

Discussion Section 1

Distributed Systems
Spring 2014

Types of Distributed Systems

Recalling from the lecture...

- **Distributed Computing Systems**
 - e.g. a cluster or grid of computers
- **Distributed Information Systems**
 - e.g. a transaction processing system
- **Pervasive Distributed Systems**
 - Small, battery-powered, mobile computing devices with wireless connections
 - e-Healthcare systems
 - Sensor networks
 - Home systems

Home Systems

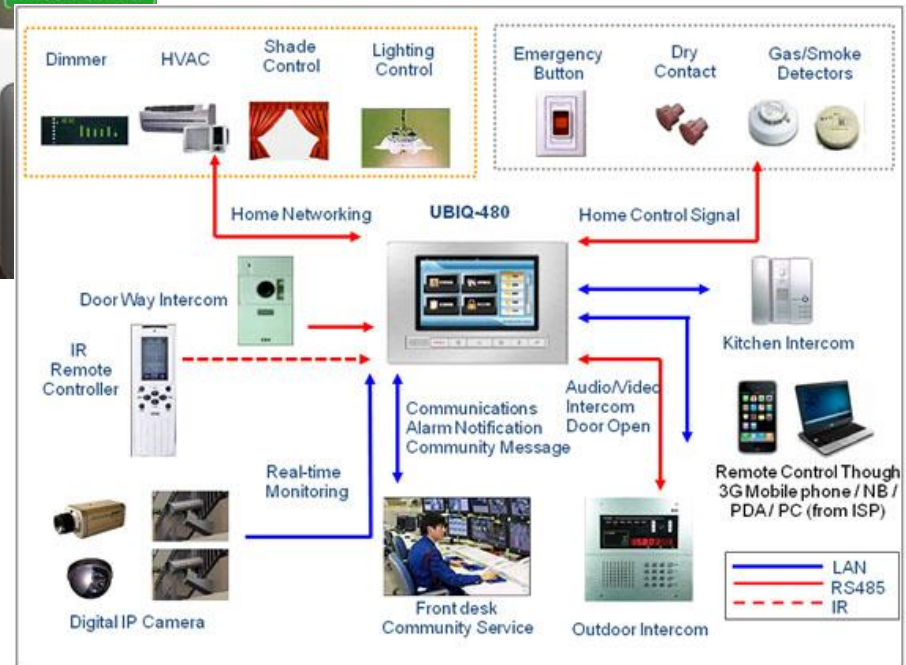


These are systems built around home networks. Consist of:

- Personal computers
- Televisions
- Audio/Video equipment
- Gaming devices
- Smart phones
- Kitchen appliances
- Surveillance cameras
- Controllers for lighting

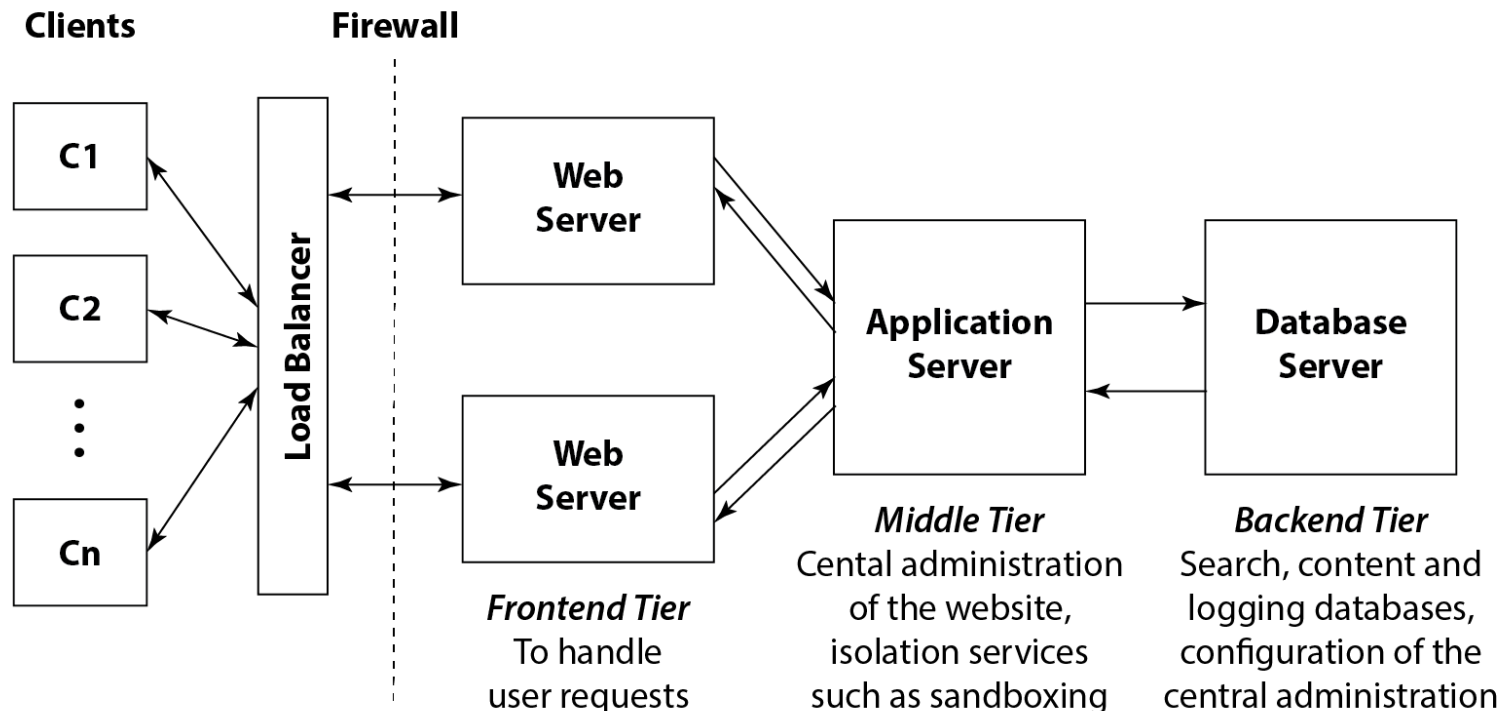
There are however several challenges:

- Self-configuring
- Self-managing
 - Universal Plug and Play (UPnP)
- Issues with “personal space”
- Storage
- Smart way of storing information



Some Questions and Answers

Q: Networked systems maybe divided as back-office and front-office. How do we match the coherent view that is demanded from a distributed system?



Some Questions and Answers

Q: Explain what is meant by a virtual organization and give some examples.

A: Virtual Organization is an organization which appears to be a unified organization but actually consists of individuals who are geographically apart.

e.g., Wikipedia, StackOverflow etc.

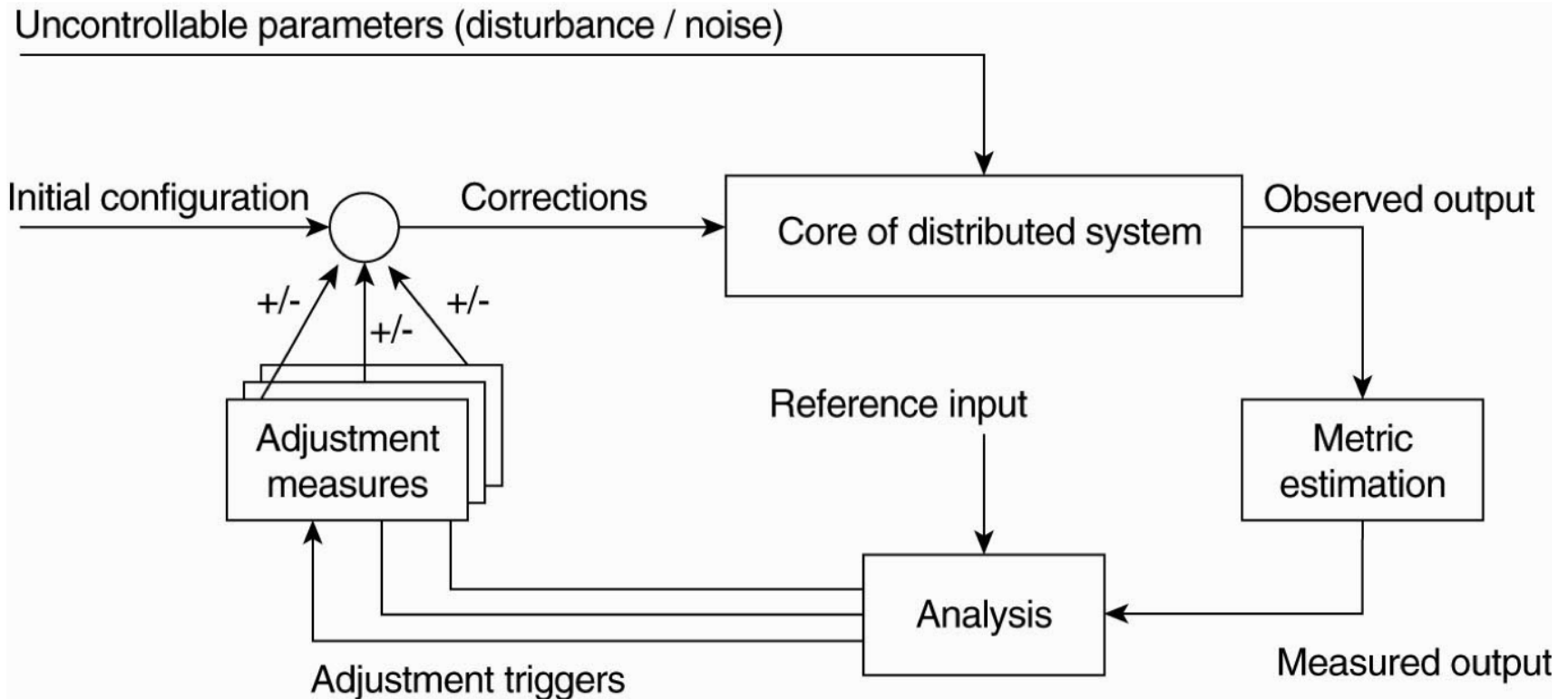
Some Questions and Answers

Q: *Give more examples for distributed systems (besides home systems, health-care systems, and sensor networks)*

A:

1. Web search services
2. Online gaming
3. Social networks

The Feedback Control Model



The logical organization of a feedback control system

The Feedback Control Model

Example: *Cruise control*

Measures speed, when a change is detected, the car is slowed down or speeded up.

Core : Cruise Control System

Reference Input : Speed Threshold

Metric Estimation & Analysis : Compares vehicle speed (from the sensors) and the speed threshold.

Adjustment Measure : Reduce speed if vehicle speed is higher than the speed threshold

More Questions and Answers

Q: *What is the difference between a vertical and horizontal distribution?*

A: *Vertical Distribution:* Distribution of different layers in a multitiered architectures across multiple machines => ***Client-Server***

Horizontal Distribution: Distribution of a single layer across multiple machines, such as distributing a single database => ***P2P***