Here –finally– after a year of happenings, you are about to start reading our annual publication, a compilation that unfolds a year of life at our beloved Aalto Design Factory (ADF).

Aalto Design Factory is an interdisciplinary product design and learning hub that unites students, teachers, researchers, and industry. Here at ADF we focus on creating the best possible physical and mental working environment for product developers, researchers and game changers.

ADF started as a research project already in 2008. Since it was one of the first physical manifestations of Aalto University, we like to call it ‘Aalto on a mini scale’. We kindly invite you to check and enjoy the past academic year here at Aalto Design Factory.
Greetings from the Janitor’s boiler room

This annual report is a rather comprehensive overview of the wide variety of activities during the past year. There is no need to list or repeat those facts in this foreword. However, this report is very special – it will be published before the 10th year anniversary of ADF! Hence, it’s natural to highlight things that hopefully will never change, some that have changed, and others that will change in the near future.

ADF has one philosophy that we never want to change: Students come first. We can’t and shouldn’t do things for the students, but it’s our responsibility to understand their needs and their pressure in order to support and boost their learning process. There are many and various courses taking place at ADF. It’s a good sign that students keep coming to ADF proactively and on their own, not only when they have classes or guided workshops. During the past year, there has been a good number of non-curricula activities, e.g., theatre, robotics, debate, e-sports, recruitment and match making events, personal school projects and even sinfonia orchestra practices. Sometimes students are also entrepreneurs, and quite a number of Aalto startups have gotten help or helped themselves at ADF labs. It makes me so glad that the students come from all schools of Aalto. Oftentimes ADF really is the Aalto University on a small scale.

One of the greatest changes at ADF is rather new. So new that we may not even understand yet the whole importance of this change. Two of our longtime co-workers, Tua Björklund and Maria Clavert, were appointed as professors of practice in the summer 2018. This reinforces ADF muscles in research, education and guidance for doctoral studies dramatically. Maria has even the unique responsibility for making an impact in technology education nationwide!

In the global perspective, the Design Factory Global Network has not only grown to 24 members (this number might have changed already when you read this), but it has also become a strong enabler of initiatives between any of its members. Those initiatives include double degree doctoral studies, new course ideas, student exchanges, EU Knowledge Alliance funding, among many others. In addition to academic cooperation, the Design Factory concept has been applied to a co-creation pilot with the City of Wolfsburg, Volkswagen and VfL Wolfsburg, the Bundesliga soccer team – a successful experiment that has recently secured funding for the next stage.

It is amazing, how Aalto University campus in Otaniemi has developed in a really short time. There is life on campus like never before! This development will also bring changes to ADF as well. Just in a few years, ADF will return to the place where its idea was originally born. Aalto Works is the working title for some of the blocks surrounded by Väre, Undergraduate Center and A-Grid. All the knowledge and experience from the past 10 years – good and bad – is carefully collected in order to secure functional architectural designs for the renovated and partly new buildings. For builders of the new, my most important message has been: there will be needs for changes, the new house must develop and find its shape when the time passes.

Many happy returns to ADF! The winter is coming but I’ll keep the heat on.

Kalevi “Eetu” Ekman
At Design Factory students come first. Learning can sometimes be painful and slow, but the process is accelerated at the Design Factory, and the best thing is that you’re never alone. Our skillful staff is always ready to help students so that they can blossom in their own way.

All of the Design Factory courses are problem-based, and students have the opportunity to solve real-life challenges provided by the industry and the society. Students gain invaluable lessons and experiences using a learning-by-doing approach in multicultural and diverse work environments. This helps students thrive in an increasingly demanding professional environment, and helps to bridge the gap between university and the outside world. Getting your hands dirty is the DF way.

LEARNING & EDUCATION

TABLE OF CONTENTS:

PDP
ME310
AALTONAUT
YOUTH AT DESIGN FACTORY

“If you don’t try, you will never know how much you could achieve.”

-PDP student-
PDP is the largest product design course organised at Aalto Design Factory and one of the largest project-based courses at Aalto University. Problem-based learning (PBL) with multidisciplinary and international teams guarantee an unique learning experience for the students as well as for the industry partners.

The academic year-long master’s level course starts with forming diverse student teams from the business, design, and engineering fields. The teams then receive an industry-related challenge from a partner company. They solve the problem by building a functional prototype, and presenting their solution at the final gala held at Aalto Design Factory. Students get support from the staff, but the decisions are still always made by the students themselves. Every group, company, problem, and solution is unique, and this diversity is what makes things more interesting, sometimes even unpredictable. PDP is not a simulation of the real world inside a school, but rather the school is brought into the real world.

The students are not expected to have a perfect solution but to provide well argumented results, and ultimately learn by doing. Therefore, failure is not a disaster, but an opportunity to learn. In PDP, the end result itself is a bonus, but not the only goal.

2017-2018
11 PARTNER UNIVERSITIES
110 STUDENTS THIS YEAR
FROM 9 COUNTRIES & 4 CONTINENTS
1,209,800 KILOMETERS TRAVELED
This year’s projects were highly related to digitalisation and robotisation even though it was not a planned theme. Since the course is conducted in a close collaboration with companies it well reflects the trends of the industry. This is one of the reasons why half of this year’s projects are planned to be continued even after the course has ended.

PD6 Week
Product Development in 6 hours
This year PD6 was part of a week-long event where the students from partner universities came to Finland to meet their Aalto teams.

Right from the start the teams were pushed out of their comfort zone as they tackled the given problems by prototyping and building a solution in just six hours together with their sponsors. This introduced the students to problem solving and teamwork, and laid the foundation for collaborating with the partner companies.

At the end of the week-long event, all the teams worked together to build a huge chain reaction. Each team had to build a Goldberg’s machine station made out of different materials such as wood, office supplies and random objects. These stations were then connected in order to allow an object to travel through the different stations that the teams had created. This encouraged students to collaborate with the other teams in addition to within their own team.

Product Design Gala
Showcasing the Prototypes
The course ended in May with the Product Design Gala, where all the teams and their respective sponsors gathered together for the final showcase of their prototypes. This year there was a team who built a robot which automatically assembled elevator cars, but the prototype got lost on its way to Finland. So, they decided to build a new one just two days before the gala! In the end, the lost robot arrived just in time leaving them with two robots. This showcases the perseverance that the teams have after working together on the project for the whole academic year.

Student Perspective
Student: Li Yuying, PDP alumna
I remember taking the introduction lecture and seeing the previous year’s projects, I thought they were amazing and never imagined I could do the same. Now here I am, managed to do something unbelievable just like them. If you don’t try, you will never know how much you could achieve. PDP also gave me a chance to try out all my ideas and be responsible with them. But at the same time, be fully supported by the teaching staff and Design Factory.

Partner Comments
Ericsson: Guzmán Álvarez from Ericsson
It is clear for us at Ericsson Finland that participating in PDP was a great decision: suddenly many students at Aalto are excited about an awesome company called Ericsson and we got to hear lots of new ideas and suggestions from students, some of which have greatly helped us. Furthermore, even if the WeBrew (developing an app for home beer brewing) project seems crazy and unrelated to Ericsson’s business, it actually implements a potential use case of our IoT offerings: one never knows what the next big hit will be!

PDP Team Trips
Since part of the team is situated in one of the partner universities, students have to travel during the project. Other reasons for travelling was participating in technology and product design events such as CES (Consumer Electronics Show).

From Helsinki (and back)
New York, USA
Philadelphia, USA
Las Vegas, USA
São Paulo, Brazil
Warsaw, Poland
Stockholm, Sweden
Sundsvall, Sweden
Munich, Germany
Mumbai, India
Melbourne, Australia
Tartu, Estonia
Oulu, Finland
1,209,800 kilometers traveled

Robert Silén from Restel
The most valuable thing PDP had to offer was the opportunity to look into a new, unconventional area to see the feasibility of using robotics in a restaurant and kitchen environment. The students were able to explore and produce results that would not have been possible otherwise. Companies should get involved with PDP or student projects to get fresh new views and bold action to implement them - at a feasible price.

OR Strategy
Our Partners Comments
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ME310 Aalto is a master’s level global innovation program – and arguably one of the most intensive, yet rewarding project courses taught at Aalto University. Students of design, business and engineering come together as interdisciplinary teams to work on a year-long real-life challenge introduced by an international company.

