

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

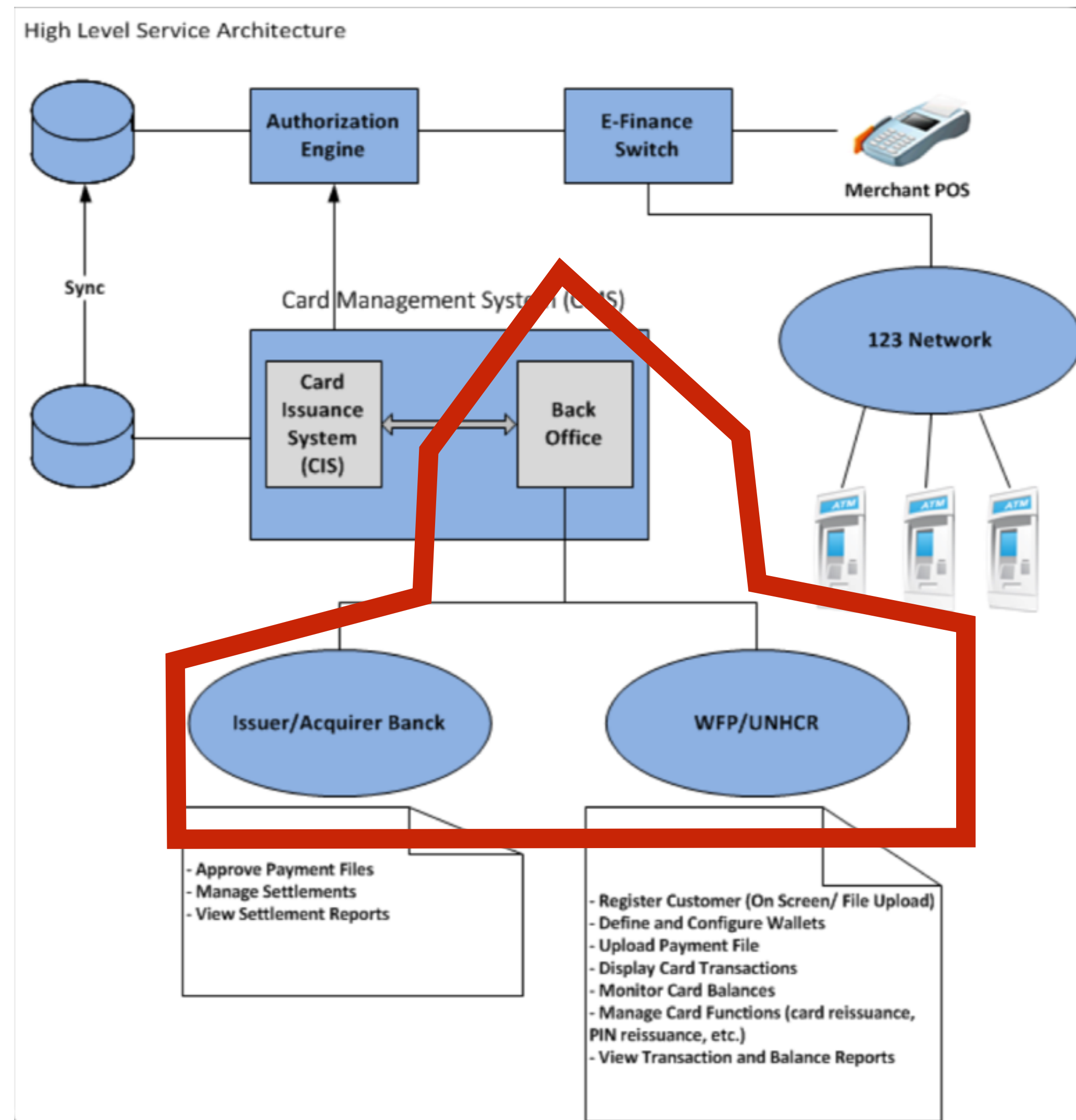
- Batch
- Concurrency
- Simplified JMS



- 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

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.



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JavaOne 2014  
27 June 2014 - 02 October 2014  
JavaOne Community Run  
Official website: <http://oracle.com/javaone>  
Twitter: @javaoneconf

