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POSDRU 2007-2013



Instrumente Structurale
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INSEED: A model of interdisciplinary, open education & research in the service domain

Professor Theodor BORANGIU
University Politehnica of Bucharest
Director of the INSEED Project

FONDUL SOCIAL EUROPEAN

Investește în
OAMENI



Project Consortium



Coordinator:

- University Politehnica of Bucharest
 - Faculty of Automatic Control & Computer Science
 - Faculty of Electronics, Telecommunications and IT
 - Faculty of Power Engineering
 - Faculty of Electrical Engineering

Partners:

- University Transilvania of Brasov
- Academy of Economic Sciences of Bucharest
- University of Medicine and Pharmacy
Carol Davila of Bucharest



General Objectives



- To create a **modern framework in higher education** for competencies and skills in **service engineering** and **management**
- To foster **service innovation** in partnership with national and EU Higher Education Institutions, professional organizations and companies
- To promote **new types of services**: knowledge intensive, IT -based using advanced computational and software technologies
- To qualify **T-shaped professionals** as adaptive innovators for the new service economy

Work Packages



WP1. Elaborate the open and continuous education model, in the domain of service science, design and management



WP2. Define, develop and perform a multi-regional interdisciplinary educational program for service analysis, design and management, in correlation with the National Qualification System for Higher-Education



Wp3. Develop a collaborative, open, transnational e-learning platform, with virtualized resources accessed as services, and sharing education and research resources to promote service innovation



WP4. Foster service innovation by disseminating research results in the open, collaborative knowledge environment SSKE



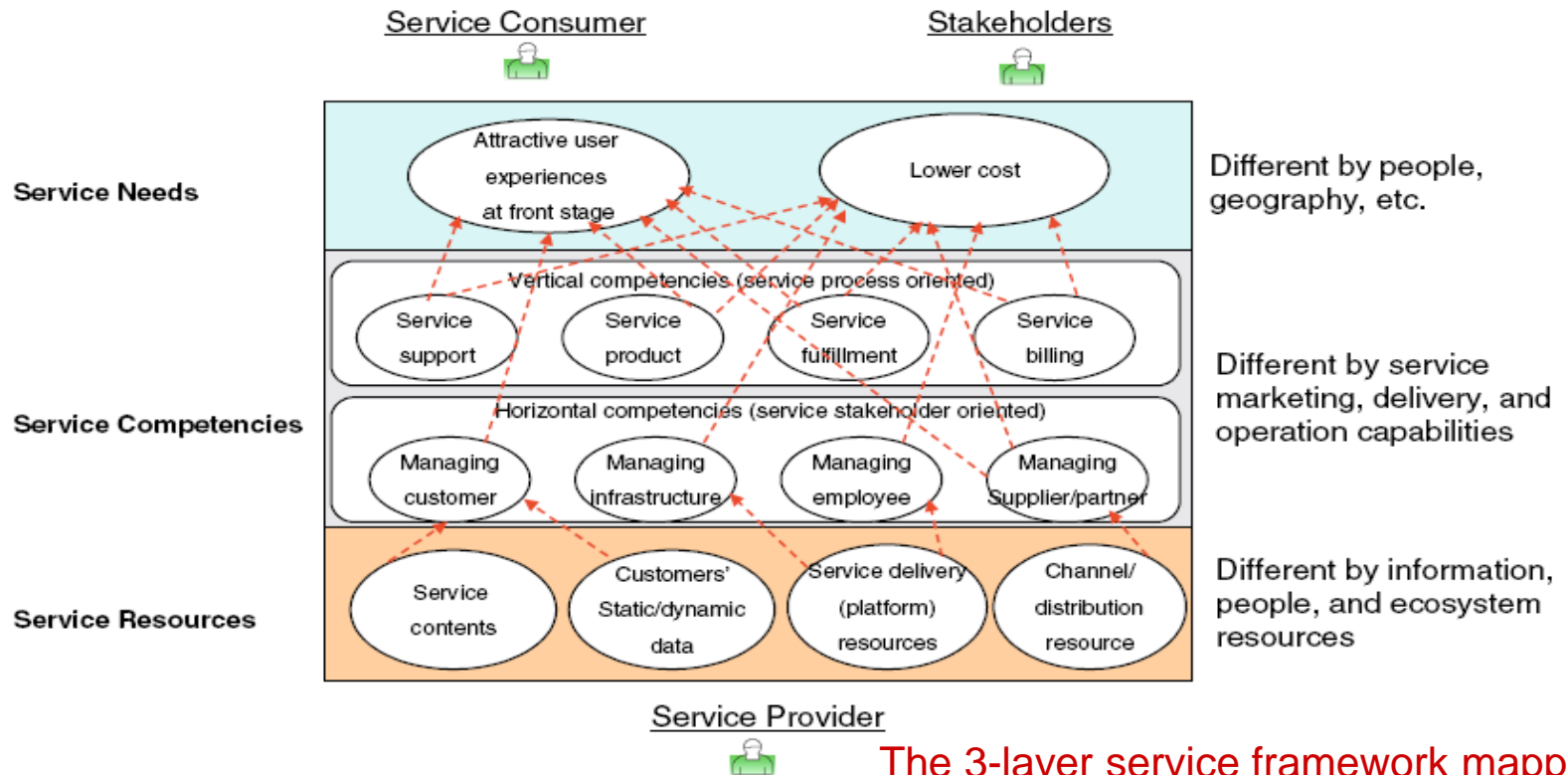
Wp5. Cloud set-up
WP6. Communication
Wp7. Project management

Project Scope

The project aims at creating an open, on demand higher education system to prepare T-shaped graduates for the service sectors: society and economy

The Higher Education Model

[Generated by the need to grow and innovate IT-based services]



