BACK-PORTING DSPACE 2.0: DSPACE SERVICES

Mark Diggory

DSUG 2009

@MIRE

Conflicts in DSpace.

Developers vs. Developers?

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But is it Their Fault?

Pioneer Argonne computer scientist Jean F. Hall.

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Need to solve immediate issues formost.

Static code is not extensible...

```
public class StaticManager {

    public static Object getSomething(Object object) {

        SomeOtherManager.doSomethingElse(...);

    }
}
```

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  Concentrate too much functionality in a class
- **JAR Hell**:
  Users resort to classpath ordering to overload core API.
  User override classes directly to change behavior.

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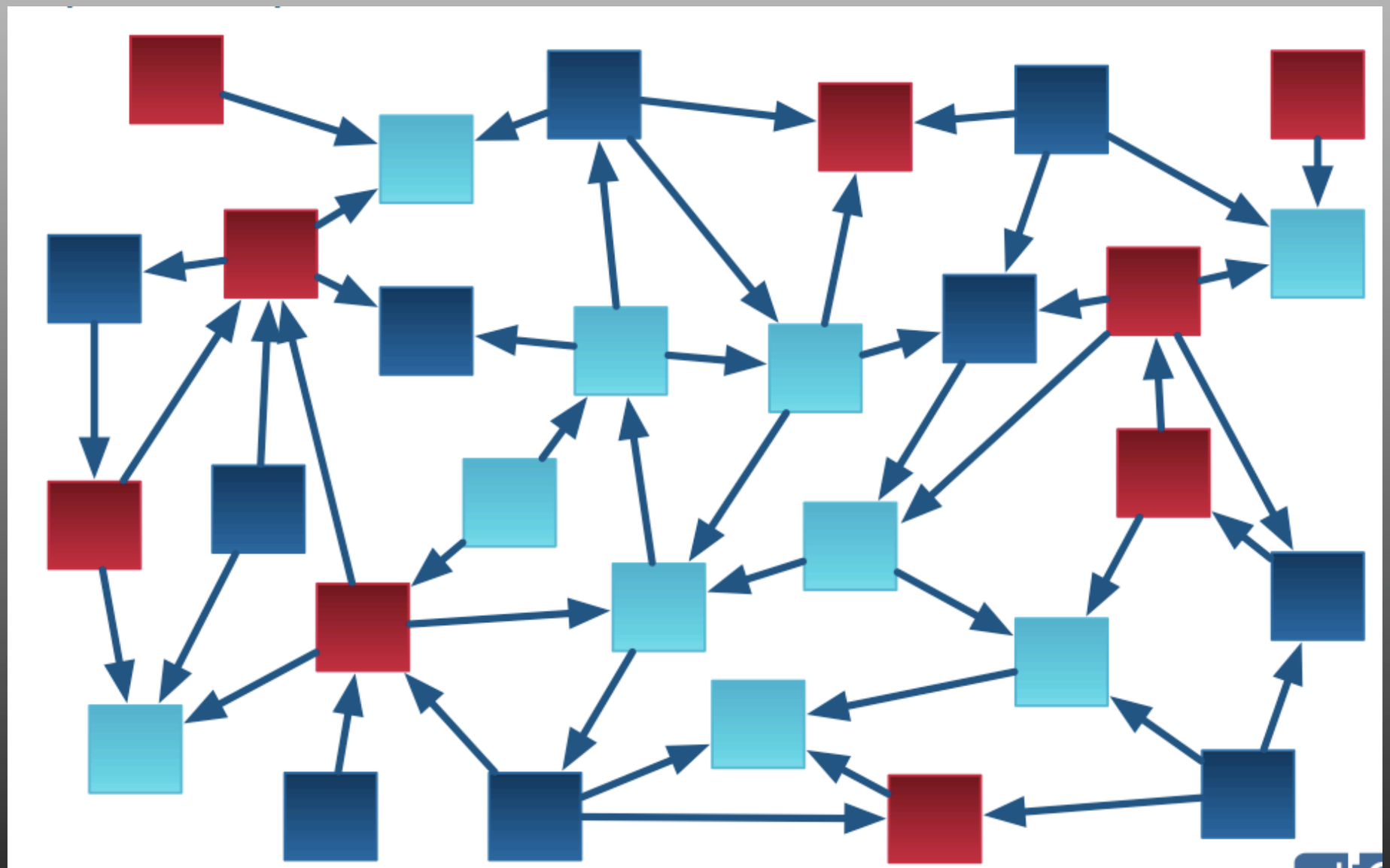
- We have to guaruntee upgrade path.
- Need stability and modularity in DSpace.

Modularity



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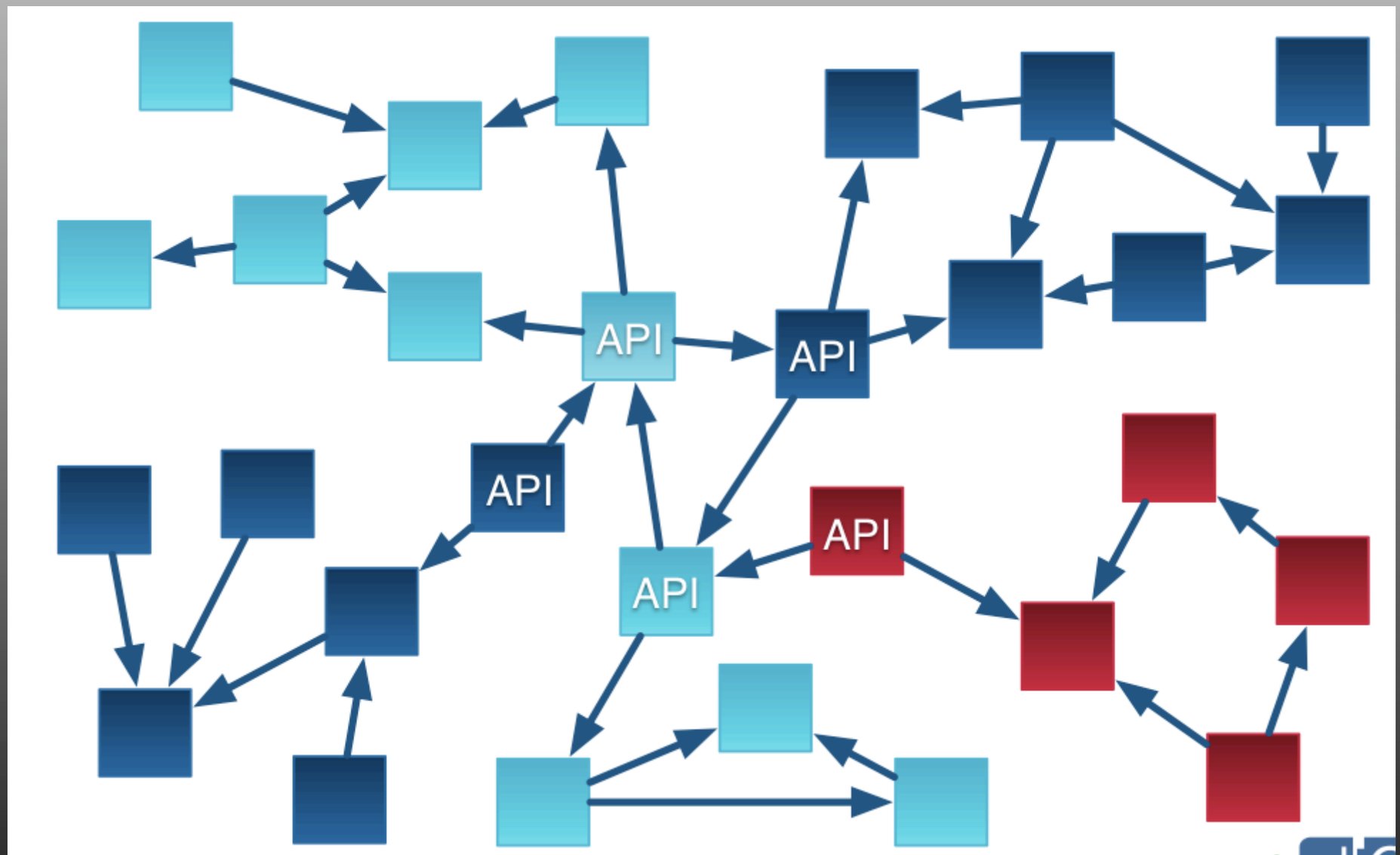
Modularity



