IntegraTUM: Information Services and University IT Governance

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Integration of Information Services into University Infrastructures

Frankfurt

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Unique Profile

Superb Community

- 21,000 Students 32% female
  20% international
- 400 Tenured Professors
- 4040 Researchers
- 2600 Graduates p.a.
- 730 Ph.D/Habils. p.a.
- >27,000 Alumni in network

6800 Employees
12 Departments
7 Research Centers

NATURAL SCIENCES – ENGINEERING – LIFE SCIENCES – MEDICINE –
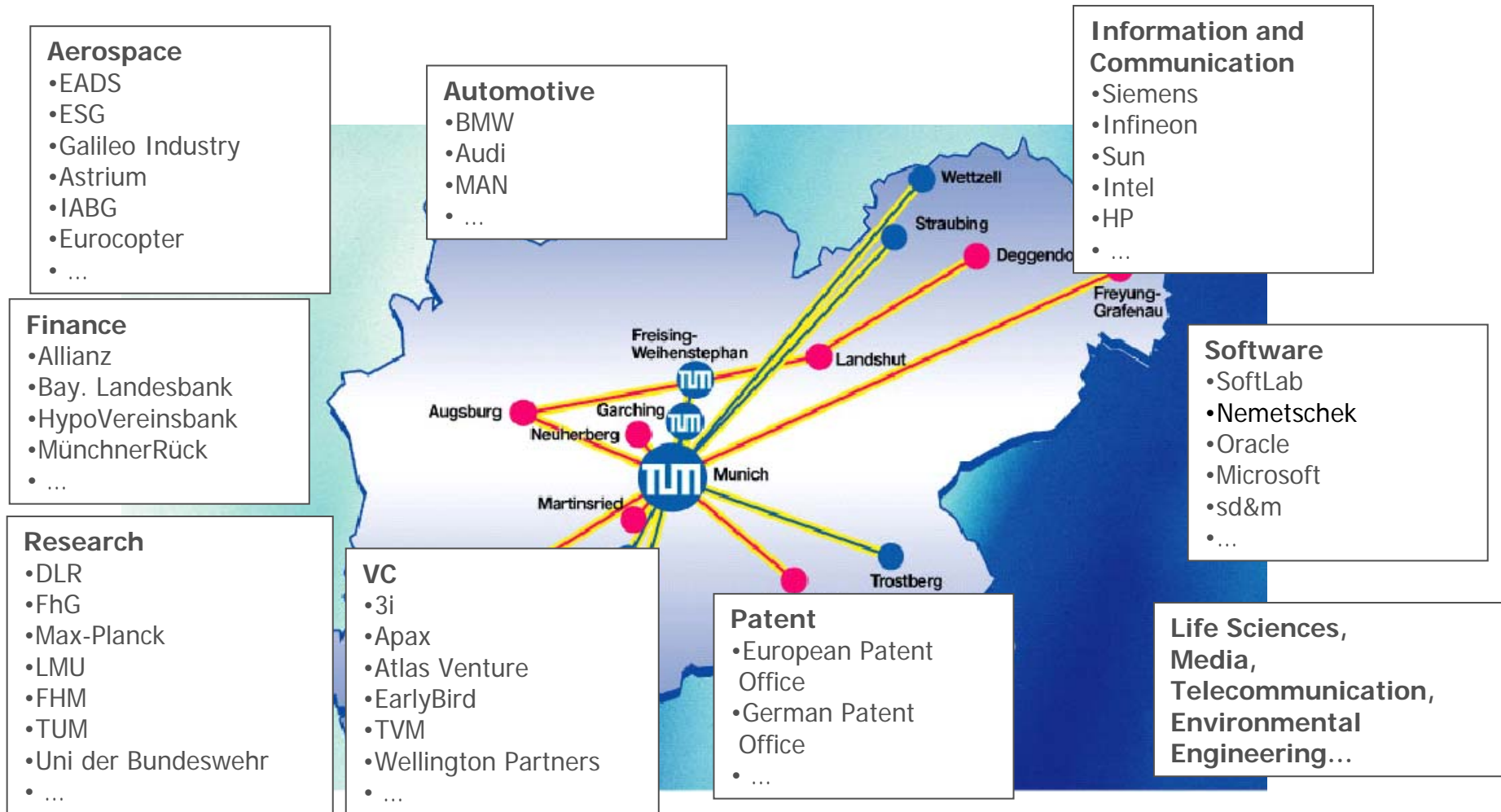
Entrepreneurial Spirit

- **Internationality**:
  - #1 AvH Senior Research Awards
  - Off-Shore Branch Singapore
- **Fundraising** >100 M€ since 1999
- **Third Party Funding**: 147 M€ (´05)
  = 31% of total Budget, #1 GER
- **Entrepreneurial Assets**:
  UnternehmerTUM, TUM-Tech Ltd.,
  Accounting System SAP-R/3

Innovative Strategies

- **Student Admission Assessment**: 1998 TUM-initiative pioneered State Law Amendment 2003

- **Advanced Organizational Structure**: 1999 TUM constitution pioneered Bavarian Higher Education Act 2006

- **Centers of Excellence Strategy:** Competitive restructuring program *innova*TUM (2003) allocates 10% total TUM resources to areas of excellence until 2008

- **Social & Cultural Awareness**: Linde Academy, Gender Responsibility

Munich Region: High-Tech Cluster ….