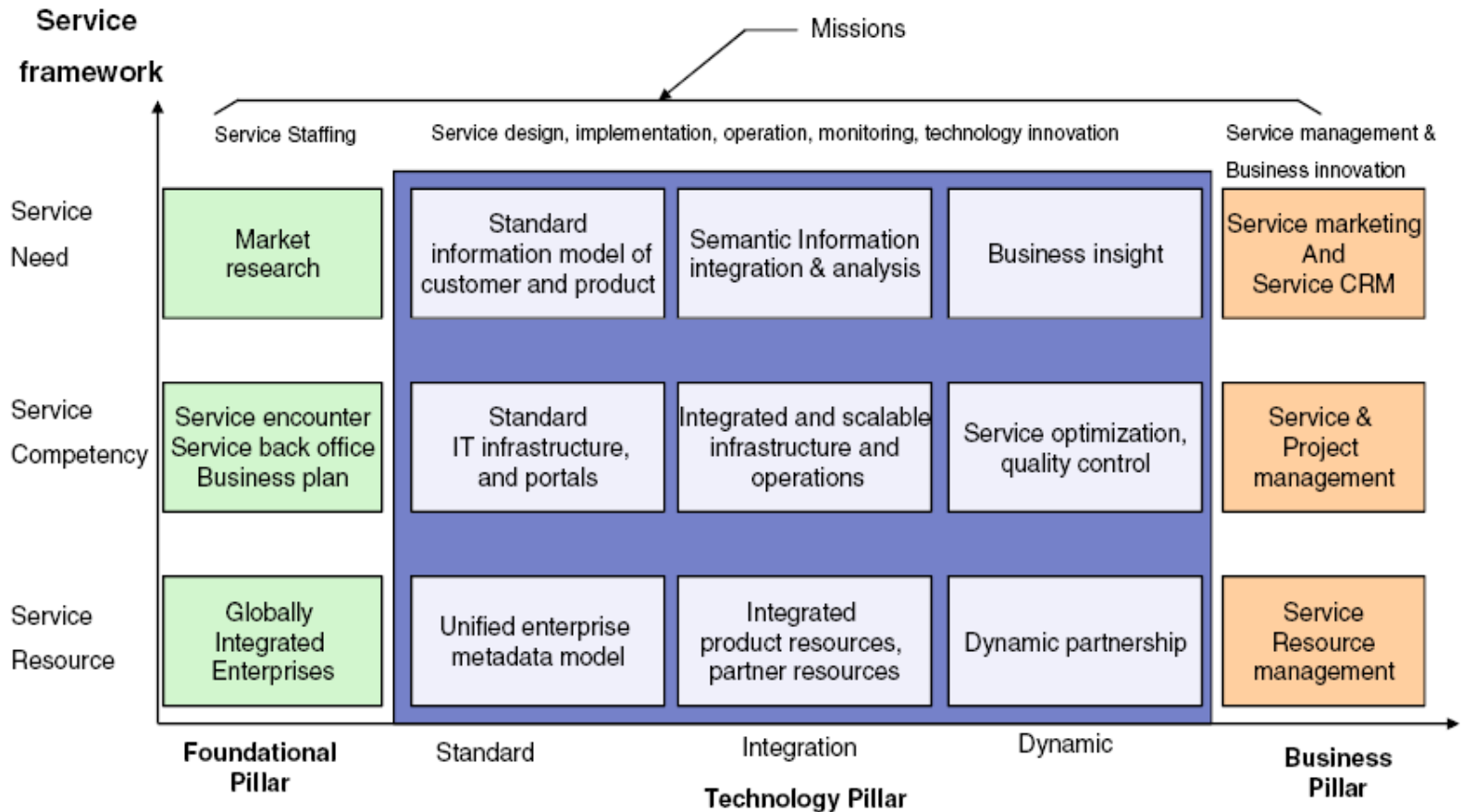
The 3-layer service framework mapping **service innovation** – in **S_S education**

Activities for services:

- Core: marketing, design & dev., operations management, delivery
- Support: general- & HR management, technology development
- Performance evaluation of services, metrics, KPIs

