System Integration Introduction

Systems Integration

PBA Softwareudvikling/BSc Software Development

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Fall 2017

Today's Agenda

- Introduction to course
- Introduction to System integration

- Solving integration problems using messaging technology and treated through patterns descriptions

- We will cover
  - Basic Messaging Architecture (EIP chap. 1)
  - Integration Styles (EIP chap. 2)
  - Messaging Systems (EIP chap. 3)

- Messaging exercises
  - Coffee Shop (messaging concepts)

EIP

The Course

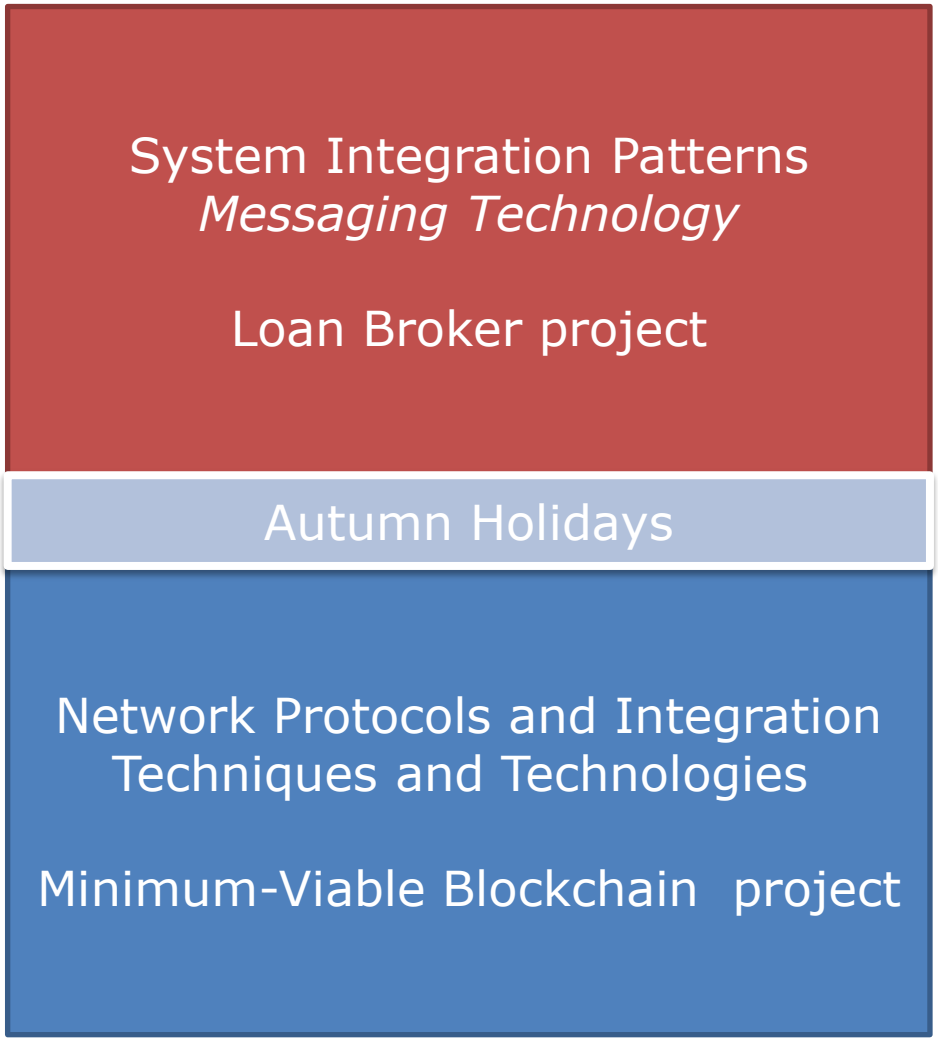
What to expect

Helpful links

- Moodle (links to GITHUB, TimeEdit, IT guides etc.): https://cphbusiness.mrooms.net/
- Semester plan overview: https://datsoftlyngby.github.io/soft2017fall/
- Teaching materials: https://github.com/datsoftlyngby/soft2017fall-system-integration-teaching-material
- EIP book online resources: http://www.enterpriseintegrationpatterns.com/

