

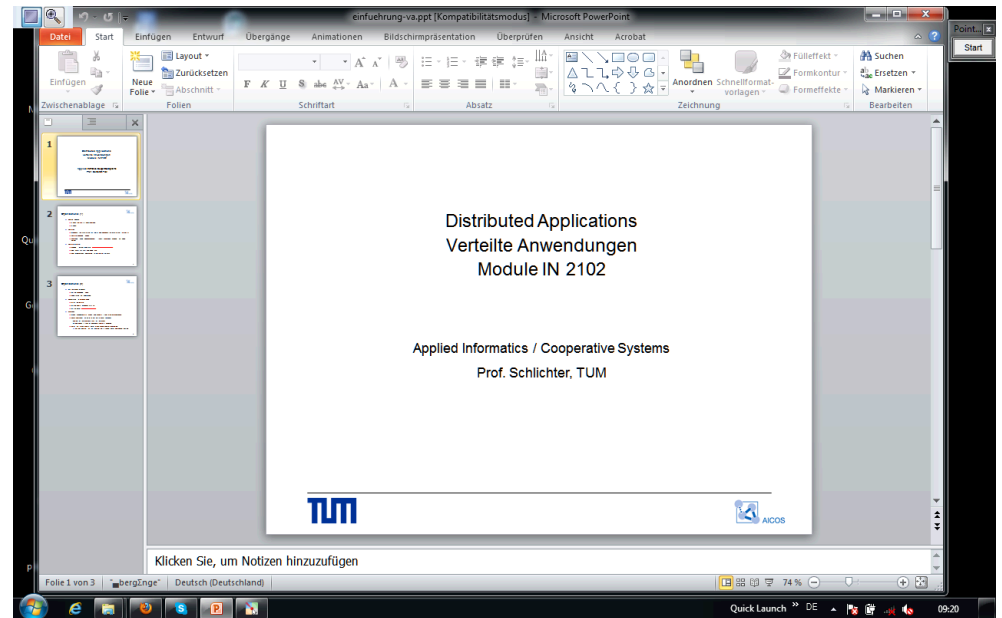
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Title: Schlichter: Distributed\_Applications  
(15.04.2013)

Date: Mon Apr 15 09:20:48 CEST 2013

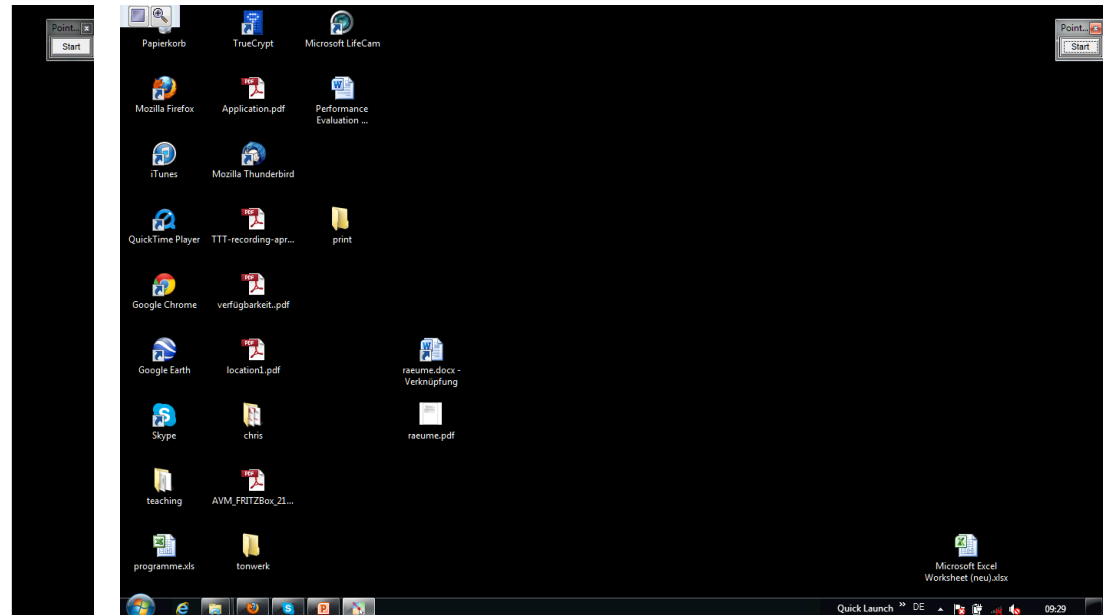
Duration: 41:20 min

Pages: 23



Distributed Applications  
Verteilte Anwendungen  
Module IN 2102

Applied Informatics / Cooperative Systems  
Prof. Schlichter, TUM



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Distributed Applications - Verteilte Anwendungen

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[Overview](#)  
[Introduction](#)  
[Architecture of distributed systems](#)  
[Remote Invocation \(RPC/RMI\)](#)  
[Basic mechanisms for distributed applications](#)  
[Web Services](#)  
[Design of distributed applications](#)  
[Distributed file service](#)  
[Distributed Shared Memory](#)

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Overview

introduction of basic concepts for the design and implementation of distributed applications.

