

# Enterprise Application Discovery and Monitoring Management with **ExplorViz**

**Master's Thesis Presentation**

March 21, 2018

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# ➤ Motivation

```
[➔ ~ ps au  
alexanderk  
vaVirtualM  
24m -Dfile  
derkrause/  
dle-launch  
alexanderk  
o --exclud  
java  
➔ ~ kill
```

The image shows a terminal window in the background with a Java command being executed. The command is:

```
1 /Library/Java/JavaVirtualMachines/jdk1.8.0_91.jdk/Contents/Home/bin/java  
-javaagent:/explorviz-discovery-agent/webapps/explorviz-discovery-agent/WEB-INF  
/kieker/kieker-1.14-SNAPSHOT-aspectj.jar -Dkieker.monitoring.configuration=/  
explorviz-discovery-agent/webapps/explorviz-discovery-agent/WEB-INF/  
monitoring-configurations/4/kieker.monitoring.properties  
-Dorg.aspectj.weaver.loadtime.configuration=file:///explorviz-discovery-agent/  
webapps/explorviz-discovery-agent/WEB-INF/monitoring-configurations/4/aop.xml  
-Dkieker.monitoring.skipDefaultAOPConfiguration=true
```

In the foreground, the ExplorViz web application is displayed. The browser address bar shows the path `/Library/Java/JavaVirtualMachines/jdk1.8.0_91.jdk/` and the status "UNREGISTERED". The ExplorViz interface has a navigation bar with "Visualization", "Tutorial", and "Discovery" tabs. The "Visualization" tab is active, showing a "System" view with a single component "KiekerSampleApp" at IP address "192.168.178.20:8089". The interface also includes a "Signed in as admin" status and a "Text" input field on the right.

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```
/Library/Java/JavaVirtualMachines/jdk1.8.0_91.jdk/ UNREGISTERED  
< > /Library/Java/JavaVirtualMachines/jdk1.8.0_91.jdk/  
1 /Library/Java/JavaVirtualMachines/jdk1.8.0_91.jdk/Contents/Home/bin/java  
-javaagent:/explorviz-discovery-agent/webapps/explorviz-discovery-agent/WEB-INF  
/kieker/kieker-1.14-SNAPSHOT-aspectj.jar -Dkieker.monitoring.configuration=/  
explorviz-discovery-agent/webapps/explorviz-discovery-agent/WEB-INF/  
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-Dkieker.monitoring.skipDefaultAOPConfiguration=true
```

ExplorViz

Visualization

Tutorial

## ADAMMS

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Signed in as admin

↗

# (Application Discovery and Monitoring Management System)

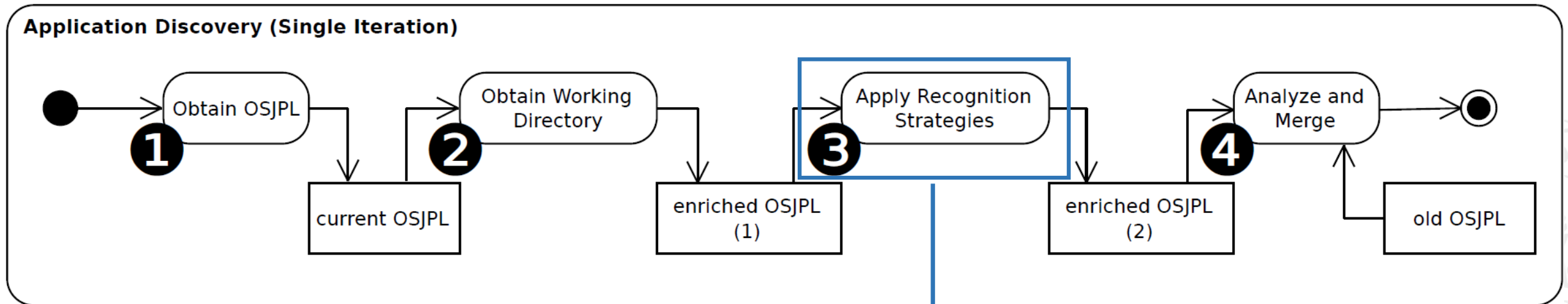
System

KiekerSampleApp ?

