

Application of Open Source OGC Sensor Web Implementations for Disaster Management and Environmental Monitoring

Christoph Stasch
Simon Jirka

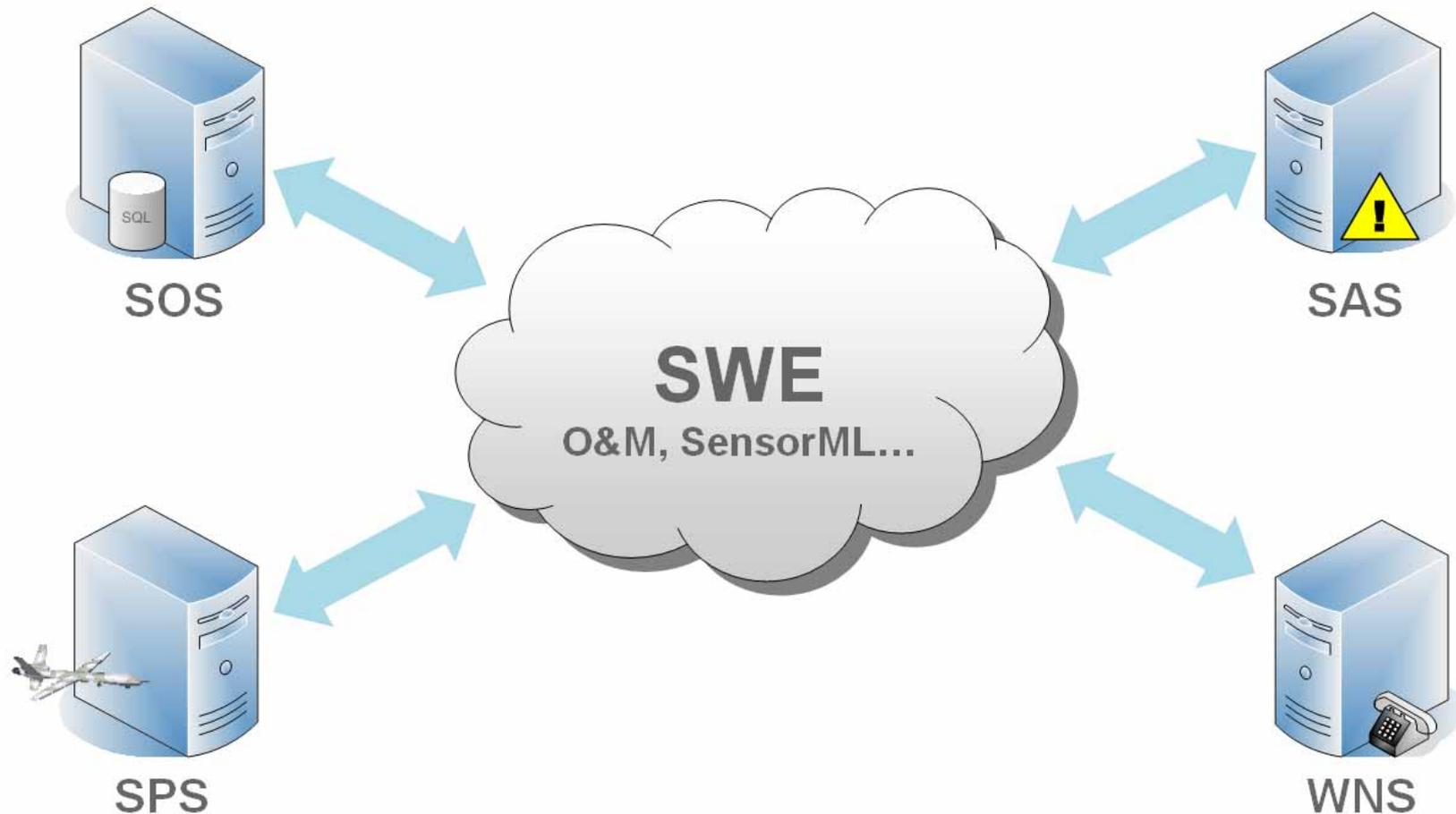
Overview

- Sensor Web Enablement
- OSIRIS
- Practical application of SWE
 - Fires in industrial plants
 - Forest fires
 - Water pollution
 - Air pollution

