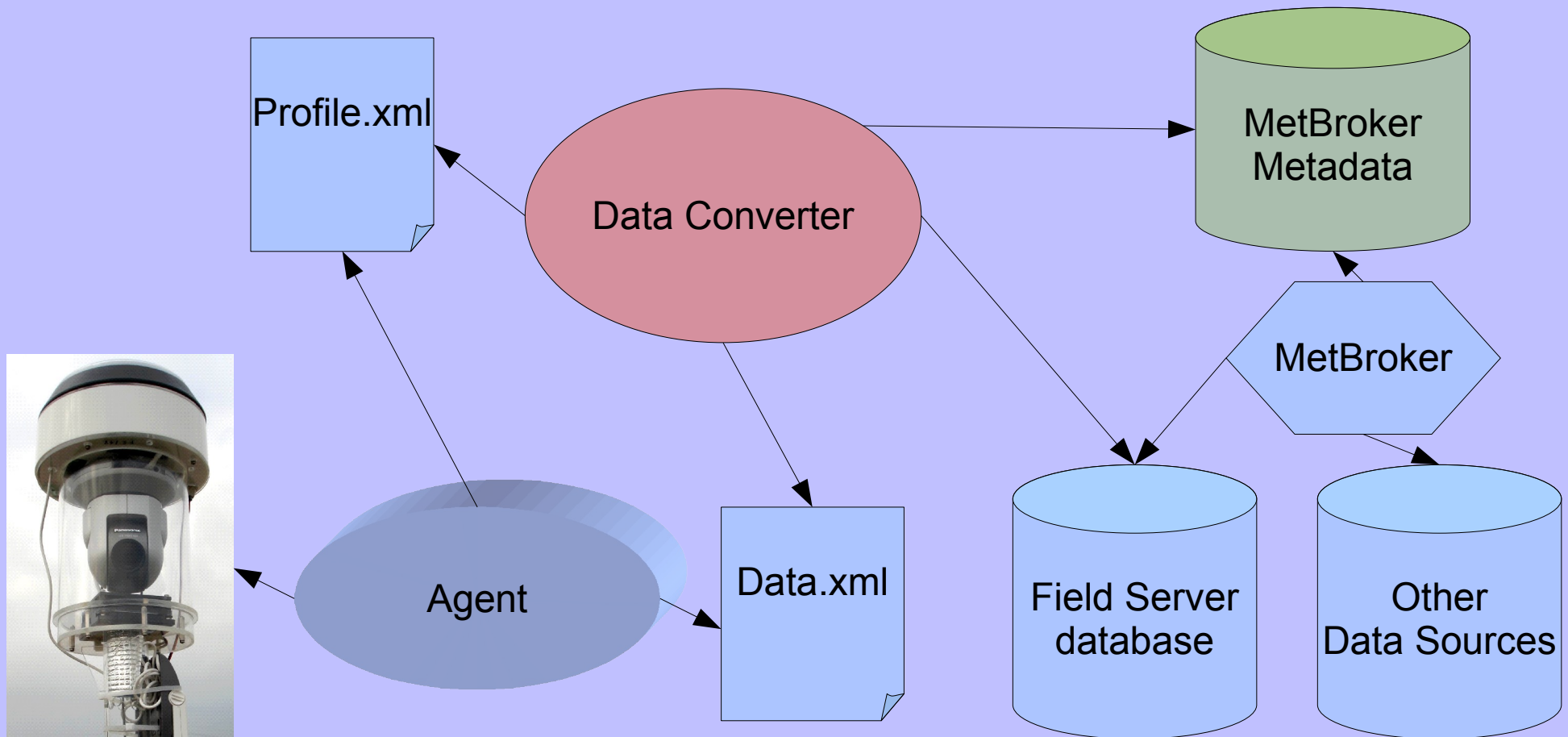
National Agriculture and Food Research Organization(NARO)
National Agricultural Research Center(NARC)

MetBroker (Current Version)



