Lessons learned from real-world deployments of Java EE 7

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@arungupta

- More annotated POJOs
- Less boilerplate code
- Cohesive integrated platform

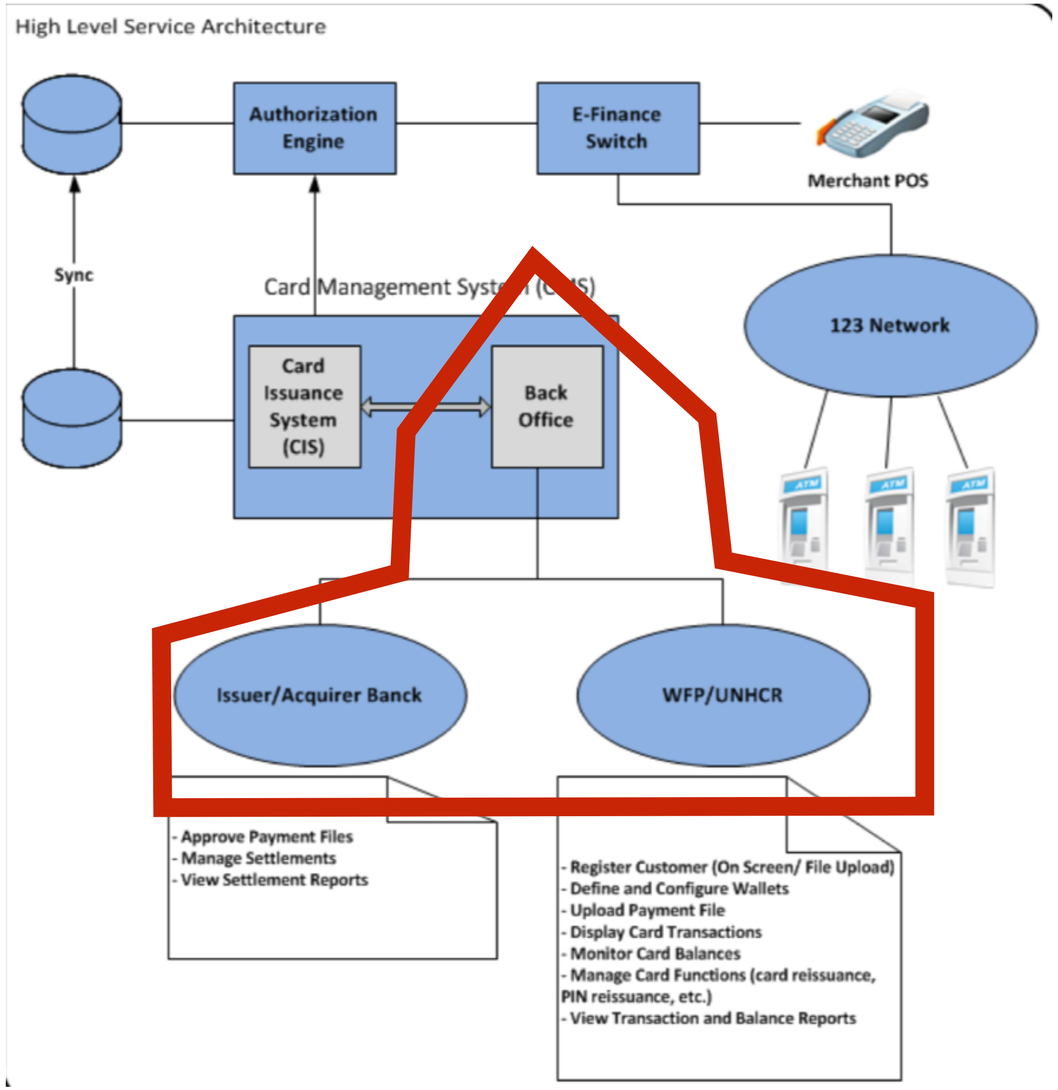
- WebSockets
- JSON
- Servlet 3.1 NIO
- REST

- Batch
- Concurrency
- Simplified JMS

UNHCR
The UN
Refugee Agency

- UN agency to protect and support refugees
- Help UN refugees to get benefits through secured card wallets
  - Register, issue card, POS, ATM, Settlement
  - Refugees get cash or use cards at merchants

Architecture



Technology

- **JSON**: Notification messages to agents (simple messages created using `JSONBuilder`, No dependency on 3rd party library)
- **Batch**: End of day tasks like posting of accounts, generation of reports, email to clients and banks
- **Concurrency**: Managed threads pool for work
- **EJB**: Backend services (locally and remotely)
- **JAX-WS**: Integration with WFP/UNHCR systems (exposed interface)

Technology

- **JPA**
  - Stored procedure calls (Oracle and SQL Server)
  - Two-way schema (model using JPA, generate schema, tune it, and regenerate entities)
    - Change requests
- Default **CDI** enabled (ease of integration between different layers)

Additional Libraries

- PrimeFaces
  - Great support in NetBeans
  - Generator plugin (in NetBeans) that facilitate and streamline development of pages based on entity beans (e.g. Admin and Operations page)
- jQuery stock library (streamline UI development in few lines)

Runtime

- GlassFish 4
  - 2 instances deployed locally
  - Mandate to use commercial app server
- Java SE 7
- Oracle 11g and Microsoft SQL Server 2008

