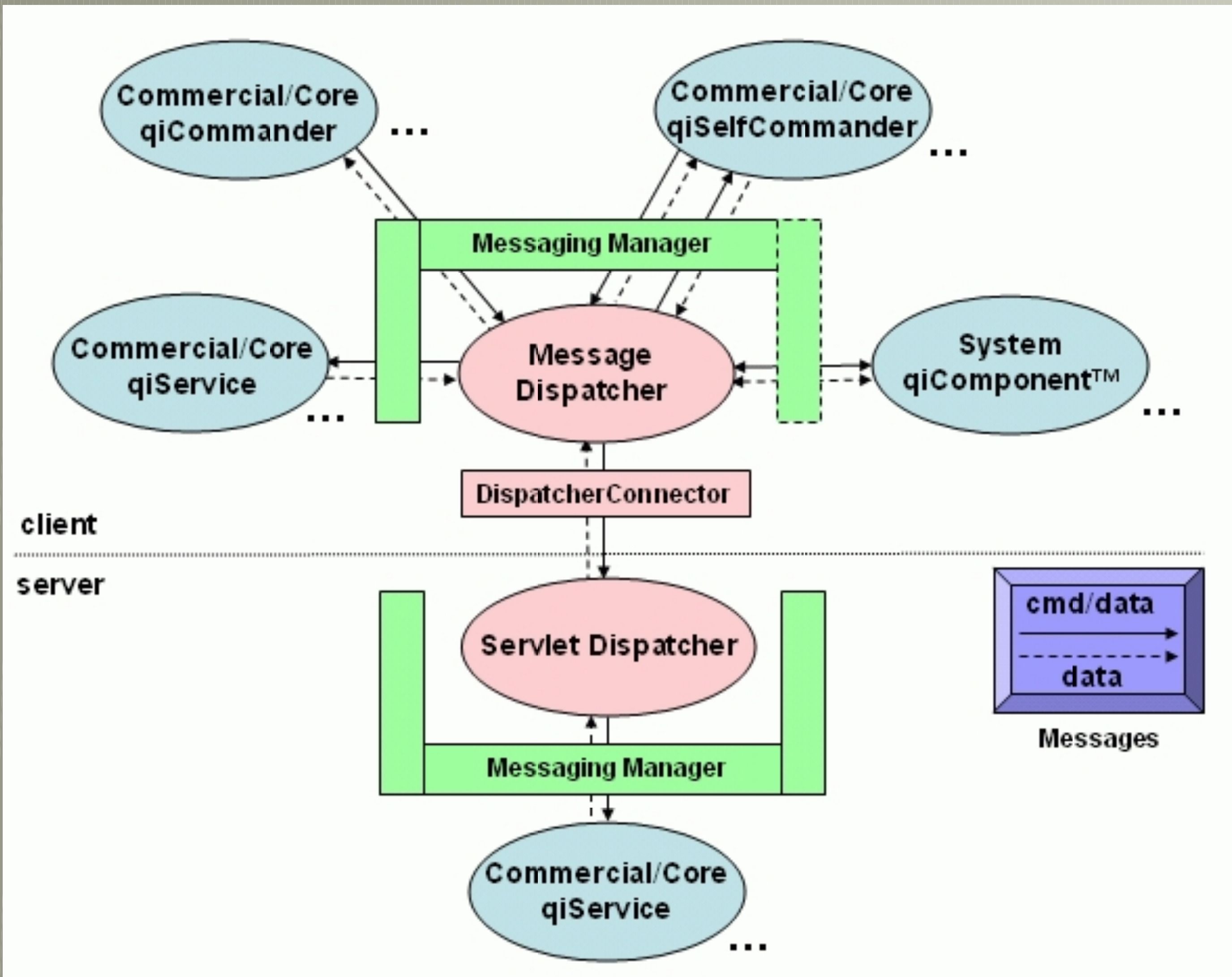# qiWorkbench

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

Gil Hansen
Michael Glinsky

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**

Architecture

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**

Workbench Screenshot

bhpbilliton

G&W Systems, Corp.