Working with Java

Sander Mak
Java Champion

@Sander_Mak

Java's Various Uses

Java's Various Uses

Desktop

Java's Various Uses

Desktop

Enterprise applications

Java's Various Uses

Desktop

Enterprise applications

Cloud services

Java's Various Uses

Desktop

Enterprise applications

(Android development)

Cloud services

Java's Various Uses

Desktop

Enterprise applications

(Android development)

Kotlin

Cloud services

Java's Various Uses

- Desktop
- Enterprise applications
- Cloud services

Language features

Desktop Java Development

Desktop Java Development

Swing

Desktop Java Development

Swing

Pure Java-based UI controls

Desktop Java Development

Swing

Pure Java-based UI controls

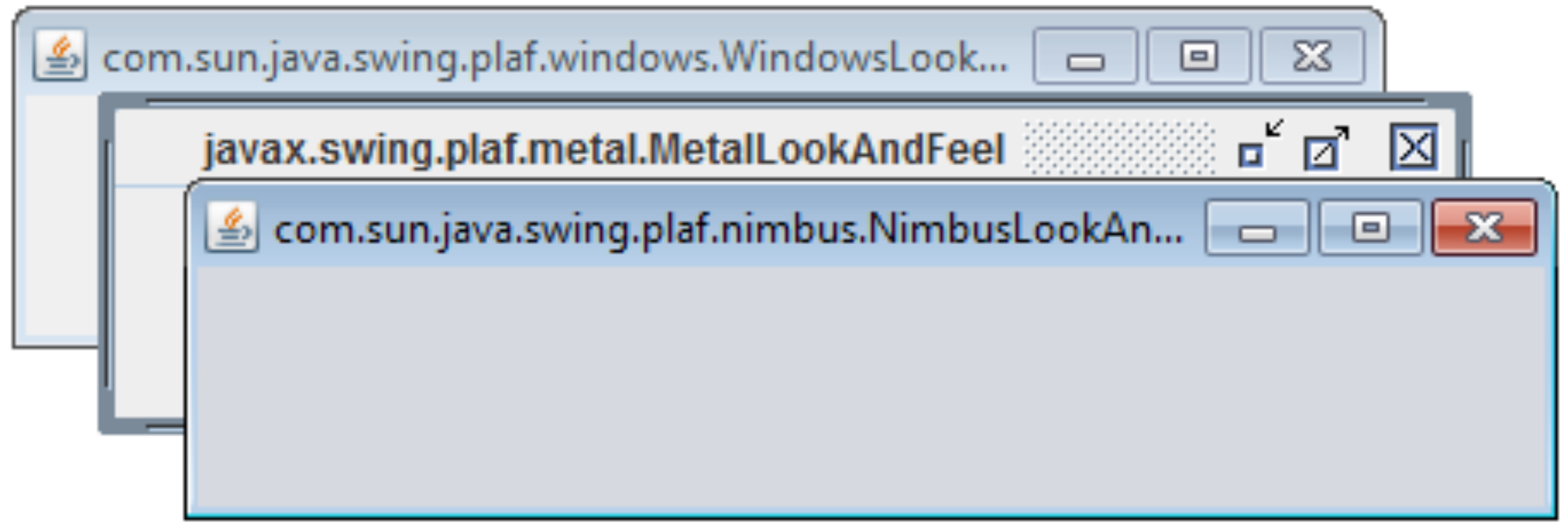
Cross-platform look & feels

Desktop Java Development

Swing

Pure Java-based UI controls

Cross-platform look & feels

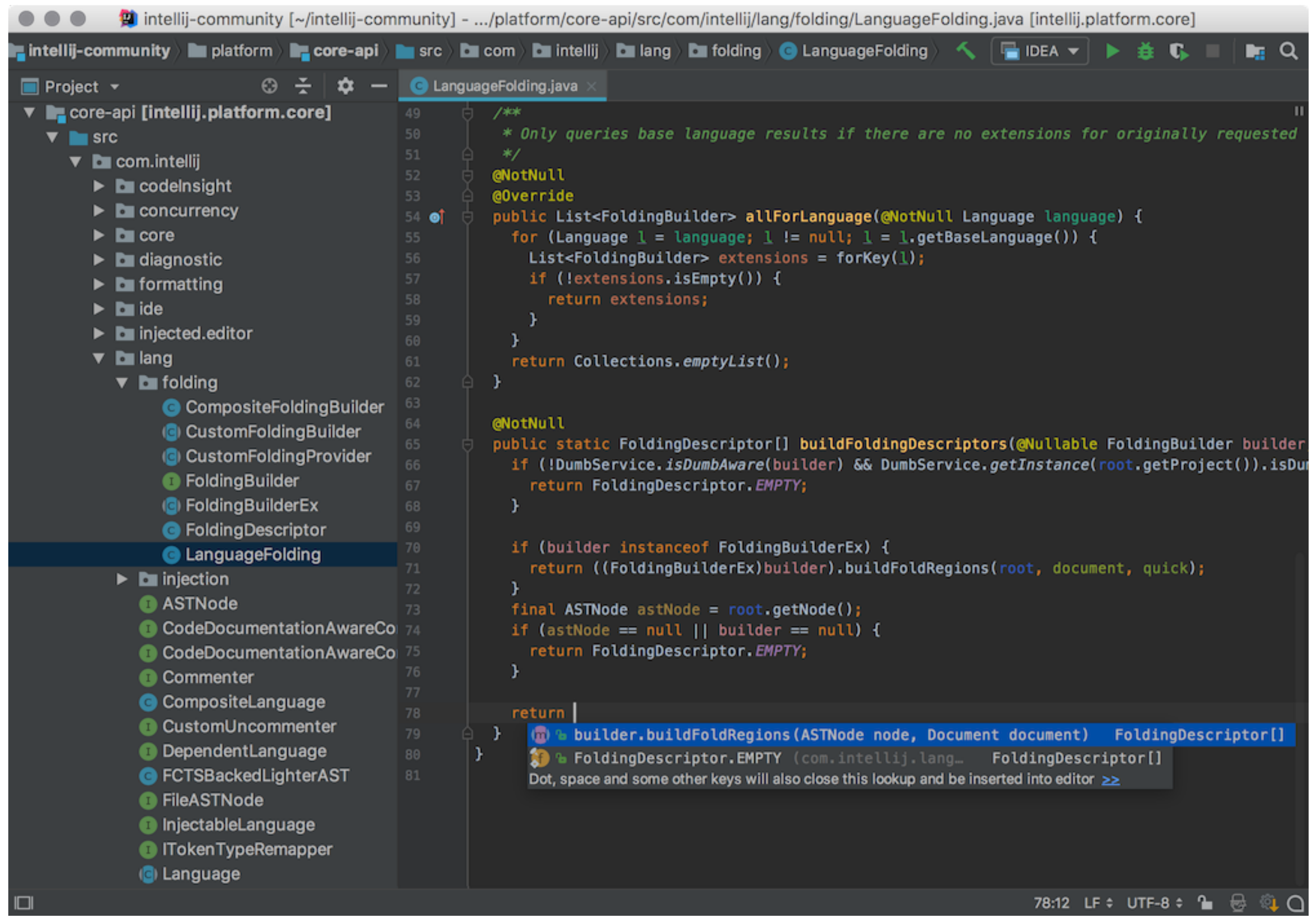

com.sun.java.swing.plaf.windows.WindowsLook...
javax.swing.plaf.metal.MetalLookAndFeel
com.sun.java.swing.plaf.nimbus.NimbusLookAn...

Desktop Java Development

Swing

Pure Java-based UI controls

Cross-platform look & feels



```
/**
 * Only queries base language results if there are no extensions for originally requested
 */
@NotNull
@Override
public List<FoldingBuilder> allForLanguage(@NotNull Language language) {
  for (Language l = language; l != null; l = l.getBaseLanguage()) {
    List<FoldingBuilder> extensions = forKey(l);
    if (!extensions.isEmpty()) {
      return extensions;
    }
  }
  return Collections.emptyList();
}

@NotNull
public static FoldingDescriptor[] buildFoldingDescriptors(@Nullable FoldingBuilder builder
  if (!DumbService.isDumbAware(builder) && DumbService.getInstance(root.getProject()).isDu
    return FoldingDescriptor.EMPTY;
  }

  if (builder instanceof FoldingBuilderEx) {
    return ((FoldingBuilderEx)builder).buildFoldRegions(root, document, quick);
  }
  final ASTNode astNode = root.getNode();
  if (astNode == null || builder == null) {
    return FoldingDescriptor.EMPTY;
  }

  return 
}    builder.buildFoldRegions(ASTNode node, Document document)   FoldingDescriptor[]
}    FoldingDescriptor.EMPTY (com.intellij.lang…   FoldingDescriptor[]
     Dot, space and some other keys will also close this lookup and be inserted into editor >>
```

IntelliJ IDEA

JavaFX

JavaFX

FXML

JavaFX

FXML

Advanced controls

JavaFX

FXML

Advanced controls

Animations & 3D graphics

JavaFX

FXML

Advanced controls

Animations & 3D graphics

Skinnable using CSS

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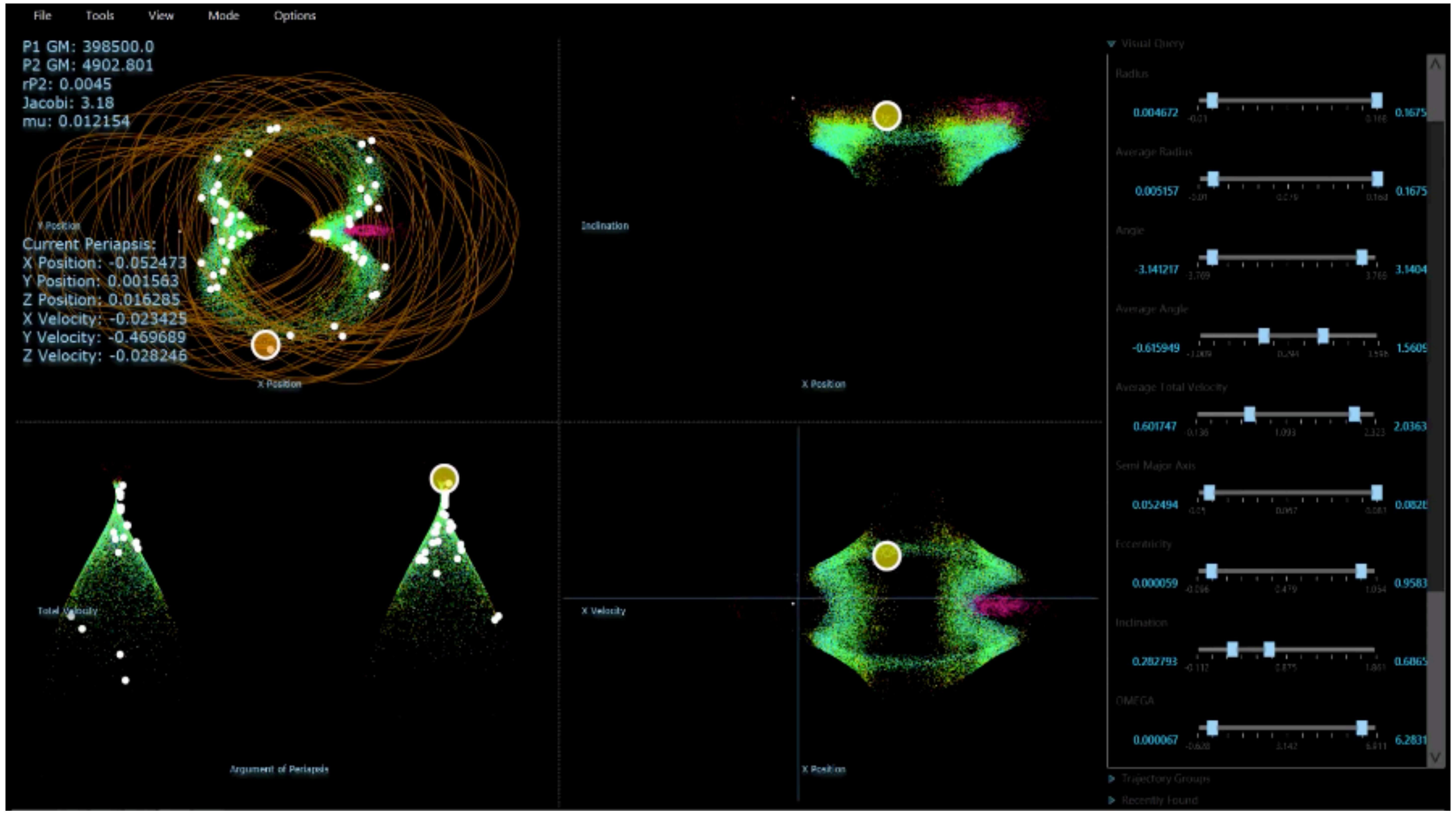
Skinnable using CSS



P1 GM: 398500.0
P2 GM: 4902.801
rP2: 0.0045
Jacobi: 3.18
mu: 0.012154

Current Periapsis:
X Position: -0.052473
Y Position: 0.001563
Z Position: 0.016285
X Velocity: -0.023425
Y Velocity: -0.469689
Z Velocity: -0.028246

Radius	0.004672	0.1675
Average Radius	0.005157	0.1675
Angle	-3.141217	3.1404
Average Angle	-0.615949	1.5609
Average Total Velocity	0.601747	2.0363
Semi Major Axis	0.052494	0.0828
Eccentricity	0.000059	0.9583
Inclination	0.282793	0.6065
OMEGA	0.000067	6.2831

