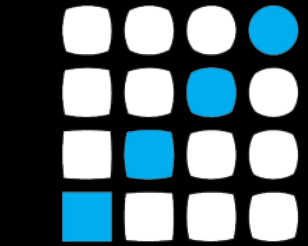

APACHE SLING & FRIENDS TECH MEETUP
2 - 4 SEPTEMBER 2019

The newest OSGi specs: CDI integration and Release 8

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About David

- Senior Computer Scientist @ Adobe
- Member of the Apache Software Foundation
- OSGi Enterprise Expert Group co-chair

About Carsten

- Principal Scientist @ Adobe
- Member of the Apache Software Foundation
- OSGi Expert Groups + Member of the Board

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Agenda

- The OSGi CDI integration spec
- New R8 specs under way
  - Messaging
  - Connect
  - Condition Service
  - Feature Model
  - … more …

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OSGi Specification Process

- Requirements, Use Cases -> RFP
- Technical Specification -> RFC
- Reference Implementation
- Compatibility Testsuite
- Spec Chapter
- Books: Core, Compendium, Enterprise

OSGi CDI Integration

OSGi Service Model

- Service Registry
  - Publish/find/bind
- Service Scopes
  - Singleton
  - Bundle
  - Prototype

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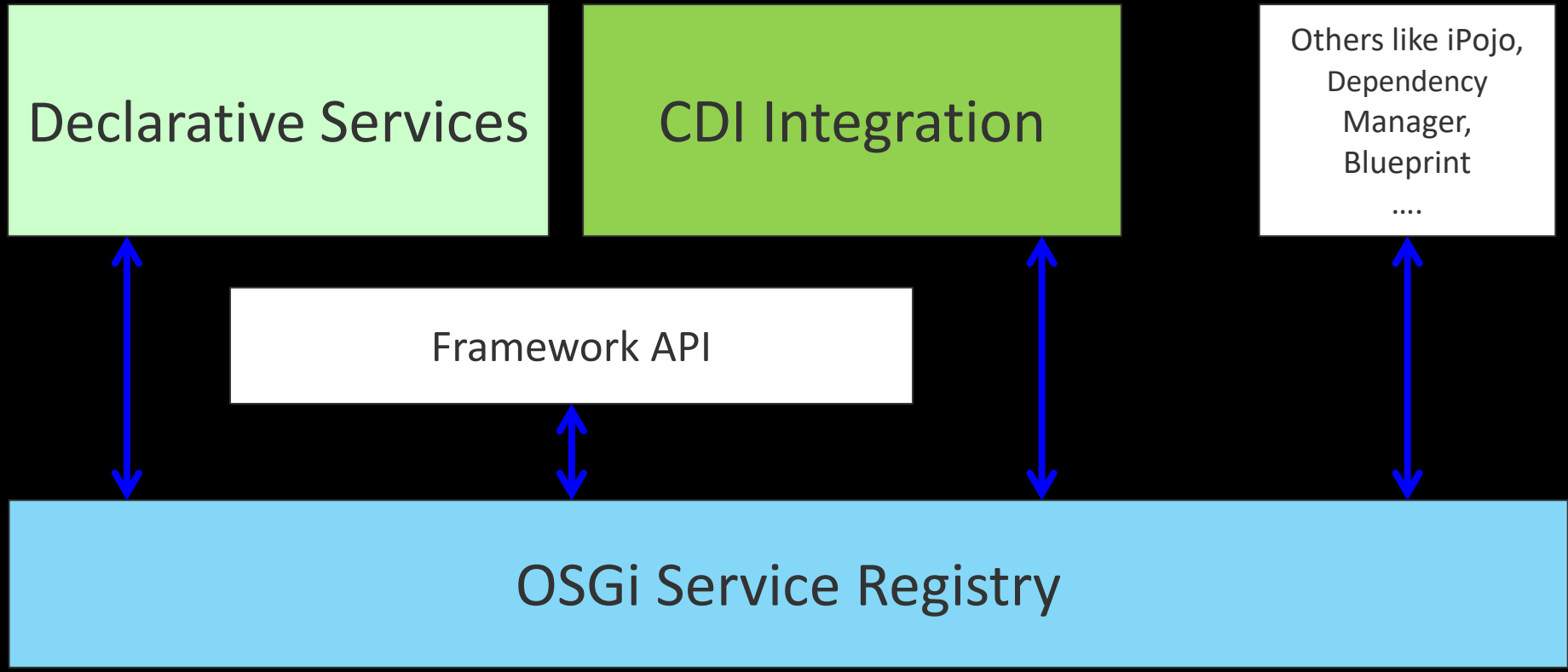
Component Container Integration



Register a Service using CDI

```
@Bean
@Service(value = GameController.class)
@ServiceDescription
      ("This is the core game component")
public class GameControllerImpl
implements GameController {


}
```

Reference Services and Beans

```
@Bean
@Service(Servlet.class)
public class GameServlet extends HttpServlet {

    @Inject @Reference
    private GameController game;

    @Inject
    private HighscoreService highscore;
```

Service Properties

```
@Bean
@SingleComponent
@AppServletContext.ContextConfig
public class AppServletContext {

  @Retention(RetentionPolicy.RUNTIME)
  @Target(ElementType.TYPE)
  @BeanPropertyType
  public @interface ContextConfig {
      String service_name() default AppServletContext.NAME;

      String service_path() default "/guessinggame";
  }
```

OSGi CDI Extender

- Connect CDI with OSGi
- Supports CDI Annotations and Extensions
- Constructor, Field, Method Injection
- Supports Component Property Types

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Why CDI Extender?

