

Java EE Microservice platforms - which is best?

Steve Millidge – Founder Payara



The Best is?



Get Serious

- What is a Microservice
- Features of the platforms
- Experiences in Use



What is a Microservice?

In computing, **microservices** is a software architecture style in which complex applications are composed of small, independent processes communicating with each other using language-agnostic APIs.

Wikipedia



What is a Microservice?

*The term "Microservice Architecture" has sprung up over the last few years to describe a particular way of designing software applications as suites of independently deployable services. While there is no precise definition of this architectural style, there are certain common characteristics around organization around business capability, **automated deployment**, intelligence in the endpoints, and **decentralized control of languages and data**.*

Martin Fowler

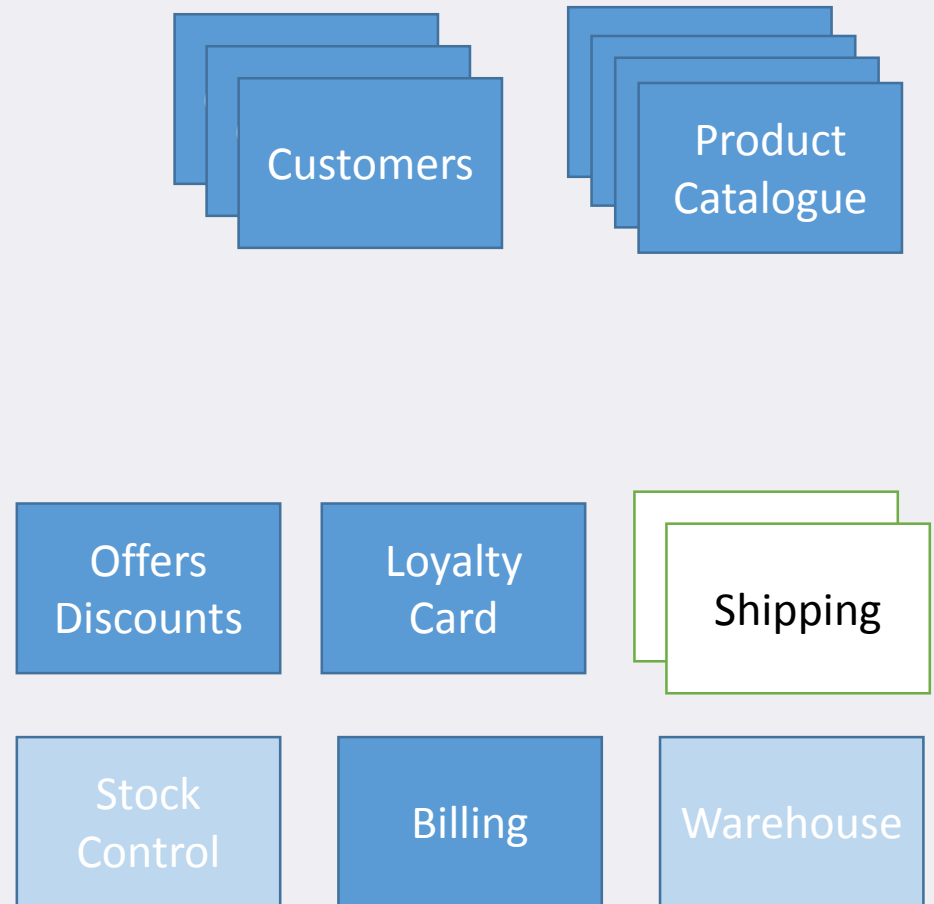
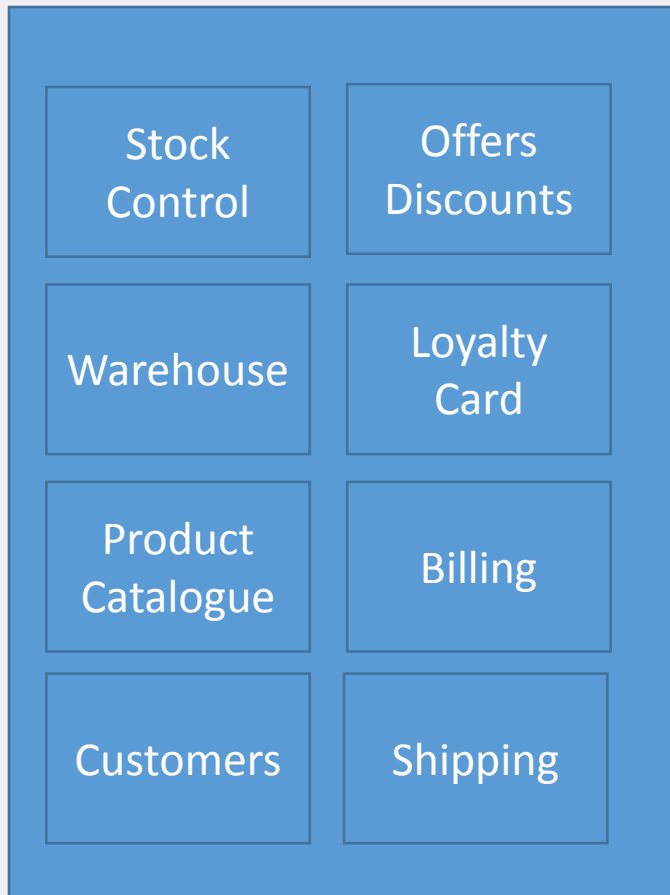


