



ServLab

Service Engineering aided by Virtual Environments

XVIII. International RESER Conference

PhD Summer School 2008

Thomas Burger

Fraunhofer-Institute for Industrial Engineering, Stuttgart

Profile of Fraunhofer-Gesellschaft

www.fraunhofer.de



- **Founded:** 1949
- 13.000 **employees**
- **80 research institutes**, of which 56 operate as independent profit centres
- **Fraunhofer International:**
 - Europa:** Brussels (Belgium)
 - USA:** Boston (Massachusetts), Pittsburgh (Pennsylvania), Plymouth (Michigan), Providence (Rhode Island), College Park (Maryland), Peoria (Illinois)
 - Asien:** Beijing (China), Singapore, Jakarta (Indonesia), Tokyo (Japan)
 - Russia:** Moscow

— The  inventors

Fraunhofer 
Institut
Arbeitswirtschaft und
Organisation

 The Origin of
Service Engineering



Profile of IAO

www.iao.fraunhofer.de



- **Founded:** 1981
- **Director:** Prof. Dr.-Ing. Dr.-Ing. E.h. Dieter Spath
- **Budget:** 24 million Euros,
of which 38% from industry contracts
- **Staff :** 202 employees,
185 student assistants

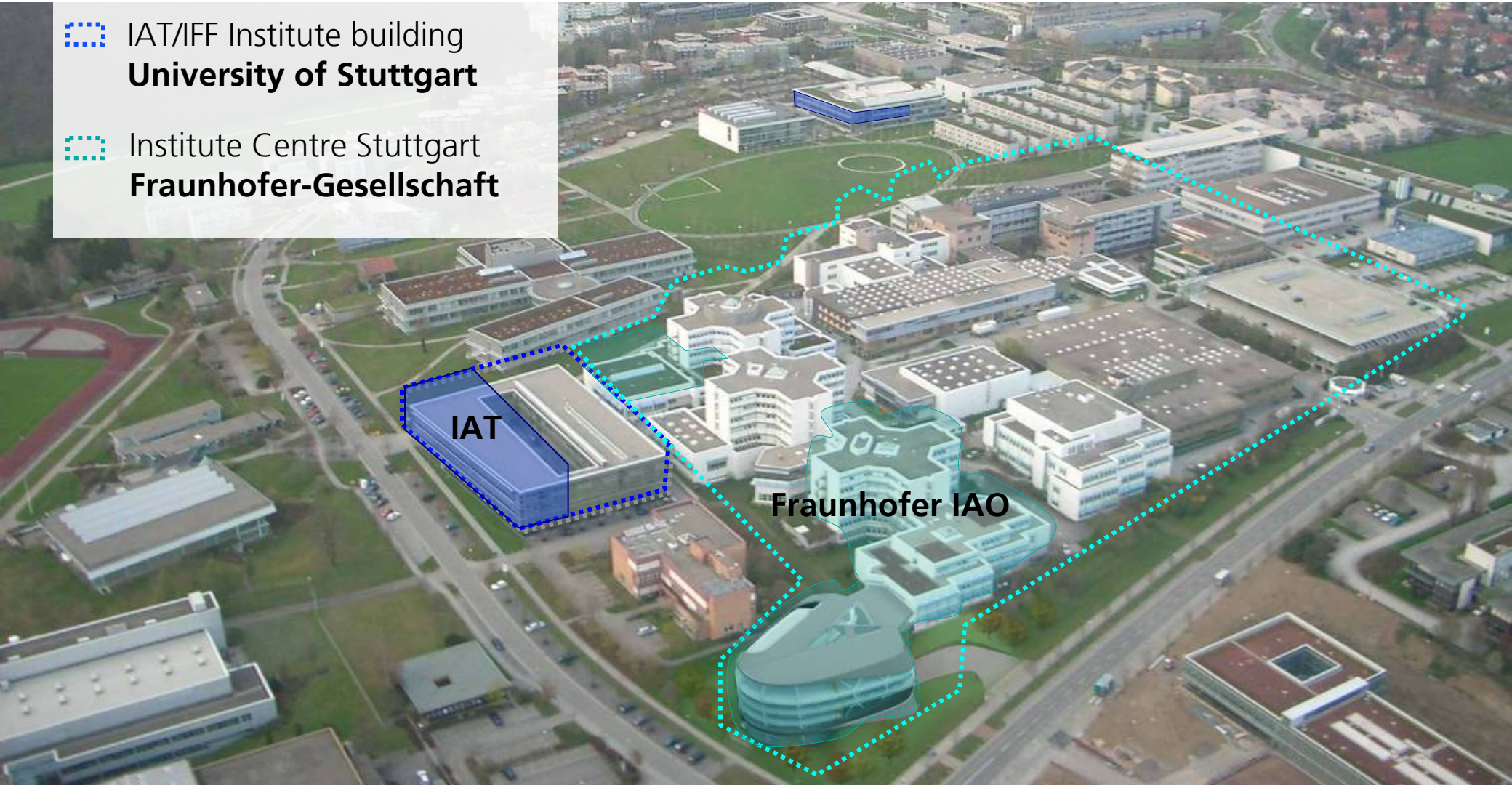


Aerial photo of the Institute Campus in Stuttgart

Fraunhofer IAO and IAT University of Stuttgart

 IAT/IFF Institute building
University of Stuttgart

 Institute Centre Stuttgart
Fraunhofer-Gesellschaft



Service Engineering aided by Virtual Environments

Service Engineering at Fraunhofer IAO

ServLab

Project Cases: Accor Hotels

BGW

Siemens Switzerland

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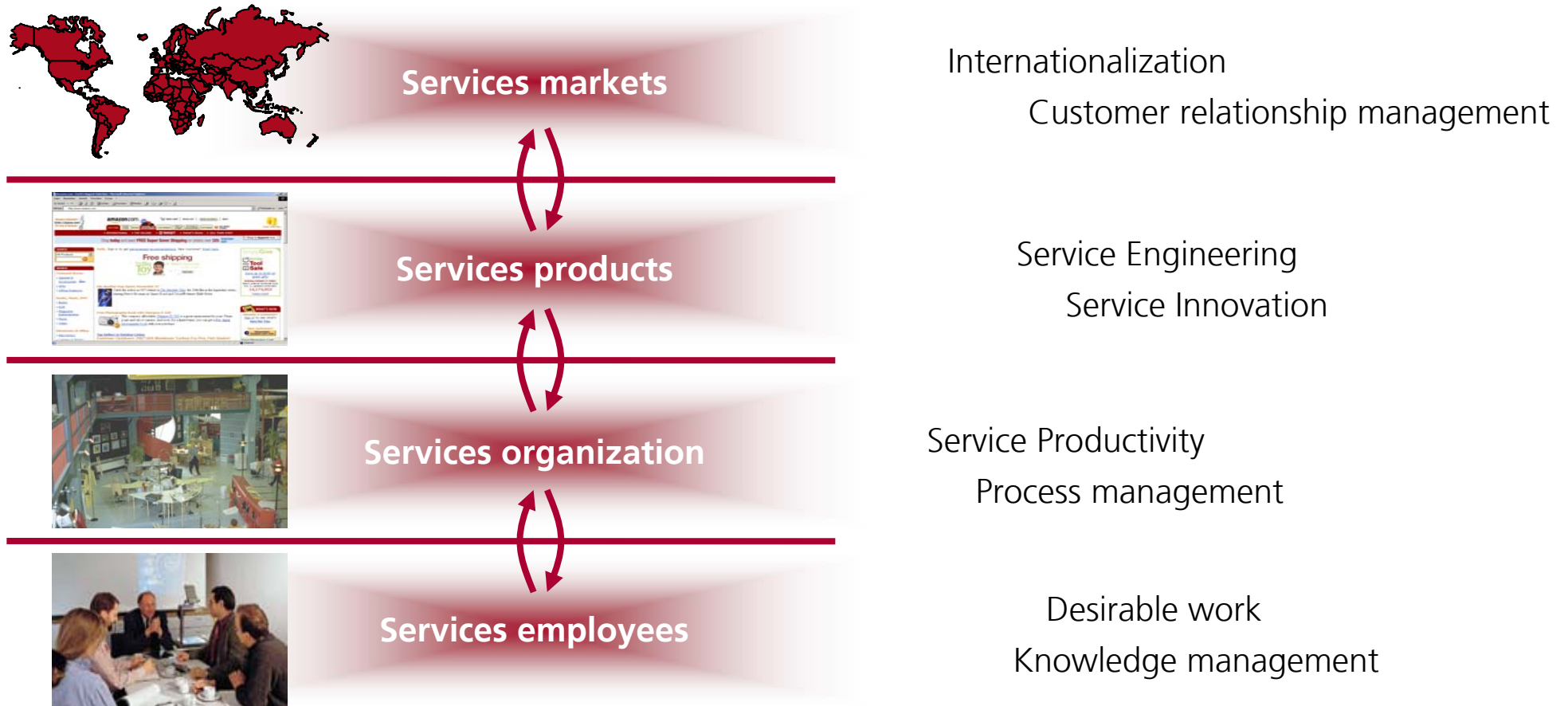
IAO Center »Service Innovation«

For more than 15 years, Fraunhofer IAO is offering solutions in the field of Service Innovation.



Interdisciplinary teams are providing holistic solutions for customers.