Aerospace
- EADS
- ESG
- Galileo Industry
- Astrium
- IABG
- Eurocopter
- …

Automotive
- BMW
- Audi
- MAN
- …

Information and Communication
- Siemens
- Infineon
- Sun
- Intel
- HP
- …

Finance
- Allianz
- Bay. Landesbank
- HypoVereinsbank
- MünchnerRück
- …

Software
- SoftLab
- Nemetschek
- Oracle
- Microsoft
- sd&m
- …

Research
- DLR
- FhG
- Max-Planck
- LMU
- FHM
- TUM
- Uni der Bundeswehr
- …

VC
- 3i
- Apax
- Atlas Venture
- EarlyBird
- TVM
- Wellington Partners
- …

Patent
- European Patent Office
- German Patent Office
- …

Life Sciences, Media, Telecommunication, Environmental Engineering…

Wettzell
Straubing
Deggendo
Freyung-Grafenau
Freising-Weihenstephan
Landshut
Augsburg
Garching
Neuherberg
Munich
Martinsried
Trostberg

Universities: Changes in Goals and Structures

- International competitiveness is key for national welfare (science and technology instead of treasures of the soil)

- Competition around quality in science and teaching

- New political conditions (India, China, Eastern Europe, greying Society, continuous education, liberalization and harmonization of university study)

- Student tuition fees

- University education as a global offering

- Secondary Schools must not be neglected

Technology Changes: The Digital University

- IT ubiquitous in universities

- Historically: IT centralized-decentralized, today: recentralization needed

- University boards must recognize strategical importance of IT
  - Responsibility
  - Changes
  - Investments

The Digital University

„ Efficient use of IT for research, teaching
and administration"

Processes

Organization

Technology and support
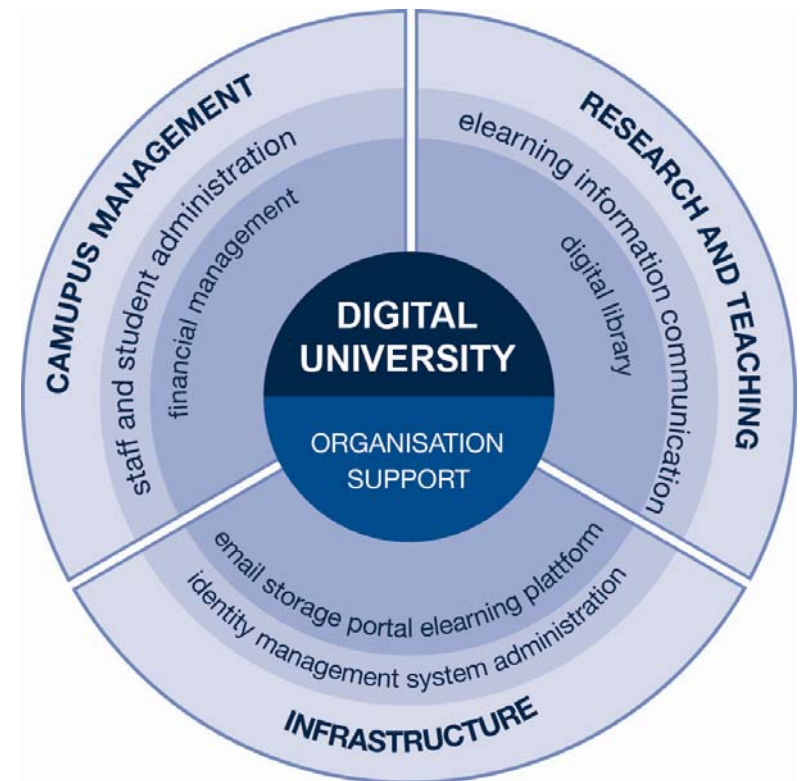
IT Services for Research, Teaching and Administration

Distributed, cooperating service system consisting of 4 layers:

- IT Infrastructure — Systems and Networks

- Unified Basic Services — OS, PL, middleware, Data management, security, ...

- Heterogeneous Application Services — Software-Applications, DB, tools, Interfaces

- Service Portal — Application-oriented integration layer(s): teaching, research, administration

Recommendations KfR: www.dfg.de

University – IT: Changes in Organization

■ IuK Management structure must reflect investment and strategical importance

- CIO and CIO-staff

- IT-Governance Rules

- Communication Platform: „CIO-IO"

- Service provider: Internal – External (outsourcing - cosourcing)

■ Functions of the classical Computing-Centre must be extended: multimedia, eLibrary, corporate communication, telecom, administration, eLearning, eGovernment, ...

IntegraTUM at TU München

- Extension of Portal Services

- eLearning (elecTUM)

- Extension of Digital Library Services (mediaTUM)

- Standardization of System-Administration based on LRZ-Services: email, Storage/Archiving, ...

