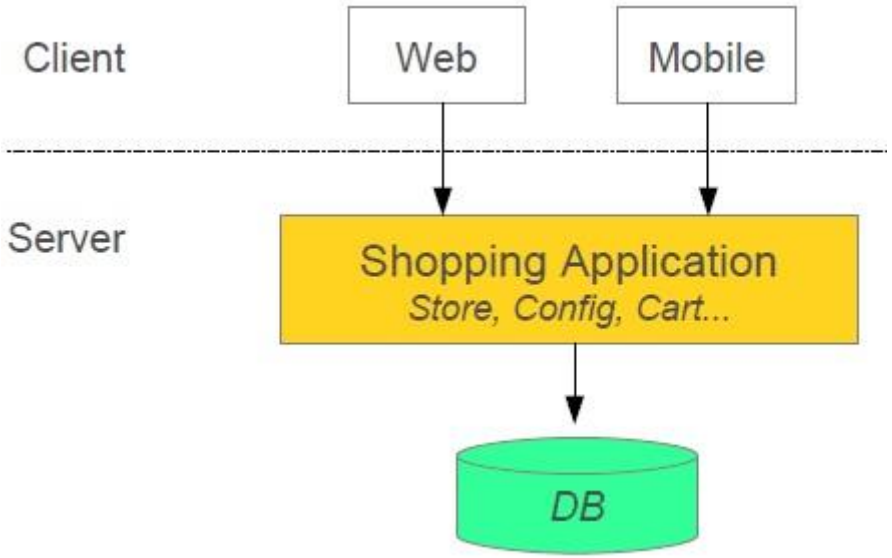
psc_ TRANSITION TECHNOLOGIES

Microservices

Old Times – use case

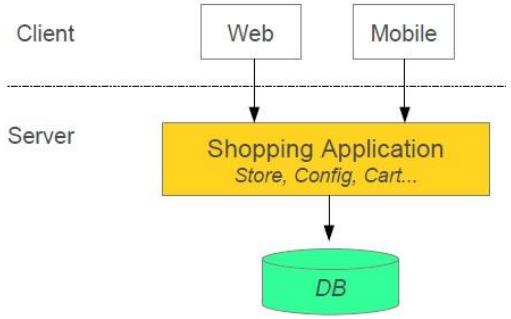


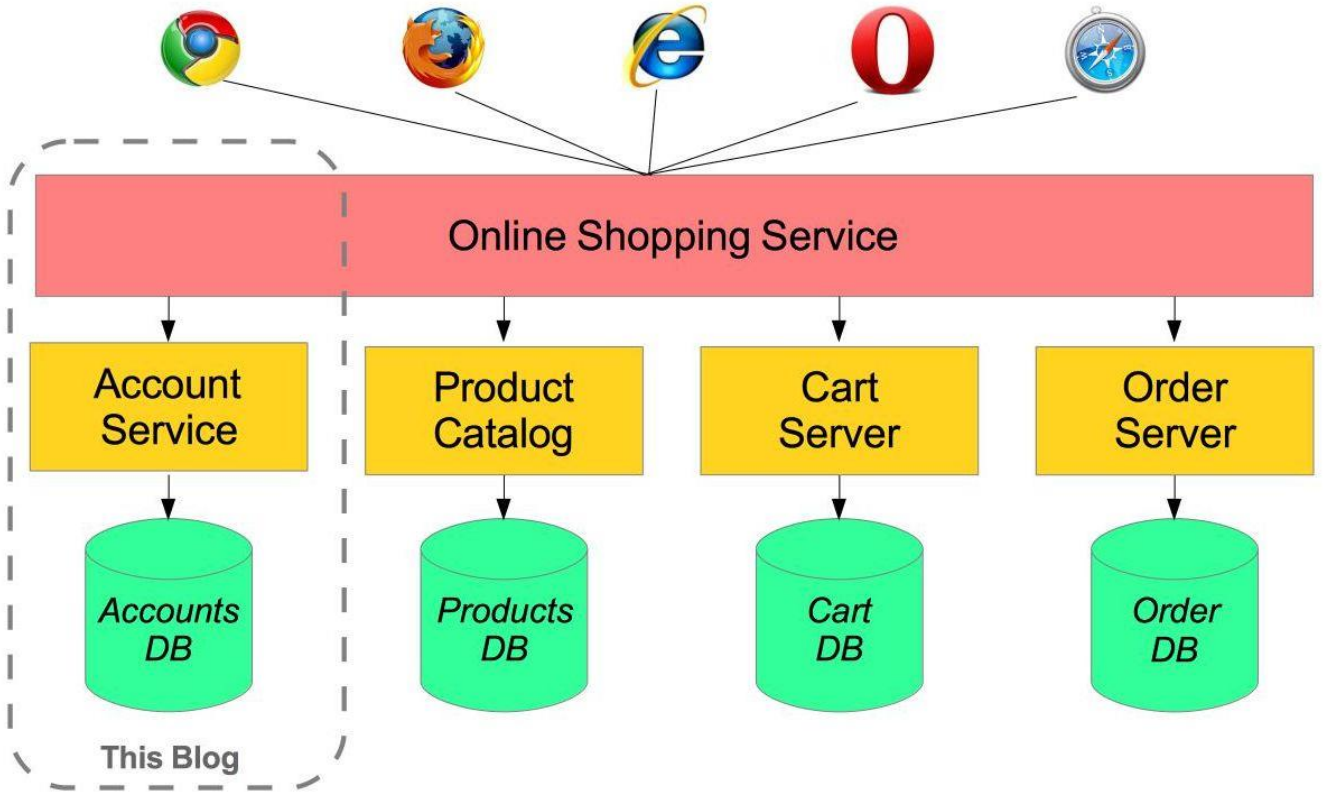
Shopping system without Microservices (Monolith architecture)
In this architecture we are using Monolith architecture i.e. all collaborating components combine all in one application

