

# ADDING FLEXIBLE SUBSCRIPTION OPTIONS TO EPICS\*

## Abstract

The need for a mechanism to control and filter subscriptions to control system variables by the client was described in a paper at the ICALEPCS2009 conference [1]. The implementation follows a plug-in design that allows the insertion of plug-in instances into the event stream on the server side. The client can instantiate and configure these plug-ins when opening a subscription, by adding modifiers to the channel name using JSON notation [2]. This paper describes the design and implementation of a modular server-side plug-in framework for Channel Access, and shows examples for plug-ins as well as their use within an EPICS control system.

## Server-Side Plug-Ins — Instantiated and Configured by the Channel Access Client Using JSON Modifiers

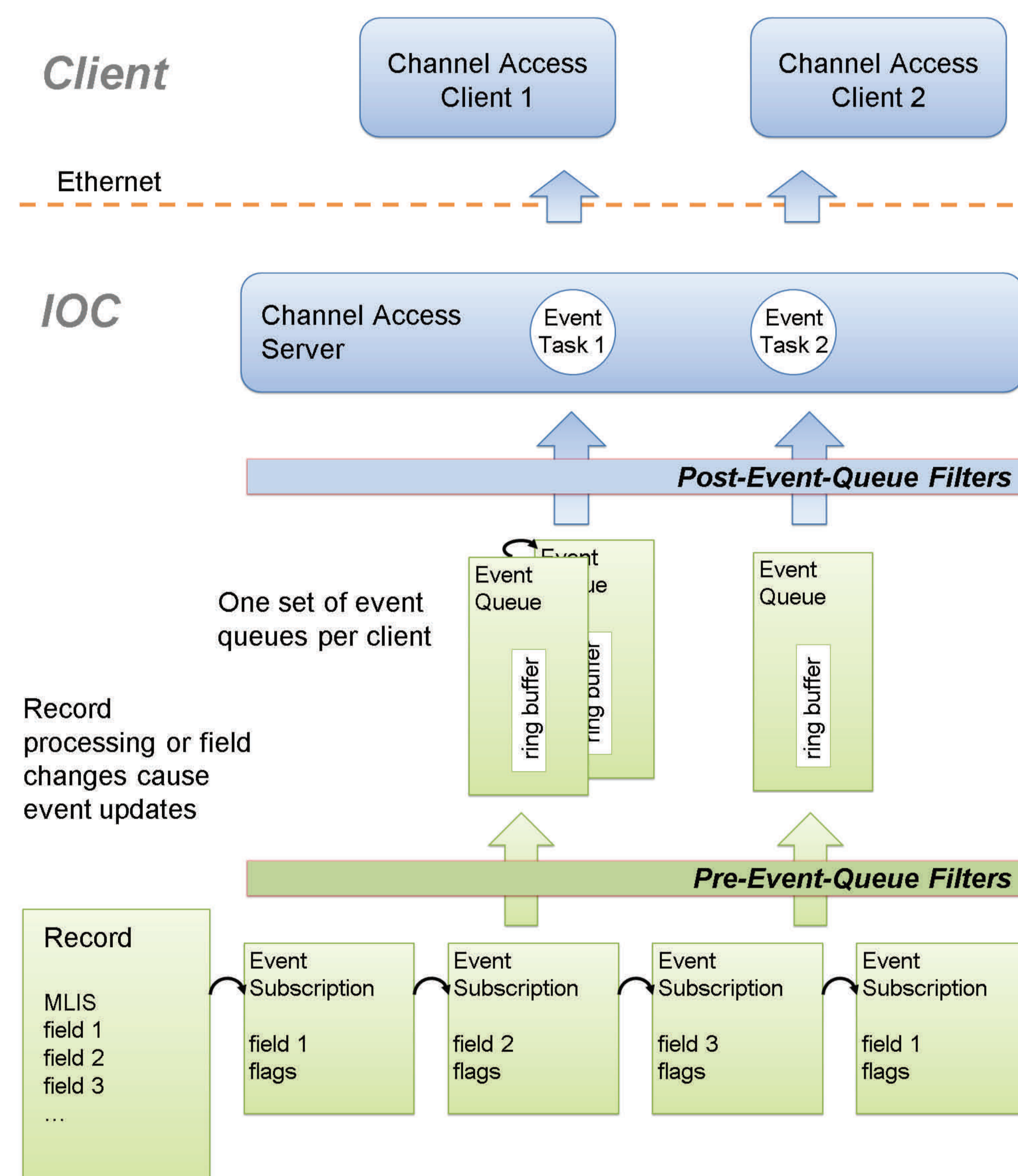
```
myPV.A{"ts":{}}
myPV.RVAL{"dbnd":{"m":"rel","d":7.5}}
myArray.VAL[-5:2:8]
myPV.VAL{"sync":{"m":"while","s":"red"}}
```