Deep Space Trajectory Explorer

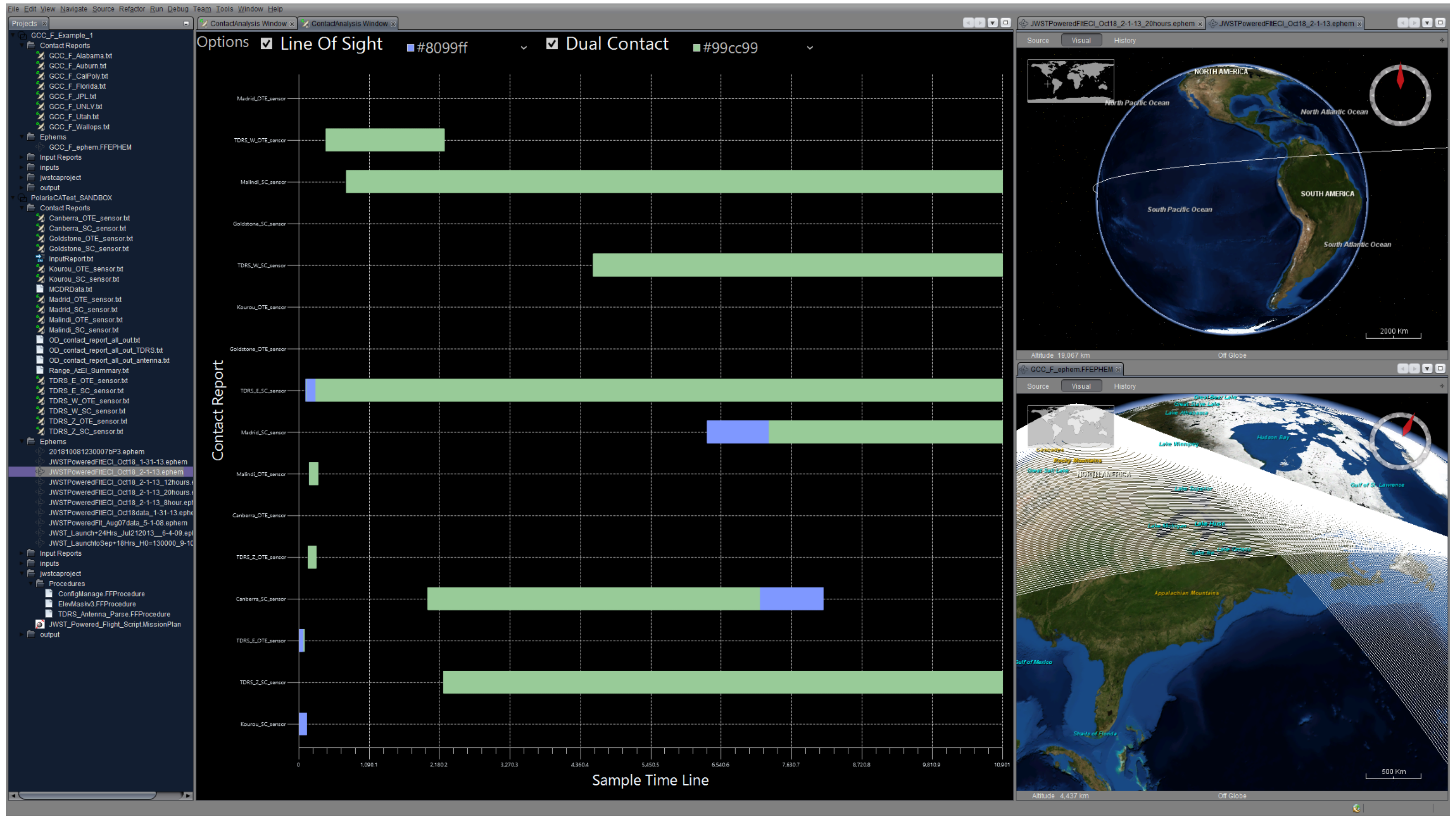
JavaFX

FXML

Advanced controls

Animations & 3D graphics

Skinnable using CSS



James Webb Space Telescope Flight Dynamics Ground System

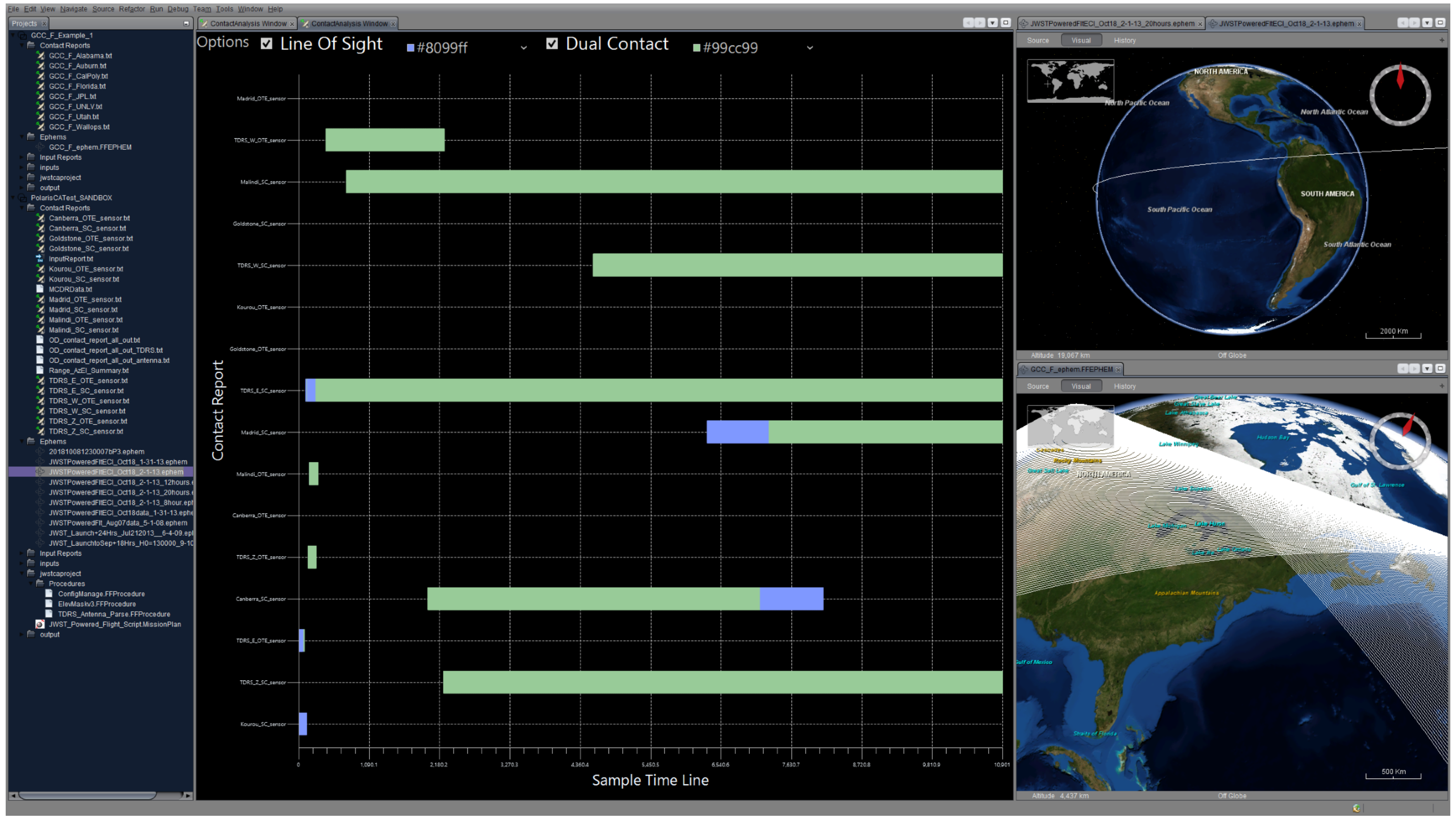
JavaFX

FXML

Advanced controls

Animations & 3D graphics

Skinnable using CSS



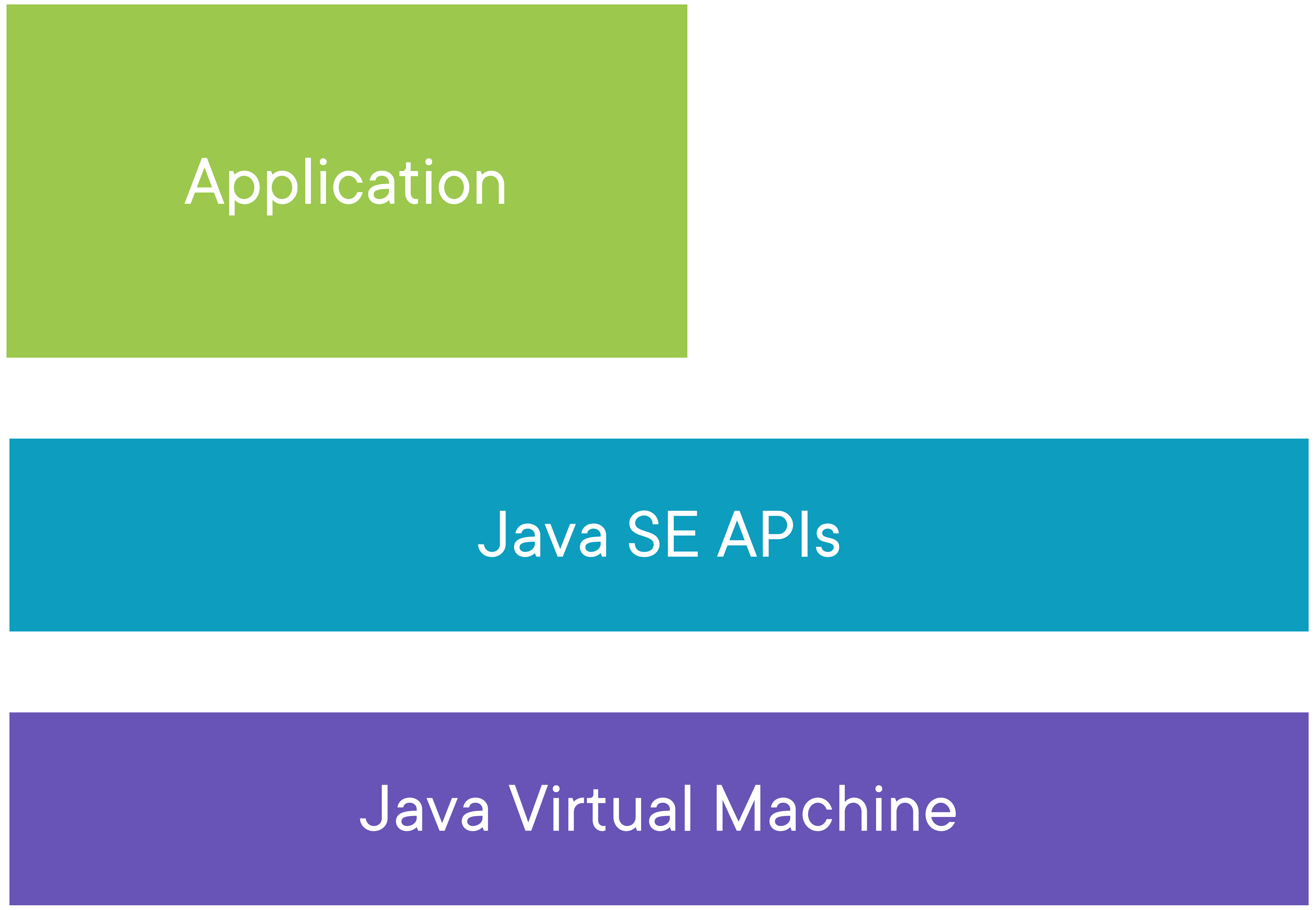
James Webb Space Telescope Flight Dynamics Ground System