Field Servers

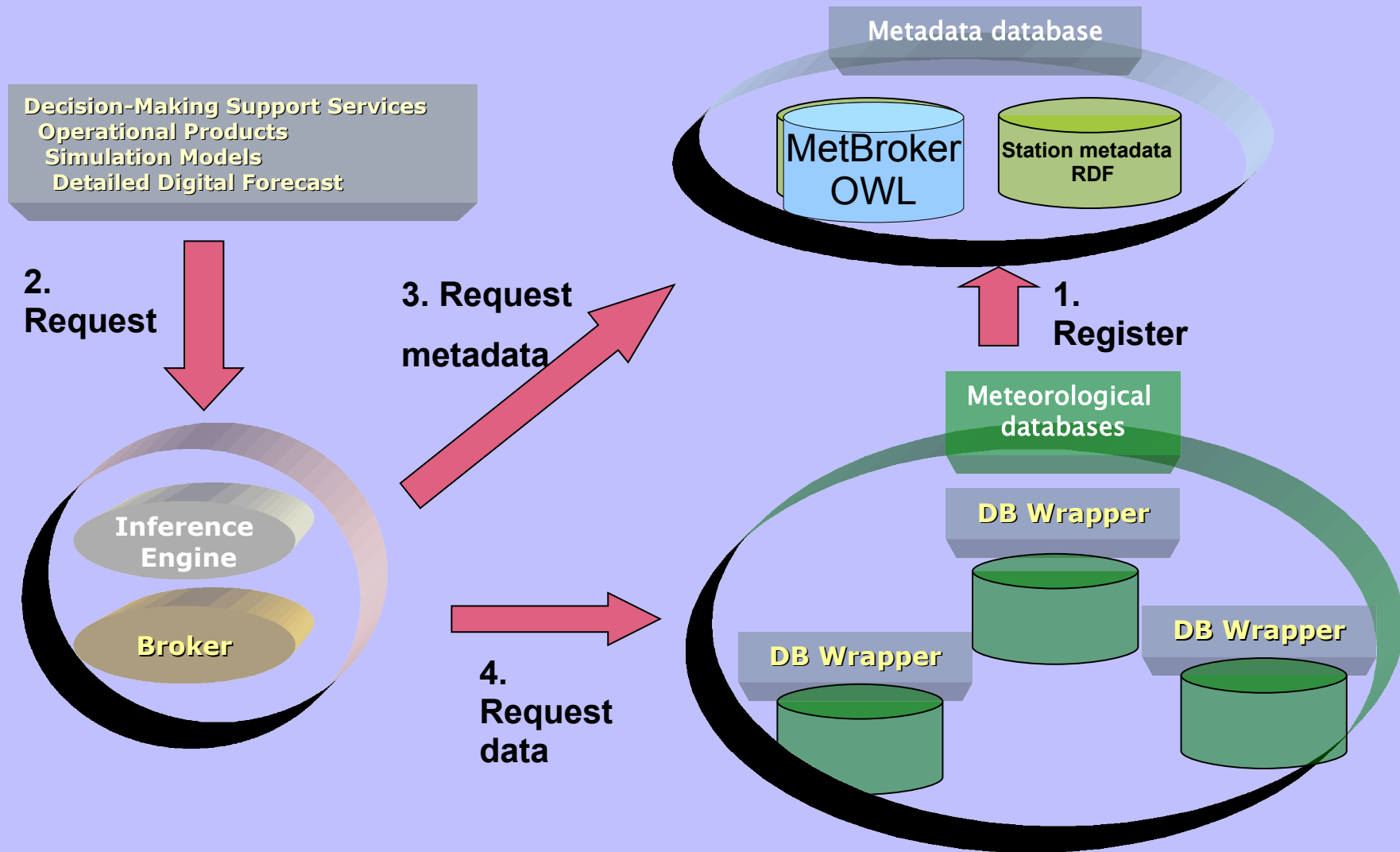
Field Server Data Converter



Problems

- Profile.xml is written manually (Not Controlled)
- Knowledge about each profile.xml is hard coded in data converter.
- Require restarting MetBroker to reflect updates of Metadata (hard coded)
-