Time Stamp Reset  
 Deadband  
 Sub Array  
 Synchronization

## Extending the Existing Update Mechanism in a Flexible and Modular Way

## Plug-Ins Can Manipulate Data Updates in Many Ways

- Manipulate the data
- Manipulate the meta data (alarm, timestamp)
- Change the type of data
- Change the size of arrays
- Drop updates
- Insert updates



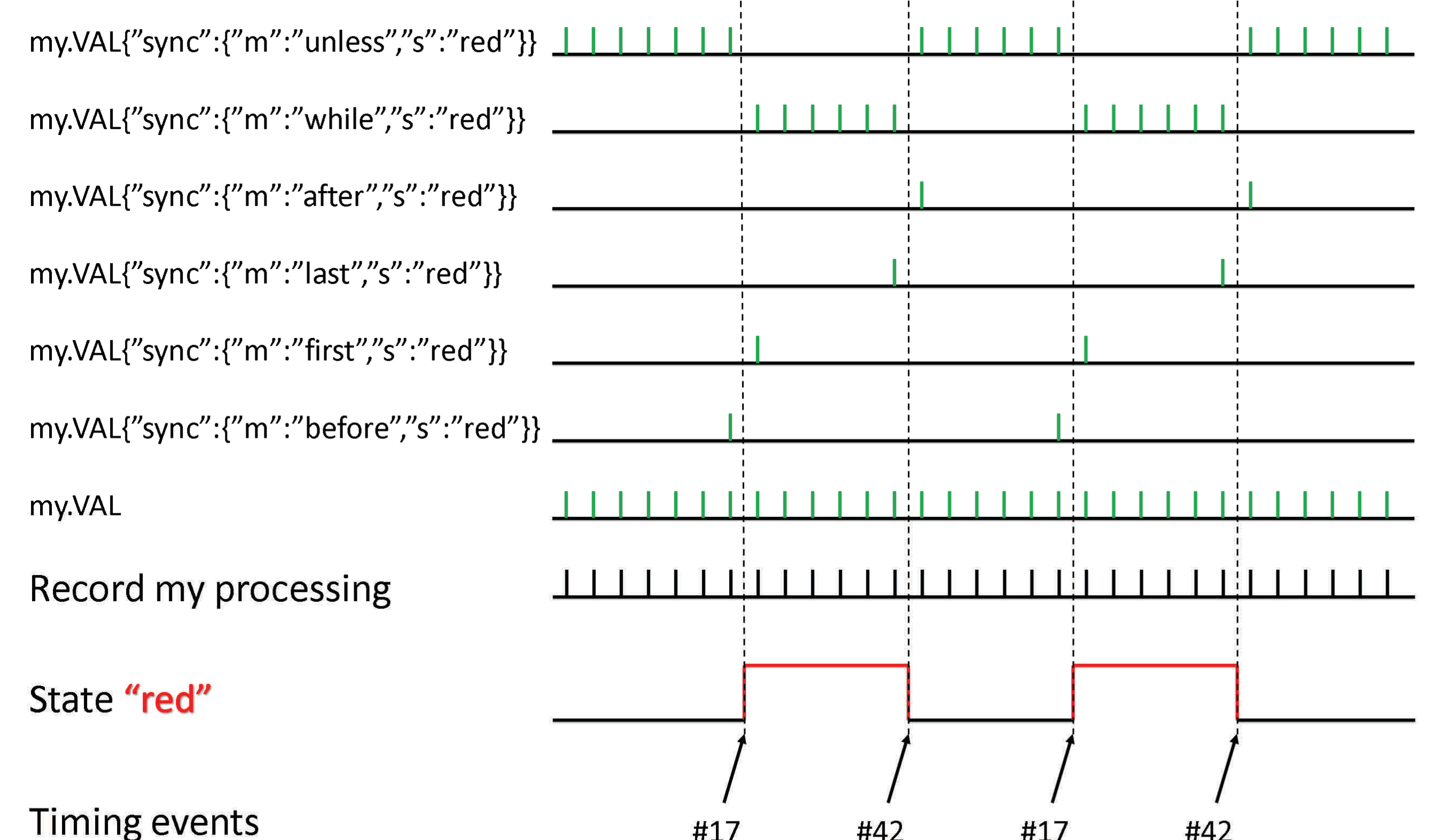
## Plug-In Instances Can Be Inserted at Two Levels

**Low Priority CA Context**  
 for CPU intensive, atomic operations that work on single updates

**High Priority Database Context**  
 for real time relevant, throttling, or average-type operations

## Flexible Plug-In Options Control Synchronization with External Events and System States

External events from timing/event systems or other software modules set or reset *system states*. The „sync“ plug-in forwards or drops data updates depending on state transitions.



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 [1] R. Lange, A.N. Johnson, "Advanced Monitor/Subscription Mechanisms for EPICS", THP090, Proceedings of ICALEPCS2009, Kobe, Japan, pp. 847-849.  
 [2] A.N. Johnson, R. Lange, "Evolutionary Plans for EPICS Version 3", WEA003, Proceedings of ICALEPCS2009, Kobe, Japan, pp. 364-366.