- Campus Management
    - HR and FI (SAP@TUM)
    - Student Registration and ECTS Management (HIS@TUM)
    - Room- and Teaching Management

- Identity Management

Optimal Scenario

- Process optimization
  - Process analysis
  - Standardization of process structures
  - Customer- and Service-Orientation

- Central Identity Management

- Cooperation of University- and IT Management regarding governance (rules and structures)

- Integration of departments and administration

- Cooperation TUM and Leibniz-Rechenzentrum (LRZ), Outsourcing of IT-Services

Reorganization: Domain knowledge vs. IT-Competence

IT Projects at TUM

■ IntegraTUM: integrated IT Infrastructure

■ HIS@TUM: Exam and ECTS Management

■ elecTUM: eLearning

■ Web Corporate Design / Internet-Portal TUM

■ Administration Services
- SAP@TUM (FI, HR, CO)
- Data Warehouse (BW@TUM)
- Document Management (DOMEA@TUM)

Finance Status

IntegraTUM

DFG	Project
TUM	Program InnovaTUM
TUM	Basic Personal
LRZ	Basic Personal

HIS@TUM

TUM	Basic Personal
Bayer.	HWP-Program

elecTUM

BMBF	Project
TUM	Basic Personal
LRZ	Basic Personal

Since 2007: Student Tuition

IntegraTUM: Projects

Projects

LRZ 1,5 — recentralisation of email

Administration 1,5 — extension web-portal

LRZ 1,5 — central data storage

LRZ — directory service 4

Media-Centre 1 — central elearning platform

Departments 2 — reorganisation system administration

Library 3 — digital library

Administration 0,5 — administrative ICT

CIO 2 — organisational measures

DFG 8
TUM 9
+ Basic Personal
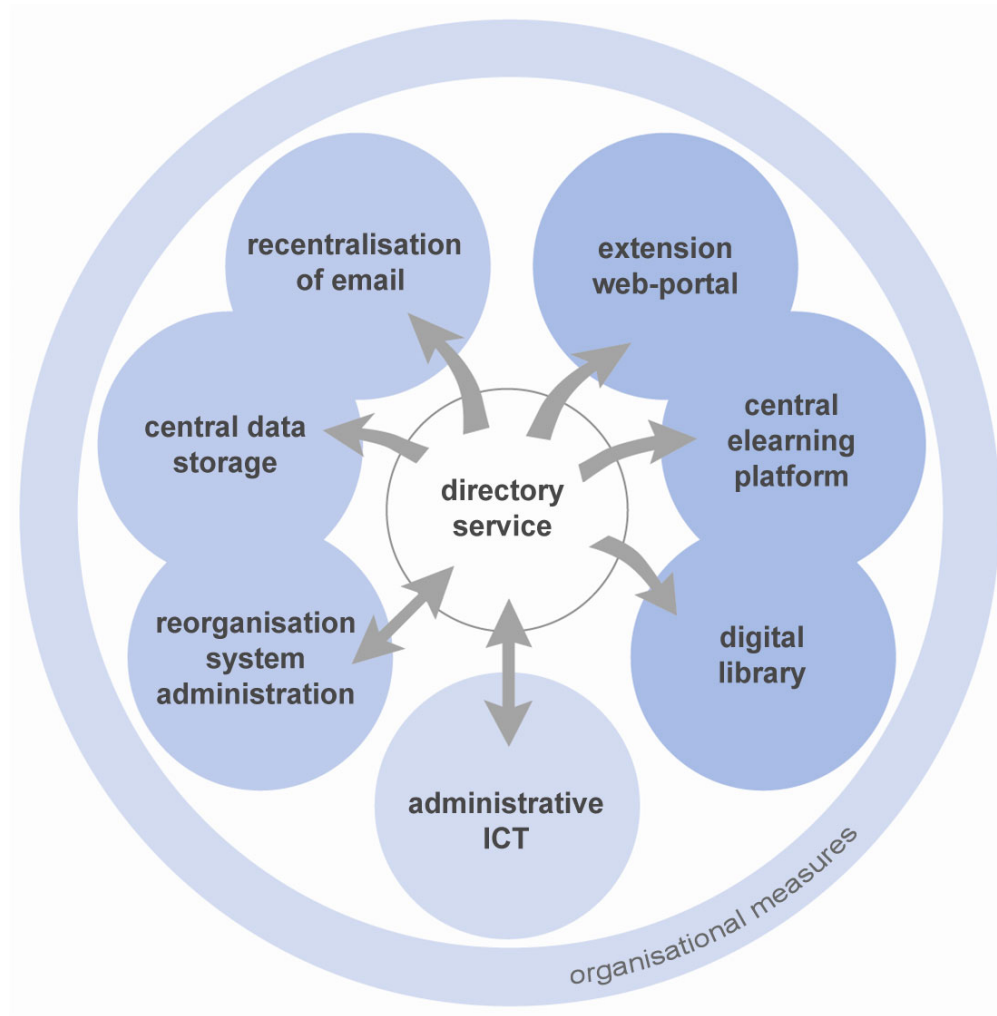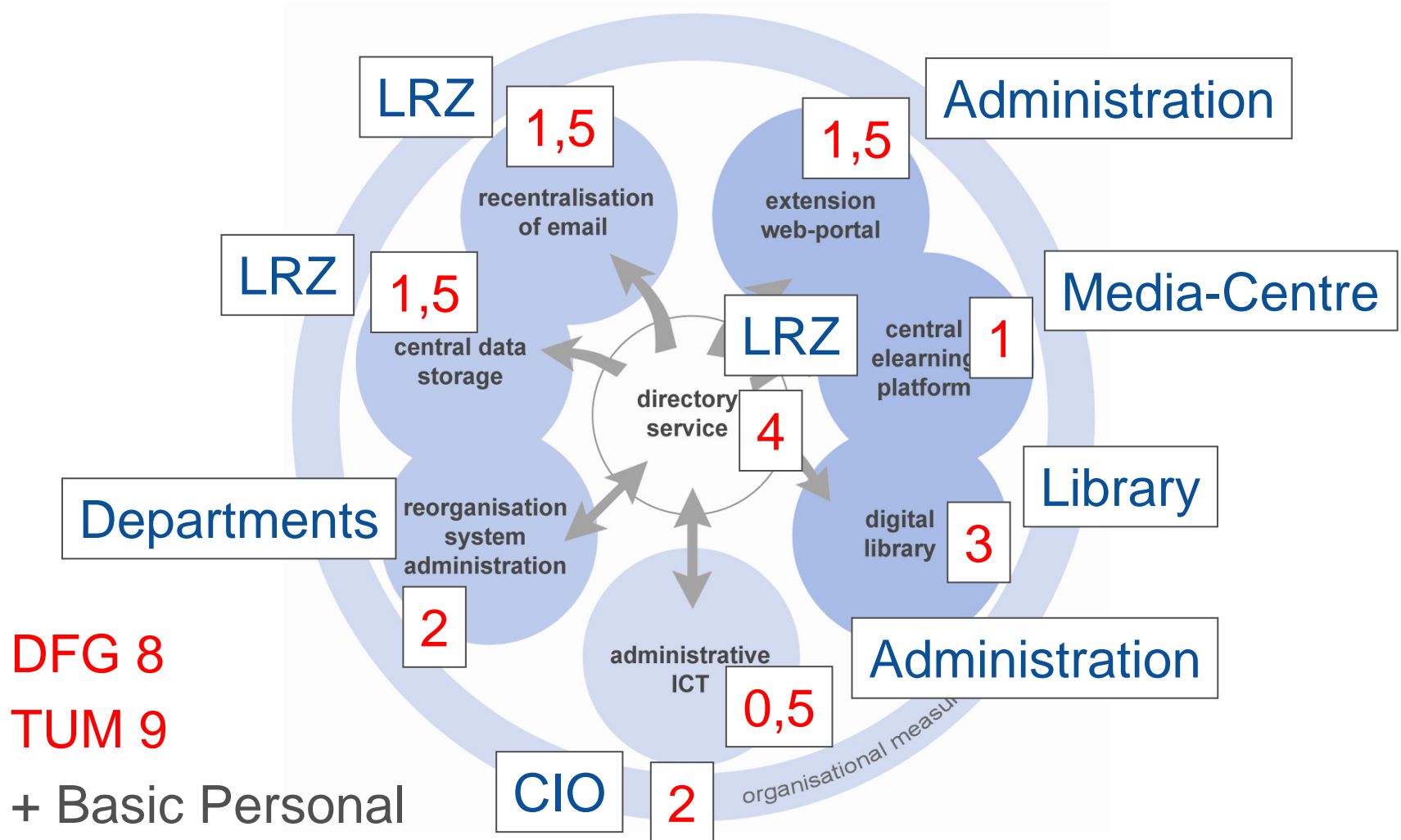
Organization