Join Community Run

4 RUNNERS    452.83 MILES    0.54 HOURS    4 CITIES



## JavaOne 2014 Community Run

New Activity

**452.83**  
Total Distance (mi)

**86**  
Total Activities

**98**  
Total Days

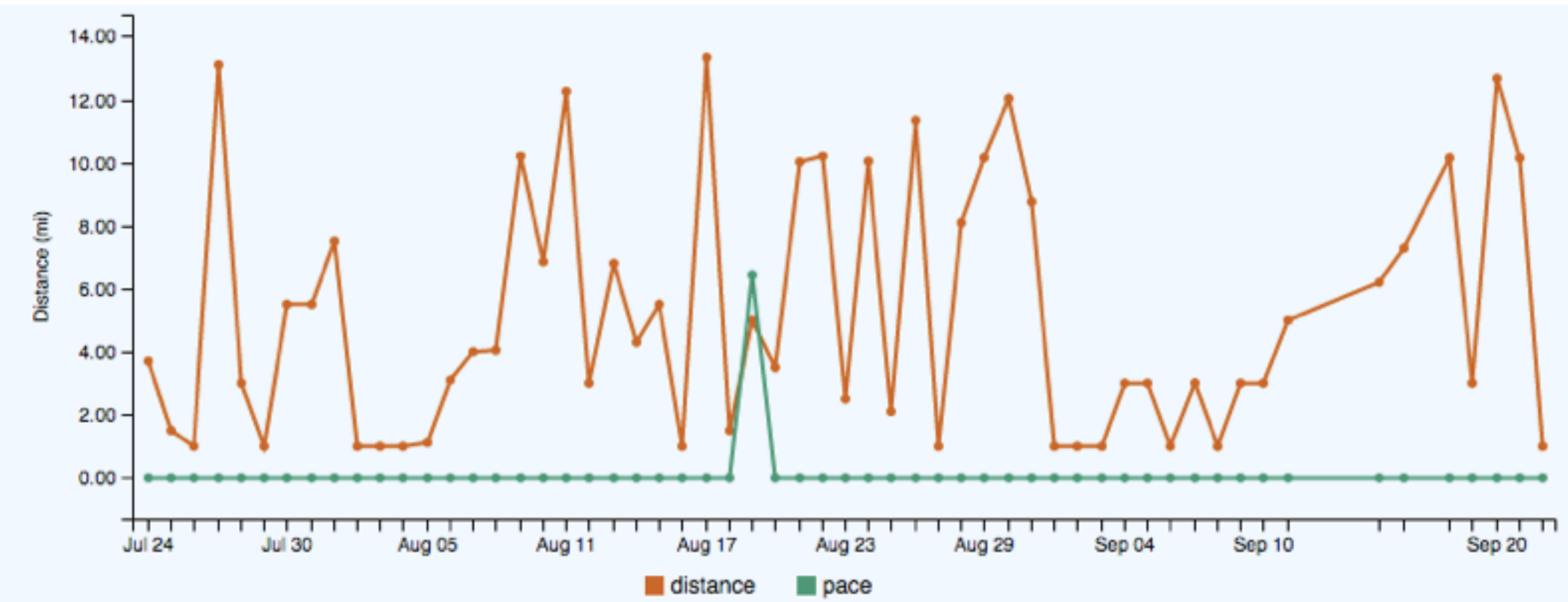
