

Swiss Experiment

Interdisciplinary Environmental Research

Web-based infrastructure components

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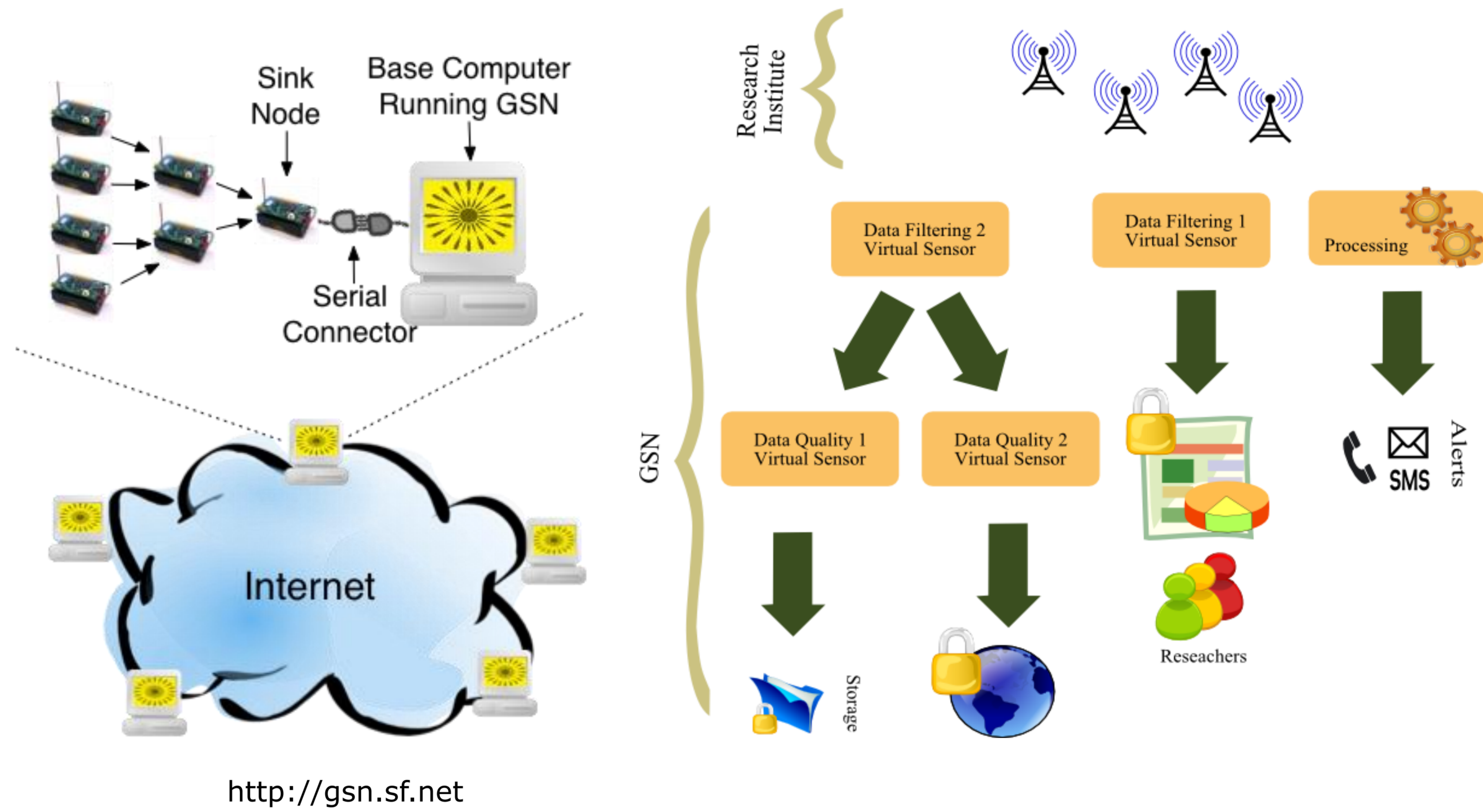
Global Sensor Networks (GSN)

GSN is a middleware (extendable software infrastructure) for rapid deployment and integration of heterogeneous wireless sensor networks

Sensor network deployment is time consuming with heterogeneous devices which require bespoke programmes in order to acquire the data. Post-deployment changes to the sensor configurations are expensive when using bespoke solutions.

GSN offers:

- Zero-programming sensor network setup.
- Easy deployment configuration using basic pre-defined data format declarations.
- Supports latest platforms and hardware
- Easy-to-use web interface allowing collaboration on data
- Web interface uses less than 1 ms processing time per client while handing 500 clients concurrently.
- Inter-GSN protocol allowing data to be 'pushed' between instances, making data sharing easier.
- Generic web-services to allow e.g. Models or external tools to pull data from the database.

