APACHE SLING & FRIENDS TECH MEETUP
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The newest OSGi specs: CDI integration and Release 8

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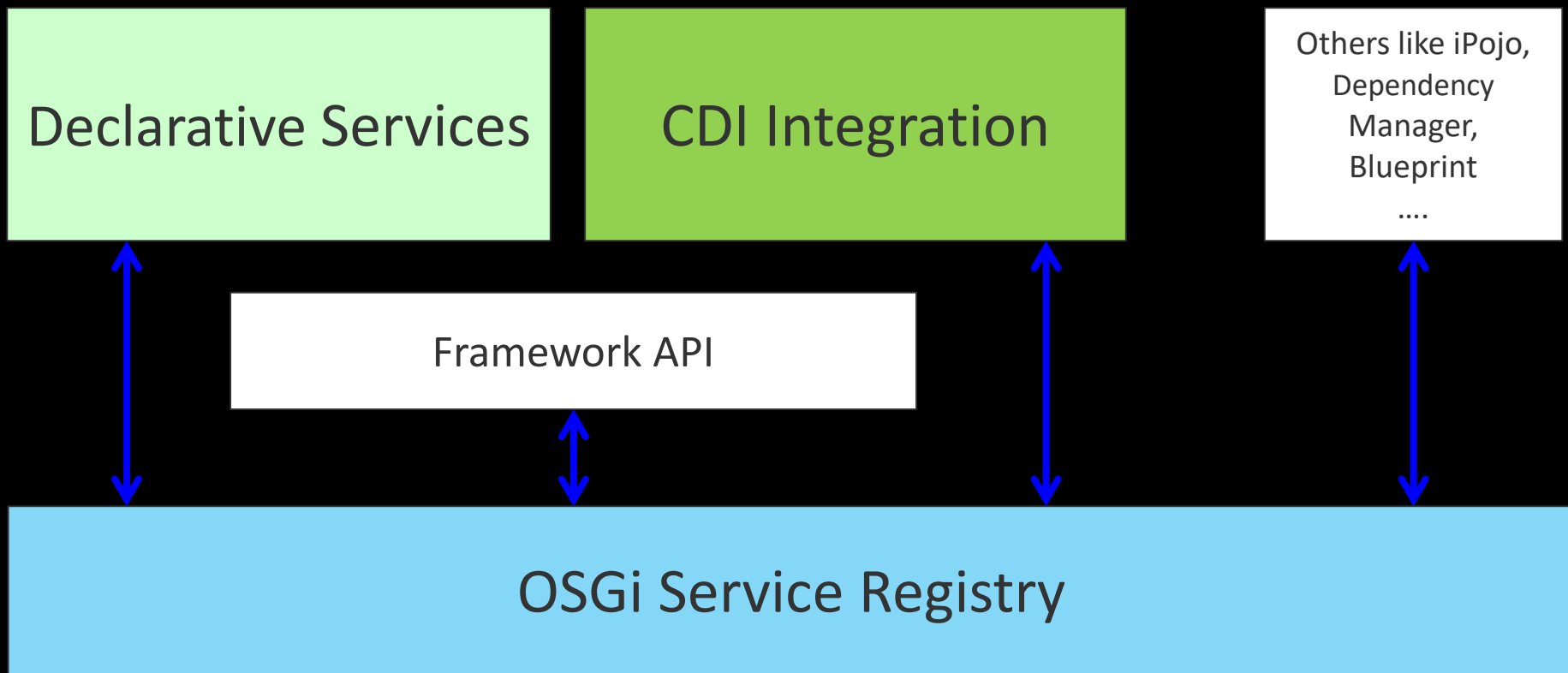- OSGi Expert Groups + Member of the Board

Agenda

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

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

OSGi CDI Integration

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

Component Container Integration

Declarative Services

CDI Integration

Others like iPojo, Dependency Manager, Blueprint ….

Framework API

OSGi Service Registry

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


}
```

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

        @Inject @Reference
        private GameController game;

        @Inject
        private HighscoreService highscore;
```

```java
@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";
    }
```

- Connect CDI with OSGi

- Supports CDI Annotations and Extensions

- Constructor, Field, Method Injection

- Supports Component Property Types

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

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

OSGi R8

Messaging (RFP 192)

- Remote async messaging API for OSGi

- Publish-Subscribe

- Point-to-point

- Lightweight

- QoS & Intents

  - require and advertise capabilities

Connect (RFP 196)

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

Condition Service (RFC 242)

- When is your asynchronous system fully ready?

- Generally very app-specific

- Sometimes multiple levels

- Introducing:

  org.osgi.service.condition.Condition

  service interface

- 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)
```

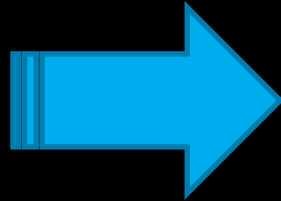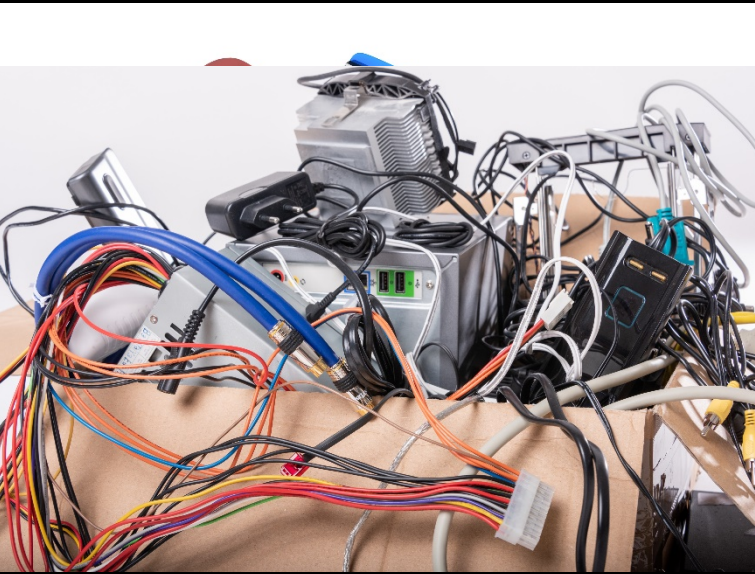… change via config by setting target property

- 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)

- 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…)

Easy!

Others

- 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

- 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/

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