The SUGAR Network - larger than ever

The ME310 program originates from Stanford University, but has grown to be taught in over 20 universities around the world: this is now known as the SUGAR Network. At Aalto University (and its predecessor Helsinki University of Technology), ME310 has been taught since 2005.

For the duration of one academic year, the ME310 Aalto students partner up with students from the top universities in the SUGAR Network to form a global design team. This partnership adds diversity to the project teams, and students are given the opportunity to experience true global collaboration.

Throughout the course of the project, students learn, apply, and experience human-centered design through the Stanford Design Innovation Process. The process is based on need-finding, benchmarking, iterative prototyping, and user testing, to enable students to learn quickly about the field at hand and create innovative ideas. User insights are uncovered and creative solutions are developed by engaging a wide range of different design thinking tools and techniques. The end result is a detailed proof-of-concept design solution that integrates desirability, viability, and feasibility.

Traditionally, these final proof-of-concept prototypes have been displayed at the Stanford Design Fair each June at Stanford University, California. However, with the SUGAR network growing larger year by year, SUGAR network members have started organizing their own final presentations outside of Stanford Campus, yet still remaining in the heart of innovation and entrepreneurial culture, the Silicon Valley in California.

The 50th anniversary

The academic year of 2017-18 was special in the sense that it highlighted the long history of the course, marking the 50th anniversary of ME310 course at Stanford University. Furthermore, the Design Factory Global Network (DFGN) was evermore present in the SUGAR Network, as all of Aalto University’s partners were members of the DFGN. In total 8 Design Factories participated in the ME310/SUGAR program this year.

An insight into a project

One of our projects this year came from All Nippon Airways (ANA). After identifying the aging population of Japan becoming a more and more important customer segment for the airline, they brought in a challenge for the students to redesign the airport experience for the elderly. This challenge was taken on by a global interdisciplinary student team between KIT Japan and Aalto University. After vast exploration of the design space with many iterations of prototyping and user testing with the elderly, the team ended up building a new class of service products for the airline industry. With the team’s final proof-of-concept prototypes, a digital companion named TOMO, the elderly could enjoy a stress-free experience going through the airport, removing some of the biggest discovered pain points of the entire experience of air travel.

"ANA is continuously striving to create more innovative products, business models and services. However, I believe it’s often difficult to do so when the ideas are being created from within the organization where many biases interfere with the ideation process. And it’s often difficult to have a devoted team spend 9 months using a framework like design thinking to really find new insights and solutions. That’s why I thought this would be a great opportunity to see what is possible when a solid 9-month design thinking cycle is applied to a real world need within the company."

Kevin Kajitani, Assistant Manager, Digital Design Lab, ANA Holdings Inc.

The corporate sponsor ANA not only got the final prototype of course but stayed actively in contact with the students throughout the year. They were also able to tap into all the learnings and customer insights the team gathered from all their tests and interviews. This massive resource is very often seen as one of the biggest values of an ME310 project to a corporate sponsor.

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For those who are ready to experience Aalto

The Aaltonaut minor in interdisciplinary product development has run now for 5 years. It has proven to make interdisciplinary Aalto visible for students during their bachelor’s studies. Aalto courses are based on collaborative planning, student-centred teaching, and hands-on teamwork during courses. During the academic year 2017-18, Aaltonaut minor was offered for the first time for students in Shanghai. Shanghai International College of Design and Innovation (SD&I) teaching started in 2017. Four Aaltonaut courses were chosen for the SD&I offering for Bachelor’s degree students: Two courses offered in Shanghai, and two in Aalto during summer. 15 students from Shanghai participated in Aaltonaut teaching 2017-2018. SD&M courses required teaching development activities, which are aligned with many of the Aaltonaut-goals. Firstly, we have experimented to enable low access international experiences for the students. Secondly, we want to develop ourselves as teachers and provide development opportunities for other Aalto teachers. Thirdly, we have aimed to make use of the online and digital tools in our teaching as part of our teaching development. Along with SD&M teaching development and teaching activities, we gathered experiences of four different international course concepts, our students got international experiences, and our teaching team enhanced its international teaching and course development competencies.

2017-2018
100 STUDENTS
9 DIFFERENT DISCIPLINES
530 AALTONAUT CREDITS
60 BACHELOR’S THESIS CREDITS
140 CREDITS FROM SHANGHAI D&I
25 WERE EXCHANGE STUDENTS

Lessons from international teaching

How to offer a minor with four interdisciplinary, multi-teacher courses feasible for students from Shanghai? Our solution had two basic approaches. One: to bring students to Aalto in the summer. Two: to integrate Tongji teachers in the Aaltonaut courses in Shanghai. In all the courses, the teacher in charge of the course, the course concept, and course development leadership was from Aalto. Moreover, Aalto provided online course platform, and approved course executions. Two courses in Shanghai ran on weekends during the semesters. At these courses, two Aalto teachers (per course) travelled to Shanghai for ten days to teach over two weekends. From all the courses, we learned something new.

Online teaching tools must be considered in any distant teaching. Our experiences didn’t differ from others who have tried them: Face-to-Face meeting remains the golden standard in planning and teamwork. Skype, Zoom, WeChat or any other tool is not a true rival for it. However, practical experience on using these tools is certainly a valuable asset for teachers and students. Furthermore, even with handicaps, these tools enabled international teaching team communication during planning, execution, and grading of the courses. Moreover, the tools enabled flexibility for summer course scheduling in the form of guided pre-assignments for the distant teams.

Altogether, rebuilding existing courses for the new frames forced our teaching team to rethink our courses and to strengthen the alignment between learning goals, teaching methods and learning evaluation. The new frame also enabled the development of new daylong teaching concepts.

Our summer teaching experiences will form the basis for the development of Aalto summer school planning for summer 2019.

Student experiences

We focused thoroughly on how well our teamwork teaching concepts suit for the Chinese students. In spring 2018, Gero Klingler, an ID&M master student, went for exchange to Tongji University and conducted his master thesis in the mentioned field. According to preliminary findings, students experienced the teamwork as enjoyable and relaxing compared to previous experiences. The students noticed the value of interdisciplinary teams by highlighting new perspectives and the number of ideas. They appreciated the opportunity and tact to give and receive interpersonal feedback in teamwork exercises. The majority of the students had never experienced feedback sessions before and recognized its value in facilitating teamwork and enabling personal development. What comes to student experiences during their stay at summer courses in Aalto, the feedback emphasized the helpful attitude of teachers and easy access to various tools and devices in Design Factory.

Teacher experiences

Four Aalto teachers went to teach in Tongji for two weekends and three teachers organized the summer courses. The first one to go to Shanghai was Sini Silvonen: “I loved participating in the Product Sustainability course as a co-teacher last year. Being my first teaching experience, I am not sure who learned more – me or the students. I’m grateful to Aaltonaut teaching team for this unique opportunity. What a profound experience in many fronts!” The new kind of setting gave new challenges for experienced teachers, such as Tuomas Paloposki, who got AYY’s Best international teacher prize in 2011. “It was great to have an opportunity to teach in a project course where the students were a mixture of Aalto degree students and Chinese exchange students. The achievements of the students were amazing, especially considering that the time schedule was very tight because of a number of constraints from outside. The experience also showed how important it is to have a place where people can be brought together and where they can work together; much as we have made technical progress in communication technology, the internet is still no substitute for face-to-face contacts.”

Next steps

The next Aalto course will run during spring 2019 and our whole teaching team is looking forward to this. We hope to be able to find new enthusiastic Aalto teachers to join this teaching export venture.

During Aaltonaut courses I learnt the most about team dynamics and how to communicate openly so that a good spirit and effective work distribution will prevail. This will ensure that the best outcomes are achieved. Also, Aaltonaut offered me a chance to get to know and work with students from other disciplines. This kind of experience is not offered in other programs. Aalto has ongoing development projects to build an internationally attractive summer school program. This year students from China’s co-operation center, Tongji, are coming for summer courses. The assistant position was a good fit for me considering that I’m fluent in Chinese. I’m looking forward to developing better learning experiences and content for Aalto, because while my own experience was very positive, there is always room for improvement. Jukka Sang, course assistant and Aaltonaut minor alumni
Who would have thought as a youngster that university could be more than just dusty books and boring lectures? Here at Aalto Design Factory we want to change this old-fashioned university stereotype and do our bit to that university could be more than just a youth science competition or young interns getting to know the ways of this place.