What is Microservices Architecture?

Microservices architecture allows to avoid monolith application for large system. It provide loose coupling between collaborating processes which running independently in different environments with tight cohesion.

Microservices allows us to break our large system into number of independent collaborating processes.





For example imagine an online shop with separate microservices for user-accounts, product-catalog order-processing and shopping carts

Microservice’s characteristic

- Loose coupling
  - application build from collaboration services or processes, so any process change without effecting another processes
  - effect of changes isolated

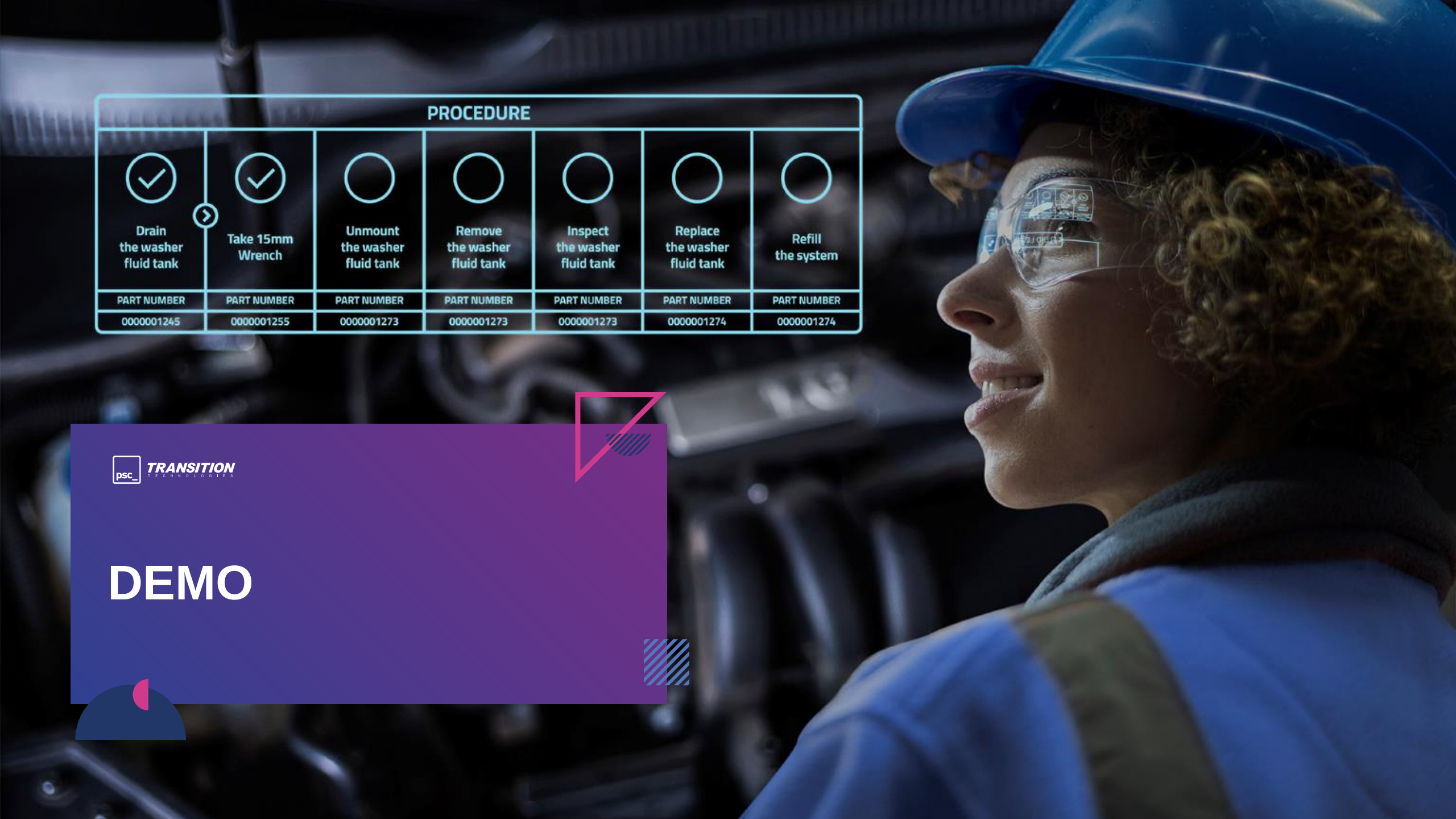
- Tight cohesion
  - an individual service or process that deals with a single view of data
  - code perform a single well defined task

