

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

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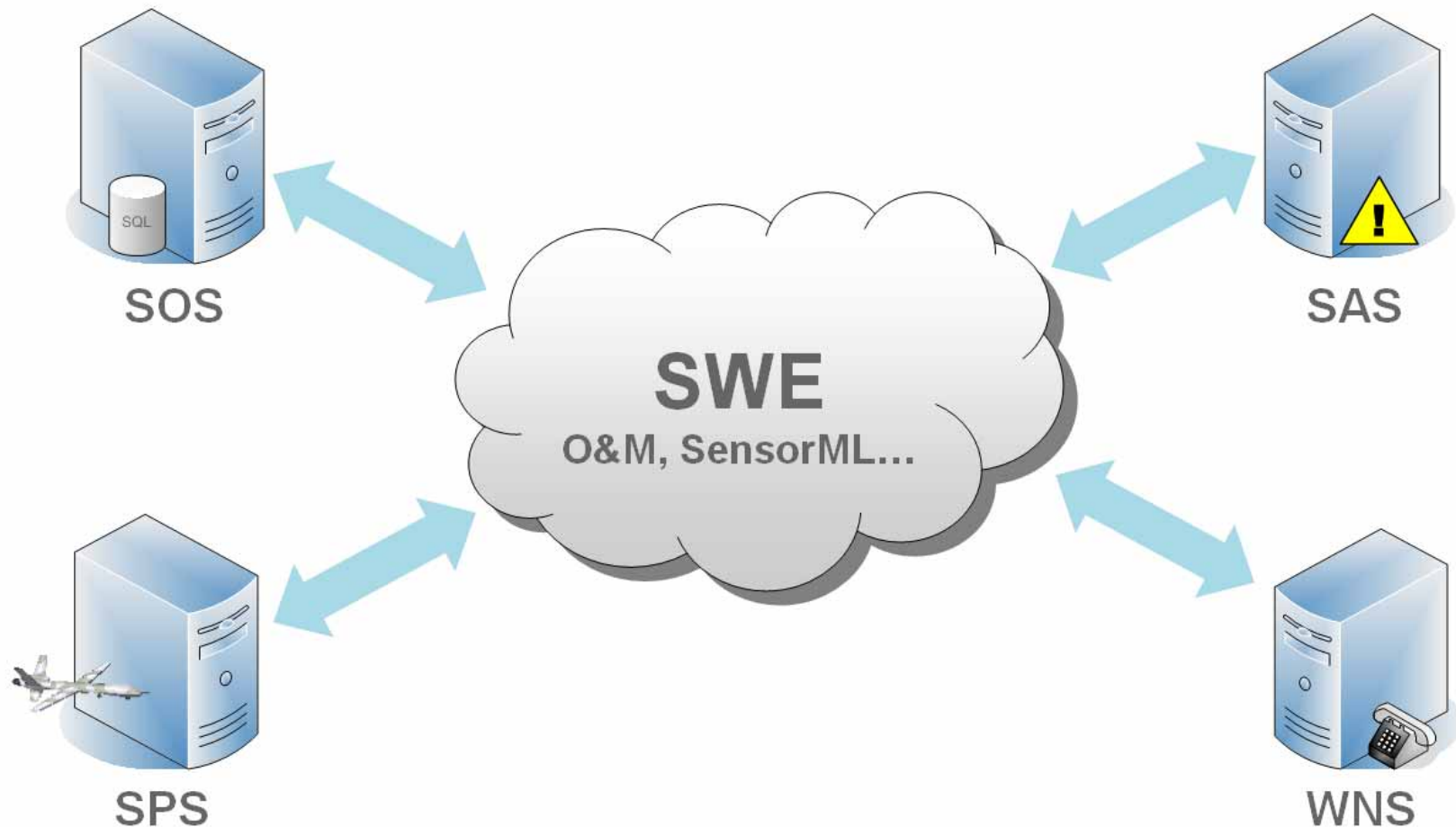
# Overview