TUKOKE

On the 5th and 6th of April 2018 you could hear the joy and laughter of children everywhere in the Design Factory. The final of a youth science competition, Tuki-Kokeile-Kehitä, had brought over a hundred students of all ages interested in technology and science to the Design Factory. The competition, meant to encourage young people to creativity and interdisciplinary learning, had dozens of starting projects from a fish research to a self made particle accelerator. The competition was full of exciting moments and the students seemed to enjoy the opportunity to showcase their projects. “I think it’s really great that I get to show what I’ve learned and maybe get other people interested in this area as well”, commented one of the students whose project was awarded a shared first place in the third category.

Tuki-Kokeile-Kehitä final will be held once again at Design Factory in April 2019.

Teknoloikka

NUMBER OF INTERNS OVER THE YEARS: 3
WORKING HOURS: 1812

For the third year in a row Aalto Design Factory took part in Teknoloikka, a program organised by Technology Academy Finland for high-school graduates. Teknoloikka provides 4-month internships in a technology company or organisation resulting in much needed work experience and opportunities that you can’t put a price on.

Anna Rekola’s journey

This year, a high school graduate from Järvenpää, who (at first) didn’t have the faintest idea of what to do with her gap year, started an internship at Design Factory through Teknoloikka.

Going through my old notes it’s easy to get back to the first day’s feelings. Everything was new, different and exciting. I had gone through DF’s web page, to get an idea of where I was heading to, but to be honest, the web page didn’t really do justice to what I faced on my first days and weeks. It felt like I had come to a completely different world. Anything was possible! Prince Daniel could walk through the doors and even the craziest projects could become true at DF.

I went home telling my siblings about the TV’s in Kallis from which you could call the other Design Factories around the world and talk with them while having breakfast, and the millions of grasshoppers that hid in some mysterious boxes in the backyard. There were bicycles outside that you could hop on whenever, a 3D-printer made by our own student, and our talented staff always kept the spirit in the skies.

Dazzled by all this, I started working with the TET-trainees, to give them support during their internship period. It turned out to be fun and rewarding, and after a while I could give DF tours, and gained more confidence. At the end of my 4-month internship it was sure, I really wanted to study in Aalto University.

My internship at DF taught me more than I could have ever imagined. It completely shaped the way I saw universities and it exposed me to so many inspiring ideas and people that supported me on my way to realise my dream. In May I received the news - I was accepted to study Business in Aalto University. While I’m studying, I get to continue at Design Factory, working with communications and events. Without Teknoloikka and Design Factory none of this would be possible, and my story is just one proof of why youth work is so extremely important. It truly creates amazing opportunities and shapes futures.

"I actually think that the DF Family doesn’t really know how cool they and this place are anymore because they are surrounded by coolness every day so some kind of a coolness-overload happens." Anna Rekola in the beginning of Teknoloikka internship.

YOUTH AT DF

Learning & Education

Youth at DF

18

Learning & Education

Youth at DF

19
Research enables us to envision further than just the next iterative step to take. At Design Factory, we have an open-minded group of researchers who are willing to cross the boundaries between different fields to provide answers to real problems. Most of the research we conduct at the Design Factory is explorative, helping us to arrive at the right questions to ask when developing our teaching and operations.

Then how do we go about transforming universities into even better hubs of learning and development? What should we be taking into consideration? Other studies help to validate the effectiveness of something we’ve seen working in one context, providing a solid basis for teaching. Our research is directed to support the development efforts of those we study already during the process, while publishing our work helps to spread the lessons learned. The Design Factory is filled with great problems to study!

“If I’m searching it for the first time, why is it called RE-SEARCH?”

-Confused DF researcher-
It is fair to say that the academic year 2017–2018 was probably the most exciting time during my Design Factory career. One of the highlights was the public examination of my doctoral dissertation. The research process had started already in 2009 with a focus on engineering educators’ experiences of developing as a teacher. The context of Aalto University provided a new perspective for my research. Between the years of 2011 and 2013, I focused on the engineering educators’ experiences of developing teaching and learning practices for the newly established university. The resulting longitudinal study demonstrated that it is the ability of departments and research groups to support collaborative development that defines the extent to which higher education can be transformed in practice. The dissertation was accepted at the University of Helsinki in February 2018, and I obtained a doctoral degree in Educational Sciences. But the excitement was not over yet.

After completing my doctoral degree, I was appointed Professor of Practice at the Aalto University Design Factory in June 2018. For the next five years, my new role is to promote technology education from basic education to university level and teacher education. As a part of this role, I will raise awareness of Aalto University’s expertise in technology education and make the possibilities of new technologies visible already in comprehensive schools and upper secondary schools. In addition, I will strengthen the multidisciplinary collaboration between Finnish and international experts in the field. In order to excel in these tasks and impact the society, I will harness my previous experience and my contact networks in the field of engineering education. I’m looking forward to another exciting academic year at the Design Factory!

As one of the co-founders of the Design Factory, I’ve had the privilege of seeing Aalto University become a reality and the needs of the stakeholders served by Design Factory evolve throughout the years. Returning from my stay at Stanford University, 2017-2018 has seen many of our new initiatives starting to take form. At the beginning of the academic year, we launched three new research projects enabling us to bring in wonderful new researchers to our community. We track design and change initiatives, investigating what successful transformation looks like in practice - more on that on the next page! We’ve also been working to bring our colleagues from the Design Factory Global Network closer to us. Neither oceans nor time differences can keep us apart in co-creating new ways of doing collaborative research.

In March, I was honored to be invited to join the editorial board of the Journal of Engineering Education, the number one research journal in engineering education (ranked on the level jufo 2 in the Finnish classification system). The editorial board comprises leading engineering educators around the globe, dedicated towards understanding how we can help our students become effective, innovative and wise professionals.

In what I take as an acknowledgment of all of the great work that has been done by the entire Design Factory community, a new professor of practice position was created and I’m now the first professor of practice of the Design Factory itself. The mission is to bring in the human element into engineering, developing new ways of co-creation to update universities to the 21st century. My goal is to create more fluid boundaries - both between disciplines and between our students, staff, industry and society. The challenges we face today are too complex to be solved in silos.

This year, Design Factory got to add two Professors of Practice to our repertoire of courageous faculty. Maria and Tua act as bridge builders across disciplinary boundaries and bring theory and practice closer to each other.

Professor Tua Björklund

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Professor Maria Clavert

It is fair to say that the academic year 2017–2018 was probably the most exciting time during my Design Factory career. One of the highlights was the public examination of my doctoral dissertation. The research process had started already in 2009 with a focus on engineering educators’ experiences of developing as a teacher. The context of Aalto University provided a new perspective for my research. Between the years of 2011 and 2013, I focused on the engineering educators’ experiences of developing teaching and learning practices for the newly established university. The resulting longitudinal study demonstrated that it is the ability of departments and research groups to support collaborative development that defines the extent to which higher education can be transformed in practice. The dissertation was accepted at the University of Helsinki in February 2018, and I obtained a doctoral degree in Educational Sciences. But the excitement was not over yet.

After completing my doctoral degree, I was appointed Professor of Practice at the Aalto University Design Factory in June 2018. For the next five years, my new role is to promote technology education from basic education to university level and teacher education. As a part of this role, I will raise awareness of Aalto University’s expertise in technology education and make the possibilities of new technologies visible already in comprehensive schools and upper secondary schools. In addition, I will strengthen the multidisciplinary collaboration between Finnish and international experts in the field. In order to excel in these tasks and impact the society, I will harness my previous experience and my contact networks in the field of engineering education. I’m looking forward to another exciting academic year at the Design Factory!
2017-2018 was a busy year in starting new research initiatives at the Design Factory. From tech companies to food entrepreneurs, hospitals to universities, there are lessons waiting to be learned on developing things!

D. START

D.start is a one-year research project that started in January 2018, exploring how internationalizing Finnish food and drink startups experiment and use design in their development efforts. During the spring 2018, we’ve done a first round of interviews in 13 companies, and preliminary results can be checked out on the ADF website. Our goal is not only to better understand co-creation processes, but to help create more effective education for the future game changers and entrepreneurs of Aalto. The project is funded by the Wihuri Foundation and managed by Tua.

Design+ is a two-year research project on how organizations can increase their use of design and design thinking. Funded by the Finnish Work Environment Fund, Aalto and companies, the project started in September 2017, and we’ve been tracking design initiatives in four organizations, with over 100 interviews conducted to date in nine countries across the globe. The project is managed by Tua, and the advisory board of the project consists of professors Eetu, Eero Vaara (Aalto BIZ), Sarah Soule (Stanford’s business school) and Larry Leifer (Stanford’s engineering school).