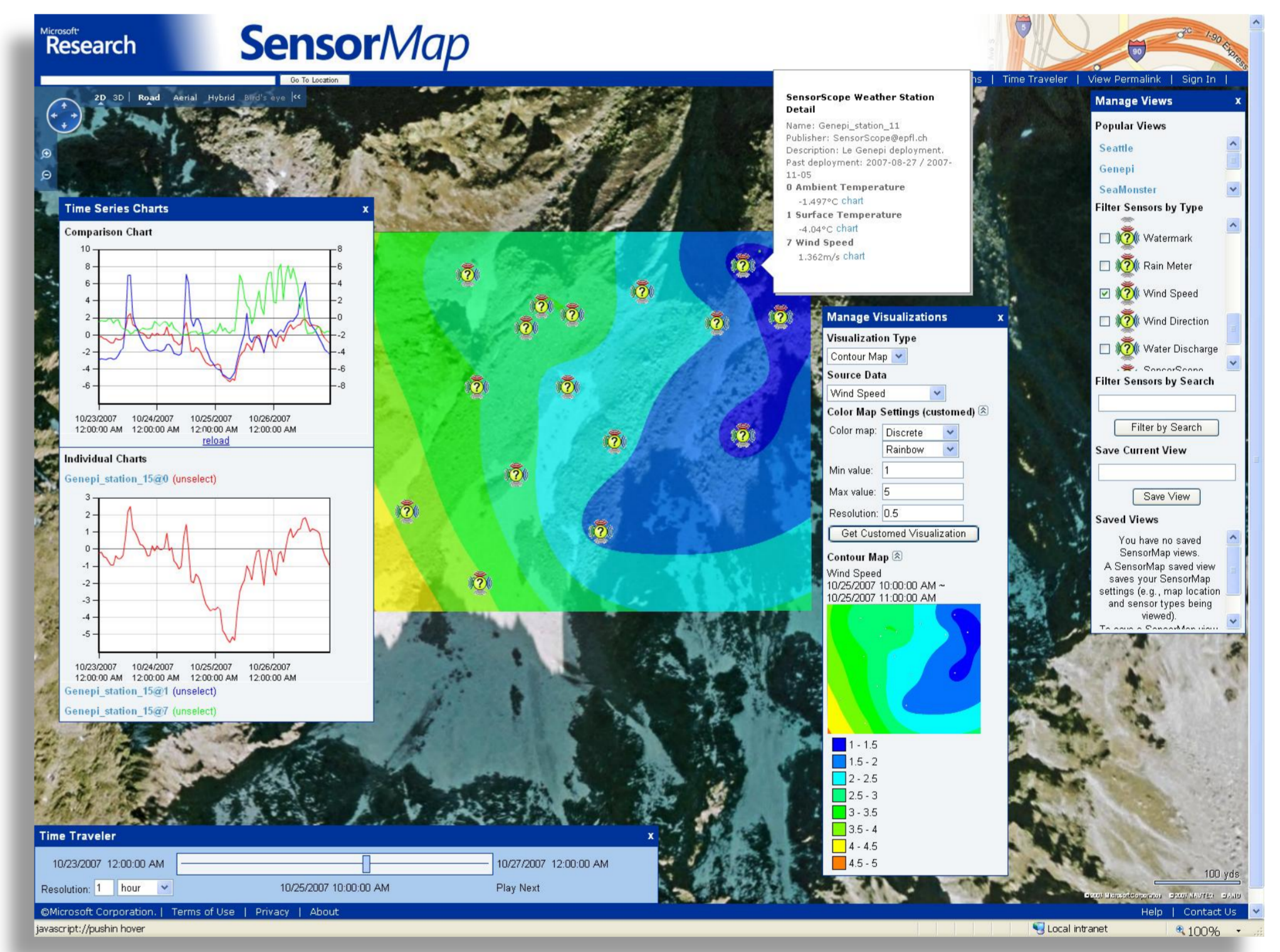


SensorMap

SensorMap is a central resource for SwissEx scientists. Where data can be exchanged between GSN instances, this data is replicated. Registering GSN instances in SensorMap, means that users can query the GSN instance over the sensormap interface and display/download this data without requiring it to be replicated.

SensorMap provides a geo-spatial central data access point, where data from all instances can be accessed and increasingly complex tasks can be carried out on data from an assortment of hardware locations.

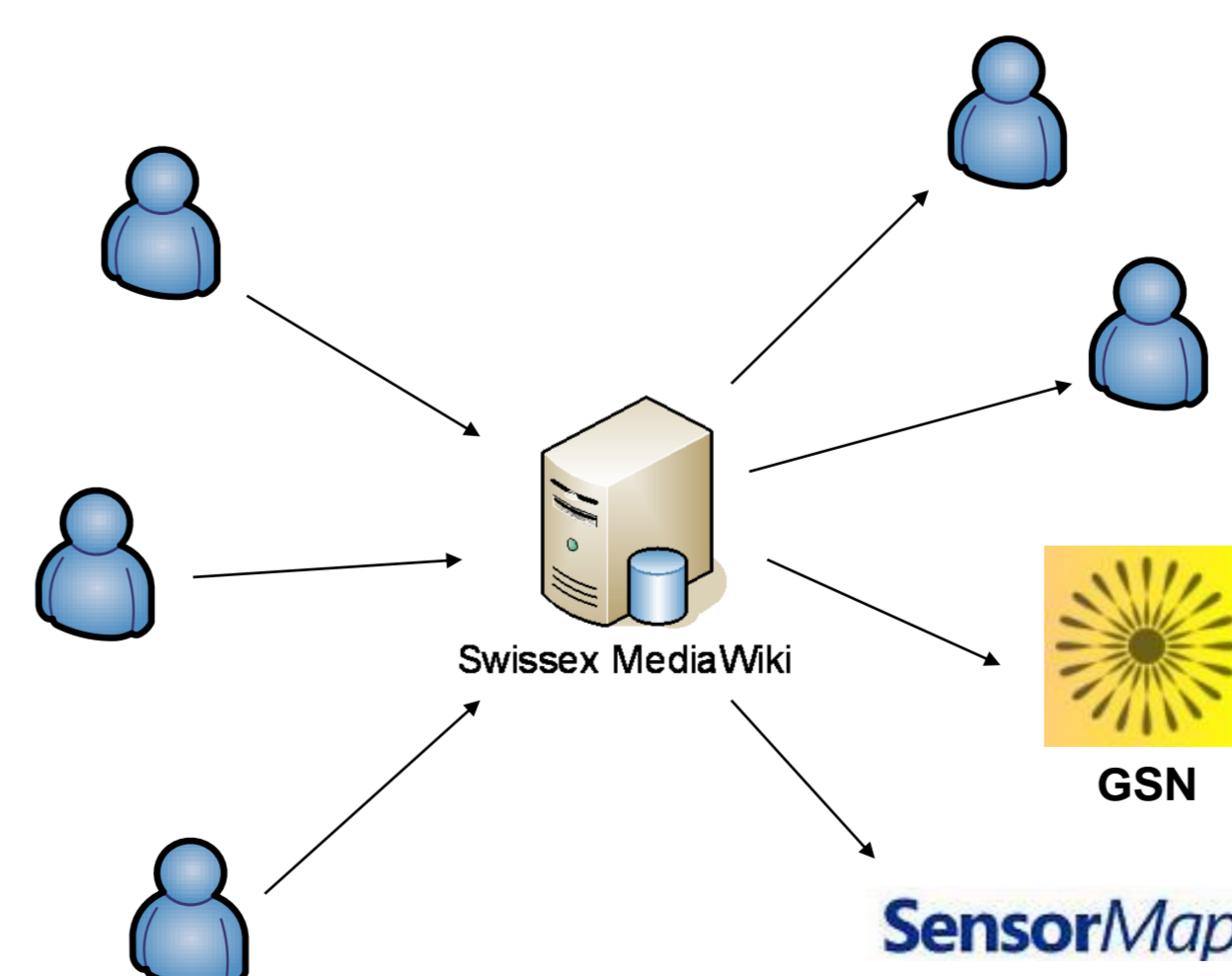
In addition, metadata entered over the wiki interface (below) is simultaneously displayed to show the user the known status of the data that they are using.



<http://www.sensormap.org>

Metadata integration

- Problem
 - Information about deployments
 - Characteristics (geographical positions, sensor types, transfer functions)
 - Time varying node and sensor positions (geographical positions and node IDs)
 - On site observations
 - Quality of data (data filtering and correction)
- Solution
 - Annotations in a semantic wiki (SwissEx)
 - No programming needed (data entry through forms)
 - Can be automatically queried (through SPARQL)
 - Persistent and shared space



The screenshot shows the Swiss Experiment metadata entry form. It includes fields for Deployment, Description, Coordinate System, Coordinates, Altitude, Start Date, End Date, Institute Responsible, and Image. There is also a section for Free text and a Summary field. The form is designed for easy data entry and metadata management.

www.swiss-experiment.ch