Arquitectura de Sistemas de Internet

Course Topics

- Large Scale Distributed Systems
- Architectures (client-server, publish-subscribe, MQ, P2P, ...)
- WebServices (SOAP/REST)
- Data storage on the internet (noSQL databases)
- Consistency and replication
- Cloud computation (IaaS, PaaS, SaaS)

Objectives

- The main objectives of this course is to give students enough knowledge and competencies to the development and evaluation
  - of Internet based computational systems
  - and distributed applications.

Objectives

- At the end of this course students will be able to:
  - Understand, compare and evaluate the different Internet systems architectures
  - Understand and present solutions to the various problems present in the development on Internet based systems
  - Evaluate and apply different technologies and models in the solution of problems in the context of the Internet
  - Develop Internet based systems, using available technologies, storage, processing, communication and presentation

Detailed planing

- Distributed systems
  - Challenges
  - Architectural models
- Remote invocation
- Naming
- Indirect communication
- Web services
- Mobile code
- Cloud
- P2P / DHT

Instructor

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  - 213100347
- Office at INESC-ID
- Office hours
  - Fridays 10h00 to 17h00
    - With appointment
    - Or at your own risk

Grading

- Exam
  - 50% final grade
  - Minimum grade 9.5
- Project
  - 50% final grade
  - Minimum grade 10.0

Project

- Programming assignment
  - Large scale distributed system / Internet Application
  - Using presented technologies and techniques
- To be developed during the semester
  - In groups of two students
  - To be submitted on last week of classes
- Assigned in the middle of the semester
  - Students can proposed topic
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Classes

- Theoretical
  - Tuesday
    - 12h30
    - QA1.1
  - Thursday
    - 14h00
    - QA1.1
- Laboratory
  - Tuesday
    - 9h30..11h00
    - SCDEEC
  - Wednesday
    - 11h00..12h30
    - SCDEEC

Reading material

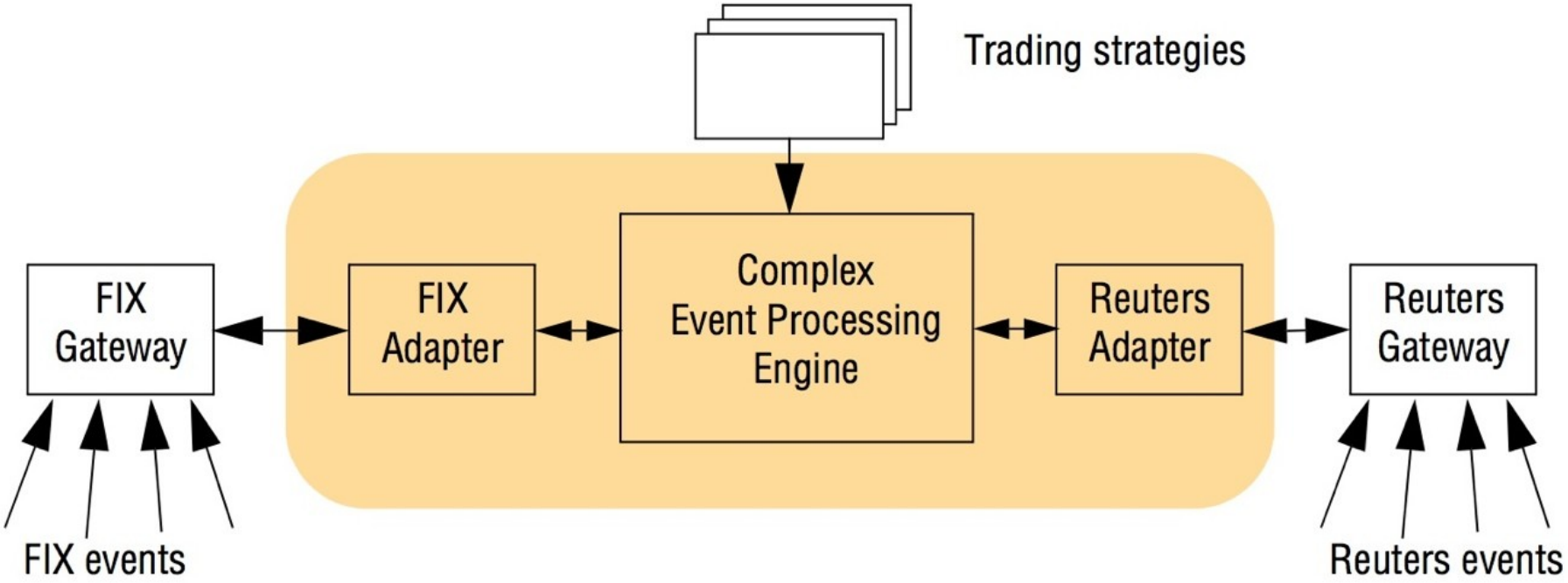
- Tannenbaum, A., Steen, M., “Distributed Systems: Principles and Paradigms”, Prentice-Hall International, 2007.
- Couloris, G., Dollimore, J., Kindberg, T., “Distributed Systems, Concepts and Design”, Addison-Wesley
- Further material
  - PDF Documents to be posted on the web page

