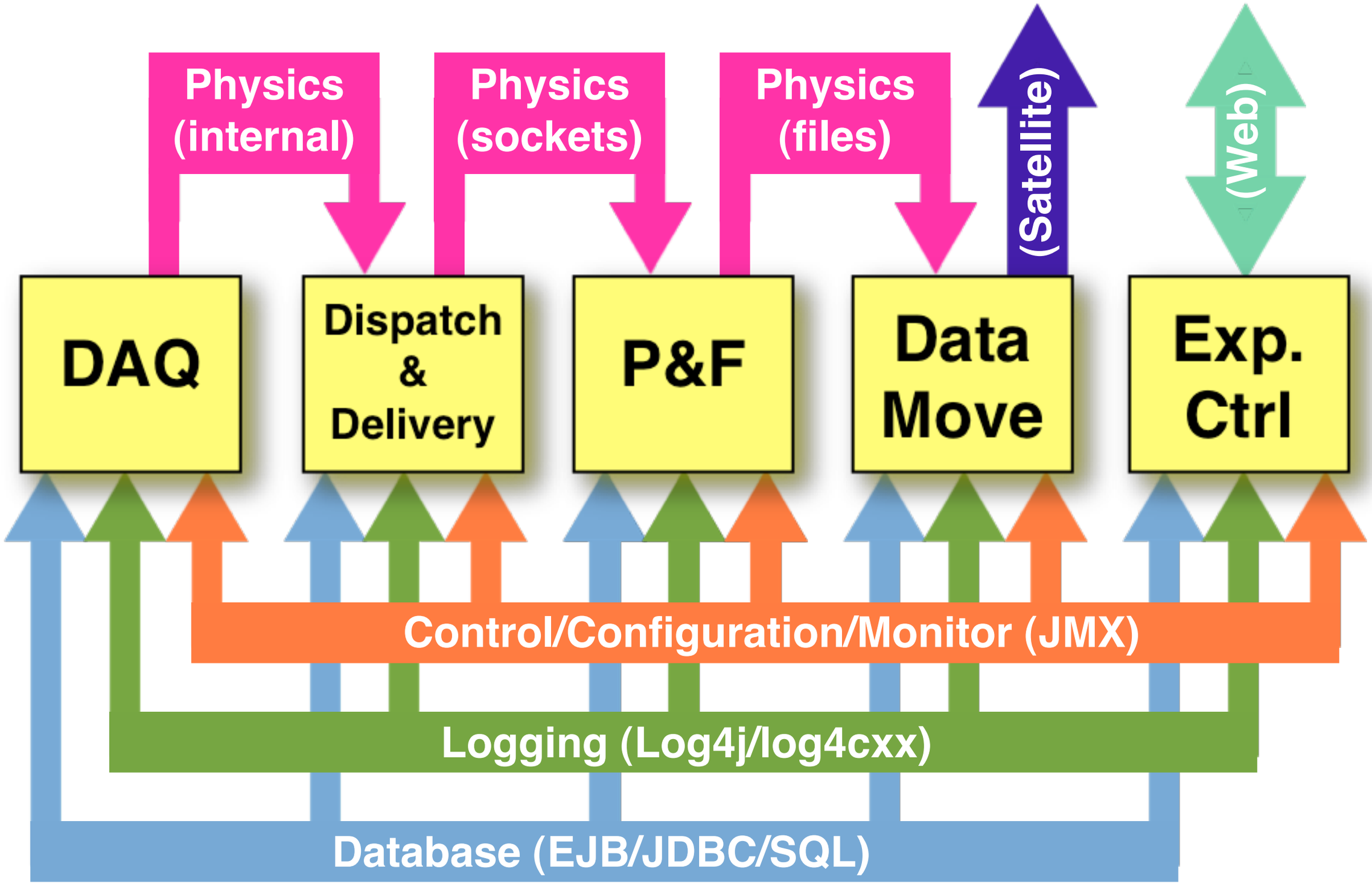
Experiment Control

Simon Patton


Physics (internal)
Physics (sockets)
Physics (files)
(Satellite)
(Web)
DAQ
Dispatch & Delivery
P&F
Data Move
Exp. Ctrl
Control/Configuration/Monitor (JMX)
Logging (Log4j/log4cxx)
Database (EJB/JDBC/SQL)

