**Event Detection in Water Resource Management Applications**

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**THE MOTIVATION FOR EVENT-DRIVEN INFRASTRUCTURES**

Classic View and Download services (such as OGC WMS or WFS) do not provide means to access measurements. Measurements could be anything that is a phenomenon in the real-world, observed and sensed with specific devices. Examples can be: water level measurement, discharge (hydrology), air quality parameters, but also information about mobile entities (e.g. tracking of ships). The OGC Sensor Observation Service (SOS) is designed to manage observations and measurements and provide access to these. The ability to react to certain critical situations has always been an important task for managers of water resources, ranging from water gauge monitoring to pollution detection. This implies a paradigm shift — from pull-based communication patterns to push-based approaches such as the Publish/Subscribe message exchange pattern.

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**NOTIFICATION CONCEPT**

- **Rules**
  - Define conditions
  - Are checked when new measurements are available

- **Notifications**
  - Group sets of rules (e.g. threshold overshoot/undershoot, sensor failure)

- **Subscriptions**
  - Correlate notifications with users
  - Define the communication channel (e.g. email, web client, mobile, ...)

REST API with JSON binding
- Analogous to the OGC Publish/Subscribe 1.0 standard
- Uses the same database and conceptual model as the SOS

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**TECHNICAL APPROACH**

**REST/JSON API**
- Allows lightweight (web) client development
- Provides user and group management (administrators create subscriptions; users receive notifications)
- Supports different types of events (rise of gauge above the threshold, staying above the threshold, fall below the threshold, sensor failures/errors)
- Sends warnings and all-clear signals for the end user

The API is an **Open Source** project → collaborators are welcome!

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**USE CASES**

- **Domain specialists**: responsible for monitoring water networks and facilities (e.g. dam monitoring)
- **Public**: recreational activities (e.g. water level is important for canoeing or fishing)
- **Maintenance staff**: observe states of sensors and react to failures
- **Overall goal → receive meaningful information in near-real time**

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**OUTLOOK**

- **Web client development**
- **Triggering of complex processing workflows**

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**Contact and further information**

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