Bayerisches Staatsministerium für Wissenschaft, Forschung und Kunst

Executive Board of Management (6) President, Vice Presidents, Chancellor **Extended Board of Management (20)** Executive Board of Management, Department Deans, the Speaker for the Central Scientific Institutes and the Speaker for the Deans of Studies	**Supervisory Board (18)** Senate (10) External University Council (8)

Deans (12) and Deans of Studies	Faculty Board

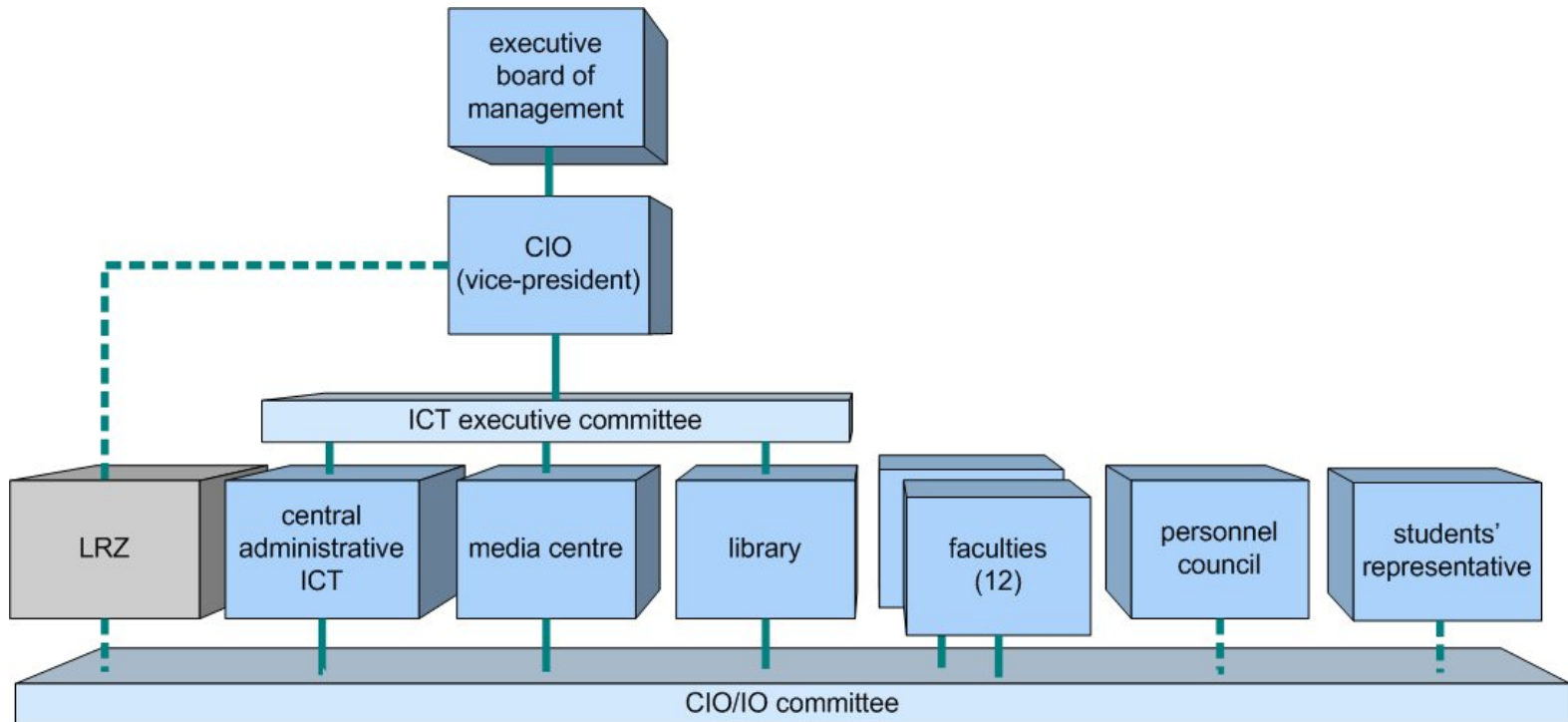| Departments |
|---|

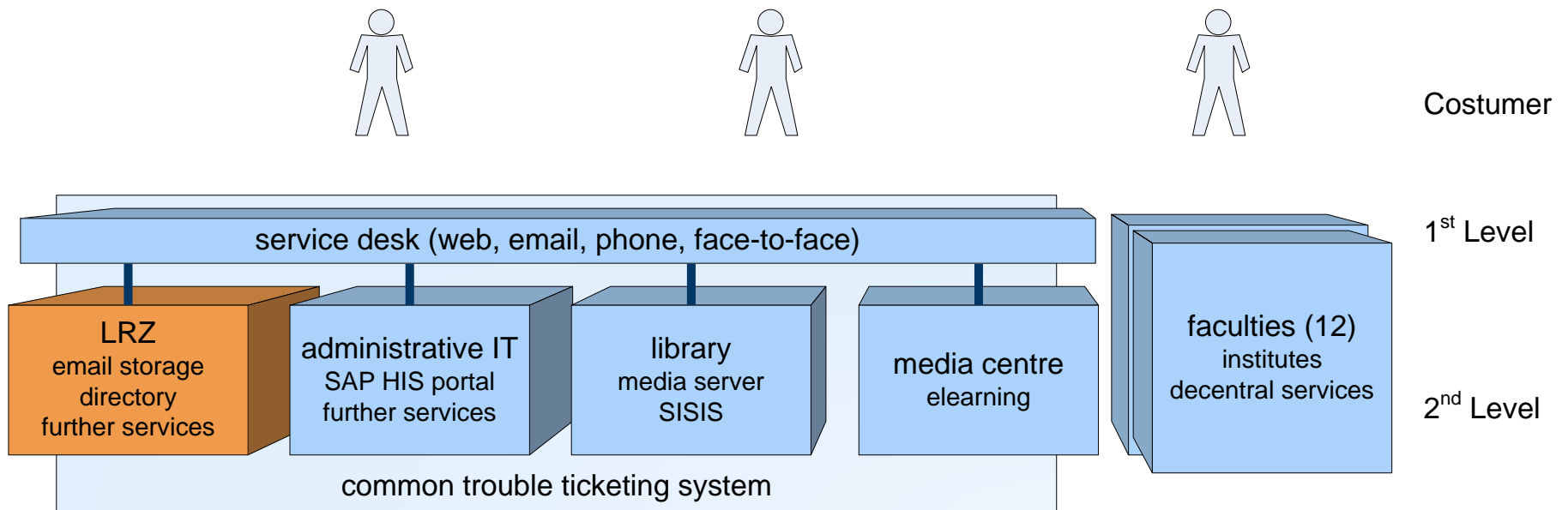| Students and Staff |
|---|

IT-Decision Structures

- CIO is member of the board
- CIO/IO represents all parts of the university
- Participation of LRZ

Central IT Service Desk

- Single-Point-of-Contact (staff, students, alumni, guests)
- Contact via: web, email, telephone, personally
- Goal: direct answer or forwarding of all IT-relevant questions

Costumer

1st Level

service desk (web, email, phone, face-to-face)

LRZ
email storage
directory
further services

administrative IT
SAP HIS portal
further services

library
media server
SISIS

media centre
elearning

faculties (12)
institutes
decentral services

2nd Level

common trouble ticketing system

IT Governance, IntegraTUM first summary after 3 years:

