ILP / 8
Database programming

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CW1 review

- Marks are out for the "soft" part -> coding, commenting, structure
- Marks for the auto-marker to come
  - Explanation of the format and the content

- Show a small runtime demo of the auto-marker
- Major takeaway points of CW1
  - Read the §§$!% instructions properly
 - Submit a working image -> check the image by loading it once more

Outlook CW2 / 3 / 4

- Some words

Databases

- Either on-site or in the cloud. Usually no difference (as IP address)
- Most commonly used is Oracle, SQL Server, PostgreSQL, Mongo-DB, etc.
- Access either via native drivers (OS- / Hardware-specific) a "network only" protocol which has no native part
  - o pgJDBC is a pure network driver written in Java

Our landscape with e.g. PostgreSQL
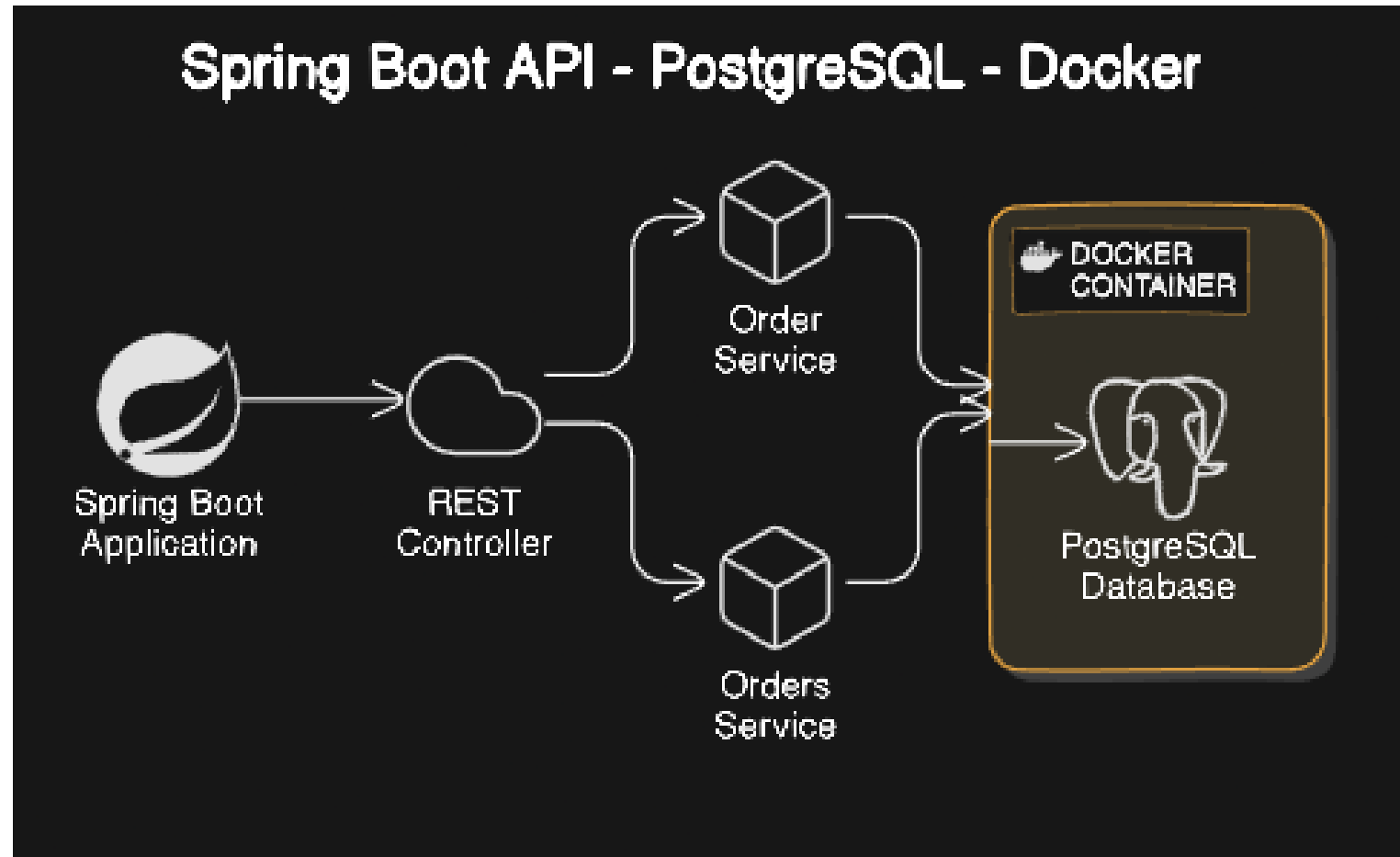
How to program databases in Java?

