

## Experimental feed of JMA XML messages by PubSubHubbub protocol

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TCP/IP-based protocols are often classified into two categories: push protocols are initiated by TCP connection from the sender of information, while pull protocols are initiated by the receiver. It is commonly known that pull protocols are simple but polling (periodic check of updates) causes latency, while push protocols can achieve low latency but workloads of management and monitoring are proportional to the number of subscribers which cannot be reduced by load-balancing for the web (Table 1).

PubSubHubbub (<http://goo.gl/f5edD>) is a protocol to notify updates of a website by sending Atom or RSS by HTTP POST. It is getting popular in publishing blogs. The sender may choose to post only essential metadata (such as URL), to let receivers retrieve the content by HTTP GET. In that case the protocol has mixed nature of push and pull protocols. A website called "hub" can relay the posting to more subscribers, and that can reduce the cost of management while maintaining low latency (Figure 1).

On December 2012, Japan Meteorological Agency starts experimental feed of JMX (Japan disaster Mitigation and prevention information XML format; <http://xml.kishou.go.jp/>) messages using PubSubHubbub. I'd like to discuss about experiences of this work in the session.

Keywords: JMA XML, PubSubHubbub, Telecommunication Protocol

Table 1: Comparison of Protocols.

	Push Protocols (FTP PUT, HTTP POST)	PubSubHubbub (in case only metadata is notified)	Pull Protocols (HTTP GET)
Who starts TCP	Sender	Both:	Receiver
→who's responsible to management and monitoring	Sender (workload proportional to # of subscribers)	Notification: Sender (workload reduced by hub) Content: Receiver	Receiver
Polling	Unnecessary	Unnecessary	Necessary
→pollinglatency	No	No	Up to cycle of polling

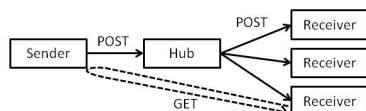


Figure 1: structure of PubSubHubbub network.

## Co-occurrence Analysis on the 2011 off the Pacific coast of Tohoku Earthquake

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The March 11, 2011, earthquake off the Pacific coast of Tohoku, Japan, was a record-breaking natural disaster. After the M9.0 mainshock, numerous aftershocks and induced seismicity occurred throughout Japan. In this study, we extract earthquake co-occurrence patterns for investigating mechanical interactions among the affected areas. We applied a novel data mining method to extract frequent and co-occurring seismic patterns. We acquired the affected areas and relationships between earthquake co-occurrence patterns and focal mechanisms from the Japan Meteorological Agency's 2011 hypocenter catalog.

Keywords: data mining, mechanical interaction, asperity, focal mechanism solutions

## A Testbed of Web-Based Hyperspectral Data Analysis Platform

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We are now developing web based hyperspectral data analysis platform for future satellite borne hyperspectral sensors. The system will have capability for searching, browsing, and analyzing for hyperspectral and other kinds of data through the web browsers. The platform is based on Web-GIS with backend of InfoFrame DWH Appliance (IDA). We did not have global hyperspectral data for the Earth yet, but for the Moon, we already have hyperspectral data obtained by SELENE Spectral Profiler (SP). Then we use those SP data for building testbed system. The testbed system has capability for searching SP data by coordinate, spectral characteristics, geological settings based on other kinds of lunar data.

In this paper, we show the current status of the testbed system and future development plan of the system for lunar data and for the Earth observation hyperspectral sensors.

Keywords: hyperspectral data, data analysis, lunar exploration