- Declarative Services are great, so why?
- CDI Extender Use Cases
  - Existing Code
  - Enhanced annotation processing
  - Private services/beans

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How to use CDI?

- Apche Aries CDI Extender Implementation
- Bnd Tooling >= 4.2.0

OSGi R8

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Messaging (RFP 192)

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Messaging RFP 192

- Remote async messaging API for OSGi
- Publish-Subscribe
- Point-to-point
- Lightweight
- QoS & Intents
  - require and advertise capabilities

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Connect (RFP 196)

Reboot OSGi Connect

- Connect OSGi to the „outside“
- Popular Application Frameworks
- JPMS
- JARs on the classpath
- Native compilation

Condition Service (RFC 242)

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Condition Service

- When is your asynchronous system fully ready?
- Generally very app-specific
- Sometimes multiple levels
- Introducing:

  org.osgi.service.condition.Condition

  service interface

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Waiting for a condition

- A client can just listen for a condition:

```
@Reference(
   target="(osgi.condition.id=mycondition)")
Condition ready
```

- Or default to the predefined true condition:

(osgi.condition.id=true)

… change via config by setting target property

Registering a condition

- Just register a Condition service (custom ID)
- Configuration-based:

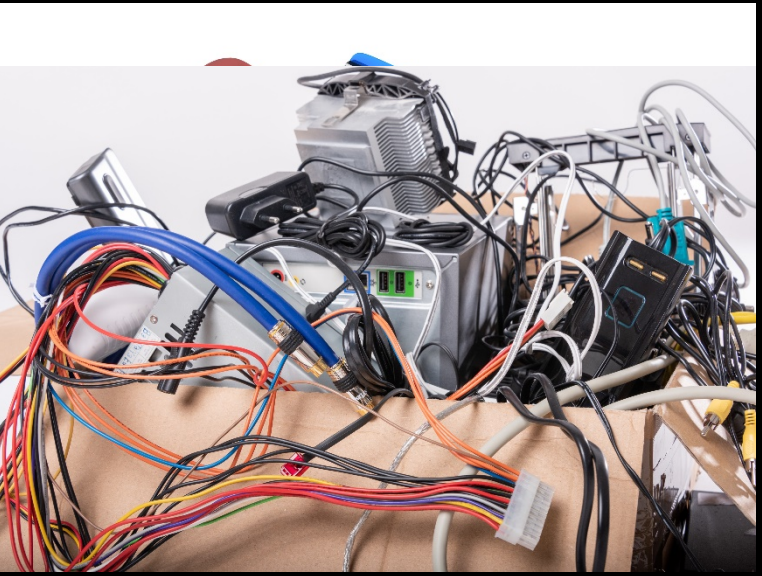
```
"osgi.condition.factory~systemready" : {
        "osgi.condition.identifier" : "application.ready",
        "osgi.condition.match.all" : [
                "(&(objectClass=javax.servlet.Servlet)(role=main))",
                "(db.connection.url=*)"
        ],
        "osgi.condition.match.none" : [
                "(&(objectClass=javax.servlet.Servlet)(role=loading))"
        ]
}
```

Features (RFC 241)

Features RFC 241

- Design and work with entities
  - Larger than individual bundles
- Configuration
- Additional metadata
- A design artifact
  - can be mapped to runtime implementations (Sling/Karaf/Eclipse etc…)

Features – building a system



Easy!

Others

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Other work

- RFP 190 Resource Encoding for Java Modules
- RFP 191 Microservice Architecture
- RFP 195 Actor Runtime
- RFP 197 Type-safe events

… and more: https://github.com/osgi/design

Q & A

Appendix

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References OSGi

- OSGi RFPs and RFCs
  - https://github.com/osgi/design
- OSGi Specifications
  - https://osgi.org/specification/osgi.core/7.0.0/
  - https://osgi.org/specification/osgi.cmpn/7.0.0/
  - https://osgi.org/specification/osgi.enterprise/7.0.0/

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References Sample Code

- CDI Example
  - https://github.com/cziegeler/samples.guessinggame.cdi
- CDI Launcher
  - https://github.com/cziegeler/features.cdi

Images

- From stock.adobe.com:

Karton voll mit Computerschrott By peno - penofoto.de

Modern PC isolated on white background. 3D illustration By Destina

Computer spare parts store By Vlad Kochelaevskiy