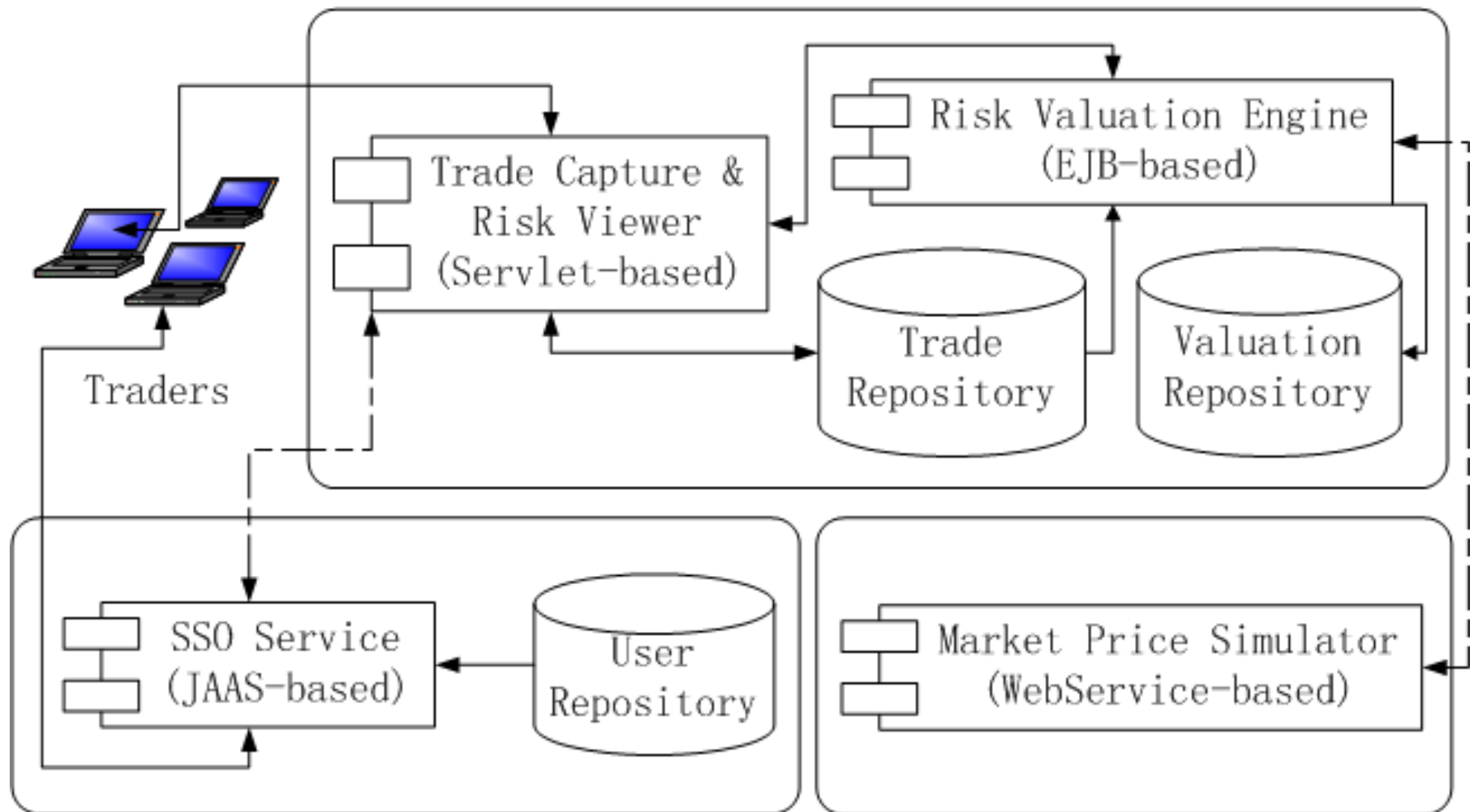# Commodities Risk Exposure and Valuation System

Jijia Wang (Leader)

Liufeng Ren

Xiao Jia (Architect)

System Architecture

User interface

- Browser-based
- Ext JS
  - 4.0.0
- Real-time risk viewer
  - long polling

Web back-end

- Servlet 3.0
  - Tomcat 7
  - Annotations
  - Asynchronous Support
- Server push (for long polling)

Risk Valuation Engine

- EJB 3.0
  - Message-driven beans
  - multiple instances of valuation engines
- JBoss 5.1.0
- Communication with Web back-end
  - Message Queue (JMS)
  - receive valuation requests
  - send real-time valuation results

Repositories

- User repository
  - JDBC (read-only)
- Trade repository
  - Entity beans – for various trade types
  - accessed by Servlets via a stateless session bean
- Valuation repository
  - Entity bean(s) – different trade types may share the same entity structure (to be determined)

Market Price Simulator

- Web service
  - JSON (?)
- Probabilistic simulation
  - well-supported theory-based
    - Stochastic process
    - Markov chain
    - …

Integration with other systems

- SSO Service is standalone
- Web Service
  - to the whole system
- Message Queue
  - to Valuation Engine

Available demos

- Web interface
- Long polling
- Market price generator