Background

- Modern Distributed Systems rely on networking
  - TCP/IP
- Approval on Psis or RCI
  - Not necessary
  - Recommended

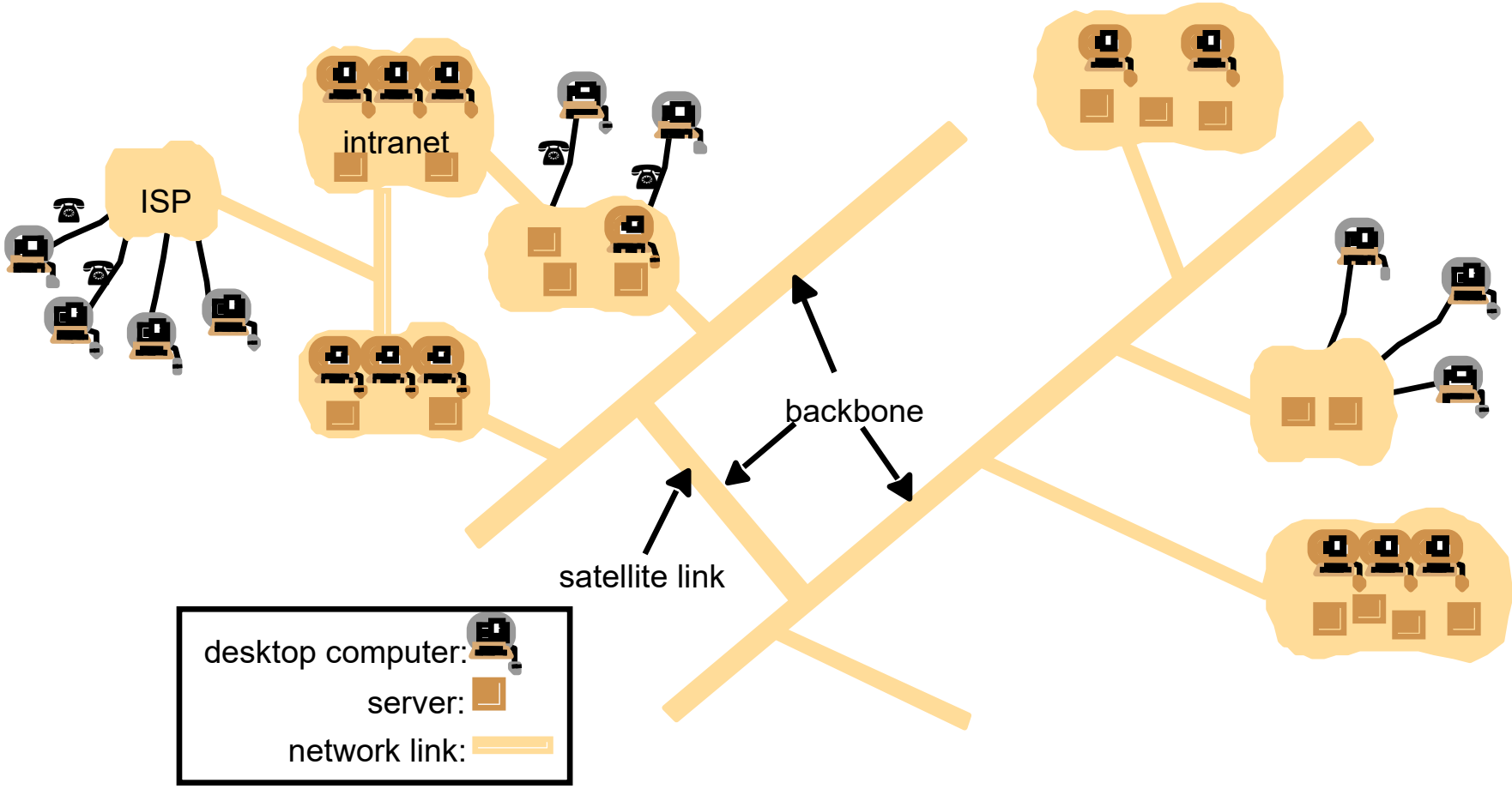
Distributed Systems
Examples