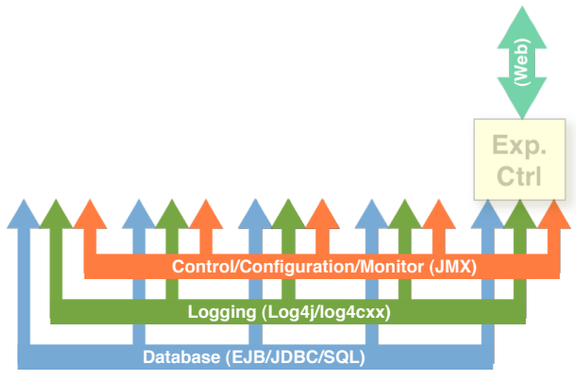
Demarcation

- Logging
  - Manage messages pushed out by the systems.
- Monitoring
  - Access to and storage of read only quantities.
- Configuration
  - Access to and storage of read-write quantities.
- Control
  - Management of execution.

Infrastructure

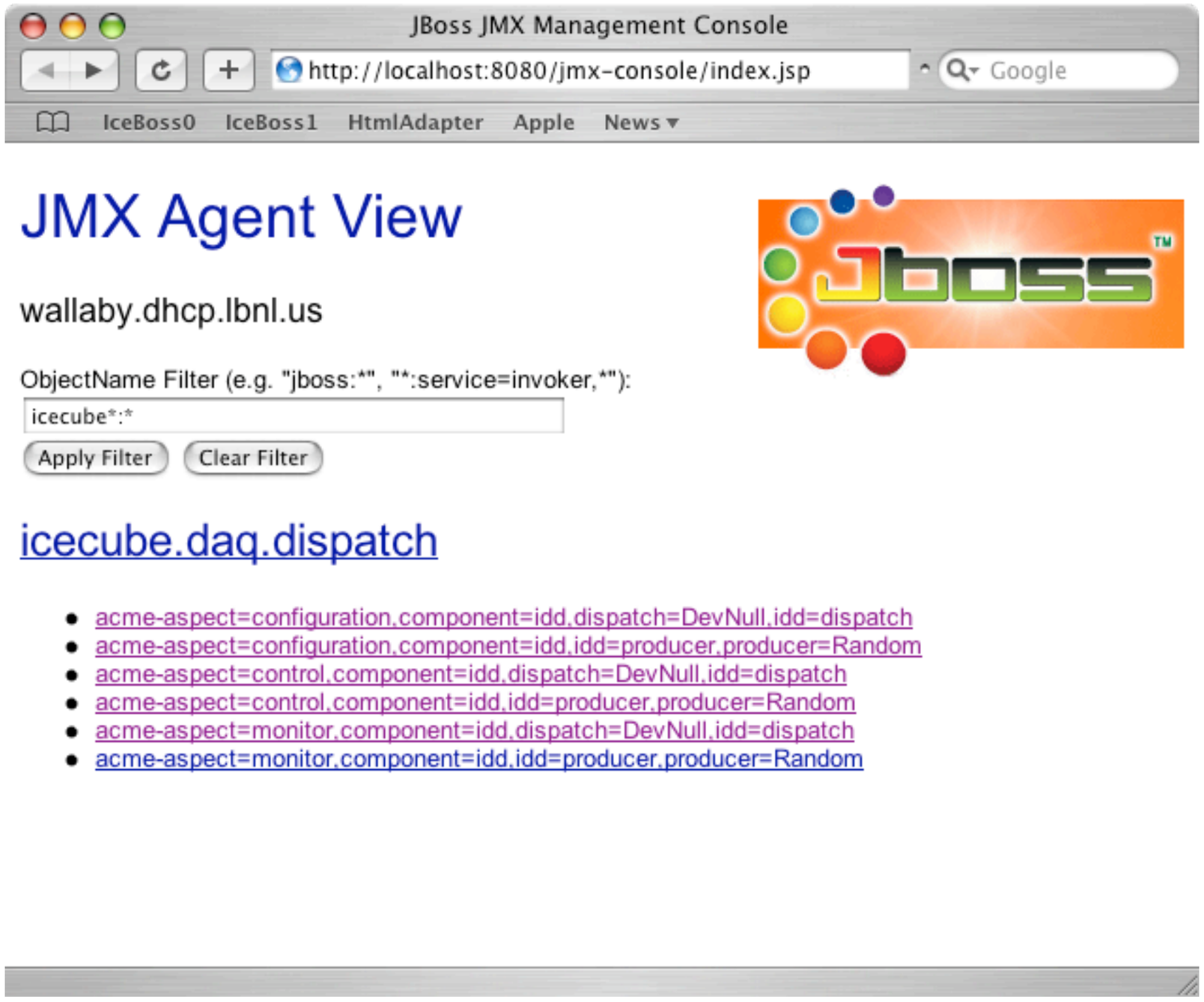
- JMX (Java Management Extensions) used as management interface.
- EJB (Enterprise Java Beans) and Java DataBase Connector (JDBC) used to make information persistent.
- JSP (Java Server Pages) used to prepare dynamic web pages.
- Portal used to manage users and allow customization of web pages.