**84**  
Completed Days

**10**  
Remaining Days

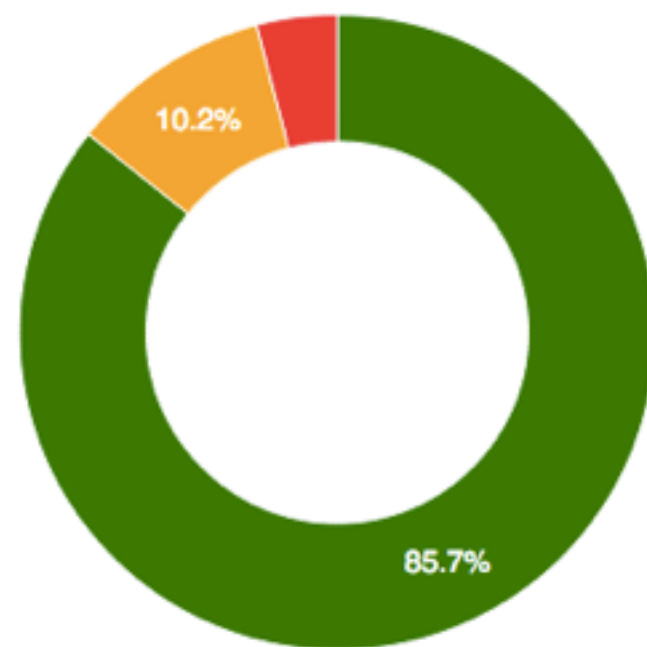
**4**  
Missed Days

### Distance vs Pace

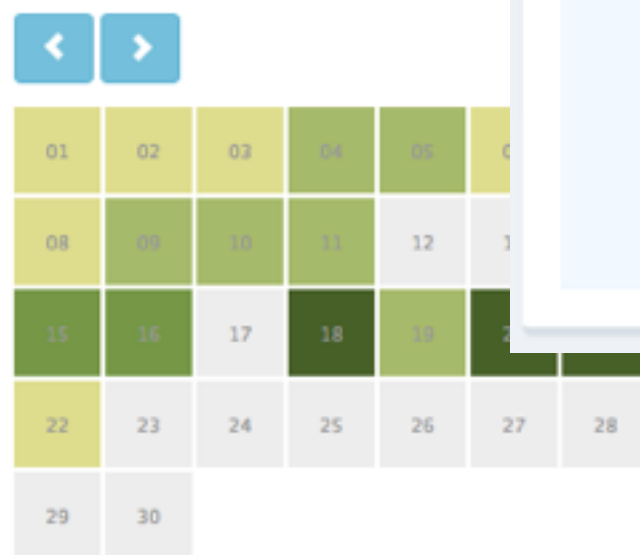
Day    Month



### Progress

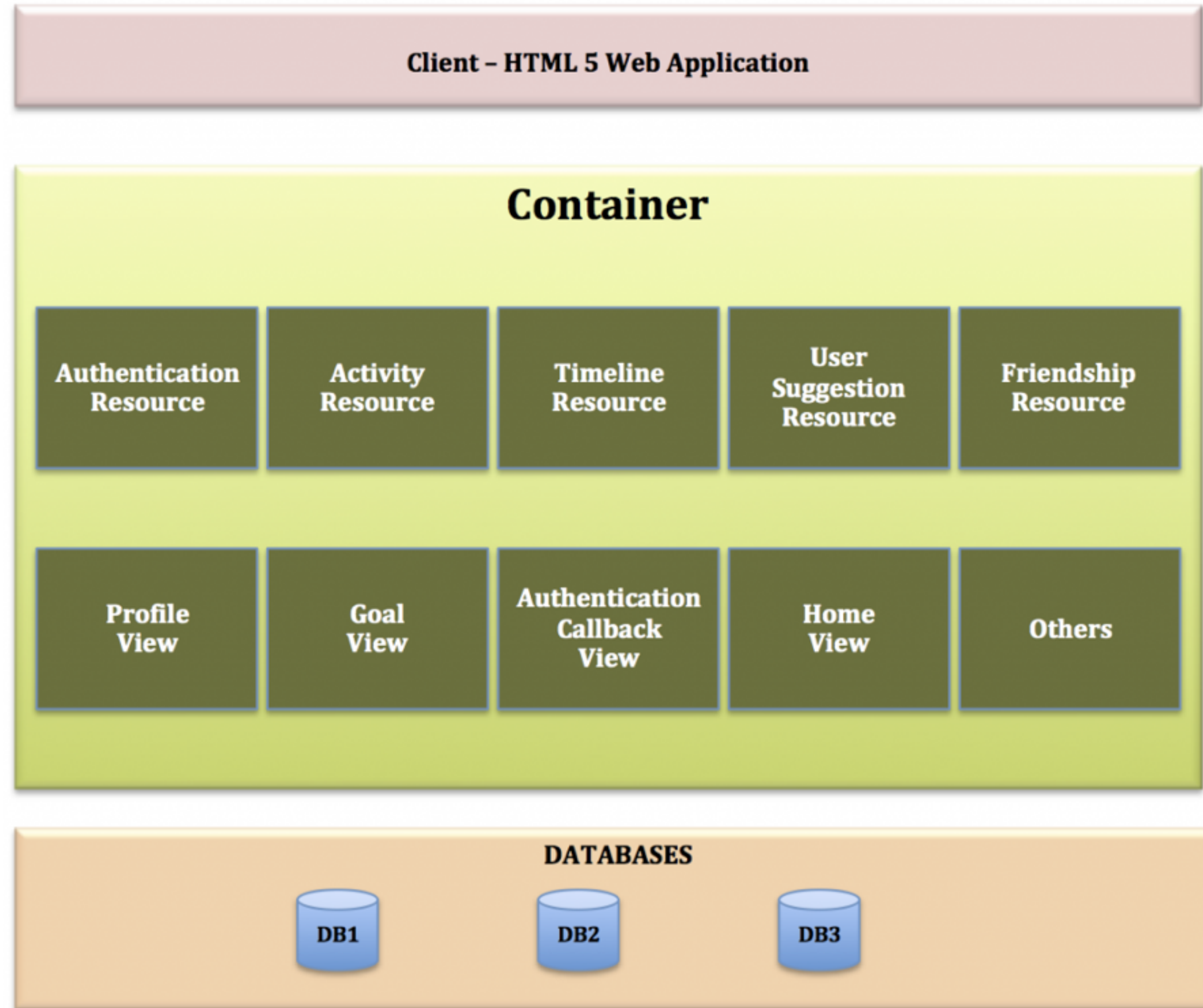