Tools

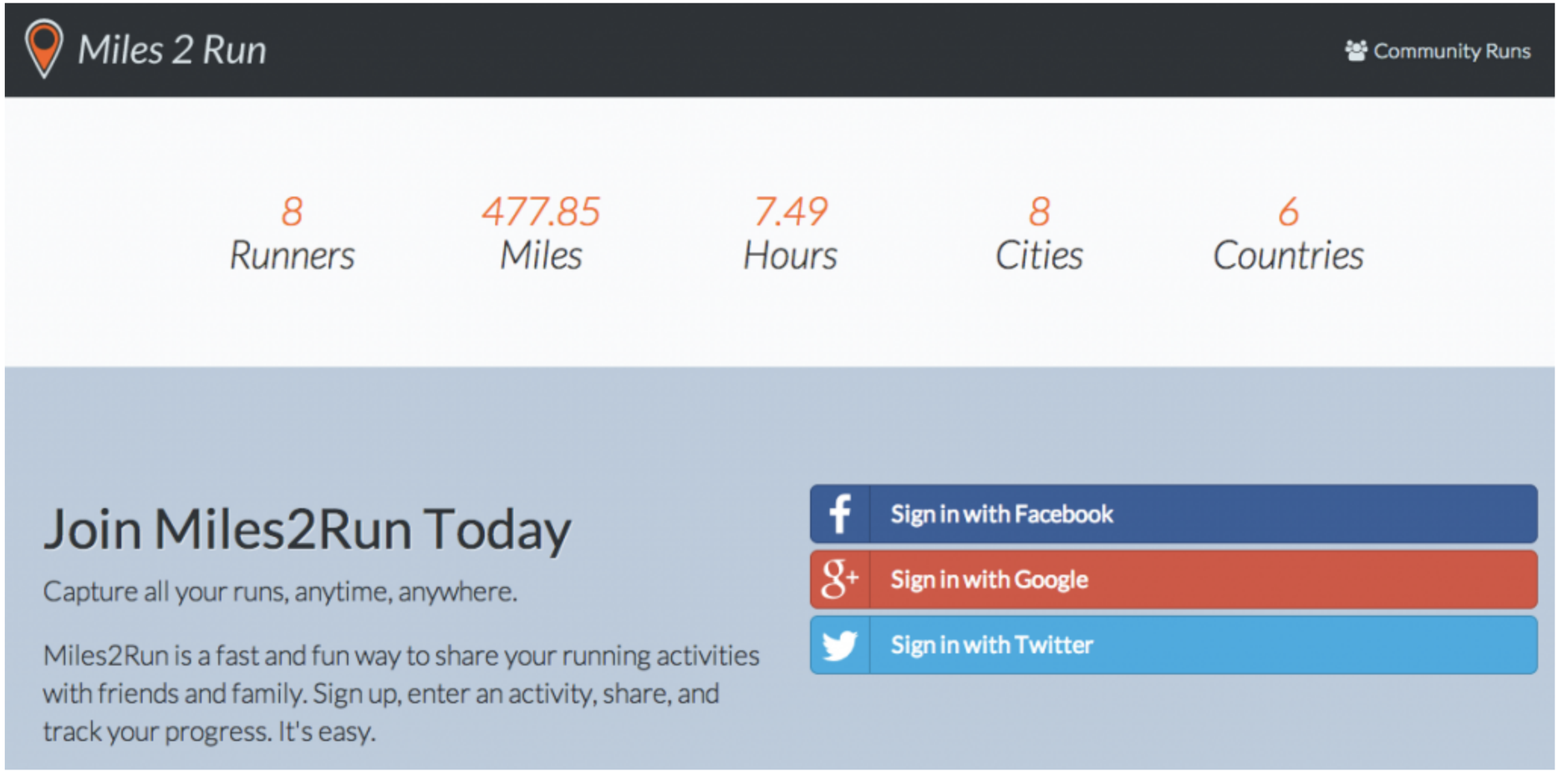
- NetBeans 7.4
  - Integrated GlassFish management
  - Many templates to start from
  - PrimeFaces generator plugin
  - Great compatibility with HTML5

Acknowledgments

@_tamanm

miles2run.org

- Track your daily runs
- Day or distance-based goals or community runs
- Social network for runners
- Its free


Miles 2 Run
Community Runs
8
Runners
477.85
Miles
7.49
Hours
8
Cities
6
Countries
Join Miles2Run Today
Capture all your runs, anytime, anywhere.
Miles2Run is a fast and fun way to share your running activities with friends and family. Sign up, enter an activity, share, and track your progress. It's easy.
Sign in with Facebook
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Sign in with Twitter

www.miles2run.org/community_runs/javaone-2014

JavaOne 2014

27 June 2014 - 02 October 2014

JavaOne Community Run

Official website: http://oracle.com/javaone

Twitter: @javaoneconf

Join Community Run

4	452.83	0.54	4
RUNNERS	MILES	HOURS	CITIES

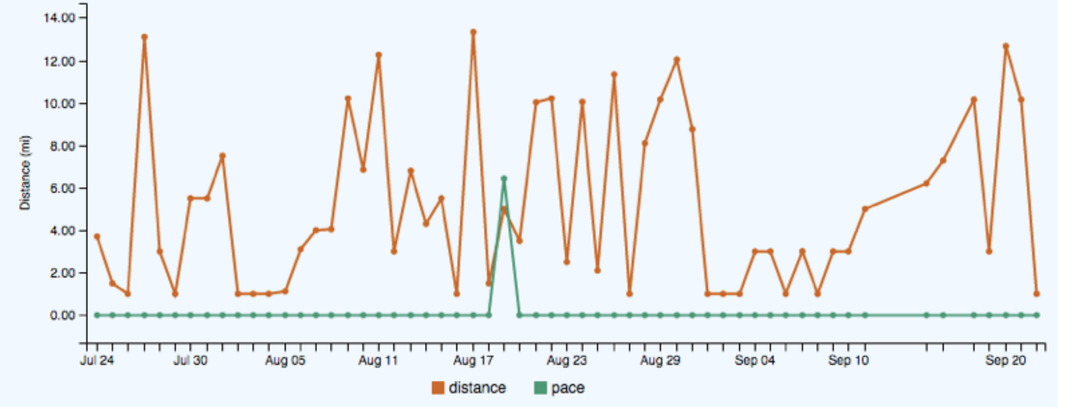
JavaOne 2014 Community Run

New Activity

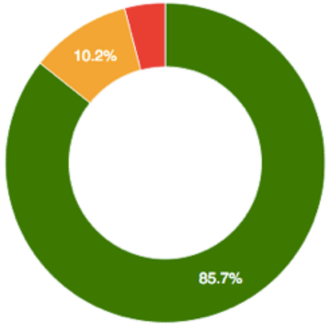
452.83	86	98
Total Distance (mi)	Total Activities	Total Days
84	10	4
Completed Days	Remaining Days	Missed Days