JBoss



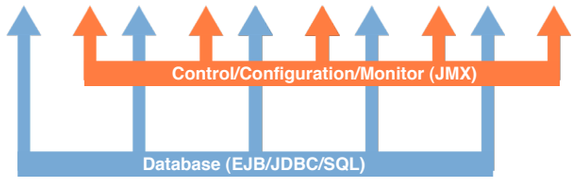
- Off-the-shelf J2EE application server.
- Built around a Java Management Extensions (JMX) backbone.
- Provides Enterprise Java Beans (EJB) and Java Server Pages (JSP) containers.
- Provides **`jmx-console`** application that allows access to Managed Beans (MBeans).

jmx-console


JBoss JMX Management Console
http://localhost:8080/jmx-console/index.jsp
Google
IceBoss0
IceBoss1
HtmlAdapter
Apple
News
JMX Agent View
wallaby.dhcp.lbnl.us
ObjectName Filter (e.g. "jboss:*", "*:service=invoker,*"):
icecube*:*
Apply Filter
Clear Filter
icecube.daq.dispatch
acme-aspect=configuration,component=idd,dispatch=DevNull,idd=dispatch
acme-aspect=configuration,component=idd,idd=producer,producer=Random
acme-aspect=control,component=idd,dispatch=DevNull,idd=dispatch
acme-aspect=control,component=idd,idd=producer,producer=Random
acme-aspect=monitor,component=idd,dispatch=DevNull,idd=dispatch
acme-aspect=monitor,component=idd,idd=producer,producer=Random

JBoss Support

(Chris Day/Simon Patton/Martin Stoufer/
Keith Beattie)



- Define installation and deployment protocols.
- Supply classes for common IceCube specific tasks.
- Educate developers.

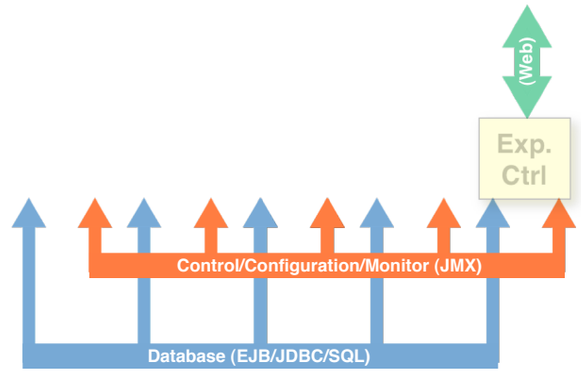
Logging

(Akbar Mokhtarani/Chris Day)

- Define logging interface to be used.
- Central "Concentrator" for all `WARN`, `ERROR` and `FATAL` messages.
- Compatibility with Offline **C++** logging package.
- Presentation GUI to access messages.