Course Overview

- 2 main modules
- Projects & Groups
- Exam
- Platform & Languages

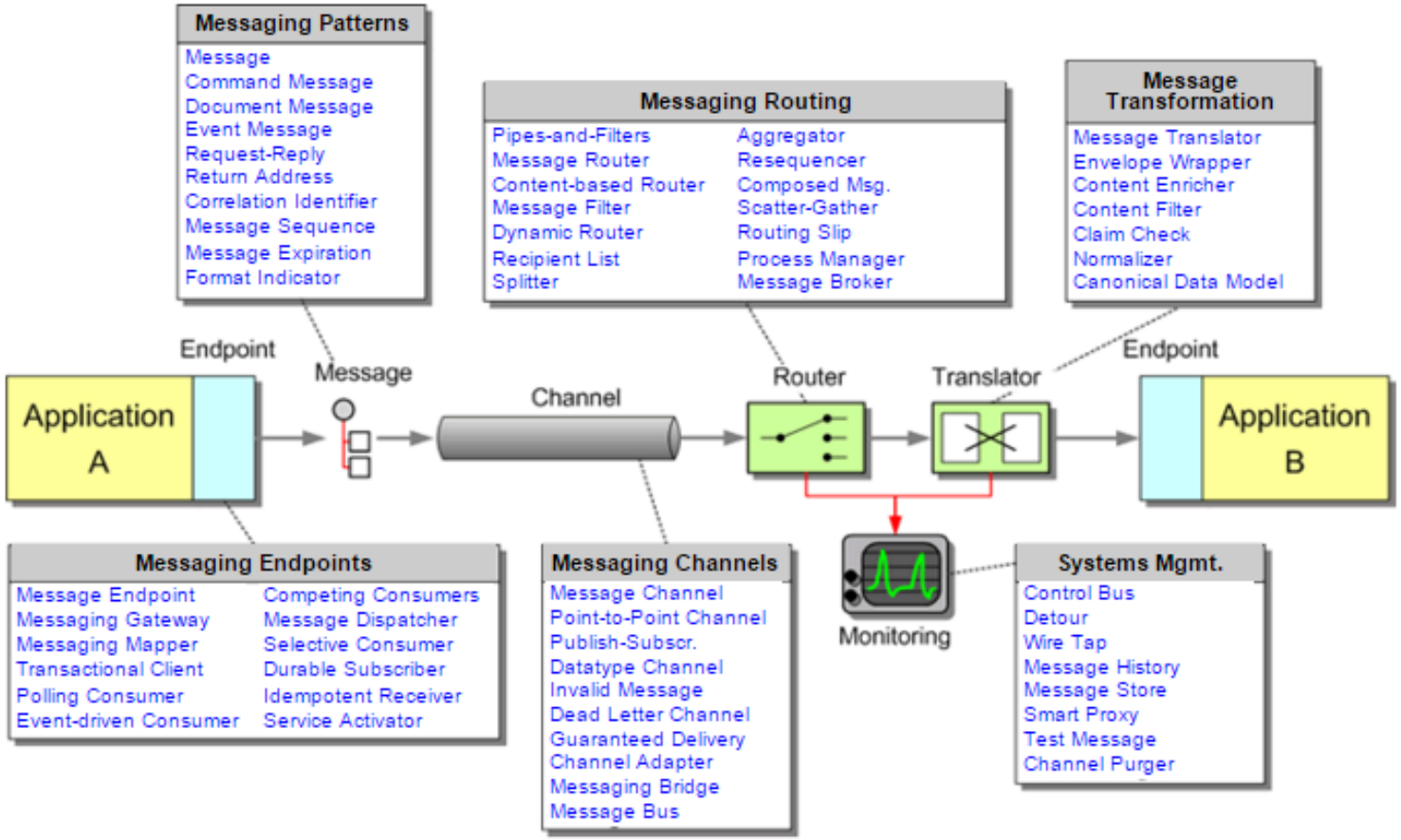


EIP Book Organization

- **Visual and verbal language** to describe integration solutions
  - Not a precise specification language
  - No vendor jargon
- **Patterns** describe message components and concepts
  - Systematizes messaging knowledge learned the hard way
  - Each pattern describes considerations and trade-offs