HUS Testbed project

A pilot project in the newly formed HUS Testbed organized together with the Helsinki University Central Hospital and corporate partners in an effort to form a new long term collaboration for innovations in the hospital. During the pilot year, we focused on usability and other user driven issues in the operating room.

Neuroimaging of Empathy in Engineering and Design

An Experience Platform seed funding project, started by Katja Hölttä-Otto in collaboration with Prof. Mikko Sams from Neuroscience and Biomedical Engineering, School of Science. The aim is to combine knowledge on empathy from psychology, neuroscience and design-thinking to enable novel means to measure empathy.

PDP alumni insights

During 2017-18 we reached out to PDP alumni to investigate learning outcomes in the long term. We received survey and interview responses from 272 alumni, representing by far the largest alumni inquiry into the 21-years-old course. Multidisciplinary and multicultural teamwork, understanding the development process and learning the needed courage, initiative and optimism for development were highlighted as the most significant learnings from the course in hindsight. We also learned that most of the alumni end up in development and design related positions, one in five alumni had a managerial position and over one in seven became an entrepreneur.

Most important development skills PDP alumni need at their work

- 69% attitudes like confidence, curiosity, and persistence
- 34% user-centered design, prototyping and defining problems
- 33% multidisciplinary and multicultural teamwork
- 25% communication and networking
- 16% managing people, projects and tasks
Every year, a variety of theses result from research activities at DF. These are some of the theses directly linked either to development of the design Factory concept itself or related to ongoing research projects.

**Theses**

NUMBER OF BACHELOR’S THERSES 
SUPERVISED/INSTRUCTED: 10

NUMBER OF MASTER’S THERSES
SUPERVISED/INSTRUCTED: 26

**Master Theses**

**Maiju Sairanen:**

Development of the university students’ working life skills during Bachelor’s level studies

**Matilda Akkola:**

Selling design and design-thinking issues in big corporations

During the past years, companies have started to invest more and more into design. This kind of transformation can be considered to be a big cultural change that needs to be conducted, as the companies need to acquire a certain mindset and adopt user-centric ways of working. However, to succeed in it, a lot of work is required on all levels of the organisation and as part of the transformation. As a part of the Design+ research project, I investigated how nine mid-level design managers working in different countries engaged in “issue selling”, what kind of arguments they were using, who were they targeting in their attempts and how they sabotaged. Turns out much issue selling is needed on a horizontal level across the organization, rather than just typical advocating upwards to top management.

**Martyna Kosmala:**

Becoming a design-driven large organization: Challenges faced and support efforts needed to implement design thinking

Neither scholars nor practitioners have a clear agreement on what design and design thinking are. There’s a wide array of practices and attitudes associated with design thinking approaches. As a part of the Design+ project, I investigated how designers working in different type of positions and units in the same case organization understood design thinking, what kind of activities they emphasized, and the types of support and challenges they reported. There was much variation, even though everyone was working for the same company! Lone UX designers struggled with limited resources and focused on the practices of user-centered design, unembedded design team managers combined methods and mindsets to adjust organizational processes, and global-level designers emphasized creating a culture conducive for design.

**Research**

**Antti Suruma-aho:**

Manifestations of Perspective Taking in Student Design Thinking Projects

I studied how engineers and designers empathize with the people they are designing for and how they use empathic understanding to create innovative solutions. In practice, I observed students during design projects, focusing on how they considered the perspectives of others in their work.

What is my work about? What does it mean?

As professionals in our own specific fields, we tend to design solutions for people very unlike ourselves. This requires us to develop an understanding of the other’s perspective, be they an elderly person, an operating room nurse, or a paper machine operator in South America. In my thesis, I studied how engineers and designers generate and use this empathic understanding of users in projects.

Key findings: What can this actually change?

I demonstrated two novel aspects of designer empathy. First, I statistically showed that student designers develop empathic skills during a user-centered design course, and not only as designers and engineers but also as human beings. Second, the most successful design teams allowed people to test mock-up solutions in a realistic environment and later connected the users’ experiences to concept design features. These results systematically support the significant role of empathy in design.

Where is this field of going? What is the bigger picture?

In a world where concepts like AI are changing how we work, we are left with assuming that technologies serve the best interests of people. Thus, empathically understanding others will be an important aspect of engineering and design, not as a replacement to technical know-how but alongside it.

My future plans: What will I do next? Is there any business potential for my work? Will I continue my research?

I want to improve the tools used to generate and share user understanding, and for that I need to study professionals and explore more rigorous connections between empathy, design methods, and project success. Starting this fall, I will continue my research at Massachusetts Institute of Technology (MIT).


Co-creation, simply put, is people coming together to create something new. On a practical level, however, this is often easier said than done. How do you motivate people to work for an issue and with one another, and how can you smooth this process...

The book is based on contributions from scholars from around the DFGN sharing insights based on research in product design, organizational psychology, creativity, management and beyond.

After a year of writing sandwiched between equal incubation periods, Passion-based co-creation saw daylight. We brought the book fresh from print to the International Design Factory week Seoul in November 2017, and celebrated it in Aalto in December. As we believe in open access and spreading the love, you can download the book for free (see the QR code on the right!).

Check out the book for more insights to help you create the future. You can read it from cover to cover, or jump around to find the topics that are most relevant for you. After going over the basics of what passion-based co-creation is, we dig in deeper to concretization and prototyping, motivation, facilities and organizational ingredients.

Did you know that...

• Sense of progress is the number one motivator for development?
• Brainstorming is bad for actually producing creative ideas but good for kickstarting projects?
• Grit counts for more than intelligence for success?

SCANTO SEEMORE...
Bringing research to the people

In addition to the ADF blog posts and physical walls over the years, research has been infiltrating the live scene at the Design Factory. On alternate weeks, we’ve been gathering in the Kafis (the kitchen) for a short presentation and discussion on the latest results by the community members. The purpose is to keep it nice and informal so you can stop by and join the discussion even if you’re not an academic expert, while at the same time we get extra feedback for ongoing work. For example, we’ve shared manuscripts in progress on how newly graduated engineers engage in innovation, organizations adopt design thinking practices and project-based courses cultivate empathy.

We’ve also had another bi-weekly research dessert at the Research Plaza to discuss the basics of the research process - literature reviews, framing, coding data - amongst the research community, with professors Katja and Tua sharing their experiences with those working on their theses and dissertations. There’s certainly more than one right way to proceed, and this has been a nice opportunity to reflect on our work and get some support from peers!
The Design Factory community consists of students, partner companies, teaching faculty, the research department, visitors, DF-enthusiasts and staff. You could think of this as the body of Design Factory, every individual part of it is necessary to make a functioning whole. On the other hand the community also stems from the way daily life is practiced here at DF. These practices could be thought of as the heart of DF: talk with strangers, be helpful, YES-attitude, lead by example, flexibility and just-do-it attitude.

At DF we believe that behaviour is contagious. By creating this place where you are surrounded with people who do and think in different kinds of ways, you get a fresh point of view and get to truly improve yourself. The environment supports you in whatever you want to do. With this we hope to encourage the people who walk through the front door to start fulfilling their dreams.

“Behaviour is CONTAGIOUS”

- Random person at DF -
A QUICK PEEK INTO WHAT HAPPENED AT DESIGN FACTORY OVER THE ACADEMIC YEAR 2017-2018, SHOWCASING WHAT EVENTS TOOK PLACE AT DF AND A GLIMPSE OF THE TOURS HOSTED AT OUR FACILITIES

**August**
- **TedxOtaniemi**
  - is a yearlong organized independent “Ted Talk” – event at Otaniemi; this year’s theme was “Constructing kindness”.

**September**
- **Teknoliikkou Kick-off**
  - Teknoliikko is an internship for young adults where they get acquainted with the technology field through work.

**October**
- **DSM conference**
  - The 18th DSM (Dependency and Structure Modelling) conference, an international academic conference on complex system design, was held here at Aalto DF in co-operation with Stefan Epping from Massachusetts Institute of Technology. This year a design sprint was pioneered to make learning more active and hands-on.