### Activity Calendar

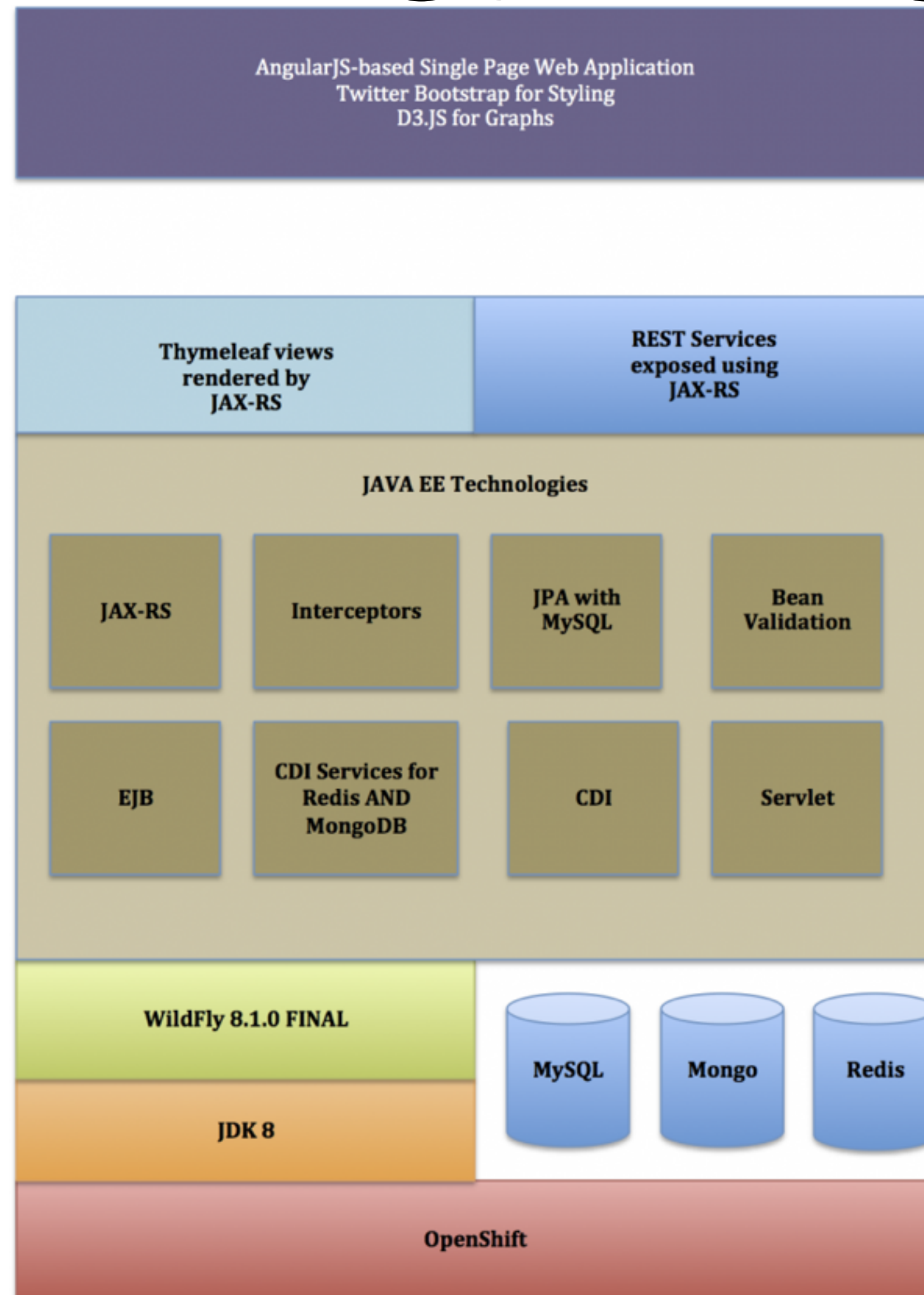


September-2014

# 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

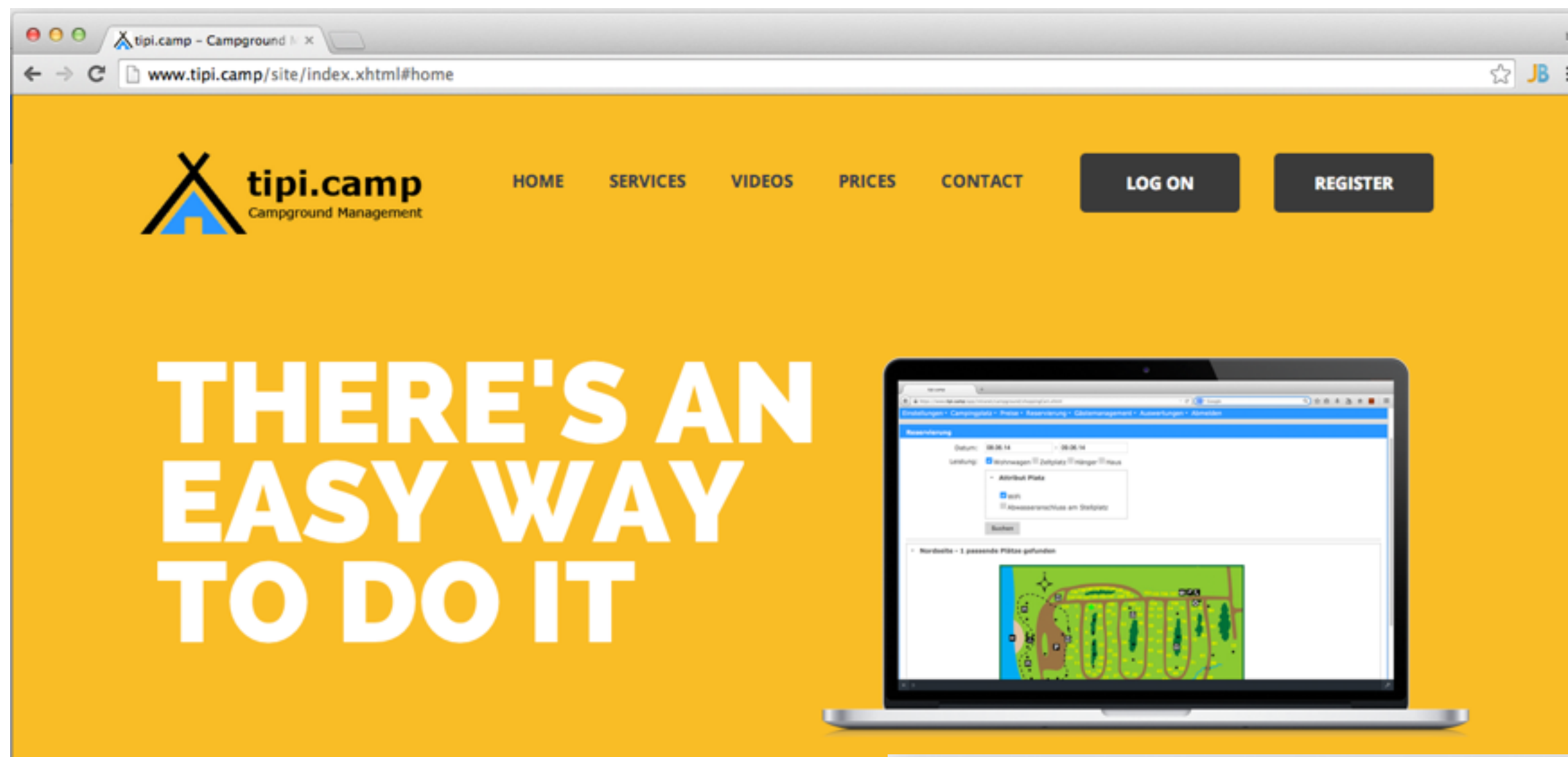


@shekhargulati