Ontology Based MetBroker



Integrating FS Data

- <http://www.agmodel.org/OntDemo/pages/main.js>

Select profile URL:

item	relation	definition	
Air-Temp.			<input type="button" value="Edit"/>
Soil-Temp.			<input type="button" value="Edit"/>
Humid.			<input type="button" value="Edit"/>
Rain			<input type="button" value="Edit"/>
Solar			<input type="button" value="Edit"/>
WaterMark			<input type="button" value="Edit"/>
ECHO_mV			<input type="button" value="Edit"/>

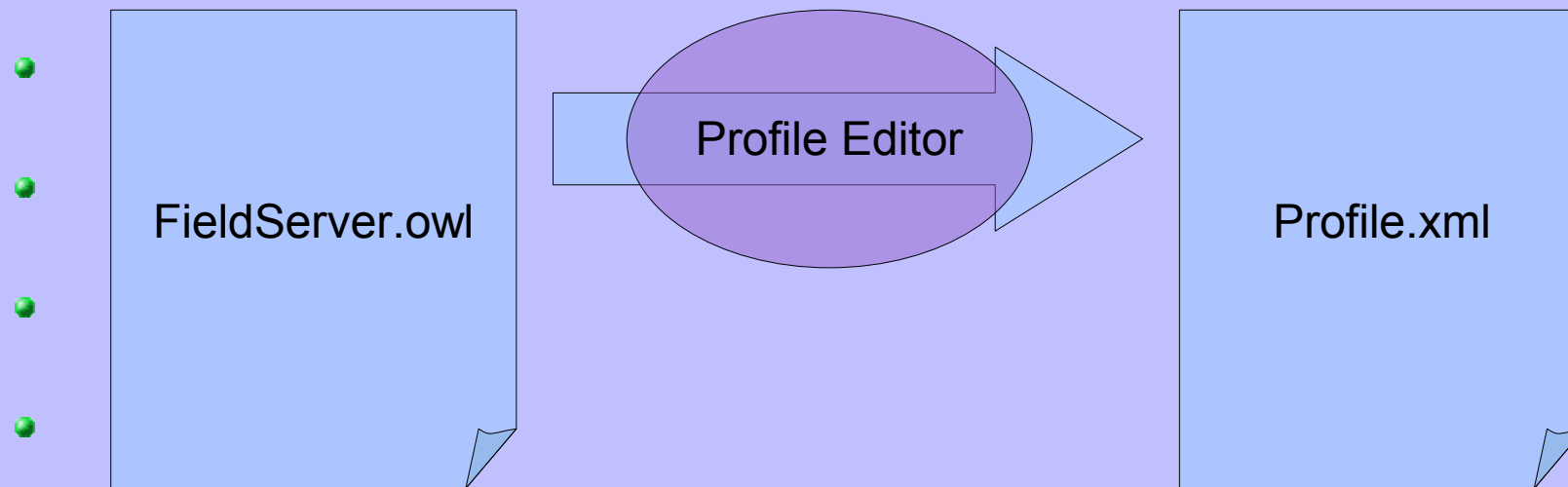
Select profile URL:

item	relation	definition	
Air-Temp.	INSTANCEOF	http://www.agmodel.org/vocabulary/200608/MetBroker.owl#AirTemperature	<input type="button" value="Edit"/>
Soil-Temp.			<input type="button" value="Edit"/>
Humid.			<input type="button" value="Edit"/>
Rain			<input type="button" value="Edit"/>
Solar			<input type="button" value="Edit"/>
WaterMark			<input type="button" value="Edit"/>
ECHO_mV			<input type="button" value="Edit"/>
WaterTemperature			<input type="button" value="Edit"/>
Pressure			<input type="button" value="Edit"/>
Radiation			<input type="button" value="Edit"/>
Shine			<input type="button" value="Edit"/>
Snow			<input type="button" value="Edit"/>
AirTemperature			<input type="button" value="Edit"/>
Cloud			<input type="button" value="Edit"/>
DewPoint			<input type="button" value="Edit"/>
Wind			<input type="button" value="Edit"/>
Humidity			<input type="button" value="Edit"/>
Steam			<input type="button" value="Edit"/>
Rain			<input type="button" value="Edit"/>
SoilTemperature			<input type="button" value="Edit"/>

It is difficult to define relations between MetBroker.owl and FS Profile.xml!!!