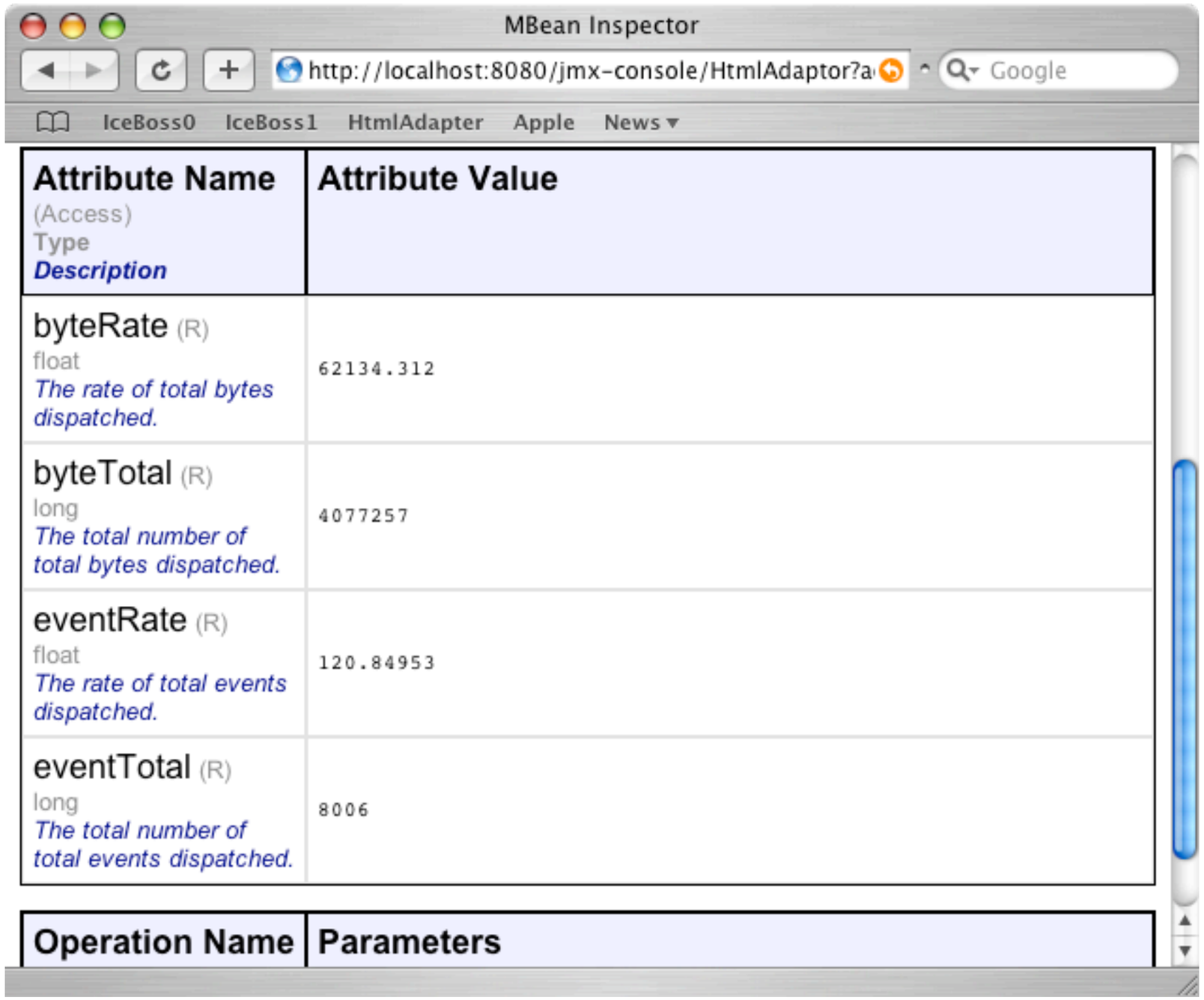
Monitoring

(Simon Patton/Akbar Mokhtarani)



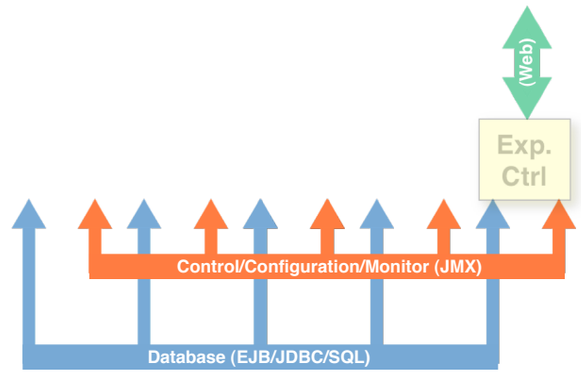
- Saving of attributes using JMX infrastructure and JDBC.
- Supply of "Standard" monitoring classes.
- Display built using Portal and Java Server Pages (JSPs).
- Published via "acme-aspect=monitor".

