CMS Monitoring Update

- What's happening now?
  - Magnet cool down
    (http://cms.cern.ch/iCMS/jsp/page.jsp?mode=cms&link=/MTCC.html&name=MTCC) This
    page also has links to the online logbook and "CMS Page1"
  - Event display (http://iguana.web.cern.ch/iguana/live_events)
  - Control room webcam
    (http://forwardrpc.cern.ch/cms_forward_rpc/webcam/webcam.php)
  - (see http://home.fnal.gov/~biery/cms for these links)
- CMS ROC web page (http://www.uscms.org/LPC/lpc_roc/index.html) has many
  more useful links

- Event data monitoring – I've presented my understanding on the
  following slides (all errors are my fault, of course).
- Remote monitoring of non-event data and remote control – the
  collaboration is starting to discuss how these might work.

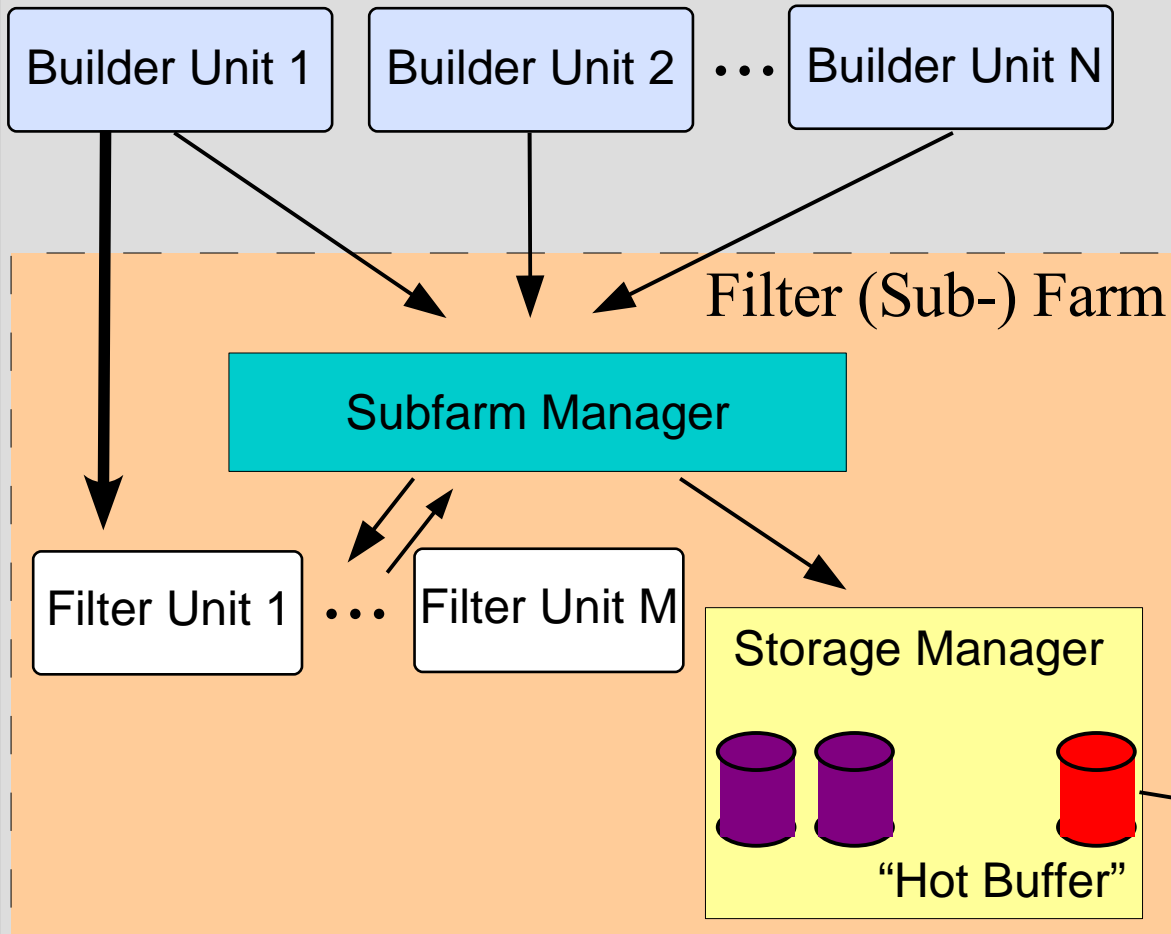# CMS Event Data Monitoring

Several different types

1. Histograms are filled in the high level trigger farm and distributed to monitor programs. The monitor programs include histogram viewers and histogram analyzers. The output from these programs can be viewed on displays on the experiment network and, in principle, on the web (for a wider audience). My impression is that the monitor programs are sub-detector-specific.

