

**BEEEN**

Benchmarking Environment



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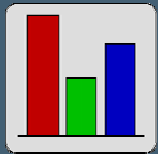
# Motivation

- benchmarking
  - running model application, collecting performance data
  - built ad-hoc
  - deployment and running is difficult
- regression benchmarking
  - automation

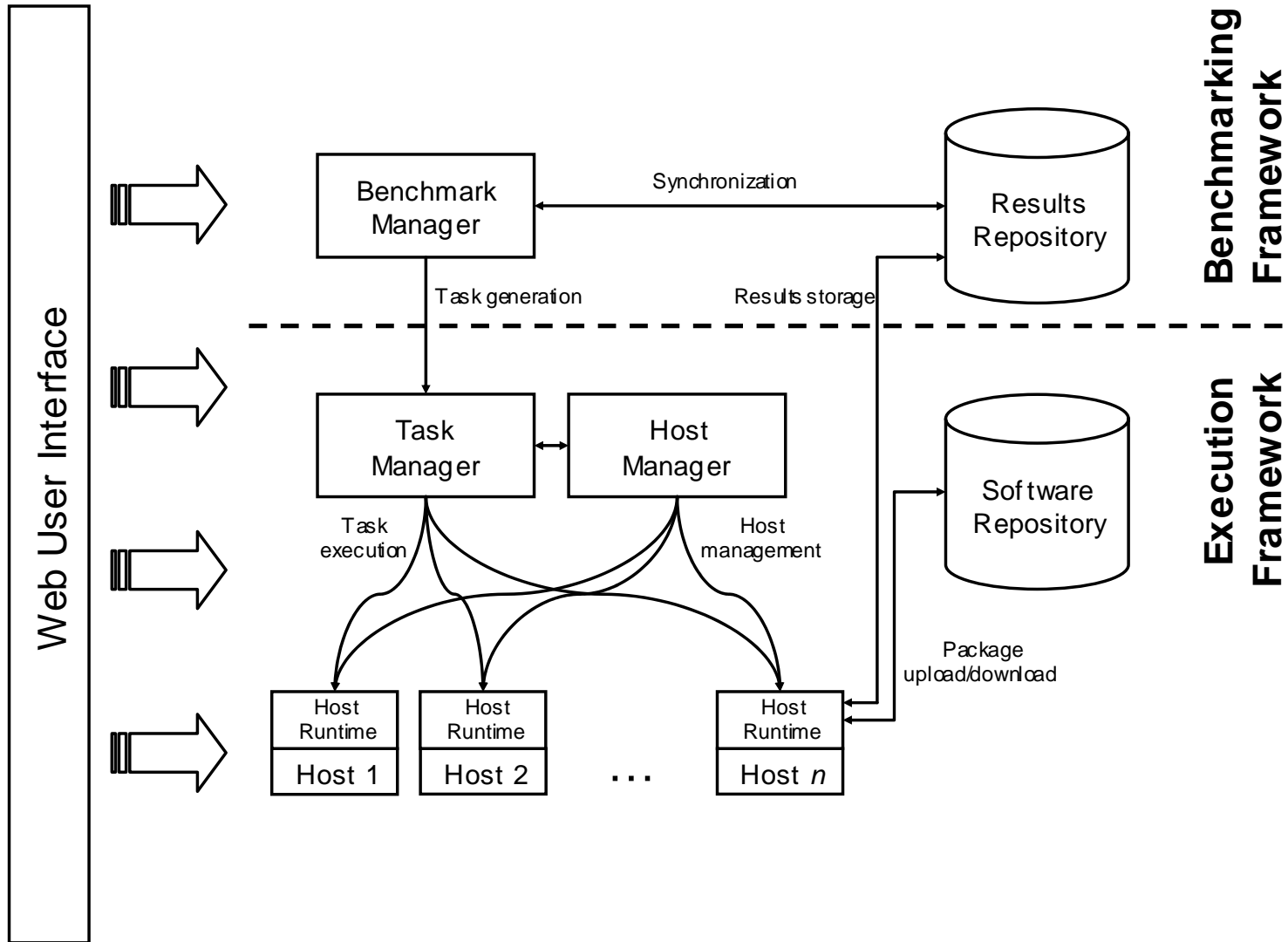


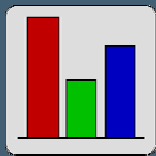
# Features

- **BEEN = generic tool for regression benchmarking in a distributed environment**
- supports multiple platforms
- automation
- data analysis and visualization
- user-friendly web interface
- extensibility