Distance vs Pace

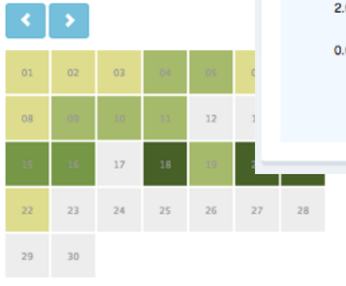
Day | Month



Progress

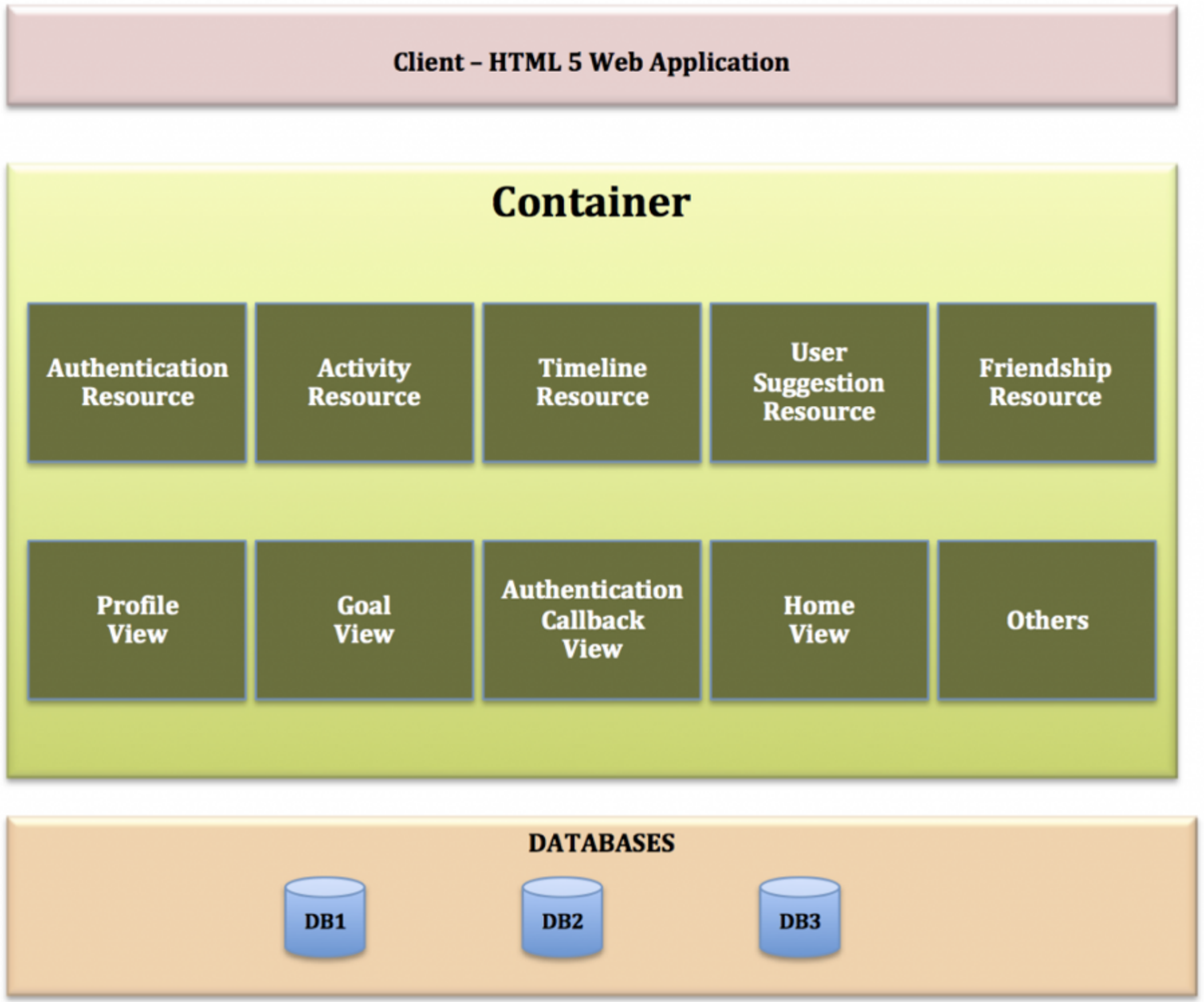


Activity Calendar

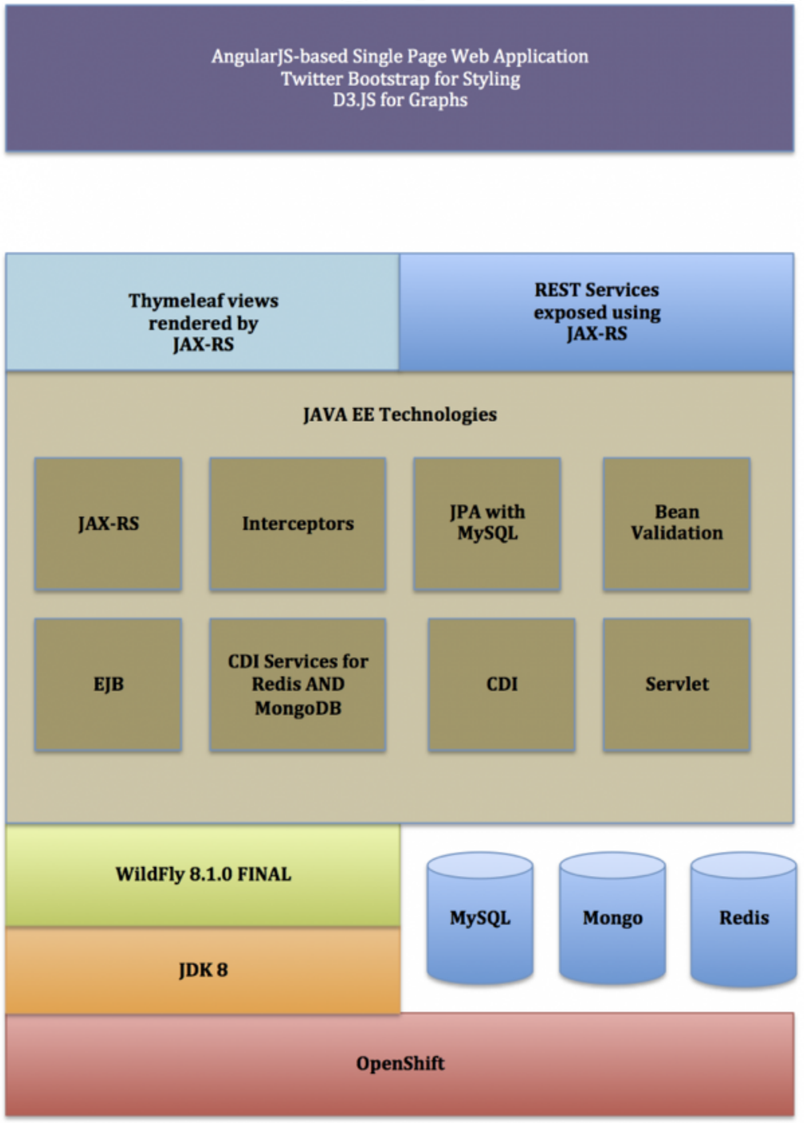


#JavaEE7 #Riga

Architecture Diagram



Technology Diagram



Technology

- User Interface
  - Thymeleaf: Java-based HTML5 templates
  - AngularJS based multiple SPA, consuming JAX-RS endpoints
  - Twitter Bootstrap theme
  - Authentication using JAX-RS filters
  - D3.js and C3.js for pretty graphs

Technology

- Middleware
  - EJB + JPA services for RDBMS
  - CDI services for NoSQL datastores
  - Joda-Time API for working with Date
  - Authenticating with various OAuth providers like Twitter using respective client API. Planning to upgrade to Keycloak.
  - SFL4J with logback for logging

Additional Libraries

- Thymeleaf template engine for server side HTML5 views
- OAuth providers with client libraries
- Joda-Time for working with date/time
- jadira.usertype for storing date as UTC in database
- Database drivers for Redis and Mongo
- JUnit with Mockito for Unit testing
- Arquillian for integration testing

Runtime

- JDK 8
- WildFly 8.1.0 Final: 2 scalable instances running on OpenShift with HA Proxy Load Balancer
- Data Stores
  - MySQL - All business entities like Activity, Goal, User profile, etc.
  - Redis - Generate timeline data using *sorted sets* and storing all counters
  - MongoDB - Location based user recommendations, follower/following stored using in-built array types

Tools

- IntelliJ IDEA
- Git as version control
- Jenkins - planned for CI and deployment