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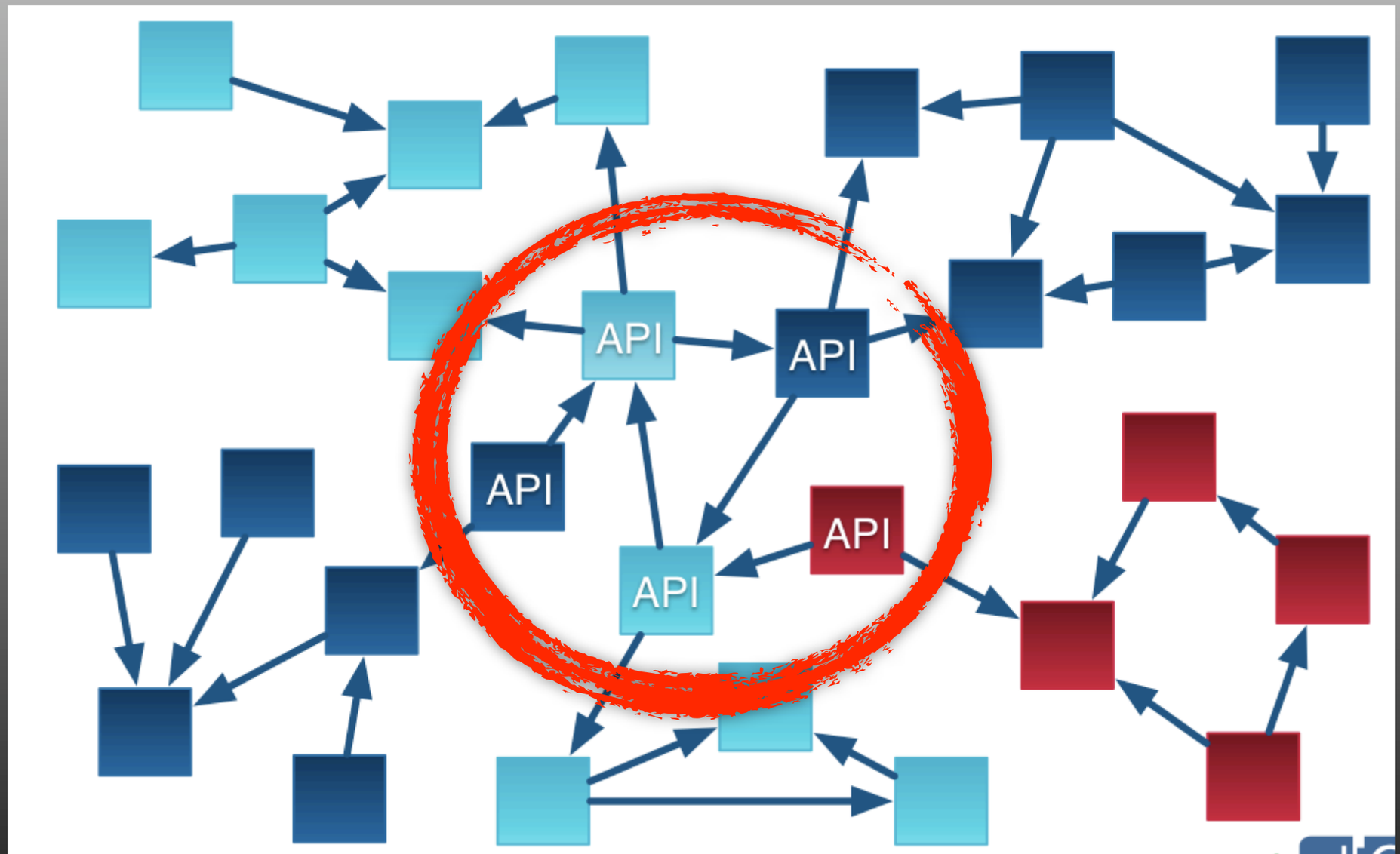

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  API contracts, default implementations off limits.
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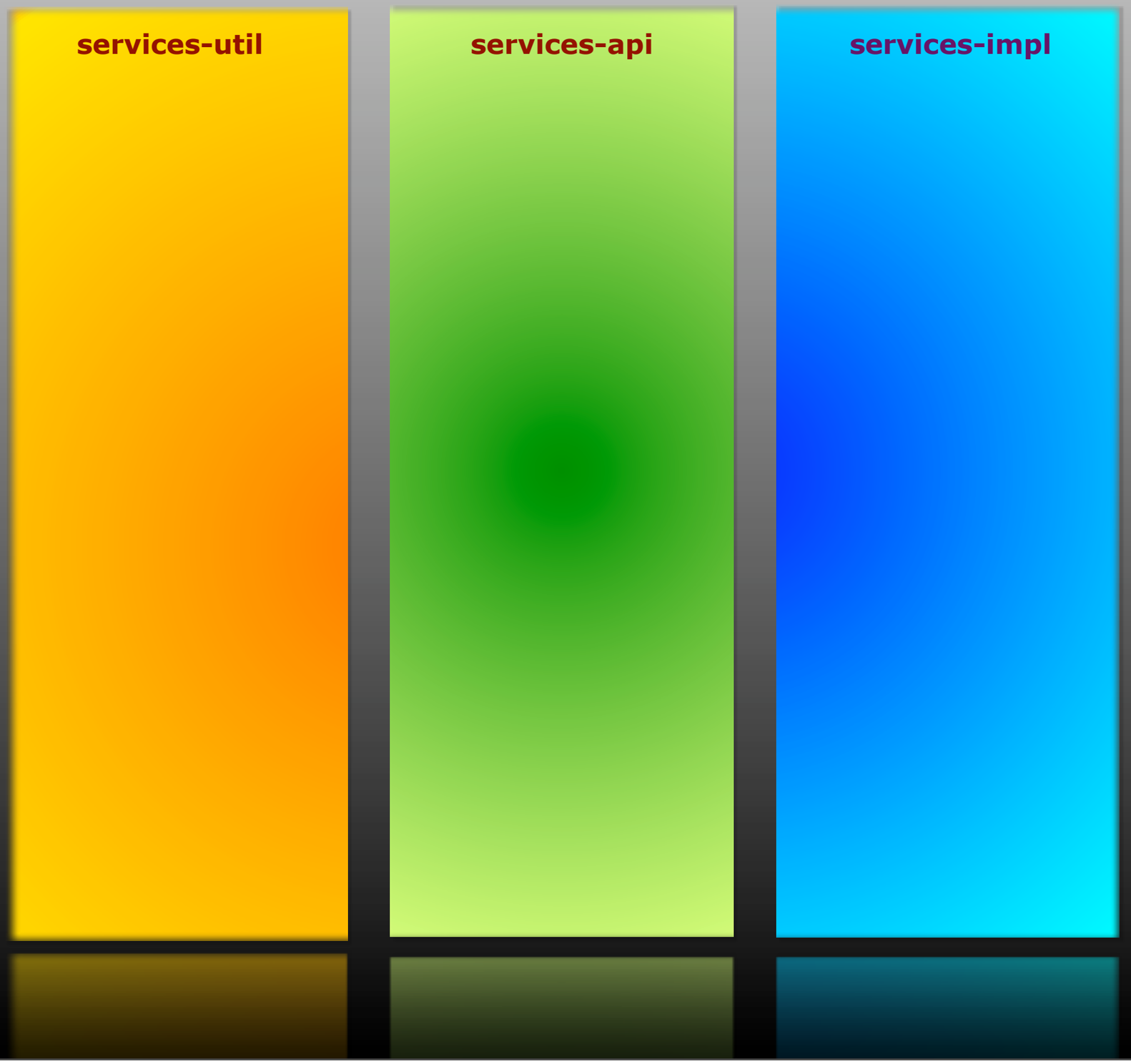
- **Removes Hardcode:**
  Data Models are anemic, Services implemented separate from interfaces used by applications.
- **Lessens JAR Hell:**
  API contracts, default implementations off limits. Want to change behavior, write changes separately.
- **Removes God Objects:**
  Services separate functional areas, separate Data Models without interdependency assure separation.