■ Outsourcing of IT services to LRZ successful

■ University needs at least minimal IT-infrastructure, competence

■ Incentives better than Top-Down imposed rules

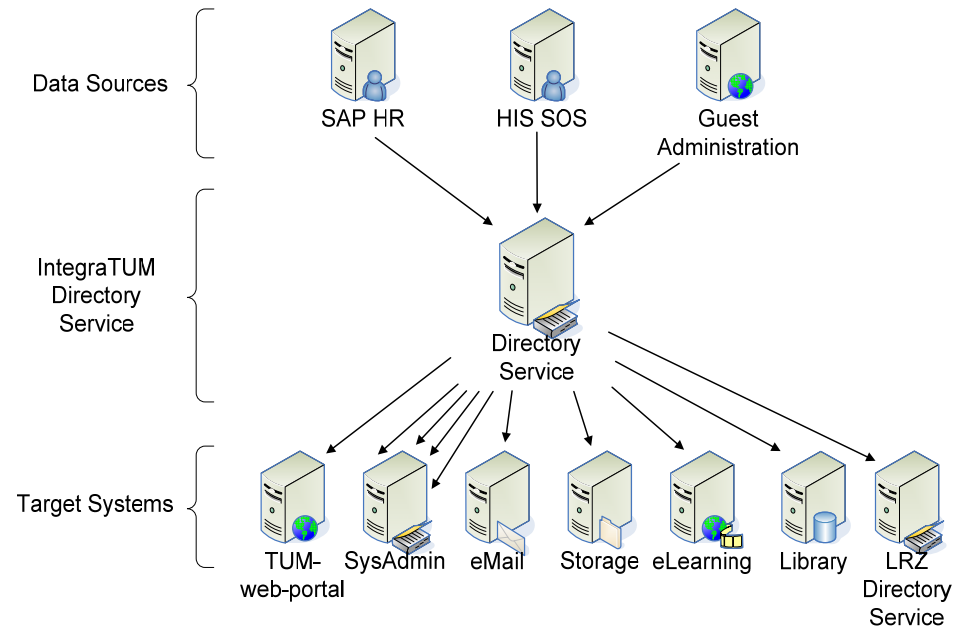■ Decision making (small group) and information dissemination (large group)

Identity Management

- Provision of a single
  - central,
  - always up-to-date,
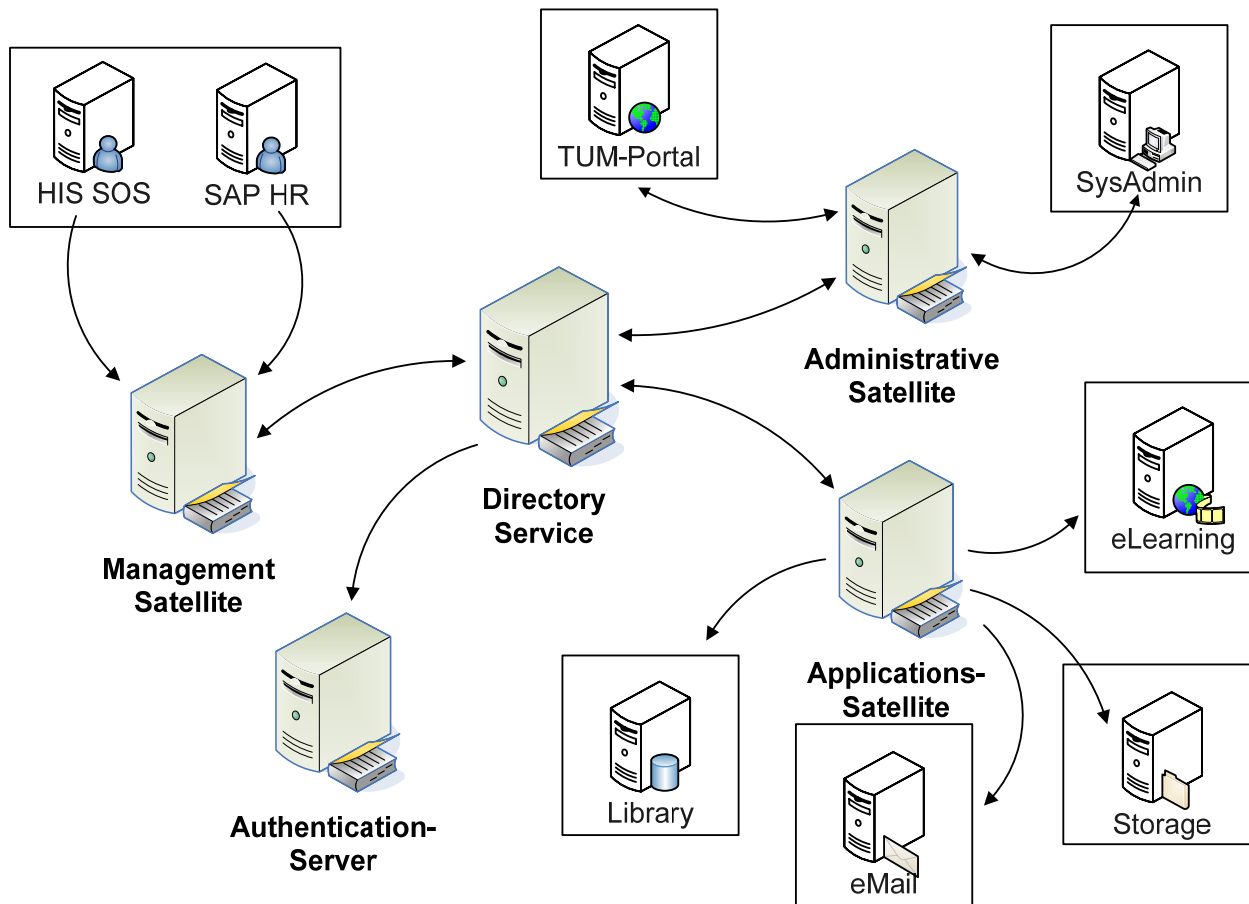 - mandatory