# tipi.camp



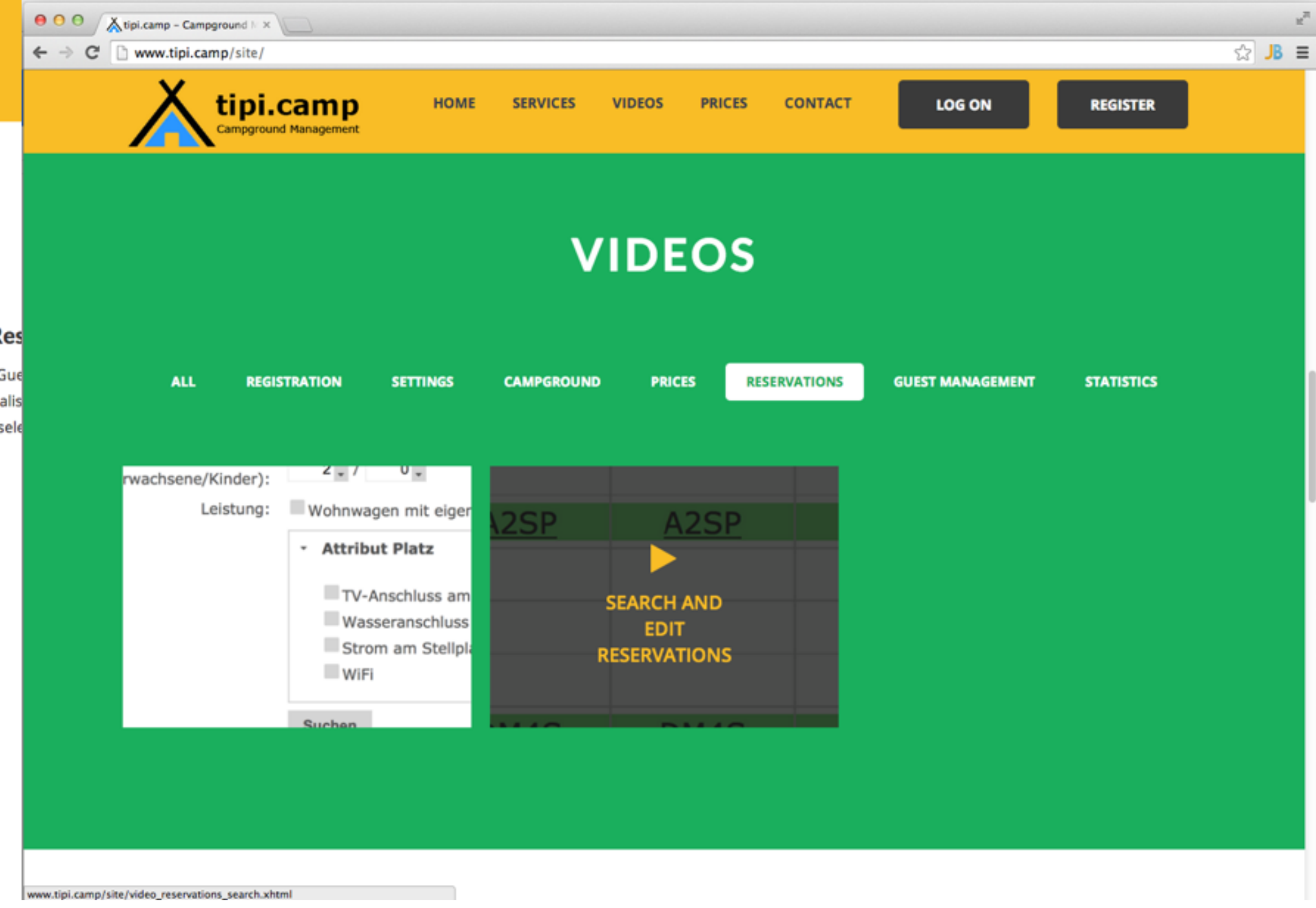
- Campground management
  - Reservations, portal, email, monitoring, ...
  - Targeting 25k+ campgrounds in Europe
- Customer-friendly booking portal
- On-premise or SaaS
- €1 or \$1 / day



