UNIVERSITY OF TWENTE.

DEVELOPING A SERVICES SCIENCE GRADUATION PROGRAMME AT THE UNIVERSITY OF TWENTE

MARTEN VAN SINDEREN

VIKRAM SORATHIA, LUÍS FERREIRA PIRES AND FONS WIJNHOVEN

Outline

- Need for services science education programme
- Survey: Classification and coverage analysis of existing curricula
- Our proposal
- Outlook and conclusion

Shifting Trends

- Services sector is fastest growing industrial sector
  - major source of employment *(for the working population)*
  - major source of revenue *(for corporates and governments)*

- Contributions from research developments in different disciplines
  - computer science: information systems, software engineering, databases, knowledge engineering
  - business administration: business modeling, change management, marketing, financial engineering

Needs and relevance

- Need for research and education programme that bridges between these disciplines
  - *transfer of knowledge from one to another discipline*
  - *creation of new (interdisciplinary) knowledge*
  - *establishment of unified theory*

- Social relevance of education in this area
  - *trained service professionals for the services industry*
  - *knowledge sharing and knowledge transfer*

Some Responses to Shifting Trends

- Research and Academia:
  - *UvA: Amsterdam Academic Centre for Service Innovation - AMSI*
  - *VU: Service Science and Innovation – SSI*
  - *U. Tilburg: European Research Institute in Service Science - ERISS*
  - *U. Singapore, IBM: Service Science, Management and Engineering - SSME*
- Policy
  - *Netherlands Services Innovation Roadmap*
  - *Germany - Funded Innovation with Service*
  - *EU - Networked European Software and Services Initiative - NESSI*
  - *US – America COMPETES Act*

Our Response

University of Twente should meet demand by offering own program

1. *Systematic survey of existing services science curricula:*
   - *Data collection and processing*
   - *Classification and coverage analysis*

2. *Develop new curriculum based on*
   - *Outcome of analysis*
   - *Resource availability*
   - *Existing academic requirements*

Data Collection

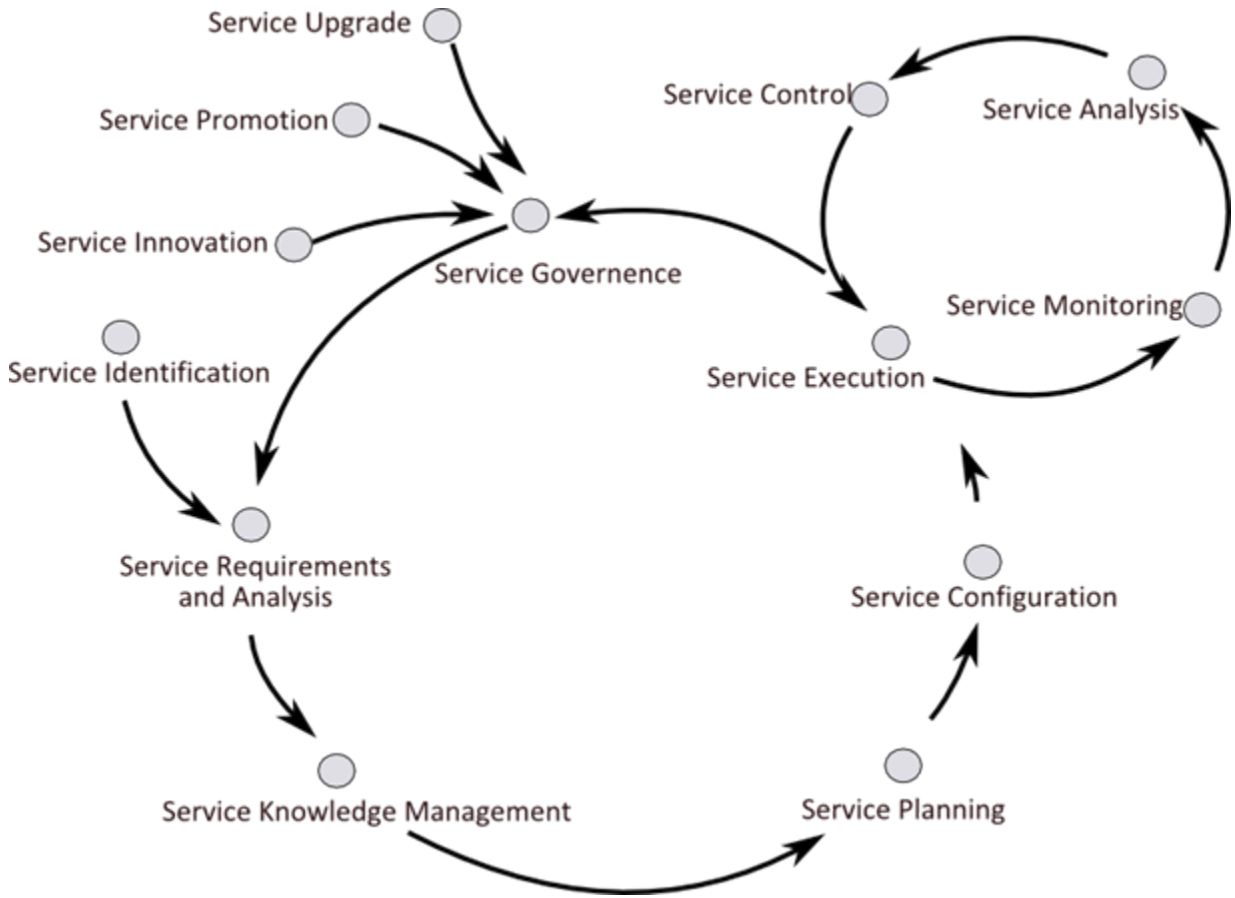
- Programme Selection Criteria
  - *Programmes listed in SSME Portals*
  - *Programmes reported in research papers, books*
  - *Certificate, undergraduate and graduate level programs*
- Courses Selection Criteria
  - *Courses taught*
  - *Excluding research, project or any other specific requirements*
- Outcome **[Not claiming completeness]**
  - *35 Programmes*
  - *386 Courses*