OpenJFX as of Java 11

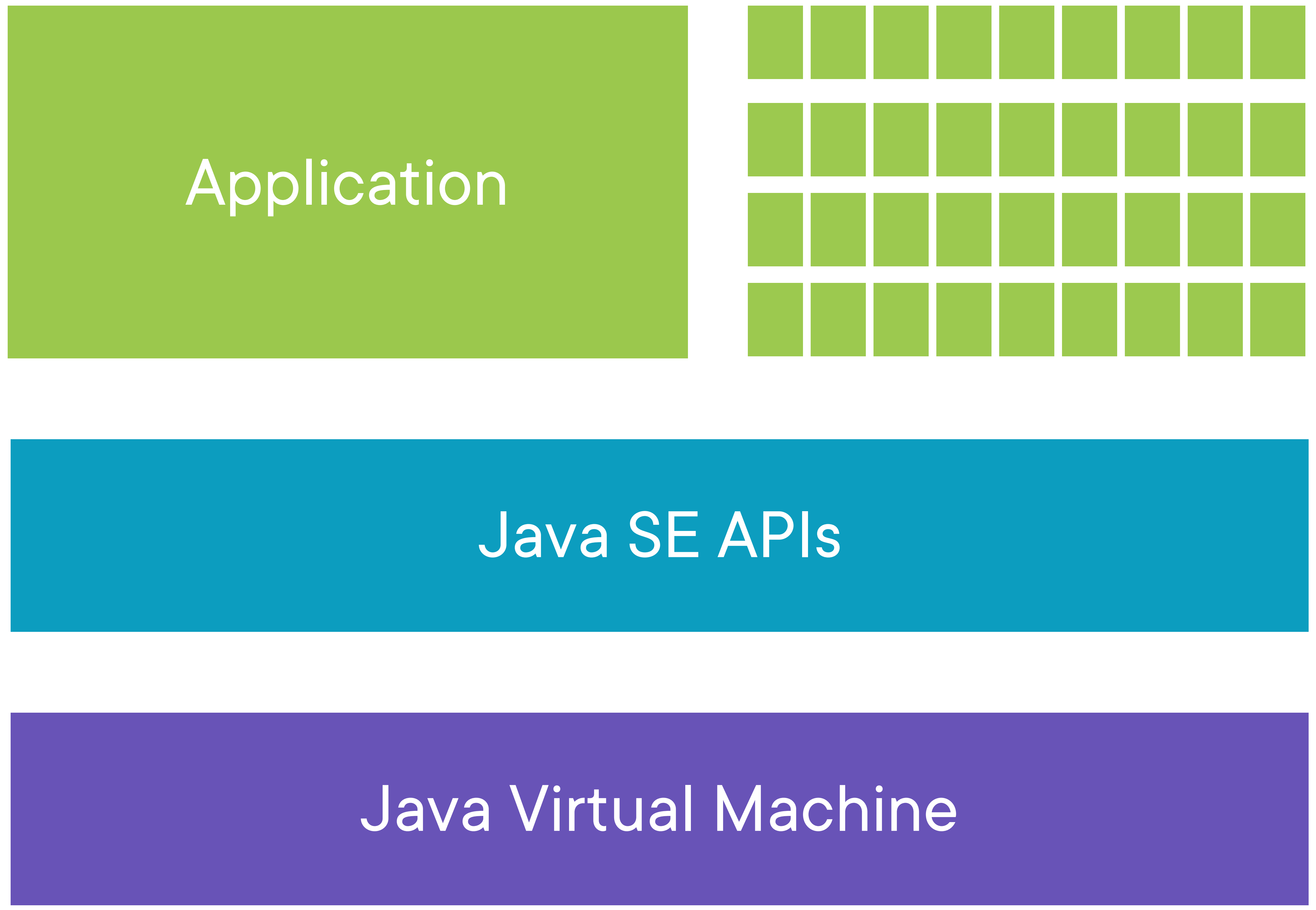
Enterprise Java

Enterprise Java

Enterprise Java



Enterprise Java

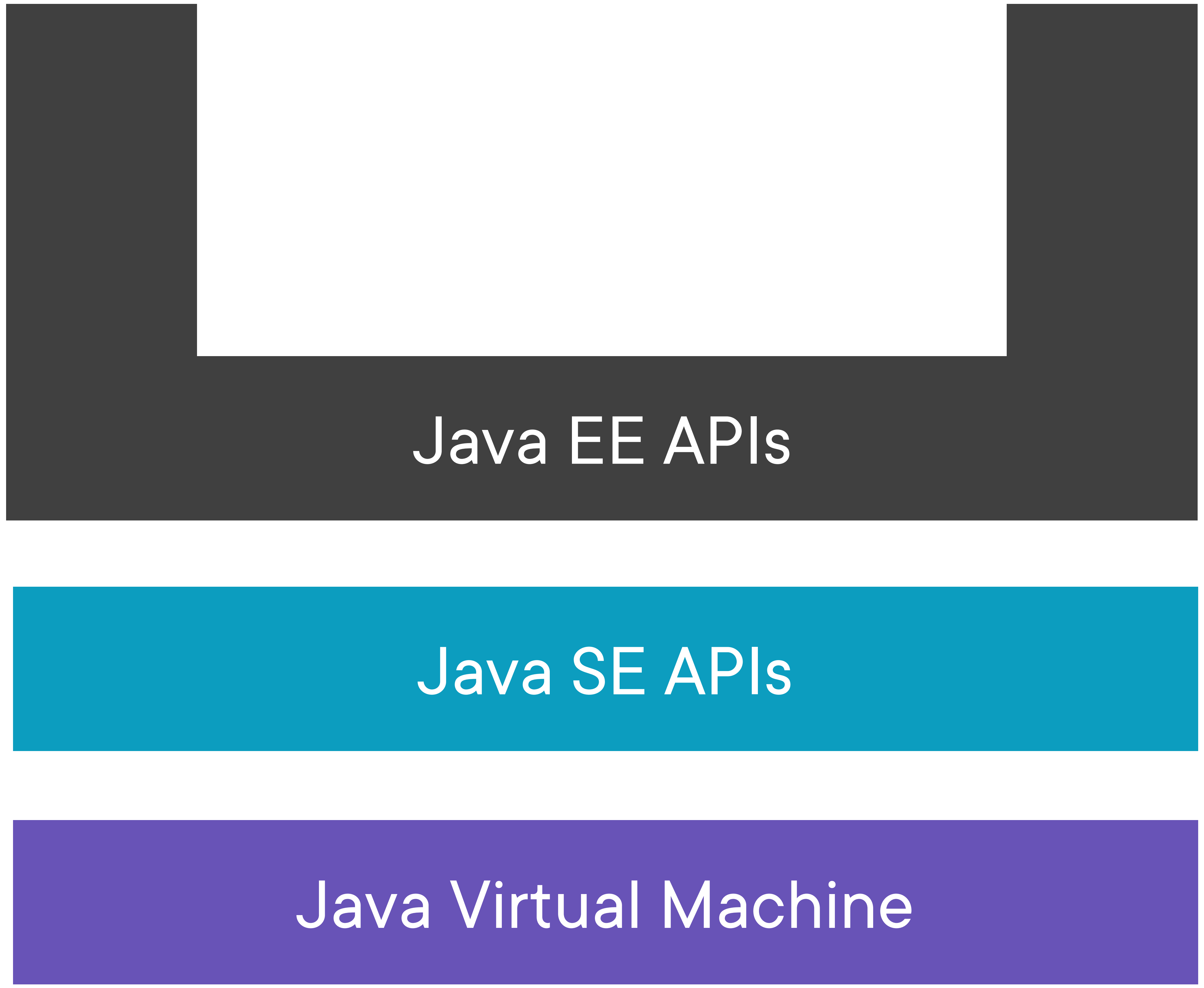


Java EE

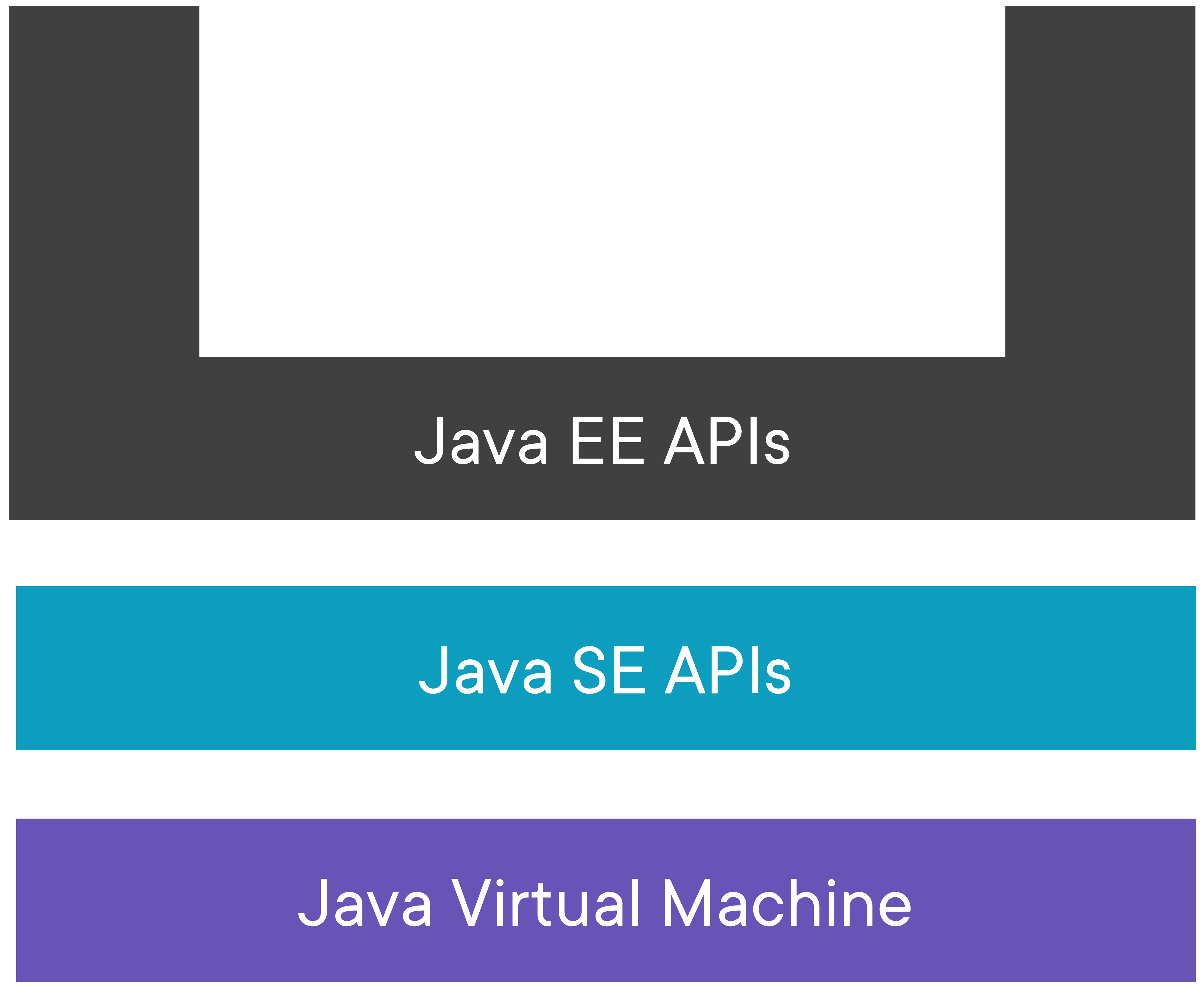
Java EE

Java Enterprise Edition

Java EE

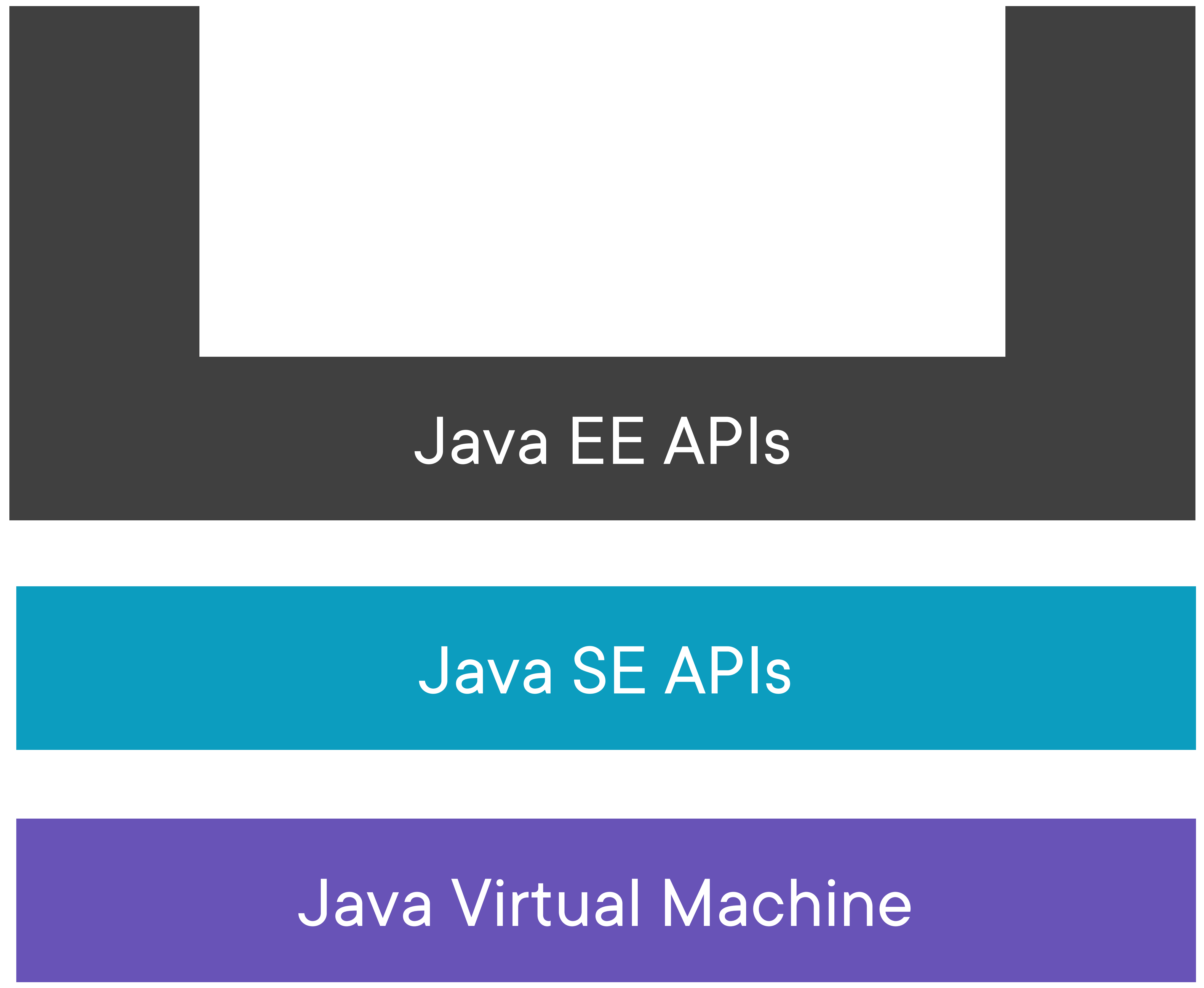


Java EE



Data persistence

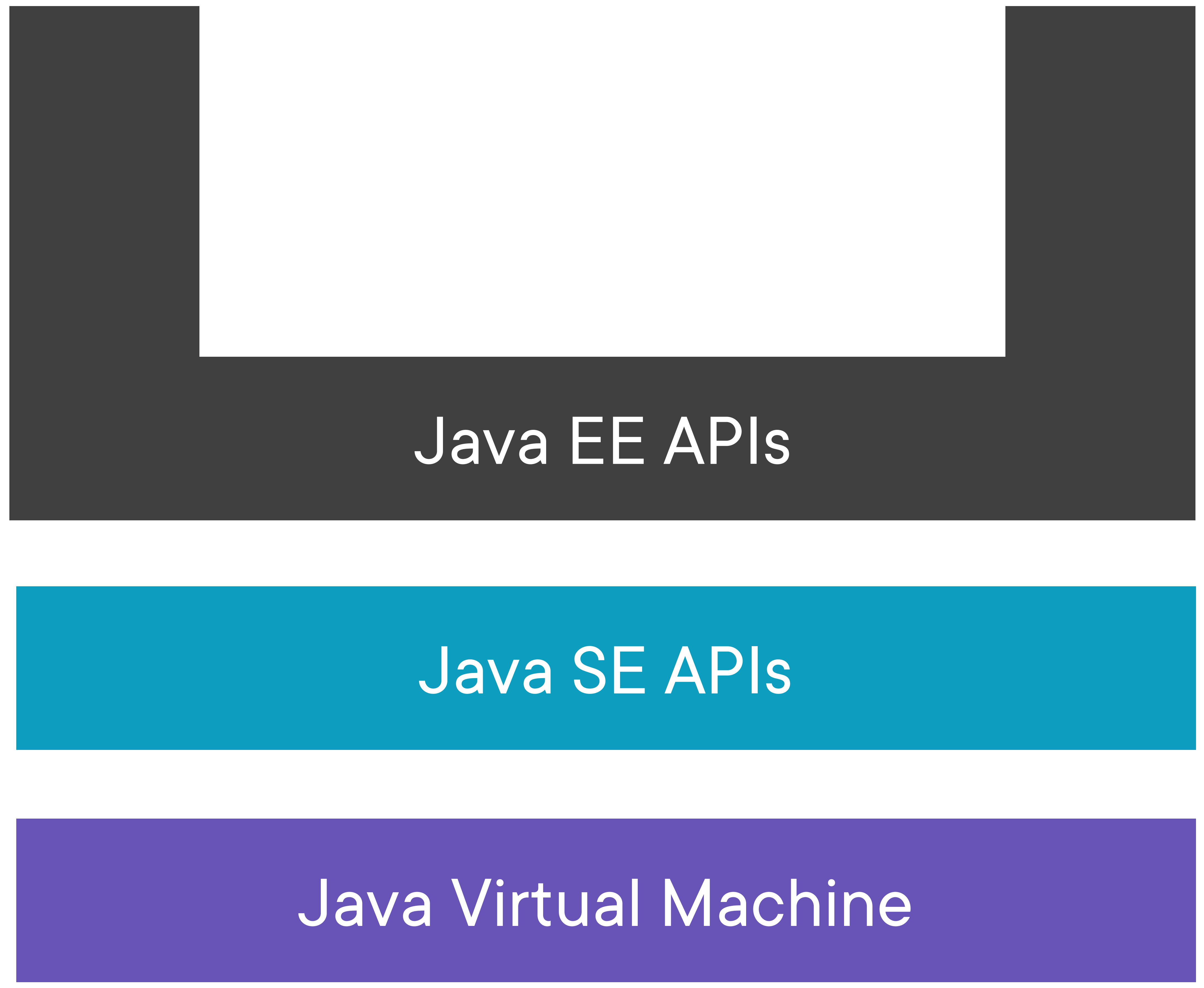
Java EE



Data persistence

Web applications