Some Principles of MicroServices

- Componentization via Services
 - Independently replaceable and upgradable
- Organized around Business Capabilities
 - One team one capability across the stack
- Products not Projects
 - Team manages the whole lifecycle of the service(s)
- Independent Replacement and Upgradeability
- Infrastructure Automation
- Decentralized Data Management



Micro Service Architecture



FUD!

You can't build microservice architectures with
Java EE.

It is heavyweight and monolithic.



Why Java EE and not #####?

- Java EE is incredibly lightweight
- Rapid to develop
- Majority of alternative Java frameworks based on Java EE apis
- Concentrate on building business functionality
- Produces small skinny wars
- Versioned runtime – aids operations



Idea for Testing

This XML file does not appear to have any style information associated with it. The document tree is shown below:

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<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<ha_planned_roadworks>
  <ha_planned_works>
    <reference_number>1535363</reference_number>
    <road>M1</road>
    <local_authority>Leicestershire</local_authority>
    <location>Jct 19 - 24 (999932)</location>
    <start_date>2016-03-14T08:30:00</start_date>
    <end_date>2016-04-21T05:00:00</end_date>
    <expected_delay>Slight (less than 10 mins)</expected_delay>
  </ha_planned_works>
  <description>
    Mobile hard shoulder closures north and southbound
  </description>
  <traffic_management>Mobile Lane Closure</traffic_management>
  <closure_type>Planned Works</closure_type>
  <centre_easting>453356</centre_easting>
  <centre_northing>303840</centre_northing>
  <status>Firm</status>
  <published_date>2015-08-03T13:12:19</published_date>
</ha_planned_roadworks>
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  <road>M1</road>
  <local_authority>Derbyshire / Leicestershire / Nottingham</local_authority>
  <location>Jct 19 - 24 (999932)</location>
  <start_date>2016-03-14T08:30:00</start_date>
  <end_date>2016-04-21T05:00:00</end_date>
  <expected_delay>Slight (less than 10 mins)</expected_delay>
</ha_planned_works>
</ha_planned_roadworks>
```

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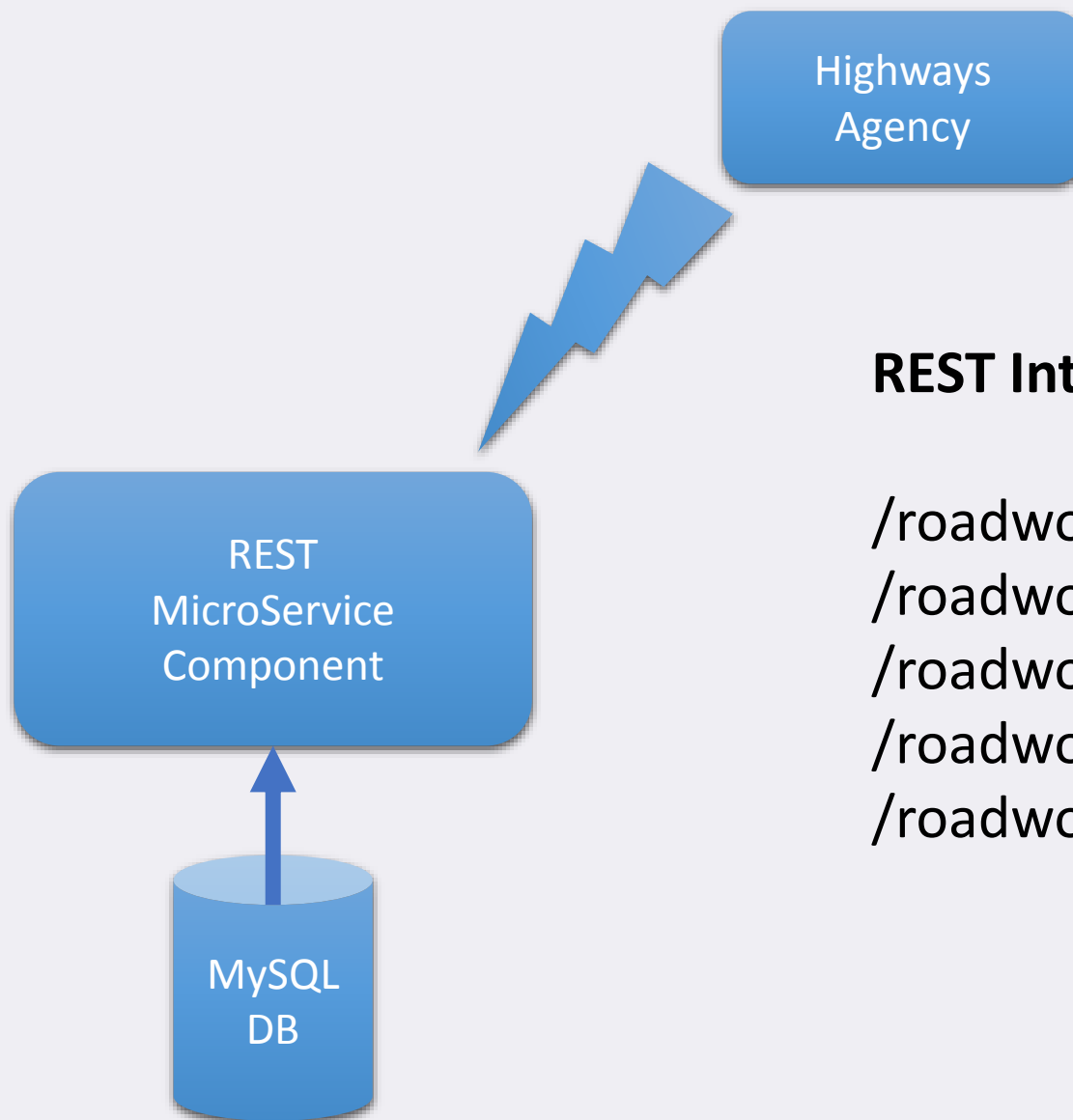