Wish list for Java EE 8

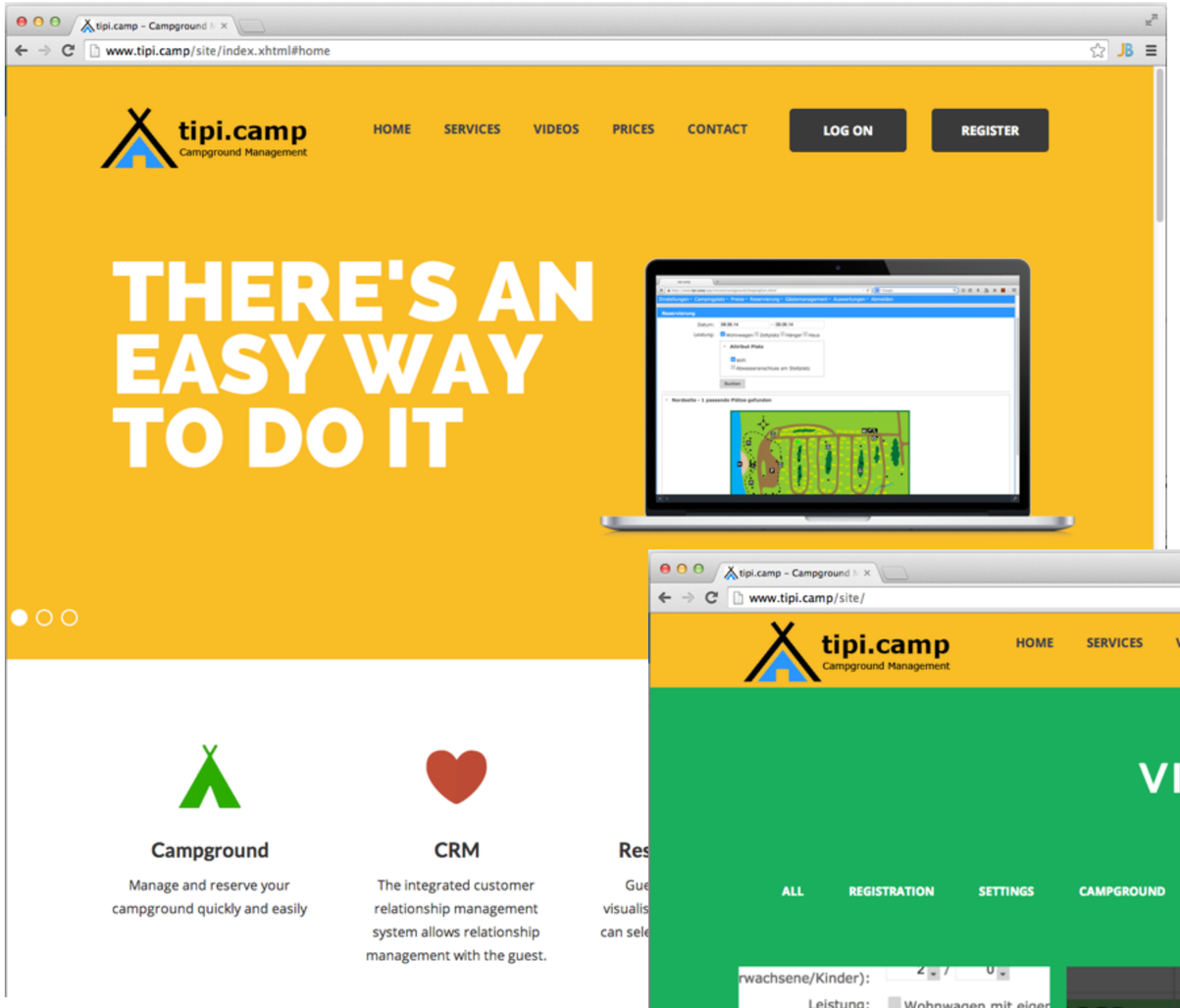
- Support for NoSQL database
- Easy to add OAuth support to application and use existing OAuth providers
- Modern MVC framework with support for pluggable template engines

