Welcome to ADF, Aalto Design Factory!

Just past the decade mark, the Aalto Design Factory is a magical co-creation space, the first of its kind in the world, where a growing family of hard workers from various disciplines combine their skills to create, teach, learn, conduct research and solve problems.

In this publication, we provide an overview of our experiences from 2019-2020 and share our activities and highlights in love, design, business and engineering.

Enjoy!

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Face-to-face greetings from the janitor

Community

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Aalto 10 Year Party
ADF Industry Day

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Mobile spaces
Mathematically optimized lamps
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During the spring of 2020, the Aalto Design Factory (ADF) was more silent than ever in its history. University buildings were closed down and online studying and working became the standard. Most of the courses were quickly reshaped and realized without classrooms, seminars, studying together in teams or sharing access to laboratories. When I spoke to students, they were surprised at how smoothly the change actually went. The official message from the political and university leadership is quite similar: a huge thanks to teachers and students for successfully adapting to an unexpected situation. It seems very likely that online studying and working will continue after the summer.

The Aalto Design Factory was built for interaction, joint learning, prototyping, testing, using facilities without a plan and providing a space for ‘planned coincidences’. How do I feel about transferring all this to the online mode? Without hesitation, I can say, for instance, that the Product Development Project (PdP) course students and sponsors have been truly flexible and understanding about the restrictions. On the other hand, the lockdown has caused numerous problems and delays and the final gala event is still to be held in September. When sitting in an empty building of 3000 square meters, I wished there was a way to better help students than just let them borrow some tools or arrange components for their projects. Informal online sessions didn’t attract much of an audience. The mental distance between the students and teaching staff grew greater, while the number of informal discussions decreased dramatically. The threshold for contacting staff and asking for help has always been high, but informal meetings have always counteracted that. They inform us about problems or issues without a formal request to help.

Interesting discussions have taken place on supporting online prototyping and testing, but it’s not against such approaches. However, in addition to the straightforward adaptation to the restrictions, it is important that we also find creative ways to make the ADF for its fundamental purposes, without endangering the safety of users and letting global chains like COVID-19 disrupt the ADF. It is exactly the same as most other campus learning facilities. It’s built to be different and, consequently, doesn’t do/online very well.

Having said all that, everyone knows that, at the ADF, safety and students come first.

Kalevi “Eetu” Ekman

Face-To-Face Greetings From The Janitor

From The Janitor

Kalevi “Eetu” Ekman

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The Aalto Design Factory (ADF) community is a stunning bouquet of backgrounds, experiences, and ideas that come together and intertwine students, staff, researchers, and companies. Even though we don’t share the same genes or family name, the ADF community is a one big family with one thing in common: a passion for creation.

A community of creators, and those who prefer to show rather than tell, is how we prefer to be viewed. Our daily activities include working inside collaboration-oriented spaces, homelike setups, and hands-on workshops.
Welcome to Aalto Design Factory

What you will find in ADF:
The ADF structure is a combination of workshops, lecture halls, office and research wings, and social gathering areas where we used to hug all the time. Although the better part of this year has been away from the physical space for most habitats, the walls are waiting on standby for life to go back to normal.

Touring the facilities:
Every year, local and international visitors come to see the facilities and learn more about the design factory structure. The director-led planned tours are recorded and categorized according to the user segments. Additionally, a number of impromptu tours take place on the premises year-round.

Workshops:
Discover and develop any project by picking a course or becoming a partner company.

Office wings:
Where you can find staff.

Lecture spaces:
Where you can host a lecture or team through the online booking system.

Meeting spaces:
Where you can hold team meetings by booking through the online booking system.

Social areas:
Where you can share the space with other members of the community to mingle, learn, and eat.

The Community:
*

<table>
<thead>
<tr>
<th>Type of User</th>
<th>Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>University delegations or student groups</td>
<td>51%</td>
</tr>
<tr>
<td>Companies or start-ups</td>
<td>25%</td>
</tr>
<tr>
<td>Governmental or municipal delegations</td>
<td>17%</td>
</tr>
<tr>
<td>Other (Media, NGOs, associations)</td>
<td>7%</td>
</tr>
</tbody>
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Requested tours of the premises
- Coomunity break
  - Fasts cancelled due to COVID-19

Bottles collected and returned from ADF
- Community break
  - Fast breakdown
  - Fast recovery

Cups of Coffee Consumed

The Community
At the Aalto Design Factory, a staff packed with awesome and authentic individuals who work together to run the factory, welcome visitors, teach students and learn from each other.

The people of ADF

**Worksheets**
- George Alexasov
- Carled Producer

**Teaching**
- Yrsa Björkman
- Professor of Practice
- Maria Clareti
- Professor of Practice
- Tuomas Palonpää
- National Teacher
- Meri Kuukka
- National Teacher

**Research**
- Tero Kajki
- PhD Researcher
- Irja Marttunen
- PhD Researcher
- Reeta Kokkonen
- Research Assistant
- Erja Petterson
- Researcher & Communicator

**Enablers**
- Katariina “Katia” Nordström
- Professor
- Senni Kirjavainen
- Project Researcher
- Maria Mikkonen
- Researcher / PhD Candidate

**Staff**
- James Savage
- Magnum Opus
- Teppo Vainio
- PhD Course Assistant
- Joel Tolonen
- PhD Course Assistant

**The Aalto Design Factory**

- Kalevi “Eetu” Ekman
- ADF Director
- Martti Jerkkä
- Project Manager of ADF
- Vesa “Vesku” Saarijärvi
- Omniscient Caretaker

- Miska & Communication Candidate
- Pulma Mentula
- Soft Skills Expert

- Martta Ojala
- DFGN Coordinator
- Klaus E. Calvin
- Engaged Envision Project Mentor

- Päivi Oinonen
- DFGN Manager
- Martti Soininen
- PhD Researcher

- Eeva-Mari Virtanen
- PhD Researcher / PDI. Candidate
- Anna Bökk
- Research Assistant

- Erkki Virtanen
- Researcher & Communicator
- Eeva-Mari Virtanen
- Project Coordinator

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- Project Coordinator
**Industry Collaboration**

Industry collaboration is an integral part of the course of experimentation and educational activities at ADF. The ability to have in-house startups grows without saying the most recent publicly available information on nine of the partners.

Based on the most recent publicly available information on nine of the partners.