Service Research at Fraunhofer IAO



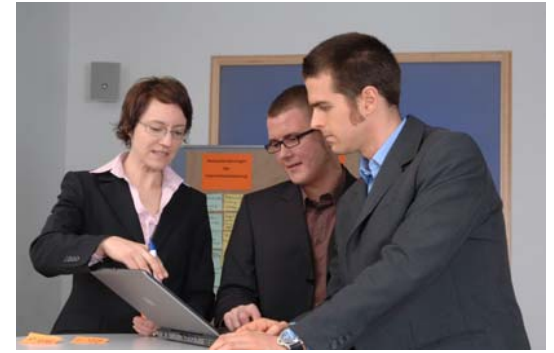
Activities



Service Management



New Service Development



Customer Relationship Management



Service Work Design

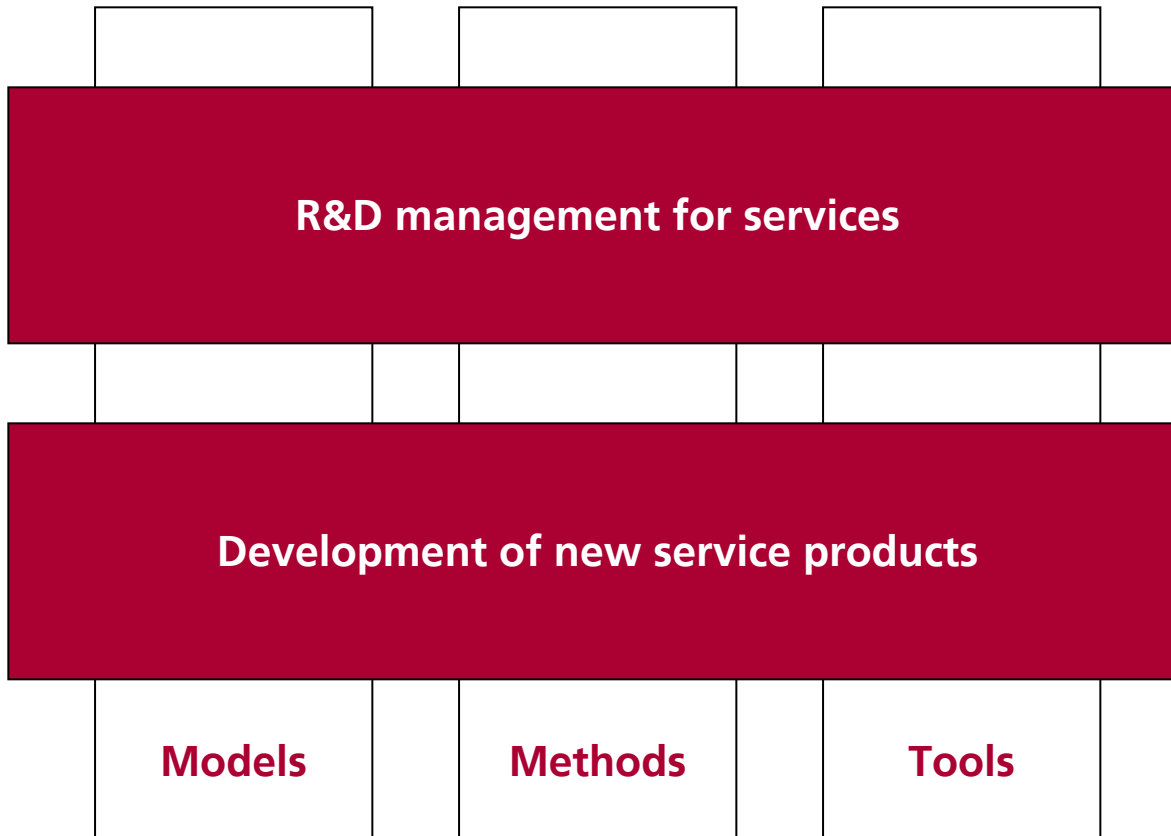


Personnel Development



Service Monitoring

Service Engineering

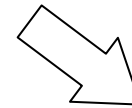
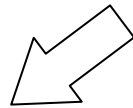


- Service engineering is concerned with the systematic development and design of service products by using suitable models, methods and tools.
- Germany has a large methodical know-how in the traditional engineering sciences, which should be used for the development of services.

High tech – high touch

The challenge of Service Engineering

Services are to be regarded as products like goods and software.
They can be developed and marketed accordingly.



opportunities

Generic development methods, e.g.:

- product and process modeling
- integrated product development
- engineering design