- JPA (Java Persistance API) based on hibernate
  Has a lot of PROs, some CONs

- JDBC
  Good old classic. JPA is easier to use, JDBC has more speed and power (batch management)

- Hibernate (not too often used anymore)
  https://docs.spring.io/spring-framework/reference/data-access/orm/hibernate.html
  https://www.geeksforgeeks.org/advance-java/basic-program-in-hibernate/

Tools

- Docker (to run the DB) or a native installation

- Intellij

- DBeaver

- …

Welcome Back

CW2-issues

- Drone planning / check functions
- Costs
- Strategies

About dockerfiles

```
FROM maven:3.9.9-amazoncorretto-21-debian AS build
# Set the working directory in the container
WORKDIR /app
# Copy the pom.xml and the project files to the container
COPY pom.xml .
COPY src ./src
RUN mvn clean package -DskipTests
# Use an official OpenJDK image as the base image
FROM openjdk:21
# Set the working directory in the container
WORKDIR /app
# Copy the built JAR file from the previous stage to the container
COPY --from=build /app/target/ilpcoursework-*.jar app.jar
EXPOSE 8080
ENV ILP_ENDPOINT=https://ilp-rest-2025-bvh6e9hschfagrgy.ukwest-01.azurewebsites.net/
CMD ["java", "-jar", "./app.jar"]
```
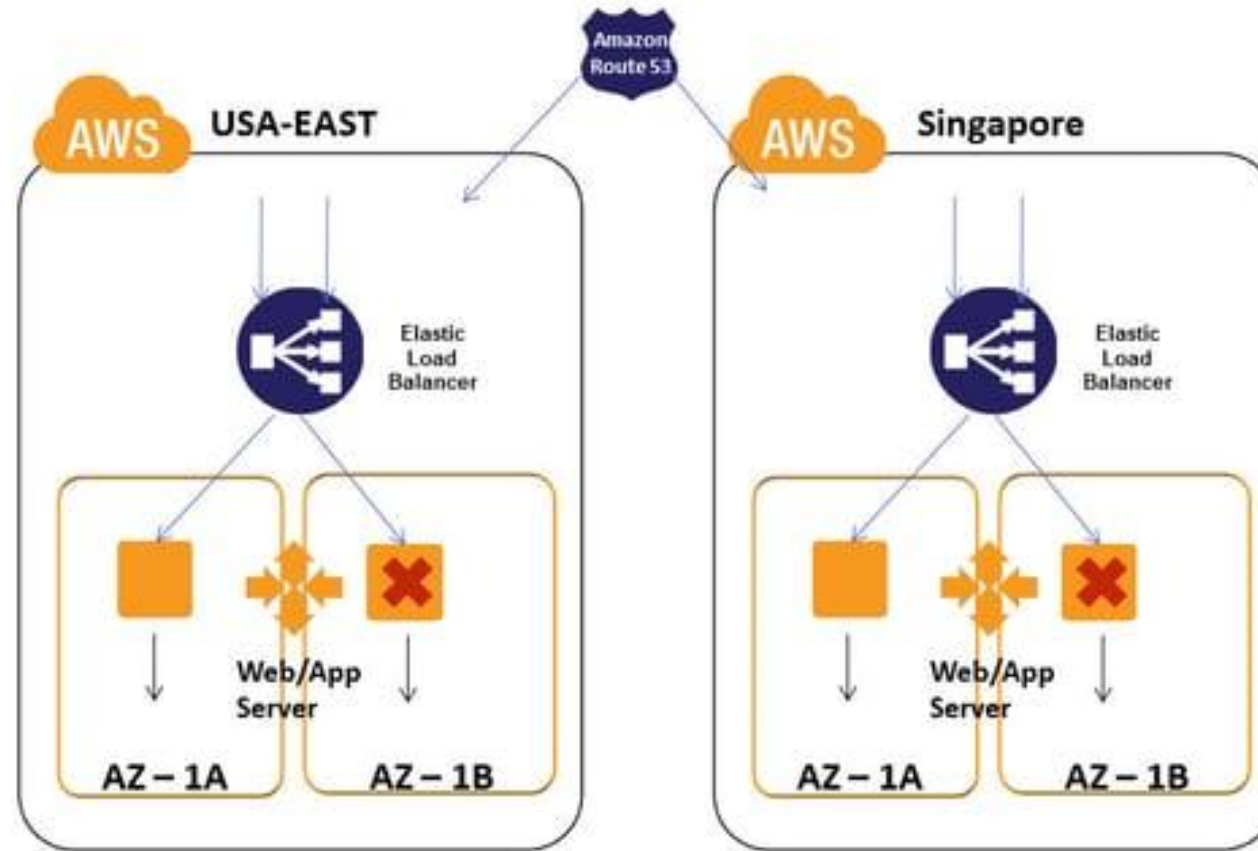
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informatics