● ○ ○

**Campground**  
Manage and reserve your campground quickly and easily

**CRM**  
The integrated customer relationship management system allows relationship management with the guest.





Sundown Camping

Home Lage Plätze Buchen Aktuelles Ausstattung Preise Bilder Karten Impressum

**Sundown Camping**

**Willkommen bei Sundown-Camping**  
Genießen Sie den 4 Sterne Terrassencampingplatz in Sunhill am Bergsee.

[Online Buchen](#)

Einen Fahrräderverleih gibt es am Platz, um das großzügige Angebot der schön angelegten Fahrradwege nutzen zu können. In zwei Minuten Entfernung befindet sich der Abenteuerspielfeld und das Freibad - Unternehmungslust wird hier belohnt. Aktivität und Sportlichkeit können sie auch beim Paddeln, Motorboot-Fahren oder auf Wasserski und Wakeboard am Main unter Beweis stellen. Naturliebhaber werden den Wein- oder Quittenlehrpfad vorziehen. Verwöhnen Sie sich mit unbeschwertem, erholsamen Tagen an der Mainschleife bei Volkach - beim Wohlfühlen entsteht Wellness.

Sundown Camping Kontakt Geokoordinaten

Am Waldrand 7a  
85476 Sunhill  
Deutschland

Sundown Camping

Home Lage Plätze Buchen Aktuelles Ausstattung Preise Bilder Karten Impressum

**Buchen**

Datum Anreise: 24.06.2014  
Datum Abreise: 31.06.2014  
Erwachsene: 2  
Kinder: 0

[Suchen](#)

Stellplatz 33  
Zeltplatz  
Zeltplatz für 170,00 EUR Buchen

Stellplatz 9  
Zeltplatz  
Zeltplatz für 170,00 EUR Buchen

Sundown Camping Kontakt Geokoordinaten

Am Waldrand 7a  
85476 Sunhill  
Deutschland

**tipi.camp** Campground Management

Warenkorb (0)

Einstellungen · Campingplatz · Preise · Reservierungen · Gäste · Auswertungen · Abmelden

**Kalender**

Datum: 30.06.14 - 11.07.14

[Suchen](#)

**Südseite**

	30.06.14	01.07.14	02.07.14	03.07.14	04.07.14	05.07.14	06.07.14	07.07.14	08.07.14	09.07.14	10.07.14	11.07.14
1												
2		A2SP	A2SP	A2SP	A2SP	A2SP	A2SP	A2SP	A2SP	A2SP	A2SP	A2SP
2												
23												
3				W54A	W54A	W54A	W54A	W54A	W54A	W54A		
4	NR97	NR97	NR97	NR97	NR97							
47	XJQF	XJQF	XJQF	XJQF	XJQF	XJQF	XJQF	XJQF	XJQF			
71												
82	3W49	3W49	3W49									
Haus 85												

**47**

ID: XJQF  
Erstellt: 27.06.14 19:32 - Sarah - Intranet  
Datum: 28.06.14 - 09.07.14  
Platz: 47  
Leistung: Zeltplatz  
Gast: Mike Hellriegl  
Autokennzeichen:

**tipi.camp** Campground Management

Warenkorb (1)

Einstellungen · Campingplatz · Preise · Reservierungen · Gäste · Auswertungen · Abmelden

**Warenkorb**

Reservierung

47 - Zeltplatz

Aus Warenkorb Entfernen

Anzahl Erwachsene: 2  
Anzahl Kinder: 0

Name	Verwenden	Anzahl	Datum	Handp	Preis EUR	Total EUR
Kurtaxe	<input checked="" type="checkbox"/>		18.07.14 - 22.07.14		2,00	8,00
Firewood	<input checked="" type="checkbox"/>	2	18.07.14 - 22.07.14	<input checked="" type="checkbox"/>	4,00	8,00
<b>Grundpreis</b>	<input checked="" type="checkbox"/>		18.07.14 - 22.07.14		20,00	80,00
						<b>96,00</b>

