

Quality Attributes and Tradeoffs

17-423/723 Designing Large-Scale Software Systems

Recitation 3
Jan 31, 2025

Agenda

- About the systems
- List out Quality Attributes
- Activity 1: GQM (Goal, Question, Metric) Exercise
- Activity 2: QAS (Quality Attribute Scenario)
- Activity 3: Compare & Contrast Two Quality Attributes
- Summary

System Overview (Online Payment Portal)

- **What is it?**
 - A platform enabling merchants and individuals to send and receive payments online.
 - Examples: PayPal, Stripe, etc.
- **Key Features:**
 - Merchant onboarding, customer transactions, refunds, subscriptions, digital wallets.
 - Fraud detection, dispute handling, multi-currency support.
 - Integrations with external payment networks (Visa, MasterCard, banks).

Quality Attributes

Let's think about important quality attributes of the system.

Activity 1: Goal, Questions, Metrics

- Choose any quality attributes.
- Work in pairs to prepare the GQM graph.

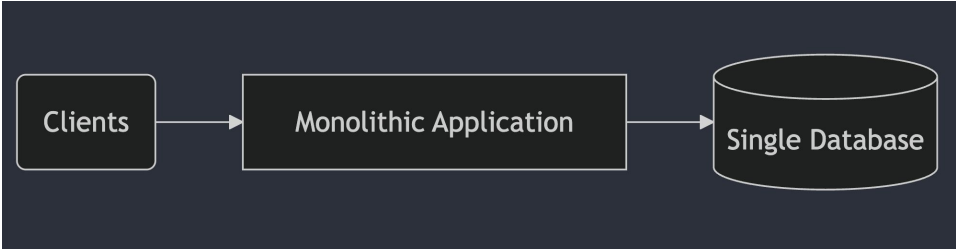
Activity 2: Quality Attribute Scenarios

- Choose any quality attributes.
- Work in pairs to prepare the QAS.
- A typical quality attribute scenario has 6 elements:
 1. Source
 2. Stimulus
 3. Artifact
 4. Response
 5. Response Measure

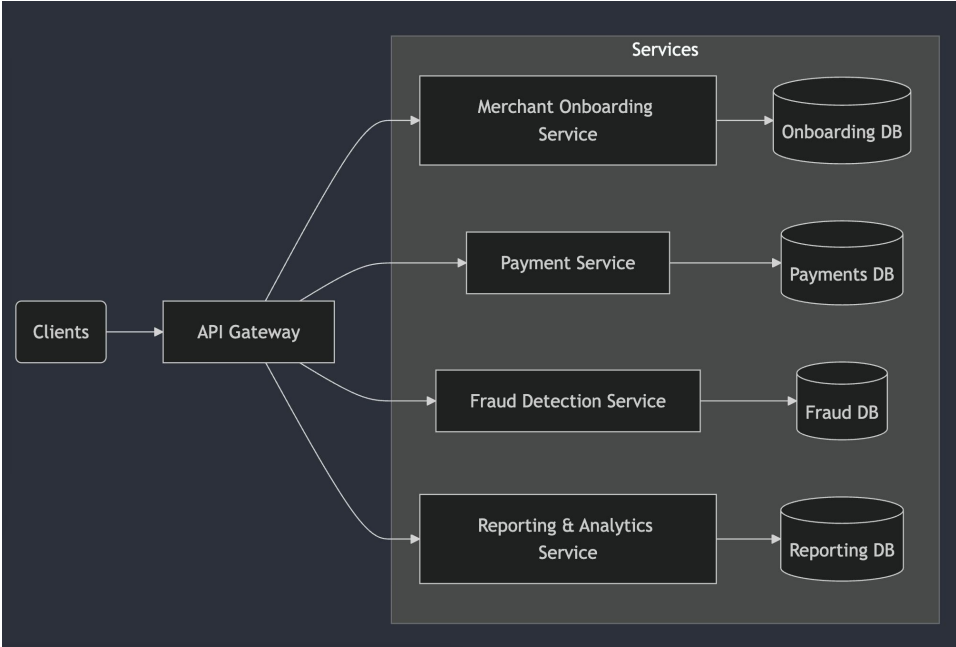
Activity 3 – QA Trade offs

- Let's look at two possible architectures for the system.
- Work in pairs to find out trade-offs among design options with respect to different quality attributes.

Monolithic Architecture



Microservice Architecture



Thank you for your Quality time!