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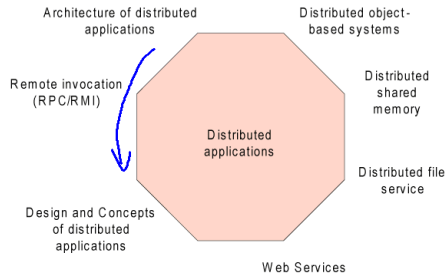
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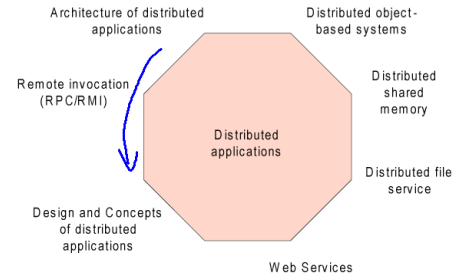


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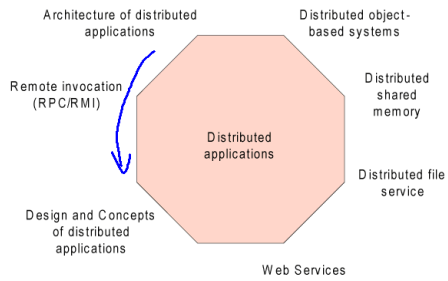


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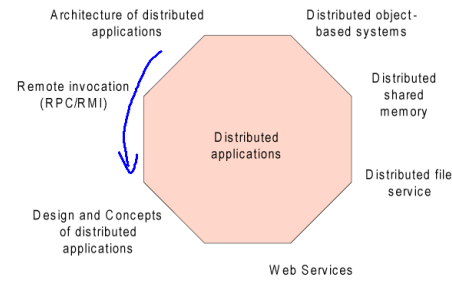


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



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 Lecture Content 

Discussion of various aspects, concepts and mechanisms of distributed applications.

Basic principles for the design of distributed applications.

- Terminology, communication mechanisms, client-server model, aspects of remote invocation (RPC, RMI).

model for distributed applications.

- happend-before relation, clocks for synchronization

Introduction to distributed transactions and group communication.

- 2 phase commit, aspects of consistent message delivery ("atomic multicast", virtual synchronization) in groups, group management.

Information replication and distributed file systems.

- consistency of replicated information, concurrency control.

Designing distributed applications.

- Web services
- MDA (Model Driven Architecture)
- SOA modeling

Object-oriented distributed systems.

- Impact of the object-oriented paradigm on design of distributed applications, especially Corba.

Secure communication in distributed systems.

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

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Secure communication in distributed systems.

- brief introduction to the authentication of users and systems, and discussion of the Kerberos system.

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 Bibliography 

The following literature was used to prepare this lecture.

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- George F. Coulouris, Jean Dollimore, Tim Kindberg, Gordon Blair, "Distributed Systems: Concepts and Design", Addison-Wesley, 2012  
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API	Application Programming Interface
BPEL4WS	Business Process Execution Language for Web Services
B2B	Business-to-Business
B2C	Business-to-Consumer
CLSID	class identifier (in the context of DCOM)
CORBA	Common Object Request Broker Architecture
CSCW	Computer Supported Cooperative Work
DCE	Distributed Computing Environment (OSF)
DCOM	Distributed Component Object Model
DIT	Directory Information Tree (LDAP)
DME	Distributed Management Environment (OSF)
DNS	Domain Naming Service
DSM	Distributed Shared Memory
EAR	Enterprise Archive
EJB	Enterprise Java Beans
GIOP	General Inter-ORB Protocol
IDL	Intreface Definition Language
IETF	Internet Engineering Task Force

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  - URL: <http://www11.in.tum.de/>

**Overview****Introduction****Architecture of distributed systems****Remote Invocation (RPC/RMI)****Basic mechanisms for distributed applications****Web Services****Design of distributed applications****Distributed file service****Distributed Shared Memory****Object-based Distributed Systems****Summary**

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Introduction

**Issues**

Issues of the following section

- Motivation for distributed systems and distributed applications.
- Basic terminology for distributed systems, e.g. terms like *distributed applications*, and *interface*.
- Introduction to some influential historic distributed systems, such as NFS File system, Mach and Java 2 Platform Enterprise Edition.

[Background](#)

[Key Characteristics of distributed Systems](#)

[Distributed application](#)

[Influential distributed systems](#)

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[Background](#)

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[Distributed application](#)

[Influential distributed systems](#)

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Development of computer technology

1950	specialized applications (reserved computing time)	isolated data
1960	numerical applications (batch)	
1970	commercial applications (Time Sharing)	data modeling
1980	presentation-oriented applications (personal workstation)	isolated data, desktop publishing
1990	distributed application	distributed information management Multimedia
2000	internet computing	Web Services

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