High Tech

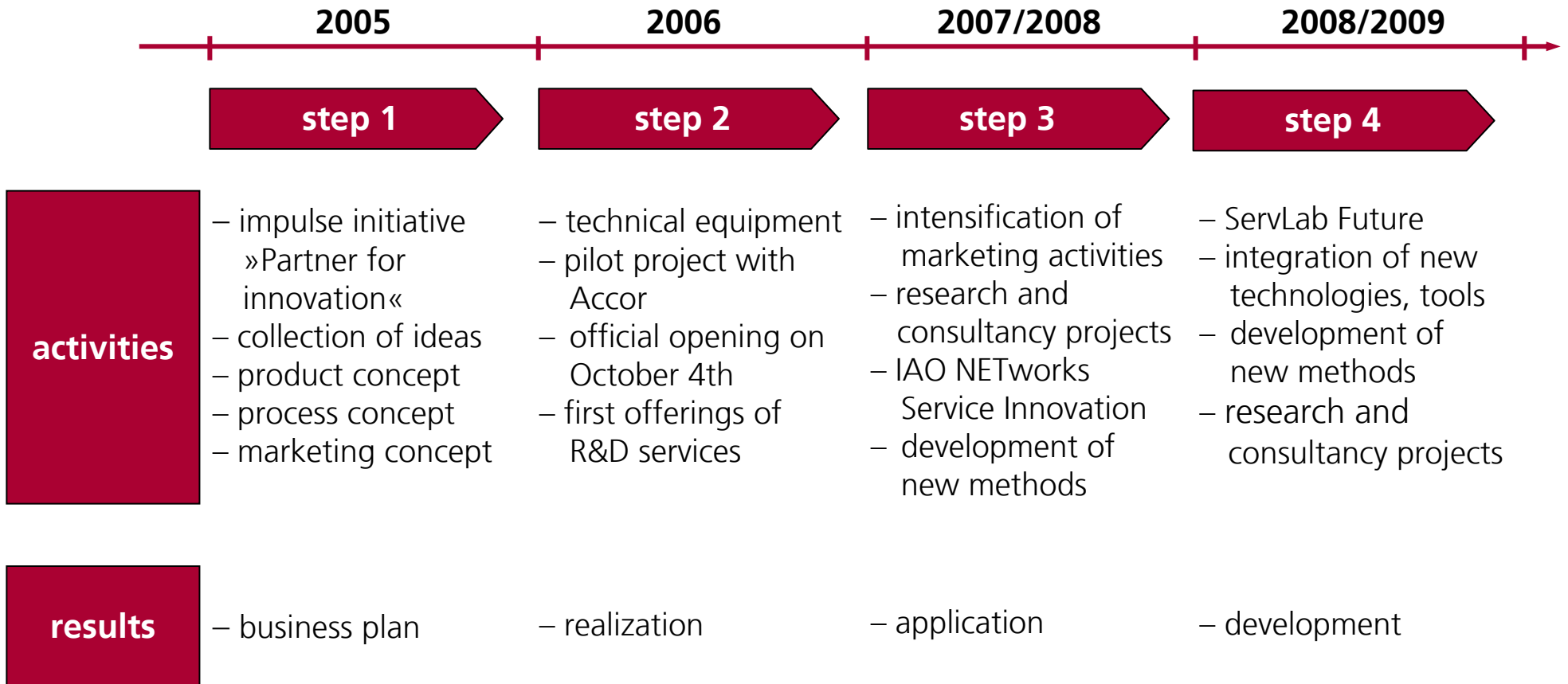
differences

Integration of »soft factors«, e.g.:

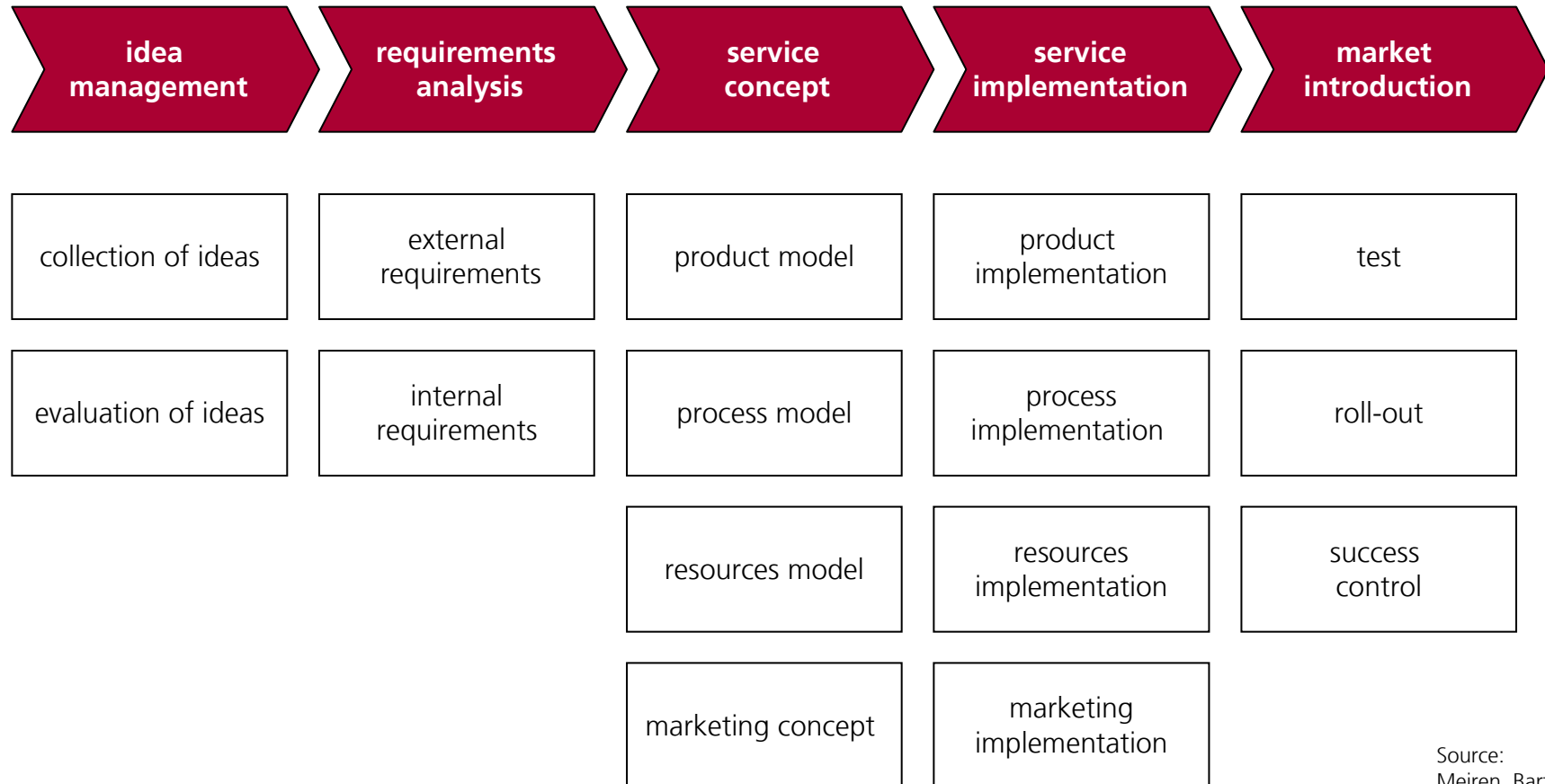
- corporate culture
- human resources
- customer interaction

High Touch

Realization



Service Engineering at Fraunhofer IAO



Source:
Meiren, Barth 2002

Service Engineering at Fraunhofer IAO

1995/1996 First research activities at Fraunhofer IAO as well as first publications on Service Engineering.

1997/1998 So-called »Prioritäre Erstmaßnahme« (i.e. »measures of high priority«) on Service Engineering. Funded by the German Ministry of Research.



1998 Service Engineering is one of the nine central topics in the first German service research program.



1999 till today Research projects at BMBF and EU, among other Holistic Service Engineering, Computer Aided Service Engineering (CASET), Customer-oriented Service Development.

2000 till today R&D projects with German industry (e.g. AUDI, C & E. Fein, Dekra, DIW, ETAS, IWKA, Océ, R+V, Zwick).

2006 Opening of the ServLab.

till today further development of the ServLab, R&D projects (e.g. BGW, Siemens, Bergmann).

1. Strategic Factor for Service Excellence: Service Strategies

Activities:

- Development of business models for services
- Structuring of service portfolios and catalogization of service offerings
- Standardization and modularization of services
- Strategies for internationalization and export of services

References:

- Service strategy (ETAS)
- Catalog for services (TÜV Management Services)
- Module concept for services (SCC)
- New services for international markets (IWKA)



2. Strategic Factor for Service Excellence: Development of new services (Service Engineering)

Activities:

- Identification of new services and creation of business plans
- Analysis of requirements for new services
- Concept development
- Implementation and market introduction

References:

- Multimedia museum guide (AUDI)
- Full service leasing (C. & E. Fein)
- Data capture service (Océ Document Technologies)
- Process for new service development (DEKRA)



3. Strategic Factor for Service Excellence: Optimization of service processes

Activities:

- Analysis and improvement of existing service processes
- Optimization of service structures
- Quality management for services
- Performance measurement systems for services

References:

- Process optimization (SBS Technologies)
- Redesign of business processes (Ziemann)
- Process analysis (VMS)
- Reorganization of service processes (Albany Door Systems)



4. Strategic Factor for Service Excellence: Design of customer-employee-interaction

Activities:

- Interaction design
- Customer integration into services
- Simulation of customer interfaces with virtual reality
- Training of employees

References:

- Simulation of customer interfaces (BGW)
- Design of customer-related processes (Huber Technology)
- HR development (e-pro solutions)
- Service initiative (is:energy)



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Project Cases: Accor Hotels

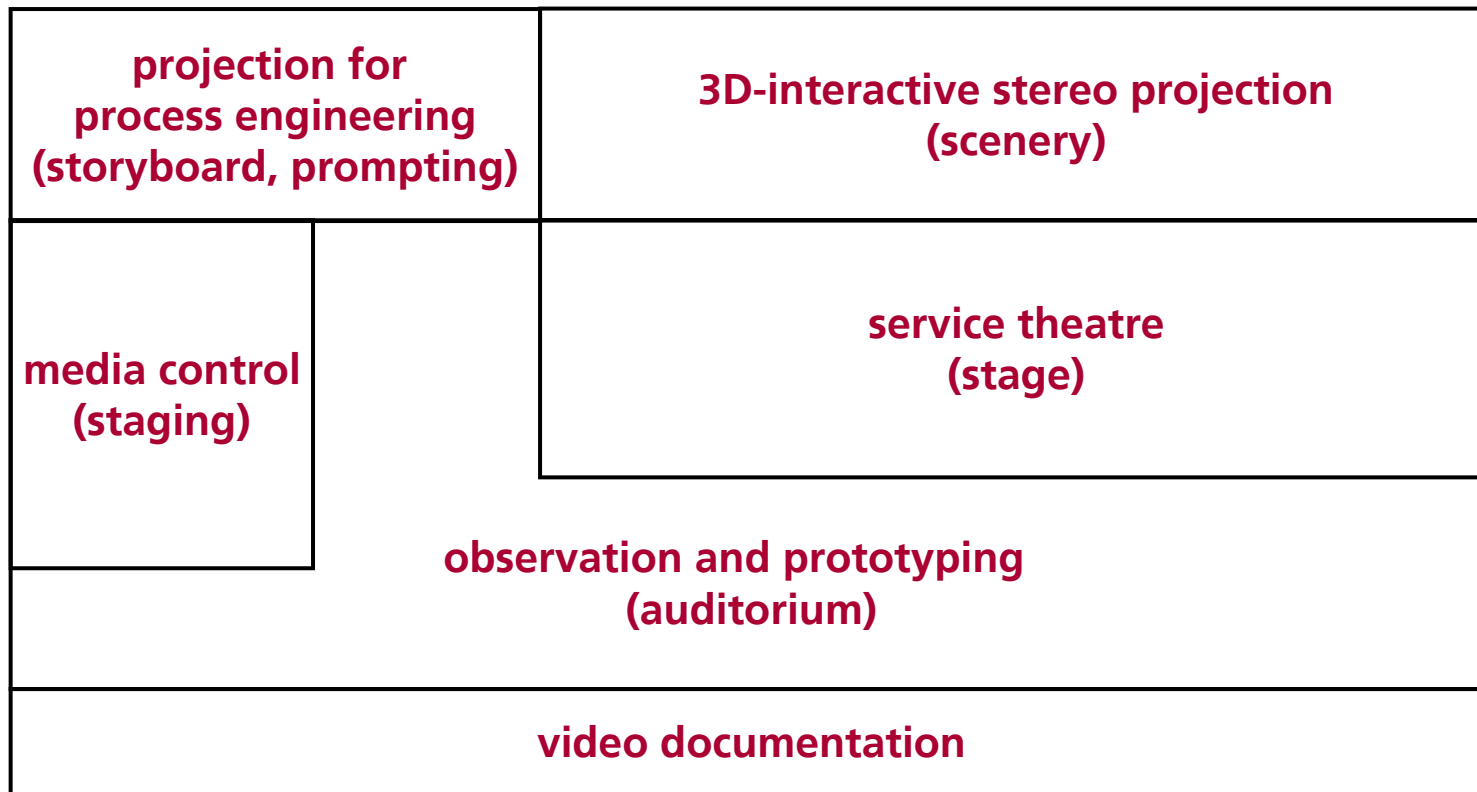
BGW

Siemens Switzerland

What is ServLab?

ServLab is a holistic platform for testing new service concepts.

Functional areas and layout of ServLab



ServLab Overview



**media
control
(staging)**

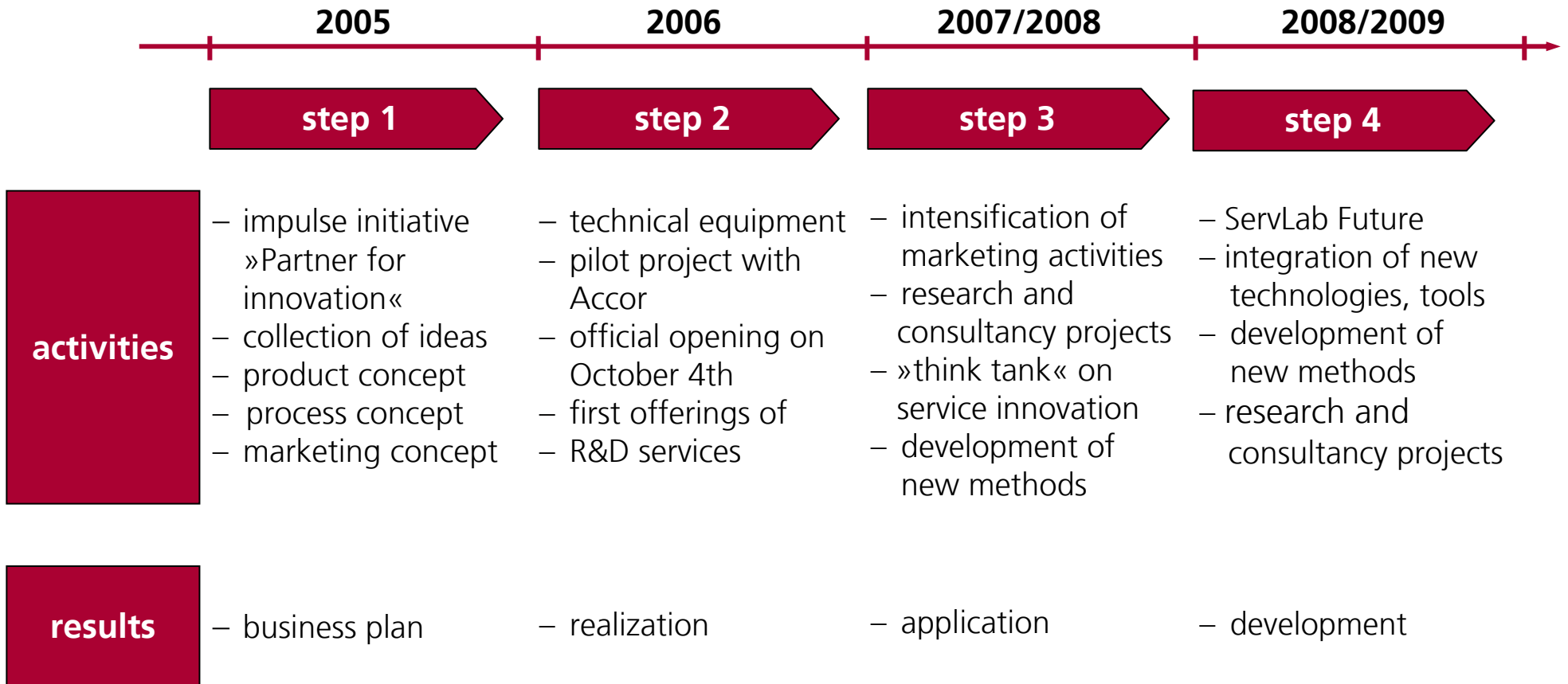
**projection for
process engineering
(storyboard,
prompting)**

**service
theater
(stage)**

**3D-interactive
stereo
projection
(scenery)**

**observation and
prototyping
(auditorium)**

Realization



Processes inside ServLab



conceptualize

evaluate

present

discuss

decide

Areas of application

Supporting the full process
of new service development

Visualization of Servicescapes
in a very early stage

**Developing
new services**



**Designing
customer interfaces
using virtual
reality**



**Optimizing
services**



**Managing
interactions**



Identification of service failures
and testing of alternatives

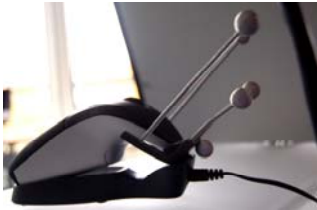
Definition of roles, competencies
and interaction processes

Advantages of the ServLab



- **Think-out-of-the-Box**

- design new generation of services
- visualization of hard communicable services



- **Risk reduction for new service development**

- services can be tested before the introduction on the market
- simulation of services in protected environments



- **Acceleration of development processes**

- use of prototyping methods for services
- extensive integration of customers and employees

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Overview: Presented Projects in ServLab



Testing Innovative
Check-In-Concepts

SIEMENS

Service Optimization
»Knowledge on Demand«



Service Concept
Consulting Process in Nursing Homes

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Project Cases: **Accor Hotels**

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Film: ServLab

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Experience the Servicescape



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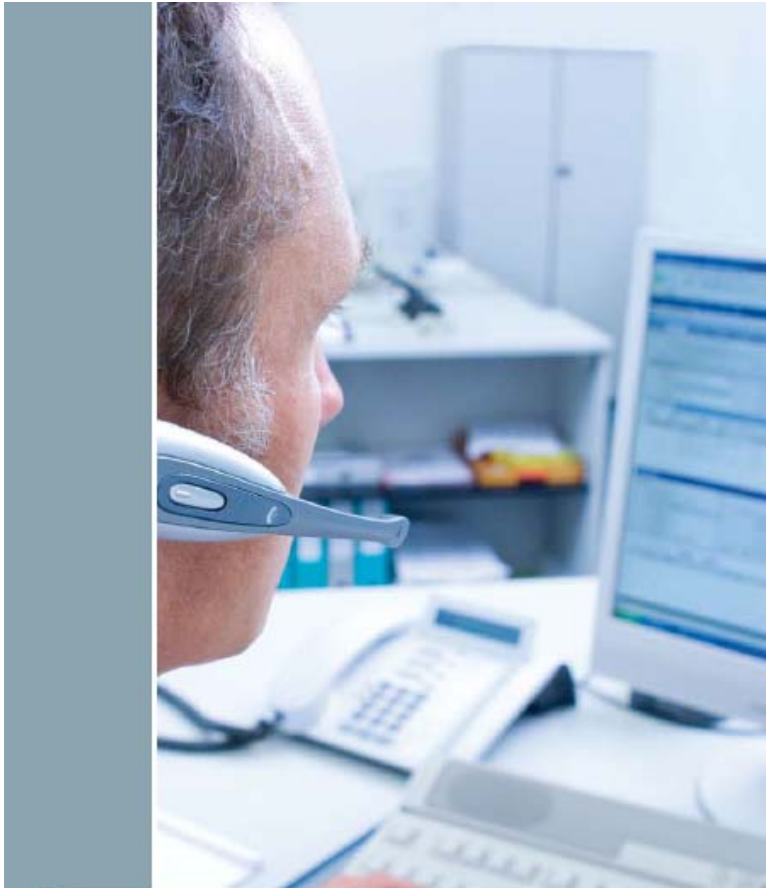
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Project Cases: Accor Hotels

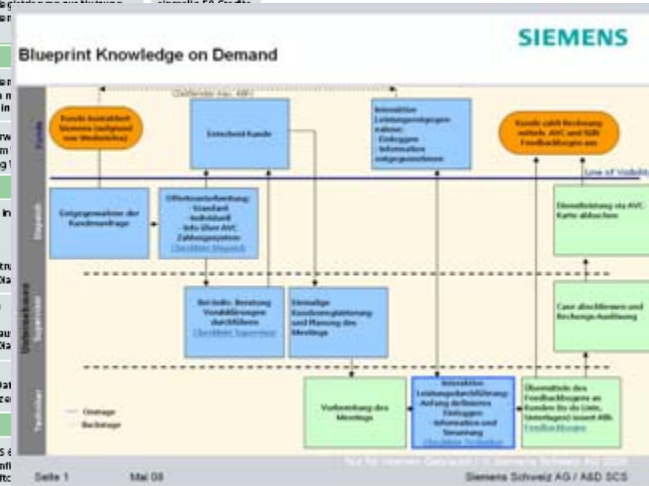
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Siemens Switzerland: New service »Knowledge on demand«



	Beschreibung »Knowledge on Demand«	Beschreibung	Modul-Festpreis AVC (Credits)
Regi- strierung	»Knowledge on Demand« Registrierung	Einmalige Registrierung von gesamten Angebot	
Stand- artpakete	WinCC flexible		
	WinCC flexible Starter Dauer des Meetings 2 h	Möglichester Projektkosten in Integration in	
	WinCC flexible Starter Dauer des Meetings 2 h	Benutzerverwe Melde system Archivierung!	
	STEP 7		
	STEP 7 Starter 1 Dauer des Meetings 2 h	Einführung in HW Konfig FUP / KOP Funktionen Programmstr Controller Dia	
	STEP 7 Starter 2 Dauer des Meetings 2 h	Datentypen AVL Funktionsbau Controller Dia	
	STEP 7 Spezialitäten Dauer des Meetings 2 h	Pointer Komplexes Dat MultiInstance	
	SIMATIC NET		
	Fernwartung mit SCALANCE 5 VPN Dauer des Meetings 2 h	SCALANCE 5 Security Konfi Security Softz	
	Datenanbindung über Open Process Control (OPC) Dauer des Meetings 2 h	Erste Schritte CPC von SIMATIC NET (Server) CPC Scout (Client)	200 Credits
Netzwerke mit PROFNET-Starters Dauer des Meetings 2 h	Netzwerkgrundlagen PROFINET Periphere Kommunikation NetPro Netzdiagnose	200 Credits	
Netzwerke mit PROFIBUS DP-Starters Dauer des Meetings 2 h	PROFIBUS DP Netzwerkgrundlagen Kommunikation NetPro Busdiagnose	200 Credits	
Individuell	Persönlich		
	Private Session Dauer des Meetings nach Bedarf	Wunschthemen aus der Welt von »Totally Integrated Automations« (Sie bestimmen den Inhalt und die Zeitdauer)	100 Credits / h



Knowledge on Demand

Vleifältige Funktionen – maximale Flexibilität

Automation and Drive

SIEMENS

The Origin of
Service Engineering

ServLab

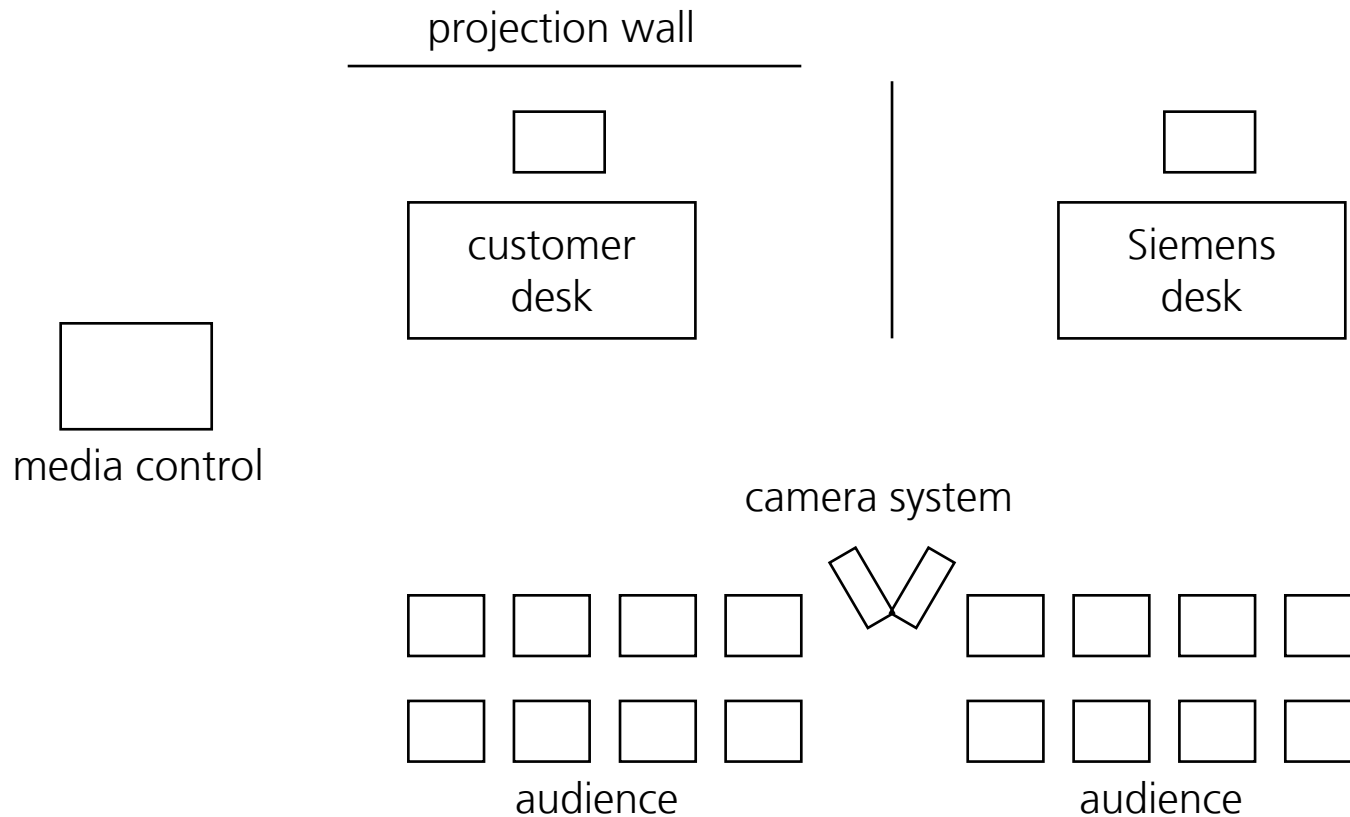
Knowledge on Demand

Challenge: How to test the new service?

*A test with a pilot customer failed
(due to technical problems and interaction problems)*

*The management decided not to go on the market
before the problems are solved*

Knowledge on Demand Test environment



Knowledge on Demand Impressions



Knowledge on Demand

Test scenarios

- Scenario 1:
First contact and introduction of the customer to the system
- Scenario 2:
Technical failure
- Scenario 3:
Unsatisfied customer

Knowledge on Demand Benefits

- visualization of the service is particularly useful for decision makers
- acceleration of development processes
- service has been systematically tested before the introduction on the market
- simple method for the optimization of the service
- the involvement of customers is not necessary
- training of customer-contact staff

Fraunhofer IAO: Competence in research and consulting

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