- **Manufacturing motors and plasma breaks for satellites weighing up to 150 kg.**
  - Founded in 2018
  - ADF partner since autumn 2019
  - 24 employees
  - Start-up stage: validating solution and business, starting to scale up

- **Creating smart modular outlet systems to optimize the use of electricity and reduce the environmental footprint.**
  - Founded in 2018
  - ADF partner since autumn 2019
  - 3 full-time employees and 1 Master’s Degree intern from Aalto University
  - Start-up stage: early stages of validation

**COVID-19 and Partner Plaza**

Start-ups are by nature highly fragile in their early stages and the COVID pandemic created serious concerns amongst start-ups within our community. The university gradually shut down almost all physical access to the ADF, while rationally deciding that working remotely was the best way to protect the students and the level of collaboration with the students and the level of business. As the university gradually shut down almost all physical access to the ADF, while rationally deciding that working remotely was the best way to protect the students and the level of business.

- **Partners at the Design Factory - 2019/2020**
  - **Kaon Oy**
  - **Onnivation Oy**
  - **Teraloop Oy**
  - **Trick Technologies Oy**
  - **Trenox Oy**
  - **Riot Innovations Oy**
  - **Caidio Oy**
  - **StrateCo.Global Oy**
  - **mResell Oy**
  - **Yield Systems Oy**
  - **Surgify Medical Oy**
  - **Protorhino Oy**
  - **EHE Oy**
  - **Nordic Crafters Oy**
  - **Nose Academy Oy**
  - **Consair Oy**

**Start-ups at the Design Factory - 2019/2020**

- **Aurora Propulsion Technologies**
  - Manufacturing motors and plasma breaks for satellites weighing up to 150 kg.
  - Founded in 2018
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Hosting Otaniemi, Espoo is the second-largest and fastest-growing district of Finland, rapidly shaping into a unique, innovative and collaborative ecosystem, with a vibrant and rapidly evolving community of game-changers. The Aalto Design Factory has been part of the Otaniemi neighborhood for more than 10 years as a critical player that shortens the gap between education and industry by fostering a multidisciplinary approach to work.

Neighbours in Otaniemi

Bijan Bajat Mokhtari is a Master of Engineering graduate of Aalto University who is no stranger to how this environment is unique in turning ideas into reality. He has taken part in a PdP (Product Development Project) course hosted at the ADF and, prior to, experienced the start-up accelerator programme at Startup Sauna. He is now working at Surgify Medical based at A Grid, which is also a partner of the ADF. Bijan emphasizes the importance of such an environment in fostering innovation.

This ecosystem takes the worries out of innovation and leaves room for problem-solving.

Väre is a home for the school of Business and the School of Arts, Design and Architecture, housing shared facilities for both fields. Part of the Espoo Innovation Garden, Urban Mill opened its doors back in 2013. Urban Mill is and works as a global focal point for urban innovation and co-creation. This space and community is open for all students to collaborate and explore new ideas. Urban Mill provides a platform for new businesses to test out ideas and develop them into products. A Grid, on the other hand, is a start-up community and one of Europe’s largest centres for growth companies. Embedded at the Aalto University campus, A Grid offers the perfect gateway to starting with the Aalto ecosystem. A Grid has become the afterlife for many Aalto Design Factory students who have joined the entrepreneurial lifestyle and A Grid plays a major role in lowering the strongholds that people and teams must conquer (office space, contact networks, etc.) to grow as entrepreneurs.

Located directly adjacent to the ADF, Startup Sauna is a central hub for the student-run entrepreneurial movement. Equipped with friendly co-working spaces and a 1500 square meter industry hall open for all those interested in or who desire access.
Cheers to an eventful Year
2019/2020

Project: Mobile Sauna
Design+: Book Launch
Courses: Kick-off week

Aalto 10-Year Party
ADF Industry Day
PdP Halfway Show

UNITE! First Dialogue
ATTRACT Ecosystem Workshop
DFGN Community Day

Project: Spa Kit – Hygiene Touch Tool

The Community
Aalto University has brought together science, art, technology, and business at the Otaniemi campus and is now one of the world’s leading universities in these key areas. In January 2020, Aalto celebrated its 10th anniversary. Aalto Design Factory is the physical manifestation of Aalto and the forerunner of interdisciplinary education; our community had a strong presence at Dipoli where the festivities were organized.

ADF showroom was established on the 2nd floor of Dipoli where projects and prototypes from past years were showcased. Students and staff together promoted ADF’s interdisciplinary activities and described how we cherish the innovation culture. The highlight of the day was the moment when KU Leuven signed the membership agreement with ADF and became the 30th member for Design Factory Global Network. This ceremony was accompanied by Repuperän WPK orchestra, followed by raising a toast for the new member of the network.

The party was as warm, diverse, and extraordinary as the Aalto community is at its best.

The Industry Day at the ADF was organized for students, researchers, and teachers to meet industry representatives from multiple sectors. The goals were to explore the possibilities of research and academic collaboration to solve multidisciplinary real-life problems, and for students to learn about available opportunities such as thesis work, summer jobs, internships, and more!

For many international students, this was an exceptional opportunity to make closer connections with Finnish companies in a casual environment, and we hope for this to be the first of many such events in the future.
To turn ideas into usable innovations, the ADF has access to a range of individuals and resources. After an idea is expressed, the team discusses what is needed and designs a manufacturing process to achieve the final form of each project. Students and staff are supported in learning about their vision and translating it into tangible forms. Iteration is key to successful solutions, so students are encouraged to make alternative prototypes (aka dark horse prototypes) by varying the scale, materials and use scenarios.

Some of these tangible objects are highlighted in this section, as well as the processes that led to the end result. These objects are created through the use of various technologies, some of which can be intimidating. In an effort to make these technologies more approachable and to simplify communication, some of the ADF machines are given individual names to help illustrate the sometimes complex technologies involved.

This is also a reminder of the importance of creating objects that are perceived as more than the sum of their parts.

In This Section
- Maker’s Wonders
- Mobile Sauna
- Mathematically Optimized Lamp Shades
- Space Key – Hygiene Touch Tool
In ADF, the workshop facilities for makers offer a wide range of tools and materials to work with. All workshops prioritize the needs of students and the start-up partners when offering services and staff assistance. Regardless of the complexity of the product envisioned, the arc of development often follows this order:

1. Sketch on paper
2. Crude handmade prototype using a light & easy-to-shape material like paper, foam modeling or digital version with computer-aided design software (CAD)
3. Mockup made with accessible materials like wood and readily available objects (read: trash & other stuff that is lying around)
4. Revise the digital version so that the CAD is manufacturable
5. Prototype using CAM (computer-aided manufacturing) technology like 3D-printing, laser-cutting or CNC-milling
6. Combine the prototype with additional components like nuts & bolts and electronics to produce a functional prototype
7. Repeat steps 5-7 until design satisfies all design drivers (needs & wishes)
8. A high-fidelity prototype is outsourced to a company with more ideal machines for the job
9. Document the prototype with high-quality photos and videos, because “pics or didn’t happen!”

ADF Workshops

Protobunker
- Houses power tools and basic machines for wood and metal work, an inventory of recycled materials, and a mini electronics workshop with a board mill, a laser cutter, and a CNC lathe.

PrintShop
- Houses 3D printers named NUNU and COCO, a large-format roll-to-roll printing machine named BARBARA, a vinyl cutter named BUBU, and a laser cutter named LALA 2.

ElectroShop
- Houses a PCB etching tank, a UV reflow oven, soldering and de-soldering stations suitable for surface mount soldering, oscilloscopes, multimeters, signal analyzers, variable power supplies, and basic electronic components.

PaintShop
- Houses ventilated painting stations and basic tools for painting.

MachineShop
- Houses a 4x Axis CNC Machine, a 3-axis CNC Machine with vacuum table, a 5-axis CNC Lathe, a 4-axis Milling Machine, a Bench Drill, and a Pillar Drilling Machine.

In Finland, it is not uncommon for saunas to be built in the most remote and unlikely places, but this sauna’s idea was that it could be set up whenever, wherever. It enables users to build it on their own, a concept that is which a person has to see as a use with a future.

The sauna is flat-packed and can be assembled on site without any tools. The frame is made of 2x4 fir with simple joinery and a measure made tarp fits over it to create an enclosed space. Lastly, the stove is a readily available wood-fired model, so no electricity or grid is needed.

One might call this a ‘field sauna’, but having tested it in the backyard of the ADF a couple of times, it delivers a more pleasurable ‘löyly’ (heat/steam/the most essential sensation of a sauna) than many proper indoor saunas.

Mobile Sauna

Project by Pauli Haimiö

Hands on Work
My research deals with symmetries of signals in space and time, with Fourier and abstract harmonic analysis of groups. The formal vocabularies resulting from the spatial manifestations of these ideas are used in these lampshades to create the optimal secondary light without wasting material. Though reminiscent of modernist designer lamps and patterns in nature, this is purely coincidental. In the chosen parameters, factorizations of natural numbers result in the aesthetics of harmonic proportions.

Poul Henningsen (1894-1967) designed his lamps to provide pleasant indirect light and warm and was a great designer. Picture a lampshaped round light bulb as the unit sphere, with the light source in the center. Assume single reflections of a constant angle by the lampshade, which clicks onto the sphere, so there is no need for any other supporting structure. Exploiting Euclidean symmetries, exponential functions and spherical harmonics appear in the formulas. In the sketches of all the resulting forms, I have hidden spheres, cylinders and cubes, as well as the regular polygons: triangles, squares and hexagons. The factorizations of the number 12 play a special role, like the hours on the clock face.

At the beginning of the Coronavirus outbreak, there was a DIY hack from Wuhan called the ‘Wuhan Hook’, which went on to become known as a very simple and very effective improvised chemical weapon against the Coronavirus in the ground zero of the viral outbreak. It was a lighter with an Allen key taped to its side. After touching a potentially contaminated public surface, you turn the lighter on. This disinfects the tool head and you can be sure that you did not and will not get any virus, bacteria, fungi or other microorganisms from a contaminated surface.

This ingenious idea inspired a systematic inquiry into possibilities to create a product. The result is ‘Space Key’, an antimicrobial copper aid to avoid diseases on ‘high-touch surfaces’ and ‘fomites’. Its design is inspired by keys, upper limb prosthetics, hand tools and jewellery. Made of 99.95% copper for hygiene reasons, it is very soft in addition to having a smooth form, so it does minimal harm to materials like wood and plastic and no damage to steel or glass. It works on a variety of handles, locks, toilet halves, switches, windows, drawers, keys & other objects and, with its copper case, you never touch the device that may be on the moment before the copper eliminates them.
Learning & Education

The combination of love, design, business and engineering is an innate spirit of the ADF, as students from various backgrounds are guided through the multidisciplinary courses run in ADF.

Teaching continues despite the unusual circumstances during the COVID-19 pandemic. This section will look into some of the courses run in ADF and how they are taught by the pedagogical approach of the teaching staff.

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- Universities of the Future 36
- OpiT! Technology Education Program 34
- UNITE! 36
- Youth at DF 38
- Online Teaching 39
The three approach through various channels, including Aalto multidisciplinary education was shared key performance indicators supporting schools. The importance of developing paths and schedules across the Aalto learning in the degree structures, study to promote multidisciplinary teaching and continuing education. This academic year, the ADF has continued co-teaching Multidisciplinary education and co-teaching as well as activities were related to multidisciplinary wider audiences. The main dissemination the results were also disseminated to work was done within the ADF premises, the disciplines for Aalto students and primarily on building connections across the pedagogical activities at ADF focused encourage students or teachers to cross campus, do the performance indicators the disciplines are situated on the same courses towards multidisciplinary co-develop the current Bachelor’s degree Ten years after its establishment, Aalto & co-teaching at the ADF scientific conferences (SEFI 2019, Climate co-teaching experiments were shared at learned from the various multidisciplinary Industrial Engineering to pilot a merger courses that build connections between courses from different fields into of two courses from different fields into new multidisciplinary one. The lessons learned from the various multidisciplinary courses preview the upcoming joint courses in the area of technology companies as part of the organized in collaboration with local technology companies as part of the Estonian Knowledge Alliances project ‘Universities of the Future’. The three courses promote the upcoming joint continuing education pilot ‘Industry 4.0 – Digital Innovations and Transformation’ starting in autumn 2020.

Courses at the Design Factory - 2019/2020

- Final and Development Project
- RED Challenge
- Design Thinking: Prototyping
- Industry Theory and Methodology
- Product sustainability
- Innovation in Energy Products
- Design for Service
- Entrepreneurship
- Strategic Design
- Design for Sustainability
- Entrepreneurial Design
- Ventures Development
- Sustainable Impact

- Sustainability Capabilities
- DECS Summer Course
- EIT Climate Summer School
- EXC Summer Course
- AVP Summer Course
- ADD Basics
- Business Sustainability
- Venture Ideation
- Venture Formation
- Venture Design Projects
- Add-On Design Projects
- IDBM Challenge
- Pack-Age
- CoID Designing Interactions
- Mechanical Engineering in Society
- Design & Innovation in Context
- Design for learning
- Product Analysis
- Product Analysis
- Valve
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- Valve

Continuing Education

This academic year, the professors of Technology Education at Aalto University and the University of Helsinki joined forces to pilot a continuing education programme called ‘’. Within this pilot programme, however, best collaborative practices of technology education developed at the ADF. The first pilot was formed with 15 in-service teachers from primary schools in Espoo area, along with groups of teacher-students and partner organizations, such as the Aalto Junior and Innokas network. In 2020, the EU programmes received additional funding for the second pilot round from The Technology Industries of Finland Centennial Foundation and The Swedish Cultural Foundation in Finland.

In addition, members of the Design Factory Global network, namely the ADF and its partner design factories at the Warsaw University of Technology and Politecnico di Torino, piloted three short courses for industry professionals and doctoral students at Aalto University, the Technical University of Munich, as well as science students at the Technical University of Munich. Rovaniemi, the Arctic University of Lapland, and the University of Chalmers in Gothenburg. Moreover, the Design Factory Global network is continuing to expand, with new members from the United States, Japan, and South Korea. In addition, the Design Factory Global network is collaborating with local design and technology companies as part of the Estonian Knowledge Alliances project ‘Universities of the Future’. The three courses promote the upcoming joint continuing education pilot ‘Industry 4.0 – Digital Innovations and Transformation’ starting in autumn 2020.

Check out Universities of the Future here: universitiesofthefuture.eu

Check on and Coffee break

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Check on and Coffee break
The PDP is the largest product design course organized at the Aalto Design Factory (ADF) and one of the most significant project-based courses at Aalto University. Each year, students from around the world form interdisciplinary teams to work in close collaboration with the industry to learn the creative problem-solving of real-life challenges. It's a once-in-a-lifetime experience with great emphasis on Passion-Based Learning (PBL) methodology.

During the 2019-2020 academic year edition, the course had a variety of projects targeting innovative solutions from healthcare technology to fire prevention, space technology, safety and energy use, co-creation spaces and much more. Due to the pandemic that affected the teaching experience, the PDP staff was forced to change the Final Gala plans. The strong commitment on the part of all teams showed us that we couldn’t end the PDP course without a proper finale. Thus, the iconic Product Design Gala that takes place in May every year was postponed until 4 September of this year.

During the Product Design Gala, we hope to bring together hundreds of curious visitors, technology and innovation enthusiasts from all over Finland and (we hope) the world. The teams’ outstanding results could not have been achieved without the students’ dedication, close coaching of the PDP teaching team and the help and support of the ADF staff.

What I learned from my teammates was that sometimes it is more useful to be bold enough to just push forward than to hesitate, even if some things might be fuzzy.

Eero Suhonen
Masters in Mechanical Engineering
Aalto University

Working with people from other disciplines and getting to know their perspectives was very valuable to me because it inspired me to be more creative and not be afraid to experiment, something that philosophers have a hard time doing.

Isabella Duarte
Bachelor of Philosophy
Javeriana University

Bridge to the Future | ABB
Design of a new intelligent system that enhances the decision-making experience for bridge operators.

Winco | GRK
Development of an economic and reliable heating system for railway switches.

UFO | Logisnext
Development of a software platform that improves the workflow and interaction of manual drivers with autonomous trucks.

SkyCrew | Airbus
Development of a co-creation space and guidelines to enable participation and collaboration effectively.

Team Brainstorm | SkyEcho
Enable weather awareness in cities to improve business resilience against intensive/sudden storms using sensor technology and SkyEcho’s weather 2.0 API.

FireFlies | Heimdall | CERN
Design and development of a universal wildfire monitoring system.

Team Rise | Heimdall
Design and development of a software platform that improves the workflow and interaction of manual drivers with autonomous trucks.

Tardigrade | Aurora
Design of a post-deployment mechanism to improve the aerodynamics and lifespan of microsatellites.

Futudent | Futudent
Redesign and enhancement of usability experience and installation of dental cameras.

Wonder | Imagine
Design and development of a smart mattress and integrated software solution for elderly care.

Team Sinco | Sinco
Development of a new economic and reliable heating system for railway switches.

SkyCrew | Airbus
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Bridge to the Future | ABB
Design of a new intelligent system that enhances the decision-making experience for bridge operators.

Teams | Sponsors
2019/2020
**ATTRACT**

ATTRACT is a pioneering initiative funded by the European Union’s Horizon 2020 research and innovation programme. The goal is to bring together Europe’s fundamental research and industrial communities to lead the next generation of detection and imaging technologies. In addition to Aalto University, the initiative is co-ordinated by the following leading European research institutions: CERN, ESA/ESTRACK, ESAT/PSI, European XFEL and ILL.

During the first phase, 170 research projects involving sensing and imaging technology to enable breakthrough detection and imaging technologies, a proposal for ATTACT Phase 2 was submitted. Phase 2 will see a significant scale-up of activities from Phase 1. In January 2020, the HDF hosted a two-day workshop that brought together the ATTTRACT Programme Consortium, representatives from the research institutions that either participated in the ATTTRACT Phase 1 Pilot or have expressed interest in participating in future Design Factory-type activities and were happy to share experiences and ideas. In a series of workshops, attendees discussed how other current courses on Design and sustainability could be aligned to maximize the impact following a user-centred approach. During the 2019–2020 academic year, a number of student projects have been running at Aalto University and the Esade Business School aimed to solve the challenges of the project.

To enable the further development of groundbreaking detection and imaging technologies, a proposal for ATTTRACT Phase 2 was submitted. Phase 2 will see a significant scale-up of activities from Phase 1. In January 2020, the HDF hosted a two-day workshop that brought together the ATTTRACT Programme Consortium, representatives from the research institutions that either participated in the ATTTRACT Phase 1 Pilot or have expressed interest in participating in future Design Factory-type activities and were happy to share experiences and ideas. In a series of workshops, attendees discussed how other current courses on Design and sustainability could be aligned to maximize the impact following a user-centred approach. During the 2019–2020 academic year, a number of student projects have been running at Aalto University and the Esade Business School aimed to solve the challenges of the project.

The ATTTRACT project has been all about gathering great ideas from students and putting them into practice. The goal has been to put a significant scale-up of activities from Phase 1. In January 2020, the HDF hosted a two-day workshop that brought together the ATTTRACT Programme Consortium, representatives from the research institutions that either participated in the ATTTRACT Phase 1 Pilot or have expressed interest in participating in future Design Factory-type activities and were happy to share experiences and ideas. In a series of workshops, attendees discussed how other current courses on Design and sustainability could be aligned to maximize the impact following a user-centred approach. During the 2019–2020 academic year, a number of student projects have been running at Aalto University and the Esade Business School aimed to solve the challenges of the project.

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**Eero Prittinen** Electrical Engineering Master's student

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ME310

The ME310 Aalto Global Innovation Program is a product-service development course that is part of the SUGAR network, the world’s largest innovation network. SUGAR unites academic institutions across the globe with the aim of facilitating technology transfer and commercialization. The SUGAR network emphasizes transdisciplinary and cross-cultural design through real-world corporate projects. ME310 Aalto & the SUGAR network share a pedagogy originating from Stanford University.

This year, ME310 Aalto partnered for the first time with Trinity College Dublin, the world’s oldest continuously operating university, and is one of the number of SUGAR network. The collaboration project was designed in collaboration with Enable Ireland, an Irish charity that supports people with disabilities. The project was specially funded and supported by Enable Ireland. In addition, ME310 Aalto also collaborated with Porto Design Factory on two projects. Sponsoring companies were Konecranes from Finland and Lipor from Portugal.

ME310 online global reviews:

The lockdown hit the ME310 course in the middle of the prototyping and user-testing stages of the course. The weekly student progress review meetings of the course faced a transformation the same as everything and everybody during the pandemic. ME310 has global participants and normally, each participating university holds weekly/biweekly meetings with their own teaching teams.

Now that everyone moved online, we joined for global reviews instead. The teaching team really LOVED how it all went and how the weekly team meetings were a success across the whole team. A great experience we are not going to forget. We want to think if we can keep it after the current times.

ME310 Teaching Staff

Learning & Education

ME310 Sugar Projects in Aalto University 2019/2020

Enable Ireland

Konecranes

Lipor

Creating a global innovation network for students with disabilities

Learning & Education
Aaltonaut courses underwent quite a few changes in 2018/2019. The Aaltonaut Research Project course, which serves as a platform for completing the Bachelor’s thesis in English, was integrated into the English Bachelor’s programme in SCI. Thanks to the efforts of Tuomas Paloposki and Maurice Forget, it is now possible to complete a Bachelor’s thesis in English at all Aalto schools. The course ran for the last time during spring 2020. The Product Sustainability course was included in the EIT-AMIS M. programme of optional courses, resulting in the number of participants exceeding 50 for the first time. Product Sustainability, Device Design and ADD Basics were included as alternative ways to complete the SCI project course. Similarly, ADD Basics was offered as an alternative way to complete the CSS project course. Since then, the integrated Aaltonaut Communications course within the parallel track for the Aaltonaut courses during the winter semester in Professional Development contributed by Professor Tua Björklund and Senni Kirjavainen during the spring semester. Aalto students redesigned Aalto learning experiences using service development tools. Moving forward, the course is being changed to Service Design Tools for Creating Change, encouraging and equipping students to drive change at Aalto University. Aaltonaut summer courses were not offered in 2020 due to reduced demand and restrictions on on-campus learning caused by the pandemic.

A course within Aaltonaut:

### Better Learning Experiences Using Aaltonaut service design tools for redesigning Aalto learning experiences

Learning experiences are at the heart of Aalto University and Aalto Design Factory (ADF). That is why the teaching staff decided to redesign the Bachelor’s level course, focusing on using service design tools and methods to redesign the Aalto learning experiences. The course is a part of the Aaltonaut product development minor programme, welcoming non-Aaltonaut students as well.

This year, the students began by mapping the skills required in their future careers, i.e. those skills that are important to them individually and how those skills can be acquired. They then progressed to collecting user knowledge on existing and ideal learning experiences. Through interviews, observations, prototyping and the creation of service paths and blueprints, the students generated a variety of ideas that could improve experiences at Aalto University.

One concept under the teaching staff’s microscope was aimed at graduating design students, who have an opportunity to showcase their skills to possible employers at the end of their degree programme, while another concept focused on substituting classical exams with collaborative real-life problem-solving tasks. The teaching staff received encouraging feedback for these concepts with recommendations for the further development of the course.

Aaltonaut

Aaltonaut

Learning & Education

Learning & Education

aaltonaut.fi
The Universities of the Future project aims to create educational opportunities to upskill and reskill professionals for Industry 4.0. For this purpose, the project leveraged the ADF platform to organize three co-creation events and pilot three lectures and three courses for continuing education. The co-creation events targeted academia, industry and students, and aimed to accelerate collaboration between them within the context of Education 4.0.

The first lecture on Data Analytics and Artificial Intelligence was organized for 20 students from the Board of European Students of Technology. The second and third lectures were produced in our own ADF PrintShop, covering the topics of Prototyping and Additive Manufacturing. All classes will be available online in the upcoming Virtual Factory platform.

Education

In the spring of 2020, the Universities of the Future project piloted three short courses for industry professionals and doctoral students in Aalto. For many, it was their first visit to the design factory and their first time experiencing the hands-on ways of working. The topics covered included sustainable, ethical, and user-centered approaches to product development, and were organized in collaboration with technology companies Consair, ProtoRhino, and Start North. These three courses are the coming Joint Post Graduation course 'Industry 4.0 – Digital Innovation and Transformation', organized in collaboration with our partner design factories at the Warsaw University of Technology and Polytechnic of Porto. The course will take place online from September 2020 to February 2021.

OpTI! - Technology Education Programme

OpTI! is an interdisciplinary technology education programme coordinated between Aalto University and the University of Helsinki, and funded by the Technology Industries of Finland Centennial Foundation and Swedish Cultural Foundation in Finland. The programme combines the disciplines of science, mathematics, arts, design, crafts and the humanities in creative problem-solving.

The target group consists of in-service teachers and teacher students on all levels of the educational system. After the programme, the participants can inspire their students to learn about technology and its applications. They also act as change agents of technology education in their schools. OpTI! was successfully piloted in 2019-2020 and will be continued the next academic year.

OpiT! is an interdisciplinary technology education programme coordinated between Aalto University and the University of Helsinki, and funded by the Technology Industries of Finland Centennial Foundation and Swedish Cultural Foundation in Finland. The programme combines the disciplines of science, mathematics, arts, design, crafts and the humanities in creative problem-solving.

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The European University Alliance UNITE! (University Network of Innovation, Technology and Engineering) was launched in November 2019 and is currently one of 17 alliances in Europe funded by the EU Commission (DGAC). The coordinator for UNITE! is TU Darmstadt in Germany and Aalto University is one of the seven partners, together with KTH, Sweden; INP Grenoble, France; Polito, Italy; ULisboa, Portugal and UPC Barcelona, Spain.

Our alliance focuses on developing educational tools such as online learning materials and virtual campuses, as well as designing student and staff mobility programmes. Flexible study paths and postgraduate programmes, as well as PhD levels. Together with our partners, we aim to extend our impact to both international and regional levels.

The Aalto UNITE! Team is based at the Aalto Design Factory under the coordination of Katrina Nordström and Johanna Kaila. The project is led by VP Education Petri Suomala. There are also 30 other people from different Aalto schools active in UNITE!

In February 2020, we brought all European partners together by hosting the 1st UNITE! dialogue at the Aalto University Design Factory. A total of 160 participants took part in this successful event. They loved the ADF atmosphere and the supportive and co-operative working culture. The innovativeness of the Aalto Design Factory (ADF) and Design Factory Global Network (DFGN) attracted considerable interest, especially the way how teaching, learning, research and innovation come together.

During the spring of 2020, UNITE! has been very active, offering webinars and actively contributing to discussions with the DG EAC, as well as launching the H2020 proposal with a focus on open science and innovation, led by Ruden Vicente-Saez. In June 2020, the Aalto UNITE! team also hosted an online boot camp for online teaching and learning, good pedagogical practices, flexible study paths and joint programmes. We also welcomed two new team members on board to create UNITE! from the student perspective this summer.

UNITE!

Great, great job! The meeting was very well organized and the location (Aalto Design Factory and other meeting spaces) was perfect for the work. Thanks a lot!

Dialogue Participant

The opportunity is outstanding. We need to have this clearly in mind. We can do it!

Dialogue Participant

Youth at ADF

Encouraging a secondary school student at ADF is either a coincidence nor the aftermath of ‘take your kids to work day’. In Finland, secondary school students take part in the TET programmes, hosted by schools or companies to train in the work environment.

TET trainees arrive in pairs or alone and are provided with a desk, a workstation and tools. The date of the TET is chosen by the project and should not extend beyond two weeks. Students enrol to take part in two TET sessions in minimum, ideally four to six. They always finish the TET with a swoosh. TET trainees during autumn 2019 and spring 2020.

TET trainees during autumn 2019

TET trainees during spring 2020

Pipsa & Alma took on the challenge of enhancing the well-being of ADFers over the last few weeks of September in 2019. As a result of their observational study, they came up with an exercise platform for TET trainees.

Exercise with Alma & Pipsa.

ADF Gym

Youth at ADF

Pipsa & Alma took on the challenge of enhancing the well-being of ADFers over the last few weeks of September in 2019. As a result of their observational study, they came up with an exercise platform for all days of the week to enhance the work environment at a break and then work. The idea is to be a platform that is available at ADF Gym and TET trainees are taken to the ADF Gym and TET trainees are taken for a week. The team consisted of 20 people, 3 training sessions cancelled due to COVID-19.
This year, every agenda changed to best fit the conditions of Covid-19. Teaching at the Aalto Design Factory (ADF), working on projects at the workshops and, most importantly, hugging became impossible for a while. Typically, ADF courses host weekly student progress reviews, along with meetings among the students themselves. The changes were made to minimize contact between people and slow down the spread of the virus. However, according to feedback and course staff reports, the changes ended up being the very thing that brought people together in unexpected combinations.

Adapting to pandemic circumstances brought on positive changes, such as increasing efficiency in communication, learning from each other as a team of multidisciplinary and multicultural teaching staff, and the motivation to keep things this way during normal times.

Prototyping at Home
With the hands-on courses comes a great necessity to provide ground and materials. The pandemic hit the students in this same crucial stage of the product development processes. Students who needed facilities and materials were enabled by staff to list their required materials to pick them up from the factory.

We miss the energy and feedback from a live audience, but we also learned a lot from trying different forms of remote teaching and different platforms to do it with.

Tua Björklund
Professor of Practice

Adapting to COVID19
The Aalto Design Factory is not only one node of a global network of design factories, but a platform for ideas, values, and passion. The following pages provide an introduction to the Design Factory Global Network (DFGN) and its activities across the world. The passion, ideas, and values behind the Aalto Design Factory have spread and become 29 more design factories on five different continents. Together, we are changing the concepts known as education and learning.

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The Design Factory Global Network (DFGN) consists of innovation hubs at different universities and research institutions, spanning from North America to Oceania. Shared values and practices enable us to collaborate across time zones and cultures despite differences in governance and setup. Design factories are experimentation platforms and it is through experimentation that our network progresses towards its shared goal: to create change in the world of education and learning.

Highlights

In the past year, some of the highlights of the DFGN include the Technovation Hub becoming the 30th design factory, three more design factories joining the network: Shenkar Design Factory of Tel Aviv, Israel; Technovation Hub of Leuven, Belgium; Design Factory London of London, UK; openings of HAMK DF along with Sandbox and organization of the first virtual DFGN Community Day.

One of the ways that the DFGN team supports new and existing design factories is through dedicated bootcamps. Spanning from one day to one week, the bootcamps provide opportunities for DF staff and friends to immerse themselves in the what, why and how of their design factory.

In September, members of the DFGN team were invited to customize and facilitate a series of workshops in the Ghent Design Factory (GDF), aimed at mapping out their next steps and future. Two days were set aside for a strategy workshop with representatives from GDF, Ghent University and other stakeholders in the greater community. In addition, Ghent’s Ministry of Makers hosted two open lectures held by the DFGN team: ‘Design thinking in education’ and ‘Industry collaboration’.
Every year, representatives from each design factory get together for the International Design Factory Week (IDFW). The idea is for the network members to learn from each other’s best practices and failures, plan for future collaboration and make the overall strategic decisions for the DFGN.

Each year, IDFW is hosted by a different design factory and the 2019 edition was organized by the Nexus Design Factory at Thomas Jefferson University in Philadelphia, U.S.

October 2019: Philadelphia, U.S.

International Design Factory Week

Networks, in the end, aren’t about universities and places – they are about people. The leadership at Thomas Jefferson University was convinced of the value of participation in the network by meeting the DF representatives and it was really valuable to make connections between other DFs and the people here at Jefferson building programmes and doing valuable research.

Tod Corlett
Director of Industrial Design Programs
Thomas Jefferson University

November 2019: Stuttgart, Germany

Arena 2036

AREN2036 stands for Active Research Environment for the Next Generation of Automobiles and is a research platform for future mobility and production. It is funded by the German Initiative Research Campus – Public-Private Partnerships for Innovations. DFGN’s involvement originates in a research collaborative with Swinburne University’s Factory of the Future.

Staff from Design Factory Melbourne, Auto Design Factory and IdeaSquare@CERN teamed up to host a 48-hour hackathon together with the University of Stuttgart and Let Us start!, a start-up programme for students. The goal was to kick-start the student engagement in ARENA2036, laying the foundation for student-industry collaboration by allowing both parties to experience it firsthand.

Students, experts and industry partners were mixed up and put in separate teams to solve eight different challenges provided by the ARENA2036 partners, including names like Daimler and DXC Technology. The teams presented their ideas with topics ranging from creating a piloting service for vehicles and co-creating mobility rules, to rethinking the.DOM of cars, which has remained the same for years.
TED University was founded in 2012 by the Turkish Education Association (TED). In early November, they hosted creative experts from England, Finland, Israel and Turkey for the three-day-long ‘Modelling for a creative hub workshop’. The university wants to develop a creative hub for innovation and collaboration and the DFGN was asked to facilitate a session on governance and decision-making practices. Other topics included programme development and service design, business model development and financial sustainability and networking and community building.

November 2019: Ankara, Turkey

Workshop with the Turkish Education Association

The year started with a double celebration for the DFGN team at Aalto University – the home institution of the first design factory – the Technovation Hub from KU Leuven signed a contract making them the 30th design factory in the Design Factory Global Network! Back in 2010, the day after its opening festivities, Aalto University signed its first strategic partnership agreement with Tongji University of Shanghai, China. Part of this collaboration was the idea to establish the Aalto-Tongji Design Factory in Shanghai, the first design factory abroad. Unbeknownst to those involved at the time, this sparked the expansion abroad and, ultimately, several years later, to the Design Factory Global Network.
One of the projects that emerged from the IDFW 2019 was the idea of a DF Day to be organized at all design factories on the same day worldwide. Due to mobility restrictions and most universities moving their lessons online, the DFGN team decided to pivot the idea and organize a fully digital event called the virtual DFGN Community Day. The programme offered something for everyone, ranging from a virtual pub quiz with the DF New Zealand (GMT+12) to a co-creation workshop organized by the New York City DF (GMT-4).

The DFGN team itself organized a ‘chit chat’ session, where people could drop by and talk about things more or less related to the design factory way of thinking and working – a mini-experiment that has now turned into weekly hangout sessions on Zoom.

May 2020: Online
Virtual DFGN Community Day

<table>
<thead>
<tr>
<th>Participants</th>
<th>Programme hours</th>
<th>Sessions</th>
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<td>300+</td>
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Design Factory Global Network

Design Factory Global Network
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Impactful scientific research at Aalto Design Factory is growing steadily in terms of both visibility and reputation. But behind each article with a specific focus is a network of researchers, designers, and academics working together towards a shared goal: to provide a platform for designers to push the boundaries of their skills through education and engineering research. This section will look into this year’s research output and give a glimpse of the Design Factory’s ongoing efforts to build upon the legacy of the academic community to create societal impact.
When the pandemic and lockdown measures hit Finland in March, entrepreneurs did not stand idle. The DesignBites research project changed plans and documented over 100 new products, services and sales solutions created by packaged food and beverage entrepreneurs in response to the crisis during the spring. Distilleries switched to hand sanitizer to help dwindling supplies and their own sales, beer, chocolate and coffee were branded and bundled for self-quarantining, while local ventures banded together to share information on building websites, putting each other’s products on their shelves and more. As a result, revenue picked up and new lessons were learned, forging horizons for businesses to move forward. Entrepreneurs really can make lemonade when life gives us lemons!

Agile corona pivots in the food industry

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Media Coverage:
2. Björklund & Koskinen Ylen Aamu (29.04.2020): Poikkeustila on ruokkinut yrittäjien luovuutta - "Hämmentävällä tavalla onnenpotku"

This year our research community kept exploring design, development, and innovation-related issues with local and industrial partners with an additional challenge: the pandemic! While the Covid-19 pandemic limited our physical encounters with colleagues, students, and fellow researchers, it also enabled us to think outside of the box in our data collection and experimentation.

It has been a fruitful year in terms of research at ADF where over 200 interviews with designers, design researchers, and business owners were conducted, more than 100 different organizations became our collaborators, and 43 papers and reports were published in leading journals and conferences. We are happy to share our output with you and looking forward to a new academic year full of co-creation, design, and research.

Rundown of the year

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It has been a fruitful year in terms of research at ADF where over 200 interviews with designers, design researchers, and business owners were conducted, more than 100 different organizations became our collaborators, and 43 papers and reports were published in leading journals and conferences. We are happy to share our output with you and looking forward to a new academic year full of co-creation, design, and research.

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This year, we took a close look at our own creative, organizational and informal social networks. Using a social network analysis, we identified patterns in how these connections shape the network. We found three frequent forms of brokerage in our community, helping to connect would-be-collaborators. Firstly, creative brokerage was strongly connected to multifunctional and multidisciplinary community members, who linked together different functional and disciplinary social groups, helping to align different backgrounds of potential collaborators. Secondly, managers leverage broad information from the organizational networks in which they are centred to initiate new creative relationships. This, however, does require making the switch from coordinating to hands-on doing and management connections don’t automatically boost creative connections. Thirdly, extensive informal networks and strong personal connections were found to facilitate information distribution within the community, thereby increasing creative linkages between individuals. They increase cohesiveness and tend to group based on similarity in demographics and roles, so they need to be complemented by other forms of connections to ensure diversity.

**Networks of ADF:**
**striving for a resilient community**

**Ideation mechanisms:**

Eighty-six well-documented creativity methods actually consist of only 25 mechanisms, which can be combined in almost infinite number of ways to unleash your creativity. We found that all creativity methods actually consist of various elements combined together in a specific way. For example, when brainstorming for the given duration, a facilitator helps the team ideate by jotting down ideas and calling them out, aiming for a high number of ideas by suspending judgment and building on each other’s ideas. Using random words as stimulation for individual or team ideation helps make associations between the words and new ideas. The ideas are then written down.

We are shifting research from examining ideation methods to examining these elements and mechanisms in order to form an understanding of how they work and support them in different teams and projects. We recommend that you change up your usual ideation method by adding or switching mechanisms. What if you used a physical ideation approach instead of writing down ideas or what if you added an idea classification or a stimulus, such as ideation cards, to your current method? The mechanisms allow you and your team to create your own method.

Based on over a hundred interviews with designers and managers in different organizations and countries, we’ve identified three typical pitfalls in bringing design into organizations – and how to avoid them:

1. Boxing in design with ineffective cross-functional collaboration. One of the key values the design can bring to organizations is the asking of new questions, but these don’t necessarily follow function and unit lines. You need to create a culture of collaboration in order to explore new ideas and low-threshold opportunities for joint efforts.

2. Applying design thinking only. A lack of knowledge is rarely the main culprit in lingering change. Training needs to be accompanied by action and beginners in design thinking need design experts in order to benefit from new ways of working.

3. Fragmented design efforts. Be inclusive and welcome different flavours and variations of design, creating a community of designers and design-minded allies. In addition to preaching design, speak in languages – connect design to the bigger picture of your organization, sharing showcases on how design can add value to things that already matter for the people in the organization.

Bringing design to technology organizations:
Learn more in:

Empathic Accuracy
Empathizing with users is believed to result in better product development. However, no one has ever measured empathy. How well do we really understand the user? This is why empathic engineers – engineering, design, psychology, and neuroscience team members – took on this challenge. In 2019, they measured the empathic accuracy of designers. It turns out we understand only 30-50% of the users’ thoughts and feelings. If the empathic accuracy is calculated only for the user’s product or design-related thoughts and feelings, the accuracy is improved to 45-65%. This is better, but to improve this situation, the team is now collecting physiological and brain data in order to develop an understanding of how to improve this understanding. (Funded by Teknologiateollisuuden 100-vuotissäätiö & Aatos & Jane Erkko Foundation.)

Learn more in:
Societal factors in scoping innovation projects

Experimenting with problem-based teaching techniques to enhance student perspectives is a core value at the Aalto Design Factory. In the autumn of 2019, we designed a mini-series of workshops and exercises for Mechanical Engineering in Society, a Master's level compulsory course for all students in the Mechanical Engineering programme. Not only did this cover course redesign efforts, but we also began to track the impact of our additions and found statistically significant improvements in taking sustainability, ethics and collaboration into consideration in scoping innovation projects later in the course. While some environmental factors were considered by all student groups from the get-go, the students were able to integrate a wider set of economic, safety, legal and social responsibility issues, among others, in project proposals. We shared the results with the international community of engineering education scholars and won the Best Teaching Paper Award from the Entrepreneurship and Engineering Innovation division of the American Society for Engineering Education. Congrats, Sine, Senni and Tua!


Design Factories as hubs for co-creation

Collaboration through innovation is central to the discussion of how today’s universities can respond to new interdisciplinary challenges, competitive environments and stakeholder complexity. Innovation hubs like the Aalto Design Factory represent a dynamic example of the public sectors including higher education, responding to the need for new methods and perspectives that foster desired intra-institutional change.

We interviewed staff and students from 17 design factories in the global network, identifying six recurring enablers of change and growth strategy through design-based experimentation. Our findings show how institutional policy of ‘hanging flexible’ (1), securing a physical cross-disciplinary and multi-purpose collaborative space (2) to which the access is kept low-threshold (3), having upper-level support (4) and building a community (5) are all vital in ensuring design-driven experimentation that contributes to the effectiveness of higher education.

Co-creating products, sharing information and insights and aiding in product testing are among the most common ways for Finnish food and beverage SMEs to collaborate with other ventures, food and non-food alike. Collaboration examples range from co-designing products where ingredients from both partners are used and utilizing the waste from one venture’s production process in the product of the other while sharing tips on the best packages.

Moreover, financial motivations are rarely behind the partnerships, rather more solidary motivations like belonging to the same community, wanting to support other small ventures or merely having fun together. There are also noteworthy differences between collaborations in different fields in the packaged food industry, such as the extremely collaborative and open craft beer industry and the more closed new protein source industries.

DesignBites - collaboration in designing new products

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One of the chapters examines involving stakeholders in product development based on research and experiences at Outotec. Co-creation is not only about collaboration, but about combining the expertise and experiences of organizations to actively develop ideas and create solutions that would not be possible without the input of different stakeholders. One way to do this is by organizing co-creation workshops together with customers. At Outotec, we identified three elements that make a good co-creation workshop. Firstly, an active link between the organizations played an essential role in implementing the workshops. Secondly, personal relationships enabled mutual trust, helped identify the right partners for co-creation and ultimately got the right people in the customer organization to participate in the collaboration. Secondly, a champion in the customer organization was needed to push collaboration further at their end. Without a proactive attitude, the workshops would not have been possible. Thirdly, customer needs and co-created future visions should serve as the starting point for successful co-creation. Setting clear goals at which the customer is ‘heard’ is essential for the success of co-creation.

The co-creation workshops have had a positive impact on our case company on multiple levels. The most important factor for successful co-creation efforts, connecting customers with solutions and companies who have collaborated with customers who helped form a critical mass of potential development ideas, which creates immense potential for future development efforts. Connections, which create value in multiple ways, are especially strong in companies with solutions and companies with solutions who helped form a critical mass of potential development ideas, which creates immense potential for future development efforts. Connections, which create value in multiple ways, are especially strong in companies with.

For tips on implementing co-creation and eight more cases on advancing design and innovation: designfactory.aalto.fi/research/


For the online version: Research Wing - Community
Technology education

The technology education research field has played a central role in the recent public discussion on ways to strengthen the national level of technological competence. Professor of Practice Maria Clavert was featured in the Helsingin Sanomat Special Technology Issue (10/2019), promoting the interdisciplinary nature of technology education. Joining forces with 12 leading professors and experts in the field, Clavert co-authored an opinion piece (Helsingin Sanomat 24.11.2019), stating that the innovative problem-solving processes of the technology education should be integrated into all school subjects. While the discussion continues in the media, initial research findings show the benefits of co-teaching in educating future engineers.

Media Coverage:

The Nordic STEM initiative

The Nordic STEM initiative is an Erasmus+ Strategic Partnership on the future of engineering education. The consortium of leading technical universities in each Nordic country works together with NORDTEK, a network of rectors and deans of the technical universities in the Nordic and Baltic countries, and the Association of Nordic Engineers (ANV). The collaborative development areas of the project range from increasing the attractiveness of engineering education among adolescents to mapping engineering education involvement in lifelong learning.

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And that’s a wrap!

This publication was created with the love and passion of our community. Our greatest thanks and biggest hugs go to everyone who has been a part of the ADF spirit.