Java EE

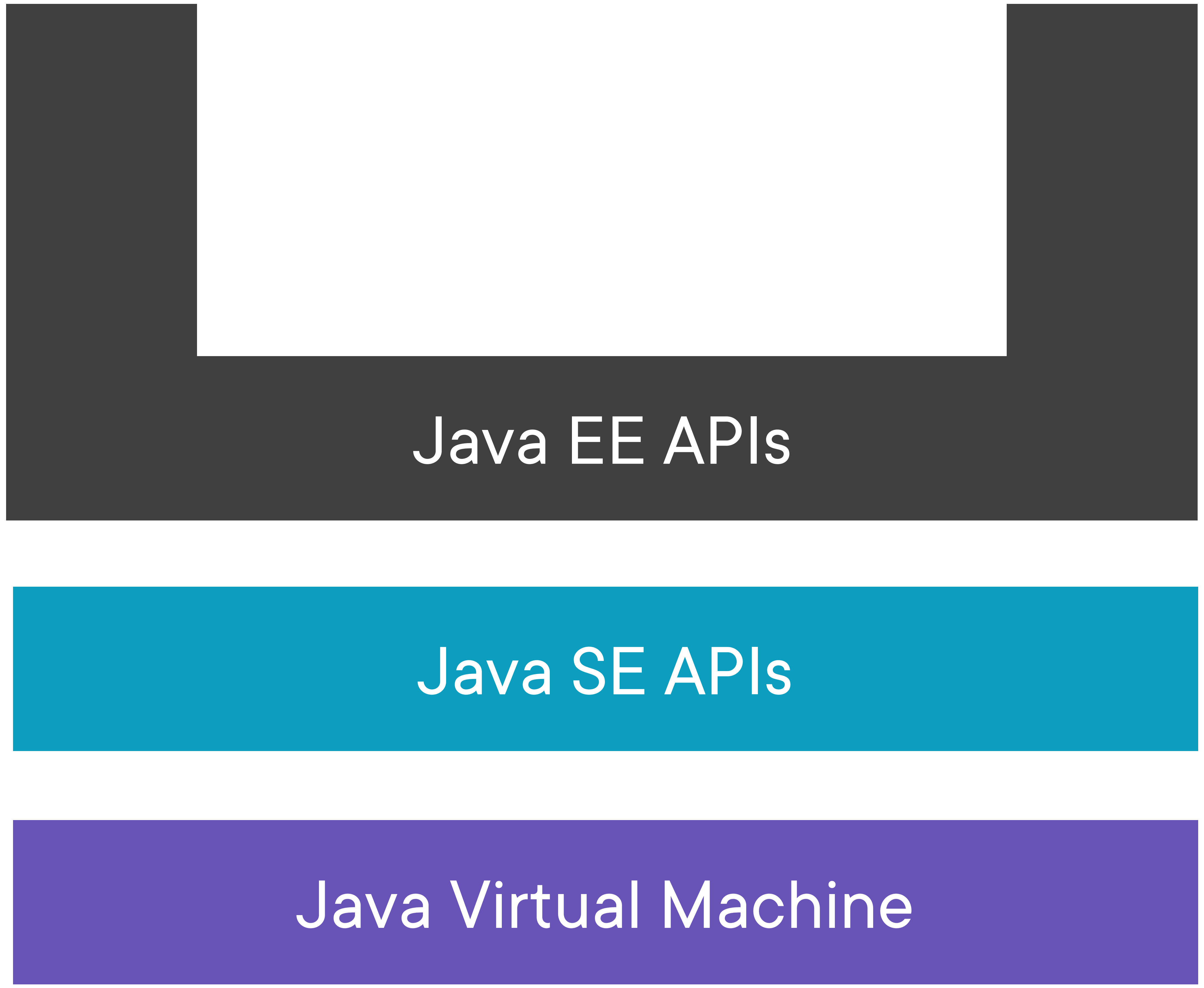


Data persistence

Web applications

Security

Java EE



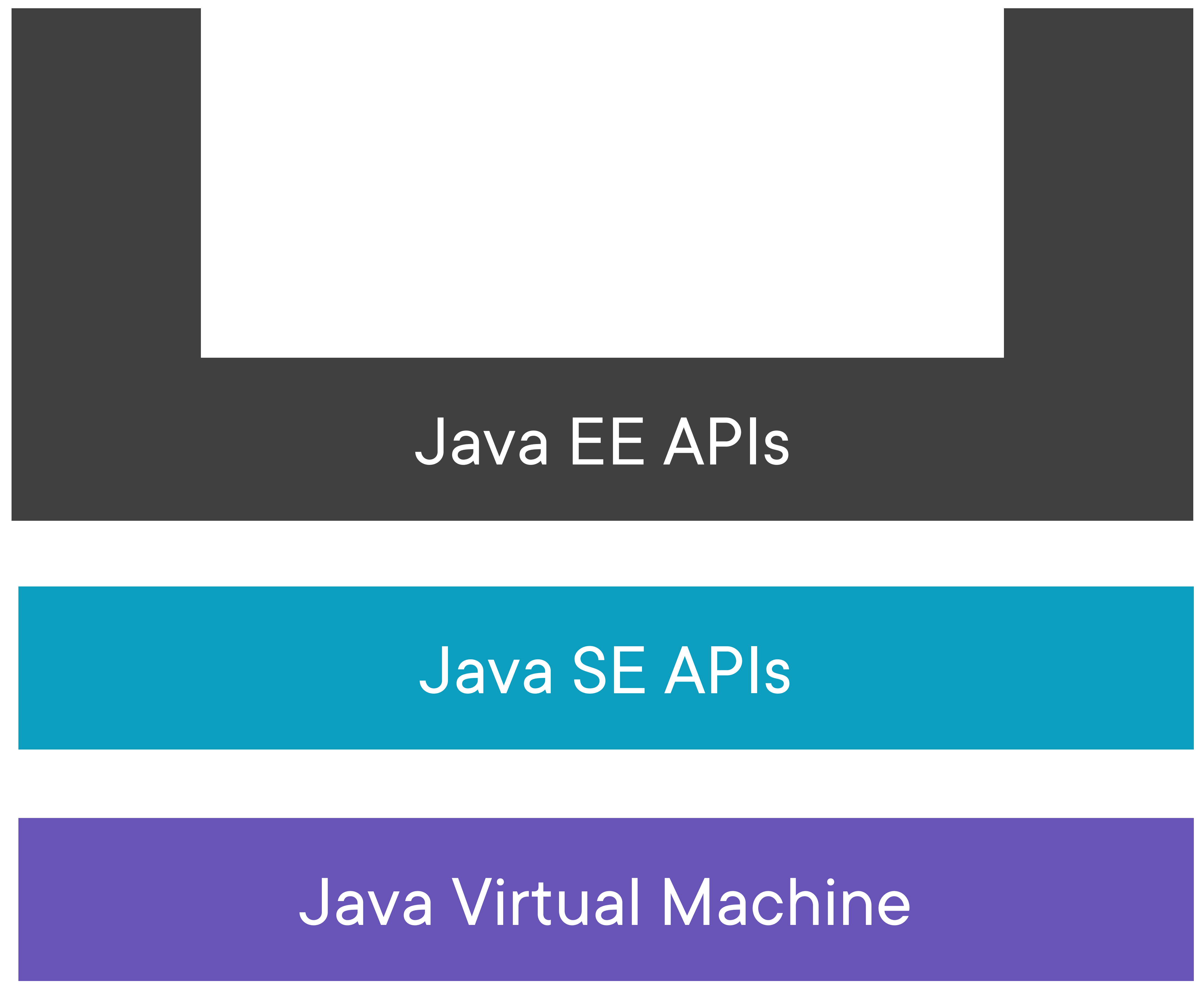
Data persistence

Web applications

Security

Messaging

Java EE



Data persistence

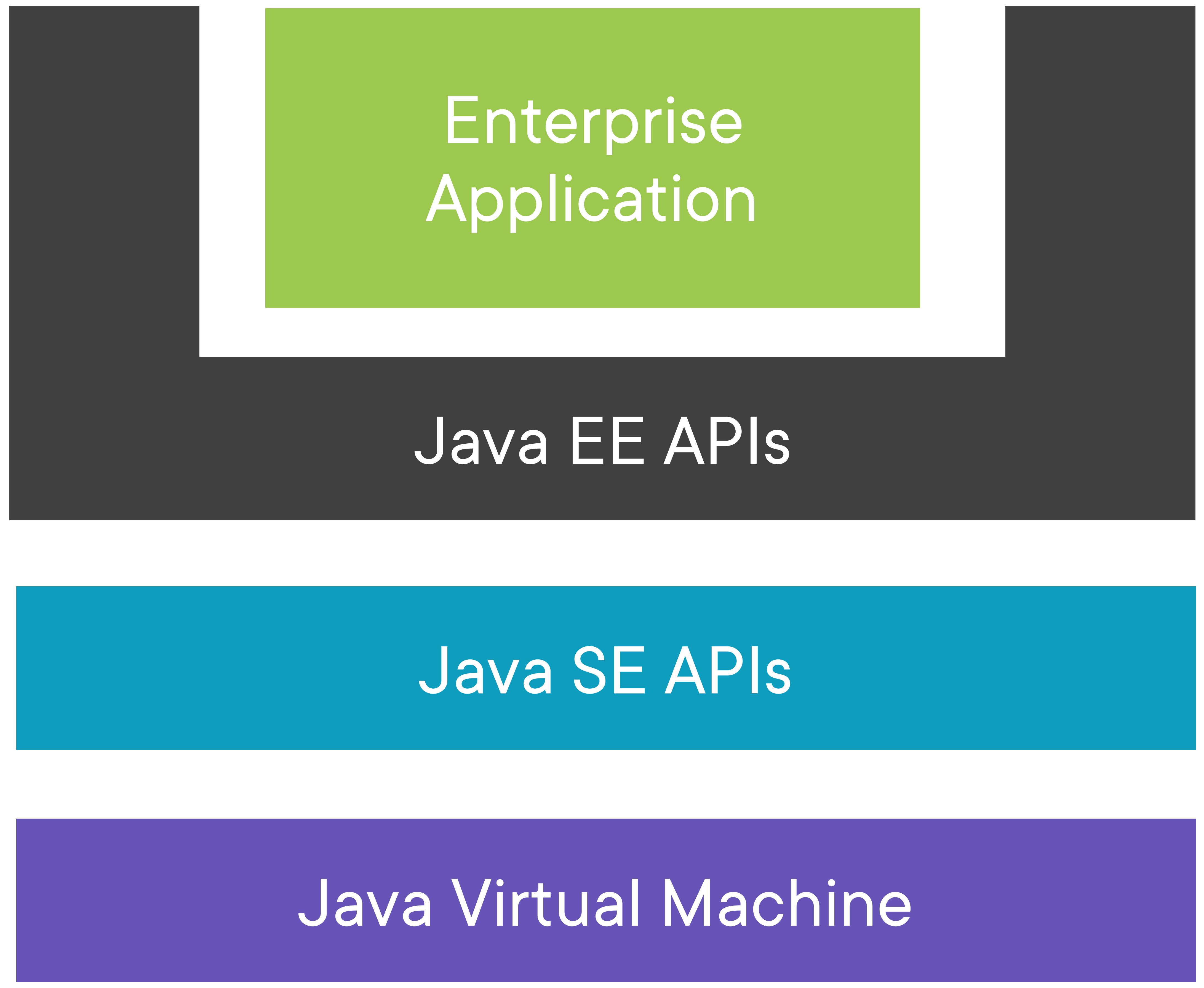
Web applications

Security

Messaging

JSON/XML handling

Java EE



Data persistence

Web applications

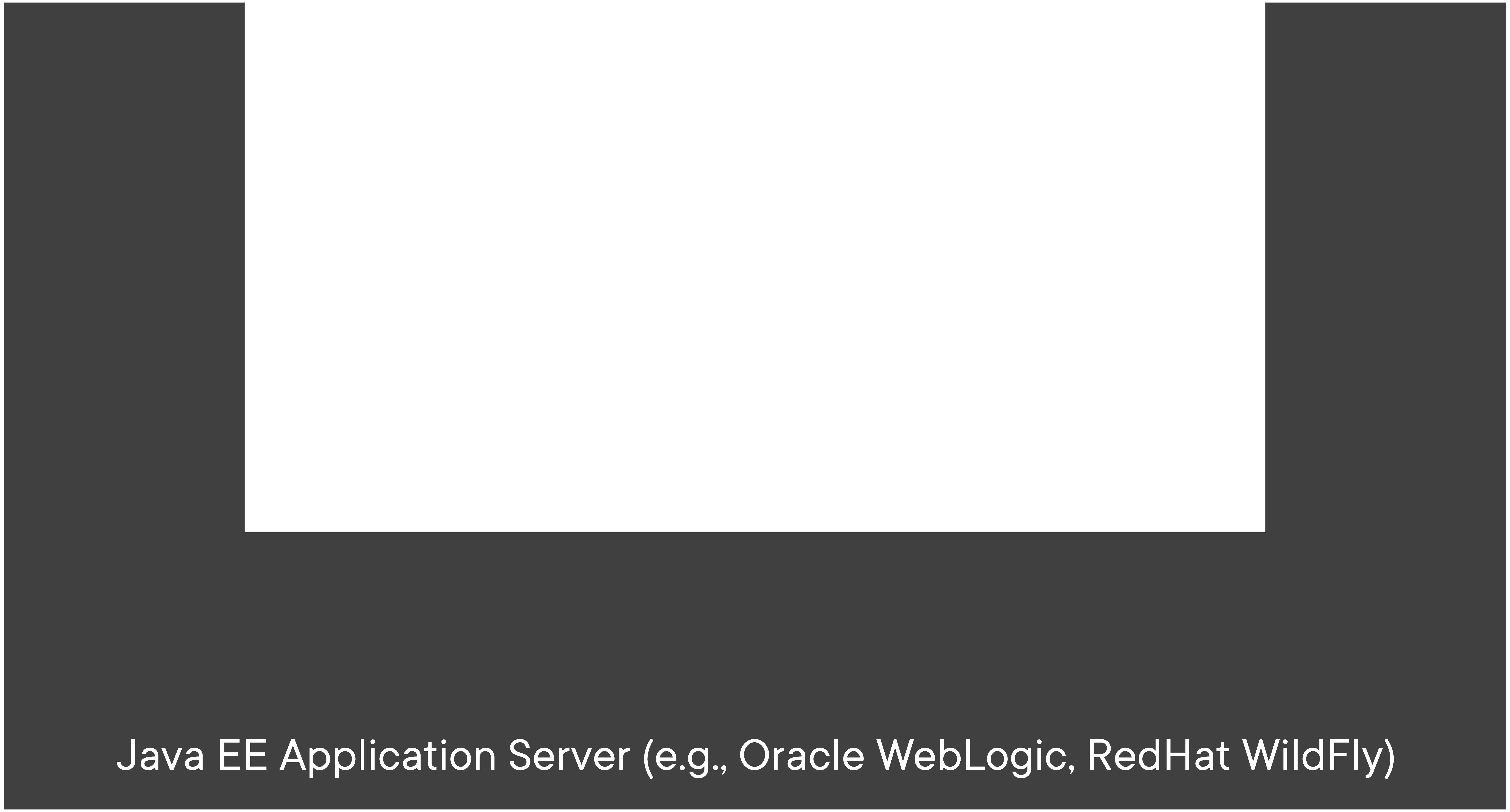
Security

Messaging

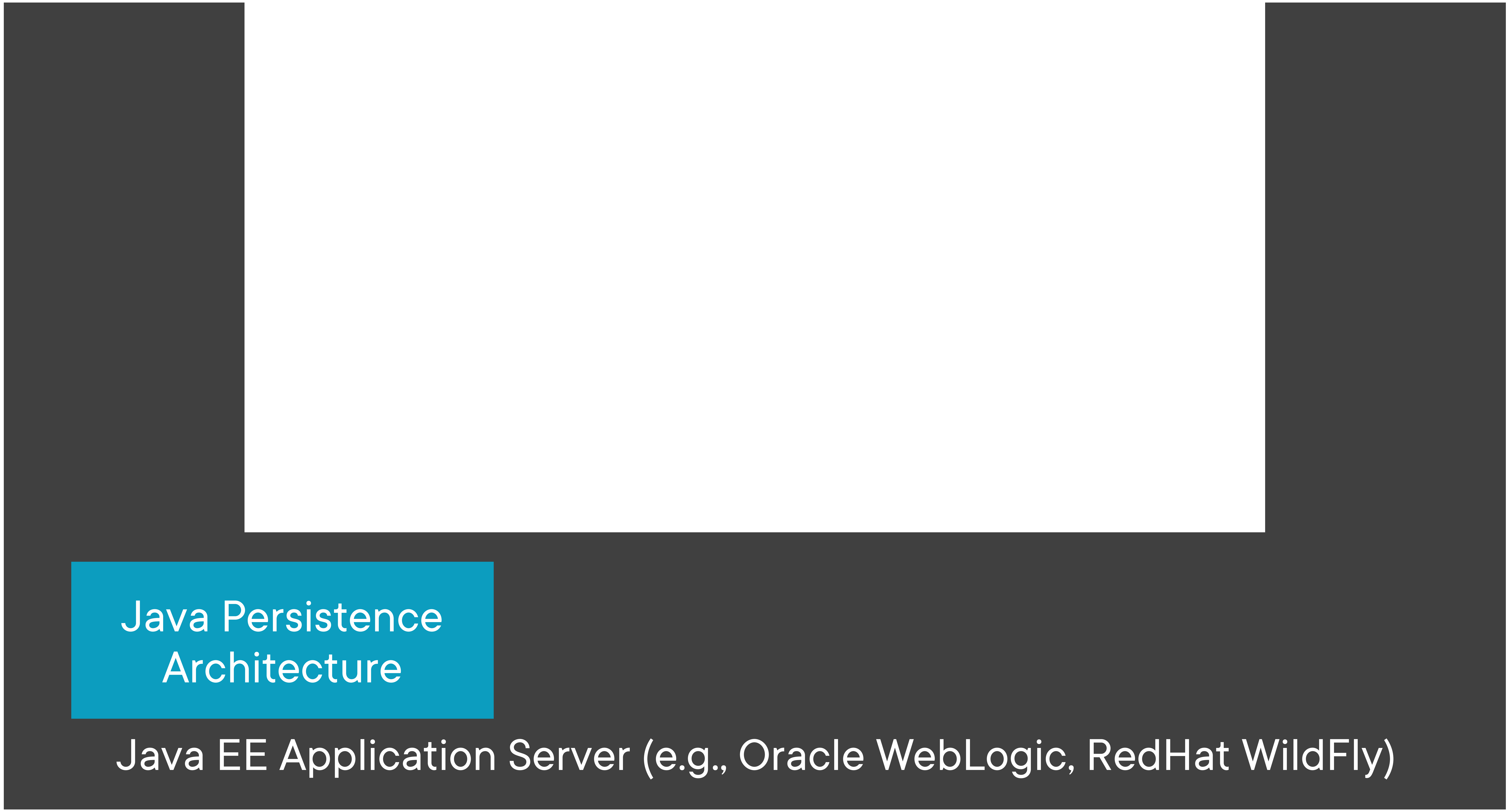
JSON/XML handling

Java EE: Application Server

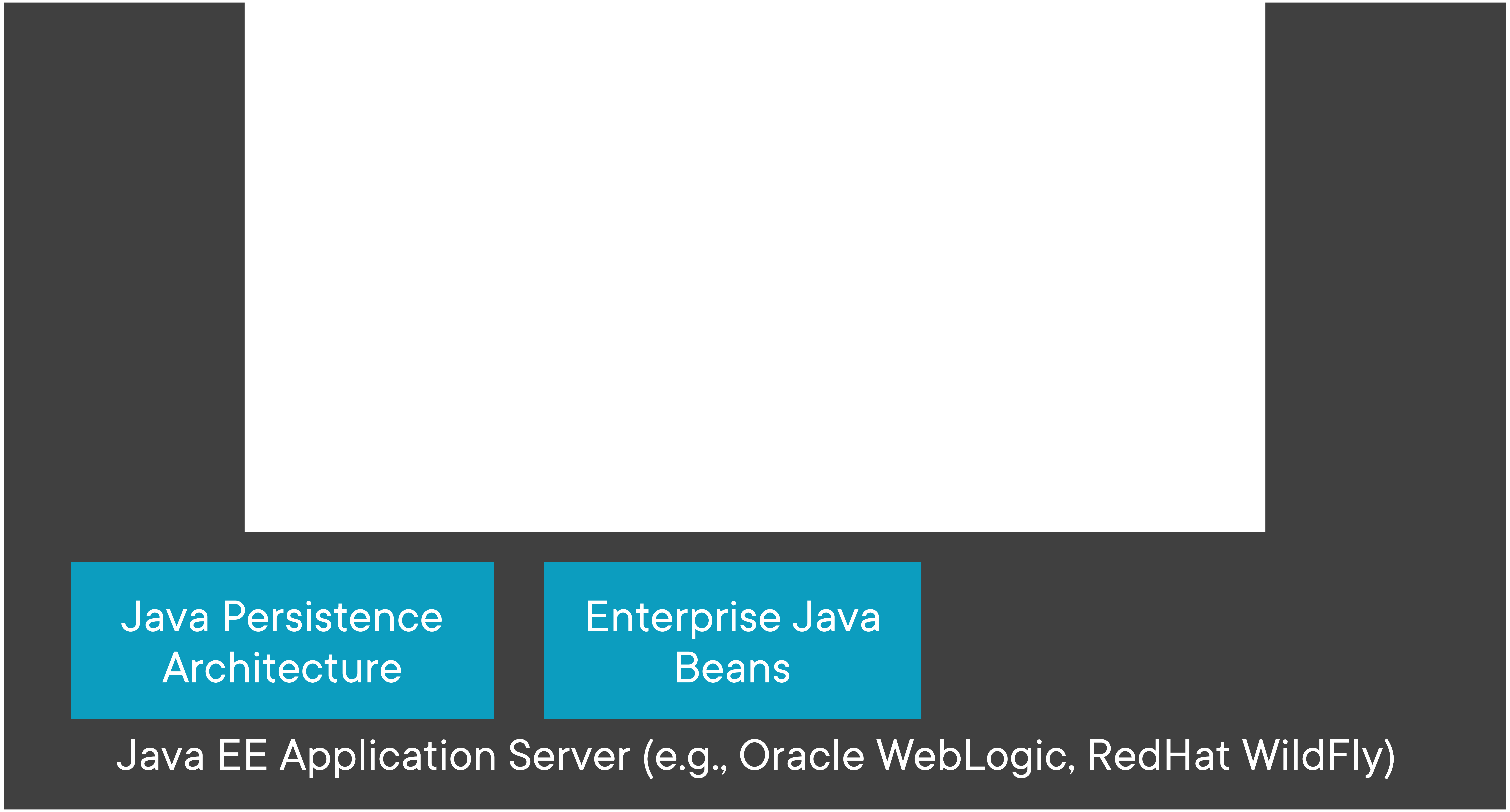
Java EE: Application Server


Java EE Application Server (e.g., Oracle WebLogic, RedHat WildFly)

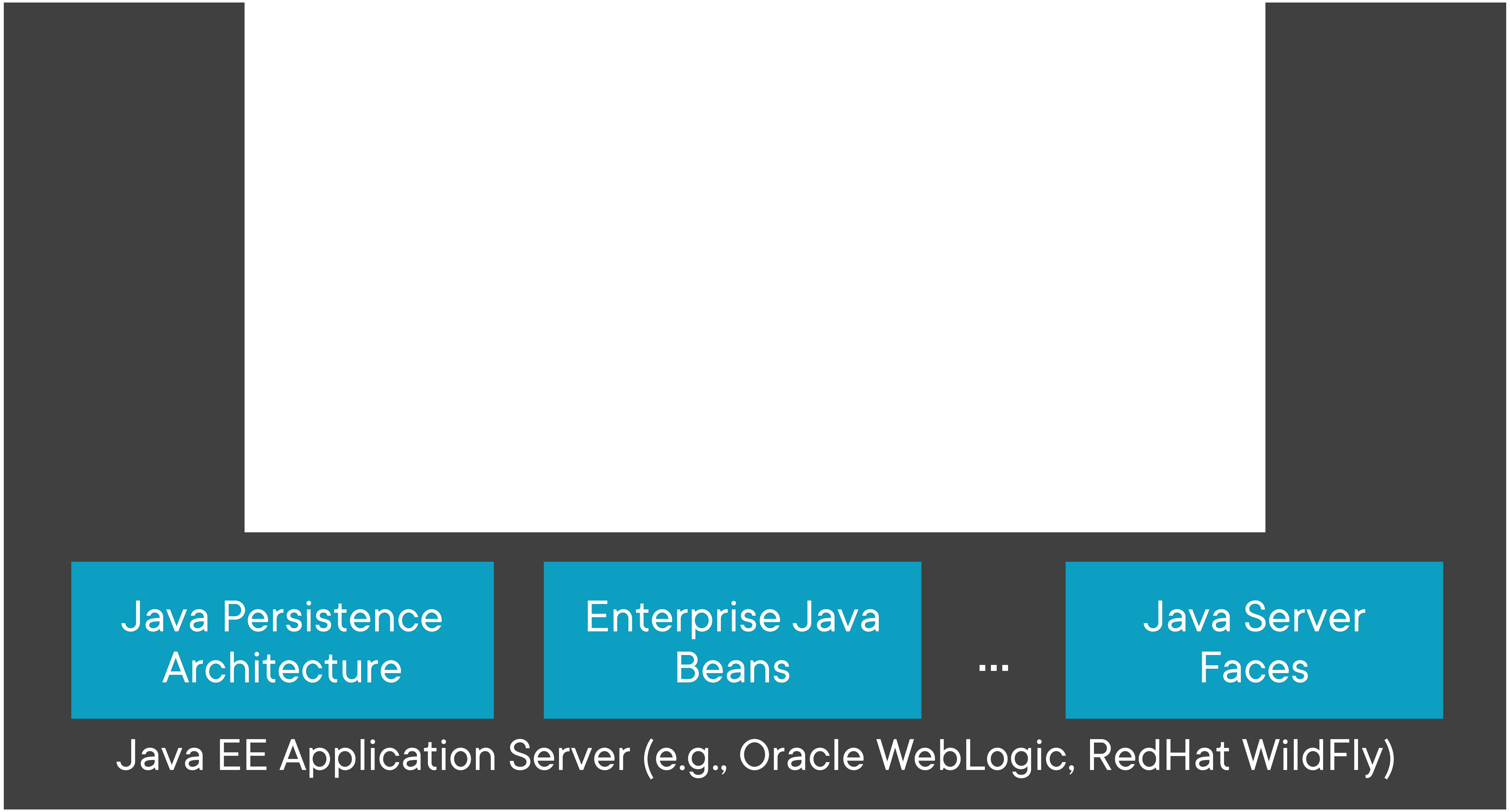
Java EE: Application Server


Java Persistence Architecture
Java EE Application Server (e.g., Oracle WebLogic, RedHat WildFly)