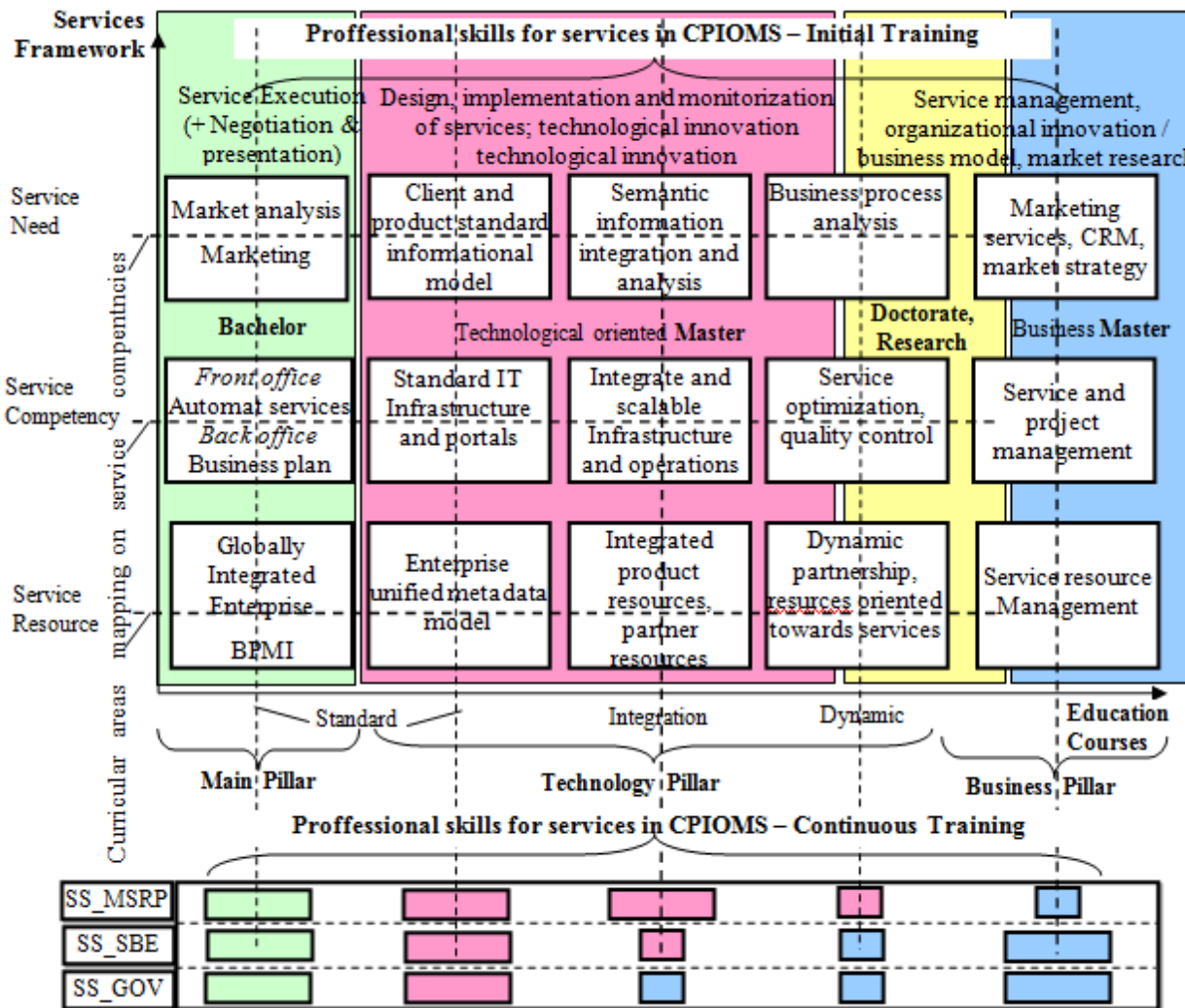
The Higher Education Model

Competency pillars for the 3-layer service framework



The Higher Education Model

The 3-layer SS Model



A new fundamental domain:
Service Sciences