  - Combines patterns to describe larger solutions
- The patterns apply to a **variety of programming languages and platforms**, e.g.
  - Java, C# JMS, MSMQ, BizTalk
  - A few larger coding examples in chap. 6 + 9 (interludes which are templates for YOUR project!)
- **Online resources**: http://www.enterpriseintegrationpatterns.com/

Overview of Patterns in the EIP Book

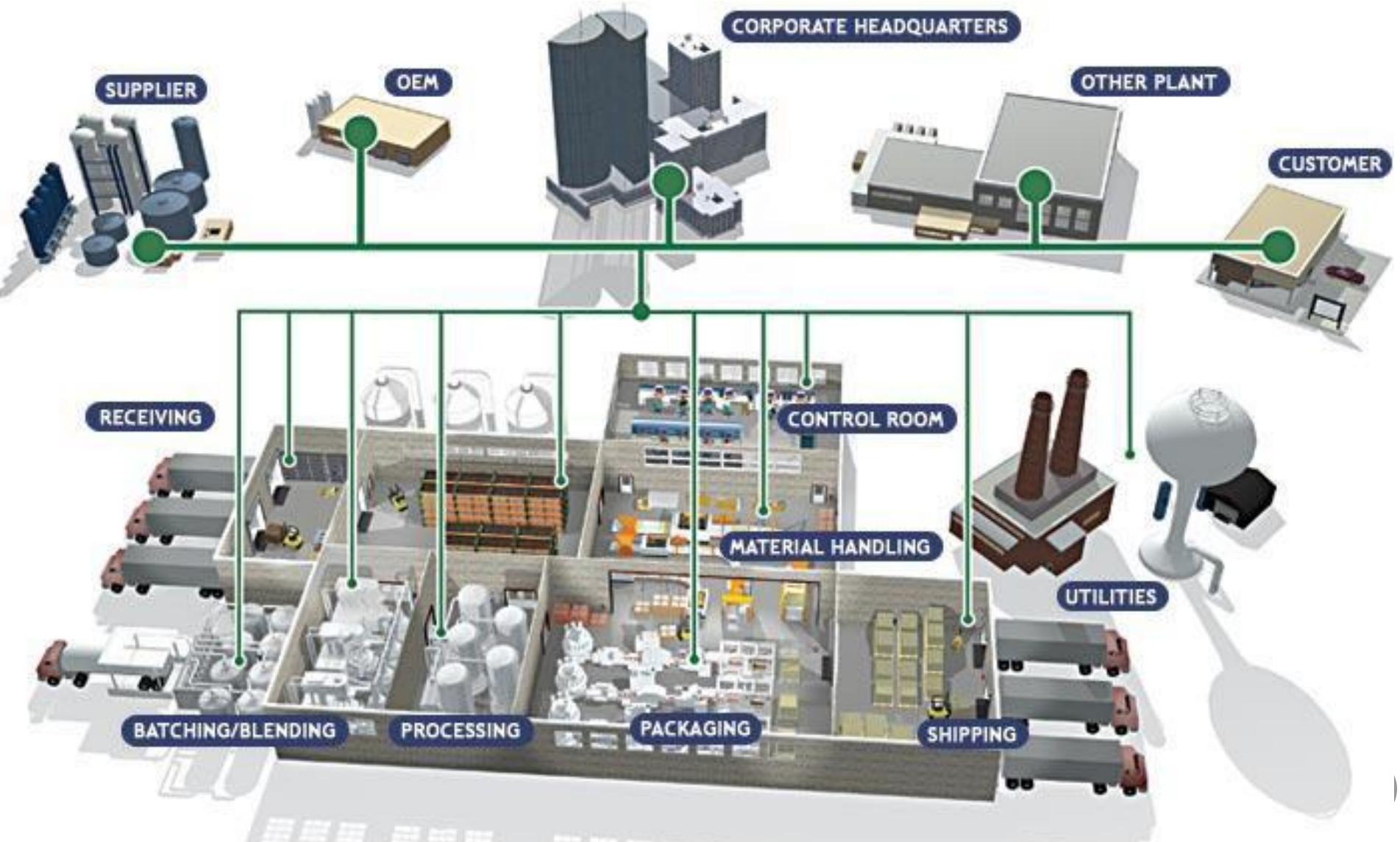
- **65(!)** messaging patterns are documented
  - We are NOT covering them all ☺