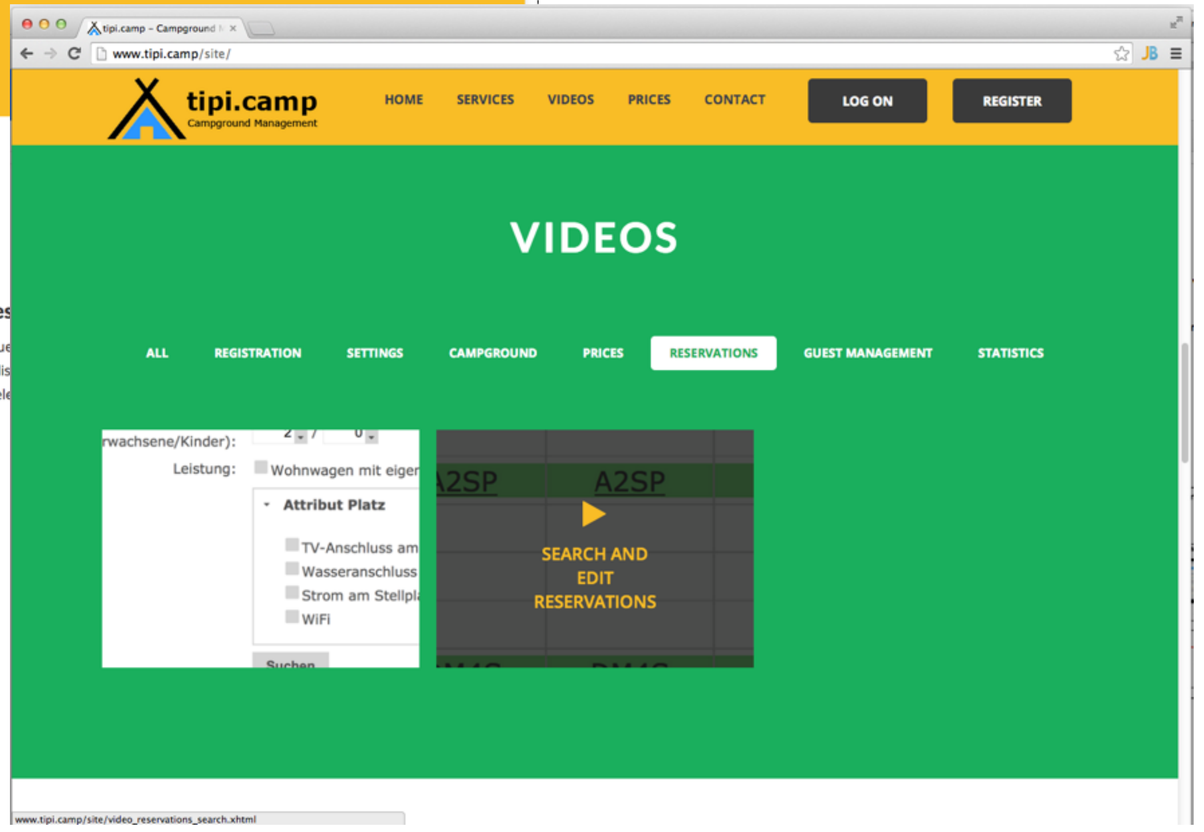
Acknowledgments

@shekhargulati

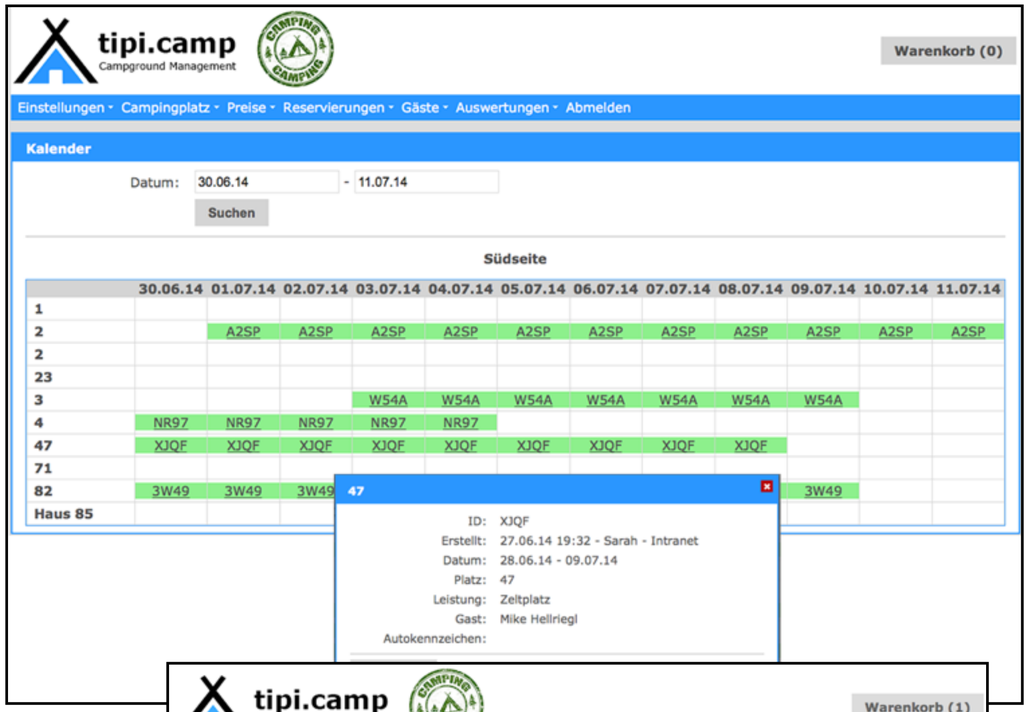
tipi.camp

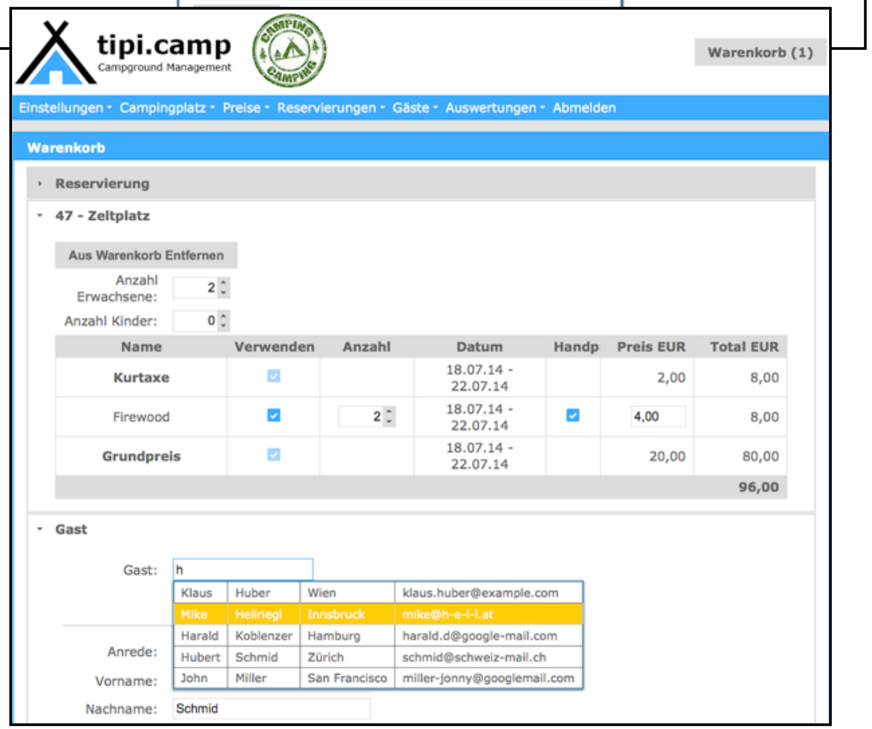
- Campground management
  - Reservations, portal, email, monitoring, …
  - Targeting 25k+ campgrounds in Europe
- Customer-friendly booking portal
- On-premise or SaaS
- €1 or $1 / day