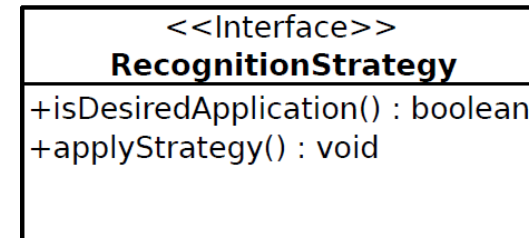
192.168.178.20:8089

⏏ ||

# ➤ Design – Application Discovery

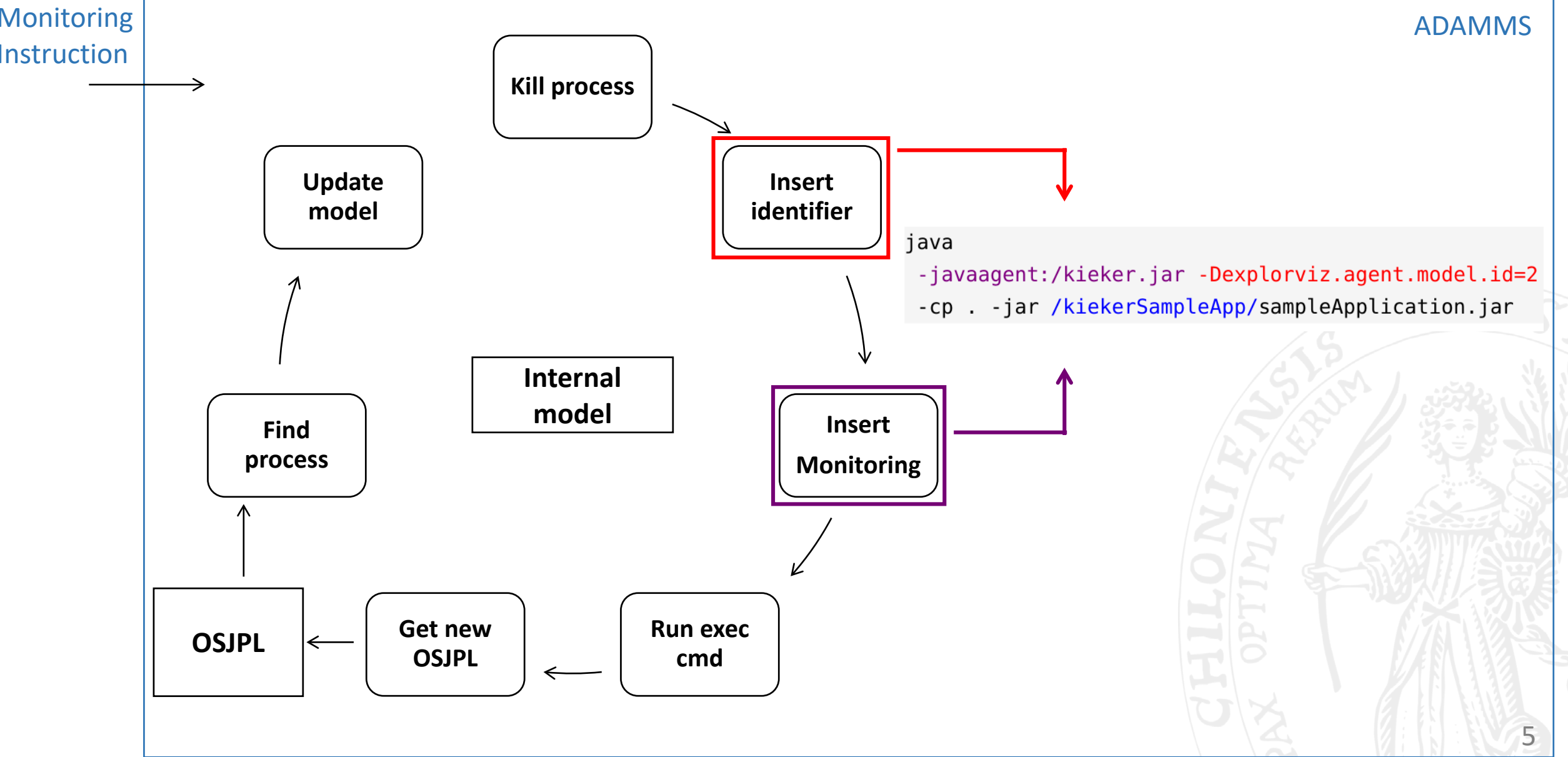


OSJPL – Operating System Java Process List

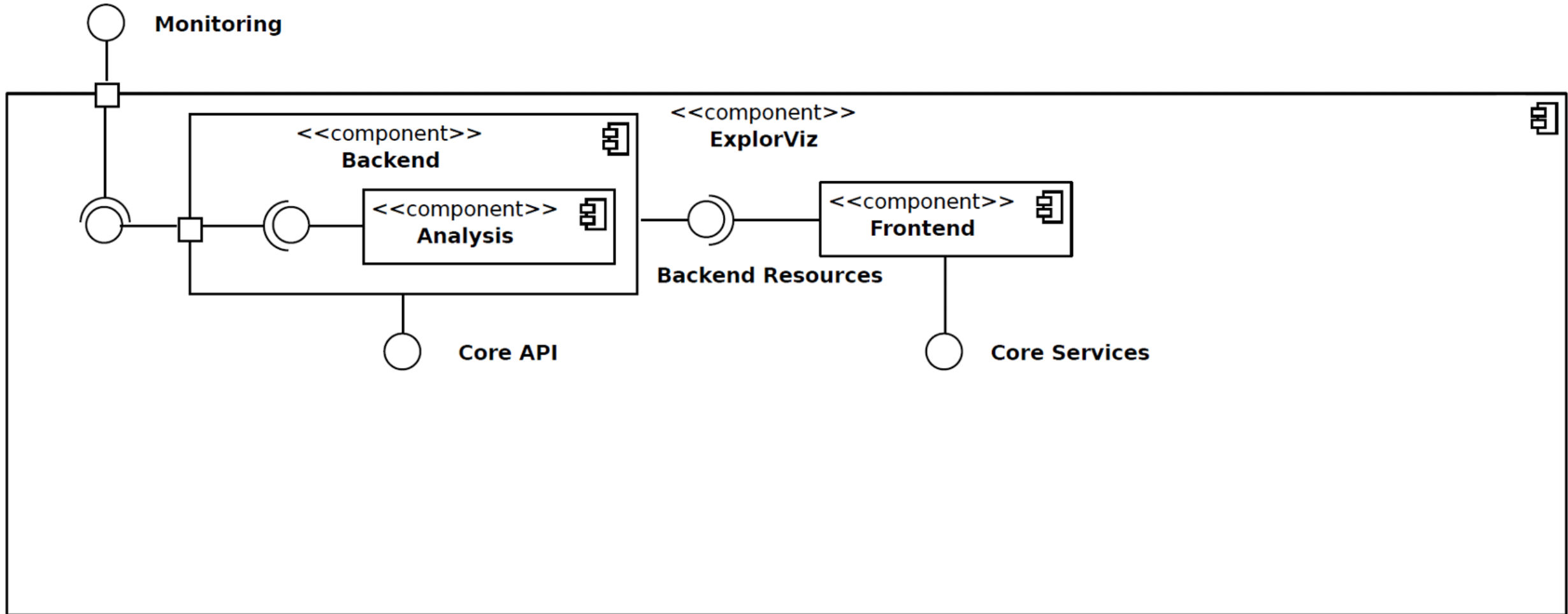


# ➤ Design – Monitoring Management

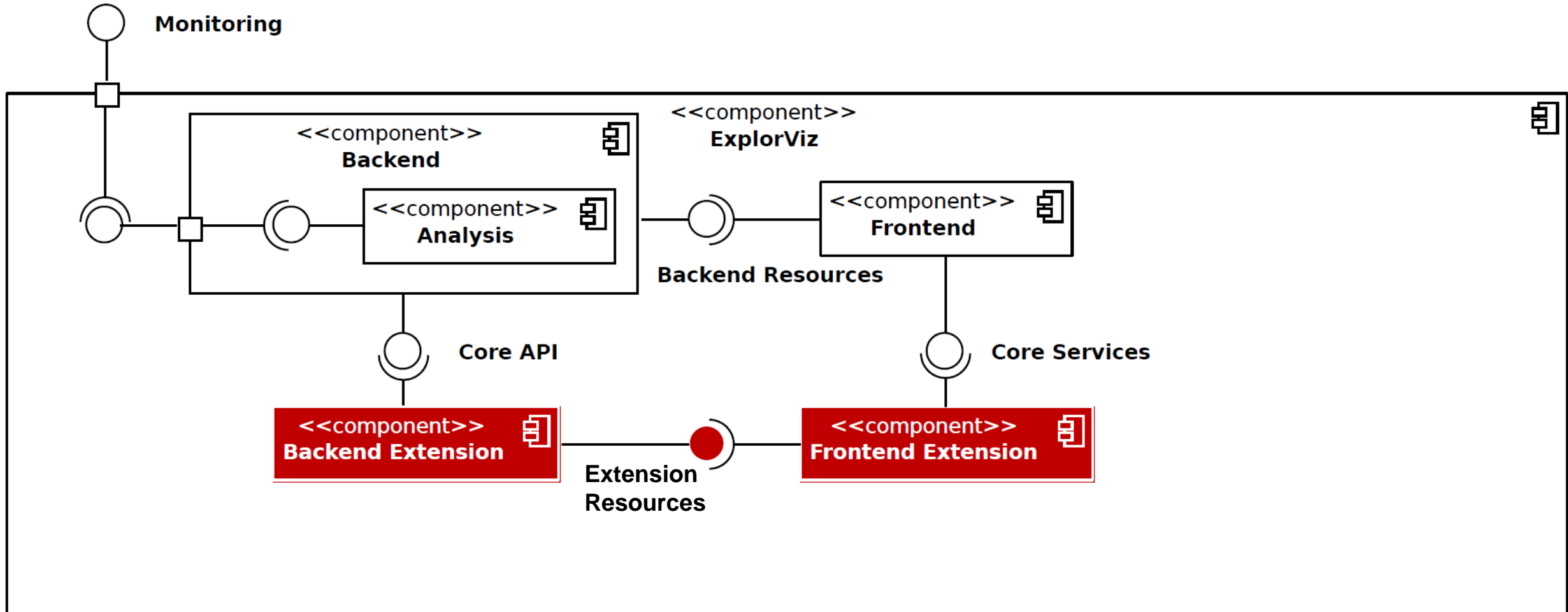
ADAMMS



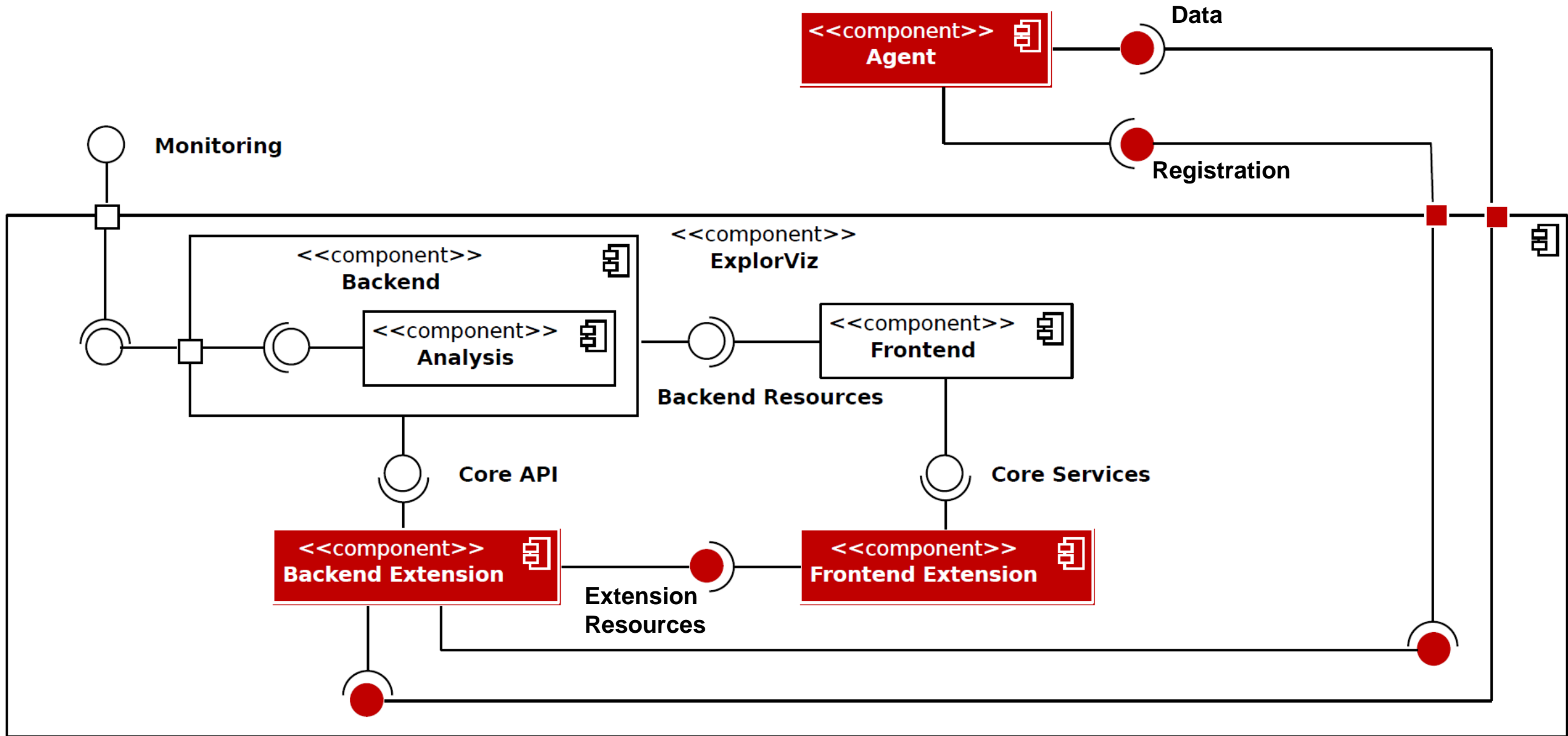
## ➤ Architecture – Component Design



## ➤ Architecture – Component Design

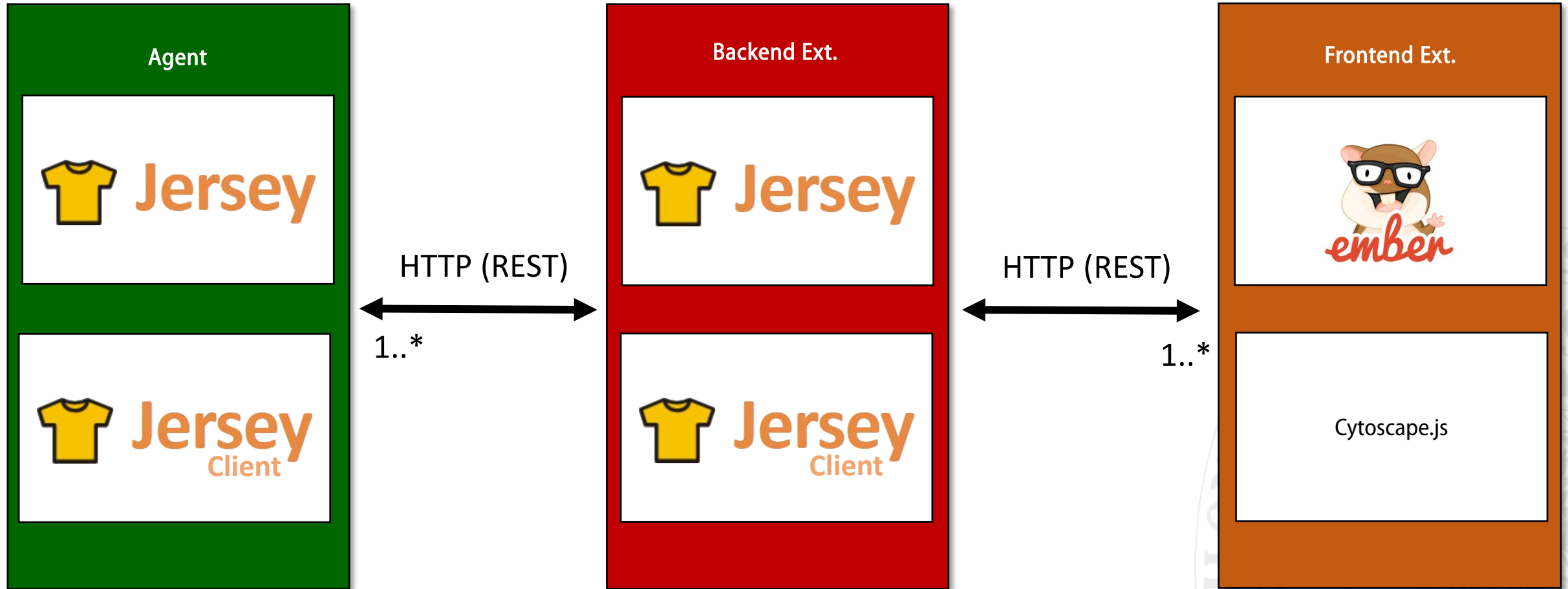


## ➤ Architecture – Component Design

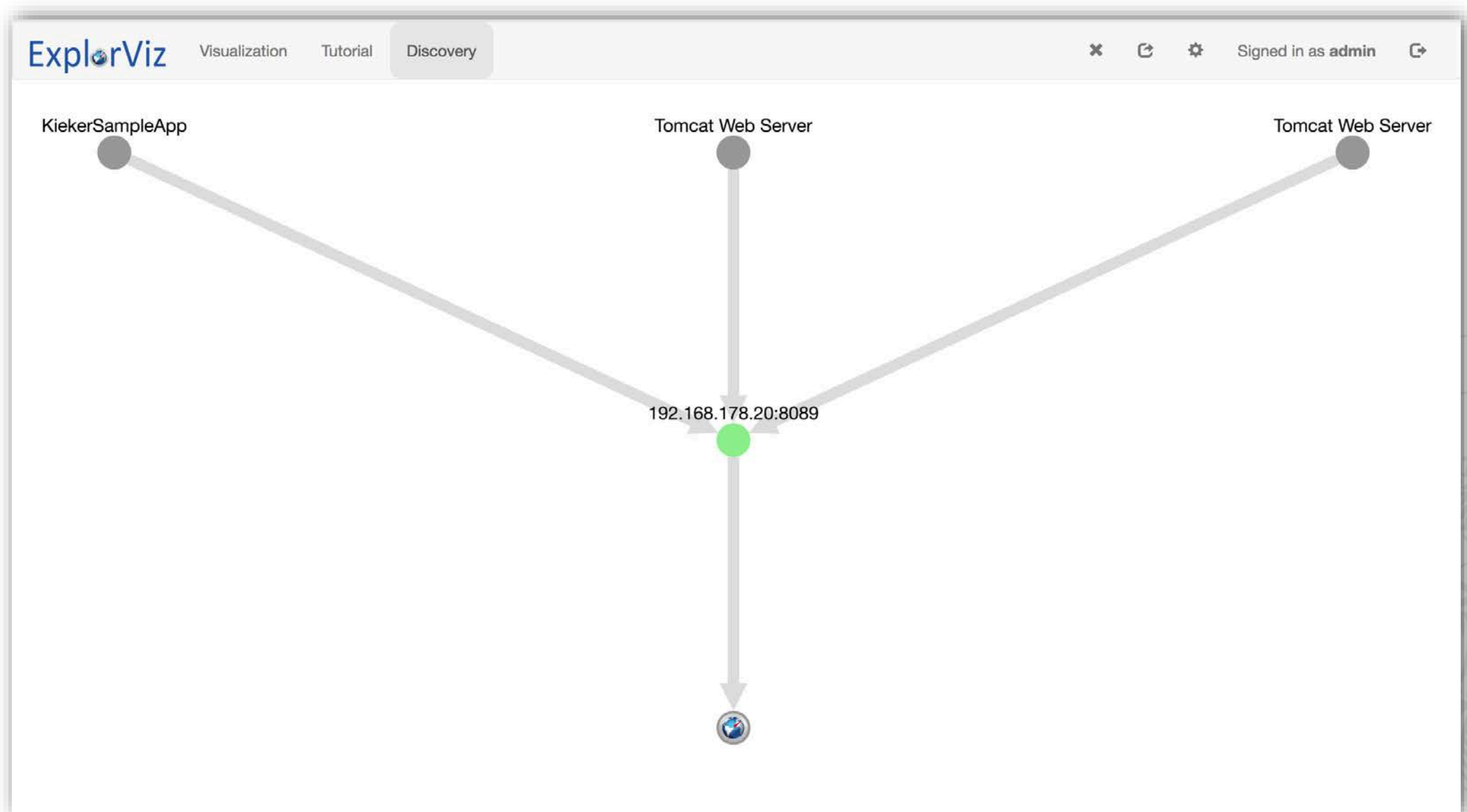