**November**
- **Visitors**
  - Tour for Afrikan for Erika Storm Program
  - Tour for Aalto Summer school
  - Games industry visitors
  - VgU University students
  - Human Biology delegation
  - Chinese students visitors
  - KAUPPAS program tour
  - Helsinki University teachers group
  - IT delegation
  - Finnish Minister of Science and Technology
  - Tour for engineering students from China
  - Tour for students from China
  - East负荷 delegation
  - Tour for separate students
  - Visitors from Korea
  - Delegation from France
  - IT delegation from China
  - Design Profession (DFDTPC) delegation
  - Tour for students from China
  - Tour for students from Aalto art students
  - Vietnamese delegation
  - Visitors from EEM and MAI
  - Tour for students from China
  - Tour for students from Hong Kong
  - Visitors from University of Applied Arts in Vienna
  - Tour for Tanzania
  - SJS delegation
  - Tour for Technion Network of Dutch Students
  - SJS delegation
  - Tour for Technion participants

**December**
- **Visitors**
  - Presentation of SouthFront development academy
  - Visitors from Vietnam
  - Tour for Technion in China
  - Tour for students from KFIP
  - Aalto’s own tour
  - Delegation from Hungarian Standards Institute
  - Visitors from Hungarian Institute of Metrology
  - Visitors from Swiss University of Applied Sciences
  - Finnish Ministry of Education and Science
  - Vietnamese delegation
  - Tour for students from IRIM
  - Tour for students from Hangzhou
  - Tour for students from China
  - Tour for students from Finland
  - Tour for students from China
  - Tour for students from Finland
  - Tour for students from China
  - Tour for students from Finland
  - Tour for students from China
  - Tour for students from China
  - Tour for students from China

**January**
- **Visitors**
  - Visitors from ITU
  - Tour for ETPX students
  - Tour for students from ITU
  - Tour for students from Korea
  - Tour for students from Hungary
  - Tour for students from Finland
  - Tour for students from China

**February**
- **Visitors**
  - Tour for students from China
  - Tour for students from China
  - Tour for students from China

**March**
- **Visitors**
  - Tour for students from China
  - Tour for students from China
  - Tour for students from China

**April**
- **Visitors**
  - Tour for students from China
  - Tour for students from China

**May**
- **Visitors**
  - Tour for students from China
  - Tour for students from China

**Highlights**

**Aalto Climate KIC**
- Climate KIC is Europe’s largest summer school for climate innovation and entrepreneurship where students get to innovate sustainable business ideas.

**Aalto and Design Factory**
- Aalto and Design Factory is one of the 28 locations where DF is hosted.

**EOPs**
- **Events to take place at DF and Aalto Festival**
  - TuKoKe Final Gala
  - TuKoKe is a science and technology related competition for the apps from 30 to 40. One can participate with a project, research, innovation or anything that’s related to science and technology.

**ADF events**
- **ADF Bootcamp**
  - DF Bootcamp is a week-long intensive hands-on separation of the “Design Factory” concept. It gives participants the opportunity to experience Aalto Design Factory, and learn the ins and outs of the interdisciplinary platform. The whole ADF community is involved in sharing their expertise, and the week is filled with workshops that help kick-start the planning of one’s own experiment.
TUOTE is an association for Aalto University students interested in product development. Our mission is to unite students from various backgrounds and elicit the possibilities to study interdisciplinary product development in Aalto. Our activities vary from organising workshops and networking event to community get-togethers.

Mystery eve
An evening where the students were surprised with the task of creating a chain reaction machine (AKA Rube Goldberg machine) while getting the supplies they needed through a treasure hunt. In this event each team started with just a table, a question, and a clue. Once the game started they needed to solve the consecutive questions in order to source their supplies and build their machine. The treasure hunt was designed in a way that it would show the students the different facilities in design factory while also teaching them how to best take advantage of what Design factory has to offer. After getting his supplies the students could start building the machine. The machine had to pass the “energy” from one team’s table to another. After a couple of hours, building time was over and Eetu started the machine by rolling the first ball. Within a few minutes, and some intervention, the energy went through all the tables and the chain reaction came to an end.

This event was received with overwhelming positive reaction! At the end, everybody had bonded at a different level, were exhausted from running around, explored Design Factory, and had a new found respect for teamwork, prototyping, and testing.

Sumo SUDS
Tuote organized SUDS for the ME310 students. The evening included delicious food, mingling and prototyping based activities. In the prototyping activity the teams had to design samu suit from packing material for their warriors. After the suits were designed and constructed, the warriors competed with each other in a semi authentic sumo arena constructed in Puuhamaa in the Design Factory. The suit designs ranged from shock absorbing full body armor to a more psychological approach with scary looking mias.

ATTRACT Young hackaton
In April 2018 Tuote selected four students from Aalto to participate in the Attract Young hackathon in Trieste Italy, where they worked on identifying and solving global societal issues of the future. The event is part of the larger EU funded Attract initiative, which aims to accelerate development of detection and imaging technologies to market together with European research institutes, industry and universities.

Halfway Show after party
The Halfway show is a part of the Product Development Project course organized in Design Factory and during the event the participating students present their concepts and ideas midway through their project completion. This year TUOTE organized an after party event on the 2 of February in Urban Mill. During the happening students from all over Aalto University attended and were able to mingle, get to know each other, and gather some more strength for the completion of their projects.

Pizza and project management (PPM)
To complement the DF courses and assist students in peer to peer learning, TUOTE organizes Pizza and Project Management evening. In these events guest speakers are invited to talk about leadership and project management, sometimes there are workshops held, and there is always pizza! On average, there are 30 participants with a maximum record of 120, and they consist of students, alumni, and professionals.

In the past academic year, 5 PPMs were held:
October 10th: Tiina Tuulos “Tools of Project Management”
November 14th: Vesa Koskela and Ville Kukko-liedes “Tools of Ideation”
January 9th: Aape Pohjavirta “Presenting it”
February 20th: Marc Dillon “Life as a Leader”
March 13th: Visa Parviainen “How not to Suck”
One of the fundamentals of Design Factory is co-creation with industry. Aalto Design Factory is a platform where we support companies in embracing the potential of cooperation with Aalto University.

### 17 PARTNER COMPANIES DURING 2017-2018

**Not just a space**

We have in-house partner companies who are enriching the ecosystem diversity and participating to daily activities. We support companies in their early stage to become the new success stories under our loving care and attention. Depending on the contract the companies may use ADF’s premises, materials and machinery. All of the companies in Partner Plaza have a connection with Aalto University – whether it is with a student project, hiring students, by being alumni or collaborating otherwise. Becoming a partner means becoming a part of the community. There are different kinds of contracts; some of the partner companies have virtual contracts with postal address at ADF and may use the common spaces, others share the spaces physically in Partner Plaza.

**“Design Factory offers flexible workspace with good workshops and specialists who can help when needed. Extremely important part of the Design Factory is the community and culture that encourages for collaboration. Because Design Factory is located in Aalto campus area we have been able to recruit multiple part-time workers from Aalto university.”**

Pasi Karppinen, ProtoRhino

**List of Partner Plaza Companies at ADF in 2017-2018**

- Blueleaf Lab Oy
- Consair Oy
- Kuori Oy
- Omuus Oy
- Onnivation Oy
- Riihi Consulting Oy
- Teraloop Oy
- Trick Technologies Oy
- EntoCube Oy
- Sensible Oy
- Arctic Crickets Oy
- Pexray Oy
- Tutki-Kokeile Kehittä 2019 final will be held once again at Design Factory next year in April.

**Here are the companies that left Aalto Design Factory during 2017-2018**

- Arctic Crickets Oy
- Pexray Oy
- LesLoo Labs Oy

**Arctic Crickets Oy**

Arctic Crickets Oy is a Finnish startup that manufactures the Yetitablet, the most intuitive and versatile giant tablet. The Yetitablet enables its users to turn individual tasks into group activities so they can learn, play, communicate and collaborate more efficiently.

**Pexray Oy**

Pexray Oy is professional in construction site dust management. Our CAMU 1200 clean air management unit catches 99% of dust in plaster mixing and makes mixing safe and effective.

**LesLoo Labs Oy**

LesLoo Labs Oy offers the full range of production design, including industrial design, CMF, strategy, material technology development, and trend forecasting.

**Onnivation Oy**

Onnivation® Ltd arranges visit and training programs in Finland for international groups of students, educators, educational policy makers and parents. With a blend of education, innovation, culture and nature each visit can be tailored to perfectly suit your learning requirements.