#JavaEE7 #RigaDevDay





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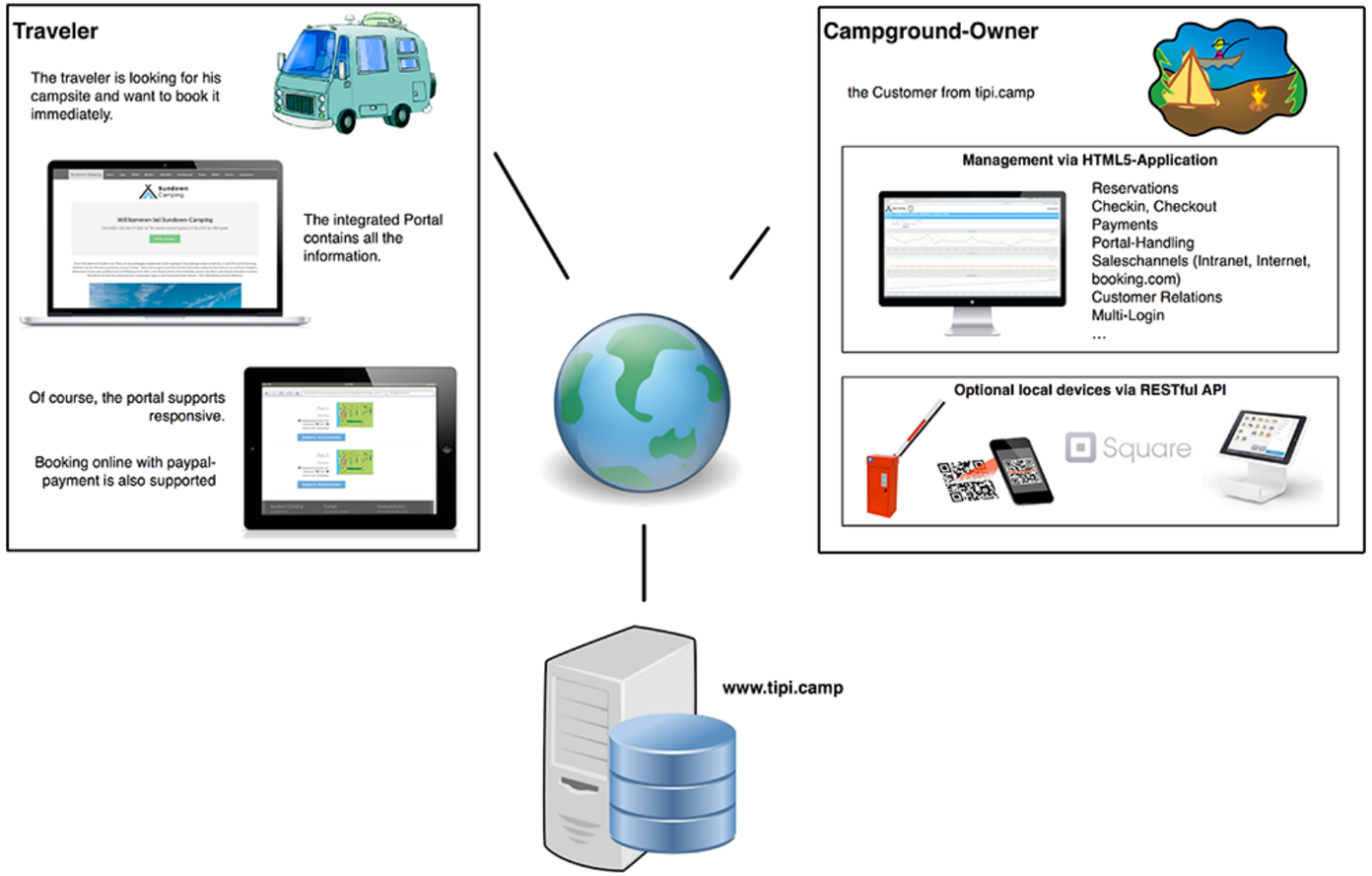
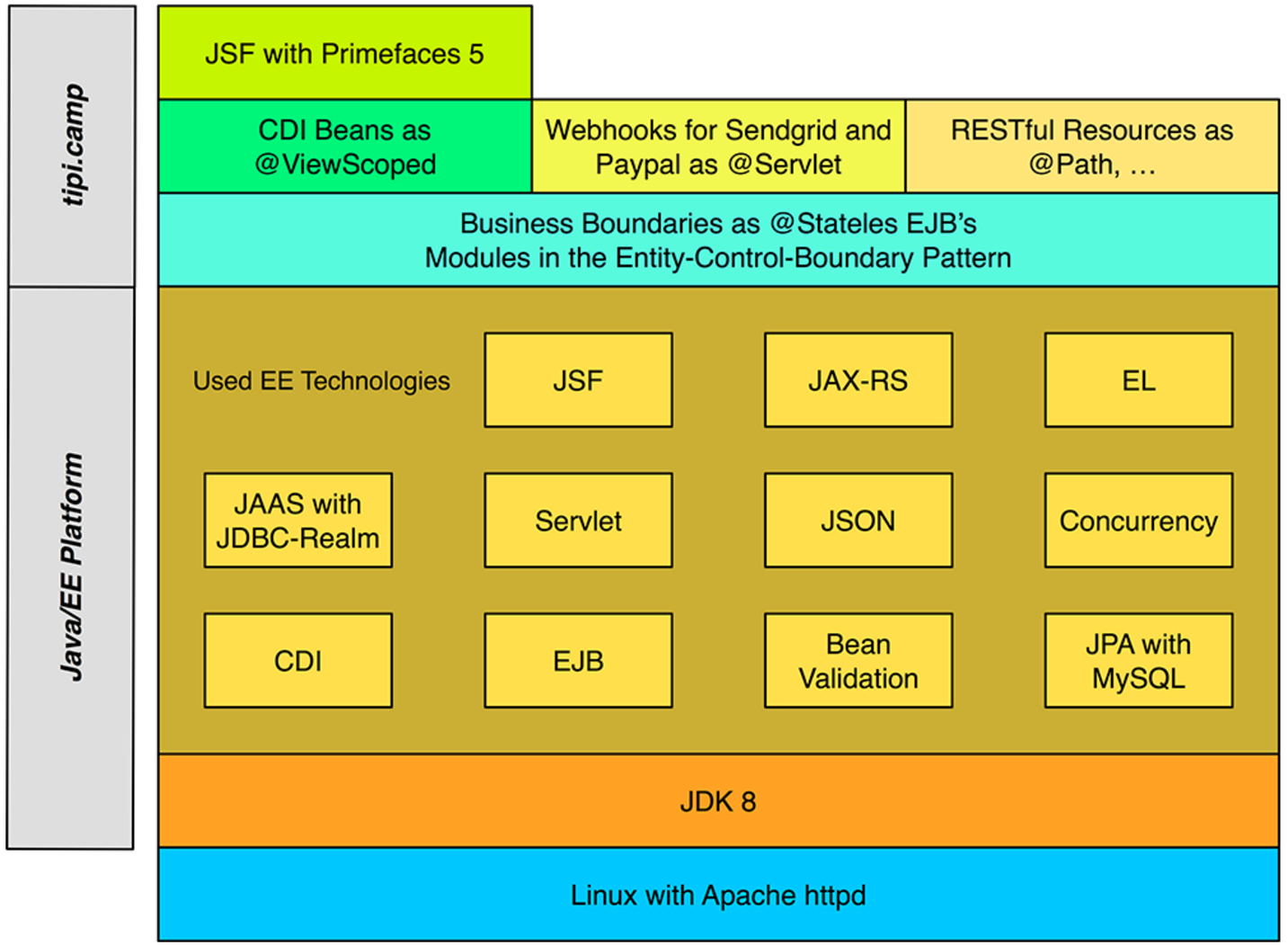