Services: Architecture:



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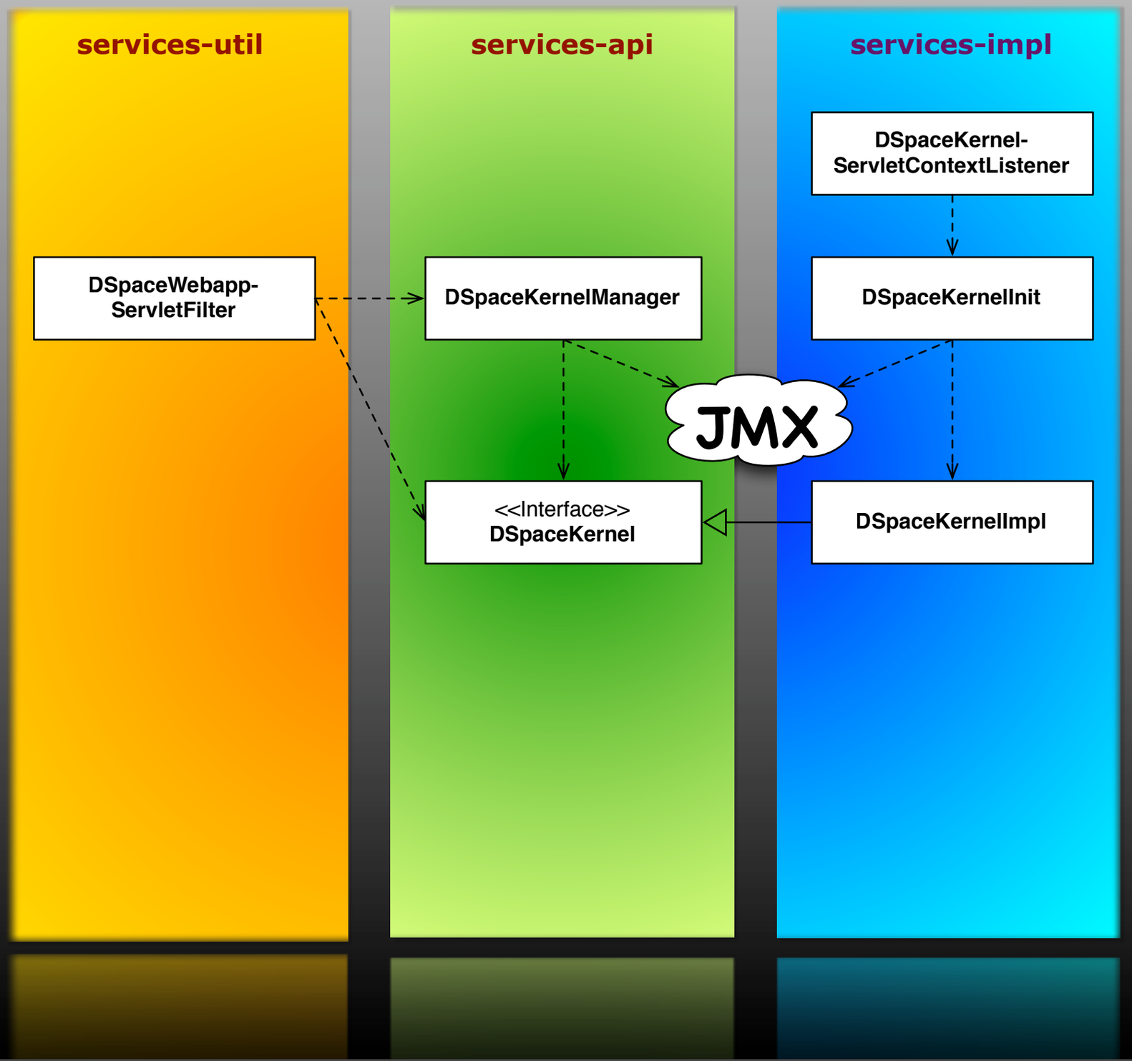

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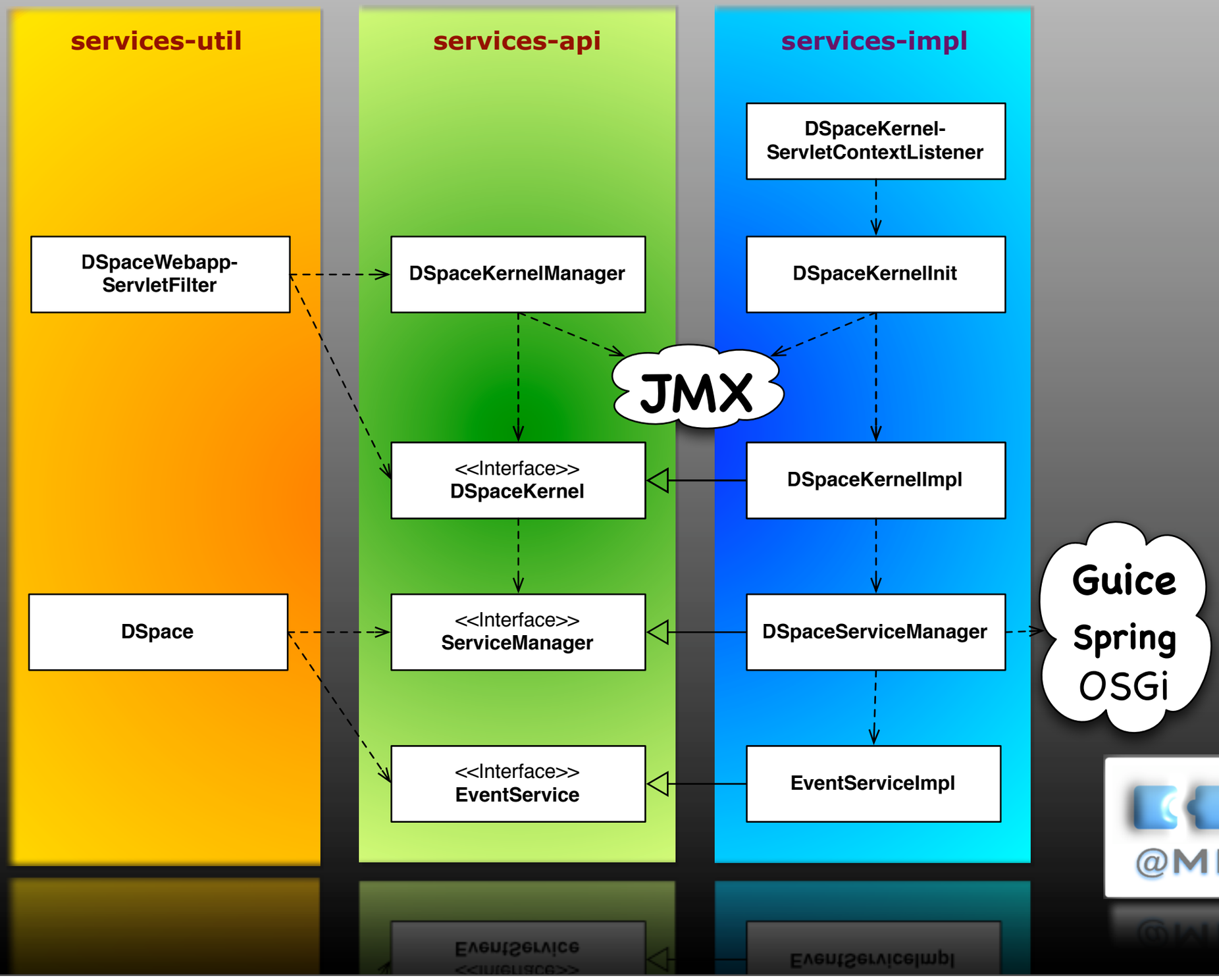