Classification Strategy

- Possible strategies to classify courses
  - *Based on various service activities to be carried out by service professionals*
  - *Based on theories/techniques/strategies employed*
  - *Based on academic disciplines*

- We selected “Service Activity” based classification
- Service activities can be positioned in a service life cycle

A generic service life-cycle



Surveyed programmes and their coverage

Service Activities / Institutions	Identification	Planning	Innovation	Requirement	KM	Configuration	Execution	Monitoring	Analysis	Control	Governance	Update	Promotion	SSME General
Michigan Tech.U.	-	3	-	1	-	1	2	-	-	-	1	-	-	-
Ohio State U.	-	1	1	-	-	-	-	-	-	2	1	-	1	-
U. Carlo Cattaneo	-	1	-	1	1	2	-	-	-	-	2	-	-	-
U. of Washington	-	11	-	3	1	-	-	1	-	-	4	-	-	-
Warwick	-	-	1	-	-	-	-	-	-	-	-	-	-	-
EPFL	-	3	-	-	2	6	-	-	-	-	2	-	1	-
Karlsruhe Inst of Tech.	1	1	1	1	2	6	2	-	-	1	-	-	-	1
San Jose State U.	-	2	1	-	-	4	2	-	-	-	-	1	-	-
Singapore Management U.	-	1	-	1	4	4	-	-	2	-	-	-	-	-
Stevens Institute of Tech	-	4	-	2	4	1	2	-	-	1	2	1	-	-
U. of California Berkeley	-	-	-	1	2	3	-	-	-	1	-	-	-	-
U. of Maryland	-	1	-	1	2	-	2	-	-	-	-	1	1	-
U. of Trento	-	-	-	-	3	3	-	-	-	-	1	-	-	1
Arizona State U.	2	-	-	-	-	-	4	1	-	-	1	-	5	-
Carnegie Mellon U.	-	1	1	-	-		1	-	-	-	-	1	-	-
U. of Glasgow	-	-	-		1	-	-	-	-	-	1	1	-	-
Bahçeşehir Üniversitesi	1	4	-	-	1	1	5	-	1	-	1	1	-	2
NC State U.	1	1	1	1	-	-	3	-	1	-	-	1	3	-
Northern Illinois U.	-	3	-	-	1	-	4	-	2	-	-	-	2	-
Rensselaer Poly. Institute	1	7	1	-	1	1	3	-	5	-	-	-	-	-
RMIT	2	-	-	-	-	1	2	1	-	-	1	-	-	5
Tecnológico Monterrey	-	1	-	-	-	-	3	-	-	-	-	-	-	1
Geneva Business School	1	3	-	-	1	-	2	-	-	-	1	1	1	-
Helsinki Sch. of Eco.	1	7	1	-	5	-	4	-	1	1	3	3	1	-
Masaryk U.	4	5	-	-	11	7	2	-	-	1	1	1	3	1
Universidade do Porto	-	3	2	1	5	2	3	-	-	-	2	1	1	-
U. at Buffalo	-	2	-	1	1	1	-	-	1	1	-	-	2	-
U. of Exeter	2	3	-	-	1	-	1	-	-	-	1	1	1	2
U. of Pennsylvania	1	7	1	1	6	2	8	-	1	-	2	-	2	-
University of Toronto	-	-	-	-	-	-	-	-	-	-	-	-	-	1
University of Bridgeport	-	-	-	-	-	-	-	-	-	-	-	-	-	1
University of Sydney	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Karlstad University	-	-	-	-	-	-	-	-	-	-	-	-	-	1
University of Alberta	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Wright State	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Services Science Courses