Monitoring Example



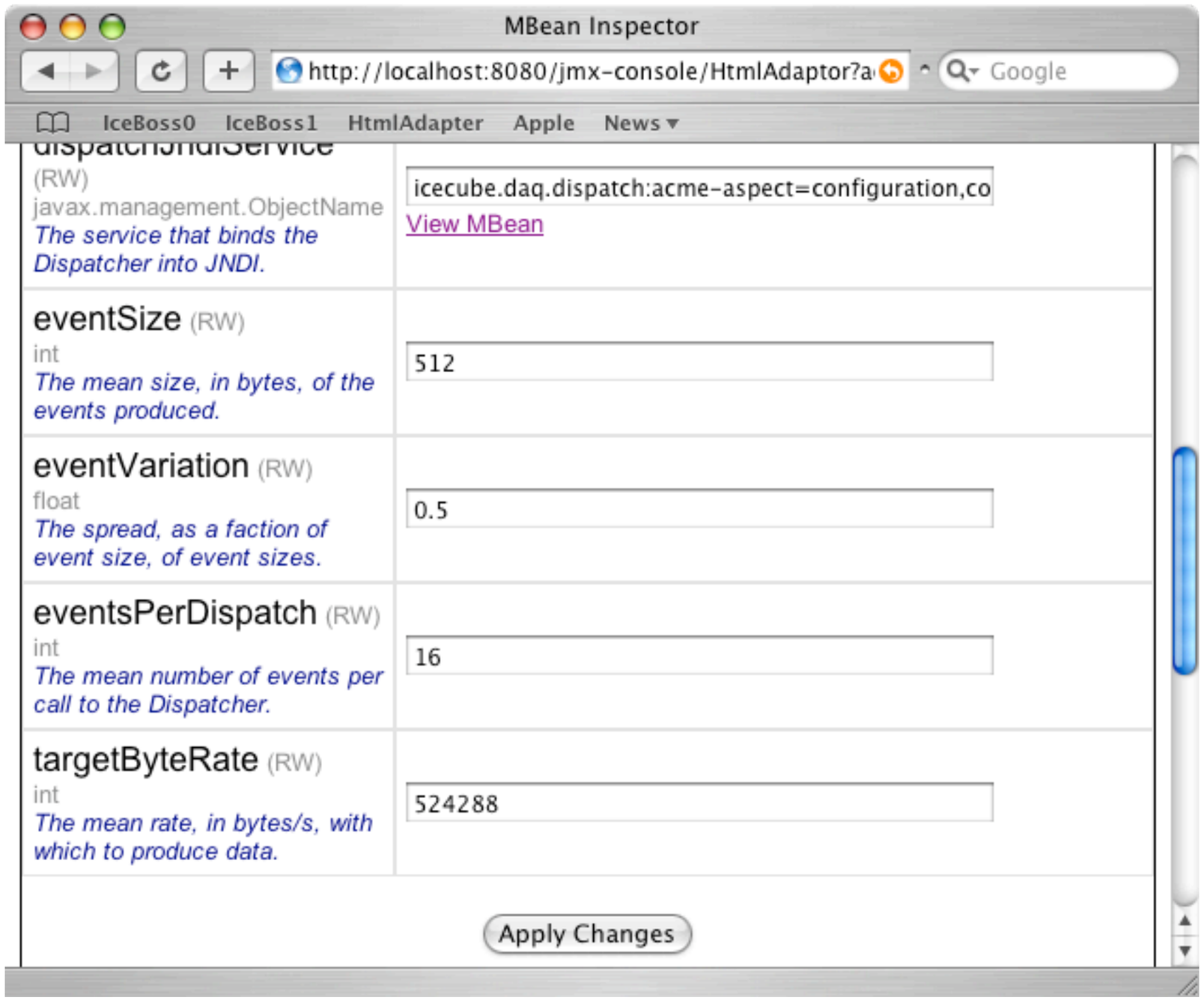
Configuration

(Akbar Mokhtarani/Simon Patton/Chris Day)



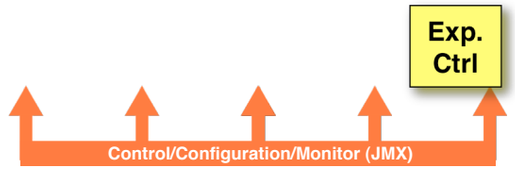
- Internal saving and setting of attributes using EJBs.
- External saving and setting of attributes using JMX infrastructure and JDBC.
- Interface built using Java Server Pages (JSPs).
- Published via “acme-aspect=configuration”.