2. Events are served to online monitor programs.

3. Events in "express" data files can be analyzed.

4. Offline data files can be analyzed.

CMS Remote Event Data Monitoring

Remote monitoring of the various types

1. It is expected that viewing of the histograms filled in the HLT can be done over the web. In addition, there is interest in writing files of summary histograms on the experiment network and transferring those files to remote locations.

2. There will be no true online monitors running at remote locations (since that would require a direct socket connection from outside the experiment network to inside). However, it seems possible that the online monitors could write summary files that could be transferred elsewhere. Another (unlikely?) possibility is to have the online monitors make their results available on the web.

3. Express data files can be transferred to remote locations.

4. Whether full offline data is useful for monitoring probably depends on how much of the raw event is kept.

Shared DAQ Structure

Builder Unit 1 | Builder Unit 2 | ⋯ | Builder Unit N

Filter (Sub-) Farm

Subfarm Manager

Filter Unit 1 | ⋯ | Filter Unit M

Storage Manager

"Hot Buffer"

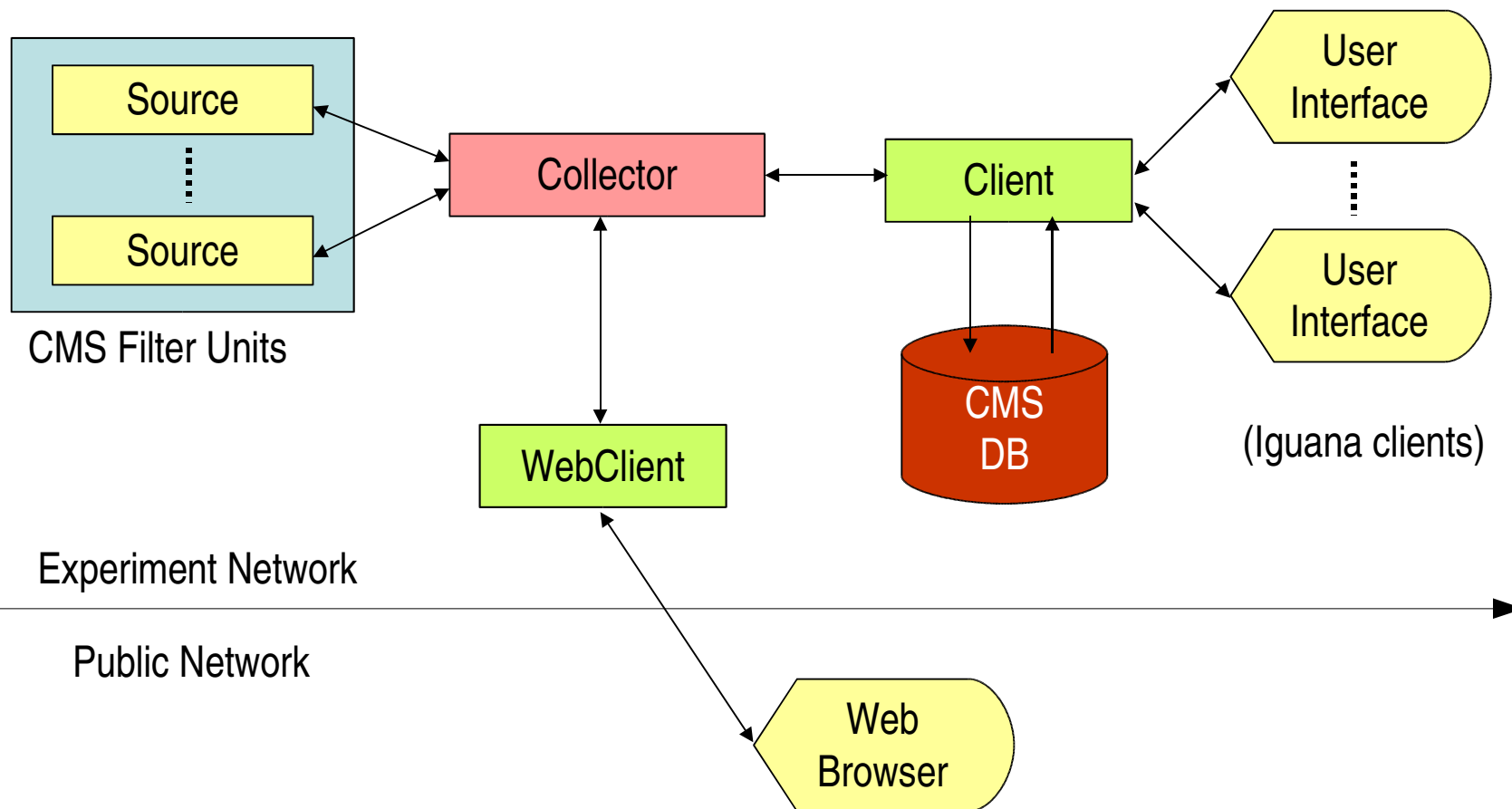Computing Services Network

✗ DAQ structure provides three places to perform monitoring
  ✗ Filter Units
  ✗ "Hot Buffer"
  ✗ Offline

CMS Data Quality Monitoring
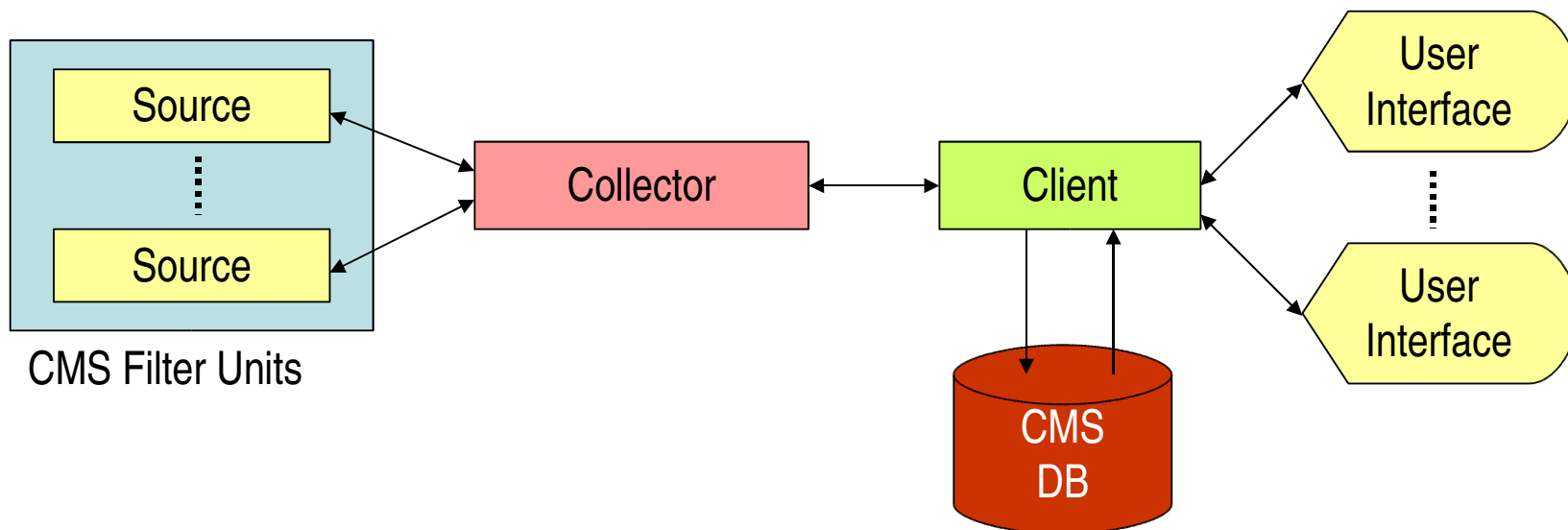
- **Source:** produce and make available a set of Monitoring Elements (MEs)

- **Collector:** manages MEs request/dispatch

- **Client:** receive a list of MEs, subscribe and receive periodic updates, visualize, collate, compare to reference, raise alarms, etc. The client can write data into the DB (e.g. reference MEs) and read detector configuration variables from the DB

CMS Data Quality Monitoring

CMS Filter Units

Source

Source

Collector

WebClient

Client

CMS DB

User Interface

User Interface

(Iguana clients)

Experiment Network

Public Network

Web Browser

Simplified Network View?

HLT Farm Nodes

One or more CPUs running Collectors

Web browser at ROC

Experiment Network

Host with Web Client

Host with Web Client

Host with Web Client

Public Network

One or more CPUs running DQM Clients

Applications will be sub-detector-specific