- Financial trading



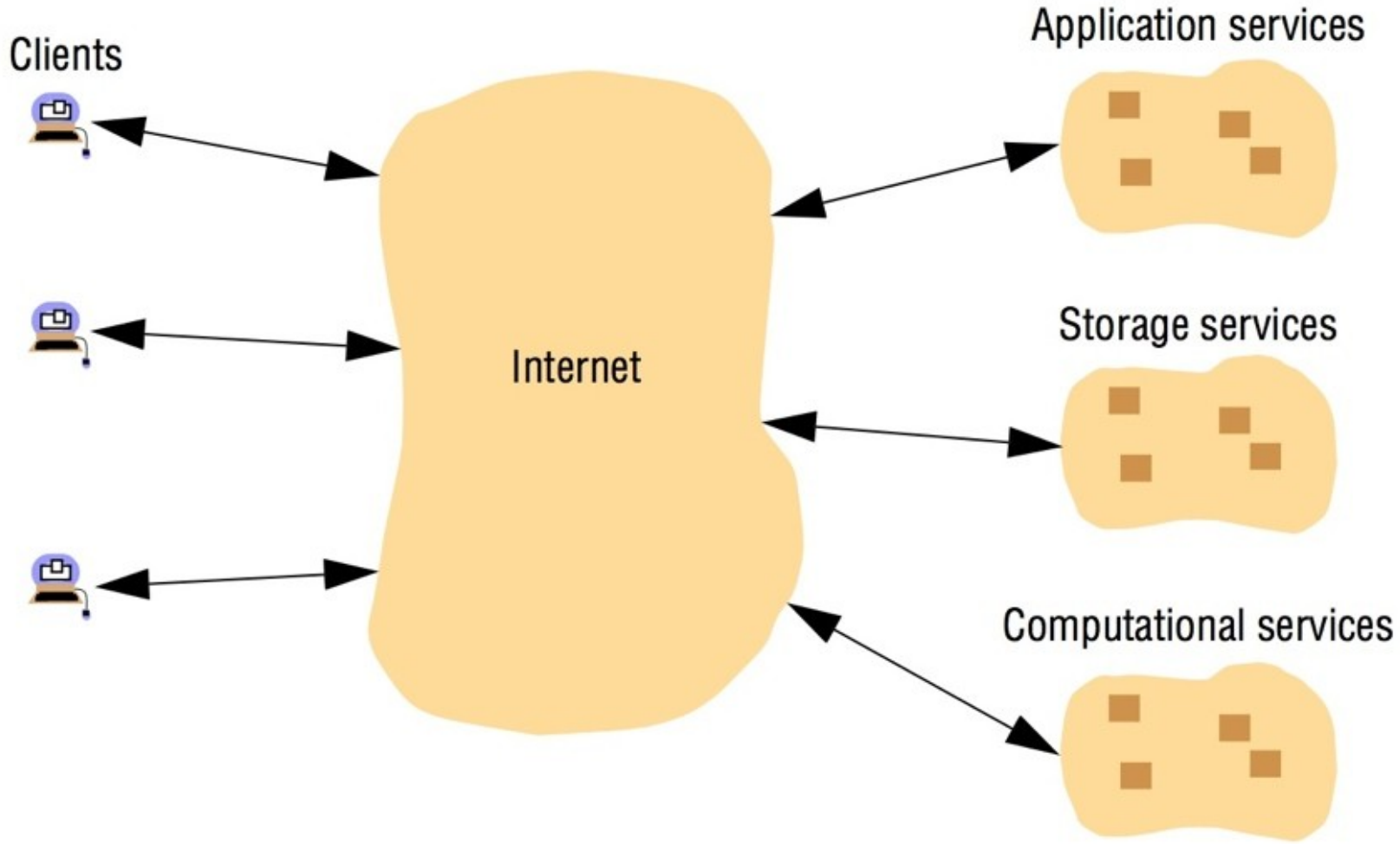
Distributed Systems
Examples

- Internet



Distributed Systems
Examples

- Cloud



Distributed Systems
Examples

- Mobile computing /IoT