Information Systems Engineering
Master specialization

24 March 2015

Marten van Sinderen
EWI/SCS
Data Science and Smart Services
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Motivation

- **Data science** plays increasing role in analysis and design of IS
  - Modern IS deal with large volumes of heterogeneous data from many sources
  - Managing large volumes of data and extracting useful information are increasingly strategic capabilities
- There is a growing demand for **smart services** provided by IS
  - IS collect and analyse data from sensors and other sources
  - Knowledge on current and future context (context-awareness) is used to offer services that are fit for the time, place and person
Movies

- **Data science**: where are we going? (Famous person) 1:40

- Smart service applications in numerous domains: business intelligence, logistics, traffic, healthcare, well-being, energy, environment, mobile consumer apps, ..

- From big data to smart services via **data fusion** (Movea) 2:20
- Make sense of big data with **context-aware computing** (IBM) 1:10
- **Context-aware platform** offering enhanced user experience (Gimbal) 2:40
Key features

- With data science, you learn how to **dig for value** in data by analyzing various data sources
- With smart services, you learn to design services that use data analytics to **add value** and enhance user experience

- Unique combination of computer science, data science and service science
- Collaboration with leading companies like Google, Twitter, Yahoo, IBM
- Local infra for analysis of large data sets
- Challenging big data and data analytics applications for smart services
## Program overview

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<th>Semester 1</th>
<th>Semester 2</th>
<th>Semester 3</th>
<th>Semester 4</th>
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<tr>
<td>DS3 Core</td>
<td>DS3 Core</td>
<td>Free choice (incl. Internship)</td>
<td>Final project</td>
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<td>Free choice</td>
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Important courses

- 201200044 Managing Big Data (1B)
  How to handle big data?
- 201400174 Data Science (2A)
  How to do data analytics? (project)
- 192652150 Service Oriented Architecture and Web Services (2A)
  How to design web services?
- 192320111 Architecture of Information Systems (2B)
  How to combine IT subsystems aligned with business goals?
- 192135450 Model Driven Engineering (1A)
  How to design systems (e.g. data and services) using models?
Research Topics and Final Project

- You will learn how to contribute to research, and independently design, conduct and present the results of research.

- Supervised by members of Database (DB) group or Services, Cybersecurity, and Safety (SCS) group.

- Embedded in national and international projects, industry collaborations, PhD projects.
Research themes

Challenges in data science and smart services

- Process big data sets in reasonable time
- Process streaming data for real-time action
- Extract reliable conclusions and models
- Design services with acceptable functionality-cost-risk trade-off
**Example projects**

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<tr>
<th>Project</th>
<th>Sector</th>
<th>Goal</th>
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<tr>
<td>SPICE</td>
<td>Telecom</td>
<td>Dynamically compose services under user control</td>
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<tr>
<td>U-Care</td>
<td>Elderly care</td>
<td>Personalized care services with adaptability based on sensor data</td>
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<tr>
<td>SWELL</td>
<td>Well-being</td>
<td>Support well-being at work and avoid stress situations</td>
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<tr>
<td>SynchromodalIT</td>
<td>Logistics</td>
<td>Streamline collaboration of logistics providers while exploiting multimodality</td>
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<tr>
<td>TimeTrails</td>
<td>Consumer services</td>
<td>Collect and use “who, when, where, what” data of persons for improved services</td>
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<tr>
<td>INFINITI</td>
<td>Dutch broadcasting</td>
<td>Information retrieval for information services: how to make sense from big data</td>
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Some more movies

- DS3 for a safer world 3:10 Dutch
- DS3 for personalized services (Commit) 2:40 Dutch
- Smart synchronodal logistics (Dinalog) 0:50
Questions

More information

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