

Configuration in Modern Software Development

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Bauhaus-Universität
Weimar

Intelligent
Software
Systems



Current best practice



mongodb.conf



application.properties



Maven™
pom.xml

bootstrap.yml



Dockerfile

pom.xml

[...]

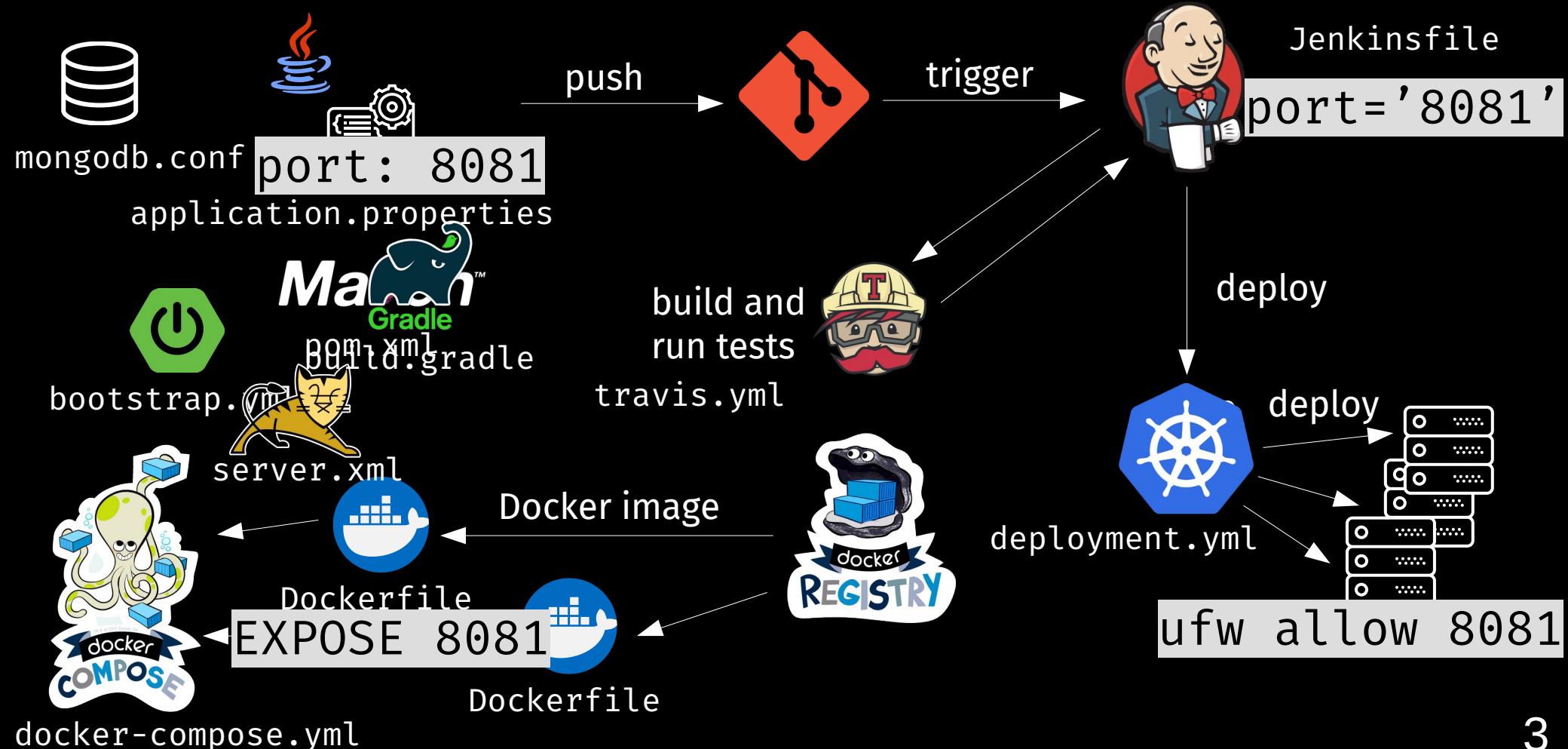
```
<artifactId>discovery-microservice</artifactId>
<version>0.2.0</version>
<packaging>jar</packaging>
```

[...]