Microservice Benefits

- Smaller code base is easy to maintain
- Easy to scale as individual component
- Technology diversity i.e. mixing libraries, databases, frameworks etc.
- Fault isolation i.e. a process failure should not bring whole system down
- Better support for smaller and parallel team
- Independent deployment
- Deployment time reduce

Microservice Challenges

- Difficult to achieve strong consistency across services
- ACID transactions do not span multiple processes
- Distributed System so hard to debug and trace the issues
- Greater need for end to end testing
- Required cultural changes in across teams like Dev and Ops working together even in same team



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Spring Cloud

- **Spring Cloud and Discovery server**
  - building blocks for Cloud and Microservices
  - provides microservices infrastructure: i.e provides use services such as Service Discovery, Configuration server and Monitoring.
  - provides several other open source projects like Netflix OSS.
  - uses Spring Boot style starters
  - provides Platform as a Service like AWS

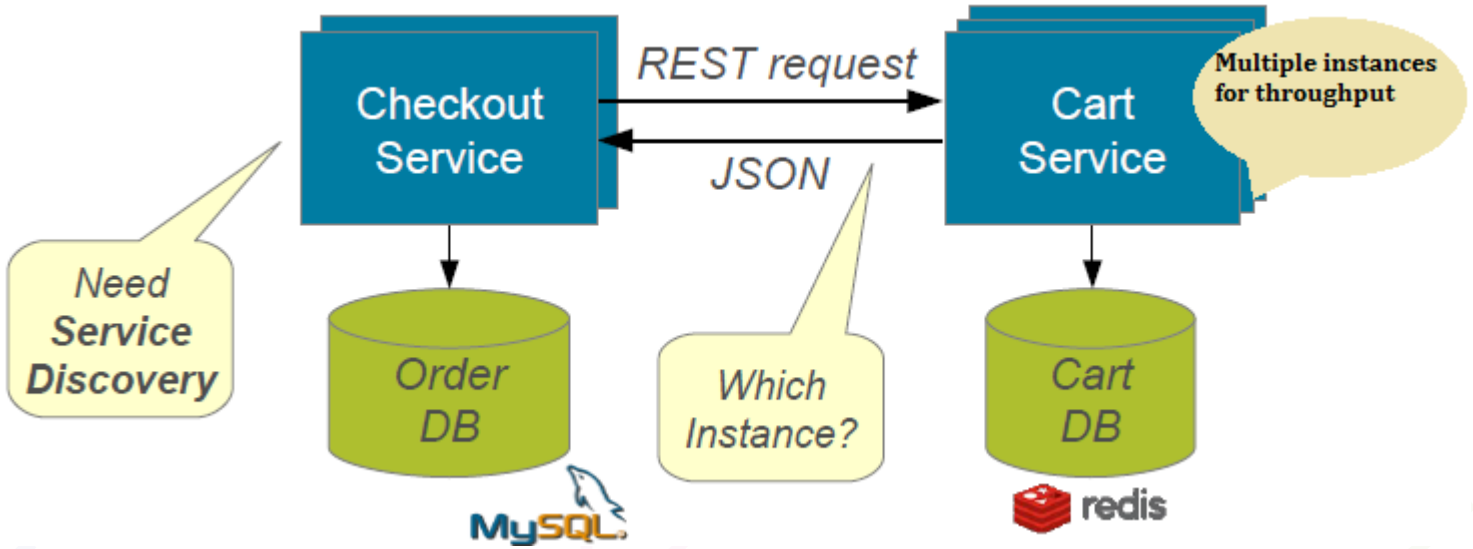
- **Spring Cloud supports**
  - Cloud Integration
  - Dynamic Reconfiguration
  - Service Discovery *(How do services find each other?)*
  - Security
  - Client-side Load Balancing *(How do we decide which service instance to use?)*

