



# Software Service Engineering

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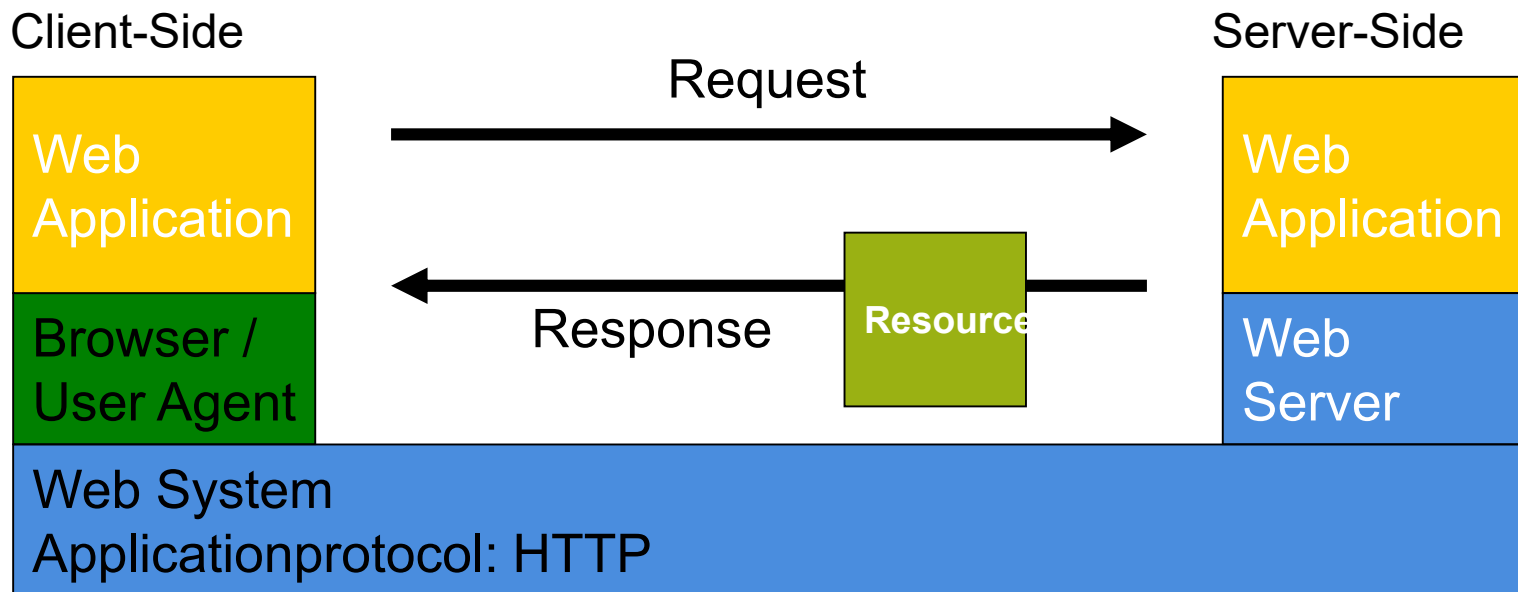
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Rechnersysteme

<http://vsr.informatik.tu-chemnitz.de>



# 2<sup>nd</sup> Generation



## ■ Browser

- ▶ Mosaic, Netscape
- ▶ HTML, Frames
- ▶ Images
- ▶ HTML-Forms
- ▶ Helper
  - Audio, Video etc.