- Some noteworthy courses
  - *Service System Dynamics and Design*
  - *Analysis and Design of Web based Services*
  - *Service Oriented Process Reengineering*
  - *Service Design and Delivery*
  - *Information and Services Economy*
  - *Capability Improvement for Service Organizations*
  - *Services Quality*
  - *Services Consulting*
  - *Commercialization Strategies for Services,*
  - *Project Management and Service Lifecycle*

Our Proposal (1)

Constraints

- Limited Staff
- Education System

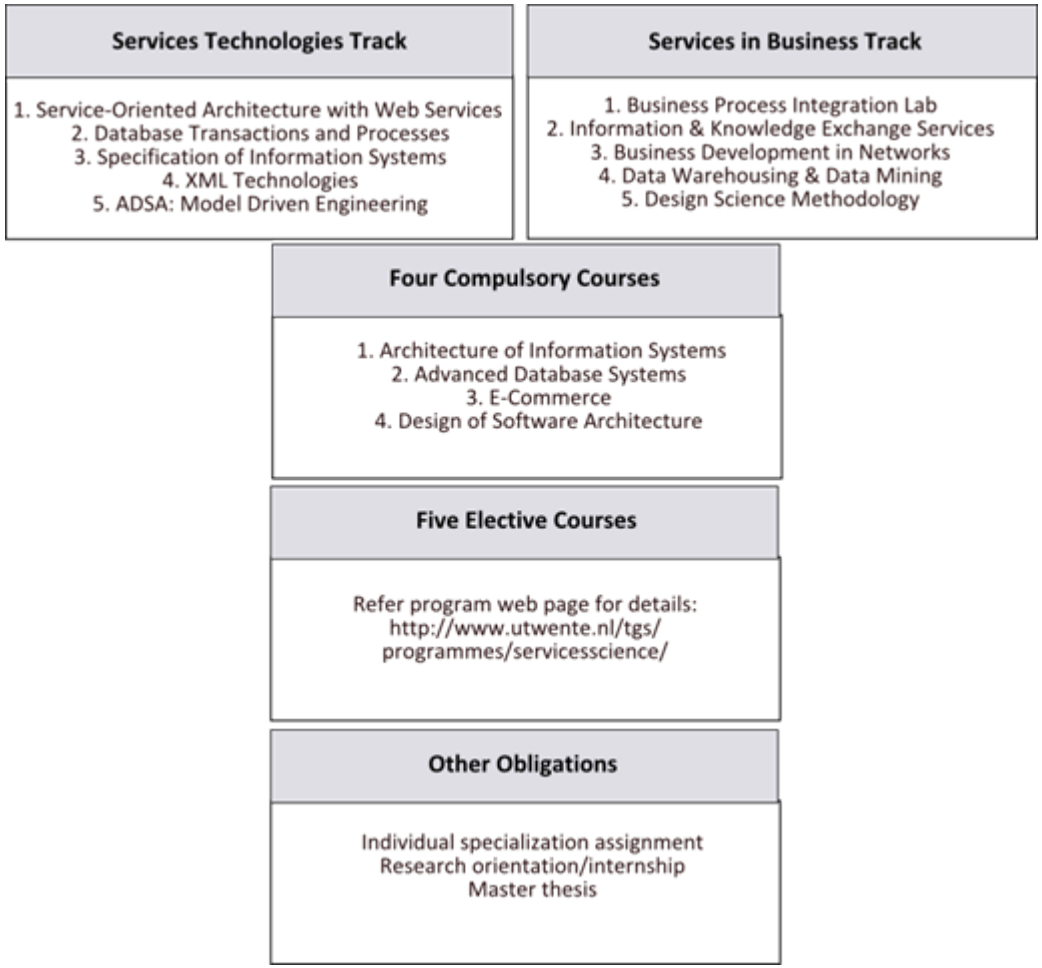
Opportunities

- Existing Programs
  - Computer Science (CS) with Information Systems and Software Engineering track
  - Business Information Technology (BIT)
- Research Orientation