Extra Q&A is tomorrow at 6:30 pm…

- https://ed-ac-uk.zoom.us/j/82834954643

- Meeting ID: 828 3495 4643
- Passcode: 3n607w35

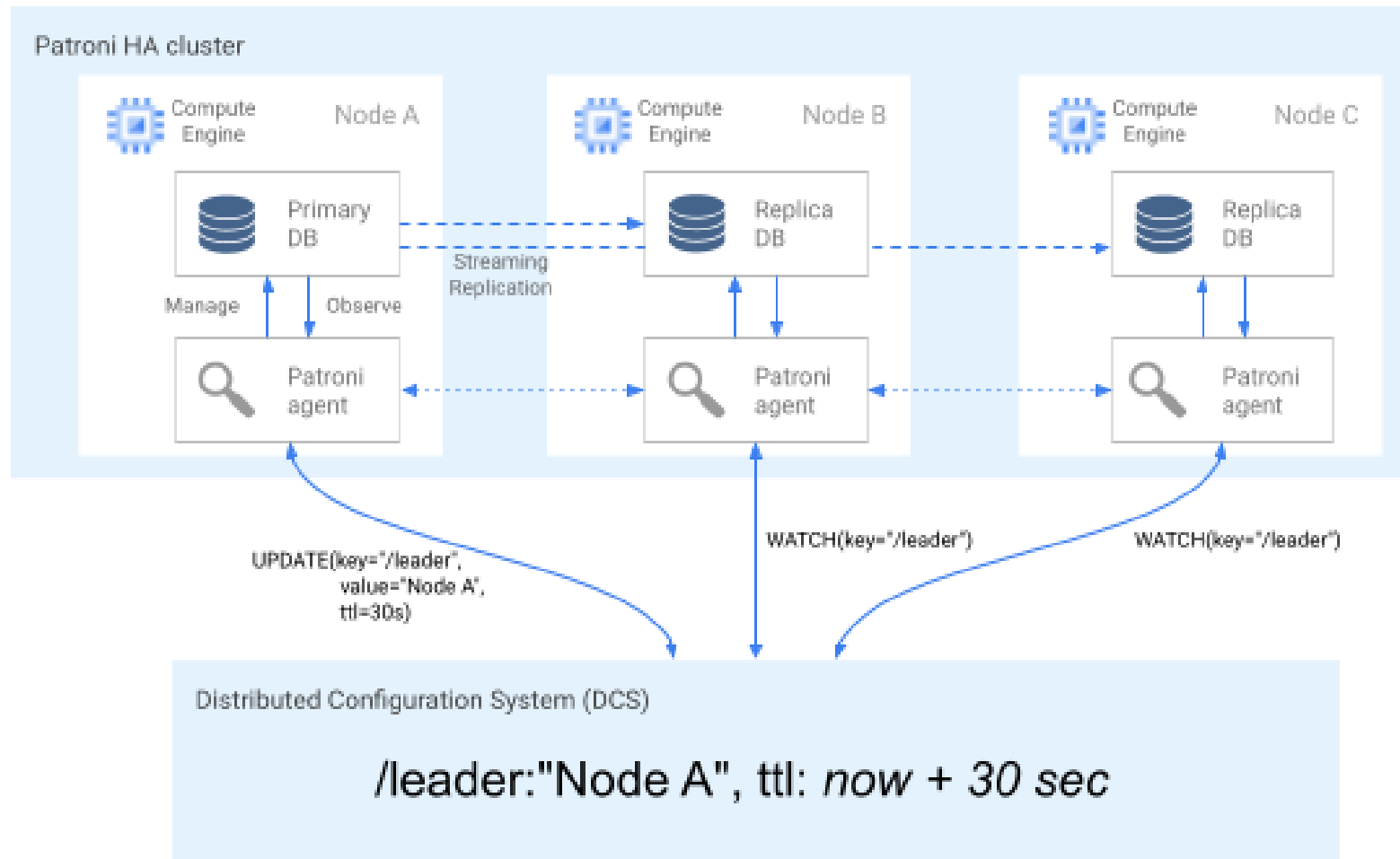# What did we go through in the last lecture?