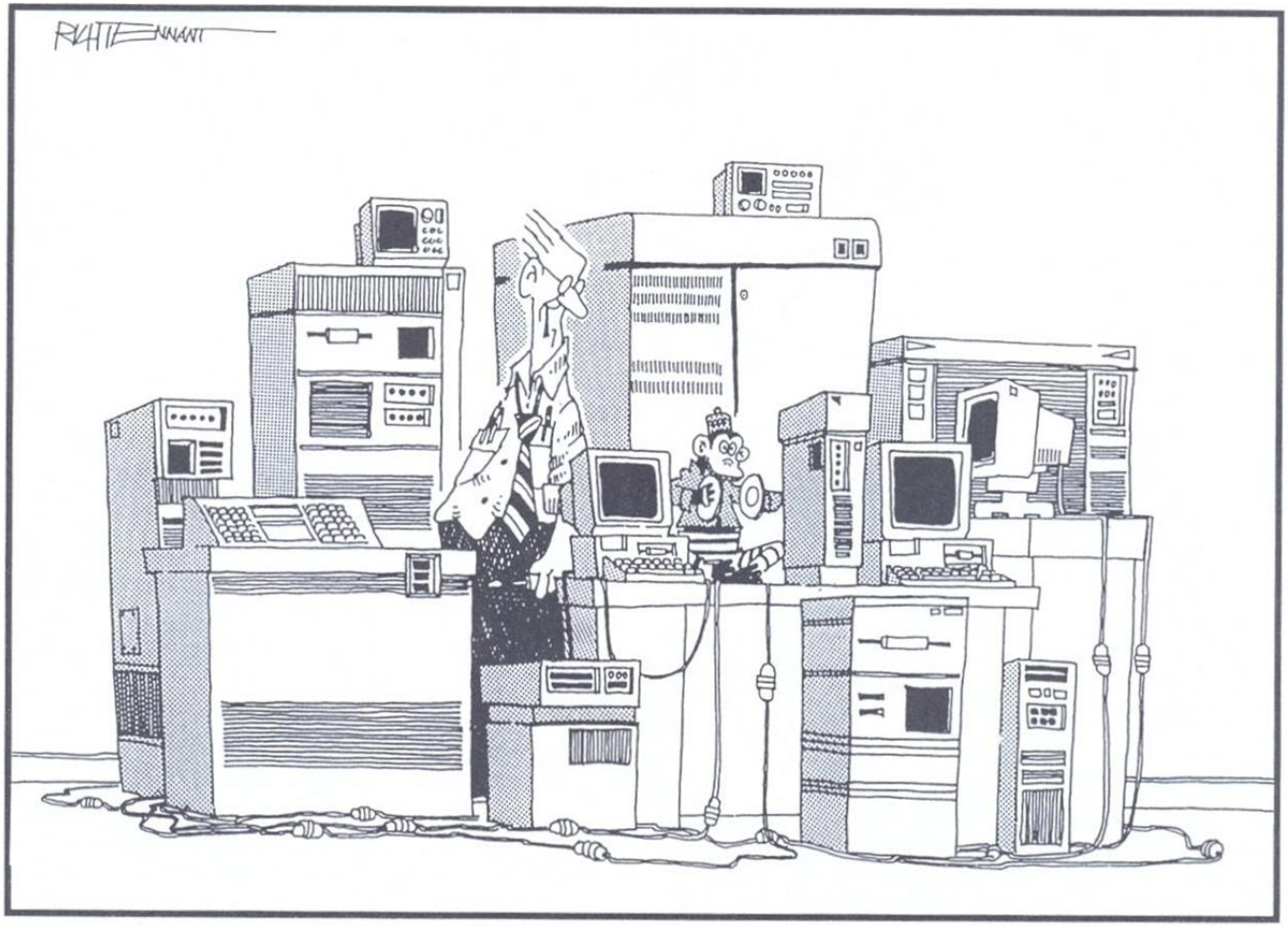
Introduction to System Integration

System integration is the task of making different applications work together in order to …?

Business Integration Scenario - Example

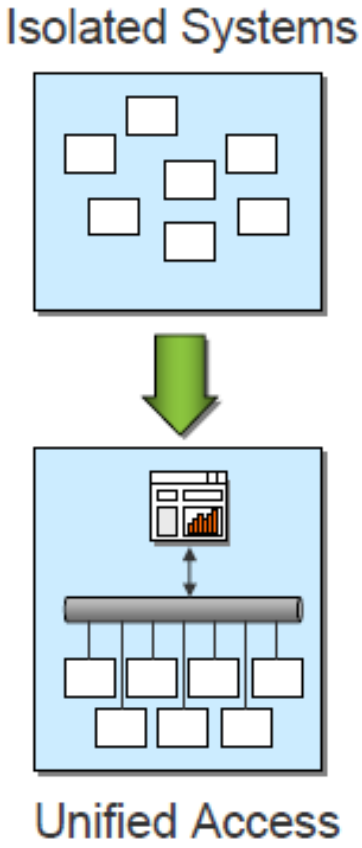


What We Don’t Want!



