Introduction

2017 has been another exciting year for the Data Science Center Eindhoven, with many new initiatives and changes. With respect to knowledge sharing, we’ve successfully introduced the Distinguished Lecture Series and organized a very well received Data Science Summit. Internally, we have strengthened the network within our five research programs, resulting in several new project ideas.

On a personnel level we welcomed dr. Pieter Van Gorp, strengthening our program management with a deeper focus on health-related data science. Unfortunately, we had to say goodbye to our founder Prof. Wil van der Aalst (as a result of him receiving the prestigious Humboldt award and subsequent move to RWTH Aachen). Early 2018 we have announced that Wil will be succeeded by Prof. Jack van Wijk, another big name in the Data Science Community. We look forward to another interesting and busy year under his leadership!

Visibility

We have been working very hard to further build the foundation of DSC/e and improve the visibility of our researchers and their work. All thirty-seven groups created a uniform one-pager describing their research, some successes and project examples and the key involved staff. This resulted in the first ever complete overview of Data Science work at the Eindhoven University of Technology.

Another highlight is the major overhaul of our website, which now has both up-to-date and historic information about Data Science news and events.

Finally, we also started the bi-monthly DSC/e newsletter that is distributed amongst our extensive list of external and internal stakeholders. This newsletter informs readers on various upcoming events, but also showcases some interesting new or ongoing projects.
DSC/e Events

This year we have introduced the Distinguished Lecture Series (DLS), where international renowned thought leaders share their experience on important data science topics. We were honored by visits of Prof. Ron Kenett (KPH Group), Prof. Jiawei Han (University of Illinois) and Prof. James Keller (University of Missouri). All of these lectures welcomed a large and very interested audience (also reflected by the intense discussions during the networking drinks after the lecture).

We also hosted five regular lectures, that were mainly given by visiting scientists. Depending on the topic these attracted between 20 and 40 visitors of which roughly 1/3rd from industry. The lectures are a great way to learn about interesting topics and meet other researchers active in the domain. A number of talks are planned already for 2018, so stay tuned.

The highlight of 2017 clearly was the Data Science Summit on December 4th. An impressive total of 423 people was present during the course of the day, resulting in a completely filled ‘Blauwe Zaal’ at the TU/e Auditorium. The poster and demo session that was organized around our five research programs was very well visited. This gave the audience practical insight in over forty Data Science projects at our University.

Research Programs

2017 also was the year that we really started connecting individual researchers around common application domains through our research programs. This results in a strengthening of individual projects and cross-departmental cooperation.

The following five programs are currently running:

- **Health Analytics**: Improving your health through data analytics
- **Quantified Self**: Human Vitality & Technology
- **Internet of Things**: Computational intelligence and network science for the internet of things
- **Smart Manufacturing and Maintenance**: Exploit the full potential of your data to boost manufacturing and maintenance
- **Customer Journey**: Informed and responsible analytics to understand and improve the customer journey
In all five programs combined, we have organized an impressive total of forty-five meetings where scientists meet, share ideas and create new possibilities. Several project proposals have been submitted based on this knowledge exchange. For all programs a flyer was made, describing the vision, research challenges, project examples and key involved staff.

A brand new activity is the start of an Artificial Intelligence initiative, together with our colleagues of HTSC and Center H&T. Together we’ve created an overview of AI expertise and applications that are studied at the TU/e. This will further materialize early 2018, where the first larger get together planned already. Well over fifty researchers are already involved.

**PhD Defenses**

It has been a busy year regarding Data Science PhD defenses. In most weeks we had at least one promotion to celebrate, resulting in a total of **61 new doctors**. The topics of these data science theses varied very much. To mention a few:

- “Threshold-Based Communication Algorithms for Large-Scale Mesh Networks”;
- “Computer-aided detection of early Barrett’s cancer”;
- "Learning Analytics and Educational Data Mining for Inquiry-Based Learning".

**Jheronimus Academy of Data Science**

We are cooperating with Tilburg University, the province Noord Brabant and the municipality of Den Bosch in the Jheronimus Academy of Data Science (JADS), which is now in its second year. This academic year saw a new class of bachelor, master and PDEng students start, along with an offering of specialized Data Science training courses for professionals.

The number of strategic JADS partners is growing as well, resulting in some twenty funded PhD positions on very relevant and diverse topics. At the same time this brings new, real-world data cases, which can be used in the education programs. We are working very hard on further expanding JADS on several levels such as updating the building (Marienburg), growing the educational & research program and last but not least, extending the team of involved staff.

**Industry Flagships**

In the context of the existing strategic partnership with Royal Philips on Data Science, some of the first projects are nearing their end with promising results that lead to new technological innovations enabling new products. Various programs have been further reinforced by a series of new projects, some of which are part of bigger European public private partnerships. The overall program has grown to 27 PhD positions.

DSC/e became part of the new strategic collaboration between KPN and Eindhoven University of Technology, in a program called the “Flagship Telecom”. This collaboration started with four PhD positions, one of them in Data Science. The intention is to grow this quickly to at least 16 positions.
New projects

A large number of new projects have started within the broad Data Science community this year, as a result of successful project proposals or direct funding from industry partners. Without trying to be complete, we list some interesting project examples in industrial, national and European funding.

Next to the already mentioned flagships with Philips and KPN we also started or strengthened projects with companies like Brandloyalty (through JADS), Rabobank, Achmea, and several others.

Many researchers have been successful in national funding programs. A selection of the projects and programs: Efficient Deep Learning (NWO Perspectief), GOAL (ZonMW), Vitality Living Lab (OP Zuid), TACTICS and GAAVHSTD (both Commit2Data), Real-time maintenance logistics and Real-time supply chain logistics (both NWO ICT for logistics).

Our Data Scientists also participated in several awarded European projects. Again, without trying to be complete: PROPHESY (Factories of the Future call), UNITED-GRID (Low Carbon Economy call), BigMedilytics (Big Data Value PPP lighthouse project) are amongst the winning proposals.

About us

The DSC/e has a simple, threefold mission:

- We act as a window to the world. This has two directions: interested external parties can easily reach us in order to investigate potential cooperation possibilities. On the other hand, the DSC/e label and organization can be used by TU/e groups to communicate about our joint strength towards other parties.

- We support our scientists in obtaining funding. This is mainly done through managing a number of research programs. In these programs researchers from different groups all work from their own expertise on commonly interesting challenges.

- We act as a meeting place, where new interesting ideas are born. Due to the nature of scientific research we normally ‘go deep’ within one’s own discipline. However, many cool things happen at the interface, so we organize lectures and other event to exchange ideas.

This support is provided by a small but enthusiastic team (5 persons, 2.8 FTE). The Data Science community is much, much larger: almost 200 scientific staff and 300 PhDs and Post-docs from six departments are active in this field.

We invite you to contact us via dsce@tue.nl or www.tue.nl/dsce for more information.

On behalf of DSC/e,

Prof. Jack van Wijk  Mark Mietus
Scientific Director  Operational Director