**Riihi Consulting Oy**

The core expertise is in practices and approaches that bring creativity, user involvement, collaboration and experimentation to development work. The essence of our work is combining academic knowledge with practical experience and a hands-on approach.

**Teraloop Oy**

Teraloop is developing a breakthrough in utility scale storage to unlock the integration of renewable energy.

**Trick Technologies Oy**

Throwable microphones for audience engagement

**EntoCube Oy**

EntoCube is a Nordic leader in insect farming solutions and cricket food products.

**Sensible Oy**

We make vehicle automation systems for harsh Nordic winter conditions and extreme environments. Our approach, algorithms and software take self-driving where no autonomous vehicles have gone before. Our SAE level 4 solution is based on integration of artificial intelligence and sensor fusion.

**Tietokonekauppa VihreäOmena Oy**

Finland’s largest selection of used Apple products.

**ProtoRhino Oy**

ProtoRhino is a company that designs and builds measurement and testing devices. Currently they are focused in developing IoT applications where new measurement capabilities will change how different industries work.

**Trenox Oy**

Trenox is the biggest tower crane operator company in Finland and now it is expanding to become a technology company. If you see a tower crane just outside DF, it is probably ours. And if you see a tower crane moving around without an operator, well, that’s probably our stuff also!

**Korento Bikes Oy**

Korento Bikes Oy is a Finnish startup that develops electric light vehicles for urban environment. By integrating personal mobility and mass transit, our products make commuting easier, faster and fun.
Being the hub of product development in Aalto University, Design Factory doesn’t just teach Design Thinking, but also employs it in the day-to-day operations and planning. The use of space is observed, problems are identified, solutions are ideated, tested, improved and integrated into the whole. The core of the interior spaces is that they can be modified according to the needs of different individuals, tasks or phases of work. By observing how the facilities are used, we are able to recognize current and future needs that support the DF user experience.

**Flexibility and adaptability of the spaces is essential at DF.**

Just this past year, one of the biggest spaces in DF - the Stage was used for various purposes such as prototyping, presentations, science fairs, TuKoKe, TUOTE Mystery, e.g. Treasure hunt, Orchestra rehearsals, test trials, and many others.

**Lobby wall**
The Lobby wall is often the second thing that visitors notice after the smiling person on lobbyshift. Therefore, it should be welcoming, tell the story of DF, be functional, and attractive. The new redesigned Lobby wall tells the story of DF and invites the viewer to interact with it. Illustrated under “This is how we roll” is the underlying culture of DF and it helping visitors to quickly and efficiently get familiar with it.

The newly created Hugging point, Hug menu, and the Hug-o-Meter create a fun interaction point for the DF users, while embodying one of the basic values of DF: Love. One can select a specific hug like Deluxe or Desperado from the menu, try it out, and press the button of the Hug-o-Meter to add that memorable hug to the count.

One of the major pillars of DF that often goes by unnoticed, is the research conducted in-house. To make it more visible and attractive to DF users, the new Lobby wall has a dedicated space for publications such as the DF book and allows them to be displayed in a way that lures the viewer to interact with them.

**The new wall, in all its glory, also serves many functions such as:**
- Display and storage for pamphlets and publications
- Storage and a dedicated space for catering and its equipment
- Visual guide to the spaces in DF
- Display of the awesome DF coffee mugs

The new wall was made using the in-house tools and expertise such as the new laser cutter, stencil cutter, and Electroshop’s mastery to accurately count hugs!

**Visual communication spatial additions**
You’re walking from Kafis to Lobby with a freshly brewed hot cup of coffee when suddenly a door opens out of nowhere and you spill the coffee that you haven’t even sipped yet! How frustrating is that? Coffee spilled, clothes ruined, and now you have to mop the floor in front of all the visitors from Thailand. That would not have happened if you had any indication that the bathroom doors can suddenly open. But, don’t worry! The new dotted line stickers on the floor in front of the bathroom show exactly how the door would open. So from now on say goodbye to spilled coffees and embarrassment, because you are reminded of how the doors open! A simple yet effective form of visual communication.

**Any problem is an opportunity for improvement.**

By being open to feedback, suggestions, and collaborations across disciplines, DF is able to make spatial changes, acquire new machinery and improve the conditions in-house and beyond.

Apart from recognizing the needs of the DF users for the past year, we also have new toys which provide us with new opportunities, possibilities, and means of prototyping.

**New family member in Print shop - LaLa**
The Print Shop’s newest member Lala (Laser cutter) has already proven its value for the 5 months that it has been in use. The advanced laser cutter/engraver can effortlessly cut and engrave most materials making quick prototyping even quicker. Awesome!

**Advanced milling machine**
Super-Speed Vertical Machining Center, HAAS VF-2SS, has been working non-stop since it has arrived. It has helped and supported students, staff, and occasionally external parties interested in creating molds, prototypes, products, and parts. It’s capable of cutting different materials such as aluminum, wood, stainless steel etc.

**Silkscreen**
Silkscreen printing, or also known as serigraphy, is a technique that has been around since 1000 AD. It is a sophisticated surface printing method that DF has just come to embrace! Silkscreening allows students, staff members, and other enthusiasts to create their own designs on fabric bags, shirts, and other absorbent materials. To test this method, goodie bags for the PdP opening Gala were printed.
During these past years our neighbourhood, Otaniemi, has become the incubation center for the like-minded beings just like us who want to participate in community and support innovation. Here people are brought together by their passion to create and make stuff happen. In this map, you will find a brief description of what each one of these places has to offer.

**ESPOO INNOVATION GARDEN**
Innovation hub

Espoo innovation Garden is the largest Innovation Hub in the Nordic countries, covering the areas of Otaniem, Keilaniemi and Tapiola. It is not an physical building but a community of people from different walks of life who come together and innovate in a way of growing the various operators in the area encouraging for cooperation and enhancing the sense of community.

Where: 02150 Espoo
Website: https://www.espooinnovationgarden.fi

**A GRID 2.0**
Startup Hub

As one of Europe’s largest center for growth companies, A Grid provides a vibrant space for a variety of startups, accelerators, such as the European Space Agency, and Aalto Startup Center, as well as partners and established companies, like Fortum.

Where: Otakaari 5 A
Website: http://agrid.fi

**THE NEIGHBOURHOOD**

**AVP**
Co-creative Entrepreneurship Education
AVP (Aalto Ventures Program) organises courses, minors workshops and networking opportunities for the students here at Aalto. Their goal is to help students find valuable businesses, providing them with the inspiration, the community, and the network.

Where: Maarintie 17
Website: http://avp.aalto.fi

**URBAN MILL**
Co-working and Co-creation Platform Prototype for Urban Innovations

Urban Mill provides a flexible office, event and prototyping space for cultivating new urban innovations to create a better urban life. One can find international people, entrepreneurs and developers solving problems in Finland as well as Globally through urban development.

Where: Betonimiehenkuja 3 E
Website: http://urbanmill.fi

**STARTUP SAUNA**
Enterprise accelerator

Since the year 2010 Startup Sauna has been accelerating founders and providing growth hacks, practical tips and tricks for the hardest solved problems through their more experienced entrepreneurs. Their team is one of Europe’s most experienced teams with a Net Promoter Score of 90, our code reviews, meetings, and doing

Where: Betonimiehenkuja 3 D
Website: http://startupsauna.com

**AALTO DESIGN FACTORY**
Interdisciplinary product design and learning hub uniting students, teachers, researchers, and industry.

Where: Betonimiehenkuja 5 C
Website: http://aaltodesignfactory.fi

**ESPOO INNOVATION GARDEN**
Innovation hub

Espoo innovation Garden is the largest Innovation Hub in the Nordic countries, covering the areas of Otaniem, Keilaniemi and Tapiola. It is not an physical building but a community of people from different walks of life who come together and innovate in a way of growing the various operators in the area encouraging for cooperation and enhancing the sense of community.

Where: 02150 Espoo
Website: https://www.espooinnovationgarden.fi
Design Factory’s expanding network makes different skills and expertise as well as cultural diversity more accessible. In the last year, the Aalto Design Factory welcomed an intern from the Frisian Design Factory: Lennart Hielkema. Meanwhile, down in southern Europe, Porto Design Factory welcomed Rutger Oldenhuis, another intern from the Frisian Design Factory.