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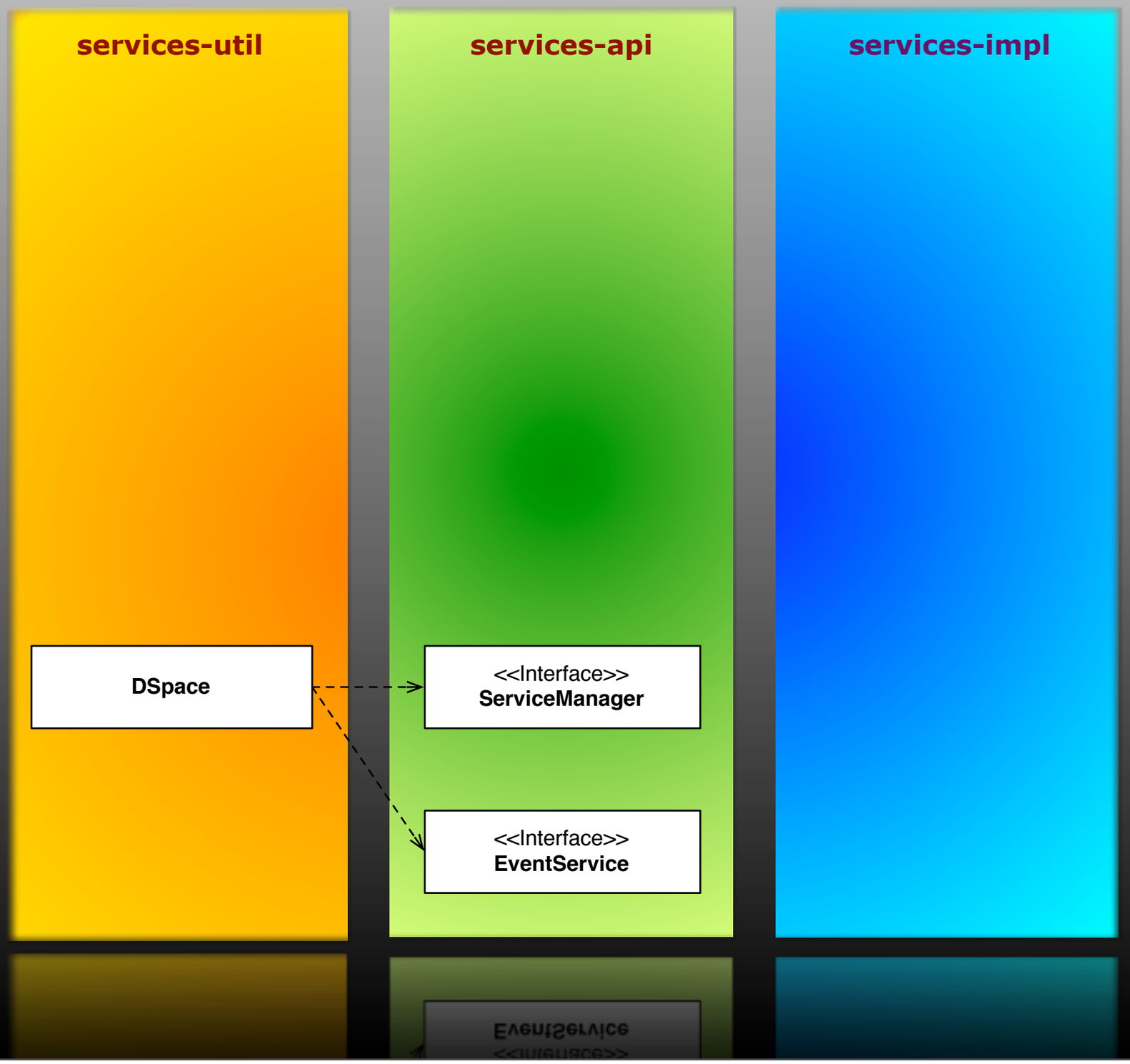


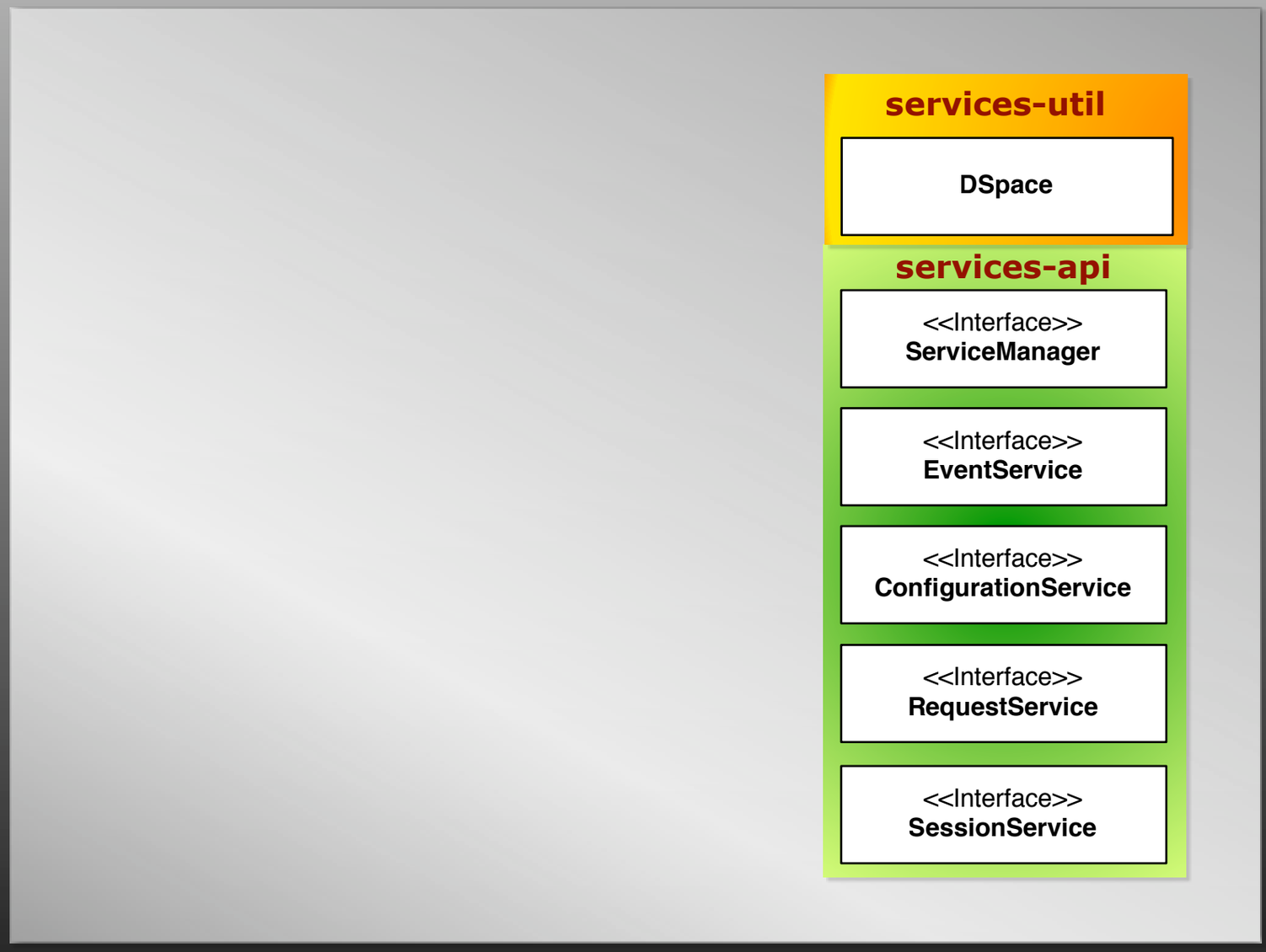
Services: Architecture:


```
/* Instantiate the Utility Class */
DSpace dspace = new DSpace();


/* Access get the Service Manager by convenience method */
ServiceManager manager = dspace.getServiceManager();


/* Or access by convenience method for default services */
EventService service = dspace.getEventService();
```