Our Proposal (2)

- Use elective space in existing programs to define a services science 'profile'
  - comply with CS & BIT requirements → obtain master degree
  - service science foundation/specialization → master permits access to service science PhD
  - Benefits: no increase in workload, no additional resources, quick implementation
  - Potential drawback: limited coverage → gradual improvement by future program modifications
- 'T-shaped' profile: general knowledge of multi-disciplinary aspects, deep knowledge in chosen (sub-)disciplines

Masters phase of the Services Science programme



PhD phase of the Services Science programme

1. Educational programme related to research
a. 4 courses chosen from the research schools IPA/SIKS/BETA PhD seminars, or similar b. 2 summer/winter schools, like IPA/SIKS/BETA summer schools, or similar c. attendance of 2 national symposia and 2 international conferences From a list of high-quality symposia and conferences, including RE, EDOC, ICSOC, ICWS, CAiSE, ICSE, BPM, ICIS
2. Educational program aimed at widening perspective
a. Choose one course form – Enterprise modelling – Information & Knowledge management – Professional services management – Financial products b. Or perform a multidisciplinary case study – With another research institute or – With another graduate school programme

PhD phase of the Services Science programme

3. Educational tasks
a. Supervision of MSc and BSc projects related to research topic (2 projects) b. Teaching exercise classes and/or limited lecturing Not obligatory for students with scholarship
4. Personal development
Choose an 8-days program from UT courses (or equivalent NWO talent classes), covering: a. Courses on technical writing / communication skills b. Course project/time management c. Career orientation
5. PhD research, culminating in papers, prototypes, and a PhD thesis
a. Completion of research plan (Month 1-6) b. Development of thesis (Month 7-30) c. Completion of thesis (Month 31-36)

Twente Graduate School

Home > Programmes > Services Science

HOME
ORGANIZATION
PROGRAMMES
PROSPECTIVE STUDENTS

SITEMAP
SEARCH
PRINT VERSION

Advanced Optics | Computational Science | Dependable and Secure Computing | Ethics and Technology | Fluid Physics | Governance of Knowledge and Innovation | Human-centered Interaction Technologies | Industrial Engineering | Learning in Educational and Training Settings | Next Generation Energy and Resources | Novel Nanomaterials | **Services Science** | Wireless and Sensor Systems

TWENTE GRADUATE SCHOOL

SERVICES SCIENCE

- Profile leading Professor

Programme

- Programme summary
- Detailed programme structure
- Description of Research Area
- Participating Research Groups

Outlook

Our plans

- To achieve complete coverage of service life-cycle with identification of new courses
- To initiate research projects in Services Science
- To establish strong network with industry and government
- To initiate regular events attracting international community
- To support new service-based spinoffs from graduate

Conclusions

- As a response to shifting trends towards service-led economy, we recognized the need to transform existing curriculum
- We carried out systematic review to analyze similar response from academia to discover best practices
- We proposed our plan to introduce new curriculum that can co-exist with existing curricula
- We identified steps for gradually incorporating new courses and supporting activities
- The proposal has recently been approved and can start per September 2010!

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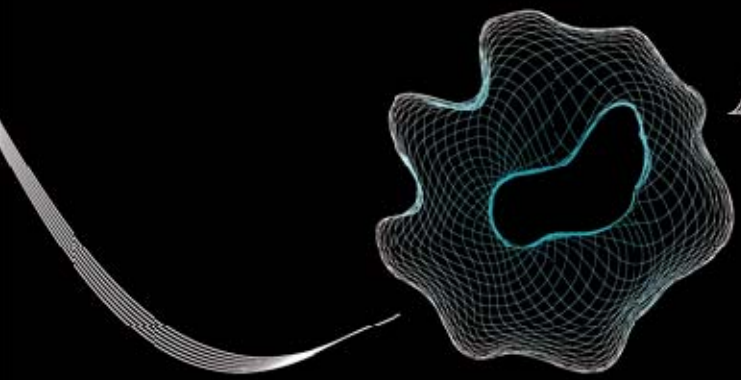
QUESTIONS ?