During the weekly chats they had, these two interns came up with the idea of promoting the global mobility of students and staff alike within the Design Factories. They found that the Design Factories, although similar in ideology, had quite some differences in workflow, work ethics, and skills and expertise. They also noticed that the people at the Design Factories were eager to make use of the new skills they brought in, such as visuals or photography. These were not already very present in other parts of the global network. So why didn’t we make use of that already?

Within a few weeks, they came up with a plan to swap places for a period of time. Lennart would go to Porto, and Rutger would go to Aalto. Due to their schedules, they could not manage to plan a longer exchange than thirteen days in total, but it would be enough for a first pilot, to find out what challenges would be faced.

The first three days were overlapping. This gave Lennart the opportunity to introduce Rutger to the Aalto Design Factory and get him used to the work he did to make the transition feel seamless. Rutger could also easily tell Lennart about his work at the Porto Design Factory, and tell him about the city and how to get around.

The last three days would be overlapping as well, giving the opportunity to reflect on their findings and experience.

Aside from practical challenges such as housing and public transport (which were easy to overcome), there were some bumps in the road regarding the planning and timing. Rutger joined the Aalto Design Factory during a very busy period, three days before the PDP Gala. Meanwhile Lennart joined the Porto Design Factory at a relatively quiet time. Then there was also the issue of the staff. Aalto Design Factory had way more staff than the Porto Design Factory. Both interns found that this resulted in a different impact on each of the receiving institutions. These and other points were discussed to address in the future. But altogether, this exchange was a valuable experience for both the interns and the staff in desperate need of their skills at the Design Factories. Even within this short time, Rutger and Lennart found that they had definitely leaned from the differences in the Design Factories. They think a longer period and better planning would definitely allow for valuable and exciting exchanges. Now it is up to them to continue this and develop it further. Hopefully, this will lead to some interesting community interactions in the future.

So what happened? Well, in February I left the Netherlands for Porto, Portugal, to start my internship at PDF (Porto Design Factory), where my main project was to help with the organisation of International Design Factory Week, and Rapid Action Week. I was also the main photographer and videographer for the events. There were many other tasks I did which are a bit harder to put into words, but let’s just say I did almost everything they needed help with. During this time, Lennart was interning at Aalto, and the video connectivity between these DFs enabled us to talk to each other, and jokingly wondered if people would notice if we switched places. We turned this joke into a side project in which we switched for 10 days. Me at ADF, Lennart at PDF. This was a very interesting project with a lot of good lessons. With IDFW and RAW almost starting, I got a rapid-fire workload that had a lot for me to work on and which was also very fun. The week itself was even cooler. Experiencing the Global Network in Porto was a lot of fun. Seeing the personalities brought from every DF and the way they are welcomed is very warming to see.

As far as experiences go I have had a wonderful time, learned a lot of versatile skills, and had a place I could be myself. I felt like I could make contact relatively easily, and was received great. Within the design factories you really feel that it is a family because of the way communication and interaction happens.

Rutger Oldenhuis
Design Factory works in the local community as well as in the global scene. We strive to be the best in the world in teaching product development and design. To achieve this goal, international collaboration is vital. The global activities at Aalto Design Factory don’t just allow knowledge transfer between the parties, but also acts as a support network for different facets that have a common goal: developing interdisciplinary teaching and taking the university education to the next level.

GLOBAL ACTIVITIES

TABLE OF CONTENTS:

- DFGN
- THE DESIGN FACTORY BOOTCAMP
- INTERNATIONAL DESIGN FACTORY WEEK
- RAT RELAY
- DF JUNIOR SCHOOL
- DIGITAL DREAMS OF POPUP MARKTHALLE

“Sharing the PASSION for doing” -DFGN-
UNPRECEDEDNT GROWTH AND NEW PROJECTS FOR DFGN

The past year has been a year of both rapid growth and consolidation for the Design Factory Global Network. During the calendar year 2017, a total of 8 new Design Factories joined the network, and during the first half of 2018 another 3 have joined. At the start end of the academic year 2017-18 the network consists of 24 Design Factories in 21 countries and 5 different continents. The growth of the network stems from the increasing interest to develop interdisciplinary learning environments and create platforms for industry collaboration and problem-based learning in universities around the world.

The growth has also lead to increase in opportunities for collaboration in the network. New experiments and collaborative projects have been developed within the DFGN, and exciting ones, such as the Fix Relay, are going on for new iterations. In addition to some of the projects you get to read about on the following pages, new pedagogical experiments have started.

For example SQUAD is a course done in triangles of three Design Factories, focusing on digital products and solutions. The first SQUAD was carried out between Porto, Warsaw and New York City Design Factories. The introduction of SQUAD was based on the needs arising from the industry. As the world is becoming more and more digital, a need was seen to create an international program specifically focusing on digital solutions.

Year 2018 has also been a year of transformation for DFGN as the growth has taken us from a small family to a mature network. DFGN has taken strategic steps in formalising the structure enough to ensure the continuation of the network, yet little enough to continue to operate as the home for like-minded individuals who are driven by the passion to put the students and learning first. DFGN has transformed become a network, where the members have the most influence. As we like to say, the DFGN is what the DFGN makes it into.

The 10th anniversary of Aalto Design Factory has been a moment for reflection also for the network, and, considerations what the future of the Design Factory-concept could be have started. “Universities of the Future”, a three-year EU Erasmus+ Knowledge Alliance project together with Porto, Aalto & Warsaw Design Factories is exploring how universities should meet the needs of industry 4.0. During the past year the DF ways of working were put to test within a public-private partnership in Wolfsburg, Germany, in a collaboration between the city of Wolfsburg, Volkswagen Group, and VfL Wolfsburg, the local Wolfsburg football team. Theses, in addition to other experiments and interactions create inspiration for future work. In this way DFGN can provide interesting insights, not only for the DFGN itself but also for ADF for the next 10 years.

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PROJECTS FOR DFGN

When we found out about the Design Factory Global Network, 4 years ago, we never have dreamed that in the near future we would be part of such a community. Encouraged by some chats with people from the DF network and after seeing their passion we wanted to learn more about the necessary prerequisites. It was the perfect timing for us to join the network because we could adapt the space and programs we had in place and at the same make profit from the network to help us on growing more in the future.

Becoming a member was going along with two hopes and expectations: the first one was to learn more about project-based learning in interdisciplinary setting from partners like Aalto that have an amazing experience on it. We strongly believe that this educational approach is an important part of the future of education, and we want to enforce it at our university. The second one was to give us the opportunity to enlarge the offers for our students by further courses in international interdisciplinary setups with other Design Factories in the network. As we are part of the ME310/Super network since 2014 we were looking for additional, more lightweight possibilities to engage more students in similar experiences.

Our first International Design Factory Week (IDFW) in June 2018, overset all our expectations. We were deeply impressed by the energy of the DFGN community, its spirit of openness and creativity that unfold on the teaching team level in the similar manner as it does for our students when being in international cooperation. The week left us with many new resources, opportunities for courses and joined events. It opened our mind again and for sure this will multiply with our students in the future.

A WORD FROM A NEW MEMBER

Kirstin Kohler, Coordinator, inno.space Design Factory Mannheim

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Design Factory Bootcamp is a week-long intensive hands-on experience of the DF concept. It has been developed as a solution to the interest among universities and other organizations around the world to get familiar with the concept. Organized for the first time in 2014, it takes place every spring at Aalto Design Factory. The program of the DF Bootcamp consists of different kinds of expert lectures, workshops and community events in which Design Factory experts and community uncover different parts of the DF concept. These topics include, among others, DF history, ways of working, pedagogical philosophy, and industry collaboration. During the Bootcamp, the participants already start planning for their own Design Factory-related experiments.

Design Factory Bootcamp 2018 was the fifth Design Factory Bootcamp organized at Aalto Design Factory. It brought together 7 new participants from three different institutes, Tecnologico de Monterrey in Mexico and St. John's University in New York were attending the Bootcamp for the first time, and Design Factory New Zealand sent new staff members to be familiarized with the DF ways of working.

SWEAT
The Super Wicked Extraordinarily Awesome Team (SWEAT) was initiated as part of the DF Bootcamp 2018 to represent the students of DF. The SWEAT consists of exemplary students of DF who are active, know the culture of DF, and can share their own stories. These super wicked awesome students are mostly students of PdP, ME310, and Aaltonaut.