Services: Default Services



Services: Default Services

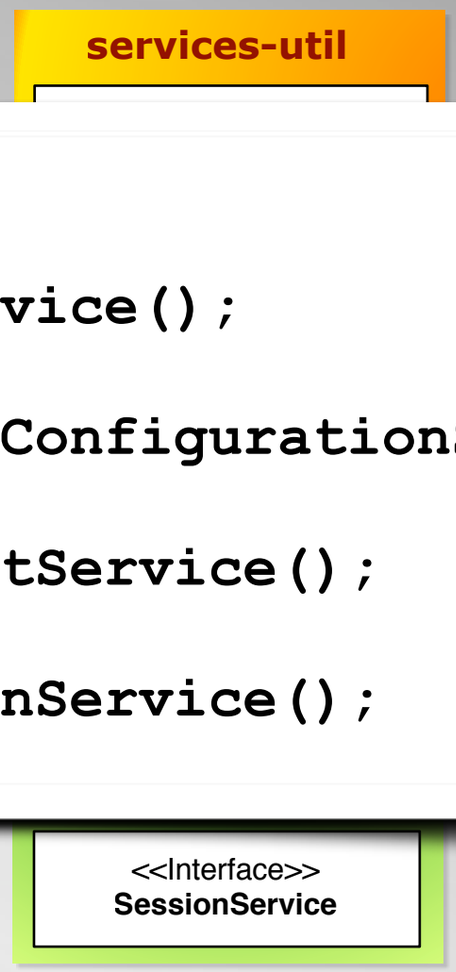
```
DSpace dspace = new DSpace();

EventService es = dspace.getEventService();

ConfigurationService cs = dspace.getConfigurationService();

RequestService rs = dspace.getRequestService();

SessionService ss = dspace.getSessionService();
```



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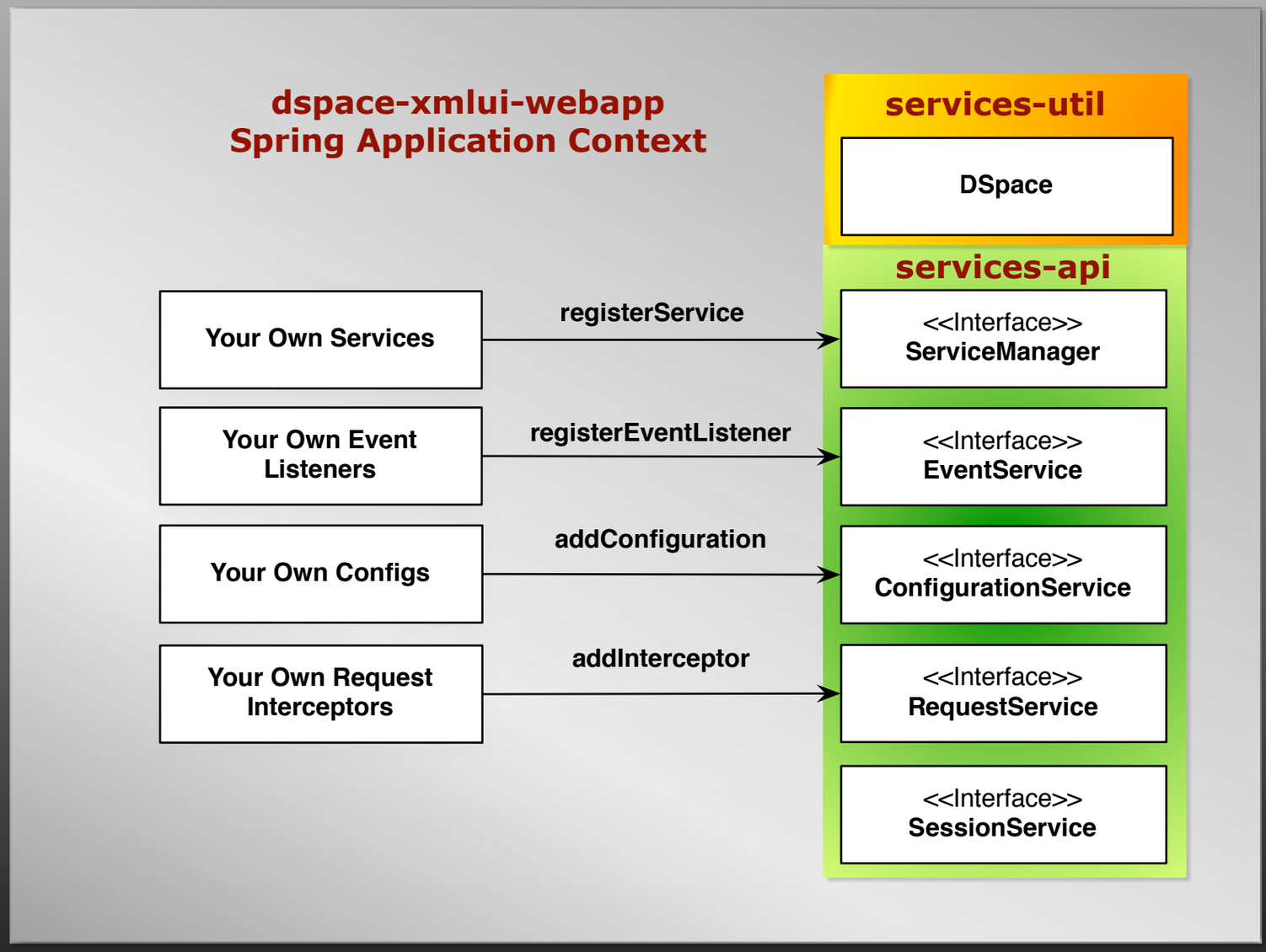
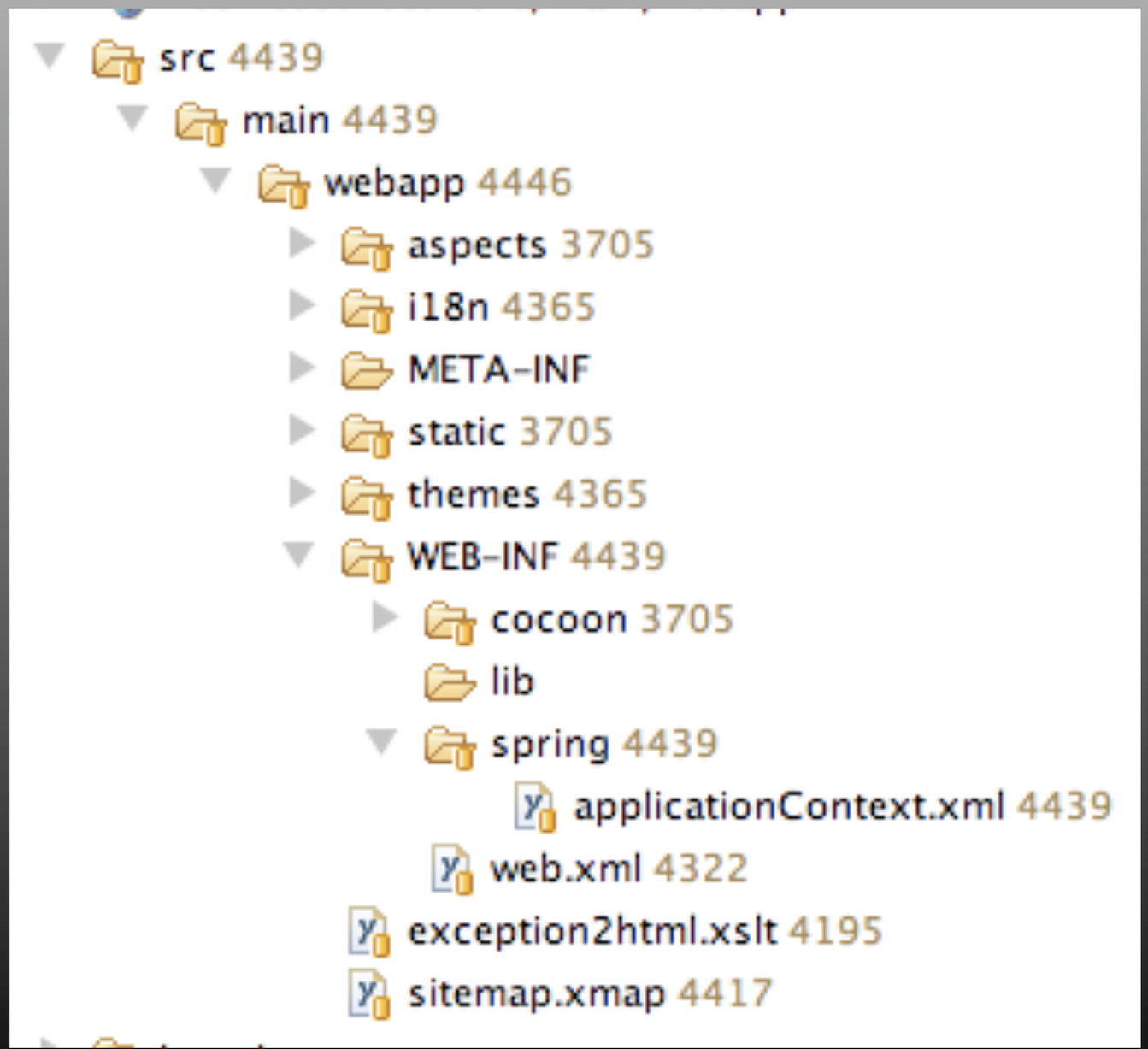