https://spring.io/blog/2015/07/14/microservices-with-spring

Service Discovery

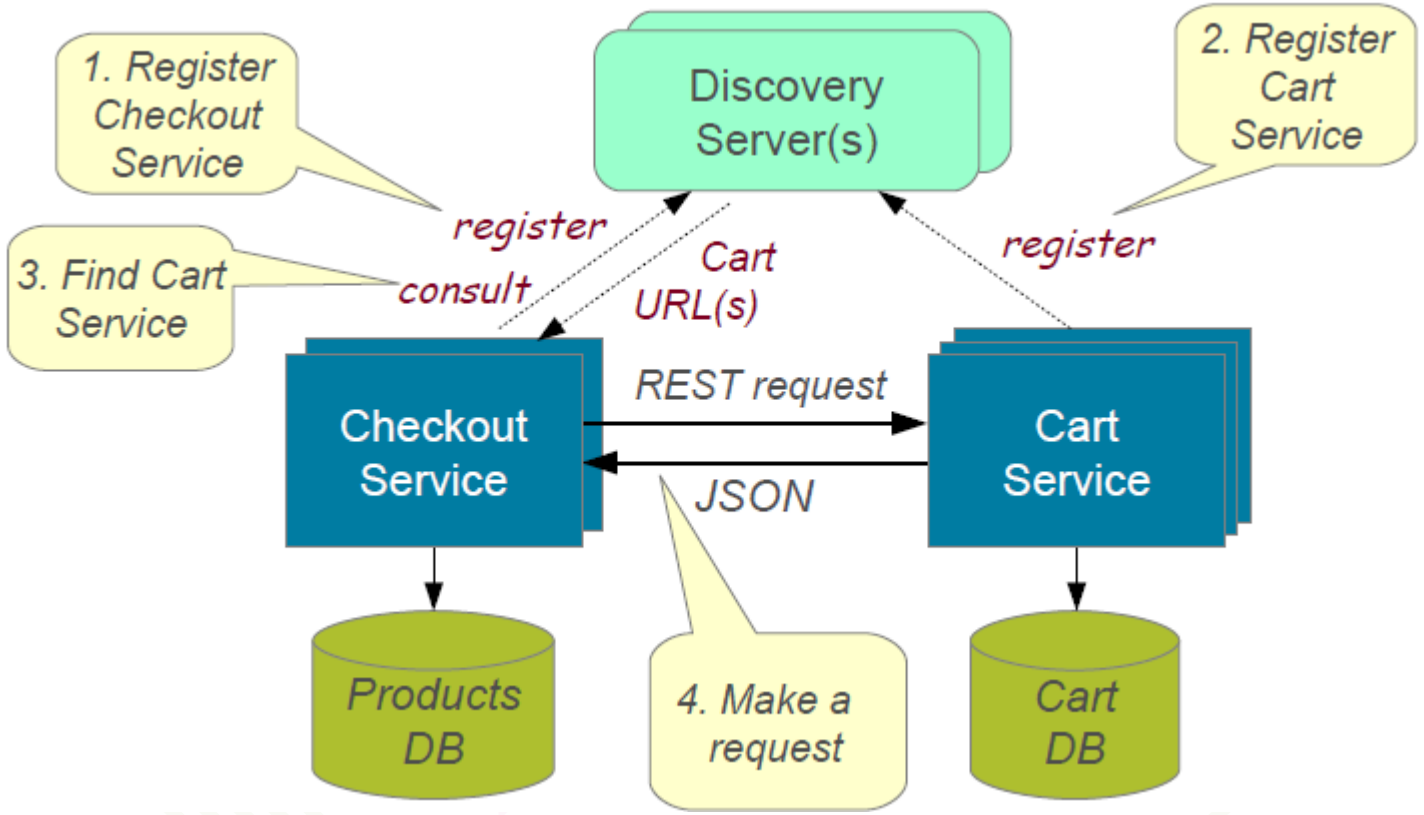
Problem without discovery

- Finding right services