SWEAT's roots go back to 2016, when the first student team was established for the DF Bootcamp under the name of SWAT, as in a specialized rapid deployment task force, but also standing for Super Wicked Awesome Team. The team was made because students are at the center of DF, so it would make sense to have a workshop about DF where the participants also get a chance to meet the real users and see for themselves how students can benefit from a place like DF. At the end of Bootcamp 2016, the team got an overwhelmingly positive feedback from the participants so it became a permanent fixture for DF Bootcamp. As part of SWEAT, the students participate in events, such as PD4 and PBL workshops, help around with the events, and help the participants satisfy their curiosity about DF. The SWEATers are told to be themselves and show the participants the place of students in DF. In return the students meet faculty and professors from foreign institutions, get 1 ECTS, and will be the first ones to hear about opportunities in Aalto and other DFs.

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INTERNATIONAL DESIGN FACTORY WEEK

IDFW2018 was hosted by Porto Design Factory during June 18th to 22nd 2018, and brought together 54 people from 21 different Design Factories. IDFW is hosted in turns by the different Design Factories, and the opportunity to host the week is offered in the order the different Design Factories have been launched.

Porto took over this time

IDFW as the annual meeting of the network has two specific goals. Firstly, as DFGN is a network built around the collaboration that takes place between the different Design Factories, planning for collaboration is the main one. During IDFW2018, a total of 25 project initiatives were introduced and worked on during the week. Secondly, the week is an opportunity for the host to take advantage of the network presence by engaging with their own stakeholders and ecosystem by organizing part of the weeks program. From the network perspective, it also works the other way around: by engaging with the hosting DF’s ecosystem, it helps everyone to better understand in order to collaborate with the hosting DF. The week is also the opportunity for the network to develop itself and its activities.

RAW

In June, I had the opportunity to attend the 1st DFGN Students Summit, denominated Rapid Action Week (RAW), a parallel activity to the International Design Factory Week (IDFW), hosted in Porto. The idea behind the RAW was to bring one student from each Design factory to re-imagine the future Design Factory in 10 years’ time. The RAW gave me the chance to experience an exciting week together with students from different backgrounds and cultures yet with the same mindset, dream DF all over again. It was amazing how a group of 14 students from all corners of the world, that never met before, got together for a full week to work and envision the DF of the future. During the week, as a team we pushed our creativity, open-mindedness and optimism to the limits: we had the brightest morning boosters ever; we brainstormed and ideated the most crazy ideas; we forecasted the future together with the IDFW people; we designed, prepared and gave inspiring workshops where both DF students and staff got to know each other and their wishes for the future of education; and, last but not the least, we had the best time together, learning with and from each other. It was truly inspiring. The 1st DFGN Students Summit, made me realise that, despite what happened in the past 10 years of DF, it’s the future that still excites our community and that still drives students, teachers, researchers and industry practitioners every single day at each Design Factory.

André Santos
PDP student 2017-18
Organized for the fourth time, the Rat Relay for Global Good brings together Design Factories from around the world - nine partner organizations, some 160 students and 30 Design Factory coaches this time around. Design briefs travel from country to country, landing back home with insights from multiple cultures and contexts. Organized in six 6hr slots according to the design thinking process of empathizing, reframing, ideating, prototyping, testing, and finally pulling it all together to pitch back to the organization bringing the challenge.

Nordic Ocean Watch - from campaign glory to lasting change. With plastic reefs the size of countries floating around in our oceans, the timely challenge aimed to reduce disposable plastic for cleaner oceans, for good.

On the other hand, our local teams at Aalto got to figure how to prevent Colombian youth joining gangs, millennials disconnect online to connect live, help employers make better job adverts while making the job search easier for job seekers on the autism spectrum, and more. The fifth Rat Relay is organized in fall 2018.

28 Coaches
8 Countries
9 Cities
337 513 km the ideas travelled
233+ coffee cups consumed
324 worked hours x 3 days
6 slots x 6 hrs x 9 DF’s
155 participants

RAT RELAY

PARTNER COMPANIES

Below you will find the Design Factories and their respective briefs

BRIEF TRAVEL

The order of the numbers below showcases the brief’s journey from country to country.

1. Aalto Design Factory ___________ Nordic Ocean Watch (NOW)
2. Warsaw Design Factory ___________ City of Warsaw
3. Frisian Design Factory ___________ Rode Krals
4. Ghent Design Factory ___________ In House brief
5. Porto Design Factory ___________ Frulact
6. Design Factory Javeriana ___________ CMM Colombia
7. Cali Design Factory ___________ In House brief
8. NYC Design Factory ___________ Tech kids Unlimited
9. Design Factory Melbourne ___________ Imagine Intelligent materials
Design Factory Junior is an experiment to introduce the Design Factory ways of working to high school students in China. The DFJ program consists of three phases: idea competition to identify and propose solutions under the theme of the competition, a local kick-off workshop, and a week-long summer course taking place at Aalto Design Factory. The theme for Design Factory Junior in 2018 was Design For 3D-printing - how could 3D help in creating solutions to everyday problems the participants face.

Design Factory Junior pilot is done in collaboration with ANYEI (Association of Nordic Youth Education & Innovation) and Beijing Strong Feeling Youth International. Altogether 89 students and 19 teams from Shanghai & Beijing applied to the Design Factory Junior program, out of which three teams were selected for the final phase in Finland. The finalist teams come from Shanghai Tongji-Huangpu School of Design and Innovation, Beijing Foreign Languages School, and Beijing Shi Da High School. The finalist teams were tackling issues related to the harmful fumes when erasing chalk from blackboards, the accurate placing of eye drops to eyes, and spilling coffee. During the final phase of the program, the week in ADF, the teams get to develop their ideas to a tangible level, with the help of ADF community.

I together with my team members applied for the Design Factory Junior. The kick-off day in Shanghai was a hands-on workshop aiming to help us further develop our DFJ project in about six hours. There wasn’t much talking but quite a lot of working. However, the atmosphere was not tense at all. Thanks to the help of the coaches and our efforts, we managed to work out a better solution of our product at the end of the day. We benefit a lot from this experience, and hopefully this will help us not only in this year’s DFJ competition, but also in all of our projects that we will be working on in the future.

Wang Xiao
Shanghai Tongji-Huangpu School of Design and Innovation
Digital Dreams of PopUp Markthalle
Wolfsburg, Germany

During the spring of 2018, the old abandoned market hall in the city center of Wolfsburg, Germany, became alive after years of solitude. The hall was busy with events, workshops and art. PopUp Markthalle, as the space was now called, was the experimental popup phase of the initiative to create an co-creation platform in the heart of the city. Markthalle is collaboration project between the car manufacturer Volkswagen, the City of Wolfsburg and the VfL Wolfsburg football club. Aalto Design Factory has been involved in the project since its beginning by facilitating the cooperation and sharing the knowledge on building Design Factory-like co-creation platforms.

Markthalle is one of the leading projects in the Wolfsburg Digital initiative, were the citizens of Wolfsburg together with the local industry are experimenting and developing the digital cities of the future. The PopUp Markthalle was open for three months with jam-packed programme: open talks, app-development workshops, football fan club meetings and other events kept the the cite busy. ADF staff member Andreas Benker, doctoral candidate at Aalto BIZ and IDBM alumnus, worked on site alongside with the people of Markthalle to facilitate the collaboration and development. Andreas and Päivi Oinonen, manager of DFGN ran a series of 6 co-creation workshops to help support the development of the permanent Markthalle to be relaunched in 2019 after a thorough renovation.

Digital Dreams

Aalto Design Factory also took part in the production of the new media exhibition Digital Dreams, that was open at PopUp Markthalle from 7th until 28th of March. Digital Dreams exhibitions was a student project done by the design students from The Braunschweig university of Art: Martin Fischer, Farina Hamann and Matthias Höffmann and Anniina Leggat from the Aalto ARTS. The exhibition explored the digital phenomena of the modern day and the future: digital isolation, the transformation of social interaction and the altered experience of reality. The exhibition consisted of six exhibit stations, each delving into a certain digital experience. Most of the stations utilized virtual or augmented reality technologies, whilst in few the chosen method was analog production to accentuate the distortion in reality caused by digitalizations.
HUGE THANKS TO ALL

The Annual publication team wants to thank the awesome Design Factory community who have helped and manifested their passion and love, by helping with the writing of the articles, proofreading, advising, and support in the production of this publication.

With Love
On behalf of The Team
Anu & Joel
All you need is Love, Design, Business and Engineering