Dockerfile:

```
FROM java:8
ADD discovery-microservice-0.1.0.jar app.jar
EXPOSE 8761
ENTRYPOINT [ "java" , "-jar" , "/app.jar" ]
```

Current best practice



“An escape from configuration hell”

(Matt Welsh, <http://matt-welsh.blogspot.com/2013/05/what-i-wish-systems-researchers-would.html>)

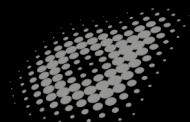
How do developers cope with this?

Interviews with developers from different companies



codecentric

- IT consultants
- 480 employees
- 16 European locations



REWE digital

- e-commerce
- 345.000 employees

XCEPTANCE
Software Technologies

- experts for software testing
- 42 employees
- more than 250 customers

Configuration in daily work

Developer:

- Responsible for one or more applications
- Configuration of environment is done by separate platform team

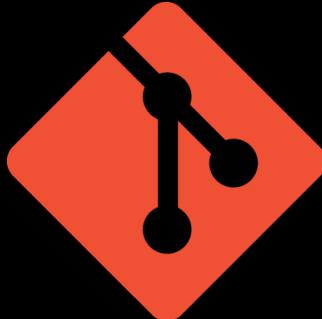
70 %

10 %

IT consultant:

- Builds up (and configures) infrastructure
- New team for new project

Where is configuration stored?



- Configuration in same repository as code
- Optional: Additional configuration project for platform

service-specific
parameters



Jenkinsfile

Environment-Jenkinsfile

Upgrading frameworks breaks configuration

A screenshot of a search results page from Stack Overflow. The search query is "spring boot migrate problems site:stackoverflow.com". The results show several posts related to migration issues:

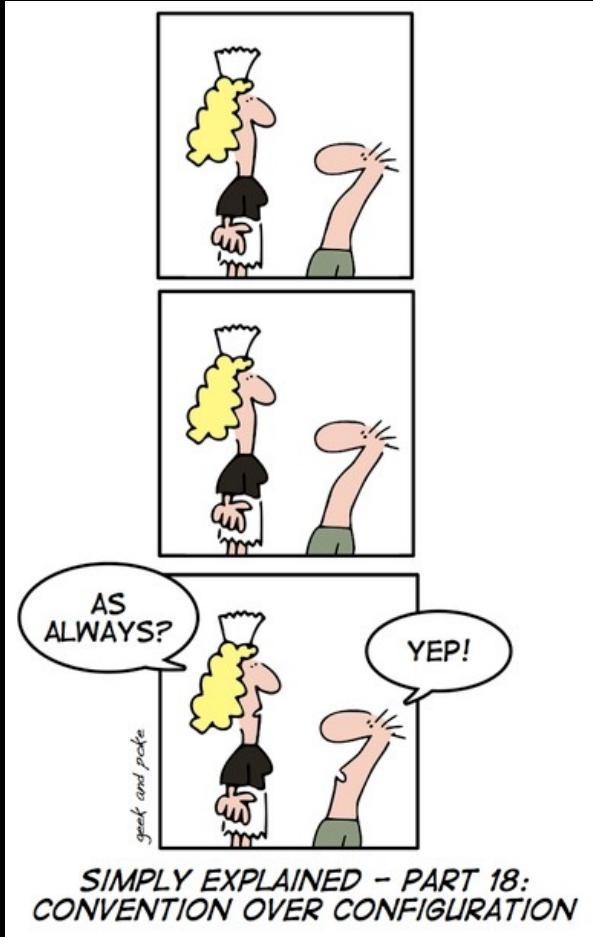
- Performance issues after migrating from Spring Boot 1 to Spring ...**
https://stackoverflow.com/.../performance-issues-after-migrating-from-spring-boot-1-t... ▾
1 answer
Oct 4, 2018 - In that situation, I think the best approach is to use a profiler, like VisualVM. Even locally you can find out what is happening. Actually, profiling is ...
- NoSuchBeanDefinitionException after migrate from spring boot 1.5 ...**
https://stackoverflow.com/.../nosuchbeanexception-after-migrate-from-sprin... ▾
2 answers
Apr 9, 2018 - You could try the basic approach where you leave your application class at the root level in your project so the `@SpringBootApplication` does a ...
- Spring boot 2 migration from Spring boot 1.5 issue with redis ...**
https://stackoverflow.com/.../spring-boot-2-migration-from-spring-boot-1-5-issue-wit... ▾
1 answer
Oct 19, 2018 - Add `spring-boot-starter-data-redis` maven dependency ... Spring Boot uses these default Redis properties which you can overwrite in the ...
- Spring boot war with embedded tomcat causing performance issues ...**
https://stackoverflow.com/.../spring-boot-war-with-embedded-tomcat-causing-perfor... ▾
Dec 15, 2018 - We've lots of jsps in our application when we migrated to spring-boot 1.5 we had to retain those. but after building a war and from there if we ...