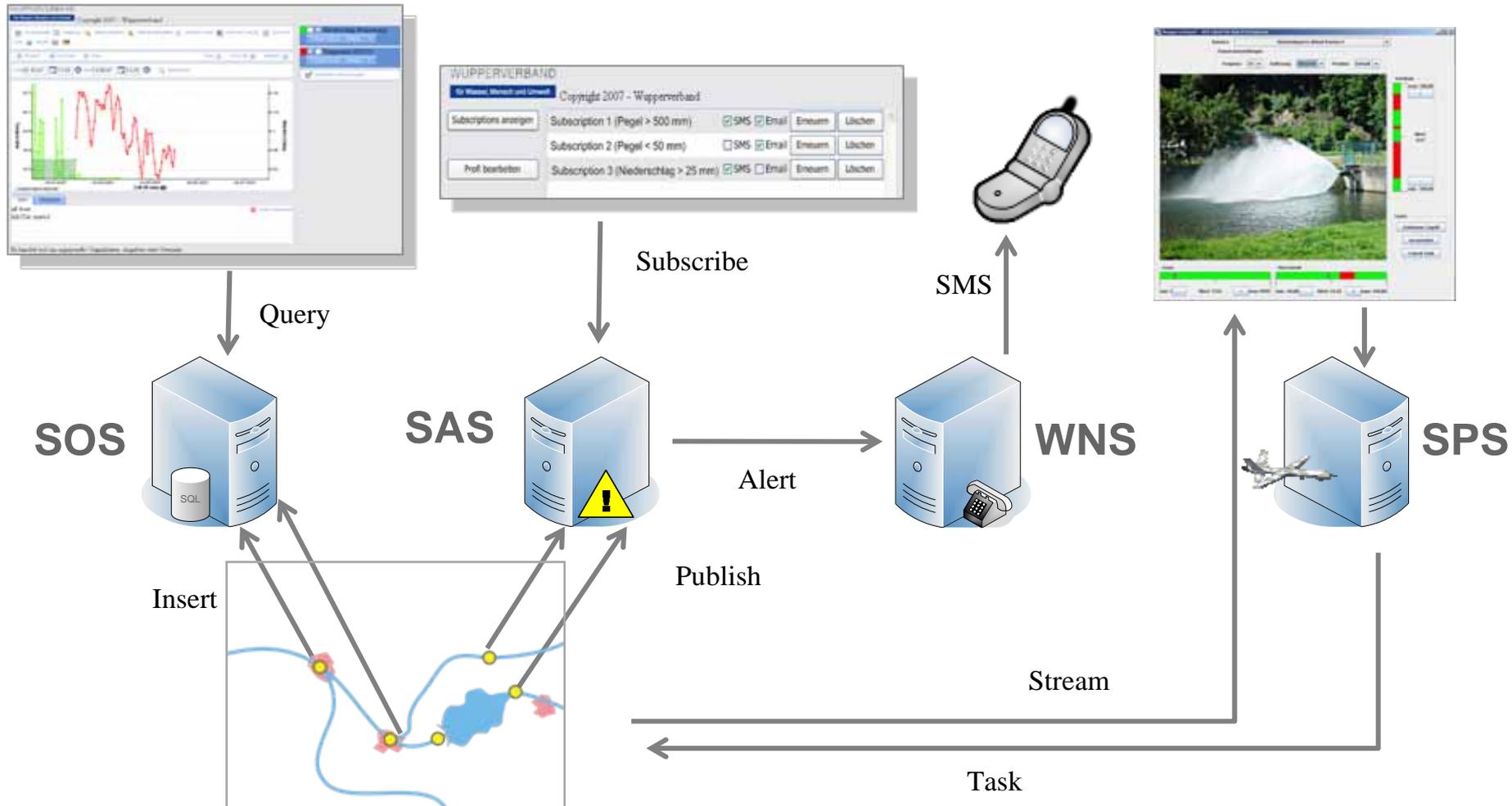
Sensor Web Enablement (SWE)

- OGC Working Group
- Standards for
 - Discovering sensors and sensor data
 - Describing metadata of sensors and sensor observations
 - Accessing real time measurement data as well as time series data
 - Accessing sensor and measurement parameters
 - Controlling sensors and simulation models

SWE Services & Encodings



SWE Architecture



OSIRIS

- Open Architecture for Smart and Interoperable Networks in Risk Management Based on In-situ Sensors
- EC funded project
- Sixth Framework Programme (FP6)
- Duration: 09.2006 to 04.2009
- 13 partners
- Coordinated by Thales Communications

OSIRIS

- Integration of in-situ sensors
- Systems for
 - Risk monitoring
 - Crisis management
- Based on the SWE architecture
- Enhancements and improvements to the SWE specifications
- Deployment of and contribution to the development of the 52° North SWE implementations



