IDS = Introduction to Distributed Systems (Foundations of)

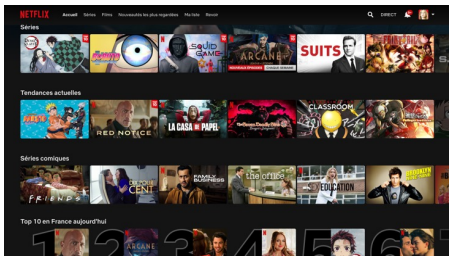
2023 - 2024

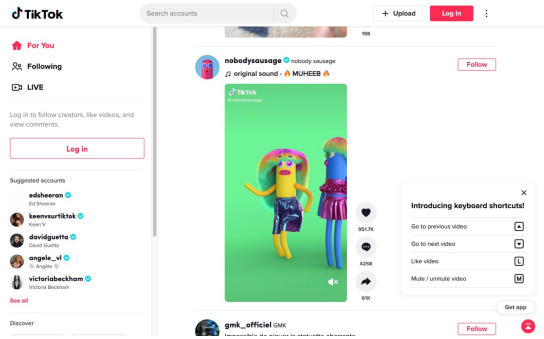
Vania Marangozova
Vania.Marangozova@imag.fr

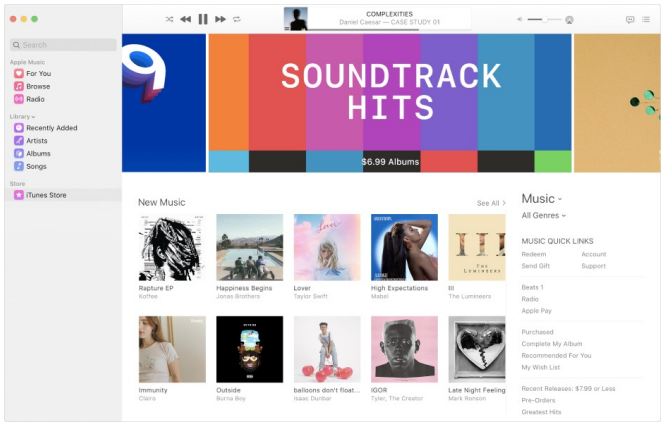
Université Grenoble Alpes
LIG Laboratory

Why distributed systems?

- **Whenever you hear "server"/"cloud"/"streaming"... it is distributed!**
  - mail server
  - game server
  - web server
  - music provider
  - VoD (video on demand) = Netflix
  - ...
  - datacenter
  - HPC cluster
  - ...
  - cloud
  - fog
  - ...

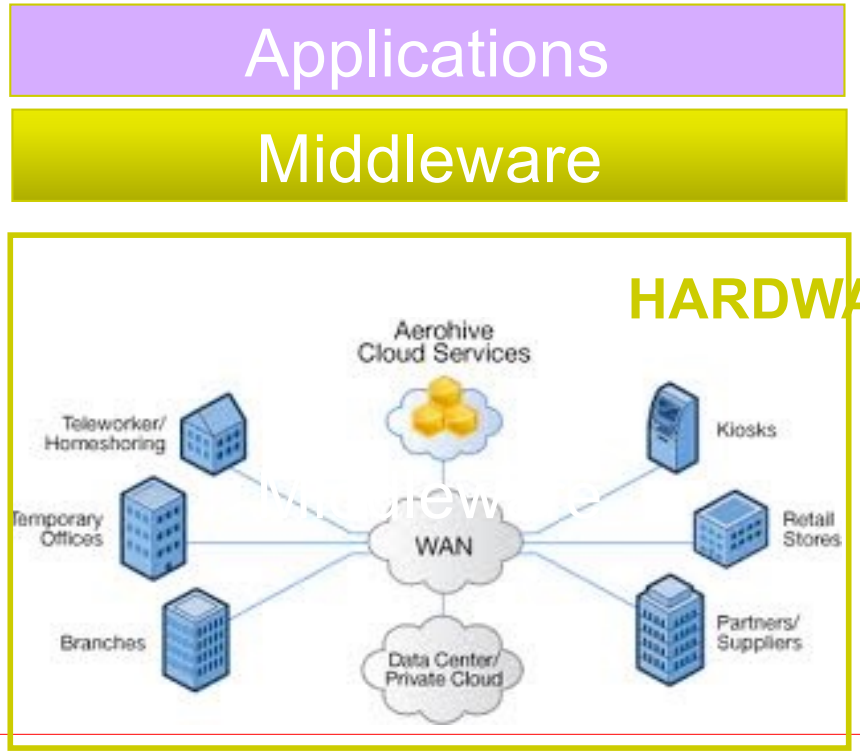






Goals

- **What is it about ?**
- **Is it difficult, I mean really ?**
- **What algorithms = what is the functionality and what is guaranteed ?**
- **What technology = how is it implemented ?**



- **Get to know the foundations**
  - architecture
  - client-server
  - protocol
  - service
  - interface
  - middleware
  - tier
  - ...

Goals

Properties

Protocols

DISTRIBUTED ALGORITHMS

Understand through experimentation

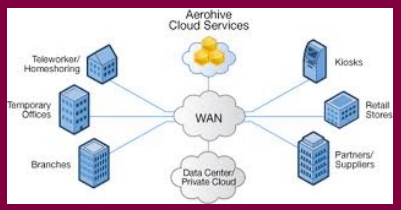
TECHNOLOGY

Java

Cloud

Web

Middleware functions - SERVICES



Distributed HARDWARE

Organization

- **Lectures + Practical sessions**

- **Labs = Mini-projects**
  - two basic labs, to get to know largely used communication paradigms
    - Java RMI -> RPC
    - RabbitMQ -> publish-subscribe
  - one

    - Distributed chat
    - Distributed game
    - Distributed shared memory
    - Virtual network (overlay)

- **Evaluation**
  - Labs 50%
  - Final exam 50%