## ➤ Implementation – Software Stack



## ➤ Implementation – Overview Page



# ➤ Implementation – Overview Page

The screenshot displays the ExplorViz web application interface. The browser address bar shows the URL `192.168.48.250:8090/explorviz-frontend/discovery`. The page has a navigation bar with links for Visualization, Tutorial, and Discovery. The main content area is titled "Tomcat Web Server - General Information" and "Tomcat Web Server - Execution Information". It contains a table with attributes and values, and several text input fields for configuration. At the bottom, there are buttons for Save, Restart, and Stop, and a footer with contact information and version details.

ExplorViz Visualization Tutorial Discovery Signed in as admin

### Tomcat Web Server - General Information

### Tomcat Web Server - Execution Information

Attribute	Value
Is stopped? ⓘ	false
Working Directory ⓘ	/
User Execution Command ⓘ	Use-OS-Exec-CMD
Agend Execution Command ⓘ	
OS (initial) Execution Command ⓘ	/docker-java-home/bin/java -Djava.util.logging.config.file=/apache-tomcat/conf/logging.properties -Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager -Djdk.tls.ephemeralDHKeySize=2048 -Djava.protocol.handler.pkgs=org.apache.catalina.webresources -Dignore.endorsed.dirs= -classpath /apache-tomcat/bin/bootstrap.jar/apache-tomcat/bin/tomcat-juli.jar -Dcatalina.base=/apache-tomcat -Dcatalina.home=/apache-tomcat -Djava.io.tmpdir=/apache-tomcat/temp org.apache.catalina.startup.Bootstrap start

Insert recommendation

### Tomcat Web Server - Monitoring Information

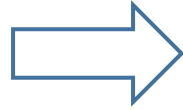