Spring:
Web Application Context



Spring:
Registering Event Listeners

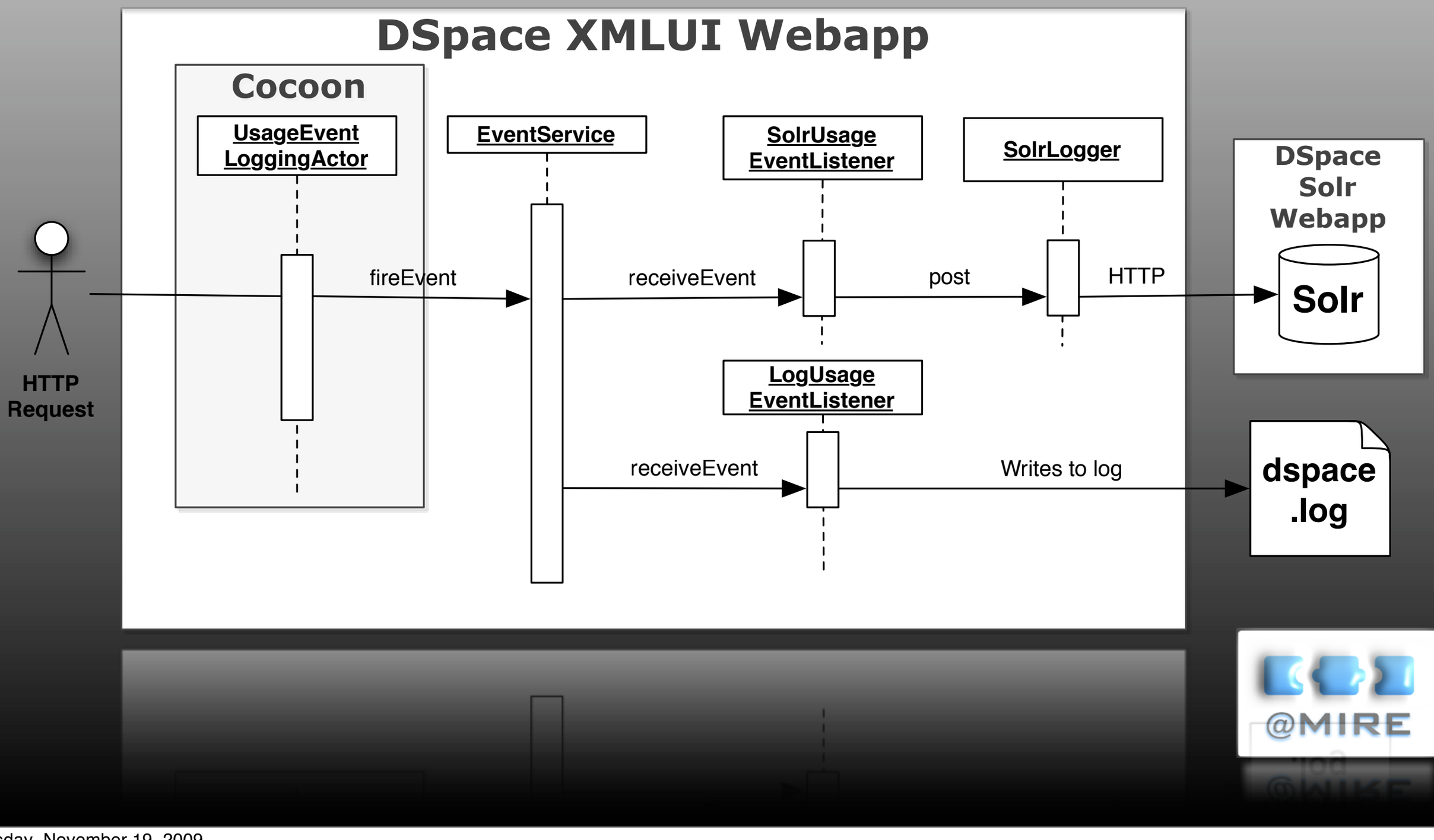
```
<?xml version="1.0" encoding="UTF-8"?>
<beans>

   <bean id="dspace" class="org.dspace.utils.DSpace"/>

<bean id="dspace.eventService" factory-bean="dspace"
     factory-method="getEventService"/>

<bean class="org.my.EventListener">
    <property name="eventService" >
        <ref bean="dspace.eventService"/>
    </property>
</bean>
```

Spring:
Java Analogy


```
DSpace dspace = new DSpace();

EventService service = dspace.getEventService();

MyEventListener listener = new MyEventListener();

service.registerEventListener(listener);
```

DSpace 1.6 Statistics

Our first example of service usage



Services: Firing Events


```
DSpace dspace = new DSpace();

Event event = new UsageEvent(
        UsageEvent.Action.VIEW,
        request,
        context,
        object);

dspace.getEventService().fireEvent(event);
```

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- **SearchService:** Unified search and browse
- **MappingService:** External Identifier Mapping to DSpace objects.

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- Search and Configurable Browse <--------- SearchSevice

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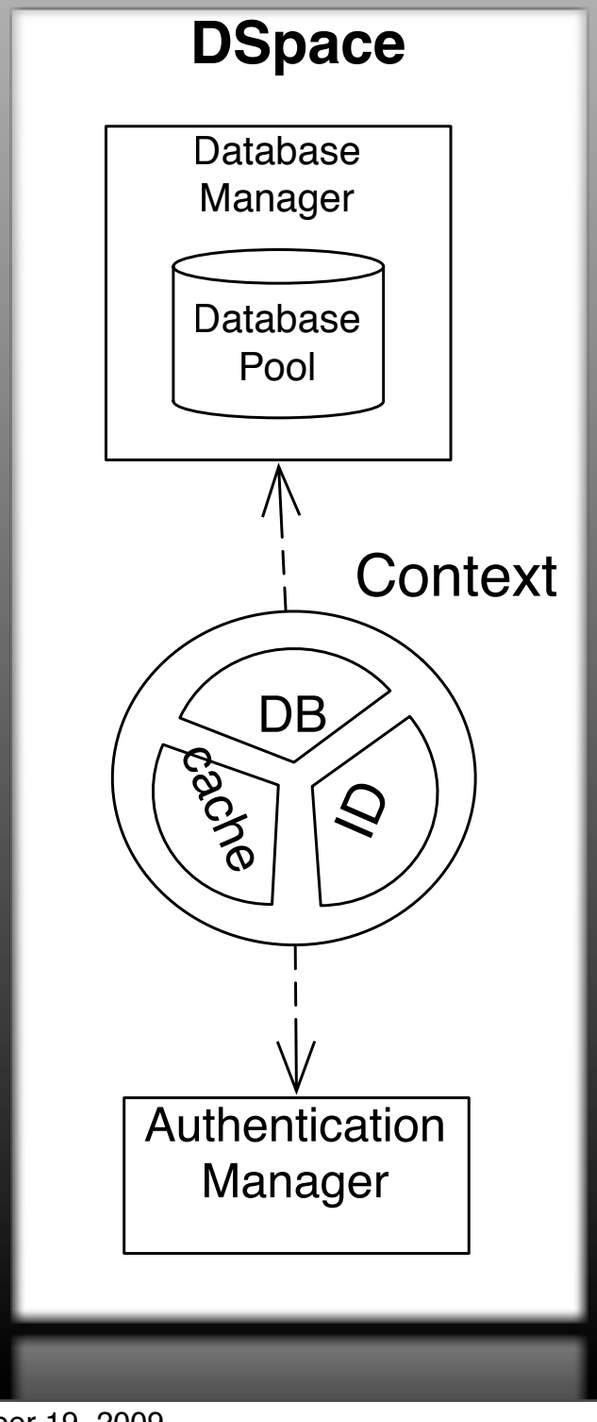
Remove God Objects