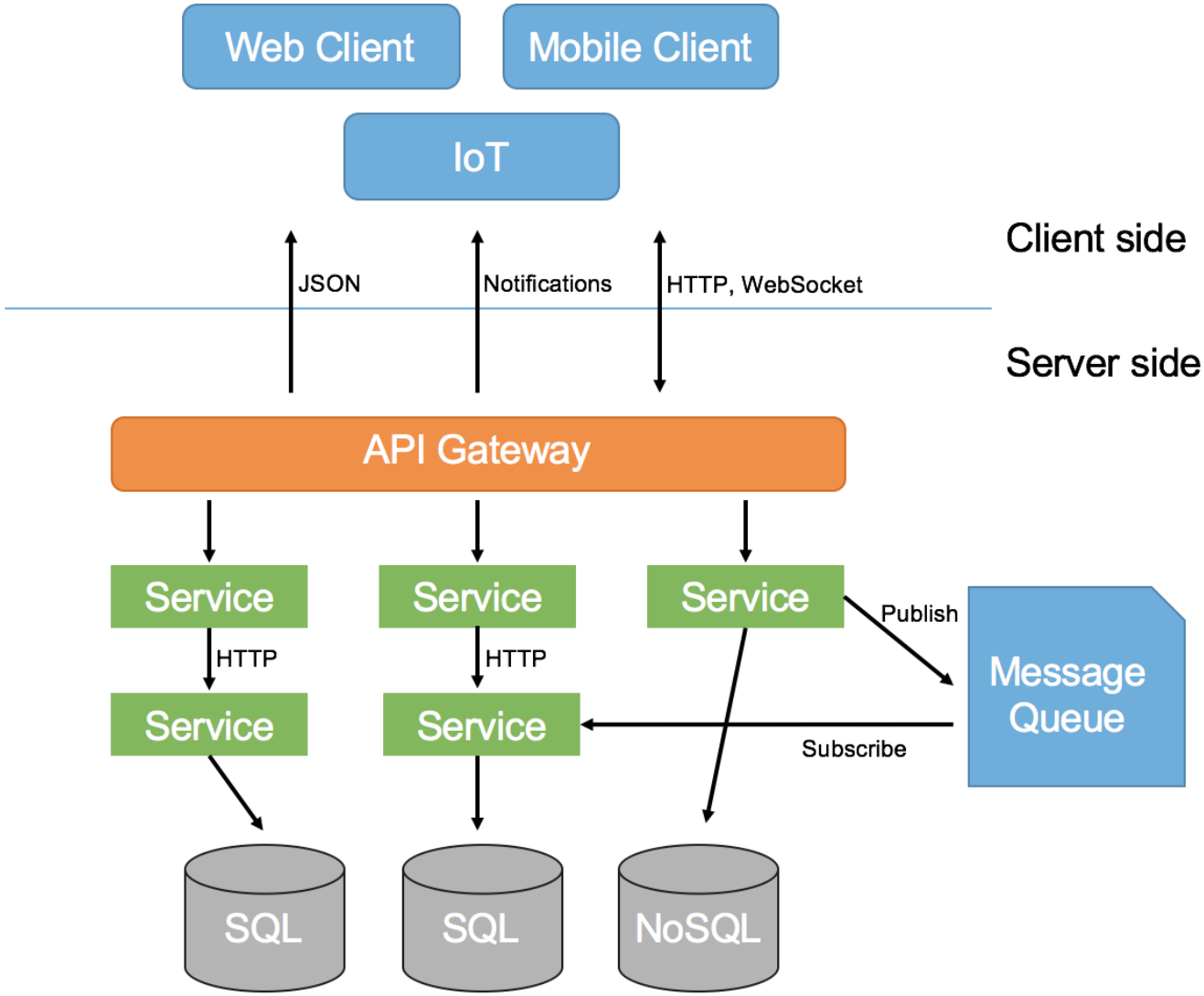
“Now, just when the heck did I integrate THAT into the system?”

The Idea: Make Isolated Systems Work