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http://data.highways.gov.uk/ha-roadworks/he_roadworks_2016_02_29.xml





REST Interface

/roadworks

/roadworks/now

/roadworks/{road}/now

/roadworks/{region}

/roadworks/{region}/now



Payara Micro

- Derived from GlassFish Open Source
- Key Design Goals
 - Elastic (auto clustering)
 - Container Friendly (no installation)
 - Small Footprint
 - Very Easy to Use (no maven messing)
 - Run wars on the command line



WildFly Swarm



- Derived from WildFly
- Flexible
 - Specify components with maven dependencies
- Generates Uber Jar
- Integrates with other Red Hat projects
- Java EE based
- Integrates with Service Discovery



Spring Boot



- Encapsulates Spring
- Creates Standalone Spring Applications
- Embeds Runtime
 - Jetty, Tomcat, Undertow
- Opinionated Starter POMs
- Automatically Configures itself
- No XML
- Provides production ready capabilities



Code Walkthrough



Platforms Tested

Feature	Payara Micro	WildFly Swarm	Spring Boot
Composable	X	√	√
Requires Platform Knowledge	X	X	√
Needs Maven	X	√	√
File Size	60MB + 1MB war	100MB	26MB
Boot Time	4s	4s	4s
Memory (full GC)	34MB Meta 63MB	35MB Meta 83MB	44MB Meta 51MB
Embeddable API	√	√	√



Payara Micro Thoughts

I'll leave that to you as I wrote it!!!



SpringBoot

- Very Simple to learn
- Marginally different from JavaEE
 - Slightly different REST annotations
- Small Footprint
- Fast Startup
- Smallest jar size but could grow depending on needs
- Slightly larger memory footprint
- Good composability
 - I didn't have to figure it out



WildFly Swarm

- A little complexity in composing dependencies
 - Repeatedly failed for a while
 - Needed jaxrs-weld not jaxrs + weld !
 - After all that largest jar
- Small Footprint
- Fast Startup
- Small Memory Footprint



Conclusions

- No Real Advantage to assembling your container
- ALL Solutions
 - Lightweight
 - Small Footprint
 - Fast
- Choose what you are Familiar with
 - If you know Spring stick with Spring
 - If you know JavaEE, JavaEE does microservices.
- Java EE apps are cross container
 - Including datasource definition



Code

<https://github.com/smillidge/JDays2016MicroServices>



Questions