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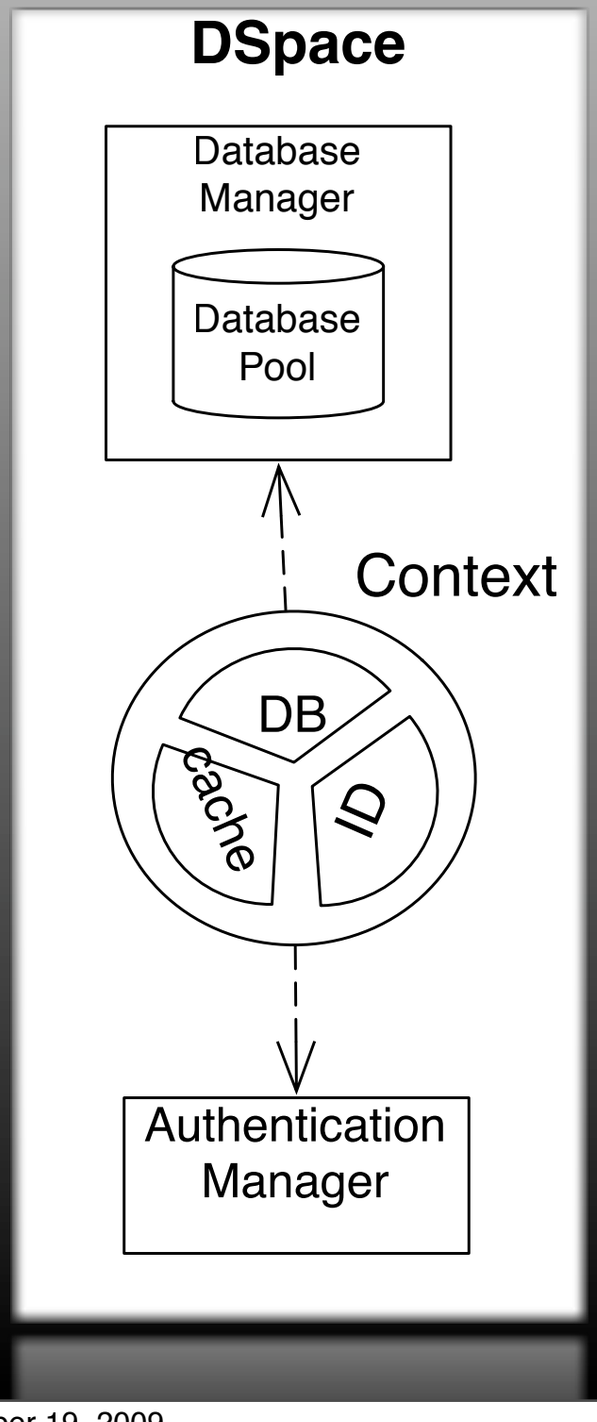

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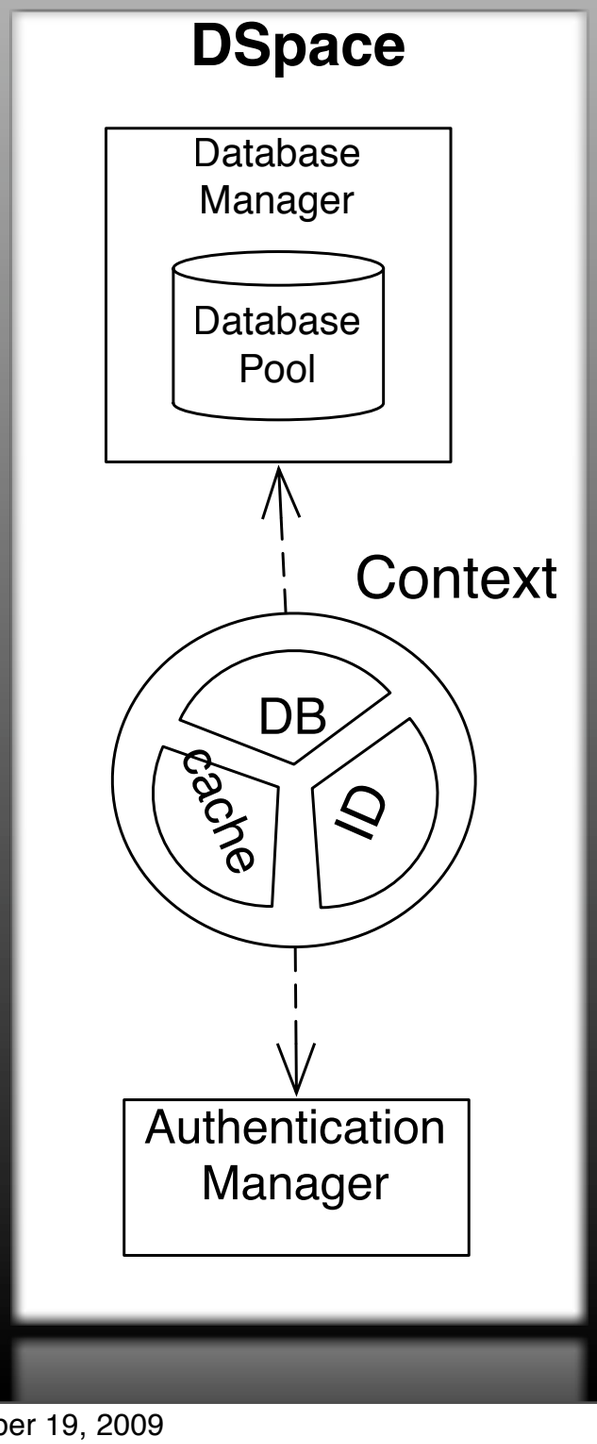

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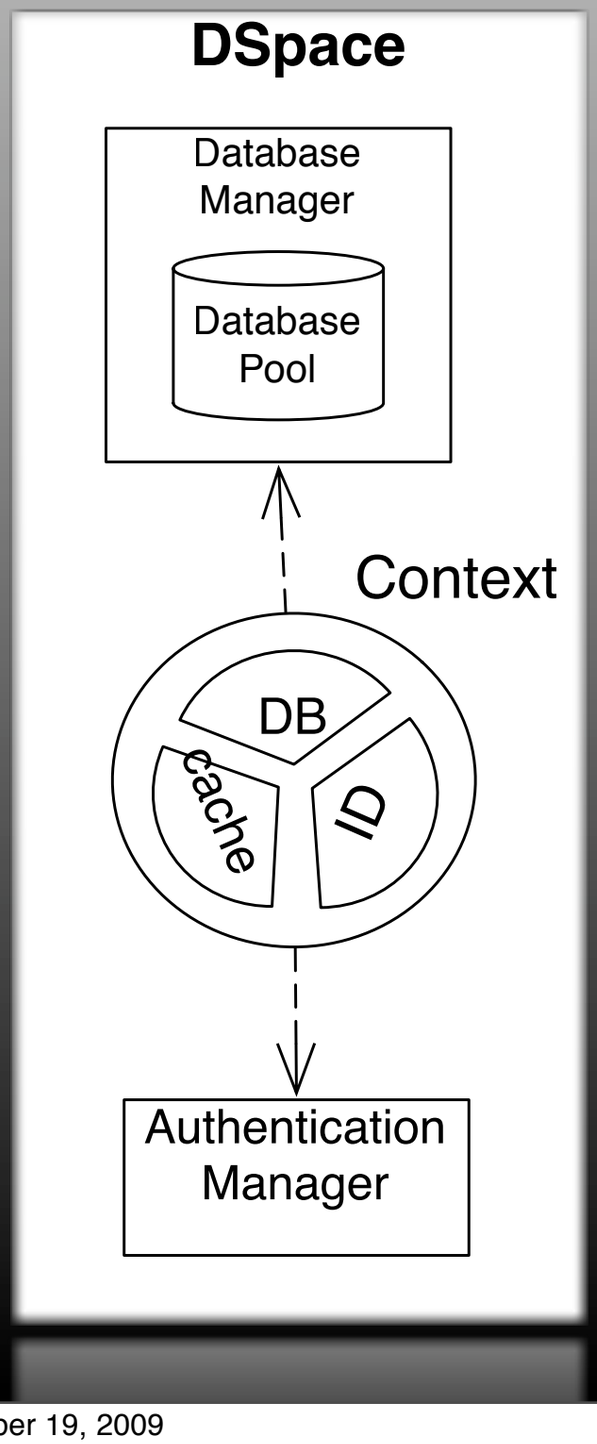