Together With Unified Access



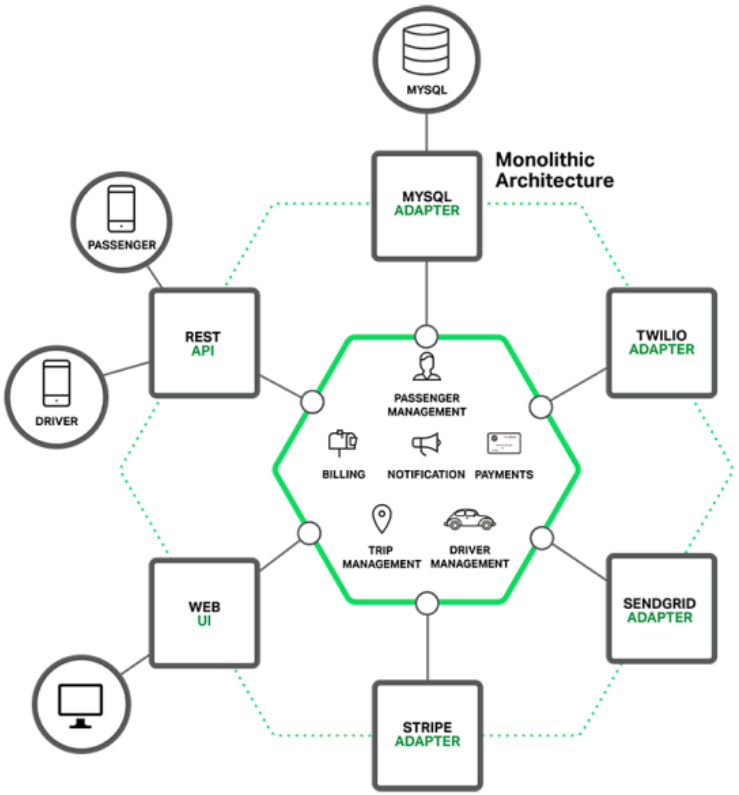
- To support common business processes and data sharing across applications