Configuration Example



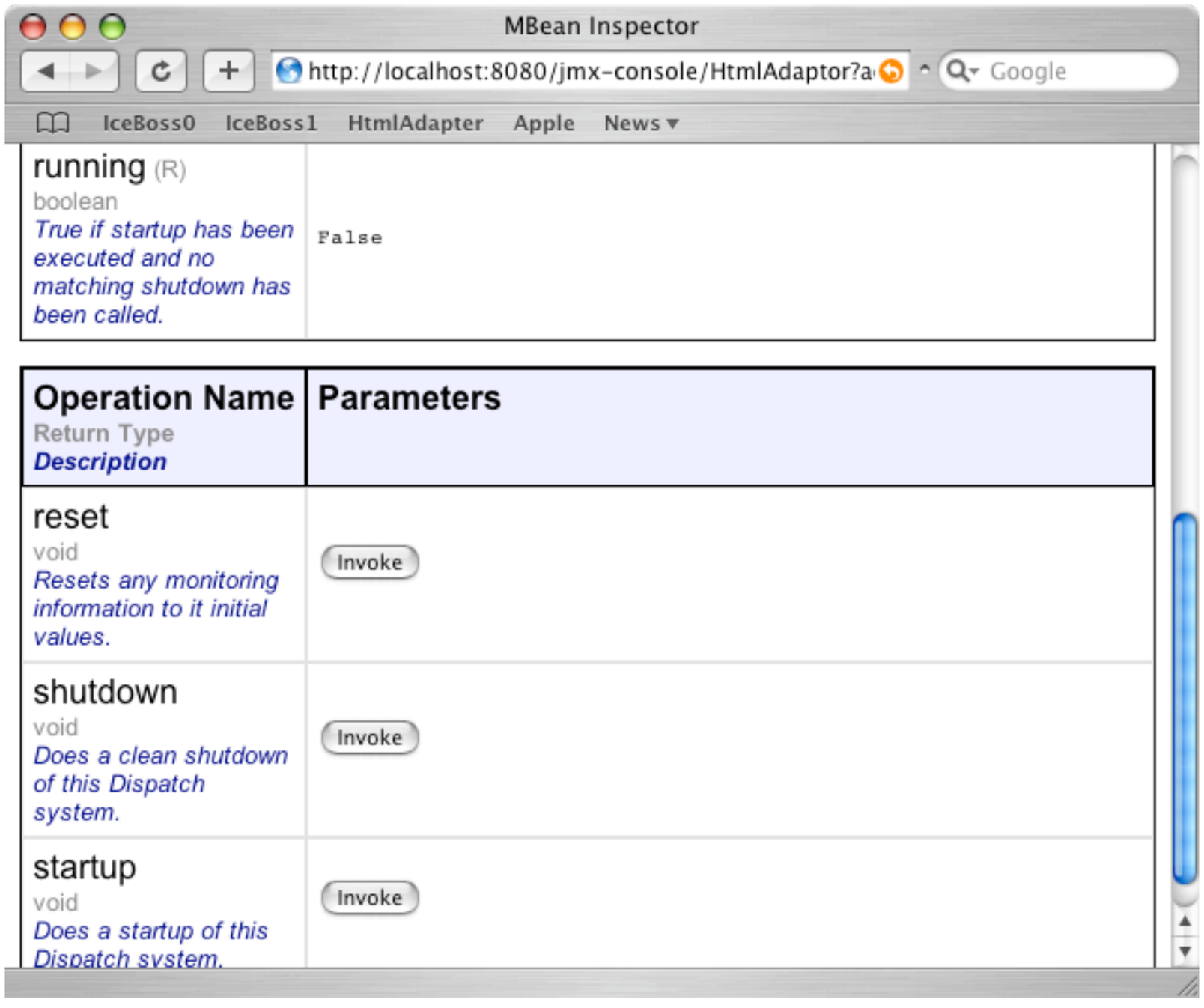
Control

(Chris Day)