Start to solve Profile.xml Problem

- Profile Editor (partially done)
- FieldServer.owl (Tokyo Univ., Kyoto Univ., & NARC, ongoing)



- Define relations between FieldServer.owl and MetBroker.owl (planned)

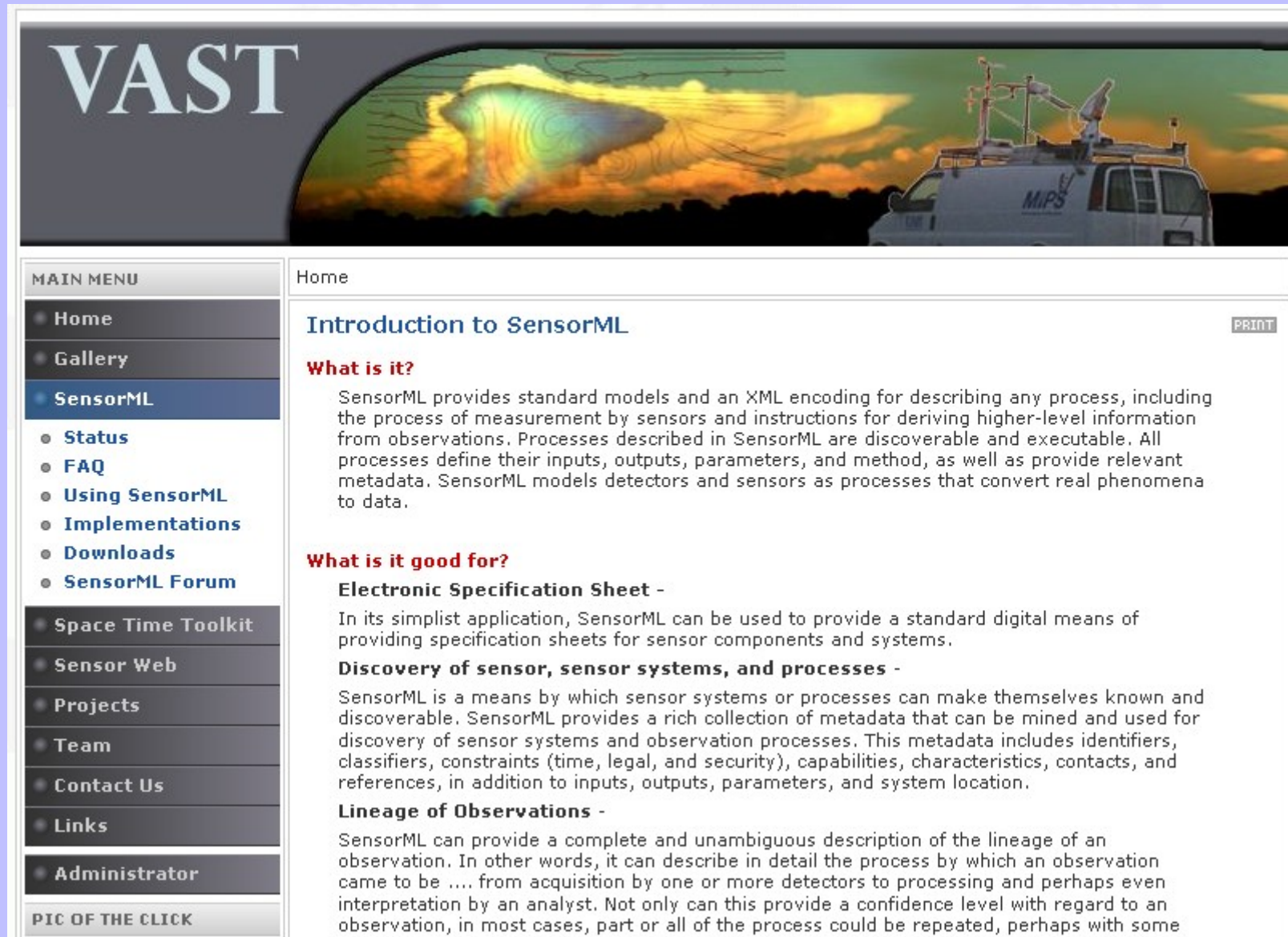
Problems (FieldServer.owl)