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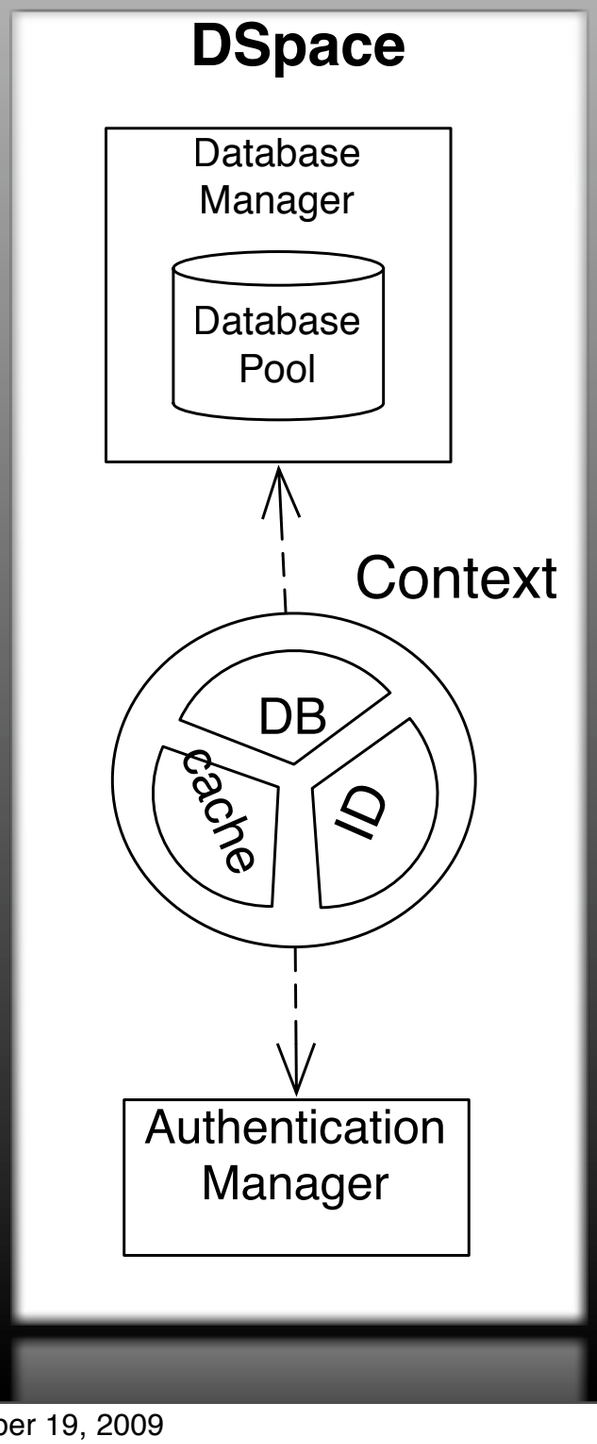

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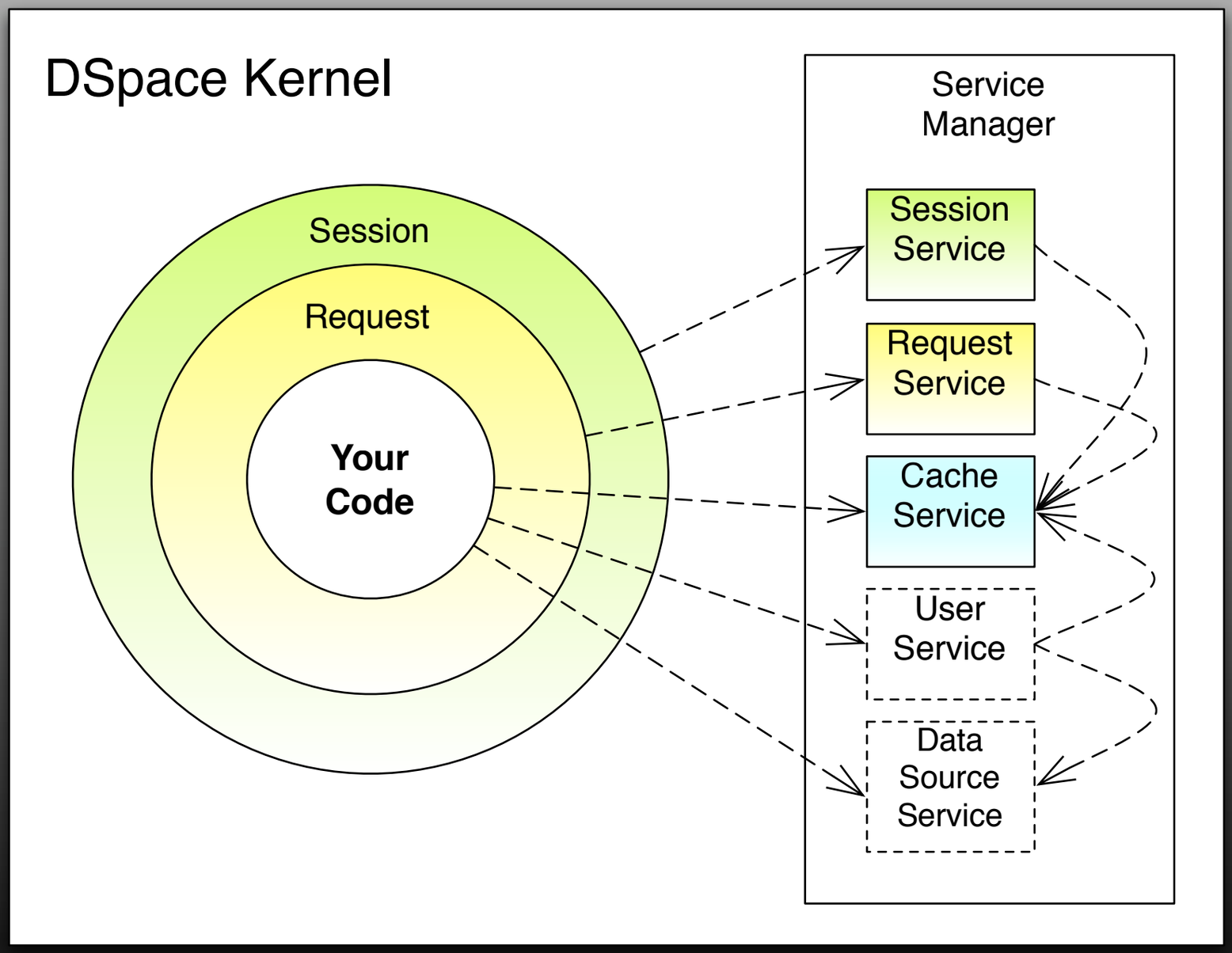
- Gets passed around everywhere
- Represents:
  - State, Identity, Transaction

Proposed Next Steps:

Kernel as “Context Container”



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Liberate the Implementation

- **Remove Static Accessors** allowing for proper API contracts and usage of Extensibility.
- **Decouple Initialization** of “StaticManagers” as Services into either core Spring, Guice or Application startup.
- **Enforce contracts and backward compatability** as a community practice to assure reliable API + Services.

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- Faster when we all **collaborate in migration** activities.
- Could always use a little more **“$support”**

Special Thanks:

Ben Bosman

Graham Triggs

Art Lowel

Kevin Van de velde

Bradley McLean

Aaron Zeckoski

Supporting Organizations:

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