- Configuration
- Entity
- Repository
- Services
- DTO
- Mapping (MapStruct / manual)
- ORM
- Liquibase / JDBC / JPA

Multiple zones for one app

https://yegortokmakov.medium.com/cross-region-disaster-recovery-with-amazon-elastic-container-service-782bcd007102
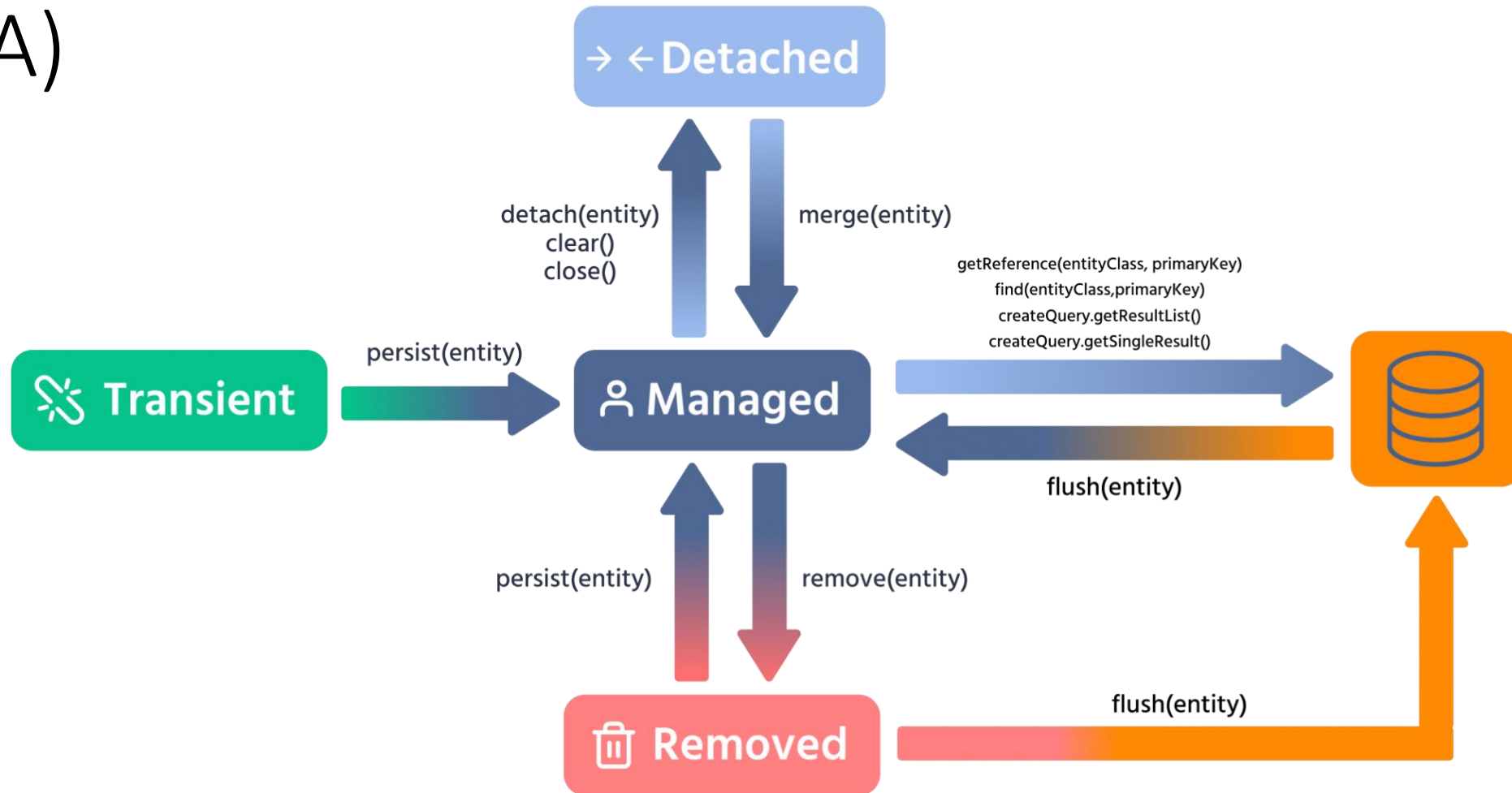
Scaling / Failover