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

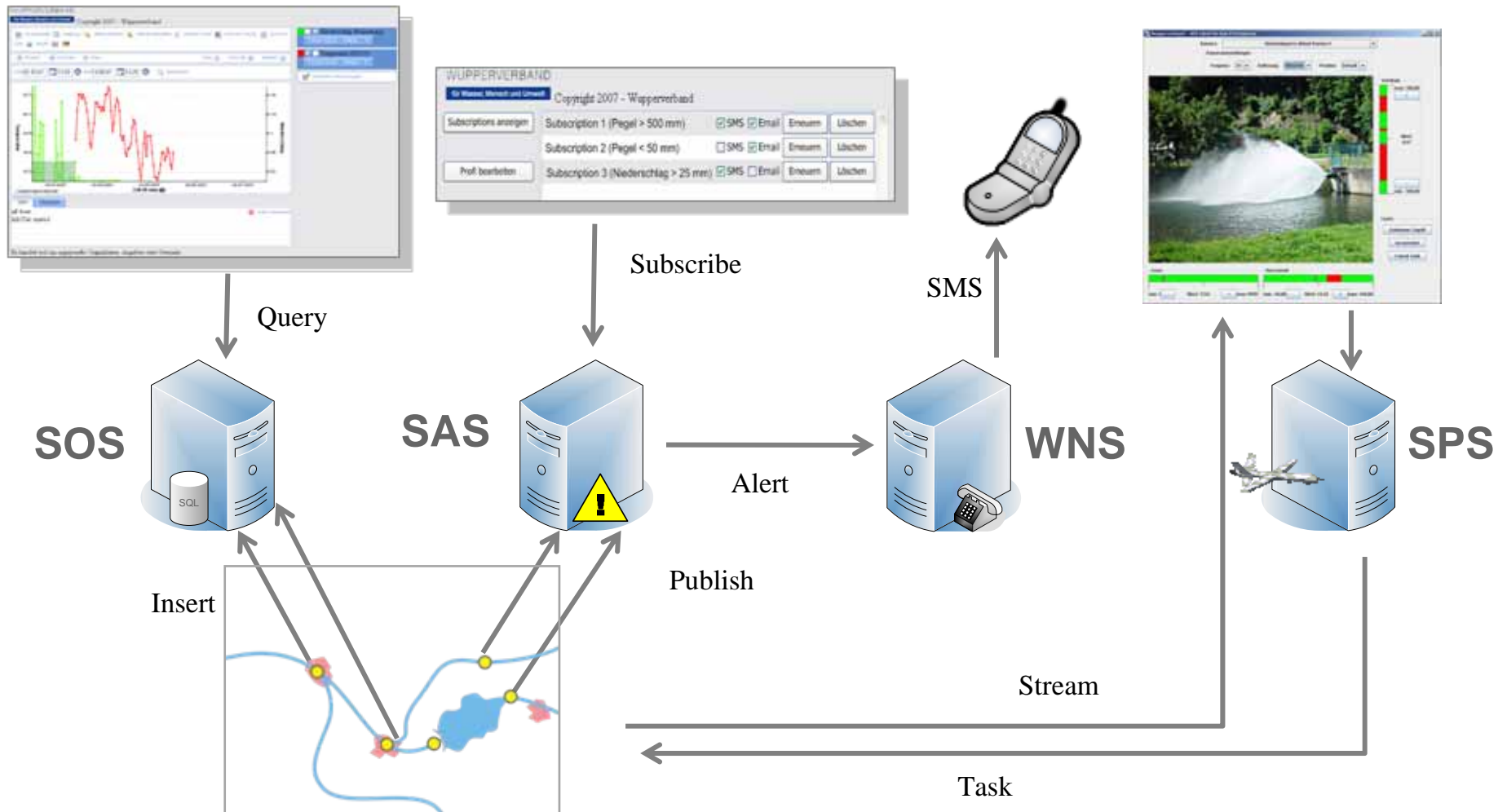
# Sensor Web Enablement (SWE)