Two new study domains:

- **Service Engineering**
- **Service Management**

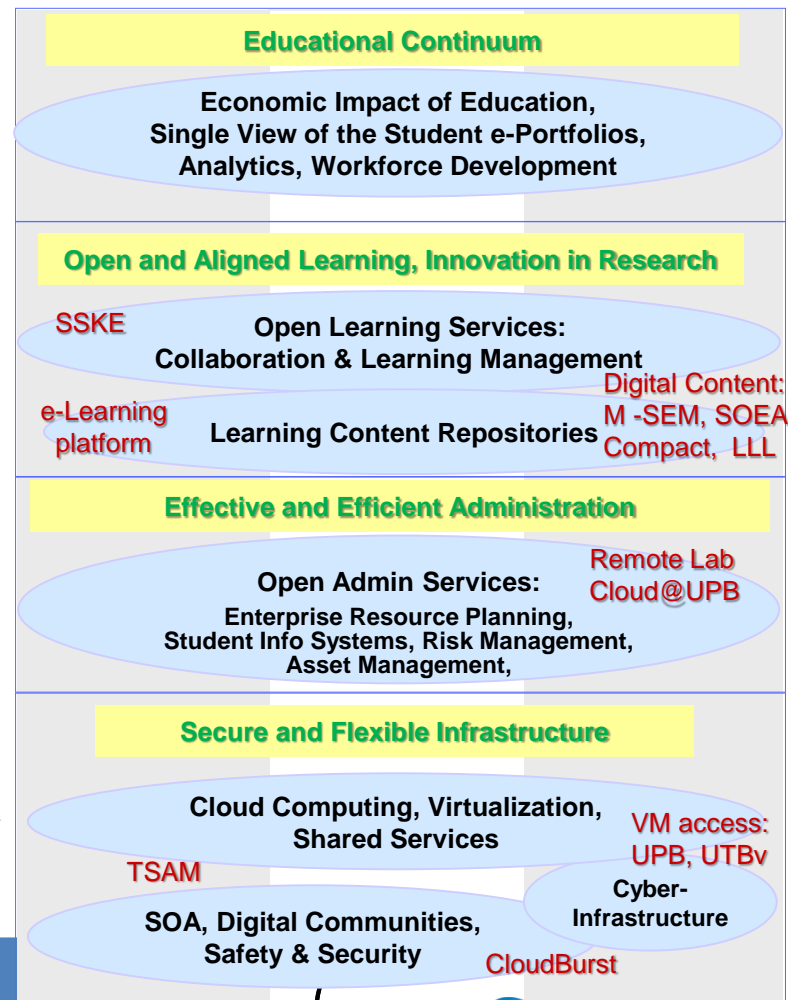
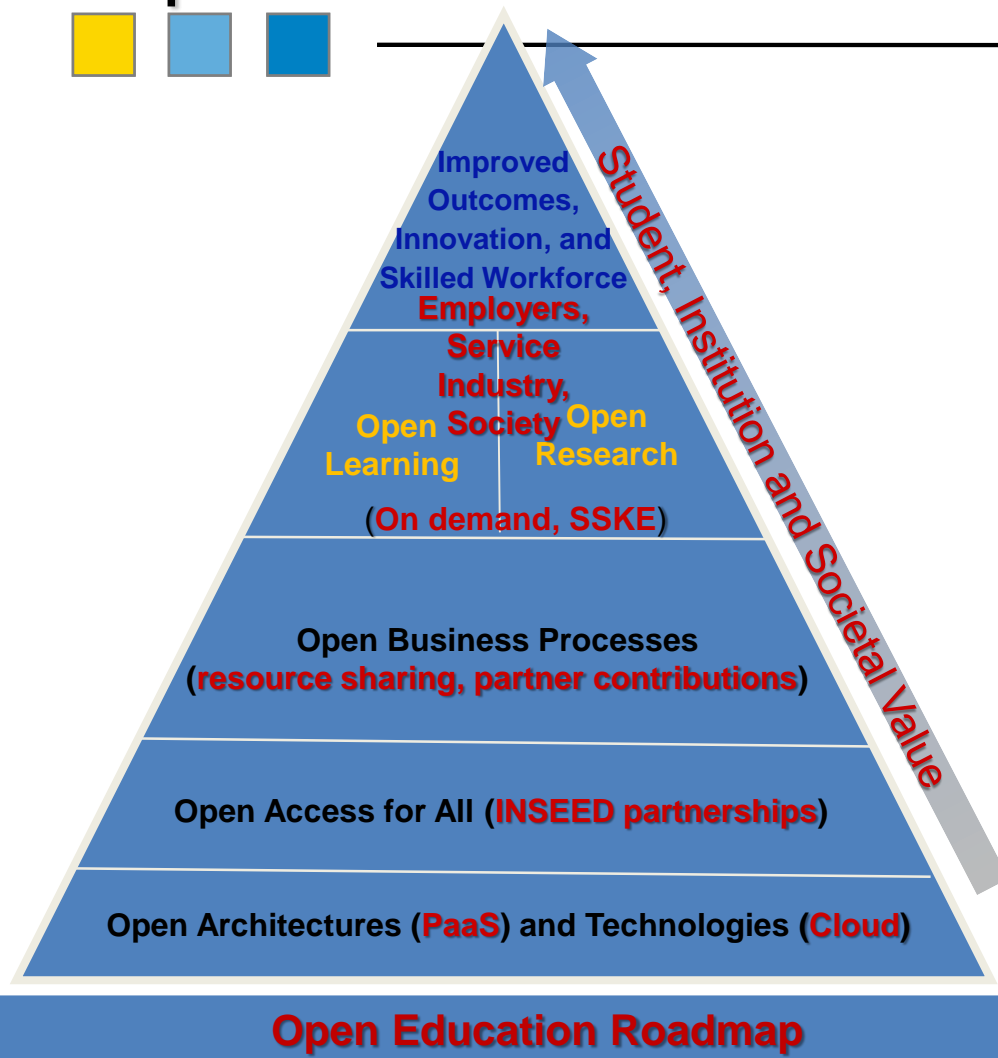
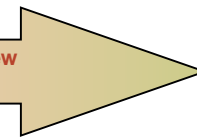
Master Programs:

- **General** (ITC, OMM, PSO)
- **IT Oriented:** Services Computing; IT Services, Software Services
- **Business Oriented:** Business & Services Mgmt
- **Sector (Industry) Oriented:** Healthcare, e-Gov, e-Admin, manufacturing, supply chains, energy supply, telecom, IT, mobile, metrology

Service Science programs align to open education roadmap



A Student/Employee/Citizen View
The Educational Continuum



Global Results



- An open, continuous and on demand **education model**, with flexible institutional framework to create and maintain skills and competencies for the design, implementation, execution and management of complex services with IT support
- **17 new master programs, 15 compact learning modules and 16 long life learning courses** in different sector services: IT, manufacturing, supply chains, telecommunication, energy supply, metrology, e- health, e-administration, e-government, business management
- New type of educational services through **resource virtualization**, using **cloud technologies**: e-learning and remote laboratories
- **Ontology-based knowledge environment** to support service innovation and promote growth and visibility of service companies

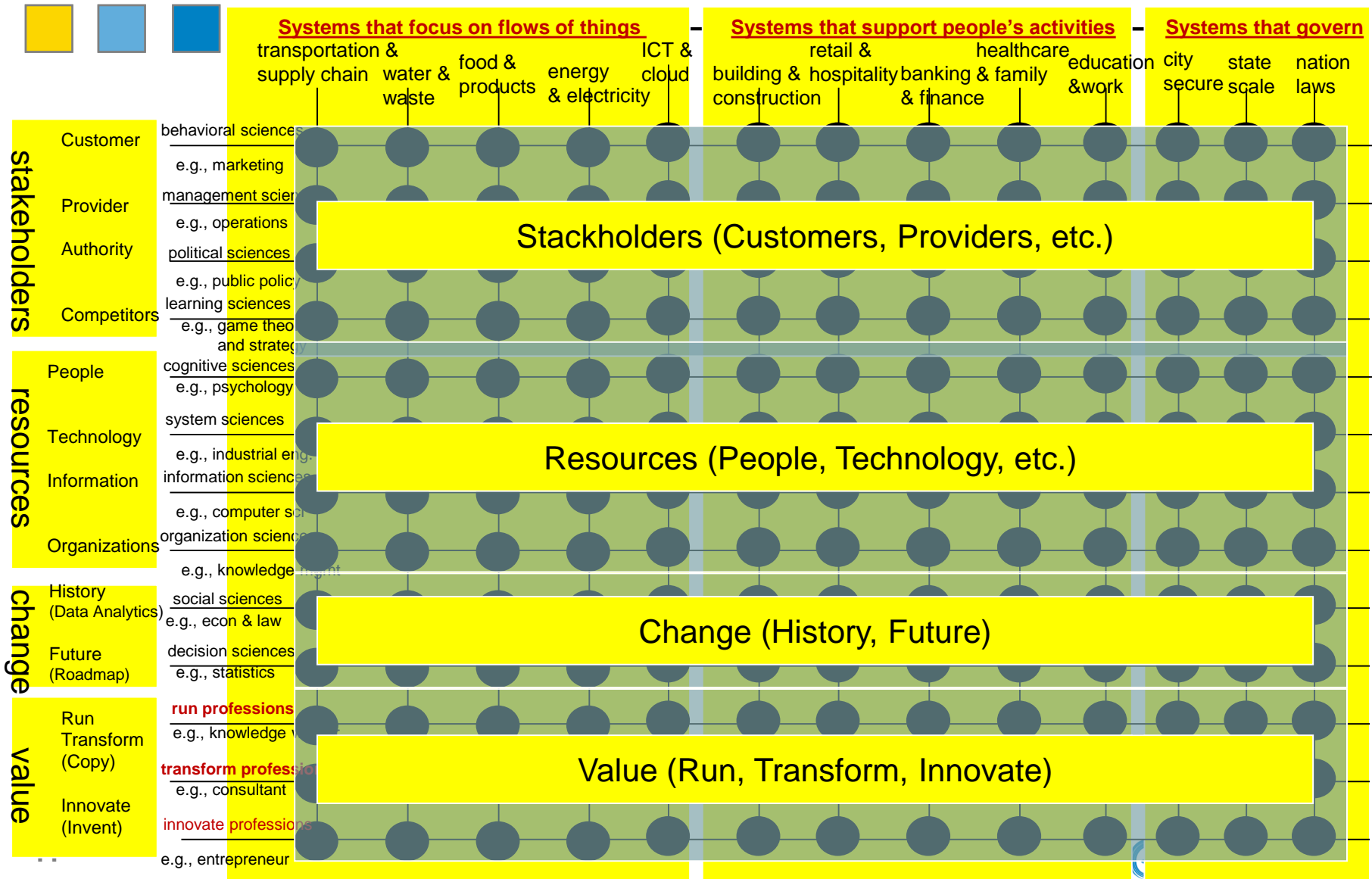
Competencies and skills



Graduates: T-shaped professionals, capable to produce viable solutions in their specific domains (engineering or management), but also having the capability to understand and interact with specialists from a wide range of disciplines and functional areas. They combine **expert thinking** (depth in one or more areas) and **complex communications** (breadth across many areas):

- Orientation towards services
- Modelling, design and management of service systems with IT support
- Analyze and enhance value co-creation
- Core activities of services: design and development, operation and management, marketing, delivery
- Service life cycle management (SLM)
- Developing new services
- Communication skills and team work
- Knowledge intensive services
- Business modelling and management
- Product-service extensions After-sales services
- Service innovation

Competencies and skills applied to...





Main Results (Education)

17 master programs

15 compact learning modules

16 long life learning courses

2 double degree master programs with the universities of Porto & Nancy

Cloud Learning Services

Remote access laboratories (Cloud@UPB)

e-Learning

Master Programs



1. **Service Engineering and Management**
2. Science, Design and Engineering of Services in Electronics, Telecommunication and Information Technology
3. Advanced Software Services
4. Management and Protection of Information
5. Automation and Industrial Informatics
6. Services Management for Business
7. Advanced Techniques for Data Management and Analysis for Business Sustainability
8. Information Systems and Services in Medicine
9. Service Oriented Enterprise Architectures
10. E-Government
11. Public Services Management
12. Services for Energy Efficiency
13. Quality Management in Electro Power Engineering
14. Service Engineering in Telecommunication Networks
15. Engineering of Electric Products and Services
16. Advanced Electrical Systems
17. Complex Signal Processing in Multimedia Applications



SEM Master Program - Goals

The Master Program **Service Engineering and Management (SEM)** is a program to educate professional engineers, i.e. graduates will be prepared to *conceive, design, implement and operate complex, IT-based engineering systems for services.*

SEM has a strong emphasis on:

- Understanding the innovation mechanisms required for sustainable service growth: (1) technological; (2) business model; (3) organizational-social; (4) demand (market)
- Understanding the functional and the experience requirements of people using services – the customer, for value co-creation
- Management of the service CDIOM lifecycle process and understanding its value:
 - Core activities for services: design & dev.; operations management; delivery; marketing
 - Support activities: general- and HR management; technology development
 - Performance evaluation of services: value, perception, metrics. KPIs

SEM main topics



ICT Information and Communication Technologies	PSO Psychology, Sociology	OMM Operations, Management & Marketing
Systems and networks security	Sociology of Organizations	Supply Chains Management
Information- and Content Management	Cognitive Psychology	Customer Relations- and Service Operations Management
Human-Computer Interaction	Communication	Marketing
Advanced software technologies: Web, Cloud	Information science and management	Financial management
Multimedia technologies	Design and Arts	Business Process Modelling
		Service design and development

SEM Courses for topics (A&C, PUB)



ICT	PSO	OMM
Foundations of Service Science	Communication Management and Cognitive Psychology	Mathematical Modelling of Economic Processes
Data Mining and Data Warehousing	Knowledge Engineering and Services Ecosystem	Marketing and Financial Performance of Business
Architecture of Service Oriented Information Systems	Intellectual Property and Entrepreneurship	Supply Chain Management and Logistics
Network and Systems Security		Service Operations and Customer Relationship Management
Business Process Modelling		Accounting and Financial Management for Services
Business Service Integration and IT Management		Enterprise Integration and Management Architectures

 Courses with strong IT orientation

MESG Courses for topics (FEUP)



ICT	PSO	OMM
Business Process Modelling	Organizational Behaviour	Service Operations Management & Logistics
Information Systems	Human – Computer Interaction	Services Marketing
Enterprise Management	Creativity	Accounting and Financial Management
Decision Support Systems	Human Resources Management	Multimedia and New Services
Information Systems Architecture	New Service Development and Design	Customer Relationship Management
Requirements Engineering for Services	Introduction to Research Project	Capital Budgeting
		Corporate Strategy

 Courses with strong business orientation

Compact Modules

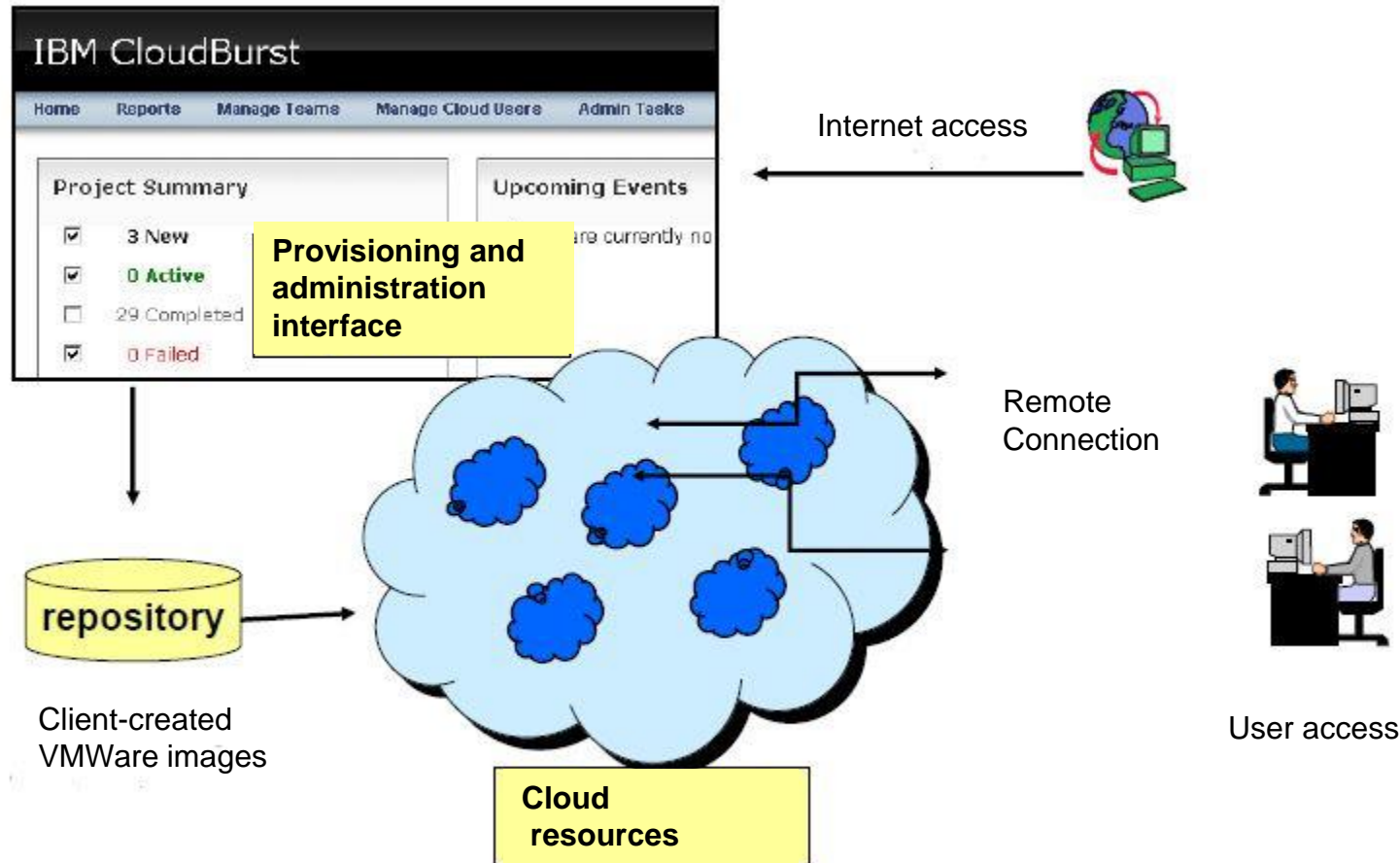


- Health Services with IT Support
- **Service Oriented Architectures and Cloud Systems**
- **Supply Chain Management**
- Service Oriented Architectures (SOA) in Manufacturing:
 - **SOA for Business Management of Manufacturing Enterprise**
 - **Service Orientation of Shop Floor Control in Manufacturing Enterprise**
- **Strategies for Business Analysis and Optimization**
- e-Business
- e-Commerce
- Products and Services in Electrical Engineering
- Advanced Electrical Systems for Renewable Energies
- Integrated Maintenance Services
- Thermo Energy Audit
- Intelligent Electrical Networks
- Technical Expertise of Electronic and Telecommunication Equipment
- Management of Public Services

Continuous Training Programs

1. Specialist in Information Systems for Healthcare
2. Marketing, Communication and Management in Healthcare Services
3. Management and Administration of Public Services in the European Union
4. Integrator for e-Government Services
5. Architect of Integrated Services for Manufacturing
6. Integrator of Services for Supply Chains
7. Entrepreneurial Culture
8. Advanced Analysis and Optimization of Business Processes
9. Trader of Electric Energy
10. Auditor for Thermo Power Systems
11. Expert in Electric Energy Supply
12. Expert in Electrical Engineering Services
13. Expertise of Electrical Equipment and Metrology Assurance
14. Consultant in Services for the Electronics Industry
15. Expert in Cloud Services
16. Developer of Interfaces for Mobile Terminals

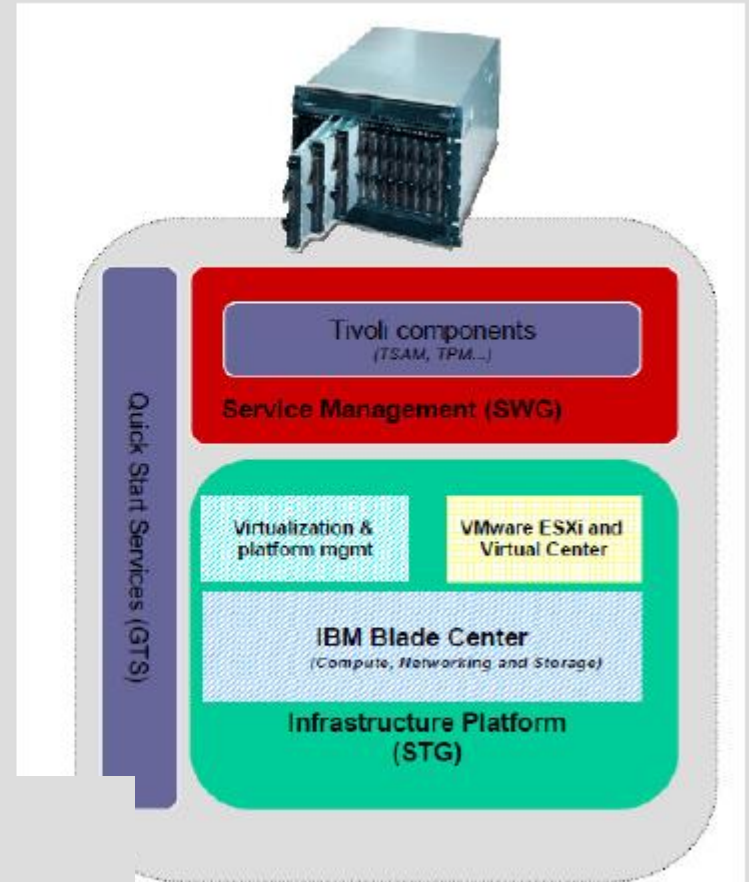
IBM Cloudburst – Logical Diagram



IBM Cloudburst 2.1 features



- Automatically extensible and scalable modular Design
- Self Service Portal with autonomous provisioning and no management effort
- Predefined automation templates and workflows of the most common resources (e.g. virtual images VMWare)
- Professional services for installation and configuration
- Technical support for hardware, software and applications
- Unique price for prepackaged and preconfigured hardware, software and networking



Software System

TSAM – Tivoli Service Automation Manager

TSA – Tivoli System Automation

ITM – IBM Tivoli Monitoring

ITUAM – IBM Tivoli Usage and Accounting Manager

Virtual Machines Applications in INSER@SPACE

- Service Science Knowledge Environment

Based on MediaWiki

Semantic

<http://sske.cloud.upb.ro>

- E-learning

Courses

Presentations

Applications (access to specific VM's)

<http://elearning.cloud.upb.ro>

- Virtual Labs

VM Template -> Customization -> Final Template

- Future Developments

Research

Industry

INSER@SPACE

E-Learning | Service Science Knowledge Environment

Data Explorer | Query Interface | Change view | Log in

SSKE

New page | Search this wiki

Domain Fundamentals | Service Support | Learning | Service Innovation | Service Sectors | About

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Service Science Knowledge Environment More

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Institutions

The service sector accounts now for over 70% of the activities and employment in the more advanced economies, and has been growing in all countries. Innovation in services is critical for sustainable societies, and there is an increasing support from Information Technologies in providing new services. Service Science is an interdisciplinary approach to the engineering of services systems in which specific arrangements of people and technologies take actions that have value for others.

The main goal the **Service Science Knowledge Environment (SS-KE)** is to implement a collaborative environment that would gather together different academic partners with the overall aim of creating a modern educational framework in the areas of *Science, Design and Management of services*, while promoting *service innovation* in different *service sectors*.

The **Service Science Knowledge Environment (SS-KE)** targets also at creating a solid knowledge-based link between academia, industry and government, along with other European institutions. It supports sharing relevant information on Service Science that would be stored in a structured way based on a common vocabulary using an integrated ontology. From the technological point of view, wiki technologies are used for enabling the collaborative aspect of the environment.

The **Service Science Knowledge Environment (SS-KE)** is delivered as a service in the cloud. It approaches the conception and development of an open, collaborative, interactive environment to gather around universities, industry, governmental agencies and European institutions in order to foster service innovation by means of information / proves / technological transfer of the research results aiming to develop sustainable service systems innovation solutions.

<http://sske.cloud.upb.ro/>

SSKE: an ontology-based Kplatform



<http://sske.cloud.upb.ro/>

- ❑ *An educational knowledge path on Service Science* fostering service innovation in different service sectors, using fundamental concepts related to Service Science
 - ❑ business oriented,
 - ❑ IT oriented (SOC, SOEA, Cloud, SaaS),
 - ❑ service orientation of processes (integration, servitization, productization)
- ❑ *Growth of the service companies' visibility*
 - ❑ companies to publish case studies
 - ❑ data base on service innovation in different sectors
- ❑ *Report on new methods, tools and software applications* to develop IT services and to accomplish service automation and to foster service and service system innovation.
 - ❑ PoTs, PoCs, demos, etc .
- ❑ *Service innovation: approaches, R&D, metrics, KPIs*
- ❑ *Activities for services: core, secondary, service performance measurement (value, perception): metrics, KPIs*





ISSIP

INTERNATIONAL SOCIETY OF SERVICE INNOVATION PROFESSIONALS

ISSIP – International Society of Service Innovation Professionals



ISSIP Membership

<http://www.issip.org/>

- promotes the professional development, education, research, practice, and policy work of its member individuals and institutions working to improve diverse, interconnected, complex service systems
- **membership** - who can join:
 - people involved in the services research, service innovation, and/or the service science field of interest either through your career and/or education

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Wendy Murphy, IBM

Yassi Moghaddam, ISSIP

- **Education & Research SIG**

<http://www.issip.org/community/special-interest-groups/sig-education-research/>

- **mission** - to increase quantity and quality of service science related educational materials, courses and degree programs as well as open data sets for service systems research, to increase the number of T-shaped service innovators globally



Joining the international Service community

IESS1.3 Participation & Proceedings



João Falcão e Cunha
Mehdi Snene
Henriqueta Nóvoa (Eds.)