What you need in Java with JPA…

- pom.xml
- @Configuration
- @Entity
- @Service
- @Transactional
- SQL-init scripts in your changelog

- @Sl4j

Just be careful

- Mapping can become invalid with new releases
  `mvn clean package`

- @RequiredArgsConstructor
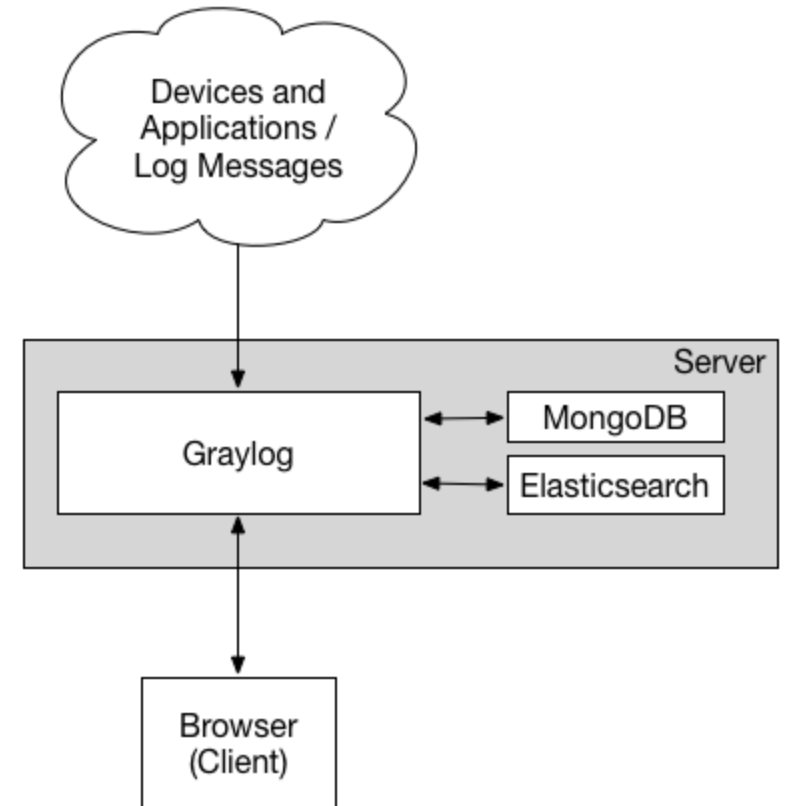
Entity Manager (JPA)

Let's get started

- Showing all necessary in the IlpRestServer...

SIEM
(Security Information and Event Management)

- SIEM is much more than just logging…

- Graylog is a typical example for a log handler (and more -> SIEM)

- https://www.baeldung.com/graylog-with-spring-boot