Save Restart Stop

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## ➤ Evaluation



Usability Evaluation



Setup



Results & Discussion

### Goals

- Overall usability regarding setup and operation
- Realization of usability characteristics

### Experiment

- Proband solved tasks
- Conductor notated issues


### Structural Interview

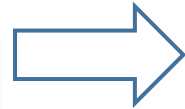
- Perceived usability
- Enhancements

# ➤ Evaluation

 Usability Evaluation

 Setup

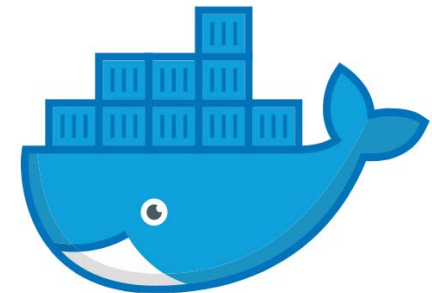
 Results & Discussion



Setup		Specification
Name	Quantity	
node2, node3	2	CPU: 2x Intel Xeon E5-2650 (2.8GHz, 8 cores) Ram: 128 GB OS: Debian
lp1	1	CPU: Intel Core i7-6700HQ Ram: 32 GB OS: Windows 10
lp2	1	CPU: Intel Core i5-4278U Ram: 16 GB OS: macOS High Sierra

## Software Landscape

- 9 running applications
  - Tomcat with JPetStore 6
  - kiekerSampleApplication<sup>1</sup>



<sup>1</sup> <https://github.com/czirkelbach/kiekerSampleApplication>


## ➤ Evaluation

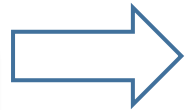
 Usability Evaluation



 Setup



 Results & Discussion

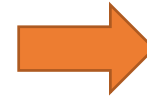


### Learnability

- Setup requirements are manageable
- Monitoring Management is easily accessible...
- ... but requires knowledge about program internals

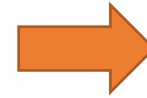
## ➤ Conclusions & Future Work

Observations indicate good usability



More research required

Simple centralized monitoring management

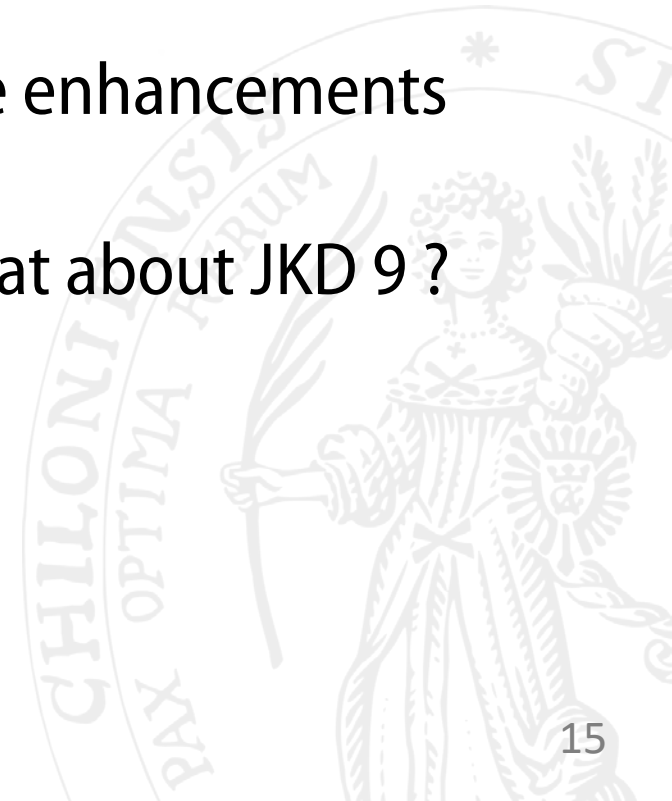


Feature enhancements

Application Discovery method works



But what about JKD 9 ?



# ➤ Live Demo