Technology Diagram



Technology

- Presentation
  - JavaServer Faces + Expression Language
  - Security: JAAS principal + JDBC-realm
- Middle Tier
  - EJB for business boundaries
  - Servlets with JSON for web hooks: response from Paypal and Sendgrid
  - JAX-RS for exposing API to partners

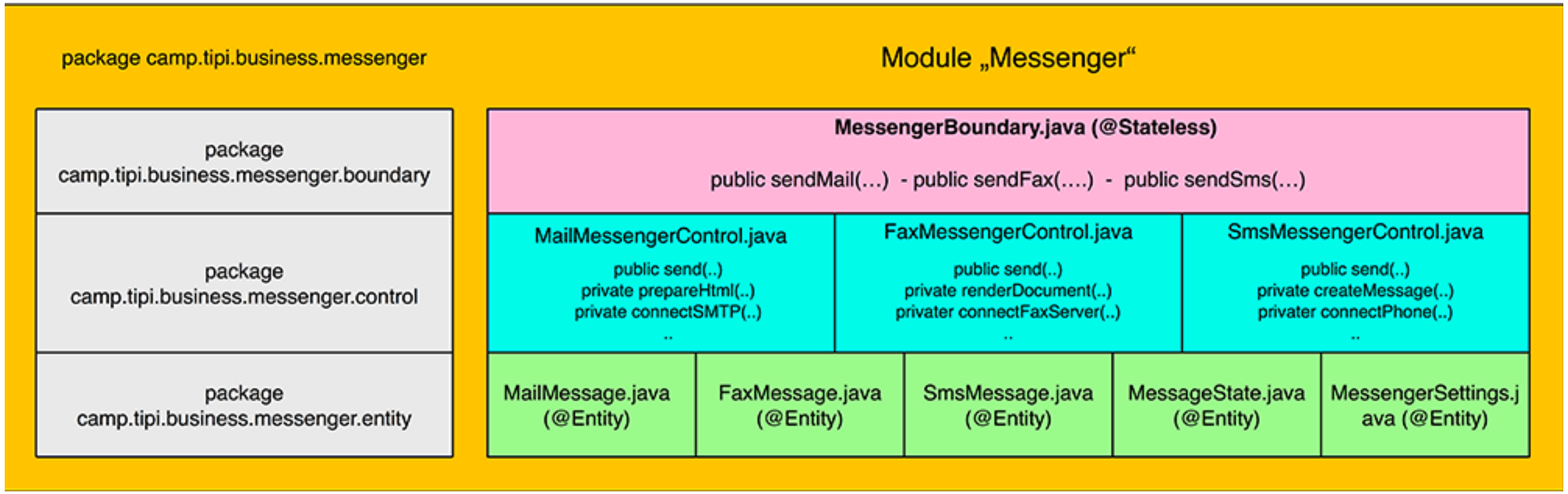
Technology

- Backend
  - JPA + Bean Validation, use `@Index` for database generation
  - Concurrency: Calculation of statistics and sending messages (Using `@Startup` `@Singleton` `@Schedule`, Sendgrid takes ~1-4 seconds)
- JDK-8 specific features: Lambdas, parallel streams, Date/Time API

General Principles

- All components used with `@Inject`
  - `bean-discovery-mode="all"`
- All named beans are JSF 2.2 `@ViewScoped`
- All boundaries are only `@Stateless`, no `@Remote` or `@Local` interfaces
- All modules in *entity-control-boundary* pattern

Entity-Control-Boundary Pattern



Additional Libraries

- PrimeFaces5 and Bootstrap for the responsive portal
- Sendgrid API for sending emails
- Flyway for database migrations
- Misc Apache Commons (`FileUtils.writeByteArrayToFile`, `IOUtils.toByteArray`)
- JUnit with Derby for testing

Runtime

- JDK 8
- WildFly 8.1.0 - *super, unique product*
- MySQL 5.1.73

Tools

- IntelliJ 13.1
- Jenkins
- loader.io for load testing
- Self-hosted Linux server in hetzner.de data center
  - Planning to migrate to OpenShift in 2015

Wishlist for Java EE 8

- Apache Commons Library
- Generics in Batch Processing
- `@Temporal` should work with `LocalDate` and `LocalDateTime`

*I have no great wishes, the **technology is perfect**. I'm with java/ee7 **very productive**, i'm and our customers are with java ee7 happy. With the technology, really **everything is possible**.*

Acknowledgments

@ChristophGapp

@AdamBien

Resources

- **Java EE 7 tutorial**: http://docs.oracle.com/javaee/7/tutorial/doc/home.htm
- **~200 code samples**: github.com/javaee-samples/javaee7-samples
- Lots of books