Java EE: Application Server


Java Persistence Architecture
Enterprise Java Beans
Java EE Application Server (e.g., Oracle WebLogic, RedHat WildFly)

Java EE: Application Server


Java Persistence Architecture
Enterprise Java Beans
...
Java Server Faces
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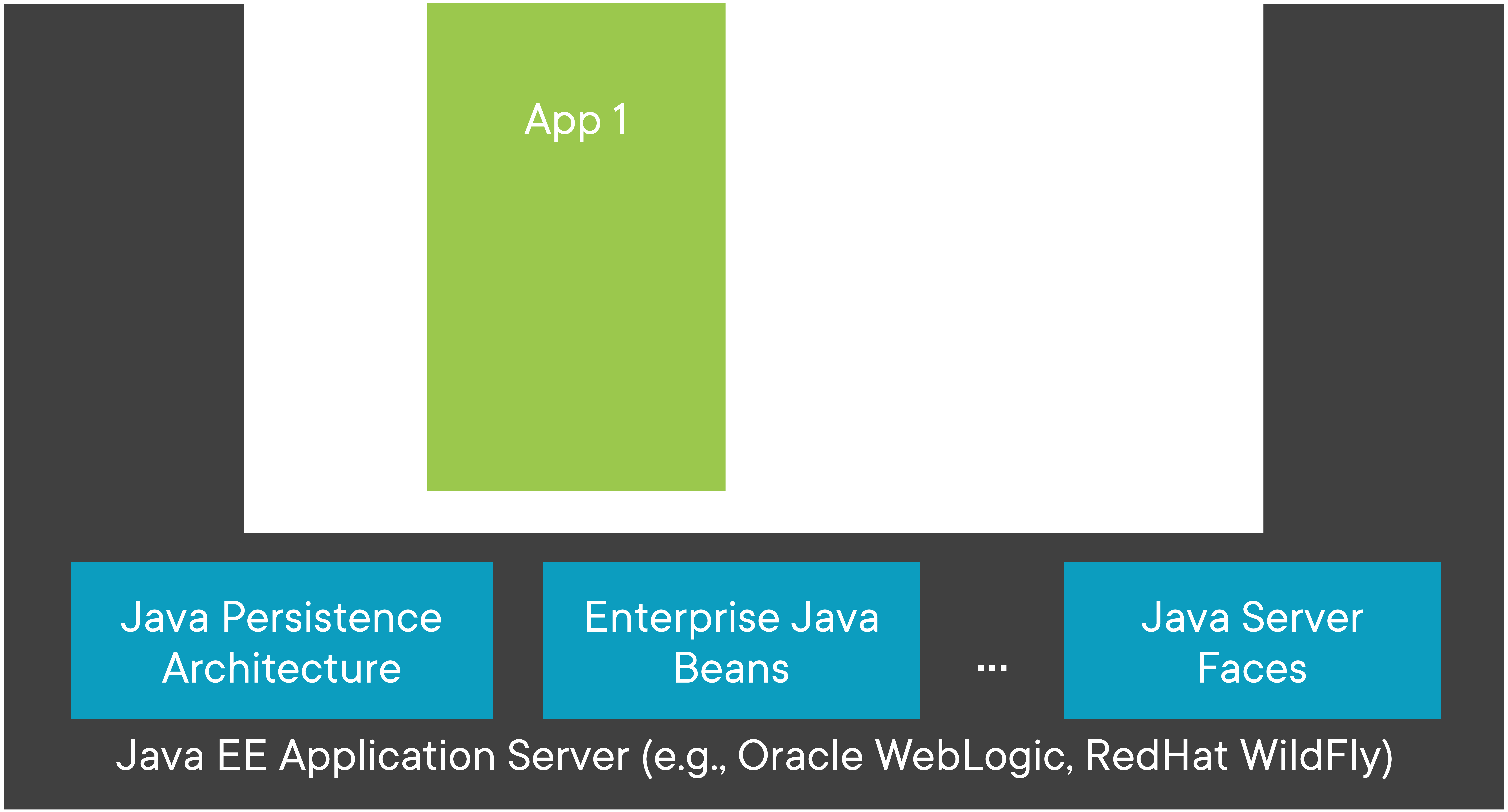
Java EE: Application Server


App 1
Java Persistence Architecture
Enterprise Java Beans
...
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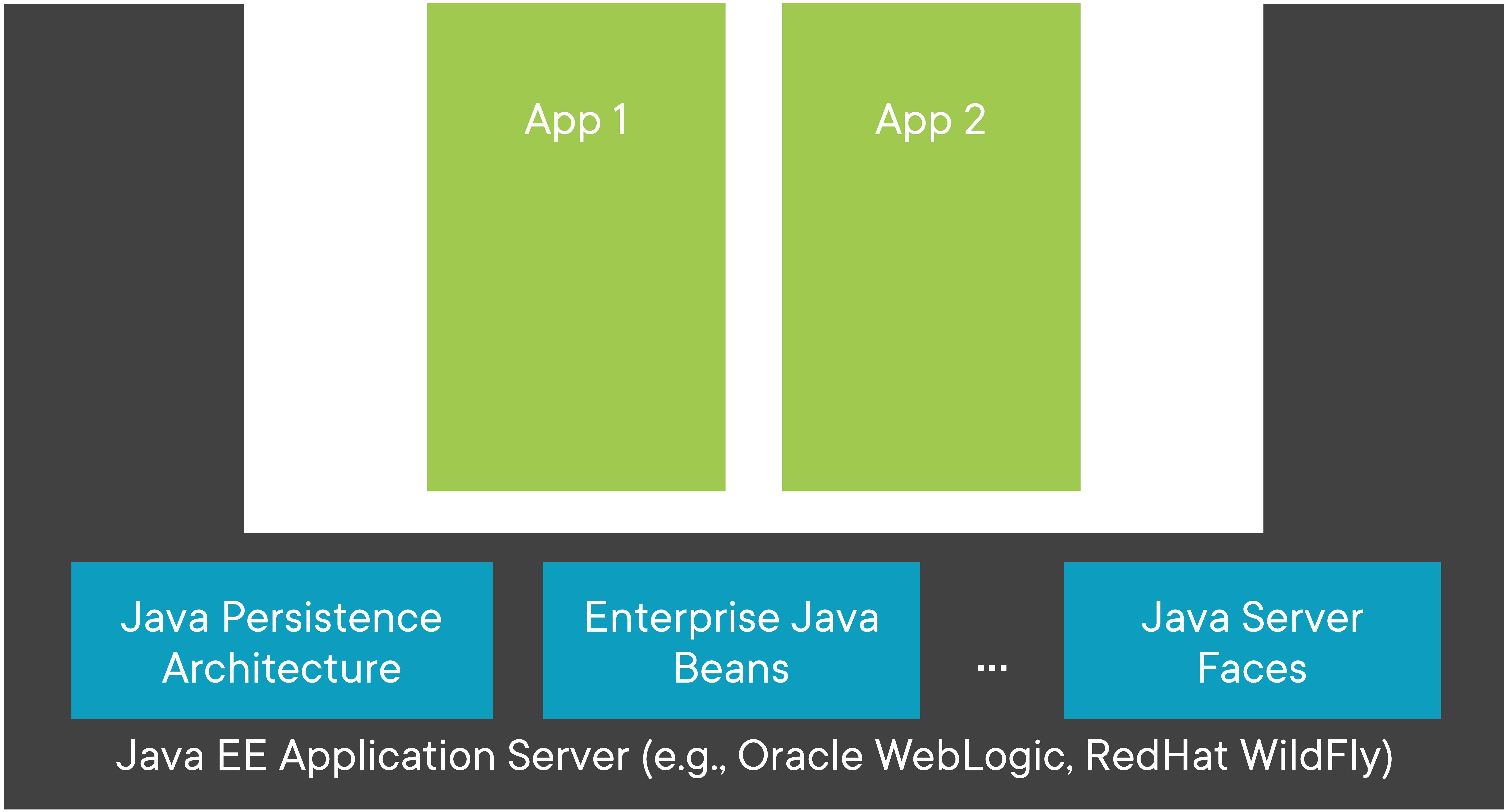
Java EE: Application Server


App 1
App 2
Java Persistence Architecture
Enterprise Java Beans
...
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Jakarta EE

Jakarta EE

Java EE 8 last **Oracle** release, transition to **Eclipse Foundation**

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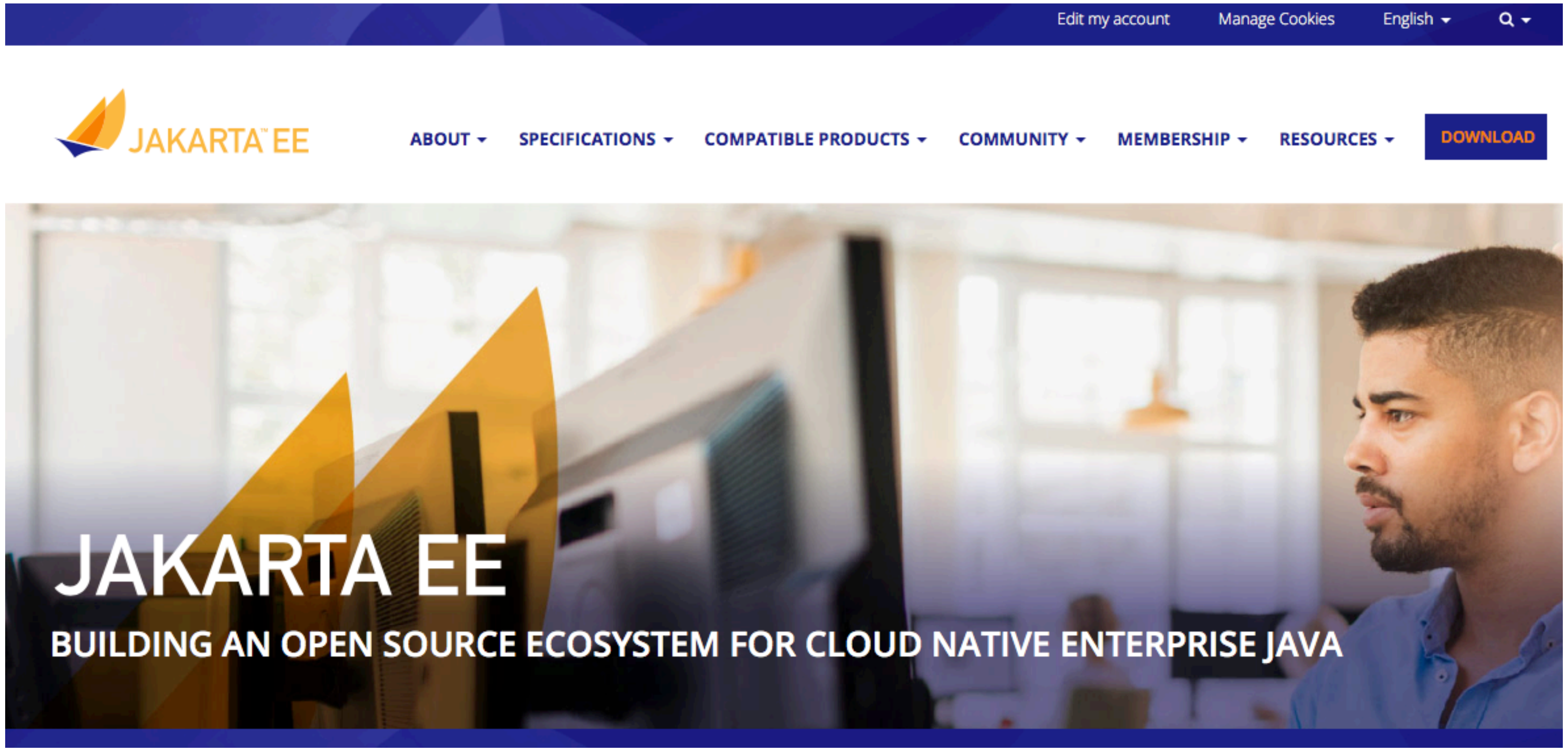
Java EE 8 last **Oracle** release, transition to **Eclipse Foundation**