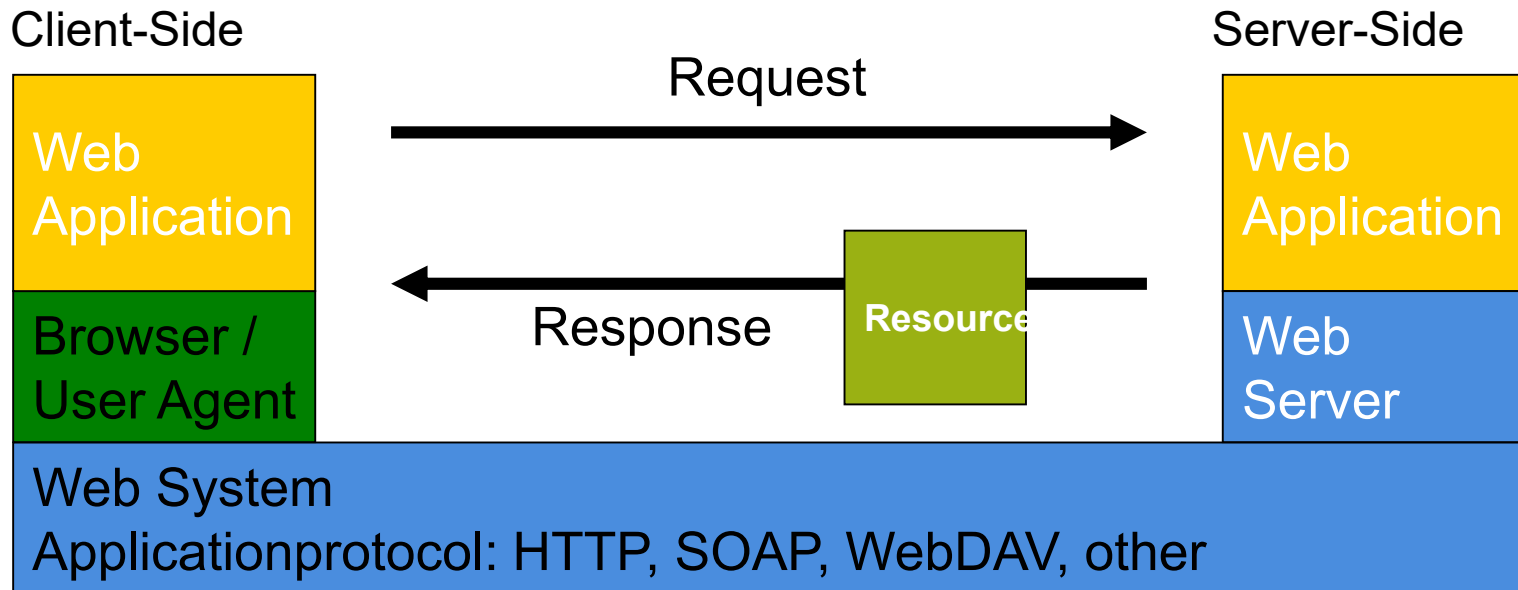
## ■ Web System

- ▶ HTTP
- ▶ Cookies

## ■ Web Server

- ▶ HTTP
- ▶ Server-API & CGI
  - Database
  - Information Systems
  - Media Server

# 3<sup>rd</sup> Generation (Multi-Tier)



## ■ User Agent

- ▶ Netscape, IE, and PDA-Browser etc.
- ▶ Other Types of User Agent
- ▶ Plug-Ins, Applets, ActiveX
- ▶ Script-Code
- ▶ DHTML, More...