  Data set

  (staff, students, guests)

- Provisioning of non- LDAP-compliant services:
  - Input by proprietary interfaces
  - Automatic service-specific user administration

- University processes supported by Workflows

Identity Management: Realization

- Flexibility and Extensibility
- Ease of Change Management through Decoupling
- Transparency through well defined dataflow
- Integration of security concept

eLearning (elecTUM)

- General Concept is blended learning

- Support of a central TUM-eLearning-platform – CLIX Campus, imc with heterogeneous uses

- WS 06/07: 10.000 Users, SS 07: 180 Courses

- Integration into IT-Infrastructure (Connection to Campus Management Systems

- Uses: Primary Education, further education, international cooperations, EMBA, ...
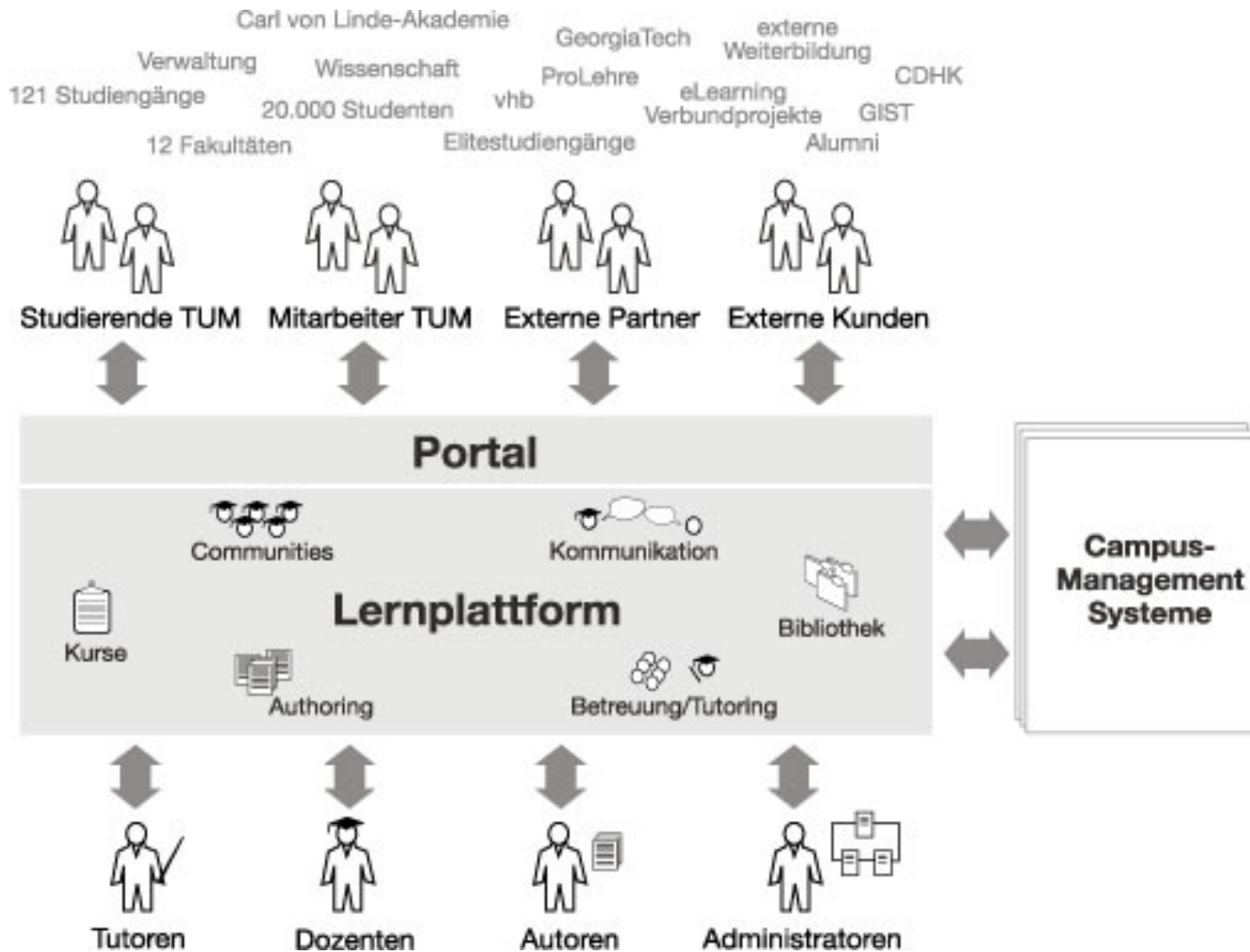
Extension of digital library services