LNBIP 143

Exploring Services Science

4th International Conference, IESS 2013
Porto, Portugal, February 2013
Proceedings

 Springer



International Conference on
Exploring Service Science
07 - 08 February 2013 . Porto

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IESS 1.3 Proceedings available!

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25 IESS1.3 Proceedings Volume

Three papers presented



SOEA – the internationalization context

Dissemination of Results: SOHOMA Editions & Literature [ISI recognized]



SOHOMA editions

2011 Edition

1st Workshop on
Service Orientation in Holonic and Multi-Agent Manufacturing Control

[SOHOMA11 Photo Gallery](#)

2012 Edition

2nd International Workshop on
Service Orientation in Holonic and Multi-Agent Manufacturing Control and Robotics

[SOHOMA12 Photo Gallery](#)

2013 Edition

3rd edition of the International Workshop on
Service Orientation in Holonic and Multi Agent Manufacturing and Robotics

[SOHOMA13 Photo Gallery](#)

SOHOMA'11 Proceedings Volume

Studies in Computational Intelligence 402

Theodor Borangiu
André Thomas
Damien Trentesaux (Eds.)

Service Orientation in Holonic and Multi-Agent Manufacturing Control

SOHOMA'12 Proceedings Volume

Studies in Computational Intelligence 472

Theodor Borangiu
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Damien Trentesaux (Eds.)

Service Orientation in Holonic and Multi-agent Manufacturing and Robotics

SOHOMA'13 Preprints Volume

Preprints of the International Workshop SOHOMA'13

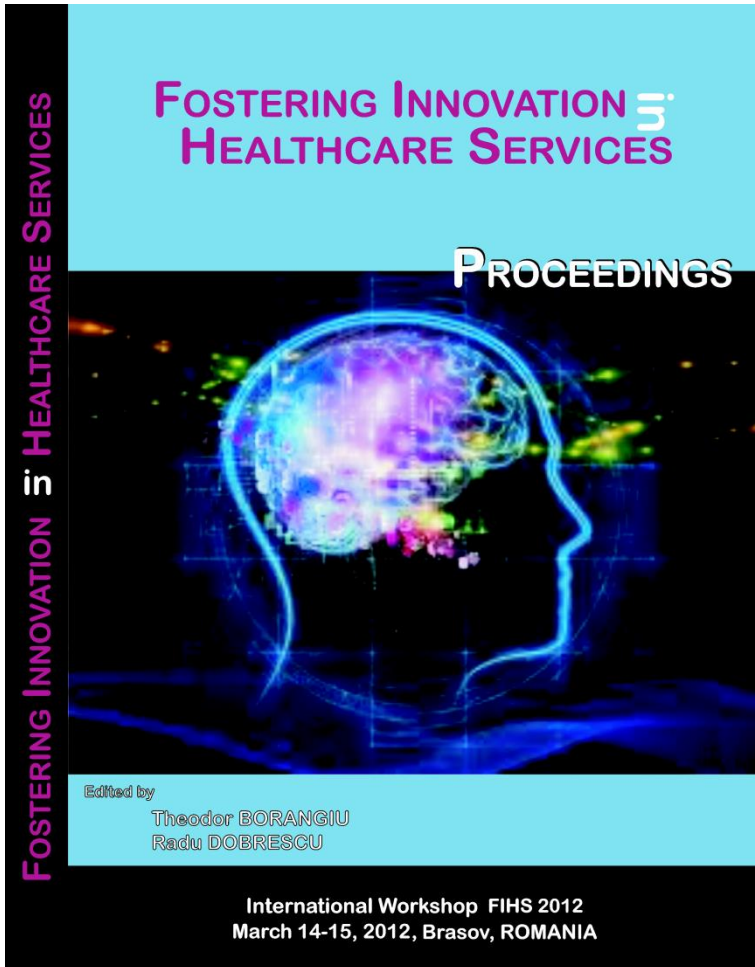
Valenciennes, France June 20-22, 2013

Service Orientation in Holonic and Multi-Agent Manufacturing and Robotics



Healthcare Services International Forum

FIHS2012 Workshop, Brasov, March 2013 [Proceedings]



FOSTERING INNOVATION IN HEALTHCARE SERVICES 2012
International Workshop
Brasov, Romania, March 14-15, 2012

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Workshop Info

The International Workshop "Fostering Innovation in Healthcare Services" is held in Brasov in the Campus of the "Transilvania" University. The Workshop is organized as special scientific event of the POSDRU Project no. 57748 "INSEED - Strategic program fostering innovation in services through open, continuous education" in the frame of the work package W2/4: Formation program of the academic staff involved in the development and management of higher education programs in IT-based Service Science, Management and Engineering.

Sidebar Menu

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- Workshop Info
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Main topics:

- ✓ Medical Information
- ✓ Health Services
- ✓ Medical Robots
- ✓ Translational Medicine





Thank
YOU