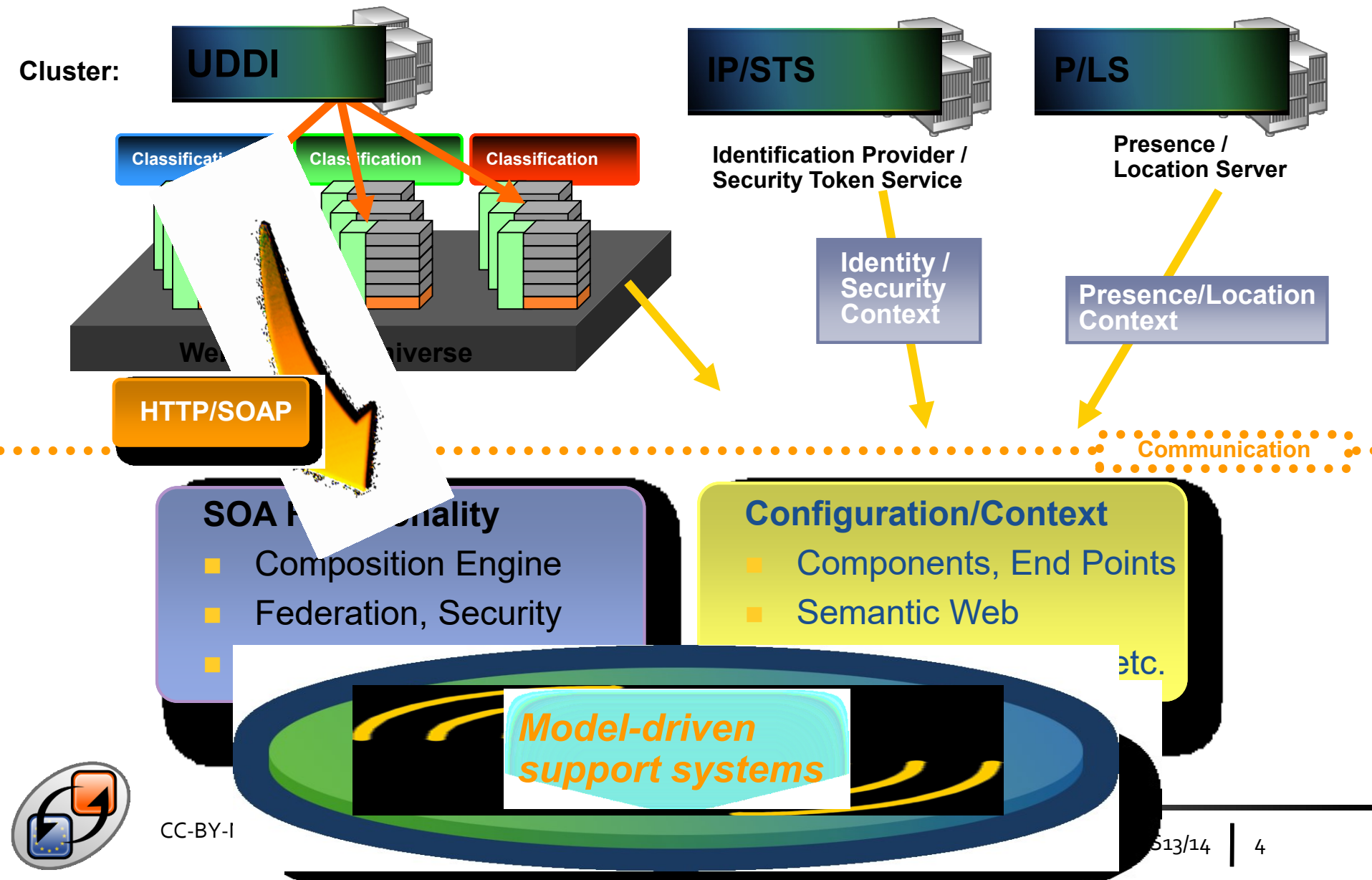
## ■ Web System

- ▶ HTTP, WebDAV, SOAP, other
- ▶ Cookies
- ▶ UDDI
- ▶ Other relevant protocols FTP, SMTP
- ▶ More...

## ■ Web Server

- ▶ HTTP, more
- ▶ Server-API & CGI
- ▶ XML-Support
- ▶ Component-Support
  - Servlets
  - Web-Services

# 4th Gen. (SOA-buzz starting 2000)



# 5th Generation (around 2004)

Distributed application (take crowd into account)

**User generated content is key**

**User Interface** – oriented part of the application  
UI/UX & Interaction & Navigation & Client-side code & Sensor-code

Browser  
(several)

Embedded User  
Agents

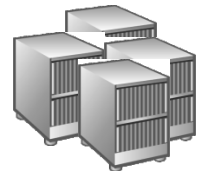
Mobile Phones

API-First  
Principle

Web Services Universe (REST/SOAP)

Communication

several  
Identity  
Systems



\*Location-based Service

# 6th Generation (around 2005)

**User relationships are key**

**Social Web** – oriented part of the application  
(take social graph into account)

**User Interface** – oriented part of the application  
UI/UX & Interaction & Navigation & Client-side code & Sensor-code

Browser  
(several)

Embedded User  
Agents

Mobile Phones and  
other devices (Tablets)

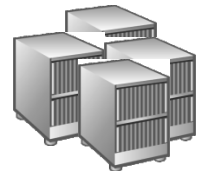
API-First  
Principle

Web Services Universe (REST/SOAP)

LBS\*

several  
Identity  
Systems

Communication



\*Location-based Service

# 7th Generation (around 2007): IoS

**User relationships are key**

**Social Web** – oriented part of the application  
(take social graph into account)

**User Interface** – oriented part of the application  
UI/UX & Interaction & Navigation & Client-side code & Sensor-code

Browser  
(several)

Embedded User  
Agents

Mobile Phones and  
other devices (Tablets)