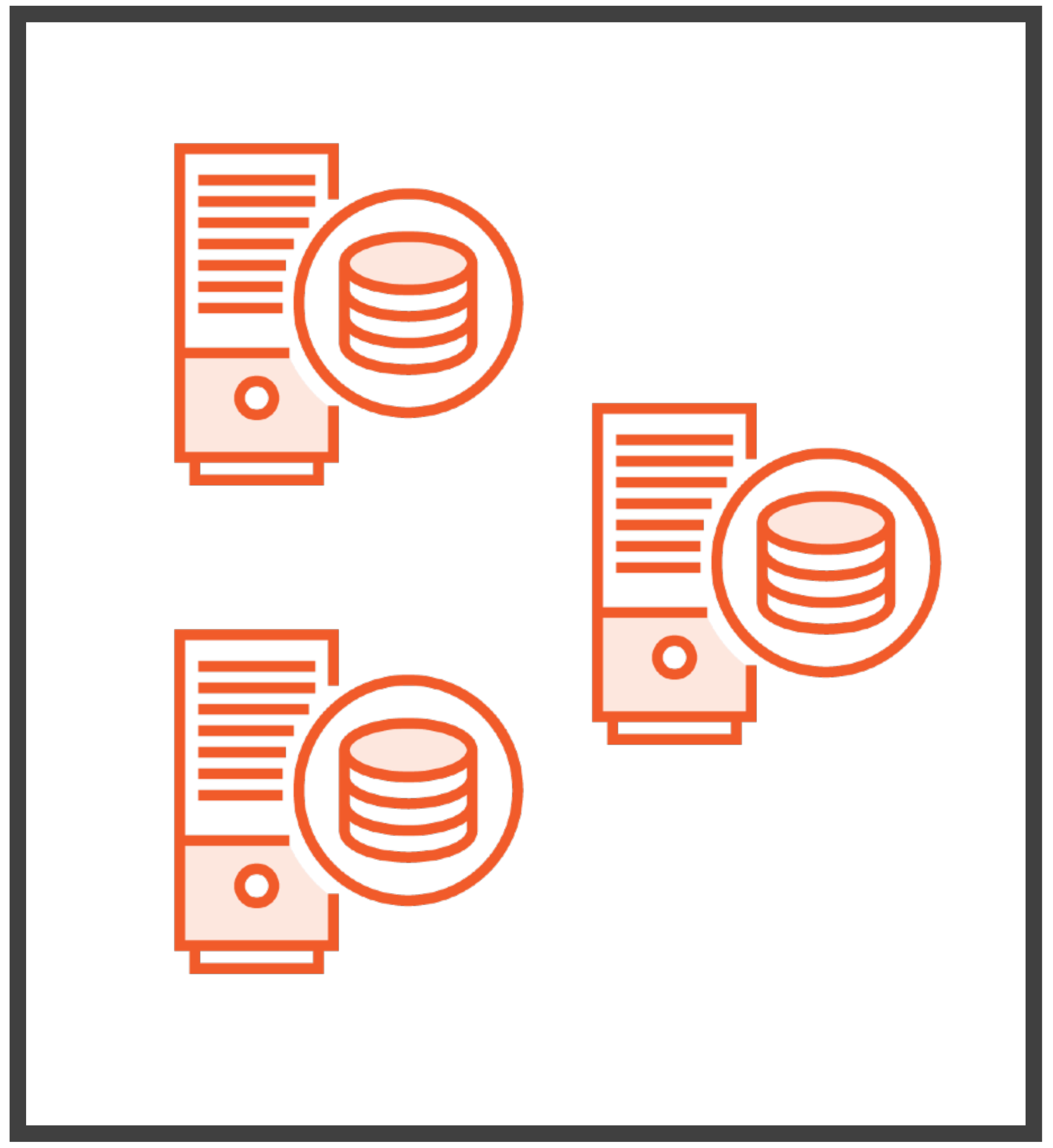


https://jakarta.ee

Java in the Cloud

Java in the Cloud

Datacenter

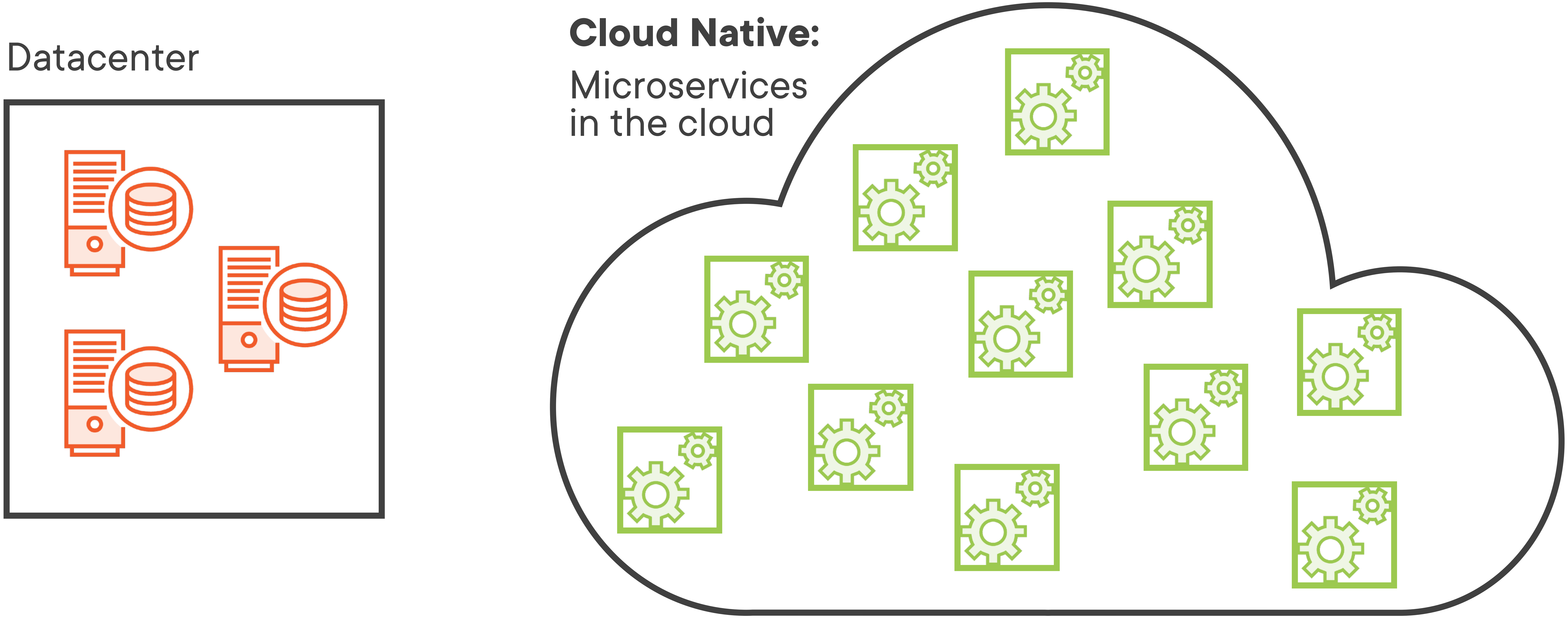


Java in the Cloud

Datacenter

Cloud Native:

Microservices in the cloud



Java in the Cloud

Java in the Cloud

Microframeworks

Java in the Cloud

Spring Boot Application

Microframeworks

Spring Boot

Java in the Cloud

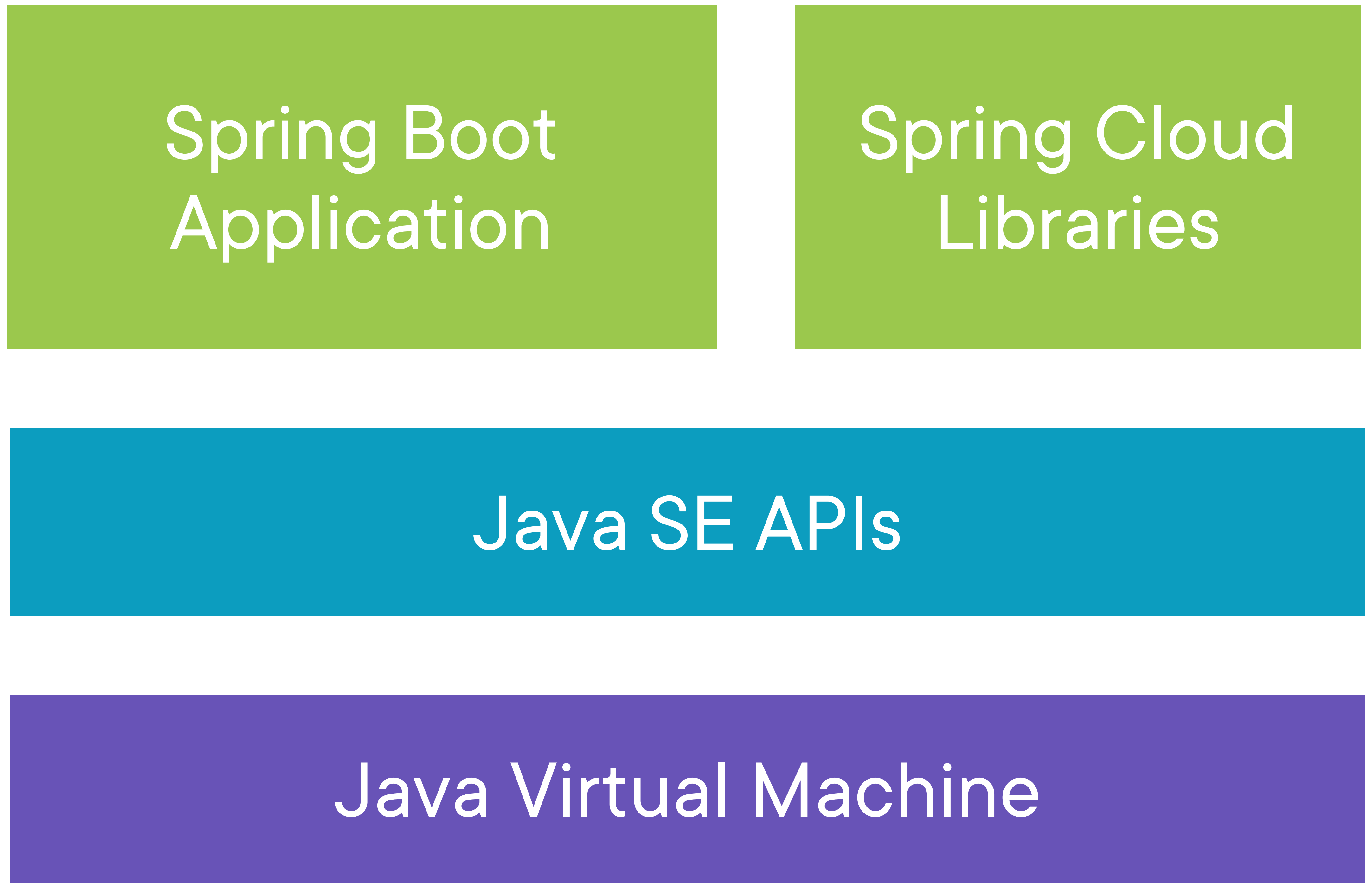
Spring Boot Application

Spring Cloud Libraries

Microframeworks

Spring Boot

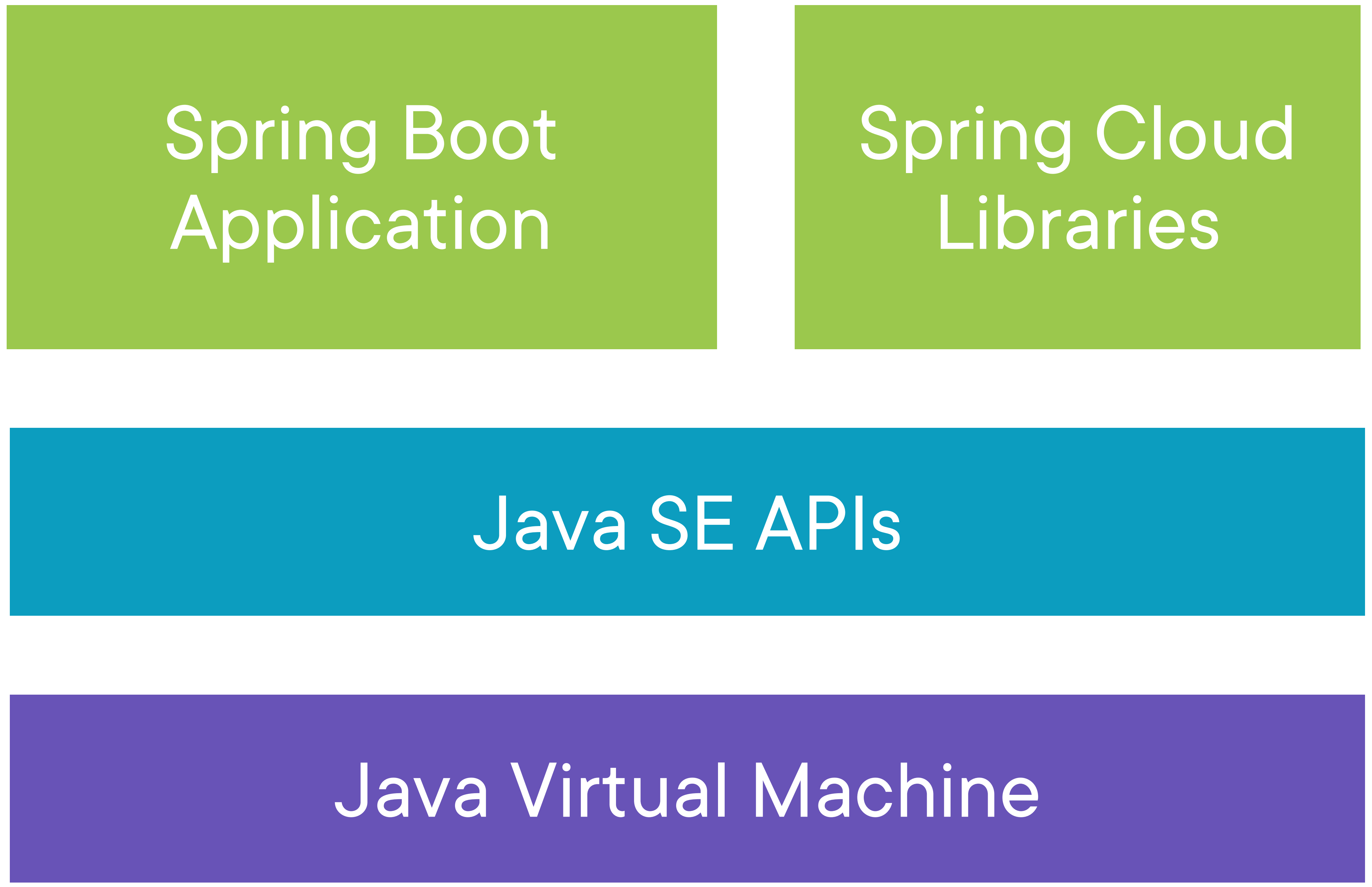
Java in the Cloud



Microframeworks

Spring Boot

Java in the Cloud

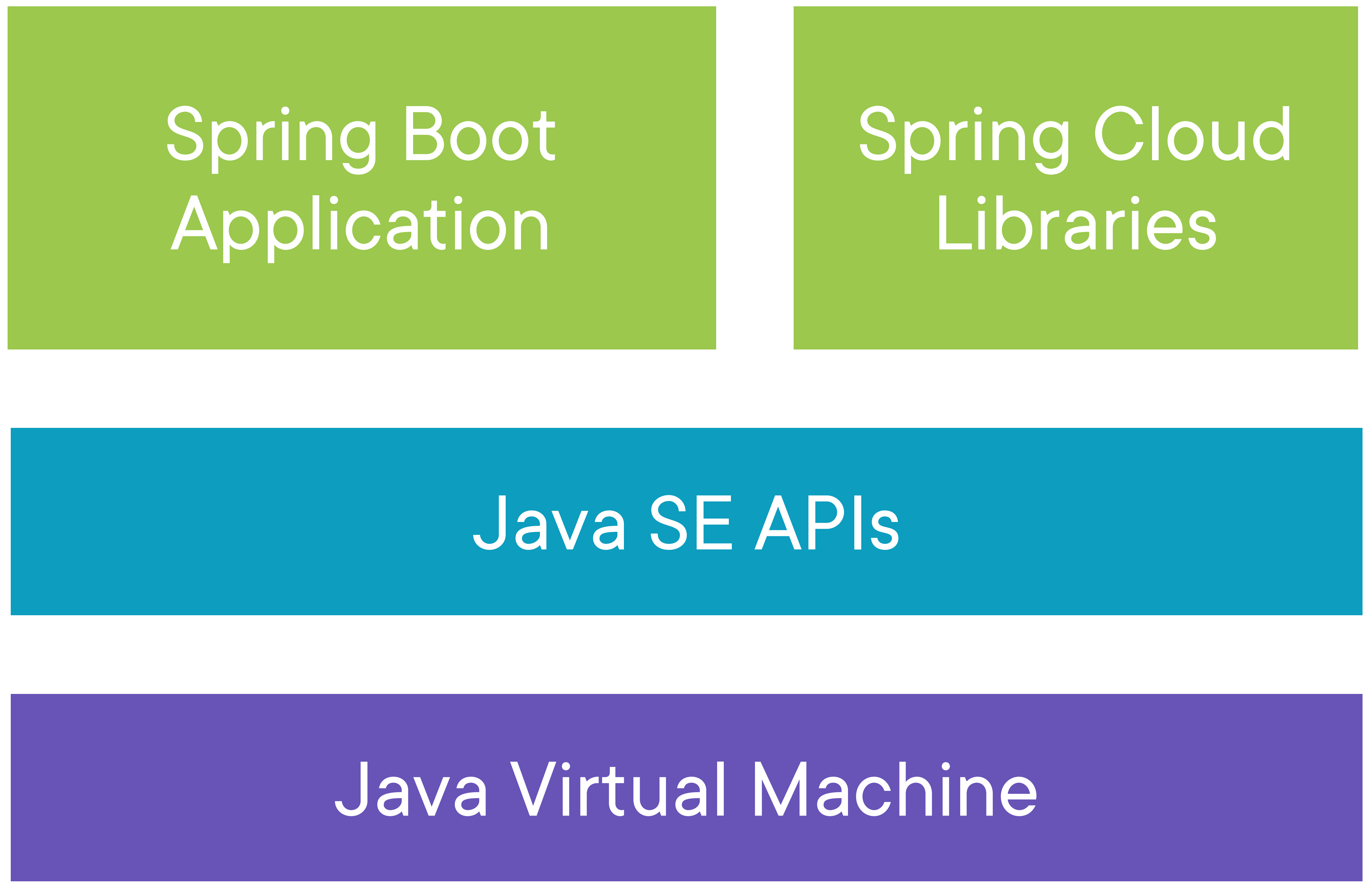


Microframeworks

Spring Boot

MicroProfile

Java in the Cloud



Microframeworks

Spring Boot

MicroProfile

Vert.x

Quarkus

Working with Java: Language Features

Working with Java: Language Features

Functional Java

Functional Java

Lambdas

Functional Java

Lambdas

Represent functions without classes (methods)

Functional Java

```
Function<Integer, Integer> increment =
  (Integer value) -> value + 1;
```

Represent functions without classes (methods)

Lambdas

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Represent functions without classes (methods)

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Function<Integer, Integer> increment =
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Represent functions without classes (methods)

Pass functions to methods

Functional Java

Lambdas

```
Function<Integer, Integer> increment =
  (Integer value) -> value + 1;
```

Represent functions without classes (methods)

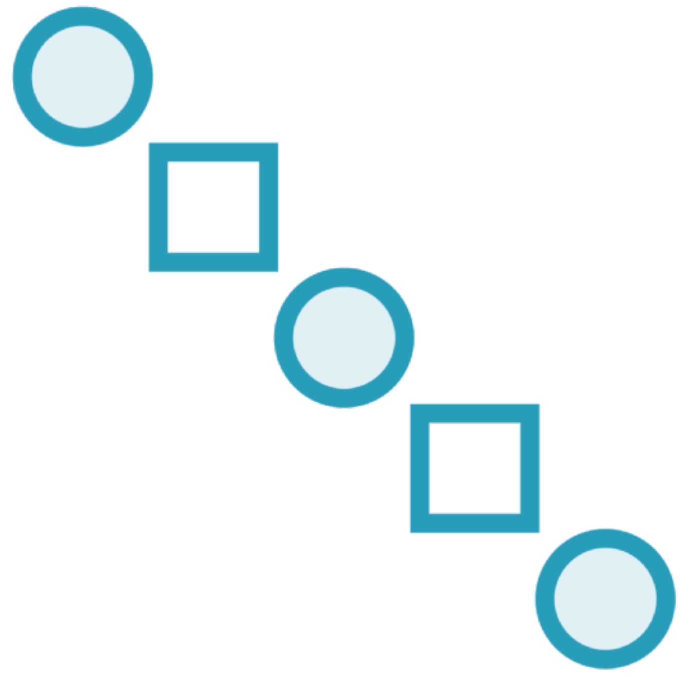
Pass functions to methods

Compose functions freely

Functional Java

Streams

Functional Java



Streams

JShell

Type Inference

Type Inference

```java
URL url = new URL("https://pluralsight.com");
URLConnection connection = url.openConnection();
BufferedInputStream inputStream =
   new BufferedInputStream(connection.getInputStream());
```

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Type Inference

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```

```
var url = new URL("https://pluralsight.com");
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```

Records

Records

Data-only classes

Records

Data-only classes

```
Product
name
vendor
price
inStock
```

Records

Data-only classes

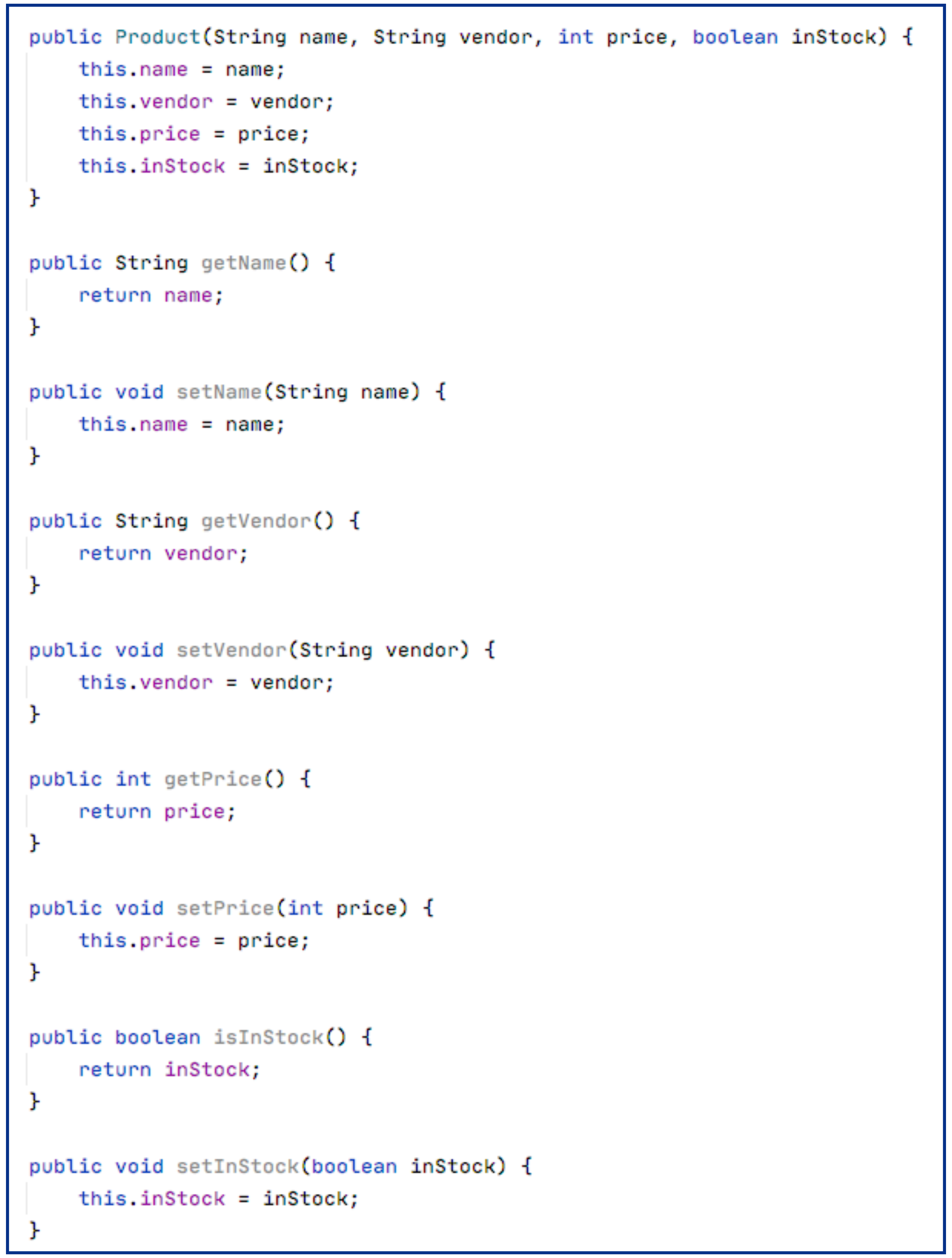
Product

name

vendor

price

inStock



```java
public Product(String name, String vendor, int price, boolean inStock) {
    this.name = name;
    this.vendor = vendor;
    this.price = price;
    this.inStock = inStock;
}

public String getName() {
    return name;
}

public void setName(String name) {
    this.name = name;
}

public String getVendor() {
    return vendor;
}

public void setVendor(String vendor) {
    this.vendor = vendor;
}

public int getPrice() {
    return price;
}

public void setPrice(int price) {
    this.price = price;
}

public boolean isInStock() {
    return inStock;
}

public void setInStock(boolean inStock) {
    this.inStock = inStock;
}
```

Records

Data-only classes

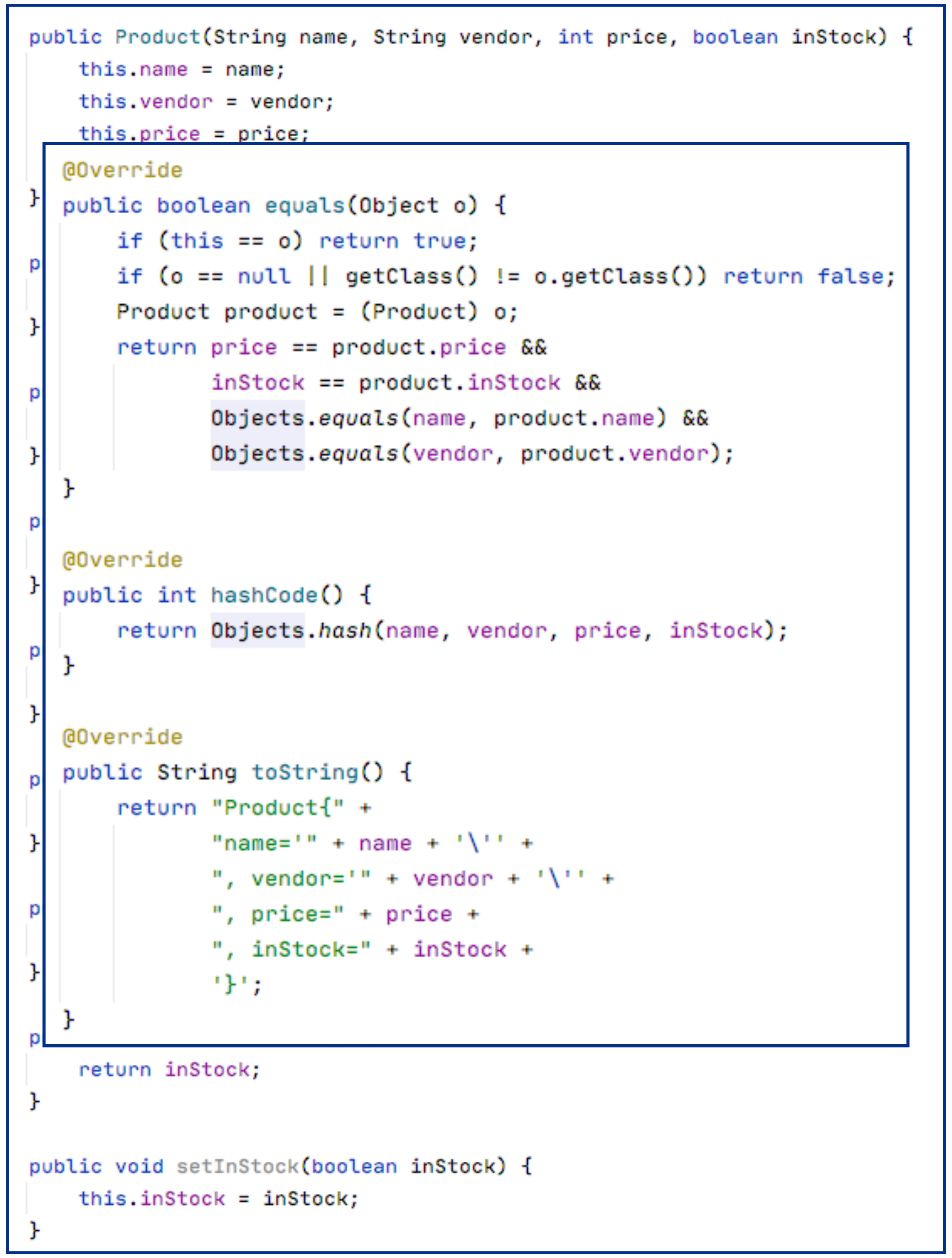
Product

name

vendor

price

inStock



```java
public Product(String name, String vendor, int price, boolean inStock) {
    this.name = name;
    this.vendor = vendor;
    this.price = price;
```

```java
@Override
public boolean equals(Object o) {
    if (this == o) return true;
    if (o == null || getClass() != o.getClass()) return false;
    Product product = (Product) o;
    return price == product.price &&
            inStock == product.inStock &&
            Objects.equals(name, product.name) &&
            Objects.equals(vendor, product.vendor);
}

@Override
public int hashCode() {
    return Objects.hash(name, vendor, price, inStock);
}

@Override
public String toString() {
    return "Product{" +
            "name='" + name + '\'' +
            ", vendor='" + vendor + '\'' +
            ", price=" + price +
            ", inStock=" + inStock +
            '}';
}
```

```java
    return inStock;
}

public void setInStock(boolean inStock) {
    this.inStock = inStock;
}
```

Records

Data-only classes

Working with Java: Language Features

Summary

Summary

Summary

Swing & JavaFX

Summary

Swing & JavaFX

Enterprise Java

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- Swing & JavaFX
- Enterprise Java
- Microframeworks

Summary

Swing & JavaFX

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Language features