- 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





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

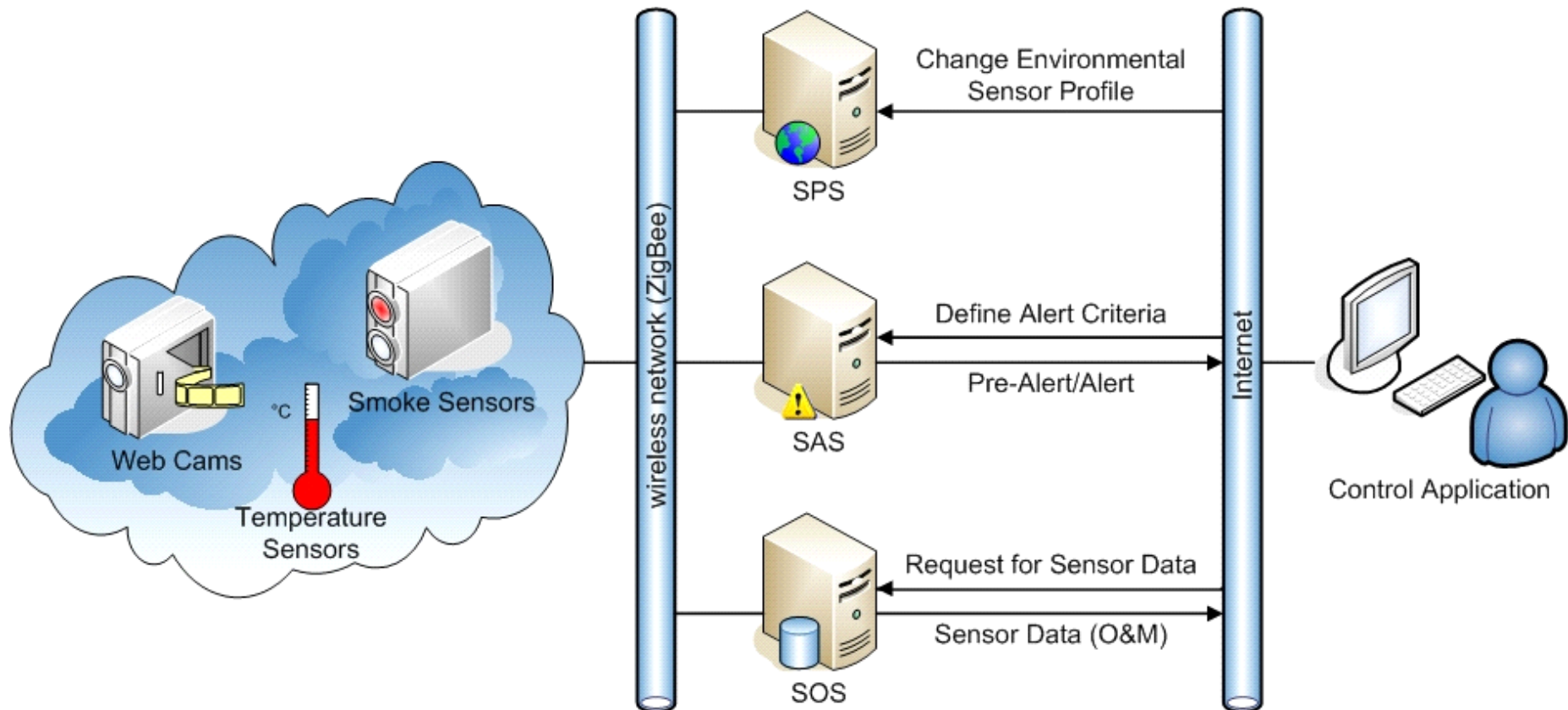
Coordination: Thales Communications



# 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