- Running multiple instances for a service



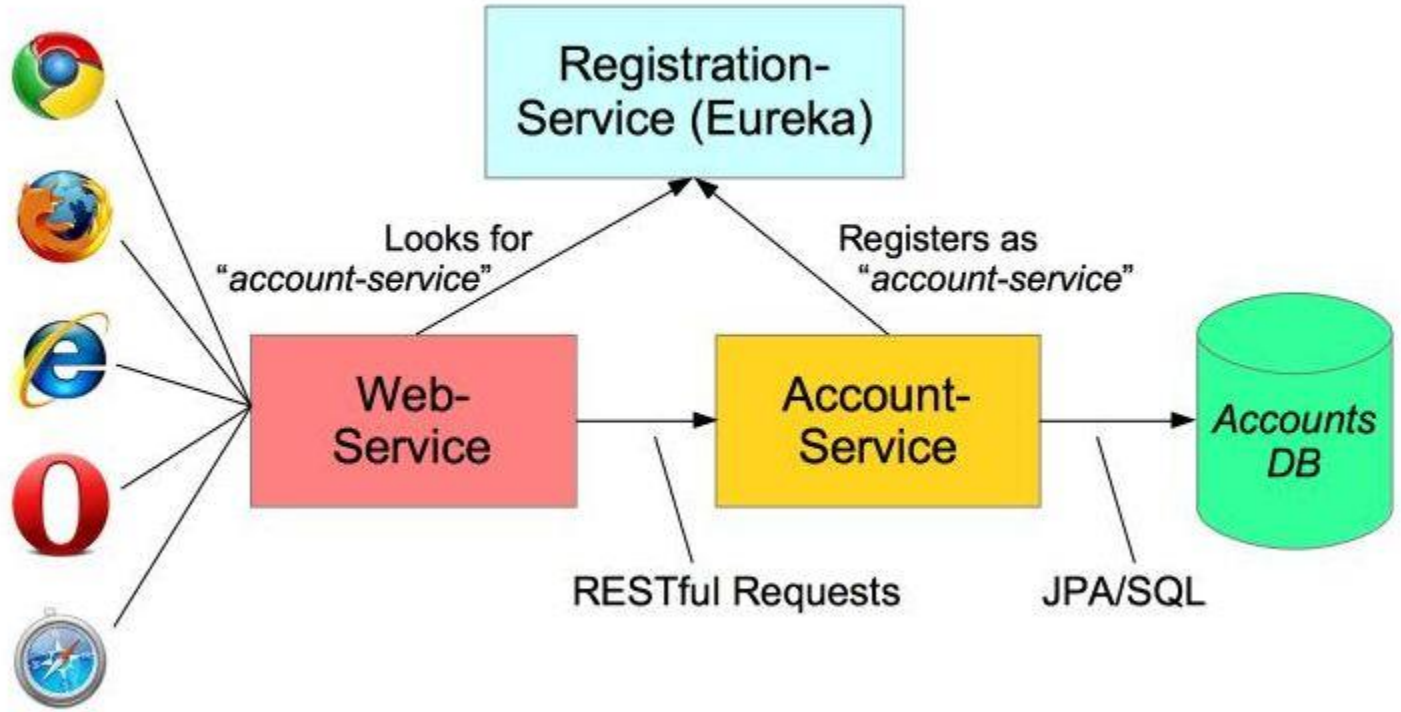
Service Discovery

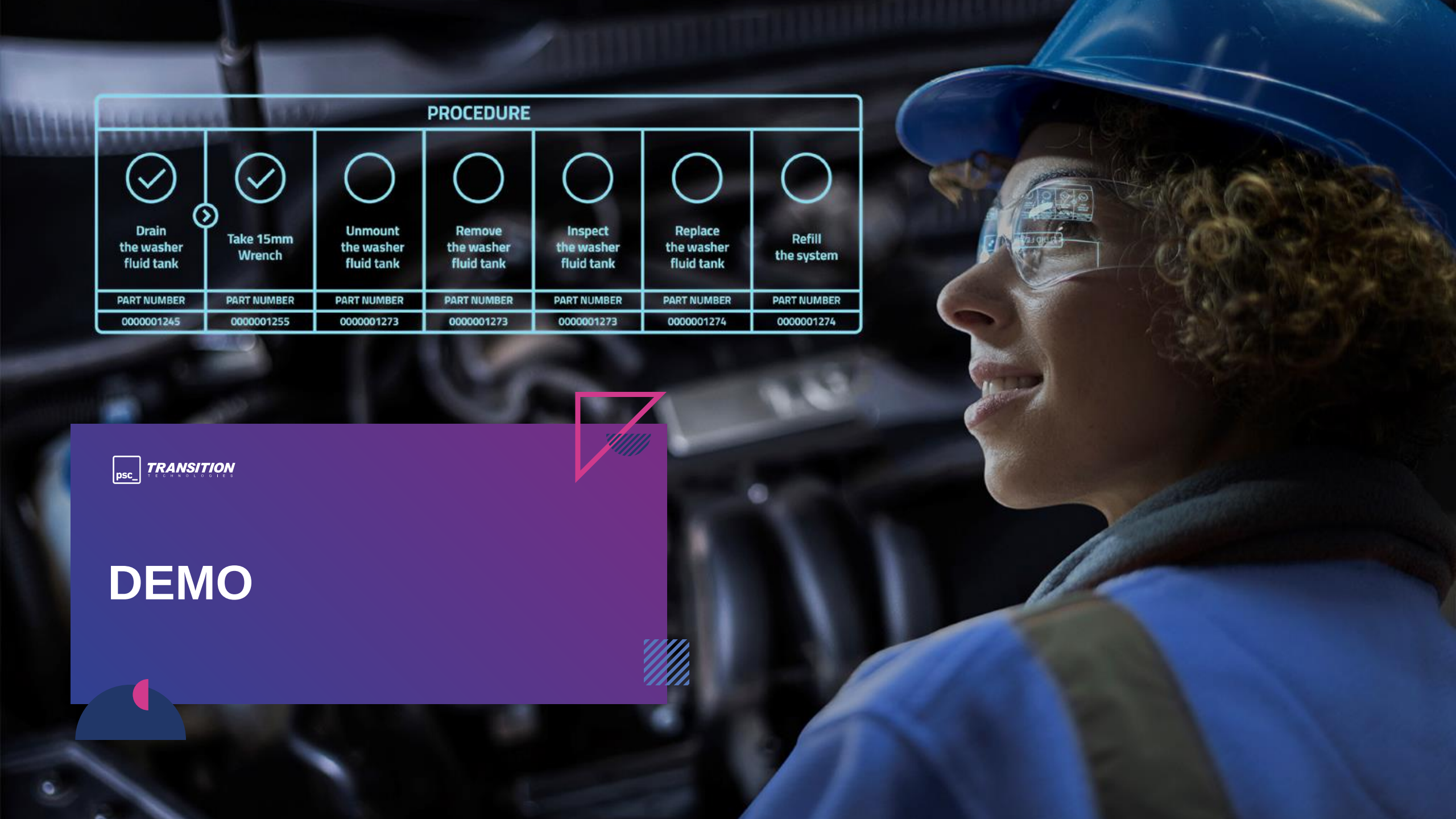
- **Implementing Service Discovery**



Client-side Load Balancing

If we have multiple instances of a service available, it picks one for you





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