Open Data

API-First  
Principle

Communication

several  
Identity  
Systems

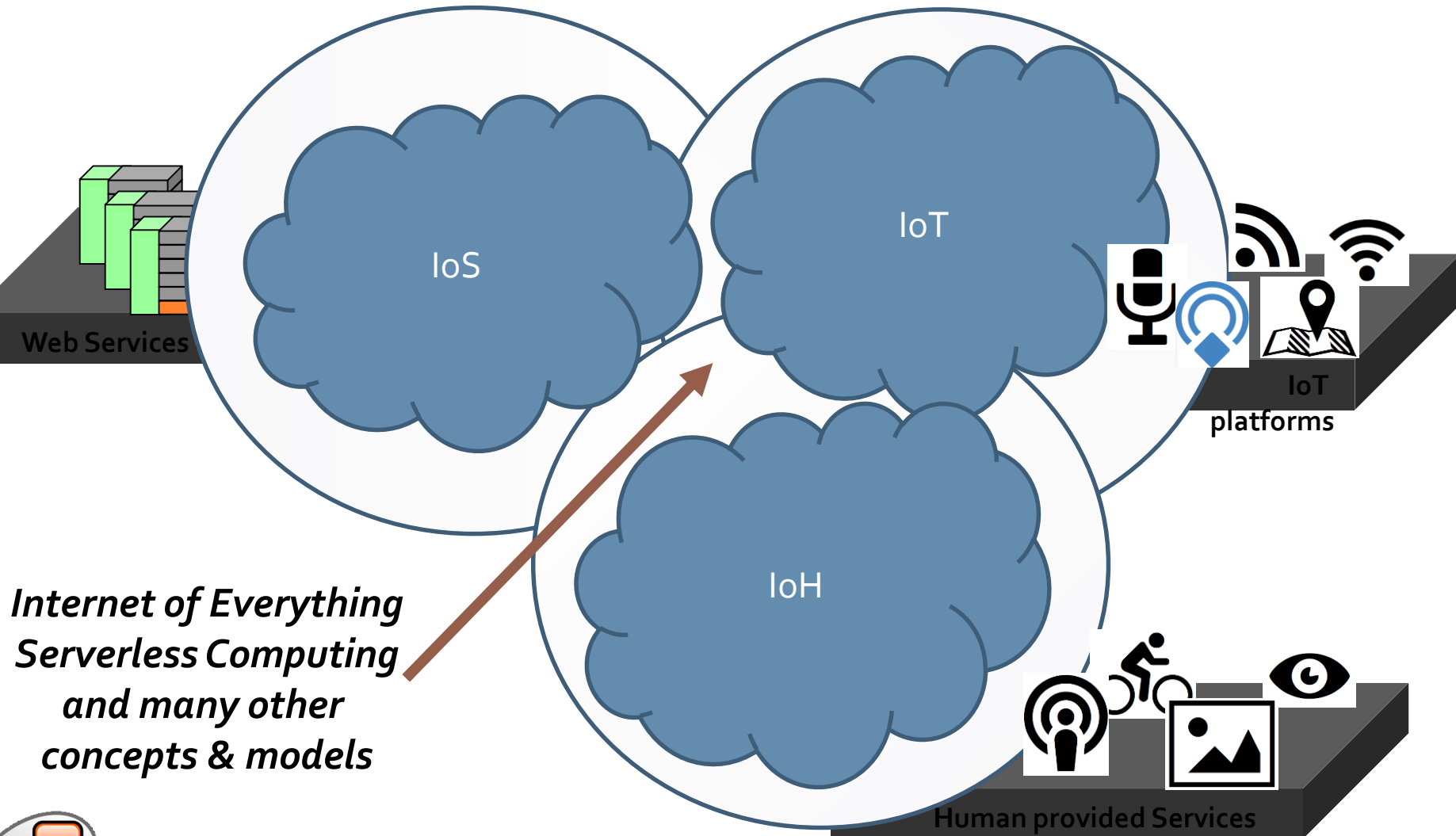
virtualize

Web Service

Virtualize

\*Location-based Service

# And what about today?





# Chapter 2

# WEB COMPUTING



# Section 1

# INTRODUCTION



# Classical Programming

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- Procedural programming
  - Aggregation of several commands
  - Functionality reuse by function calls and parameter passing
- Object-oriented programming
  - Aggregation of data and operations
  - Functionality reuse by object instantiation and message passing
- Component-based programming
  - Separation between interface and implementation
  - Functionality reuse by module composition and message passing



# Development Strategies

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- Top-Down Design:
  - Abstract definition of a system
  - Step by step refinement
  - Focus on system understanding and separation of concerns
- Bottom-Up Design:
  - Definition of basic building blocks
  - Step by step composition
  - Focus on code reuse and fast feedback