**FOREST
FIRE**

**INDUSTRIAL
RISKS**

**AIR
POLLUTION**

**WATER
POLLUTION**

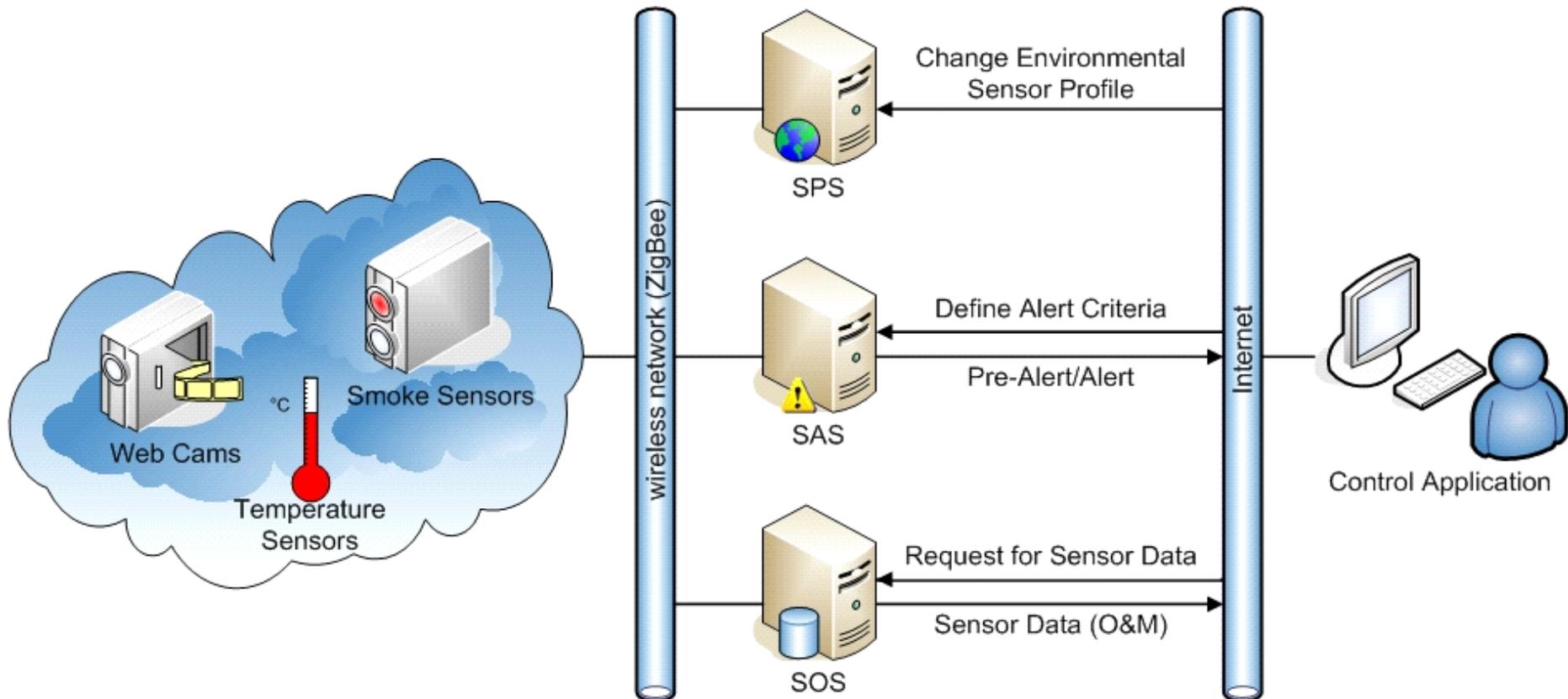
<http://www.osiris-fp6.eu>

Coordination: Thales Communications

Fires In Industrial Plants

- Realization in a fire fighting training area in Aachen (Germany)
- Sensors
 - Smoke detectors
 - Temperature sensors
 - Cameras

Fires In Industrial Plants



Forest Fires

- Realization in the South of France
- Sensors
 - Airborne sensor platform for collecting overview image data
 - Ultra-wideband positioning of fire men
 - Surveillance cameras for monitoring remote areas
 - Weather station

Forest Fires

- Usage of SWE components
 - SPS for controlling the airborne platform as well as the surveillance cameras
 - SOS for providing
 - Weather data
 - Positions of fire men
 - Video data from the surveillance cameras
- In addition: WCS/WMS for accessing the overview image data

Water Pollution

- Realisation in an area near Grosseto, Tuscany (Italy)
- Sensors
 - Arsenic concentration
 - Speed of water flow
 - Water temperature
 - Detection of hydrocarbons
 - Weather station

Water Pollution

- Usage of SWE components
 - SOS for accessing
 - Concentration of arsenic and hydrocarbons
 - Weather data
 - Water data
 - SAS for dispatching alerts in case of critical concentrations of arsenic and/or hydrocarbons
 - SPS for changing the sampling rate of arsenic and hydrocarbon sensors

Air Pollution

- Realisation in Valladolid (Spain)
- Sensors
 - Measurement of several air pollutant concentrations
 - Mobile sensors (mounted on busses)
 - Stationary measurements
 - UAV
 - Weather station

Air Pollution

- Usage of SWE components
 - SOS for accessing
 - Measurements of air pollution
 - Weather data
 - SAS for dispatching alerts in case of critical measured values

Web Links

- OSIRIS
 - <http://www.osiris-fp6.eu/>
 - EC project applying the SWE technology for disaster management and environmental monitoring
- 52° North
 - <http://52north.org/swe>
 - Open Source implementations of the presented SWE components
- OGC SWE Working Group
 - <http://www.opengeospatial.org/projects/groups/sensorweb>
 - Information about the SWE standards