- Varieties of Field Server Platforms



- Varieties of Sensor Modules

SensorML (<http://vast.nsstc.uah.edu/SensorML/>)



The screenshot shows the VAST website interface. At the top, there is a banner with the word "VAST" on the left and a photograph of a white van with "MIPS" on its side, equipped with various sensors and antennas, against a background of a colorful sunset or storm cloud. Below the banner is a "MAIN MENU" sidebar with the following items: Home, Gallery, **SensorML** (highlighted), Status, FAQ, Using SensorML, Implementations, Downloads, SensorML Forum, Space Time Toolkit, Sensor Web, Projects, Team, Contact Us, Links, and Administrator. The main content area is titled "Home" and features the heading "Introduction to SensorML" with a "PRINT" button. The text under "What is it?" explains that SensorML provides standard models and an XML encoding for describing any process, including measurement by sensors and instructions for deriving higher-level information. It notes that processes are discoverable and executable, and define their inputs, outputs, parameters, and methods, along with relevant metadata. The text under "What is it good for?" lists three key benefits: 1) "Electronic Specification Sheet -" which allows for a standard digital means of providing specification sheets for sensor components and systems; 2) "Discovery of sensor, sensor systems, and processes -" which provides a means for sensor systems to make themselves known and discoverable through rich metadata including identifiers, classifiers, constraints, capabilities, characteristics, contacts, and references; and 3) "Lineage of Observations -" which provides a complete and unambiguous description of the lineage of an observation, detailing the process by which it was acquired and processed.

Dr. Honda (AIT) is using SOS.

SWEET (<http://sweet.jpl.nasa.gov/ontology/>)



Semantic Web for Earth and Environmental Terminology (SWEET)

[Home](#) [Ontologies](#) [Products](#) [Links](#)

SWEET Ontologies

SWEET ontologies are written in the OWL ontology language. OWL is an XML language being adopted as a standard by the W3C. SWEET ontologies can be viewed using Internet Explorer 5 (or later) or Netscape 7. More specialized OWL-specific tools are available such as [SWOOP](#) or [Protege](#).

Beta version of SWEET 1.1 ontologies is available [here](#).

See our [Planetary Ontologies](#) site for sharing ontologies.

SWEET 1.0:

Ontologies revised and validated Jan 26, 2006

[Earth Realm](#)

[Physical Phenomena](#)

[Physical Process](#)

[Physical Property](#)

[Physical Substance](#)

BIX Image Broker

- [http://www.apan.net/meetings/manila2007/presentations/ag/Paper-8%20\(session%203\)%20Optical%20Sensing%20Kameoka.pdf](http://www.apan.net/meetings/manila2007/presentations/ag/Paper-8%20(session%203)%20Optical%20Sensing%20Kameoka.pdf)

Problems (FieldServer.owl)

- Varieties of Field Server Platforms



Any Idea or Suggestion?



- Varieties of Sensor Modules



New Field Server Application

Updates

- MetBroker supports GPV(Grid Point Value)
- According to agreements at APAN Manila
 - Start discussion how to support SOS in MetBroker (AIT and NARC)
 - Semantic Mediawiki for Field Server is up <http://zoushoku.narc.affrc.go.jp/FS/en/>
But...