# Architecture





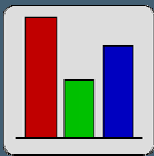
# Host Runtime

- runs on every host
- manages task lifecycle on host
  - automatic code download
  - restarts, timeouts
- communication proxy
- utilization monitoring



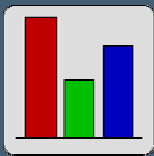
# Task Manager

- coordinates tasks in the environment
  - host allocation
  - task execution and synchronization
  - status monitoring
- log storage



# Software Repository

- stores packages
  - source
  - binary
  - task
  - data
- package queries
  - RSL language
- no need for distributed file system



# Host Manager

- manages host configuration database
- automatic configuration detection
  - detector tasks
- host groups
- host monitoring
  - availability
  - utilization
- database queries
  - RSL language



# Benchmark Manager

- manages benchmark execution
- abstracts over tasks
  - experiments, analyses, binaries, runs
- comparison × regression analyses
  - automatic execution and scheduling
- benchmark support via plugins
  - Xampler, RUBiS supplied with BEEN



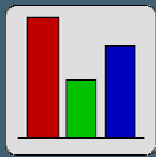
# Results Repository

- stores results
  - raw data
  - logs
  - utilization data
- computes statistics
- generates graphs
- R language
- extensible via custom R scripts



# Web Interface

- unified access to all components
- no need to install specialized application
  - only web browser is required
- easy to use
- modular architecture
- JSP & Servlets



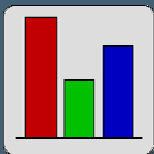
# RUBiS

- EJB server benchmark
- auction site simulation ("eBay")
- measures response time
- Java-based
- supported on Linux, Windows



# Xampler

- CORBA middleware benchmark
- C++ based
- supported on Linux

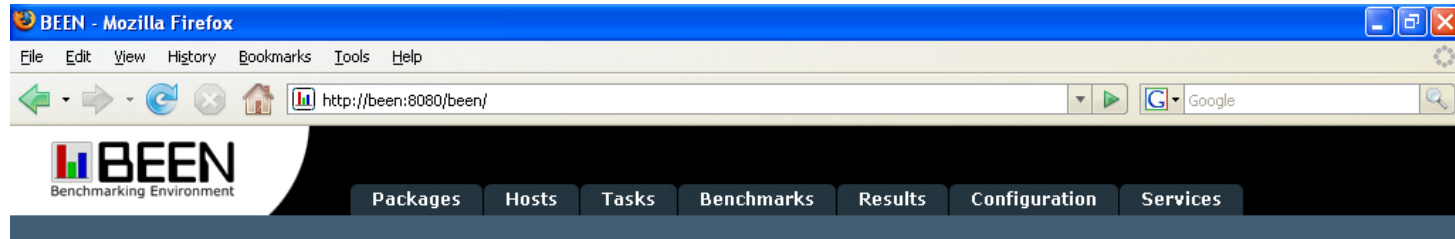


# Installation & running

- requirements:
  - JRE 5.0
  - Tomcat for web interface
  - R for Results Repository
- run from command line:
  - Task Manager
  - Host Runtime on every host
  - Web interface
- run services and benchmarks from web interface



# Demonstration





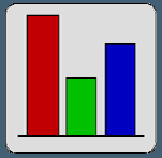
# Extensibility

- designed for extensibility
  - easy to add support for new benchmark
  - typically 5-20 tasks, < 4000 LOC
- extension points
  - custom tasks
  - benchmark plugins
  - R scripts



# Additional information

- total project size: ~200 kLOC
- presented on VALUETOOLS 2006
  - paper “Automated Benchmarking and Analysis Tool”
- open source (LGPL)
- hosted on ObjectWeb Forge
  - <http://been.objectweb.org/>



# Questions?