- Central document – and publication server
  - Support for the publication of digital documents
  - Support of multimedia in research and teaching

- One single system for all object types – modular system architecture
  - Books, articles, international reports
  - Thesis (Diploma, Master, PhD, Hab.)
  - Collection of pictures, videos, films

- Central service for technical support

- Decentralized responsibility for content and organization (library, corporate communication, ...)
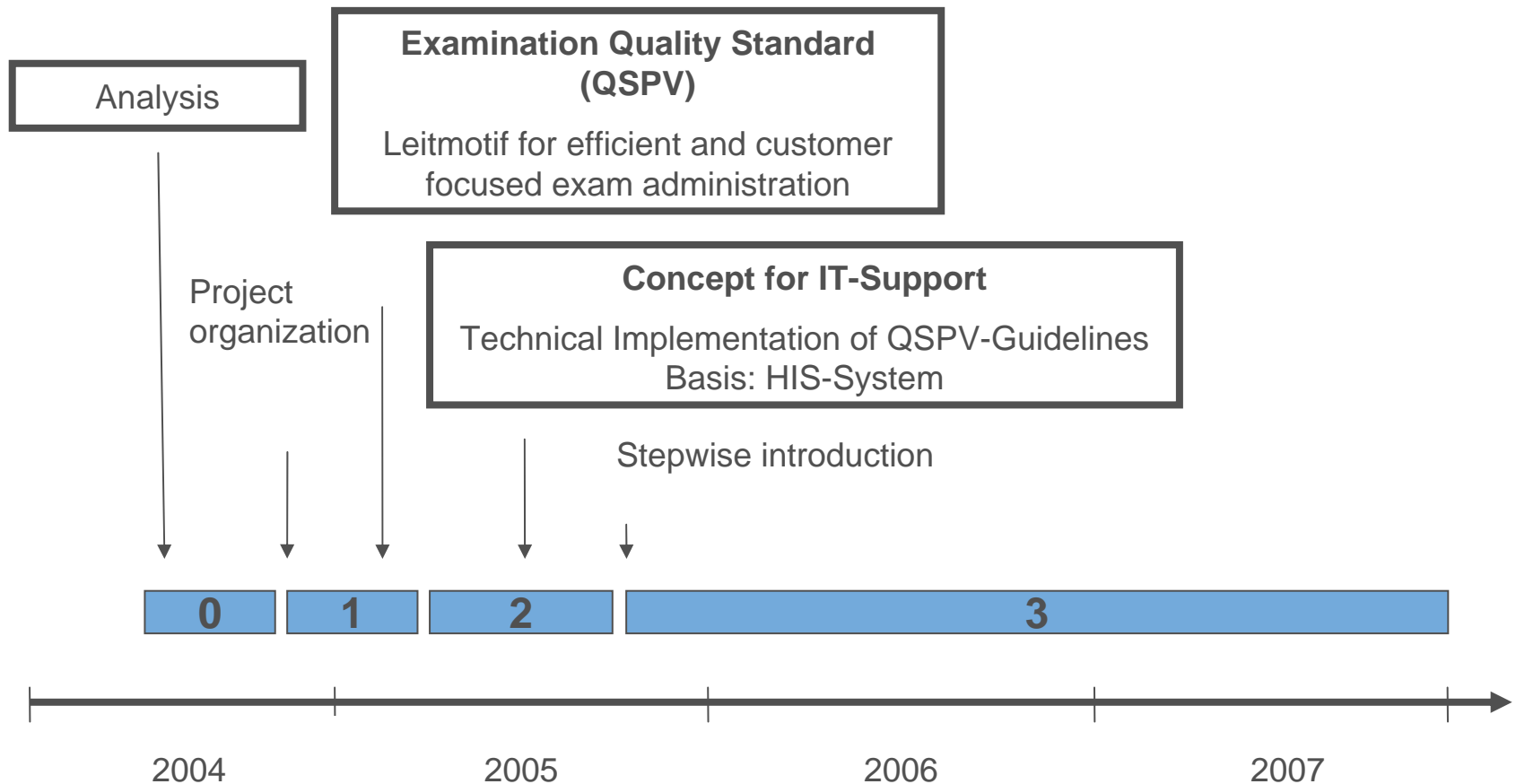
Central Management for ECTS and examinations: HIS@TUM

■ Goal: better efficiency and QoS for examination management under
           the Bologna-conditions

■ Process- and customer-oriented approach

■ Methodology
  - Analysis of Structures and Processes
  - Development of a system-independent concept „The Quality Standard"
  - Stepwise realization over 3 years

■ HIS-Modules POS and QIS

HIS@TUM - Timetable

Analysis

Examination Quality Standard (QSPV)

Leitmotif for efficient and customer focused exam administration

Project organization

Concept for IT-Support

Technical Implementation of QSPV-Guidelines
Basis: HIS-System

Stepwise introduction

| 0 | 1 | 2 | 3 |

2004   2005   2006   2007

Summary

■ Quality of a modern university depends directly from quality of its IT-strategy

■ Important factors for success:

- Optimization of processes
- Organization
- Technical solutions
- Change Management
- Marketing
- Support

■ Since 2001: new IT structures at TUM