Example:

Upgrade Spring Boot 1.x to 2.x

- Consequences: performance problems, run time errors, ...
- Configuration problems with dependencies

Convention over configuration



- Define defaults
- Only configure what differs from default
- Reduces number of decisions
- Requires a great learning curve

```
•  
├── README.md  
├── pom.xml  
└── src  
    ├── main  
    │   └── java  
    └── resources  
        └── test
```

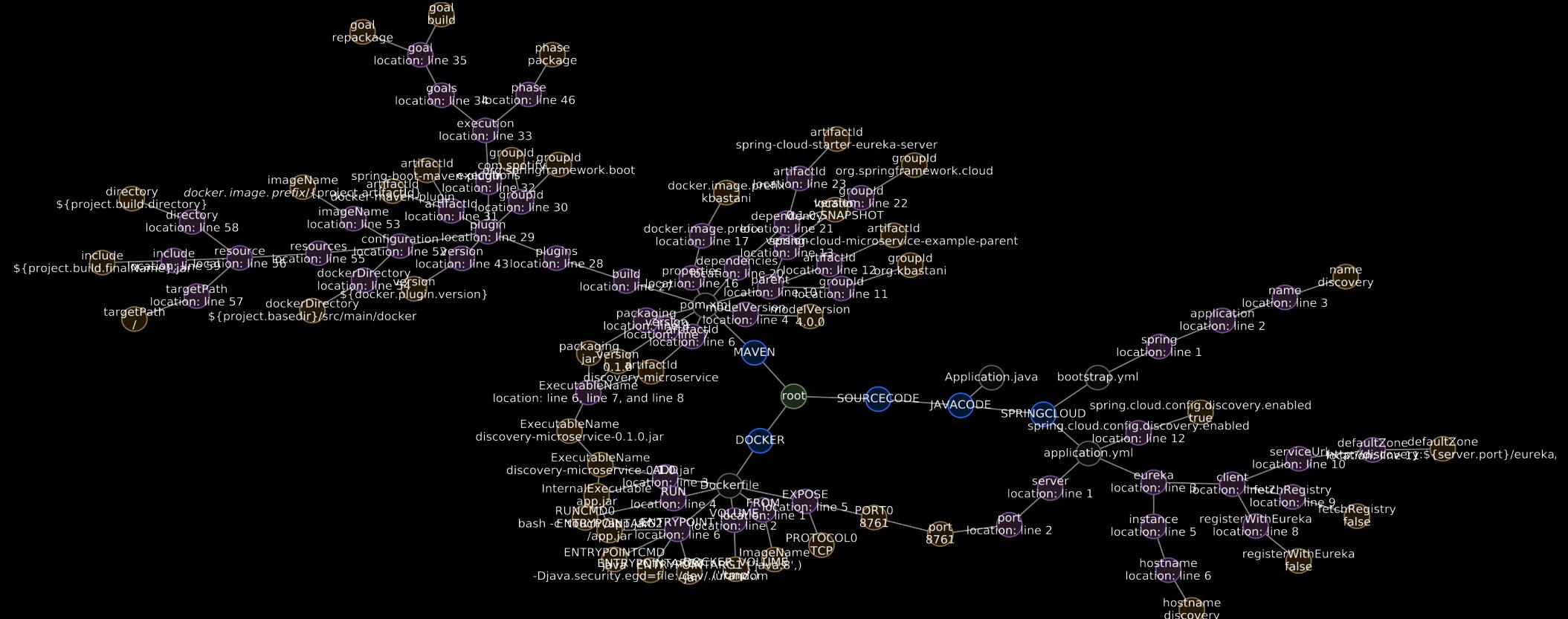
Types of configuration

- Technical configuration
- Domain-specific configuration

Future Work

- We need more interviews
- Generate theories
- Develop tools and methods for solving configuration problems

Configuration Network



Thank you for your attention!

Contact



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Images

Icons:

- Freepik
- Srip
- Eucalyp
- Smashicons
- Elegant Themes
- Yannick

Geek and Poke comic:
geek-and-poke.com