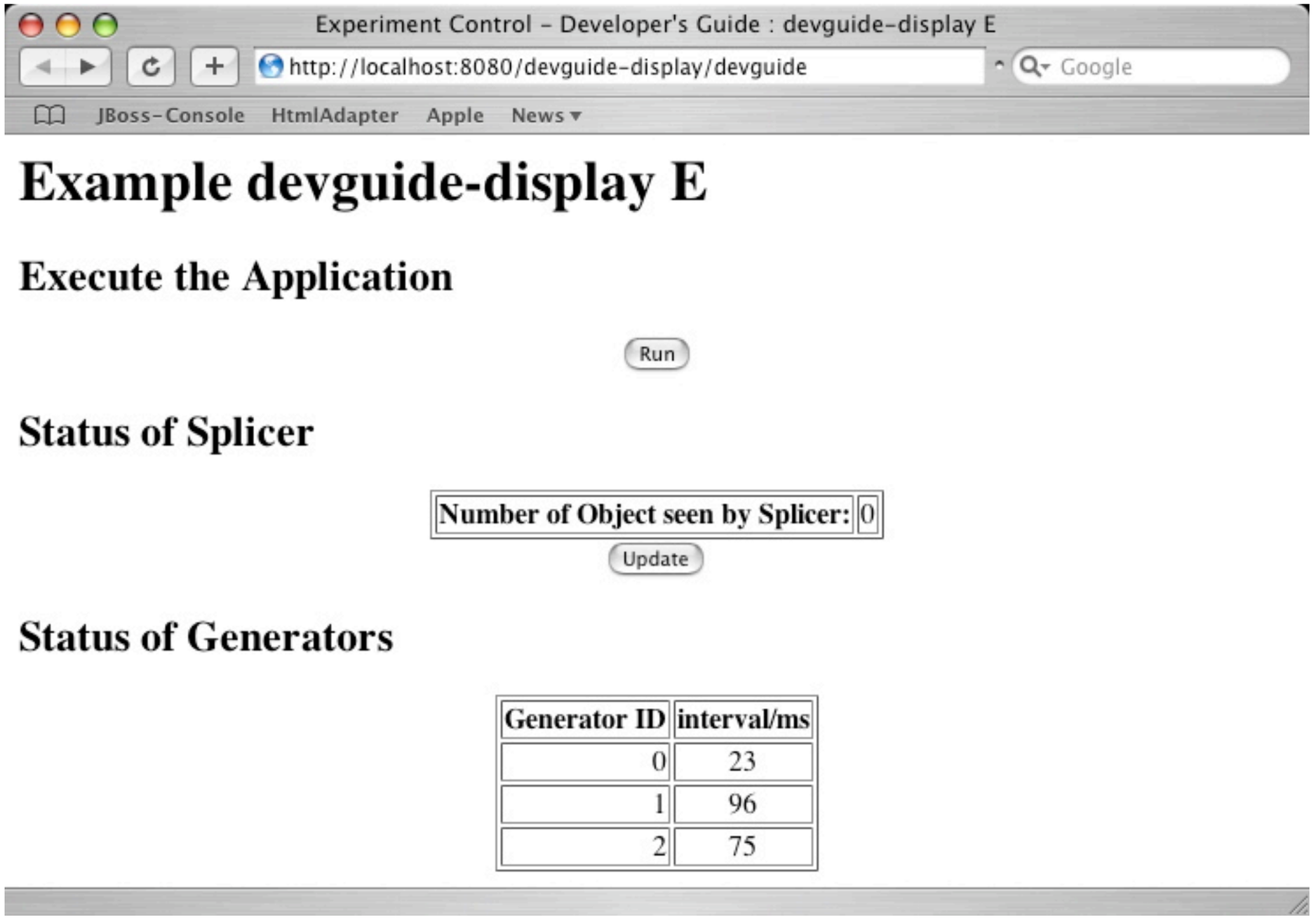


- Coordinate inter-system information.
- Implement nested state machines.
- Published via “acme-aspect=control” MBeans.

Control Example



Presentation Example



Status and Plans

- Most infrastructure installed.
- In use at the Pole for all systems except TestDAQ.
  - Each system has its own **`jmx-console`**.
- In the coming year concentrating on:
  - inter-system coordination logic;
  - support for seamless experiment expansion;
  - presentation layer for all systems.

"That's all Folks!