

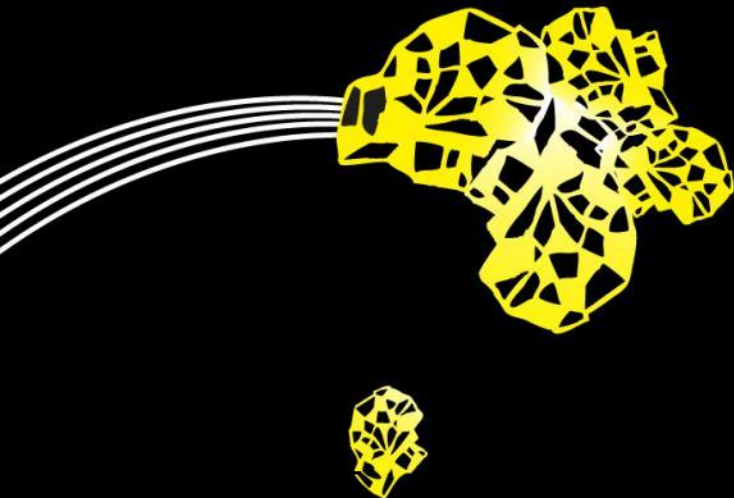
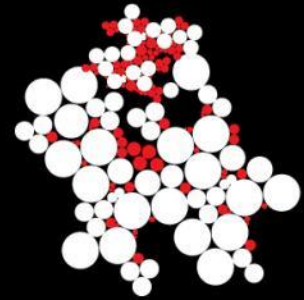
UNIVERSITY OF TWENTE.

**Information Systems Engineering
Master specialization**

24 March 2015

Marten van Sinderen

EWI/SCS



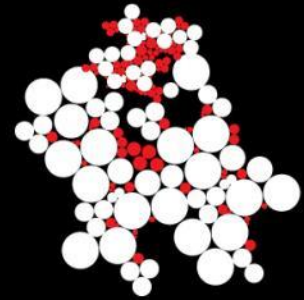
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Data Science and Smart Services Master specialization

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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

| Semester 1 | Semester 2 | Semester 3 | Semester 4 |
|------------|-------------|--------------------------------------|---------------|
| DS3 Core | DS3 Core | Free choice (incl. Internship) | Final project |
| DS3 Core | DS3 Core | | |
| DS3 Core | DS3 choice | | |
| DS3 choice | DS3 choice | | |
| DS3 choice | Free choice | Research Topics | |
| DS3 choice | Free choice | | |

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

| Project | Sector | Goal |
|----------------|--------------|--|
| SPICE | Telecom | Dynamically compose services under user control |
| U-Care | Elderly care | Personalized care services with adaptability based on sensor data |
| SWELL | Well-being | Support well-being at work and avoid stress situations |
| SynchromodalIT | Logistics | Streamline collaboration of logistics providers while exploiting multimodality |



Example projects

| Project | Sector | Goal |
|------------|--------------------|---|
| TimeTrails | Consumer services | Collect and use “who, when, where, what” data of persons for improved services |
| INFINITI | Dutch broadcasting | Information retrieval for information services: how to make sense from big data |
| | | |



Some more movies

- DS3 for a [safer world](#) 3:10 Dutch
- DS3 for [personalized services](#) (Commit) 2:40 Dutch
- Smart [sychromodal logistics](#) (Dinalog) 0:50

Questions



More information

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