Gast

Gast: h

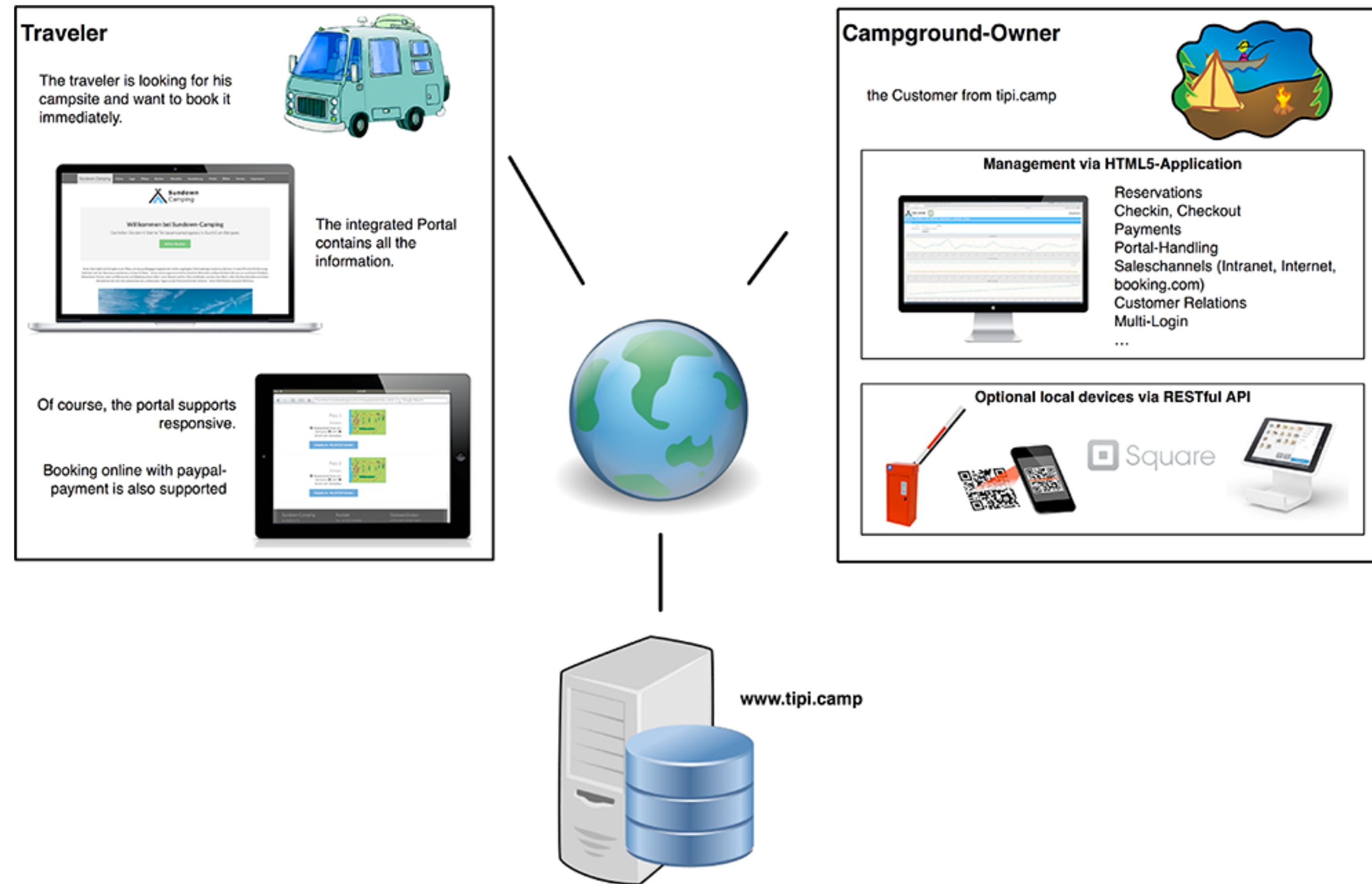
Klaus	Huber	Wien	klaus.huber@example.com
Mike	Hellriegl	Innsbruck	mike@h-e-i-l.at
Harald	Koblenzer	Hamburg	harald.d@google-mail.com
Hubert	Schmid	Zürich	schmid@schweiz-mail.ch
John	Miller	San Francisco	miller-jonny@googlemail.com

Anrede:

