qiWorkbench™ – an extensible open-source platform for seismic interpretation

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What is the qiWorkbench?

- Component-based application
  - qiSelfCommanders – 2D, 3D, well log
  - qiCommanders – Amplitude Extraction, Wavelet Decomposition, XMLeditor
  - qiServices – text IO, seismic IO, job, file chooser dialog, error dialog
- Message-based architecture - message framework supports component communication via messages
- State saving, state restoring capability
- Web-based – install workbench on any client machine from server deployed to
- Thick client – majority of functionality and processing on client machine
- Platform independent – written in pure Java; runs on Windows, Linux, MacOS
- Extensible – add core or external components (application components)
- Open Source; under GPL license
- Component API allows 3rd party vendors to build commercial components; under BSD license
- New messages registered to avoid duplication and conflicts
- Patent pending
Message Framework

• Components interact via message
  – CID of producer (CID is a unique system-wide ID for component)
  – CID of consumer
  – Kind of Message – command with arguments or data
  – Content type
  – Content – arbitrary object
  – Status – processing status of a request

• Message Dispatcher – routes client-side request and response messages

• Dispatcher Connector - communication interface between the Message Dispatcher and the Servlet Dispatcher

• Servlet Dispatcher – routes server-side request and response messages

• Messages transmitted over the network are serialized

• Message handler per component – manages message queue (enqueue, dequeue)
Messaging Manager

• Communication interface between a component and the message dispatcher

• Messaging manager per component – communicates via component’s message handler

• Artifact of licensing

• Functionality provided
  – Manage component’s message queue via component’s message handler
  – High-level message methods – route message to message dispatcher
  – Register and unregister component with message dispatcher
  – Retrieve information maintained by message dispatcher (e.g., component descriptor of a registered component)
  – Extract parts of a message
qiComponents™

• qiCommanders – send requests, receive responses; Ex: Amplitude Extraction

• qiSelfCommanders – send and receive requests and responses; Ex: viewers (2D, 3D, well log)

• System qiComponents
  – Workbench Manager – manages workbench GUI and canvas
  – State Manager – save and restore state of active component and workbench upon request

• qiServices – common utilities; Ex: read/write text or seismic data, execute job, file chooser dialog, error dialog
Software Installation

- qiWorkbench requires Java 1.5.0_06 Runtime Environment (JRE) or above be installed on client machine
- qiWorkbench downloaded and installed by Java WebStart from Tomcat server where deployed
- WebStart automatically updates to newer version of qiWorkbench each time application launched
Software Prerequisites

- Java 1.5.0_06 Runtime Environment (JRE) or above with WebStart
- Seismic Un*x (optional)
- BHP SU (optional) both available from Colorado School of Mines at http://www.cwp.mines.edu/cwpcodes/
Development Status

- Available end of June 2006 at qiworkbench.org
- No eCommerce mechanism (yet) to install and update commercial components; currently manual install
- System can recognize, load and launch commercial components
- Message framework and Messaging Manager in place
- qiComponents: 2D viewer, Amplitude Extraction
- Local and remote text IO, job services, file chooser dialog, error dialog
- Save and restore state
- Local and remote seismic IO services being implemented
  - Read/write any variation of segy format (rev 0)
  - Read/write Landmark data
- Implementing Wavelet Decomposition component
- qiWorkbench.org Website for developing qiComponents: Wiki, bug tracking, register new commands, Subversion
- Contact: info@qiworkbench.org
qiWorkbench (v1.0)
Installation

Follow these steps to install the qiWorkbench application on your machine using Java Webstart:

1. Install the latest Java Runtime Environment (JRE) 5.0 which includes WebStart. If you don't have admin privileges to your machine, contact your system to do the install. If you have admin rights, download the JRE install file for your platform from here and follow the installation instructions. If you have a Linux machine, download the 32-bit version because the 64-bit version does not (yet) include WebStart.
2. Click here to launch the qiWorkbench application using Java WebStart. The following sequence of events will occur:
   - The application's Splash screen will be displayed followed by a "Java Web Start" window that shows the progress of the download.
   - A "Warning - Security" window will be displayed asking "Do you want to trust the signed application distributed by 'BHP'"? It will also state the security certificate was issued by "Thevelo which is trusted. Select the "Yes" of Always" button.
   - (PC only) If this is the first time installing the application, a dialog window will be displayed asking "Would you like to create desktop shortcut(s) for qiWorkbench v1.0?". Select the "Yes" button. A WebStart shortcut for the application will appear on your desktop.
   - The qiWorkbench window will be displayed on your desktop.

You can always launch the qiWorkbench from this Webpage using the link in Step 2 above. On a Windows platform, you can also launch the qiWorkbench using its desktop icon (provided you choose to have one created).

Each time the application is launched by WebStart, it will check if a newer version is available and download it if there is.

After the first installation, you can also launch the application using the WebStart console, but this is only recommended for users familiar with Java.
Screenshot: Select server
Screenshot: Select project

Project Selector

Select
Select a project from those associated with the selected server.

C:\qiProjects\cascade
C:\qiProjects\maddog

Browse
Browse to a project directory. Specify a start directory accessible from the
Tomcat server containing your projects.
Start directory:

Selected Project:

[Checkboxes for remember as default and OK buttons]

[Buttons: Cancel, Help]
Screenshot: Populated Workbench