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The new OGC Publish-Subscribe specification – status of work

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We relate on the work of the Open Geospatial Consortium Publish/Subscribe Standards Working Group (in short, OGC PubSub SWG), which investigates a mechanism to support publish/subscribe requirements across OGC service interfaces and data types (coverage, feature, etc.)

Two primary parties characterize the publish/subscribe model: a Publisher, which is publishing information, and a Subscriber, which expresses an interest in all or part of the published information.

The publish/subscribe model is distinguished from the request/reply and client/server models by the asynchronous delivery of messages and the ability for a Subscriber to specify an ongoing (persistent) expression of interest.

The publish/subscribe model can be useful to reduce the latency between event occurrence and event notification, as it is the Publisher's responsibility to publish a message when the event occurs, rather than relying on clients to anticipate the occurrence. The publish/subscribe model can also be used to decouple message production from message consumption by allowing messages to be passed through a third party (a message broker).

OGC services such as WMS and WFS have primarily addressed the request/reply model because it is sufficient to meet many use cases. Clients request data of interest when it is needed and may periodically request updates. Request/reply may be supplemented with publish/subscribe, in which case the initial state of interest may be requested via request/reply, and then a subscription may be created so that changes and updates are delivered. This can result in less or more predictable network traffic.

The PubSub SWG aims at a unified solution based on existing, well-adopted IT standards, taking into account previous work and discussions, such as the activities of OASIS and W3C on WS-Notification, relevant IETF RFCs such as ATOM and XMPP, as well as the experience gained through the OGC Interoperability and Standards Programs.

The SWG was chartered in 2010. Its scope was identified after a public phase of analysis and requirements gathering. The PubSub standard version 1.0 in scheduled for release in the summer of 2013. Afterwards, specific PubSub extensions are expected to be defined for OGC Web Services (e.g. WCS, WFS, SOS).

The cross-service requirements identified for PubSub 1.0 enable:
• Notification capabilities as a module to existing services, with no impact on existing service semantics and by reusing service-specific filtering semantics;
• Notifications of service and dataset updates in order to simplify/optimize harvesting by catalogues;
• Actual data push and/or update notifications from access services (i.e. WCS, WFS, SOS) to the clients.

The use-cases identified for PubSub 1.0 include:
• Service Filtered Data Push and Notification.
• Notification of Threshold Crossings.
• Brokered publish/subscribe.
• Distributed Data Synchronization.

PubSub 1.0 comprises a core and two extension documents:
• Core: defines an abstract description of the mandatory PubSub functionality, independent of the underlying

binding technology (several extension classes are also defined, for optional capabilities).

- SOAP binding: defines how the PubSub functionality is realized in SOAP services (i.e. leveraging WS-Notification).
- RESTful binding: defines how the PubSub functionality is realized in RESTful services.