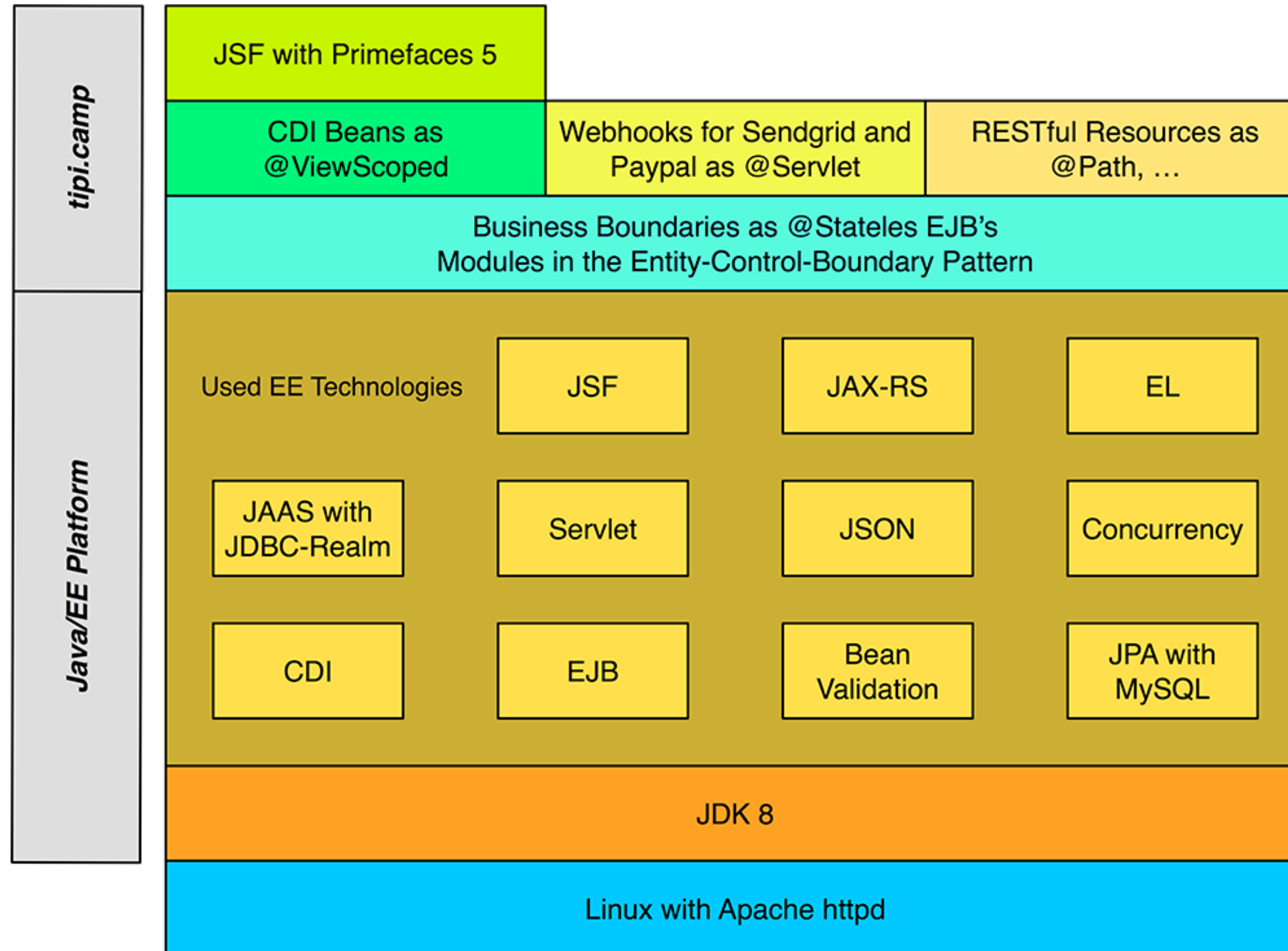
Vorname:

Nachname:

# Architecture Diagram



# 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

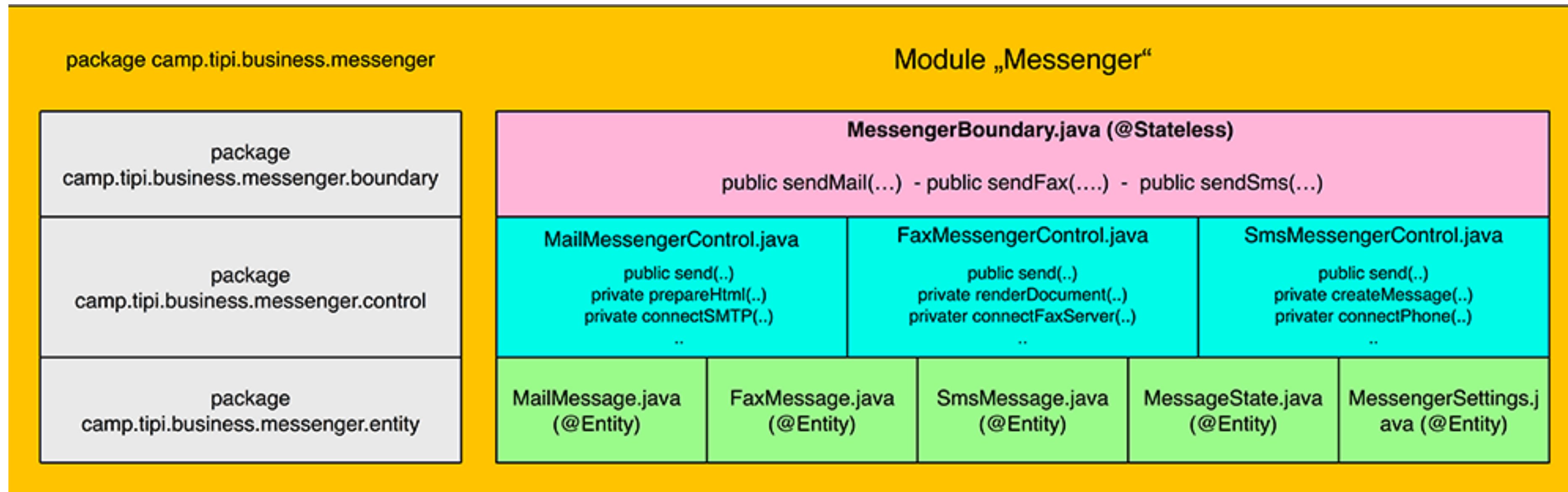
# Technology

- 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](http://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/javasee/7/tutorial/doc/home.htm>
- **~200 code samples:** [github.com/javasee-samples/javasee7-samples](https://github.com/javasee-samples/javasee7-samples)
- Lots of books