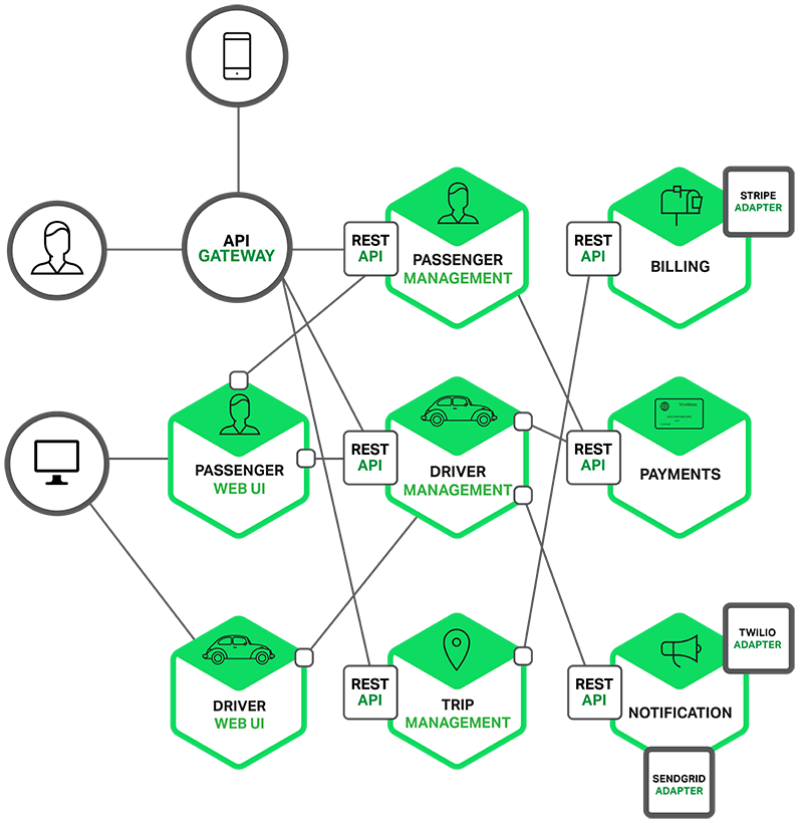
- Requires applications to be connected to a common integration solution.
- Examples
  - Cisco
  - RESTful API
  - Enterprise Service Bus


Web Client
Mobile Client
IoT
JSON
Notifications
HTTP, WebSocket
Client side
Server side
API Gateway
Service
Service
Service
HTTP
HTTP
Publish
Service
Service
Message Queue
Subscribe
SQL
SQL
NoSQL

Monolithic vs. Micro Service Architecture

Example: Taxi system like Uber





Resource: https://www.version2.dk/artikel/traet-it-monolitten-proev-microservice-1070559

Course Objectives

To enable the student to work with integration of systems

- ✓ Know about business considerations in relation to system integration
- ✓ Design a system that is easy to integrate with other systems, and uses existing services
- ✓ Transform or expand a system so that it can function in a service-oriented architecture
- ✓ Use patterns that support system integration
- ✓ Be able to choose from various integration techniques
- ✓ Acquire knowledge of developments in standards for integration

Assessment levels

- Knowledge
- Skills
- Competences

Different perspectives

- Technical view – technology focus (primary)
- Business view – business process scope (secondary)

Students Expectations / Activity

- You can expect:
  - a mix of hands-on, exercises, project work and ordinary lecturing

- We expect:
  - Full-time students ☺ I.e. spend ~ 12 hrs. work in each PBA course.
  - Activities are typically divided into 3 equal parts: