Critical Reflection 2021
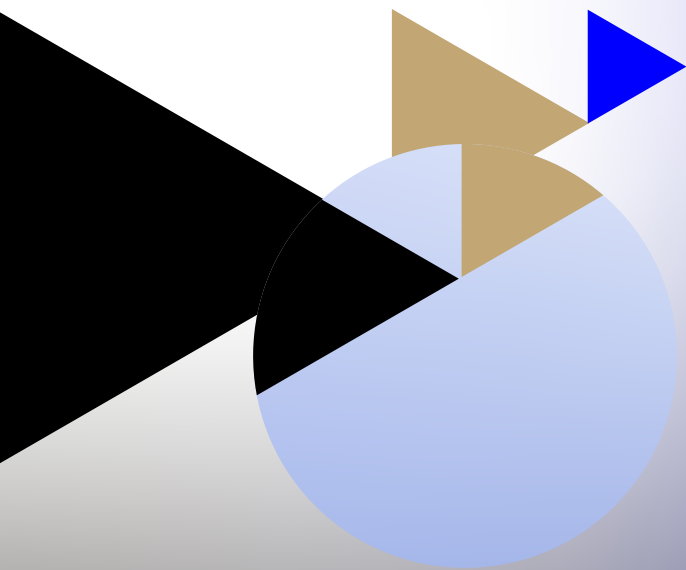# Centre for Applied Research Faculty of Digital Media and Creative Industries

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Preface

We are proud to present the Critical Reflection of the Centre for Applied Research of the Faculty of Digital Media and Creative Industries (FDMCI) of the Amsterdam University of Applied Sciences (AUAS) - a university of applied sciences that aims to be a knowledge institution in which teaching and research are closely related, intertwined and reinforce each other. Where students and employees develop continuously and the results from the centres for applied research are used both inside and outside its walls to professionalize and equip people and organizations. An institution that has recently become acquainted with broadly embracing three greatly important issues: sustainability, diversity and inclusion and responsible digitization, and thus looks closely at its social impact from a guiding value perspective.

FDMCI is fully committed to contributing to these developments. Our realm of work covers the fields of fashion, communication, (digital) content creation, design and information technology. We train approximately 10,000 students who we then allow to experience both professional and personal development. Moreover, we are strongly connected to the city of Amsterdam, including the Knowledge Mile, Campus Amsterdam and the Digital Society School. Our Centre for Applied Research comprises seven core research groups, three special research groups, one AUAS-wide research group and since 2021, a professor of practice, Marleen Stikker. We are also the lead secretary of two Centres of Expertise: Creative Innovation and Applied Artificial Intelligence, and of the ARIAS network, a platform for research in art and science. We are working on the further development of our sector with our partners at home and abroad. And with our design-oriented attitude, current knowledge and a large collection of tools and methods, we also contribute to societal transitions.

The contribution we make is characterized by the fact that we emphasize increasing the action perspective of individuals and collectives. We take the view that the top-down control and management reflex of many companies and governments needs a strong rebuttal. While we embrace technology and its possibilities, we are averse to techno-solutionism and the quick fixes that are often expected of it, and we dig even deeper to enable people to (co-) shape their own world and experiences. We therefore always look for a combination of technology, design and humanities such as philosophy, media and communication and work together in broadly composed consortia. This self-chosen position at the intersection of disciplines and organizations has proven to be productive but also precarious, and forces us to reflect continuously and to regularly reinvent ourselves.

The past period has also been characterized by a large number of personnel changes. Professors retired and unfortunately one professor passed away much too soon. New educational programme managers have also been appointed, the dean and the head of operational management have changed and a research policy advisor has been added. One CoE was rejuvenated and another CoE was completely redeveloped, during the corona pandemic, which took a toll on the energy and resilience of our students, employees and organization. These circumstances naturally have had an impact on the research and further development of the Centre for Applied Research. It is gratifying to see that there is once again a very strong team of professors and that the quality and quantity of the research output has remained at the same level.

In 2020, the Fundament ('Faculty Foundation') is jointly developed with the educational programme managers and lecturers, which will form the basis for further development in the coming years. The energy and ambitions are great. There is a lot of collaboration and this is bearing fruit in joint appointments, research projects and educational units. In the coming period, the mutual agendas will be aligned even more closely, which will bring the goal of further reciprocal integration of education and research closer.

We look forward to the dialogue about our ambitions and results expressed in this document and the annexes. Please enjoy reading this Critical Reflection!

Frank Kresin
Dean Faculty of Digital Media and Creative Industries (FDMCI)

Introduction and summary
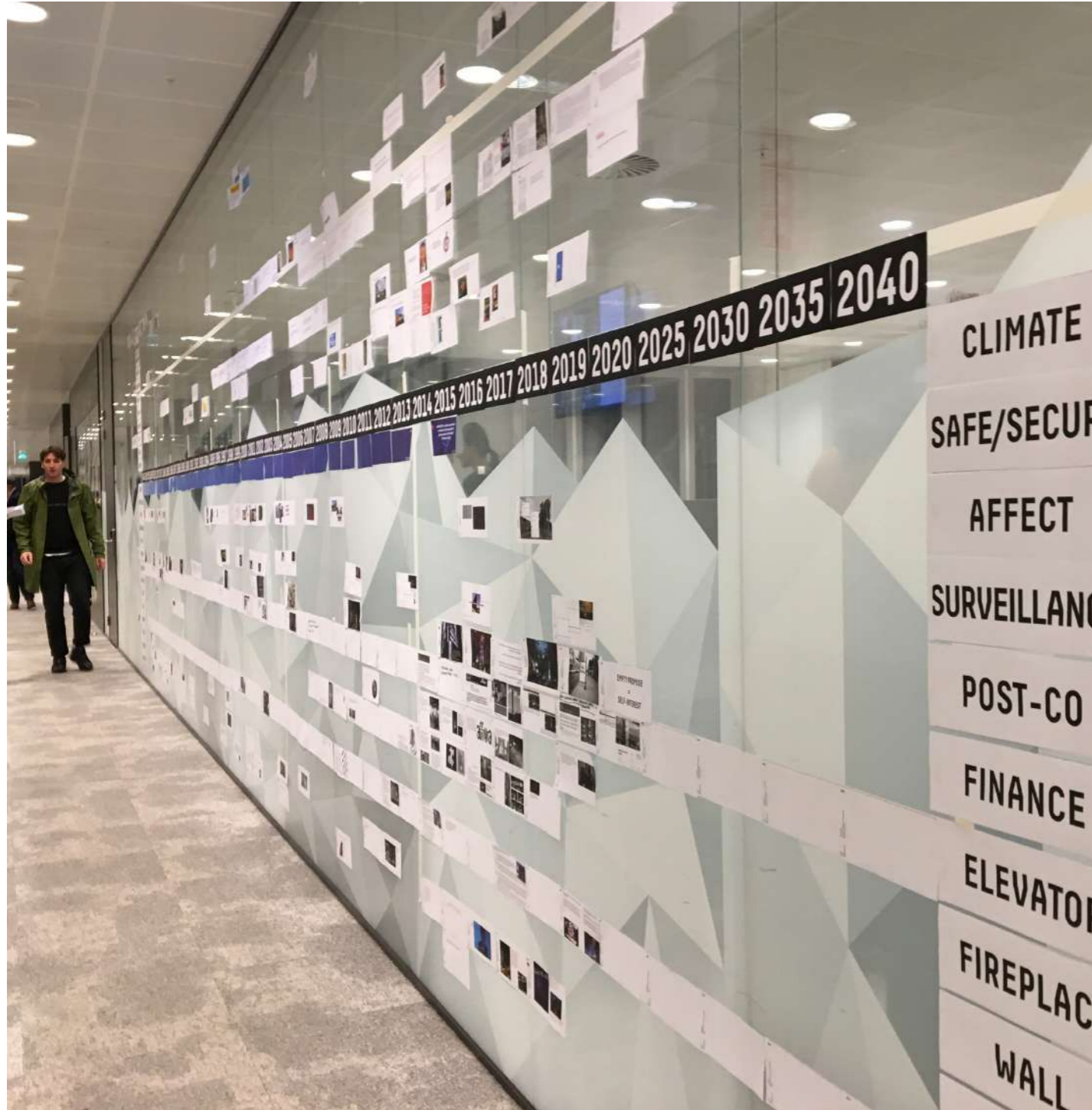
Mission and vision

The Centre for Applied Research of the Faculty of Digital Media and Creative Industries (FDMCI) focuses on the field of activity of the creative industry and the social impact of design, (digital) media and new technologies. We explore the development of digital media and new technologies and their significance for society, thereby contributing to innovation in professional practice and to the training of (future) professionals in the creative industry. The AUAS-wide themes of sustainability, diversity and inclusion and responsible digitization are important starting points. Research topics range from the application of blockchain and the internet of things for energy communities and the use of AI in relation to media and democracy, to the development of new ways of storytelling with virtual reality or the design of toys for therapy: digital tools that can be used in rehabilitation processes.

Within the creative industry we focus on the domains of media, technology and design. This is a special field, because developments in these fields play an important role in the digital transition of society. Many of the new products and services in these sectors can be understood as 'breakthrough technologies' and 'key methodologies', that due to their scope can profoundly change society[1]. This offers opportunities for a more socially and environmentally sustainable society, but also brings problems such as inequality and exclusion, strengthened monopolies and the depletion of natural resources.

The digital transition is a complex development, in which "many established parties and institutions are forced to reinvent themselves.[2]" Many different stakeholders are involved with different competences, motivations, interests and value patterns. New consumption patterns and cultural practices emerge, new relationships, and shifts in power relations. That in turn requires new research methods, professional roles, revenue models, conceptual frameworks and institutional forms. The creative industry can play a role in this process. She has (design) methods and approaches that help to provide insight into and search for solutions for the opportunities and problems that new technologies and media entail. Participatory methodologies from the creative industry can also be used to connect top-down with bottom-up in the way the digital transition takes shape.

All this requires a holistic and critical attitude in the design, development, research and application of digital technologies and media. The rapid advance of digital technology in society requires an exploratory as well as a critical and imaginative agenda-setting approach. It is also important to develop new methods with which complex tasks can be mapped out in order to address them with various stakeholders. In addition, there is a strong need for methods to empirically test the functioning of digital media. Do they deliver on the promises and claims? And how can insights from research be converted into concrete products and services, tools and practices that increase the action perspective of citizens and reduce the pressure on the planet? The Centre for Applied Research wants to play an active role in this. We do not want to map the impact on society afterwards, but be actively involved in the development of, reflection on and imagination of new (digital) technologies.

These developments also require (future) professionals in the creative industry who not only have knowledge of the latest developments in design, (digital) media and technology, but who can also put the possible impact and associated ethical issues on the agenda. It is important that they have imagination and design methodologies in which underlying values and divergent, sometimes conflicting interests of different stakeholders can be explicitly articulated. By collaborating in our research with partners from society and the creative industry, and by always connecting our research with education, we contribute to the development of (future) professionals who will shape the digital transition of society in a responsible way.

The most important developments of the past six years

In the period 2015-2020, the Centre for Applied Research went through a number of major developments. The faculty has grown from 8,000 to 10,500 students and a number of new research groups have been added. Professors have retired or have been given another position within the AUAS, and there has been a new dean since 2019. This means that compared to the previous external visitation, there is now an almost entirely new group of professors, which is now much more diverse than six years ago. An important step forward has been made, especially in the field of gender diversity: the number of female core professors has increased from zero to four (out of a total of seven core professors).

This means that the Centre for Applied Research is in full development, with professors who have started in the past two or three years and are redesigning their research group. In addition, a joint vision on research is increasingly emerging, with much more attention for research by design and an approach that focuses on societal impact, often from a more-than-human perspective: our research does not revolve around people as individual consumers or end users of products

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1 Raad voor de leefomgeving en infrastructuur, (2015). Verkenning technologische innovaties in de leefomgeving. Den Haag: Raad voor de leefomgeving en infrastructuur; Ministerie van Infrastructuur en Milieu, 2014. Smart Cities. Naar een 'smart urban delta'.

2 Stimuleringsfonds Creatieve Industrie, Beleidsplan 2017-2020

or services, but sees people as being part of society and of an ecosystem in the broadest sense of the word.

This vision is in line with a broader development, deployed both within the AUAS and in national and international research agendas, in which attention is being focussed on the social impact of new technologies, as well as to the impact of research in practice and education. The new vision of the Reiner Committee's Centres of Expertise (CoEs) confirms this development and has also led to a reassessment of the CoEs at the AUAS. They now increasingly play a role as a connector and agenda setter, and a role in organizing the impact of the research.[3]

The practice-based research at the faculty has increasingly acquired its own identity. The aim of our practice-based research is to gain new knowledge and insights in the learning communities of researchers, professionals and students, and/or to further stimulate professional and social discussions. This requires a changing role for the researchers. In addition to researchers, they are increasingly becoming 'curators' of communities of practice, which organize parties from the field, lecturer-researchers and students in learning communities. As a result, research projects are becoming more complex, with diverse stakeholders and researchers and professionals from different disciplines all working on a common issue.

This is also reflected in the research output, which no longer focuses primarily on academic papers or peer-reviewed scientific journals. In addition, professors contribute to the development of professional practice and social discussions with demonstrators and exemplars (prototypes that set an example for the further development of specific products or services), exhibitions, debate series, design guidelines, video documentaries, white papers and artistic interventions in the public domain.

Impact in education has also become an increasingly important theme. This takes shape through the involvement of researchers in curriculum development and of students in research projects, especially in masters, minors and graduation projects, and through trajectories for the professionalization of teachers, for example in the PhD programme.

What have we achieved in recent years?
After their visits in 2015 and 2018, the Meurs committee (2015) and the Schreiber committee (2018) gave the Centre for Applied Research a number of points for attention. Meurs spoke of a 'strong research programme', but there was still a lack of connection between research groups on content and methodology, and the development of domain-specific performance indicators. Schreiber also noted that the research was 'good across the board' and recommended involving the professional field more emphatically, making the vision of research by design more explicit and increasing our visibility. Both committees drew attention to improving the connection between education and research. In recent years, we have done our best to maintain the high level of research and impact identified by the committees, and to address the points for attention. We are therefore especially proud of:

- Our way of conducting research, which focuses on impact in education, the professional field and society, resulting in long-term collaborations with partners such as healthcare institutions, publishers, heritage institutions, the municipality of Amsterdam and the involvement of various agencies from the creative industry in that research.

- The impact on society and the professional field, which we generate by identifying possible applications of and social discussions about new technologies such as blockchain, virtual reality, platformization and AI at an early stage, and the agenda-setting role we play in this regard. This also includes the many networks and events that have been established in recent years, such as the internationally-leading networks and events around blockchain in the MoneyLab series, or the leading role of the Centre for Applied Research in the network of the Media Architecture Biennale.

- The improved cooperation with education. At a strategic level, this takes shape through the newly -established faculty strategy days of educational programme managers and lecturers. On a structural level, through the introduction of the 'Learning Communities', in which lecturers and researchers from research groups and educational programmes organize themselves around a number of themes, and through our close involvement in the establishment of the Digital Design master and our contribution to the establishment of the Digital Society School. And at an operational level through the contributions we make in the form of minors, specializations, graduation projects and new forms of connecting education and research, such as the Datastudio.

- The improved collaboration between research groups, resulting in joint research applications and projects, often also in the context of the programming of the CoEs.

- Our obtained grants for research projects, in collaboration with the creative industry, and national and international knowledge institutions, highlighted by several Regional Action and Attention for Knowledge Innovation (RAAK) grants, our participation in the H2020 project D-CoDE, the successful Comenius Leadership Fellow AI4Students of Nanda Piersma and the award of 500 thousand for a collaboration between the Centre for Applied Research and the Faculty of Technology in the ZonMW COVID-19 Programme.

- Our 'knowledge yield': we continued to publish in scientific and professional journals. In addition, we have delivered various prototypes, toolkits and thinking models that are applied in the field and in education.

What do we see as our most important tasks?
Despite all these great results, we realize that a number of points deserve extra attention in the coming years:

- The increasing emphasis on societal impact and the impact on practice-based research lead to larger and more complex projects and demand new roles for researchers and lecturers, new methods and new ways of collaborating with education, the professional field and CoEs. Questions arise such as: How do you interpret the role of 'curator' of knowledge communities? How do you work well together in multidisciplinary research consortia and guarantee the academic independence of researchers in processes of co-creation with stakeholders as research partners? What does all this mean for the quality of applied research? We have already worked hard on this in recent years, and we want to further shape the process of learning from each other in this area in the coming years, in collaboration with the CoEs and the new AUAS-wide re-

search group Doorwerking Praktijkgericht Onderzoek (Impact of practice-based research).

- In this complex context, research groups have a large and broad assignment: to contribute to scientific knowledge development and to participate in national and international leading research projects, to contribute to innovation in professional practice, to play a role in education and curriculum development and to be involved in the social debate. At the same time, the absolute size of the research groups is limited, with basic funding of 2.9 FTE per research group. The same applies to the relative size of the Centre for Applied Research (37 fte in research capacity, including 7.5 fte for professors, out of a total of 660 fte in the faculty and 10,500 students). How to deal with this and set priorities? And how can we improve the structures and support at the level of the Centre for Applied Research and the CoEs, for example to work more efficiently in the field of project development, communication and implementation?

- An opportunity lies in the development of the third cycle in higher professional education, and the professional doctorate trajectories that are set up therein. FDMCI is participating in the Art + Creative pilot. It is precisely from the research by design and the

connection between the arts and the creative sector that there are opportunities for the Centre for Applied Research to play a role in this. This can be linked to the broader desire to organize the organization of PhDs and master's programs in a graduate school form within the AUAS, in order to provide more coherence and structure for the collaboration between education and research at NLQF/EQF levels 7 and 8.

- The connection between education and research has been structurally improved in recent years, but further steps can be taken here in the mutual involvement in the development of curricula and research projects, the concrete implementation thereof, and the involvement of lecturer-researchers from the educational programmes in the research and vice versa.

In this Critical Reflection we elaborate on the above points on the basis of the five standards of the Branch Protocol for Quality Assurance in Research (BKO), also the chapters of this publication. In each chapter we will always first outline our vision, then describe the developments in recent years and finally identify the points calling for attention in the coming years. We look forward to a constructive and open discussion about this with the assessment panel.

How did this reflection come about?

In the autumn of 2020 and the spring of 2021, we organized various activities to look back and ahead at our research, working methods and organization from the Centre for Applied Research.

Workshops have been organized for this evaluation around the five standards of the Sector Protocol for Quality Assurance Research (BKO), which reflect on vision, impact, organisation, quality and quality assurance. They were prepared and facilitated by the portfolio holders of these standards, duos from the Faculty Research Council: the (core) lecturers, the program manager of the Centre of Expertise for Creative Innovation, the head of operational management Centre for Applied Research and research policy advisor. They also facilitated sessions where all Centre for Applied Research employees were invited to reflect on the standards. In addition, interviews were held with educational programme managers, students and partners from the professional field about the value of our research for the professional field and society, the research world and education.

One professor (Martijn de Waal) has been appointed as author and has written the reflection based on the input collected in the various workshops, supported by research policy advisor Femke Glas, the communication advisor of the Centre for Applied Research Joyce Overklift Vaupel Kleyn and editor-in-chief Marlies Dinjens. The head of operational management at the Centre for Applied Research Wouter Groot wrote a first version for Chapter 2 (Organization), and Femke Glas made the concept for Chapter 5 (Quality assurance).

The draft version was presented to the dean, all lecturers, a number of educational programme managers, the program managers of the two Centres of Expertise associated with the Centre for Applied Research, Katinka van Vuure, head of Research and Education, and colleagues from the AUAS Research and Education department. Feedback was collected and discussed in a joint session and in individual conversations.

3   https://www.verenieginghogescholen.nl/system/knowledge_base/attachments/files/000/001/074/original/085_039_CENTERS_OF_EXPERTISE_WEB.pdf?1571832857
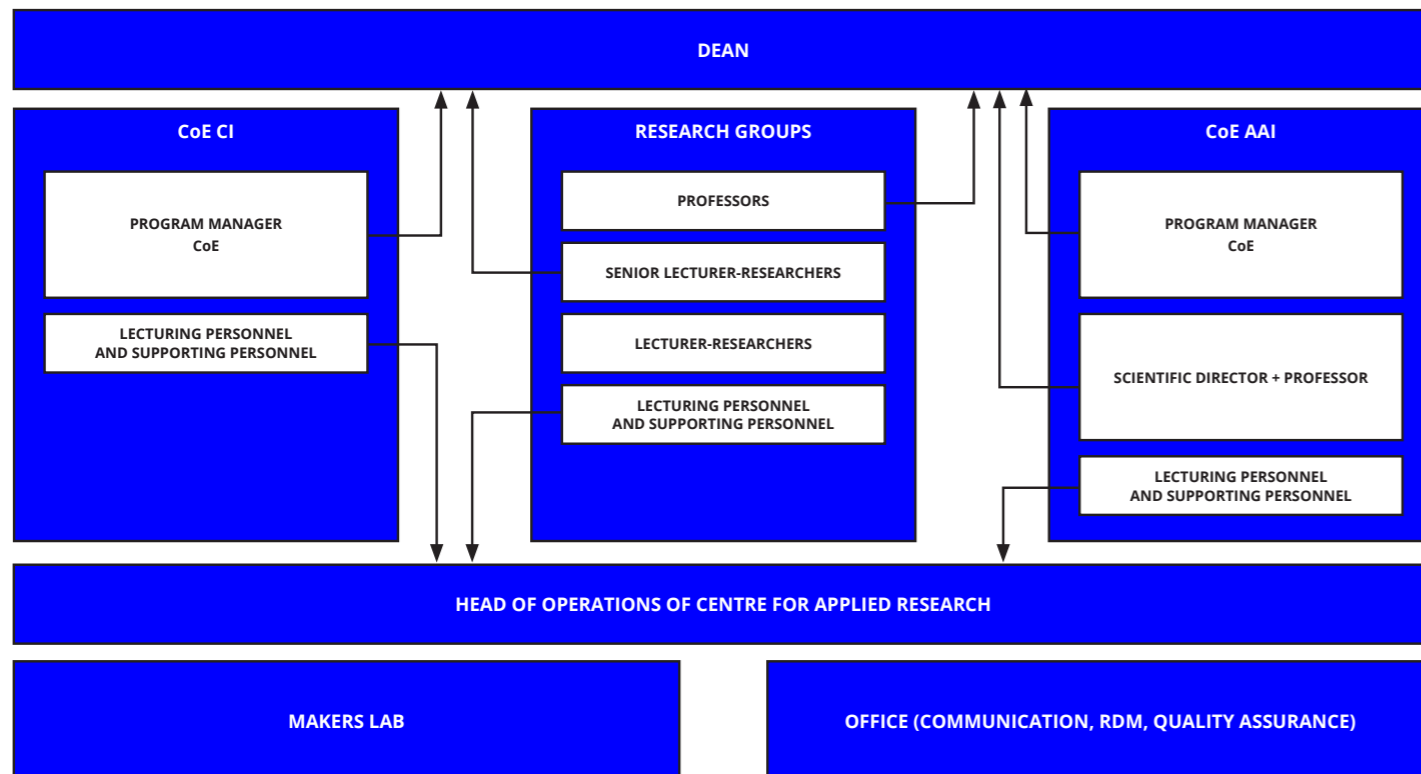
The Faculty of Digital Media and Creative Industries

The Faculty of Digital Media and Creative Industries provides education and research focused on media, communication, (digital) design, ICT and fashion. The faculty currently offers three Associate degree programs (Cyber Security, Frontend Design & Development and Software Development), five bachelor programs (AMFI-Amsterdam Fashion Institute, HBO-ICT, Communication and Multimedia Design, Communication and Creative Business) and a master (Master Digital Design). The Digital Society School offers a training program for trainees. In the period 2015-2020, the number of students grew from approximately 8,000 to 10,500.

The research takes place in seven core research groups and three professorships by special appointment, which are united in Centre for Applied Research of FDMCI. In addition, Professor of Practice Marleen Stikker is affiliated with the Centre for Applied Research, and the faculty functions as the host of the AUAS-wide research group Continued Practice-based Research. The faculty is also the lead secretary of two Centres of Expertise, which play an important role in connecting research with professional practice and education: the Centre of Expertise for Creative Innovation and the Centre of Expertise Applied Artificial Intelligence. The Centre forApplied Research hosts the Makers Lab, in which students and researchers can use various equipment such as 3D-printers.

In addition, research and education work together in six Learning Communities: Applied Artificial intelligence, Critical Making & Research through Design, Ethics, Responsible Software Development, Storytelling, Urban Interaction Design.

The faculty's formation consists of 660 FTE (December 2020), of which 49.6 FTE are appointed in the Centre for Applied Research. Of this, approximately 37 FTEs are filled by PhD students, lecturer-researchers and professors.

DEAN

CoE CI	RESEARCH GROUPS	CoE AAI
PROGRAM MANAGER CoE	PROFESSORS	PROGRAM MANAGER CoE
	SENIOR LECTURER-RESEARCHERS	
LECTURING PERSONNEL AND SUPPORTING PERSONNEL	LECTURER-RESEARCHERS	SCIENTIFIC DIRECTOR + PROFESSOR
	LECTURING PERSONNEL AND SUPPORTING PERSONNEL	LECTURING PERSONNEL AND SUPPORTING PERSONNEL

HEAD OF OPERATIONS OF CENTRE FOR APPLIED RESEARCH

MAKERS LAB

OFFICE (COMMUNICATION, RDM, QUALITY ASSURANCE)

Objective of the research
(standard 1)

Positioning

The Centre for Applied Research of the Faculty of Digital Media and Creative Industries (FDMCI) focuses on the professional field of the creative industry and the social impact of (digital) media, new technologies and design. The AUAS-wide themes of sustainability, diversity & inclusion and digitization are important perspectives in this regard. The starting point for the positioning of the Centre for Applied Research is Het Fundament ('the Foundation') of the faculty. In this document, the faculty expresses the ambition to contribute through its education and research to help prepare students and professionals for the future, developing and applying new knowledge and innovating professional practices in the creative sector.[1] Social issues are central to this. In the Centre for Applied Research, this vision is given shape by contributing through research to 'understanding, questioning and designing the social impact of digital technologies and media, with the aim of increasing people's perspectives for action and reducing the pressure on the planet.'[2]

With its contributions to research and education, the Centre for Applied Research aims to provide current and future professionals in the creative industry with a handle to contribute through their work to a democratic, inclusive and liveable society and social and ecological sustainability. In addition to conducting empirical and design research into new forms, methods and practices - and their institutional anchoring - speculative, artistic and exploratory research and technology and media criticism also play an important role. It explores new materials, media forms and technologies, stimulates the debate about the impact of technology, and imagines possible futures.

The Centre for Applied Research as a network organization
In order to achieve the objectives set out above, our research is organized in seven core research groups, focusing on the professional field and the social impact of the domains surrounding (digital) media and communication, technology and design. The research groups work together with the educational programmes, partners from the professional field and the research world and with the Centres of Expertise

(CoEs) of the AUAS. Three professorships by special appointment, an AUAS-wide professor and a professor of practice are also affiliated with the Centre for Applied Research (see page 16). The Centre for Applied Research acts as a network organization in which ever-changing coalitions of lecturer-researchers (often from different research groups and educational programmes), students and professionals organize themselves in projects and programs pertaining to the professional and social challenges of the digital transition.

The individual research groups contribute knowledge and research methods in the field of the digital transition to these coalitions. They specialize in specific impact areas, methods and design approaches around design, (digital) media and technology. For example, the research groups focus on the role of digital media and technology in the health sector, in public life, the fashion world, journalism and media or the cultural field. They also focus on the use of creative media for social change, the responsible development of new technologies, or on innovative visual methodologies with which, for example, social developments such as the debate about climate change can be mapped.

The CoEs play an important role as agenda setters and connectors. By building and connecting networks and issuing calls and associated funding, they stimulate the development of new research projects and collaborations around themes determined by their program councils. In addition, they organize thematic programs and help with dissemination and impact production. The link between the research groups and education takes shape in student projects, teacher professionalisation and curriculum development (see Chapter 2 Impact).

Centre for Applied Research and mission-driven research
The approach of the Centre for Applied Research is in line with the ambition of the AUAS to develop as a knowledge institution in which research, education and professionals work together to explore developments in society and their consequences for professional practice. It also fits in well with the mission-driven structure of national and international research agendas. Important target points for the Centre for Applied Research are the Knowledge and Innovation Agenda

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1   See FDMCI Foundation + A3 appendix / https://www.hva.nl/binaries/content/assets/faculteiten/fdmci/fdmcifundamenta3jaarplan.pdf

2   See Appendix Centre forApplied Research FDMCI Mission

'Resilience for the Creative Industry'[3] and the roadmaps Design for Change, The Humane Touch and Value Creation.[4] We contribute to the development of Key Enabling Methodologies[5] as well as to the development of social earning capacity.[6] We also connect with various NWA routes, such as Art: research and innovation in the 21st century,[7] Towards resilient societies,[8] Smart, liveable cities[9] and Value creation through responsible access to and use of big data.[10]

There is however a critical remark here.[11] Many of the current mission-driven agendas have a positivist and solutionist character, in which new technology is seen as a 'neutral' tool to arrive at solutions to problems. They focus on themes such as sustainability, safety and health. Social issues aimed at the consequences of digitization for, for example, the democratic society and associated values such as inclusiveness and equality, are discussed less. The Centre for Applied Research has the ambition to supplement existing missions and agendas with a critical and social perspective in which digital media and technologies themselves as well as the design and development methods of the creative industry are the subject of research.

State of affairs

The evaluation committees Meurs (2015) and Schreiber (2018) gave the Centre for Applied Research a number of points for attention. Meurs spoke of a 'very strong research programme', but found that there was a lack of connection between research groups in terms of content and methodology, and of domain-specific performance indicators (see Chapter 2 Impact). The Schreiber Committee also found that the research was 'good across the board', but found the central theme of 'citizen empowerment' too limited at the time. The role of the CoE was also still unclear and the Committee found the Contexts of Research - model used to be insufficiently elaborated.

Recent developments in the research groups

Due to the retirement and new roles of former professors within the AUAS, and an increase in the number of research groups, four new professors have been appointed since the internal evaluation in 2018 (see p.16). In addition, two new professorships by special appointment have been affiliated with the Centre for Applied Research since 2020, and the faculty is secretary of the new AUAS-wide research group Doorwerking Praktijkgericht Onderzoek (Impact of Practice-based Research) and of Professor of Practice Marleen Stikker. She fulfils a new role that enables the AUAS to attract people who are a source of inspiration in the field of current and future-oriented strategic topics. As director of

the Waag and an opinion leader in the field of the digital transition and responsible design of technology for society, she will play a connecting and in-depth role in developing research at the faculty. In 2020, the Lectoratenplan (Research Groups Plan) was adjusted, in which the themes 'design' and 'storytelling' are addressed as future possibilities for new research groups, when the financial support of this is available.[12]

A point of criticism during the previous visitation round was that insufficient attention was being paid to research into technological developments. In recent years, this has been responded to with the arrival of the Responsible IT research group, the professorships by special appointment Cyber Security and Quantum Computing, the CoE Applied Artificial Intelligence and two Learning Communities.

Design has become an increasingly important pillar in the Centre for Applied Research and is developing into a connecting theme between the research groups themselves and between the research groups and education, partly due to a shared interest in Research through Design (see Chapter 4). The focus on design is being further shaped by the establishment of the Master Digital Design in 2018, the start of the Associate degree program Frontend Design & Development in 2021 and the ongoing development of the Product Design educational programme at FDMCI, which also offers new research opportunities.

The fields of work of (digital) media and communication are reflected in the research groups Visual Methodologies, Network Cultures, Creative Media for Social Change, and Civic Interaction Design and the Learning Community Storytelling. Nevertheless, the Communication and Creative Business educational programmes would like to see extra attention for this in the form of a research group focused on Storytelling.

Centres of Expertise

As a result of the report by the Reiner Committee, the Centres of Expertise (CoEs) have been given a more explicit substantive mission in recent years, focusing on social issues.[13] The former Amsterdam Creative Industries Network (ACIN) has relaunched in 2020 as CoE for Creative Innovation (CoECI). In addition to Inholland and the Amsterdam University of the Arts, the Gerrit Rietveld Academy is now also part of this CoE. In addition, the faculty has been the lead secretary of the new CoE Applied Artificial Intelligence (CoE AAI) since 2020. Research groups continued to collaborate structurally with the CoE Urban Vitality (Professor Somaya Ben Allouch is a member of the Steering Committee) and occasionally on a project basis with the CoEs Urban Governance & Social Innovation and Urban Technology.

The CoECI program is shaped by a programme council of professors from the participating universities of applied sciences; at CoE AAI, the Responsible IT professor is also the scientific director. Since 2020, CoECI has also made resources available to stimulate collaboration and the development of new research. Themes of CoECI are people-oriented digital transformation, sustainable action perspective, healthy society, inclusive participation and a resilient creative sector. The CoE AAI focuses in various labs on the development of AI that is responsible and inclusive.

Programmatic Development Centre for Applied Research

The Centre for Applied Research has a role as an organizational unit and as a framework within which the strategic lines are set out. It is the CoEs and the individual research groups that profile themselves in the field of specific themes, issues and specialisms. Professors are appointed because they are prominent figures with an (international) reputation and network in their field and disseminate that expertise inwardly and outwardly. The CoEs provide profiling around specific themes and form a point of contact for potential cooperation partners.

The theme of 'citizen empowerment' has been broadened in the programming. In doing so, the Centre for Applied Research seeks to connect with international development for a more-than-human perspective, in which the well-being of the planet as a whole comes first and not just the interests of people, citizens or consumers. Examples of the broader social orientation are projects such as Measuring the Dutch Clothing Mountain (about (un)sustainable practices in the fashion world), the involvement of the research group Creative Media for Social Change in the Social Agreement for Amsterdam (Ma.ak020), and the projects Green in the City and Empowering Citizens (on involvement of citizens in local green energy supply) of the research group Urban Analytics.

The Contexts of Research model that we introduced during the internal evaluation in 2018 to indicate the different types of research in the faculty has faded into the background. At the time, this model was suitable for providing insight into the different research methods and approaches between research groups at the meta level, but has partly lost its function now that the discussion between the research groups is more focused on collaboration in research into social issues.

Cooperation

The focus on social impact leads to an increasing importance of collaboration. To tackle an issue, multiple disciplines and types of knowledge or skills are often required. Within the Centre for Applied Research, this has led to increasing collaboration between research groups themselves and the research groups and education, and in partnerships with parties outside the faculty. For example, four different research groups were involved in the RAAK MKB research Circulate, into the design of blockchain-based digital platforms for so-called 'resource communities'. Research groups Visual Methodologies and Network Cultures jointly organized the Tactical Visual Culture programme, and Civic Interaction Design and Digital Life are collaborating with the Digital Society School, the City of Amsterdam and Zilveren Kruis in a speculative study into the social implications of platformization in healthcare.

In addition, faculties are increasingly collaborating. The Digital Life research group works closely with the research groups associated with the CoE Urban Vitality. There is also a close relationship between the Civic Interaction Design research group and Bouwtransformatie (Con-

struction Transformation) of the Faculty of Technology, which has resulted, amongst other things, in jointly awarded RAAK applications for the design of responsive media in public space. In addition, there is research funded by ZonMw into the impact of corona on public space. Within the CoE AAI, professors from different faculties work together in seven labs and a joint Master's program in Applied AI is being developed.

In order to give the theme-oriented collaboration a structural character, the Centre for Applied Research also participates in a number of SPRONG applications. These are multi-year, substantial grants for the stimulation of practice-based research groups. A SPRONG for Urban Vitality has now been awarded. Professors from the Centre for Applied Research also play a role in three new SPRONGs that are still under review, in the field of social earning capacity, responsible applied AI and the circular economy. Other examples of structural collaboration include a new ELSA Lab (in the context of the Dutch AI Coalition) for the AI, Media & Democracy Lab (a collaboration with the University of Amsterdam (UvA) and CWI, to which five research groups have committed themselves); the Smart City Academy (a theme-oriented working group within the CoE Urban Governance & Social Innovation of AUAS professors in the field of smart cities) and ARIAS (Platform for Research through the Arts and Sciences, a collaboration between AUAS, HKU, Rietveld, the VU and UvA in the field of art and design research). Professor Sabine Niederer has been program manager of ARIAS since January of 2021.

Collaboration is also structurally shaped by the involvement of professors in national and international networks, such as the PRIO platform (practice-based ICT research), the Smart Cities & Citizens professor's platform, as well as international networks around EU COST Action in the area of the sharing economy. Professors also play a role in driving international networks. For example, the Institute of Network Cultures plays a leading role in setting up international collaborations between researchers, professionals, designers and artists on themes such as 'blockchain and the arts' (MoneyLab) and Video Vortex (on digital visual culture), and Civic Interaction Design is the general chair of the international Media Architecture Biennale that was organized in Amsterdam in 2021.

Positioning in the field

In accordance with the three domains of the faculty - design, (digital) media and communication and technology - different research groups focus on different knowledge domains, although there is also an overlap. Research groups such as Civic Interaction Design, Fashion Research & Technology and Digital Life are active in international scientific circuits in the field of human interaction design, multimedia design and participatory design, including conferences such as CHI, DIS, TEI, Media Architecture Biennale, ISEA, Research Through Design, Participatory Design Conference, DIGRA and ICIDS. Creative Media for Social Change and Visual Methodologies also focus on conferences in the field of communication sciences and media studies, such as AoIR, ECREA and ICA. In addition, our research groups are active in professional international networks such as the Transmediale, Ars Electronica and various biennials and 'design weeks' in the field of art, architecture and design. We also work closely with cultural institutions and professional organizations such as Waag, Het Nieuwe Instituut, Pakhuis de Zwijger, Dutch Design Foundation, Modint, Arcam, Dutch Digital Agencies, PBL Netherlands Environmental Assessment Agency and others.

3   See https://assets.ctfassets.net/h0msiyds6poj/34cbDki5f9E66S05aQDoZU/3cb841d1cd29f63d5a17c48f0b9e4bec/pdf-versie_KIA_2020-2023_-_versie_januari_2020.pdf

4   See https://kia.clicknl.nl/deel-3-roadmaps-naar-kennis-voor-de-toekomst/6.-aanleiding-voor-behoefte-aan-kennisontwikkeling/6.1-drie-roadmaps

5   https://kia.clicknl.nl/deel-1-de-creatieve-industrie-kennis-en-kunde/3.-karakter-en-kennisbasis-van-de-creatieve-industrie/3.2-key-enabling-methodologies

6   https://kia.clicknl.nl/deel-2-de-creatieve-industrie-en-missies/4-aanpakken-van-maatschappelijke-uitdagingen/4.3-maatschappelijk-verdienvermogen

7   https://2.wetenschapsagenda.nl/route/kunst-onderzoek-en-innovatie-in-de-21ste-eeuw/

8   https://2.wetenschapsagenda.nl/route/op-weg-naar-veerkrachtige-samenlevingen/

9   https://2.wetenschapsagenda.nl/route/op-weg-naar-veerkrachtige-samenlevingen/

10 https://2.wetenschapsagenda.nl/route/waardecreatie-door-verantwoorde-toegang-tot-en-gebruik-van-big-data/

11 See also Federatie Creatieve Industrie, *De Nederlandse innovatiebias.* https://www.linkedin.com/pulse/de-nederlandse-innovatiebias-federatie-creatieve-industrie/?trk=public_post_content_share-article_title

12 See Appendix FDMCI Kenniscentrum Lectoratenplan 2020

13 https://www.vereniginghogescholen.nl/system/knowledge_base/attachments/files/000/001/074/original/085_039_CENTERS_OF_EXPERTISE_WEB.pdf?1571832857

Connection with education

In the field of strategic cooperation between education and research, the start of the Learning Communities (LCs) is the most important development. LCs are networks led by a senior lecturer-researcher focused on the connection between research and education around specific FDMCI-focused themes. The LCs are directed by steering groups consisting of professors and educational programme managers and have the task of developing a program that focuses on deepening (knowledge exchange, learning from each other, dialogue), innovation (aimed at developing new educational offerings and research projects) and connection (establishing contact between education, research and the professional field). Six LCs are active around the themes of 'applied Artificial Intelligence', 'critical making & research through design', 'ethics', 'responsible software development', 'storytelling' and 'urban interaction design'.

Another innovation is the introduction of six-monthly strategy days. During these days, professors and educational programme managers come together to determine the course of the faculty, which is subsequently recorded in the annual A3 strategy note.

This has led to more consultation, exchange and joint agenda setting at a strategic level between research and education. Developments in the impact of research on education (and vice versa) at the operational level are discussed in Chapter 2.

Reflection

Development of research groups and programmatic development

In recent years there have been many personnel changes in the Centre for Applied Research within the research groups. A number of research groups have a new professor, which often leads to shifts in the course and has consequences for the lecturer-researchers in those research groups. That process required a great deal of attention and energy. The Fashion Research & Technology research group has gone through a particularly difficult period. The search for a new professor took a lot of time, and the unfortunate illness and eventually the death of Valerie Lamontagne had an immense impact on the development of the research group. By now, all posts in the Centre for Applied Research have been filled again and the focus is once again on the development of new projects, but the changes have had a somewhat stagnating effect on the programmatic development and second flow of funds of the Centre for Applied Research.

Thematic programming on social issues

The increased attention for the social implications of the digital transition and the focus on social missions in national and international research policy fits in well with the goals that the Centre for Applied Research has been pursuing for years. The new group of professors find each other in this, and there is a fertile collegial atmosphere and interest in each other's research and approaches. This applies to the professors themselves, but also increasingly to education and research (see Chapter 2). Internal communication (including through well-read newsletters) and exchange through meetings such as Food for Thought has improved. The search for new forms of research and output that match the research assignment, and its quality assurance, is experienced as a common theme and has been tackled with verve in recent years.

This is a development we are in the middle of, and there is not yet an answer to all the questions about how this can best be achieved (see

Chapter 4). The CoEs will play an important role in this development, but their new mission has only recently taken shape. How the synergy and division of roles between CoEs, the Centre for Applied Research and research groups can best be organised, must be worked out in greater detail in the coming years.

There are also questions about the professional autonomy of professors to determine their own research agenda. Mission-driven research requires that the available research capacity is united around a number of predefined goals. But what if research groups see other themes as urgent issues? Is there still enough room for alternative sounds and innovative research themes that are not yet recognized in the existing agendas?

A point of attention remains the exchange between research groups. While the professors can find each other well, this applies to a lesser extent to the employees in the research groups. They indicate that it is difficult to have a good overview of what is happening in other research groups and how they can best connect with them.

Prioritization of tasks

Much is expected of the research groups, but how can they prioritize given their size? For example, the AUAS encourages international cooperation, and some professors are already very active in this area. But participating in international research application consortia requires a great deal of time. Moreover, a European orientation also requires a certain specialization and reputation, supported by a continuous output with a high scientific research quality, which makes a research group recognizable and attractive as a collaboration partner. With a small staff, it is difficult both to be part of the international research top and to present leading papers at international conferences each year, as well as to continue to meet the other assignments of a research group, such as innovation in professional practice and connection with education. Different research groups may wish to set different priorities in this regard in the coming years.

Centres of Expertise of the Faculty of Digital Media and Creative Industries

Center of Expertise for Creative Innovation

FDMCI's Centre of Expertise for Creative Innovation (CoECI) is the creative industry knowledge network that deploys art, media, technology and design for a sustainable, inclusive, participatory and metropolitan society. In the CoECI, students and researchers work closely with partners from the business community, social organizations and governments to use our creative methods, techniques, strategies and products to give direction and shape to social transitions and to realize sustainable impact. The CoECI is an initiative of the Amsterdam University of Applied Sciences, the Amsterdam University of the Arts, Inholland and, since 2019, the Gerrit Rietveld Academy. The CoECI is led by program manager Dominique van Ratingen.

www.coeci.nl
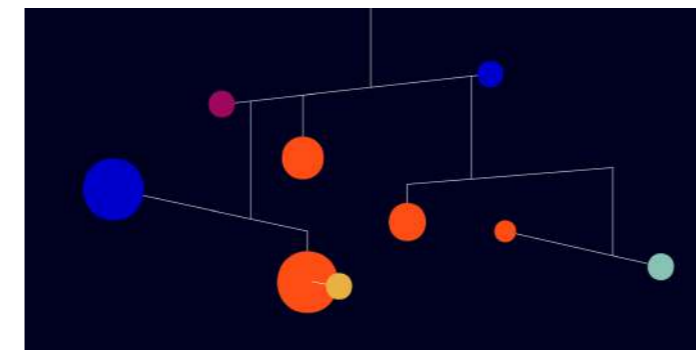
CoECI focuses on the following themes:

- to humanize the digital society
- to enable a sustainable way of living
- to create a healthy human condition
- to strengthen the creative ecosystem of the sector
- to ensure inclusive participation

Center of Expertise Applied Artificial Intelligence

With the start of the Centre of Expertise Applied AI (early 2021) and its predecessor, the FDMCI Expertise Centre AAI (from 2020), the AUAS bundles and supports existing research into the application of AI and provides an infrastructure at all faculties (research groups, education, Digital Society School, etc.). Practice, education and research all come together in Applied AI labs. The CoE supports the development of a master in Applied AI.

The CoE AAI connects parties that design, develop and implement AI innovations in co-creation through short cyclical, application- and sector-oriented research. Results of research are converted into tools and training with which professionals can further develop themselves. With this, we help every organization – large and small – to shape the digital transition that AI entails. The CoE contributes to the training of students and professionals who are changemakers for companies and organizations to actually shape the digital transition in a responsible and inclusive way. The CoE Applied AI is led by program manager Katrien de Witte.

www.hva.nl/appliedai

The CoE has seven labs:

- CENTRE FOR MARKET INSIGHTS
- FINANCE LAB
- LEGAL TECH LAB
- RESPONSIBLE AI LAB
- SMART ASSET MANAGEMENT LAB
- SMART EDUCATION LAB
- SMART HEALTH LAB

Current research groups and changes since 2015

Creative Media for Social Change (previously Crossmedia)
The research group started in 2012 with Professor Harry van Vliet. He was succeeded in 2020 by Tamara Witsche. After her inagural lecture, the research group now bears the name Creative Media for Social Change.

Civic Interaction Design (previously Play & Civic Media)
Founded as Design of Play and Games in 2013. In 2016 the name was changed to Play & Civic Media. Professor Ben Schouten left in 2020 due to his retirement and was then succeeded by Martijn de Waal, who was already associated with the research group as a personal professor. In 2021 the name was changed to Civic Interaction Design.

Digital Life
Ben Kröse retired in 2018, after which he remained associated with the Centre of Applied Research as an emeritus professor to set up the Practice-based ICT Research (PRIO) platform. In 2018, Somaya Ben Al-louch was appointed as Professor.

Fashion Research & Technology
Since March of 2020, Troy Nachtigall has been Professor at Fashion Research & Technology. The research group went through a difficult time before that: shortly after Valerie LaMontagne took office in 2018, she became ill and she passed away on 4 October, 2019. Fashion Research & Technology was established in 2012, and the first Professor was Hein Daanen, who retired at the end of 2016.

Institute of Network Cultures (INC)
Geert Lovink is Professor since the start of the research group in 2004, which was then called Netwerkcultuur.

Responsible IT
The Responsible IT research group started in 2020. After the start-up phase led by Pascal Wiggers, Nanda Piersma started as Professor at the end of 2020. The research group includes the professorships by special appointment Applied Quantum Computing (Professor: Marten Teitsma) and Cyber Security (Professor: Pieter Meulenhoff until 2021, the position is currently vacant). The research group also includes the professorship by special appointment Urban Analytics. Until 2021, this was a collaboration between FDMCI, the Faculty of Technology and the Centrum Wiskunde & Informatica (Center for Mathmatics and Informatics, CWI). Urban Analytics started as 'Big Data in the City', and is financed by the SIA Lector posities bij Insituten (L.INT) scheme. It will expire at the end of 2021, after which the research and projects will partly continue at Responsible IT. Nanda Piersma has a dual appointment Responsible IT and Urban Analytics.

Visual Methodologies
This research group was established in 2017 and Sabine Niederer started as Professor. Before that, she was involved in the Centre of Applied Research as head of research.

AUAS-wide research groups
Doorwerking Praktijkgericht Onderzoek (Impact of Practice-based Research)
In 2020 this AUAS-wide research group was set, with FDMCI acting as lead secretary. In July of 2020 Harry van Vliet started as Professor.

Previous research groups
e-Discovery
At the end of 2016 Professor Hans Henseler left the AUAS, after which the research group did not develop further.

Professors of practice
Marleen Stikker
In 2020 Marleen Stikker was nominated by FDMCI as Professor of Practice at the AUAS. She was installed in this position in 2021, with FDMCI acting as lead secretary.

Overview Learning Communities	Senior lecturer-researcher
The FDMCI Learning Communities are a new form of collaboration between educational programmes, research groups and external partners, in which current themes are explored in depth. Each community has a program around a specific theme, aimed at deepening (knowledge exchange, learning from each other, dialogue), innovation (initiating new educational offerings and research projects) and connecting (making contact between education, research and the professional field). Each community is directed by a senior lecturer-researcher and is supported, managed and financed by at least one educational programme and one research group.	
There are currently six **Learning Communities**:	
The **Applied Artificial Intelligence Learning Community** was initiated by the educational programmes **HBO-ICT** and **CMD**, and the research groups **Digital Life, Responsible IT** and the **Responsible AI lab**	Saskia Robben
The **Critical Making & Research through Design Learning Community** was initiated by **AMFI** and the research groups **Civic Interaction Design, Visual Methodologies** and **Fashion Research & Technology**	Loes Bogers
The **Ethics Learning Community** was initiated by the educational programmes **CO+CB** and **CMD**, and the research groups **Network Cultures and Creative Media for Social Change**	Charlie Mulholland
The **Responsible Software Development Learning Community** was initiated by **HBO-ICT** and the research groups **Network Cultures, Responsible IT** and **Urban Analytics**	Frank Aldershof
The **Storytelling Learning Community** was initiated by the educational programmes **CO+CB, CMD** and **AMFI**, and the research groups **Creative Media for Social Change, Visual Methodologies** and **Civic Interaction Design**	Silvana Beerends-Pavlovic
The **Urban Interaction Design Learning Community** was initiated by **CMD** and the research groups **Civic Interaction Design, Digital Life** and **Fashion Research & Technology**	Marjolijn Ruijg

Research provides insight into mountain of clothing and helps industry move forward

How many items of clothing do the Dutch have in their wardrobes? How long have they been hanging there, and how many sweaters, dresses, pants and shirts do the Dutch throw away every year? Rens Tap of Modint, the trade association in the field of fashion, carpet and textiles, conducted research into this in collaboration with the Fashion Research & Technology research group. AMFI students, together with Modint, made questionnaires and investigated fellow students and family members. Tap himself helped, amongst other things, in compiling the questionnaires. 'I am also known as the numbers man,' says 'clothing economist' Tap. 'It was a valuable study, which is still used by representatives in the industry.' With the NL NextFashion and Textiles network, Modint is a liaison between various universities of applied sciences and the business community. He collects questions from the companies and also relays back the answers from various studies of universities of applied sciences. This creates an interaction. 'This project, Measuring the Dutch clothing mountain, offers real insight into consumer behaviour, which is much needed due to new developments. We now have a mountain of figures that provide clarity.'

—

Rens Tap, clothing economist at Modint

"The collaboration between Vivium and students is of vital importance"

'The collaboration that Vivium has with students and researchers from FDMCI is not only socially relevant. No, it is even of vital importance," says Marco Wisse, director of Vivium Care Group, a large care organization in the Gooi and Vecht region and in Amsterdam South. "Healthcare is changing dramatically. The patients we see today would not have still been alive ten years ago. Technological developments in healthcare are going faster than you can keep up with. Add the aging population to this and we are on the eve of a landslide. How are we going to answer a rapidly-changing demand that we cannot predict with fewer employees – and probably less funding – in the near future?'

'Together with the Digital Life research group, we are experimenting with monitoring patients via sensors, for example by hanging them in living spaces. We are looking at whether this yields interesting data with which we can improve patient care.

'When researchers and students start a project with us, we give them the freedom to complete the assignment themselves. This is how the best ideas arise, such as an interactive experience wall that students previously made for residents with dementia, to make the world of these people bigger again.'

Marco Wisse, director Vivium Care Group

Much more insight into museum visitors thanks to AUAS research

'As a designer I made a number of multimedia installations for Rijksmuseum Boerhaave on behalf of Studio Louter, where I worked at the time. Bernadette Schrandt of the then Crossmedia research group (now Creative Media for Social Change, ed.) approached me because of her research The Exhibition Maker of the 21st century. Amongst other things, she wanted to analyse the data from our software from these installations. I learned from Bernadette and from the research how important it is to look at data afterwards and to observe visitors to an exhibition. Then you will really know if it works. She showed me that visitors to a museum take an emotional journey that you can influence as a maker through elements such as atmosphere and participation. And that you have different kinds of visitors: some flutter through the exhibition like a butterfly, while others pass through it like a grasshopper.'

'A while ago I also spent three days in the Maritime Museum to see whether a multimedia installation of mine was being used properly. With an iPad, people had to walk through the room. However, some left the iPad and pressed all the buttons. I therefore saw an area for improvement there. Organizations are sometimes hesitant to check afterwards to see whether something works, because this might reveal mistakes. I actually think that you can learn something for next time through this way of looking at things and researching.'

—

Dirk Bertels, designer/owner of Studio Bertels and coach at the educational programme Communication and Multi Media Design.

"Thanks to this project, we have a grip on what is technically possible"

Arcam, the architecture centre of Amsterdam, is looking for new ways to involve citizens in the debate about the future of the city. Traditional consultation evenings attract a limited audience and often lead to a debate in which citizens stand against the government. In the 5d ExpoLab, Arcam experiments with interactive city models as a means of imagining the future of the city and stimulating the conversation about it. With interactive models, Arcam shows current spatial developments in and around the capital to policymakers, residents, designers and other construction professionals, among others. Not only because you reach a wider audience, but also because some topics are not suitable for a simple consultation evening. 'Think of things like climate change, energy transition and long-term planning,' says director Indira van 't Klooster of Arcam.
As part of the research into the design of interactive narrative form around city models, Arcam collaborated with researchers and students from the AUAS. Students made a multimedia set-up for Arcam, using a transmedia storytelling method. For example, simple characters made data more approachable and a human connection could be achieved between data and the user. They also experimented with applications such as augmented reality and projection mapping.
The collaboration with the AUAS was very valuable for Arcam. 'Thanks to this project, we have gained a grip on what is technically possible. That knowledge is very valuable for the further development of our 5D ExpoLab.'

—

Indira van 't Klooster, director Arcam

Impact of the research
(standard 4)

Positioning

With the research of the Centre for Applied Research we want to contribute to the development of knowledge about the role of (digital) media, new technologies and design in a changing society. The aim is to offer (future) professionals and citizens a perspective for action to contribute to a socially and ecologically-sustainable society. We also want to play an active role in the social and professional debate about the implications of the digitization of society.

We do not see knowledge development and its development and impact as a linear process in which we as researchers map the world and then simply pass on the knowledge gained on a silver platter. Knowledge development and impact take place because we organize interdisciplinary coalitions of designers, policymakers, the business community, researchers and students around concrete social or professional challenges and explore these with them in research through design trajectories.

Roles and practices

This approach entails specific roles, practices and output forms. An increasingly important role for researchers is that of 'curator' or 'driver' of communities of practice, in which companies, cultural institutions, governments, researchers and students are brought together to put specific themes on the agenda and explore. The research process itself has a strong 'making'/designing character, in which prototypes and probes or 'provocatypes'[1] (objects that are not intended as a solution to a problem, but to stimulate discussion about a specific development) are made and tested, and the meaning of this is reflected jointly with stakeholders. Organizing networks and knowledge interactions in the form of lectures, debates, exhibitions, workshops, capacity-building trajectories, curricula, or lifelong learning trajectories, play an important role in that entire process. It is precisely the interaction between coalition members that leads to new insights, knowledge and skills among researchers, professionals and students.

Output

Researchers play an important role in developping general knowledge from the production process and the (empirical) evaluation of prototypes and the reflection on this, or to translate the insights into (documented) tools, methods and processes that can be used elsewhere. Examples of the results with which we aim to have impact are:

- (Documented) prototypes or copies of new products and services that depict or explore a new type of product or service and can serve as a source of inspiration and an impetus for further development.
- (Design) methods, guidelines, standards, toolkits, working methods, design canvases, etc. that help professionals shape new products, services and practices in the field of digital transformation.
- Critiques, imaginaries, speculative design objects, manifestos, opinion articles, exhibitions and debate series in which critical evaluations and alternative futures are shaped around the developments in the field of new technologies and digital media.
- Concepts, models and theories with which developments in the field of digitization and its impact on society can be interpreted, and which at the same time offer a view or perspective for action for citizens and policymakers as well as professionals.
- Pedagogy and curricula in various forms with which insights from our research can be transferred and in which new insights can also be obtained from international training schools, workshops and capacity-building trajectories to assignments for students in various subjects in BA and MA education.
- Papers, book chapters, documentaries and other forms through which we communicate our findings to colleagues (in science and the professional field) or the general public.
- (International) networks, meetings and workshops aimed at coalition building and knowledge interaction on specific themes.

Impact parameters

To determine 'doorwerking' (in Dutch another word is used than impact, to describe 'The conscious effort to influence something in such a way that something gets into a different state') and impact ('the actual (intended) effect on which all efforts were directed, which can be checked in order to map out the extent to which this has been achieved'), the AUAS-wide research group Doorwerking Praktijkgericht

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1   See for example also the Comenius Scholarship that CMD-researcher Irene Kamp received for this https://www.nwo.nl/projecten/40520865293-0

Onderzoek (Impact Practice-based Research) has developed a number of parameters in 2021. These consist on the one hand of three different types of output (products, networks and knowledge interactions) and on the other hand of a number of indicators with which they can be evaluated, such as reach, quality and relevance. These can then be applied to various domains where we want to generate impact. In order to arrive at manageable criteria, we have combined these into three overarching indicators that help us to gain insight into and discuss the impact and purpose of our activities.

- Volume & reach refers to the professionals, students, fellow researchers or citizens who learn about our products and activities. We do not only look at quantity (number of visitors, readers, page views, downloads, etc.), but also at quality: do we reach the decision makers, pioneers, trendsetters or thought leaders? For example, has it been possible to involve residents from deprived areas in the design process? Have we reached the target groups we had in mind at the start of the project?

- Activation in knowledge interactions is about the quality of the knowledge interaction that we organise, for example in the form of education, network meetings, workshops, research consortia, capacity-building trajectories, conferences and other events where knowledge is created and transferred, often also in processes of peer learning. Participants' satisfaction with their contribution and usefulness of the outcome in practice are measured in project evaluations. This is also reflected in continued involvement in long-term projects.

- Recognition and relevance addresses the relevance and usefulness of our products and activities to the broader professional field and the research disciplines to which we rely. This is apparent from, for example, citation scores, invitations as a speaker or exhibition participant, being asked to join advisory boards and program committees, grants awarded, external reviews, references to our work in policy notes or vision documents, and the use of our publications, tools and design guides in professional practice or in education.

State of affairs

In 2015, the Meurs Committee ruled that the Centre for Applied Research conducts highly relevant research that contributes to the development of professional practice and to (critical) social discussions about the role of digital media in society. Both quantity and quality were rated as 'high'. In 2018, the Schreiber Committee noted that there is often sustainable cooperation with the professional field, with 'broad influence in the (inter)national field'. However, the committee found that the connection with education was still weak. The Schreiber Committee also concluded that it is necessary to 'develop a strategy for the visibility of the research results, for the professional field and education as well as for the AUAS in general'.

Impact in education
If we look at 'activation in knowledge interactions', we see that researchers are actively involved in setting up and carrying out various minors, such as Festivals, Immersive Environments, Designing User Research, Makers Lab, Critical Making, AI, and Internet of Things. The collaboration between a number of research groups and the Master Digital Design (MDD) is very intensive. The MDD is often involved in

the development phase of new research projects and students make an active contribution to research processes. Students are involved in almost all larger research projects, for example in the creation and exploration of prototypes. Professors are also involved in the development of new masters in the field of Fashion and Applied Artificial Intelligence, and in making plans for a graduate school. The involvement in the curriculum development of existing BAs can still be improved, and vice versa, the role of programs in the development of new research projects is still modest. Professors also play a role in the process of teacher professionalisation, especially through the faculty's programme for doctoral research.

The establishment of the Faculty Learning Communities (LCs) is a promising initiative for structurally linking research and education. The LCs will develop into networks in which researchers and professors exchange knowledge and jointly develop new initiatives, for example in research design. At the end of 2020, the Responsible Software Development LC was involved in developing a RAAK application together with the Responsible IT and Civic Interaction Design research groups.

Impact in the professional field and society
The impact of our research in the professional field and society takes place in a continuous process of activation in knowledge interactions, in which we initially explore themes with stakeholders or explore the use of new materials or technologies in small-scale workshops, experiments and meetings (demand articulation and exploration). These workshops, experiments and meetings are regularly followed up in larger research projects, in which and around which various in-depth events are organized and coalitions and networks are activated, in order to gain insights in co-creation with the stakeholders. At the end of a research project, we communicate the results in workshops, lectures, training courses, etc., which can then lead to follow-up questions and new projects.

In recent years, this approach has led to a diverse range of activities and a number of long-term collaborations and networks with various partners from the professional field and society. Examples of such networks are the MoneyLab network of the Institute of Network Cultures, and the Media Architecture Biennale, which is organized by Civic Interaction Design together with the Bouwtransformatie research group (part of the CoE Urban Technology). Long-term projects can be seen, for example, in the collaboration of Fashion Research & Technology with Modint, the industry association, the involvement of the Chief Technology Office of the Municipality of Amsterdam in several research projects (and now also in the co-funding of the Responsible IT research group), and in the coalition of the Visual Methodologies, the Digital Society School and the Climate Cleanup Foundation. Digital Life has a number of long-term collaborations with partners from the healthcare sector.

Recognition and relevance are apparent from the feedback we receive from partners in the field. They tell us that they find the reflection, analysis and synthesis resulting from our investigations inspiring. It helps them to shape their vision of their field in a changing world and to translate it into new products and strategic visions. External parties also often ask our professors to act as advisors, speakers or participants in external workshops. To name a few examples: Professor Martijn de Waal was a speaker at the opening of the Bi-City Biennale of Urbanism\Architecture in Shenzhen in 2019 and was invited as a participant at a conference on civic design at Harvard. Professor Nanda

Piersma regularly gives lectures on responsible AI and IT, for example at the SIA conference in 2020. In recent years, Professor Sabine Niederer has been a guest at King's College in London, and at meetings such as MORE WORLD in Berlin and DEEP CITY in Lausanne. Publications such as the book The Platform Society are regularly cited in policy memorandums or advisory reports by, for example, the Council for the Environment and Infrastructure or the Rathenau Institute. Finally, recognition is also apparent from prizes won. Mirjam Rasch, lecturer-researcher at the Institute of Network Cultures, won the Socrates Cup (prize for the best philosophy book) with her publication Friction. Ethics in times of dataïsme.

Impact in science
Professors and lecturer-researchers actively contribute to knowledge development in their research domains. Their work is valued and relevant. The output of publications is constant, with between 100-150 publications per year (see Output registered in PURE, p.25)[2]. Google Scholar counts at least 5,000 citations of the professors' work alone since 2016. Professors' books have been translated into Italian, Chinese, Spanish, German and Turkish. In addition, the Institute of Network Cultures has played an important role in recent years as a publisher and distributor of the work of external authors who contribute to the debate about the impact of digital transitions on culture and society. Professors are regularly invited for keynotes and panels at various international meetings. And lecturer-researchers play a role as reviewer or workshop organizer during various academic conferences.

Relevance is also apparent from the fact that professors are regularly invited to participate in NWA consortia and the European Horizon and Creative Europe projects, as well as the successful applications for various RAAK, ZonMw, H2020 and Comenius grants in recent years (see Chapter 3).

Reflection

Impact in education
Collaboration with education has improved in recent years. Almost all researchers also teach at a educational programme, students play a role in many projects, and new structural partnerships have been set up, such as the Learning Communities. Those involved appreciate that very much. To further strengthen cooperation, we need to solve some structural problems related to scale and rhythm, and institutional and personal connections can be further strengthened.

If we look at volume and reach, we have to conclude that the ambitions of the AUAS to bring twenty percent of all students into contact with research are not being achieved. Scale plays a role in this. The Centre for Applied Research consists of 37 FTE of research capacity, compared to 660 FTE in the faculty as a whole and more than 10,000 students. We are mainly active in minors, masters and graduation trajectories, which usually involve relatively small groups of students. Given the size of the Centre for Applied Research in relation to education, the gain to be achieved lies mainly in our qualitative contribution to education, for example by contributing to curriculum development, tool development and teacher professionalization. For example, the CoE Applied AI has set up teacher training at three levels with the help of researchers: AI interpreter, AI adopter and AI expert. Another good

example is the Comenius Leadership Fellow grant recently received by Professor Nanda Piersma to systematically and methodically organize AI skills within the bachelor's programs of the AUAS.

Rhythm is another problem that complicates mutual engagement. The teaching load is tightly planned in the logic of semesters. Research projects, on the other hand, can be awarded at any time of the year, and funders often require them to start shortly after.

Institutional and personal connection between education and research takes shape because almost all lecturer-researchers in the research groups also provide education in a degree programme. Conversely, this does not apply – again due to differences in scale. Only a small part of the lecturers is also actively involved in the work of the research groups, simply because there are no hours available.

At the faculty level, there is already structural strategic consultation between educational programmes and research groups (see Chapter 1), but at the operational level there are still few structures for this outside the bilateral discussions between professors and educational programme managers. Professors and lecturer-researchers do not play a formal role in the MTs of eductaional programmes or in curriculum committees. The LCs should play a driving role in better connecting education and research, both on a thematic and on a personal level. For example, by organizing theme tables in which lecturer-researchers from educational programmes and research groups can jointly draw up agendas for research or education. Because the LCs started just before the outbreak of the Covid-19 epidemic, the connecting network activities have not yet started sufficiently.

An opportunity lies in the development of the third cycle in higher professional education and the professional doctorates that are trained there. It is precisely from the research by design and the connection between the arts and the creative sector that there are opportunities for our Centre for Applied Research to play a role in this. This can be linked to the broader desire to shape the organization of PhDs and master's programs in a graduate school within the AUAS as well, in order to offer more coherence and structure for the collaboration between education and research at NLQF/EQF levels 7 and 8.

Impact in work field, society and science: roles and division of tasks
The impact largely takes place in the way in which we organize our research in networks in processes of co-creation. For researchers, this means that a number of new roles and tasks are emerging, such as those of the network builder or curator and community manager. Interdisciplinary collaboration, and then also in a quadruple helix context, is rewarding and productive, but often also a complex task. Speech confusion can easily occur. How do you work well together in multidisciplinary research consortia, and how do you guarantee the academic independence of researchers in processes of co-creation with stakeholders as research partners? The role of project development and management is becoming heavier and requires further professionalization. How can we efficiently allocate these roles and tasks in the Centre for Applied Research, and what exactly can the CoEs play in this?

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2   See also the appendix FDMCI Kenniscentrum Output registratie PURE 2015-2020

Impact in work field, society and science: delineation of research assignment

Impact and relevance for professional practice are important drivers for the research groups. But where does the assignment of a knowledge institution end? Professors mainly focus on building consortia and networks focused on research and debate, and less on the further development of the results into concrete products and services, implementation and scaling up of innovations. The capacity of research groups is limited and putting a product or service 'in the market' or 'in society' requires different expertise than conducting research. However, they are often inseparable from each other. The development of, for example, a toolkit, design method or serious game often also requires the development of training courses and a consultancy service that can help companies or organizations to put it into use, and that can provide customization to tailor such a tool to a specific situation. Such a service is currently beyond the capabilities of research groups. A possible solution is to give such parties a place in consortia from the start. Or to invest such impact with the CoECI. It is also possible to offer consultancy or workshop trajectories through lifelong learning programs or the Digital Society School.

Role of criteria and indicators

We currently use the above-mentioned criteria of reach, activation, recognition and relevance to reflect on the impact of our research. This reflection is partly implicit. In addition, elements of this are discussed during PMO discussions or strategy sessions (see Chapter 5 Quality assurance). But we have not set any hard indicators or explicit targets. We could invest in a more structural evaluation and impact. This costs extra energy and effort that is at the expense of the research itself. It is a trade-off of how much time we want to invest in 'measurement' and 'accountability' compared to the time we invest in the research itself.

The criteria are aimed at the impact of our activities on actors in the professional field and education. They are less suitable for measuring the actual impact in society. For example, we often hear from designers and policy makers that they find our concepts and tools valuable in their work. But we do not yet know whether and how they really contribute to a more inclusive and sustainable society, and it also seems very difficult to demonstrate such a direct link.

Such impact often only comes about in the long term, while we like to be on the agenda and play a pioneering role. This means that we explore so-called 'nascent themes', developments that are often still in embryonic form. They are not yet an established practice and are not yet or hardly discussed in education, but they may have major consequences for a discipline or society. For example, Network Cultures already held its first conference on blockchain in 2014 and we also work together with companies, municipalities and organizations that are pioneers in their field in research into virtual reality, platformization and other technologies.

The broader relevance of this for professional practice and education sometimes only follows years later. This means that our impact is sometimes difficult to capture in evaluations.

Output of the Centre for Applied Research FDMCI, quantitative, as registered in PURE					
	Scientific products	Professional products	Products focussed on general public	Other research products	Total per year
2015	57	47	4	10	**118**
2016	80	57	16	12	**165**
2017	63	66	9	2	**140**
2018	67	54	10	3	**134**
2019	75	61	6	0	**142**
2020	62	58	20	0	**140**
Totaal	**404**	**343**	**65**	**27**	

Involvement of research groups in masters and minors 2015-2020		
Masters		
Master Digital Design	Civic Interaction Design (previously Play & Civic Media)	CMD
Master Data Driven Business	Creative Media for Social Change (previously Crossmedia), Visual Methodologies, Urban Analytics, Responsible IT	Research group Digital Commerce, faculty of Business and Economics
Master Fashion Enterprise Creation	Visual Methodologies	AMFI
Minors		
Minor Applied Artificial Intelligence	Responsible IT, Digital Life, Urban Analytics	HBO-ICT
Minor Applied Game Design	Civic Interaction Design (previously Play & Civic Media)	CMD
Minor Big Data	Urban Analytics	HBO-ICT
Minor Critical Making	Visual Methodologies	CMD
Minor Data Science	Urban Analytics, Reponsible IT	Faculty of Technology
Minor Design Thinking and Doing	Creative Media for Social Change (previously Crossmedia), Urban Technology	CMD
Minor Designing User Research	Creative Media for Social Change (previously Crossmedia), Civic Interaction Design (previously Play & Civic Media), Network Cultures, Digital Life, Urban Analytics	CMD
Minor Fashion in Retail and Marketing	Creative Media for Social Change (previously Crossmedia)	AMFI
Minor Festivals	Creative Media for Social Change (previously Crossmedia)	CO+CB
Minor Intelligent Environments	Digital Life	HBO-ICT
Minor Internet of Things	Digital Life	HBO-ICT
Minor Makers Lab	Visual Methodologies, Network Cultures, Creative Media for Social Change (voorheen Crossmedia)	CMD
Minor User Experience Design	Creative Media for Social Change (voorheen Crossmedia), Digital Life	CMD
Minor Visual Interface Design	Visual Methodologies	CMD
Minor Virtual Reality	Fashion Research & Technology	AMFI, CMD, HBO-ICT, CO+CB
Minor Healthcare Technology	Digital Life	Occupational Therapy, Faculty of Health

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TRANSFORMCITY UNIVERSITEIT UTRECHT **UNIVERSITEIT SÃO PAULO**
UNSTUDIO **UVA** UVA (ELSA LAB AI MEDIA & DEMOCRACY)
VALIZ PUBLISHERS, AMSTERDAM VODAFONE ZIGGO WAAG
WEMAKEVR ZORGGROEP VIVIUM

Organization of the Centre for Applied Research (standard 2)

Positioning

The Centre for Applied Research offers faculty employees a place in terms of content and organization, where research projects are initiated, implemented and supported in collaboration with partners from education, research and the professional field. Research projects and associated personnel appointments are organized in the seven core research groups. In addition, the Centre for Applied Research is affiliated with professorships by special appointment and a professor of practice, and the faculty functions as the host of the Amsterdam University of Applied Sciences (AUAS)-wide research group Doorwerking Pratijkgericht Onderzoek. Thematic connection, deepening and networking is provided by the Centres of Expertise (CoEs) of the AUAS, where the CoE's Creative Innovation and Applied Artificial Intelligence have their home base at the Faculty of Digital Media and Creative Industries. Connection with the city is facilitated by participating in the programme HvA in de stad. In addition to the research groups themselves, the connection with education also takes shape in the Learning Communities (LCs). The Faculty's Makers Lab is organizationally housed in the Centre for Applied Research. In addition, the Centre for Applied Research takes care of the faculty's promotion scheme.

Since 2016, the Centre for Applied Research has had a head of operations who is responsible for the operational activities. This includes finance, HR, project support, communication, ICT and quality assurance. The head of operations participates in the Faculty's Research Council and the Faculty's Staff MT and represents the Centre for Applied Research during interfaculty consultations on operational matters. Centre for Applied Research-wide support comes in the form of a communication advisor and a data steward. The Centre is supported in process by a research policy advisor from the Faculty's Research and Education (O&O) department.

The dean, professors and the head of operations jointly determine the policy and objectives for the Centre for Applied Research as a whole in the monthly meetings of the Research Council, within the multi-year AUAS-wide vision and the frameworks set by the faculty. The Research Council has an advisory function towards the dean, FMT, AUAS Research Council and the Executive Board. The dean is ultimately responsible for the results of the Centre for Applied Research as a whole.

People

In accordance with the AUAS objectives, the Centre for Applied Research aims for one professor per 720 students and a minimum size of five FTEs per research project. Ideally, each research group consists of a professor, one or more senior lecturer-researchers or professorships by special appointment with their own specializations, lecturer-researchers and a research coordinator/supporter, plus temporary researchers on a project basis and (pre-) PhD students. In addition, there must be room in every research groups for teachers from the educational programmes to professionalize and for students in graduation programs or internships.

The Centre for Applied Research wants to offer employees a career perspective in both education and research and where possible gives a permanent appointment. A condition for this is that lecturer-researchers also provide education and have the necessary qualifications. The faculty has a Doctoral research programme aimed at professionalising lecturer-researchers. The Centre for Applied Research strives for a diverse composition of staff.

Resources

The ambitions of the AUAS to grow into a knowledge institution in which research, the professional field and education are linked requires a solid foundation for the Centre for Applied Research. In an ideal situation, the first flow of funds should provide at least a stable basis for each research project (+/- 3 FTE), operating resources (+/- €3.5K per FTE). At the level of our Centre for Applied Research, the support amounts to +/- 3 FTE. AUAS policy aims to ensure that at least 25 percent of the budget is financed externally through indirect and contract funding[1]. The first cash flows are used for acquisition and co-operation financing projects. The Centre for Applied Research also aims to bring in more European projects in order to conduct research more often within an international context and to increase the chances of external funding.

State of affairs

The Meurs (2015) and Schreiber (2018) committees indicated that the preconditions for conducting good research were in order and that the consultation structure for professors and management was well organised. Points for attention of the Schreiber Committee were the exchange and consultation structure at the level of researchers between

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1   Over the period 2015-2020 the external financing averaged 25%. See Frame Spent means 2015-2020.

the research groups and the progression of lecturer-researchers from the educational programmes to the research projects. The committee also recommended developing a structural faculty personnel policy and providing better guidance for the acquisition of resources. The committee also found that communication strategy was insufficiently sound.

Organization
The most important substantive developments at the level of the research groups and CoEs are described in Chapter 1. Special attention is still being paid to the new research group Responsible IT, which started in 2020 and houses the professorships by special appointment Quantum Computing and CyberSecurity. The CTO of the City of Amsterdam will partly finance the research group until 2024. The professorship by special appointment Urban Analytics will expire at the end of 2021, after which part of the research lines and current projects will be continue at Responsible IT.

When it comes to the management of the Centre for Applied Research, the most important development is that the role of primus inter pares is no longer fulfilled by a professor. Instead, the main functions of the role are divided into five portfolios that are managed by duos of professors, the programme managers of the CoEs, the head of operations and the research policy advisor. These portfolios coincide with the BKO standards Objective of the research, Impact, Organization, Quality and Quality Assurance. The Centre for Applied Research's representation in AUAS bodies such as the Faculty Management Team and the AUAS-wide Research Council is also divided among individual professors, as is the chairmanship of the Faculty Research Council. The reason for this change is that the role of primus inter pares involved a lot of work and consultation. This turned out to be incompatible with the position of professor. This set-up is laid down in a governance model.[2] Each year it is determined which professors will fulfil which roles. In order to properly supervise the ongoing process of evaluation, adjustment and implementation of the research policy and its effects, a research policy advisor was appointed in 2018 from the Research and Education (O&O) department (see Chapter 5 Quality Assurance). Periodic Management Consultation (PMO) was started in 2019, in which twice a year a separate meeting with the faculty management takes place with the CoEs and research projects. Goals, possibilities and results are discussed therein.

In 2015, the doctoral research programme of the faculty was established. In 2018, during the internal visitation, it became clear that the pre-doctoral programme had been properly implemented, but that it was not clear how PhD students were supervised within the faculty. Improvements have been made in the areas of process, definition and communication around the programme (see Chapter 5 Quality assurance).

Effective use of communication remains an ongoing process of coordination. The research groups and the CoEs are the most important

'brands' to the outside world. The Centre for Applied Research supports the communication of the research groups. In recent years, efforts have been made to make research more visible by investing in the management of the Centre for Applied Research's central website with updated employee profiles and the link to the Research Database. In addition, the magazine (K)NOW has been launched, an annual bilingual, print and digital publication, and a podcast series with interviews with researchers[3]. A strategic communication plan has been drawn up for internal and external communication (2019), in which the relationships of the research projects, CoEs and QCs in relation to the AUAS brand are laid down and how we can make effective use of this .[4] The Communication department plays an important role in internal communication, for example by producing a monthly newsletter and organizing meetings for inspiration and knowledge sharing. For example, twice year meetings are held with employees of the research projects and monthly Food for Thought inspiration sessions, where researchers and partners take the stage.

People
Between 2015 and 2020, FDMCI experienced significant growth. The number of students rose from 8,000 to 10,500, and the number of FTEs employed at the faculty rose from 488 to 602. The Centre for Applied Research staff size lagged behind this growth and rose slightly from 44 FTE at the beginning of 2015 to 49.6 FTE at the end of 2020 (see Personnel deployment overview on p.33. This shows the averages per year, which shows a slightly different picture). The number of FTEs in research positions has only increased slightly since 2018 (34 FTEs) and reached 37 FTEs at the end of 2020. This includes the appointment of professors, which increased from 5.2 FTE in 2015 to 7.1 FTE in 2020.[5]

In recent years, efforts have been made to achieve a more diverse composition of personnel. When filling new positions, gender and age were taken into account. Partly as a result of this, the composition of the team of professors from the core research groups has become much more diverse. This group now consists of four women and three men. Within the group of employees of the research projects, the composition has remained fairly stable.[6]

Lecturer-researchers working in the research groups almost all have a dual appointment, which means that they also teach one or more days a week at least one educational programme at the faculty. In addition to their 0.6 FTE research appointment, PhDs from the doctoral research programme are also usually linked to education. Conversely, this does not apply. For lecturer-researchers with a large appointment in education, there are few opportunities to conduct research due to a lack of financial resources.

By the end of 2020, fifteen employees had a PhD and twenty employees a university master. A slight increase can be seen here: at the end of 2015, this was eleven and 21, respectively. At the end of 2020, 74 percent of employees had a PhD or master's degree.

At the beginning of 2020, a start was made on Strategic Personnel Development (SPO), a process in which the professors, together with HR, shape the future personnel policy, geared to the resources, strategy and ambition of the Centre for Applied Research. An important point was the structure of the research groups. It is now fairly polar, with a professor who carries a lot of responsibilities and the lecturer-researchers and research assistants who carry out large parts of the research. Professors expressed the wish to also be able to appoint senior lecturer-researchers within research projects, who can bear joint responsibility for acquisition and research supervision. In addition, there is a need to be able to deal more flexibly with the appointments of lecturer-researchers within research and education, in order to strengthen mutual involvement and exchange. This should make it easier for lecturer-researchers of educational programmes to participate in research projects, or to increase the appointment of researchers in education when there are temporarily fewer projects. This means that research projects and educational programmes must work together more closely in the recruitment of lecturer-researchers and the appointment of lecturer-researchers in education. The SPO trajectory has been slightly delayed due to corona. A number of the above recommendations are currently being worked out in greater detail to be implemented later in 2021.

Resources
Since 2015, the budget from direct government funding has been increased by around two million euros and then increased from around 4.5 to 5.5 million euros (see Spent resources overview on p.33). The first flow of funds consists of various components. In addition to the legally determined government grant and the additional resources that the AUAS makes available, the Centre for Applied Research receives resources for the exploitation of the CoEs (1320K) and the Makers Lab (475K). The CoE funds are partly redistributed among the AAI labs in the various faculties. CoECI makes part of the budget available as seed money for project development and activities of the research groups, and thus contributes to resources for acquisition and co-financing of projects. The total investment in research is approximately 7.5 percent of FDMCI's budget.

Although the Centre for Applied Research traditionally had many second-stream funded projects (particularly SIA RAAK), 2015 and 2019 were lean years (see Received second stream-grants, p.33). The decline in 2019 is the result of the many changes of personell. Now that all professor posts are occupied once again, the second-stream funding has recovered in 2020.

Until 2016, the third-stream grants consisted largely of the in-kind contributions made by the creative industry to the labs organized by ACIN (the predecessor of CoECI). In 2016 it was decided to transfer the activities of the labs to the research projects. Since then, the in-kind contributions from the creative industry have been included as co-financing in project applications for indirect funding. In addition, some of these activities have been moved to collaborations in the new Master Digital Design and the Digital Society School. This explains that the third-stream funding shows a dip, while this has not been at the expense of the number of partners involved in projects.

In order to guarantee the long-term structural financing, the support for project applications has been expanded, streamlined and better recorded by the head of operations. The starting point for this was the memorandum 'Duurzame groei onderzoek FDMCI' from the end of

2015. Important for the Centre for Applied Research is the central assessment of all budgets for research applications. This new approach has led, amongst other things, to more project applications within Horizon 2020 and other European schemes, several of which have been successful. A number of research projects are increasingly successful in making structural connections with European consortia and it is expected that this will translate into more awarded EU projects.

Despite the contributions from indirect and contract funding, the budget of the Centre for Applied Research still needs to be supplemented every year from the faculty because there are structurally insufficient resources for the financial obligations with regard to permanent contracts within the Centre for Applied Research. Efforts are being made to work towards a balanced budget.

Reflection

Organization
Developments in the field of practice-based research require continuous attention to the way in which the Centre for Applied Research can best be organized. The more complex research projects (see Introduction and Chapter 1) and the focus on implementation require further professionalization and specialization in the field of project management, project development and 'impact production'. Professors are looking for a good balance between their role in governance and policy and their responsibilities in the field of research and its impact on professional practice and society, research and education.

We think that with the changed set-up of the organization within the Centre for Applied Research, we have found a better balance between the various tasks and responsibilities. The CoEs can play a greater role in communication, networking and project development. Exactly how this can turn out will be a subject of discussion in the coming years.

Professionalization also means that professors will gain more insight into the financial flows, the revenue commission and the targets set by the Centre for Applied Research. To this end, dashboards are being developed in which the state of affairs in the financial and HR field at the research group level can be seen. Returning relevant management information in the right context will become a spearhead in business operations in the coming years.

People
At various staff meetings, employees have asked for more transparency and openness about career opportunities within the Centre for Applied Research. There is a need to have a clearer picture of what expertise is needed to qualify for a promotion and what the organization exactly wants and demands from lecturer-researchers. There is also a greater need for an exchange between the staff of the research groups.

The main problem is that, partly due to the modest size of research groups (2.9 FTE basic funding including the professor and support), there is little room for growth and career paths for lecturer-researchers. The new position of senior lecturer-researchers within research groups could mean something in this regard. But the absolute number in FTEs will also remain modest for this new position.

There are still areas for improvement for the supervision of PhD students. The embedding of PhD students in the research groups requires structural attention and a dialogue with HR. Exchange between

2   See FDMCI Kenniscentrum Notitie Governance

3   See (K)NOW magazine/https://www.hva.nl/binaries/content/assets/subsites/Centre for Applied Research-fdmci/jaarmagazines/know_nl_final.pdf?1598263286667.
    Podcastserie: https://open.spotify.com/show/6JeyD1yW7SjgIEGeAAt9VD

4   See appendix FDMCI Kenniscentrum Communicatieplan

5   See appendix Personele inzet kenniscentrum 2015-2020

6   See appendix Personele inzet kenniscentrum 2015-2020

PhD candidates has been stimulated, but there appears to be a particular need for better embedding in research and education. Points for improvement are ensuring a better connection of the candidate with both the research group and the educational programme and better supervision. The cause is considered to be that the content has often not been strongly enough linked to what is going on in research groups and educational programmes. Over the past two years, the process surrounding the doctoral research programme has been adjusted to focus more on strategically relevant themes for both research and education. In the long run, this will make the connection easier to secure. But it also requires more attention for this connection from an HR perspective and in the context of the SPO plans. An attractive prospect is the plan for a graduate school, which can contribute to the bonding and education of PhD students. Ideas for a graduate school are being explored, in addition to the development of professional doctorates (PDs) in higher professional education. FDMCI is intensively involved in the development of this national initiative, by participating in one of the pilots: Kunst + Creatief. The aim of this pilot, to which fourteen universities of applied sciences are associated, is to have the first six to seven candidates start with a PD from September of 2021. The dean is a member of the Kunst + Creatief working group. In addition, a professor and the research policy advisor are members of the pilot advisory committee and of the AUAS core group in which coordination takes place about the pilots in which the AUAS participates.

Resources

There are sufficient resources to achieve a critical mass of researchers within the Centre for Applied Research, who work on relevant research projects and thus contribute to innovation in professional practice and ensure impact on education. However, compared to the ambitions of the AUAS as a knowledge institution and the national role of HBOs in innovation in professional practice, the resources are lagging behind. According to the target values, with 10,500 students we would end up with about fifteen professors, and based on research groups of 5 FTE, 75 FTE would then be available for research and support in the research groups. This is not achieved AUAS-wide or nationally. In order to realize these ambitions, the funding system for higher professional education research will have to change at both national and AUAS level.

To give an impulse to the number of professors, and thus the connection with the wide variety of educational programmes, the faculty has opted to focus on (partly) externally funded professorships by special appointment. Acquiring indirect funding projects can also contribute to further expansion of research capacity, but their potential is not unlimited.

Targeted EU project development started in autumn of 2020. This is invested with CoECI. AUAS-wide, an EU funding consultation was started in 2020, in which several initiatives were developed and the knowledge gained is shared structurally. More and more experience has been gained with EU grants, which positions the AUAS and the Centre for Applied Research reasonably well for Horizon Europe.

Corona

The past two years have been largely dominated by the Covid-19 epidemic and this has demanded a tremendous amount from our employees. Working from home while primary schools are closed, and at the same time having to look for new ways to digitally shape research and education, was a difficult task for many. We are proud of and grateful for the creativity and commitment of our employees, but we also see that many have had to pay a price for this. In particular, lecturer-researchers who also provide education saw their workload increase enormously. Providing education required much more time and energy. Research tasks sometimes came under pressure as a result. Research projects in which co-creation and workshop sessions play an important role also had to be reinvented or postponed. As a result, a number of research projects were delayed, without any additional income. This was at the expense of, amongst other things, the time that researchers could devote to their own development and project development for new projects. This means that there could be a dip in second-stream projects in the near future. There is also the risk that employees have had to work too hard, which has been at the expense of their personal well-being and could potentially lead to downtime in the future.

Social safety

At the end of 2020, the AUAS was discredited by reports about a socially unsafe working and learning environment in the AMFI programme. This has also led to discussions within the Centre for Applied Research about social safety and the question of how this can be safeguarded at the institutional level. The basic principle of the Centre for Applied Research is that everyone who works here should be treated equally and feel safe – regardless of their gender identity and expression, sexual identity and preferences, skin colour, religion, age, financial situation and physical and mental health. It is also crucial that preventive and proactive actions are taken and that policies are drawn up to create a safe working environment and prevent abuse of power, instead of looking for a solution afterwards. In addition, the Centre for Applied Research must offer a working environment that is not only safe, but also shows solidarity.

The role of the manager/supervisor is essential in this. Training, provided by independent experts, should not be without obligation. The confidential counsellor and employee participation council also bear responsibility for ensuring a safe working environment. At the moment it is not always clear to employees of the Centre for Applied Research in which cases they can go to a confidential adviser and what the procedure entails.

Personnel deployment Centre for Applied Research 2015-2020						
	avg 2015	avg 2016	avg 2017	avg 2018	avg 2019	avg 2020
Total FTE	52,9	54,8	50,3	48,2	43,2	45,4
Researchers positions FTE*	38,3	39,7	36,6	36,4	35,9	35,6
Support management personnel FTE	14,6	15,1	13,8	11,8	7,3	9,8
Lecturer-researchers FTE	7,6	14,9	17,8	17,7	18,7	18,7
% Lecturer-researchers	14%	27%	35%	37%	43%	41%
* lecturer-researchers, professors, senior lecturers, research staff						

Funds spent by Centre for Applied Research 2015-2020						
	2015	2016	2017	2018	2019	2020
1e GS	€ 4.273	€ 4.744	€ 4.436	€ 5.633	€ 5.305	€ 5.573
2e GS	€ 227	€ 868	€ 1.258	€ 1.189	€ 811	€ 1.383
3e GS	€ 1.642	€ 1.592	€ 299	€ 714	€ 74	€ 305
Other	€ -	€ 48	€ 157	€ 214	€ 152	€ 237
Total	**€ 6.142**	**€ 7.252**	**€ 6.150**	**€ 7.749**	**€ 6.343**	**€ 7.498**
% 2nd & 3rd money-stream	30%	34%	25%	25%	14%	23%

Received second-stream grants						
Year	Funding organisation	Funding programme	Main applicant	Involved researchers	Project title	Subsidy amount FDMCI
2015	SIA	RAAK MKB	AUAS	Pascal Wiggers, Ben Kröse	HIPPER	€ 299.577
	Archief 2020		AUAS	Paul Rijnierse, Hans Henseler	Archief DOD	€ 36.500
					Total 2015	**€ 336.077**
2016	ZonMW	Health-Holland-TKI Toeslag	AUAS	Ben Kröse	FIT	€ 166.732
	COMMIT		AUAS	Ben Schouten, Ben Kröse	Smart Playsets	€ 148.950
	COMMIT		UvA	Wouter Meys, Ruurd Priester	Buurtinzicht	€ 46.000
	SIA RAAK MKB	RAAK MKB	AUAS	Ben Kröse, Saskia Robben	Bravo	€ 211.459
	SIA	RAAK MKB	AUAS	Schouten, Riemer van Rozen	Live Game Design	€ 225.117
	SIA	RAAK MKB	AUAS	Ben Schouten, Mirjam Vosmeer	Storytelling	€ 183.938
	SIA RAAK	KIEM-VANG	AUAS	Hein Daanen, Laura Duncker	Closed-Loop	€ 14.616
	STW/NWO	RTD	TU Delft	Hein Daanen, Laura Duncker	Smart Clothing	€ 25.500
	SIA	RAAK MKB	AUAS	Hein Daanen, Harry van Vliet	Passende Mode	€ 232.147

Year	Funder	Programme	Institution	People	Project	Amount
	SIA	RAAK MKB	AUAS	Harry van Vliet, Wouter Groot	Meer profijt uit data	€ 171.872
	SIA	TOP-UP	AUAS	Margreet Riphagen, Miriam Rasch	Toolkit	€ 10.000
	SIA	RAAK PUBLIEK	AUAS	Harry van Vliet, Bernadette Schrandt	De tentoonstellings-maker van de 21ste eeuw	€ 261.395
	SIA	KIEM	AUAS	Harry van Vliet, Michiel Rovers	Personalized After-movies	€ 19.992
	SIA	KIEM VANG	AUAS	Irene Maldini	Measuring the Dutch clothing mountain: a feasibility study	€ 19.382
					Total 2016	**€ 1.737.100**
2017	NWO	Sportsamenwer-king Brazilië	UvA	Ben Kröse, Joey van der Bie	Playful Data-driven Active Urban Living (PAUL)	€ 118.860
	NWO/ZonMW		AUAS	Ben Kröse, Ahmed Nait Aicha, Joey van der Bie	Eyebeacons: Wayfin-ding in public spaces	€ 137.717
	SIA RAAK	KIEM-vang	AUAS	Laurens Aarnoudse, Martijn de Waal	Biogasboot	€ 20.000
	NWO	Smart Culture	UvA/Eye	Harry van Vliet	SEMIA	€ 72.958
	Gemeente Am-sterdam, IXA	APCA	AUAS	Ben Kröse, Michel Oey	Platform voor onder-steuning thuisreva-lidatie	€ 22.000
	SIA RAAK	KIEM	AUAS	Harry van Vliet, Anne Moes, Wouter Groot	Experience paska-mers om fysieke winkelbeleving te optimaliseren	€ 15.461
	SIA RAAK	KIEM	AUAS	Harry van Vliet, Anne Moes	Van Passant naar klant	€ 17.577
	European Commission	Creative Europe	AUAS	Geert Lovink, Inte Gloerich	State Machines - Art, Work, and Identity in an Age of Planetary-Scale Computation	€ 30.460
	SIA RAAK	Top Up	AUAS	Ben Kröse	Hipper to implemen-tation	€ 9.991
	SIA RAAK	KIEM	AUAS	Geert Lovink, Miriam Rasch, Leonieke van Dipten	Art Criticism in the Digital Age	€ 16.660
	SIA RAAK	KIEM	AUAS	Margreet Riphagen, Harry van Vliet	Find new seductive ways of displaying books at (online) retail channels	€ 19.548
	EFRO	Kansen voor West	A'dam Arena	Harry van Vliet, Wouter Groot	Spectacular Arena Experiences	€ 114.528
	EFRO	Kansen voor West	Gezondheidsfa-briek	Ben Kröse	eHealth Gebruikers Gilde	€ 5.772
	SIA RAAK	KIEM	AUAS	Rebecca Breuer	Smart Garments	€ 16.067
					Total 2017	**€ 617.599**

Year	Funder	Programme	Institution	People	Project	Amount
2018	NWO/SIA	Kiem Smart industry	AUAS	Rebecca Breuer	Slimme kleding	€ 19.967
	NWO/SIA	RAAK MKB	AUAS	Geert Lovink	Maak het Publiek	€ 299.210
	NWO/SIA	Kiem 21st century	AUAS	Marije Kanis	Zichtbaar Slimmer	€ 20.000
	NWO/SIA	KIEM	AUAS	Martijn de Waal	Smart Cities	€ 20.000
	NWO/SIA	RAAK MKB	AUAS	Martijn de Waal, Inte Gloerich, Nazli Cila, Gabriele Ferri, Wouter Meys	Circulate: Design thinking	€ 299.914
	ZonMW	Create Health	AUAS	Ben Krose, Monique Schaule Jullens	Growing Roots	€ 249.000
	SIA	Top-up	AUAS	Lisette Vonk	Passende mode	€ 10.000
	EFRO	Kansen voor West	Gezondheidsfa-briek	Ben Krose, Monique Schaule Jullens	eHealth gebruikers-gilde	€ 190.108
	EU	Creative Europe	Goethe Institute	Martijn de Waal, Wouter Meys, Ga-briele Ferri	Trust in Play	€ 39.036
					Total 2018	**€ 1.147.235**
2019	NWO/SIA	PRIO	AUAS	Ben Krose, Somaya Ben Allouch	Lectoren platform	€ 88.012
	NWO/SIA	Top up	AUAS	Tamara Witschge, Annika Kuijper	Toolkit 21e eeuw	€ 10.000
	Interreg	Noth Sea Region	Gemeente Zaanstad	Nanda Piersma	Empower	€ 90.000
	SIA	RAAK MKB	AUAS	Maarten Groen	Sensing Streetscapes	€ 30.000
	Clicknl	TKI Toeslag	AUAS	Troy Nachtigall	Fieldlab 3D Netwerk-activiteiten	€ 43.000
	Clicknl	TKI Toeslag	AUAS	Troy Nachtigall	Fieldlab 3D Realisatie	€ 80.000
	Clicknl	TKI Toeslag	AUAS	Anders Bouwer	Fieldlab DDD	€ 9.500
	Clicknl	TKI Toeslag	AUAS	Anders Bouwer	Fieldlab DPT	€ 10.250
					Total 2019	**€ 360.762**
2020	NWO/SIA	LINT	AUAS	Nanda Piersma, Marten Teitsma	LINT: Quantum Computing	€ 187.500
	EU	Creative Europe	Neue Kammer-spiele and Public Art Lab	Martijn de Waal, Wouter Meys	Connecting Cinemas	€ 32.744
	NWO/SIA	RAAK MKB	AUAS	Mirjam Vosmeer	VR for Diversity	€ 214.257
	ZonMW		AUAS	Martijn de Waal, Frank Suurenbroek	Van Veerkracht naar Preventie	€ 133.000
	TKI	TKI Toeslag	AUAS	Tamara Witschge, Wouter Groot	Designing for value	€ 32.556
	H2020		TU Delft	Somaya Ben Allouch	Dcode	€ 244.020
					Total 2020	**€ 844.077**

Quality of the research process (standard 3)

Positioning

The research of the Centre for Applied Research must arise from relevant practice-based questions and must be of high quality. It should also be methodically thorough and ethically sound. In addition to traditional scientific methods with which specific hypotheses are systematically tested, methodological innovation and the use of artistic research methods[1] are important to us.

Our approach (see Chapters 1 and 2) often calls for an explorative way of working. Research through Design offers a suitable method for this. By designing, testing and reflecting on prototypes for products, services, interfaces, experiences or platforms, we want to experiment with new forms, roles and practices and get a grip on the relationship between technological and social developments.

Within the Centre for Applied Research, in the first instance, the research groups themselves must monitor the quality of the research process. In addition, external peers from science and the professional field also play an important role in quality assurance. How the research processes and results of the Centre for Applied Research are evaluated in relation to the objectives is described in Chapter 5 Quality Assurance.

State of affairs

In 2015, the Meurs Committee established that the research in the Centre for Applied Research of FDMCI met the standards in the field. The committee also noted that the professors played an important role in monitoring the quality of research. In 2018, the Schreiber Committee also noted that 'both the research and its output have been of a consistently high quality for years.' The committee did state that we should devote more attention to making its standards and working methods more explicit, and that the research through design method had not yet been sufficiently developed.

Practically relevant and value-driven

Research in the Centre for Applied Research always starts with a prac-tice-based question. Professors have developed various instruments to uncover questions from society and the professional field. This is done in a cyclical set-up of research practice. It often starts with small experiments, for example via seed money applications, workshops, the organization of a training school or educational project, in which a new development or problem is explored together with external parties. When the evaluation shows that actors identify with the themes, additional question articulation sessions are organized that lead to project applications. During the project, acquired knowledge and insights are shared with the professional community, in publications and during events, presentations, conferences, exhibitions and transfer, evaluation or implementation workshops. This often leads to follow-up questions that can be explored in a new cycle. It is expected that the Centres of Expertise (CoEs) will play an important role in this in the future, due to the close contact they maintain with the professional field and the events and matchmaking meetings they organize.

In addition to being practically relevant, much of our research is value-driven. This means that with the research we want to contribute to a democratic, socially and ecologically sustainable society. This colouring guides the choice for the projects we develop. This takes place in the individual research groups, where professors test whether research proposals match the objectives of the Centre for Applied Research.

Methodically thorough

The various research groups focus on a number of impact areas and are associated with many scientific traditions and fields. Roughly speaking, we can divide the methods used into three categories, which are often used in addition to each other.

- Making: a first category of methods comes from the world of human computer interaction, action research, situated design and participatory design. It concerns various methods in which prototypes are often designed together with stakeholders that embody a solution direction for a specific problem, or depict the problem itself in new ways and provide insight. Different methods distinguish phases such as emphasize, define, frame, ideate, prototype

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1   These new forms often also lead to new forms of output, other than the standard conference paper or white paper aimed at the professional field. More about this in Chapter 2.

and test or planning, acting, observing, reflecting of plan, prime, dream, develop, deliver. The different methods then recommend a number of methods for different phases with which, for example, the problem can be mapped, such as stakeholder mapping or affinity diagrams. In many cases, inspiration is sought for the implementation of prototypes in existing guidelines or reference projects that are documented in conference proceedings, journals and professional publications. The methodologies in this category range from the sometimes solutionistic design thinking approach to more subjective methods such as auto-ethnography. This category also includes methods of artistic research and approaches such as critical design and speculative design.

- Measuring: the second category contains a series of research methods from, among others, the social sciences and user research from human computer interaction. A hypothesis is tested in a systemized manner through experiments, observations, interviews and questionnaires. These methods can be quantitative or qualitative in nature. In the latter case, observations or interviews are often systematically collected and coded using qualitative analysis software. These methods are usually not separate from the creation process. They can be used, for example, to map out the routines, interests or wishes of stakeholders in advance, or to measure the effectiveness of a specific design intervention in relation to a set goal.

- Interpretation: a third set of methods is based not so much on objective measurements and analyses, but on the craftsmanship of the subjective expert.[2] This includes methodologies from the humanities, such as discursive and heuristic methods such as critical discourse analysis and close reading. These methods enable us to conceptualize the structures and properties of products and services, and their implications for society. We can then place them in a tradition of design or social developments, and critically evaluate them against a specific value framework. Researchers activate their own knowledge of broader aesthetic and normative developments, the existing literature and their skills in the field of analysis and argumentation. Knowledge and insights arise here in a heuristic way, through argued debate and essays in which researchers look together for manageable concepts and interpretations that can play a role in design processes or in the political domain.

In order to guarantee quality, the Centre for Applied Research follows a two-track policy. The first track is embedding quality control in research development and the research process. Project proposals for new projects are read internally and commented on by the grant advisors of Innovation Exchange Amsterdam (IXA), a partnership between the AUAS and Amsterdam universities for knowledge transfer. Part of this process is an internal peer review by professors from other faculties. Submitted project proposals are assessed by external committees, composed by bodies such as NWO and SIA.

The research itself is then embedded in research groups, in which the professor oversees the research and the methods and bears the ultimate responsibility for their quality. There are also external steering committees within research projects to which reports are made at regular intervals, and internal intervision takes place in research meetings. A number of research groups, such as Digital Life and Creative Media for Social Change, have also drawn up their own research guidelines. Transparency is achieved by using the publicly available data repository figshare, and Pure for documentation of all research output. When making datasets public in figshare, the data is anonymized and minimized (limited to what is strictly necessary). For methods that are firmly embedded in more traditional scientific disciplines, the process of peer review of conference papers and articles play an important role in quality control during the research process.

The second track lies in the evaluation and appreciation of the research and its outcomes by stakeholders and a wider circle of professionals. Has the research provided them with new, useful insights and starting points? Are they satisfied with the quality? On the one hand, we conduct internal evaluations for this after research projects have been completed. On the other hand, we also look at signals from the professional world. Is the end product recognized in, for example, reviews in professional journals? Does it lead to selection for exhibitions, invitations to speak at conferences or serve on advisory boards? Is there a publisher who wants to publish? In this way we evaluate the quality of the end product and not so much the quality of the research method itself, but it does help us to determine whether or not a method has been effective and whether it can be repeated with adjustments or not.

Ethically responsible research

The Centre for Applied Research endorses the importance of ethically responsible research. This is put into practice in several ways. In the first place, the ethical component of a research is part of many application procedures, including those of ZonMW and H2020, whereby reflection on ethical standards is part of the research design. Since 2018, the Centre for Applied Research has its own data steward, who supervises the research projects and advises on ethical data collection and storage, in accordance with all rules. Halfway through and upon completion of a project, the data steward does a light test on research data management (RDM). AUAS-wide, an Ethics Committee and a Scientific Integrity Complaints Procedure have been introduced, to which the Centre for Applied Research is also a member. Individual training courses in the field of research ethics are mainly offered to PhD students through the graduate schools to which they are often affiliated as part of their PhD trajectory. Since 2019 there is also a Learning Community Ethics. It mainly focuses on ethical issues for (design) professionals.

Research through Design

A specific approach to our research that deserves extra attention here is Research through Design (RTD) and related critical making. RTD is an important way of working for many research groups. By RTD we mean that we use design – the making process of prototypes for products, services and experiences – not to arrive at a one-off concrete solution to a problem, but instead to gather more general knowledge and insights. This knowledge can be aimed at the design of products and services themselves and their use in specific contexts, or it can be aimed at getting a better grip on a broader problem or development.

An example. In our research '360 Storytelling for VR', researchers and students, in collaboration with AVROTROS, developed a VR installation for the television series Circus Noël in which users could walk a tightrope in a circus tent. In reality, they were walking over a four-inch beam that lay on the floor, but in their VR goggles it looked like they were balancing on a thin rope in the top of a circus tent. The purpose of making the installation was not just the experience in itself, as a product for the media and entertainment industry. The experiment was designed to collect knowledge in a structured way about designing physical experiences in virtual environments. The design functioned as a prototype against which hypotheses about VR design could be tested, and new insights could be gathered through questionnaires and interviews. It is an example of an RTD tradition in which the materiality of the design is given a central role in research into design practices.[3] The Makers Lab, the Biomaterials Studio and the GAP Fashion Technology Studio provide the FDMCI with facilities for material exploration.

In another project, we built a fountain in which the height of the water reflected the power consumption on the smart grid of a nearby energy community. The purpose of this was to use the fountain to conduct discussions with residents about the operation of the smart grid, as well as the collection, storage and disclosure of data in the system and the underlying choices for matching energy use and demand, created by the designers of the smart grid. The physical design functioned as a conversation piece here. The discussions arising from the 'Ener-Geyser' lead to insights that can help designers to gain traction on the values and motivations of their users, and vice versa. They also invite designers, policymakers and residents to reflect on underlying assumptions, values, their implications in the daily use of the smart grid and its desirability.[4]

RTD is therefore not an unambiguous method, but an approach in which making (often in co-creation) is central. Around this, various methods can be used to evaluate, interpret, or translate (specific properties of) the resulting artifact into recommendations for design or policy. In that regard, RTD has been described by Stappers and Giaccardi (2011) as 'studies in which knowledge is generated on a phenomenon by conducting a design action, drawing in support knowledge from different disciplines, and reflecting on both the design action and an evaluation of the design result in practice'.[5] We also find in this connection with the work of Zimmerman et al. (2007, 2010), who state that this approach is very suitable for the formation of nascent theory about problems and practices that are new or still immature, as well as for the search for pre -patterns, an early version of design elements and concepts for technologies and applications that are still in development.[6]

Exchange and discussion

Exchange about and reflection on methodologies takes place in various ways. Most of the discussion about this takes place within (international) research communities and their bodies (conferences, publications, blogs, panels). Our professors and lecturer-researchers are intensively involved in these discussions. For example, a lively international community has arisen around the approach and methodologies of RTD. Discussions about RTD play an important role during the annual DRIVE events of CLICKNL (TKI of the top sector Creative Industry) during the Dutch Design Week, in which our lecturer-researchers also participate fully. We also joined the community around the biennial Research Through Design Conference. Around the last edition in 2019 in Delft, a network of lecturer-researchers was formed from the AUAS, who also held internal preliminary and follow-up discussions. The faculty's maker labs are linked to the international movement around the Fab Academy, in which the exchange of and reflection on manufacturing methods takes place.[7] Another example is the organization of the AUAS-wide conference Design & The City in the context of the Dutch-European presidency by the Centre for Applied Research of FDMCI. As part of this, the two-day Lab-of-Lab's event was organized, to which five international living labs were invited to demonstrate their design methodologies. The results of that event are documented in a publication in which researchers from various research groups reflect on this approach.[8] At AUAS level, two or three times a year substantive meetings are organized for all professors, in which they exchange knowledge and reflect on research methods, for example. In addition,

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2   See Jeffrey Bardzell & Shaowen Bardzell. 2016. "Humanistic HCI." Interactions March-April: 21–29.

3   See: RTD Ethos, Research Through Design Conference https://www.researchthroughdesign.org/rtdethos/

4   For more information about the Ener-geyser see: https://www.youtube.com/watch?v=r3puTdesaX4

5   Stappers, Pieter, and Elisa Giaccardi. n.d. "The Encyclopedia of Human-Computer Interaction, 2nd Ed. 43. Research through Design."

6   Zimmerman, John, Jodi Forlizzi, and Shelley Evenson. 2007. "Research through Design as a Method for Interaction Design Research in HCI." Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI '07, 493-502. https://doi.org/10.1145/1240624.1240704; Zimmerman, John, Erik Stolterman, and Jodi Forlizzi. 2010. "An Analysis and Critique of Research through Design." Proceedings of the 8th ACM Conference on Designing Interactive Systems - DIS '10, no. June 2017: 310. https://doi.org/10.1145/1858171.1858228.

7   https://fabacademy.org/

8   Ferri, Gabriele, and Martijn de Waal, eds. 2017. A Lab of Labs: Methods and Approaches for a Human-Centered Design. Amsterdam Creative Industries Publishing.

the AUAS-wide Kennisparade is organized once a year, where professors and researchers come together to share knowledge.

The Learning Communities (LCs) and the CoEs are also places where discussions about methodologies can be stimulated, but that has yet to prove itself. However, the cooperation with education in this area is beginning to bear fruit. The Master Digital Design, for example, pays a lot of attention to design methods in the curriculum and has especially attracted teachers who are also active as researchers in the Centre for Applied Research and who contribute their knowledge during research design sessions and connect discussions about methodologies in both places. Recent Comenius grants such as that of CMD teacher Irene Kamps for 'provoca types' also offer new points of departure for starting these discussions together with the LCs and education.

In a similar way, minors such as Designing User Research and Makers Lab play a connecting role between research and education, because diverse researchers are invited there to explore their methodologies with students. The SPRONG applications mentioned in Chapter 1 are also expected to further stimulate methodological reflection and discussion. And this also takes place in other AUAS networks, such as the Smart City Academy network.

Reflection

The Centre for Applied Research focuses on research into the digital transition and wants to play a guiding and agenda-setting role in it based on its own core values, aimed at a socially and ecologically sustainable society. This is an ambitious and complex task, because with our research we want to help shape a development we are in the middle of. On the one hand, we can fall back on existing and proven research methods. And on the other hand, we are developing a new set of instruments with which we can explore developments in the digital transition. We are experimenting with new methods for which there are as yet no calibrated methodological quality criteria. This means that we are also constantly looking for new ways to evaluate methods used at the meta level.

As described above, the discussion takes place in various places: in international professional communities to which we are affiliated and in various meetings organized within the AUAS. At the same time, even more exchange could take place at the FDMCI level. The LCs, the CoEs, the SPRING applications, the new research group Doorwerking Praktijkgericht Onderzoek (Impact of Practice-based Research) and the initiatives discussed in collaboration with education offer good starting points for this, but some of them have yet to prove themselves in the coming years. The professors/portfolio holders of Research Quality have an important task to keep this process up to speed.

"Teachers around the world are now using our reader"

Critical making is a collective term for creative and technical practices that aim to address social inequalities and provide them with an action perspective. Consider, for example, the fact that designers can incorporate certain assumptions and value systems from the tradition of their discipline, such as designing products for men only. I have put together a reader with articles about this, which has now been distributed around the world in a circulation of 1,500: from South America to Asia, art academies and colleges are using it.

Another project I did within FDMCI is a collaboration with HBO-ICT and TextileLab Amsterdam van Waag. Based on the material archive, developed by Waag, we have built an installation with alternative design materials. They are all renewable and biodegradable, which means they have a smaller footprint than, for example, plastic. Designers can view the materials in the Makers Lab at the AUAS. In collaboration with students from HBO-ICT, I digitized this so that it becomes an open-source tool that can be used by designers and students. There is already interest in the tool from other educational institutions, for example the design course at UC Davis, who actually use it in its lessons.'

—

Loes Bogers, senior lecturer Learning Community Critical Making & Research through Design

"Education and research are finding each other better and better"

Students and teachers from the Communication and Multimedia Design (CMD) programme and researchers from the FDMCI Centre for Applied Sciences are getting to know each other better and better, according to educational programme manager Andre Neumann. 'More and more research groups employ CMD lecturers, which makes it much easier to work together. The link is then quickly established.' Thanks to the research projects that are undertaken together, students can participate in progressive projects. Not driven by commerce, but instead by a research question from the research group or society. A clear example of this recently emerged in the speech by Tamara Witschge of the Creative Media for Social Change research group. She told how you can bring about change through the power of imagination and media. Students from CMD investigated, with the help of questionnaires, for example, why female students do not want to be vaccinated with AstraZeneca. The students translated the doubts about this into a comic. Policymakers, amongst others, can use this comic to determine their communication. 'This is a good example of collaboration between research and education. For such collaborations, it is important that education can be flexible; we plan lessons and content far in advance, while grants for research often only come about at the last minute,' says Neumann. 'At CMD we see the importance and we are prepared to be flexible. That's how beautiful things can arise.'

—

Andre Neuman, educational programme manager Communication and Multimedia Design

From student to researcher: students participate in research projects.

Over the course of three years, student Corné Lukken has worked in various roles with lecturer-researcher Joey van der Bie (Digital Life research group). He initially participated as a student in a project about bluetooth beacons, after which he fulfilled the role of student assistant for a year and a half. In that role, he became involved in research into navigation systems for the blind and partially sighted, based on beacons. In areas where GPS does not work, beacons can offer a solution. One can think of narrow alleys between tall buildings. Lukken assisted in the development of a prototype in this project, using input from focus groups. 'During this project I saw that people actually benefited from the app that we developed. Moreover, there is a relatively short time between research and implementation,' says Lukken. He performed his tasks quite independently, receiving weekly feedback from his supervisor. Lukken: 'Although I had no direct contact with other researchers, I experienced the atmosphere as being very open. Everyone was approachable. For example, during the joint lunch, there was always someone to spar with about a certain approach.'

—

Corné Lukken, graduate and intern Digital Life

Learning to think and work creatively through the exploration of new technologies

How can you use storytelling techniques and data visualisations to stimulate the debate about the circular economy between the citizens of Amsterdam and policymakers? Student Beach Bagenal of the Master in Digital Design was faced with this question. He was assigned the research question via the Civic Interaction Design research group as a project commissioned by Arcam, the centre for architecture in Amsterdam. For an exhibition, he and other students made a multimedia arrangement, which made use of a transmedia storytelling-method. The exploration of the students contributes to the development of a new medium. This ensures that the democratic debate about the future of the city can be conducted in a new way.

Citizen participation is often one-dimensional: a room in which policymakers and residents can discuss with each other. With special tools you can broaden that participation and also attract other residents. Beach looks back positively on the project. 'Working for the research group was pleasant: everything revolves around research and you can chart your own course. This is different for the projects I have to do for clients during my studies. Then you will receive clear instructions. The research group gave us more freedom. We were always allowed to discover new technologies and learned to think and work in a creative way.'

—

Beach Bagenal, student of the master Digital Design
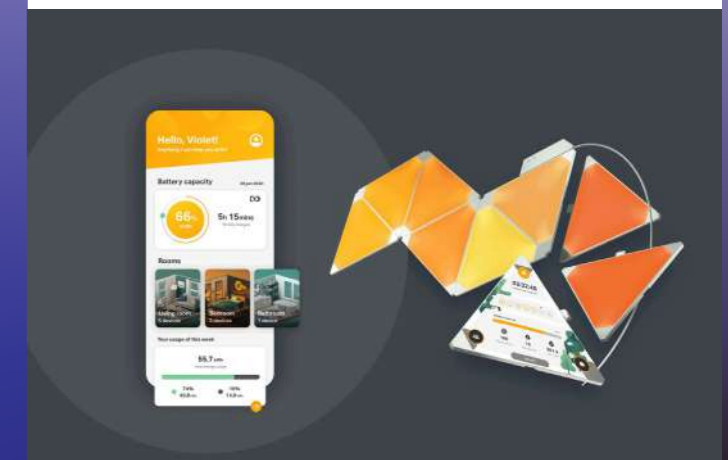
Quality Assurance (standard 5)

Positioning

The Centre for Applied Research of the Faculty of FDMCI aims to regularly and systematically evaluate the research processes and results and to make improvements based on that evaluation.[1]

Development of vision/plans

The Centre for Applied Research's vision and mission are formulated and periodically revised by the Faculty Research Council. The details of existing research groups and the wishes for future research groups are described in the Lectoratenplan, which is revised every three years.[2] The Research Council draws up the plan and discusses it with the Faculty Management Team (FMT), the FDMCI participation council (Deelraad) and the rector. The Centre for Applied Research also has an annual One Page Strategy (OPS). Like the Lectoratenplan, this is established in the FMT. In these documents, the Centre for Applied Research relates to the Institutional Plan (IP) of the AUAS and Het Fundament and annual plan of the faculty. There is structural strategic consultation between the FMT and the Research Council to jointly (further) develop the vision and mission of the faculty.

The professors are in the lead for developing the lines of research within the research groups. To this end, they also relate to the IP of the AUAS, Het Fundament of the faculty and the vision and mission of the Centre for Applied Research. When they take office, professors write a research plan, and within the first year of appointment they write and present their inaugural speech in which they make their vision, mission and research program public. After taking office, professors occasionally publish about new plans and directions.

Progress evaluation

At the level of the Centre for Applied Research, an evaluation of the research of the research groups takes place once every three years, in accordance with the standards of the Branch Protocol for Quality Assurance Research (BKO).[3] This evaluation is alternately external and internal. In preparation, the Critical Reflection is written. The Research Council prepares this publication, with input from employees of the research groups and educational programme managers and with the help of interviews with internal and external stakeholders.

The progress of the research groups is discussed twice a year in a Periodic Management Consultation (PMO) with the professor, dean and the heads of operations of the faculty and the Centre for Applied Research, of which the policy advisor reports. The vision, mission and results are discussed in the PMO. Operational progress, such as finance and HR, is also evaluated. Annual and assessment interviews are held between the dean and the individual professors via the Hay system. In addition, quarterly discussions are held about HR and finances with the head of operations and an HR officer. Quarterly reports are made at level of the Centre for Applied Research via the IMR reports. These are discussed with the Executive Board twice a year by the dean and the head of operations. The Faculty Research Council takes place once a month, in which all core professors, the dean, the programme managers of the CoEs and the head of operations participate. The Centre for Applied Research is also represented by one person in the FMT, which meets weekly to monitor processes in the faculty and to look ahead. One of the professors also serves on behalf of the faculty on the AUAS-wide Education and Research Council, which meets monthly.

Follow-up and adjustment of policy

Five portfolios have been created within the Research Council, linked to the five evaluation standards of the BKO, to jointly develop the Critical Reflection and monitor the follow-up of points for improvement and recommendations. The faculty's research policy advisor is responsible for this follow-up by putting policy themes on the agenda, writing policy memorandums and organizing various processes in the field of quality evaluation.

Doctoral research programme

The Centre for Applied Research also organizes the faculty Doctoral research programme and draws up clear criteria and procedures for this.[4]

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1   See the box with an overview of instruments for evaluation and further development of the Centre for Applied Research. A more extensive overview can be found in the appendix

2   See appendix FDMCI Kenniscentrum Lectoratenplan 2020

3   See 'Brancheprotocol Kwaliteitszorg Onderzoek 2016-2022. Kwaliteitszorgstelsel Praktijkgericht Onderzoek Hogescholen'. Vereniging Hogescholen, oktober 2015
    https://www.vereniginghogescholen.nl/system/knowledge_base/attachments/files/000/000/489/original/BKO_2016-2021_-_okt_2015_(12-1-2016_definitief).pdf?1452602175

4   See appendix FDMCI Promotieregeling

State of affairs

Evaluation and follow-up

During the last three years, many new initiatives have been taken to strengthen quality assurance at the level of the individual research groups and of the Centre for Applied Research. As a result of the internal visitation in 2018, a research policy advisor has been appointed from the faculty department Education and Research to structure the process of policy development, evaluation and follow-up in a structural manner. The work consists of developing and implementing research policy in collaboration with the dean, head of operations and professors, drafting notes, preparing and reporting on Research Council meetings and strategy sessions, acting as secretary of the doctoral research programme committee, the coordination of the three-yearly evaluation and participation in the AUAS-wide Research Quality network.

The five policy portfolios, linked to the BKO-standards, were set up at the beginning of 2020. Within the Research Council, they are divided into duos consisting of professors, the programme managers of the Centre of Expertise (CoE), the head of operations and the research policy advisor. Portfolio holders prepare sessions or agenda items together with the policy advisor to evaluate the state of affairs in the portfolio, initiate new policy or discuss succession.

The PMO was introduced in May of 2019 to monitor the progress of individual research groups. Quality assurance of research within individual research projects is the responsibility of the professors. The approach for this is described in Chapter 4.

Doctoral research programme

The policy regarding the doctoral research programme of FDMCI has been tightened up. The process surrounding the call and selection is structured and laid down in a script. There is more clarity about what a pre-promotion is and what is expected of a proposal: it is explicitly seen as preparation for the doctoral application, for which a basis is already in place at the time of the application. Previously, it was also seen as an orientation towards research in general. In addition, communication about the programme has been improved, with more extensive information, a separate web page on the faculty 'A-Z list' and the organization of an information and inspiration meeting. The intention to focus more on themes relevant to the faculty has been followed up by stipulating that a proposal for a pre-promotion or PhD position is supported by both a professor and an educational programme manager.

Reflection

Critical reflection, learning and further development are embedded on several levels in processes in the research and in the Centre for Applied Research. From steering groups in individual projects, reading along with research proposals in research groups and checks on Data Management Plans at several moments in a project (discussed in Chapter 4) to the PMOs mentioned and the strategic consultations of the Research Council. We do, however, see an area for improvement in the visibility of the available competence in the Centre for Applied Research. In 2018, the Schreiber Committee added a critical question: 'The Committee wonders whether the Centre for Applied Research is

unconsciously competent or that there is some nonchalance with regard to quality and visibility."

In 2021, the Centre for Applied Research is convinced that the competence is there, but that it is not yet sufficiently visible and is insufficiently laid down in policy. This requires an explicit vision of quality and quality criteria, and effective instruments must be in place. Steps have been taken towards that visible competence. In sessions with the Research Council and with Centre for Applied Research employees, we worked on making our vision explicit about what good research is and what impact we consider important, which is laid down in particular in Chapter 2 on Impact. In addition, an overview has been made of the instruments that we use for evaluation and (further) development (see p.47).[5] In order to ensure that the multitude of meetings that take place during the year and the documents that are produced follow each other properly and that they connect with each other, an annual overview will be made from the academic year '21-'22. This ensures that, for example, strategy sessions are linked to policy memorandums and decision moments. By implementing the portfolios and adapting the format of the One Page Strategy to these portfolios, monitoring is also better possible.

There is also a certain risk in these developments: professors spend a lot of time on discussions on progress of the research group on the one hand and Centre for Applied Research-wide policy matters on the other. These come on top of the increasing complexity of research projects and the expertise required in the teams as discussed in this Critical Reflection. This reduces the time available for research, project development and collaboration with education. Contributing to a good balance is an important point of attention within this BKO standard of Quality Assurance.

Doctoral research programme

As mentioned, our faculty doctoral research programme has been tightened up. An area for improvement is even better communication about the regulations within the faculty, by offering guidelines for the (timely) coordination process with potential candidates, management teams of educational programmes, the FMT and the Research Council. Points for improvement with regard to guidance and embedding in research and education are discussed in Chapter 3 Organization.

Involving the professional field

One of the recommendations of the Scheiber Committee in 2018 was to better involve the professional field in the development of the research themes and vision. Involving stakeholders in the professional field is of great importance and often takes place at the level of projects and research groups (see Chapters 2 Impact and 4 Quality) and every three years during the evaluation at the level of the Centre for Applied Research. We intend to organize a structural dialogue with the professional field in collaboration with the CoE for Creative Innovation, in which reflection and agenda setting with regard to our research are central in the broadest sense. Consideration is also being given to working together with educational programmes in which there is collaboration with professional field committees.

Instruments for evaluation and further development		
Level	Instrument	Frequency
Centre for Applied Research	**Documents**	
	Lectoratenplan (Research group plan)	Triennial
	Critical Reflection	Triennial
	One Page Strategy	Yearly
	Budget	Yearly
	Intern policy notes	Yearly
	Data for AUAS-yearly report	Yearly
	Consultation	
	Research council strategy days	Approx. 3 times per year
	Research council meetings	Approx.10 times per year
	Strategy days research council and FMT	Approx. 2 times per year
	Staff days Centre for Applied Research	Biannually
	Centre for Applied Research support team	Weekly
	Coordinator consultation	Monthly
	Discussion with dean and Executive board	Biannually
	Assessment with panel discussions stakeholders	Triennial
	Discussion with dean and rector regarding evaluation	Triennial
Research group	**Documents**	
	Research group's plan	When taking office
	Inaugural lecture	Within 1st year after taking office
	Publications about visions/programs/projects	Incidentally
	Consultation	
	PMO-discussions professors	Biannually
	Year and assessment interviews professors	Both once a year
	Quarterly discussions by HR and Business Operations	Every quarter
	Kenniskring research group	Varies
Projects		
	Internal peer review and feedback IXA and colleague professors	In the development process
	Peer review organised by subsidy providers	By adjudication, halfway and end
	Monitoring and advice regarding data management and ethics by data steward	By start, halfway and end
	Feedback from steering groups	Throughout the project
	Feedback research community	After presentations at conferences and events, via reviews
Management information		
	IMR-reports	
	Pure (output-database)	
	Fig share (data-storage)	
	HvA/Faculty monitors: staff monitors Education and Research, Staff satisfaction monitor, National Students Inquiry	

"Analysing images is a profession in its own right"

From his living room in Milan, researcher Gabriele Colombo talks enthusiastically about the projects he is doing together with the Visual Methodologies research group. For example, together with Professor Sabine Niederer, he investigated the number of fake news messages on Instagram about the American elections. A striking result was that there was remarkably little fake news amongst the images examined, namely those that were shared the most on the platform. Colombo is concerned with designing tools and images to properly analyse images in turn. He is now also putting his work in collaboration with the AUAS into practice with his students at the Milan University of Applied Sciences. 'I teach designers how to use images from the web in a good way, for example photos from social media. To do this, you need a method to view and collect them. This is different from data, such as numbers and text.' For him personally, the collaboration has also yielded something valuable. 'My writing skills have improved greatly thanks to Sabine. As a designer I was sometimes afraid to write. She had a lot of experience with this and that helped me get over my fear. Moreover, as a thesis supervisor, I am sometimes at a loss for good research topics that my students can dive into. For this I can always fall back on the Visual Methodologies research group, which often knows what is going on. In this way I bring both programs together nicely and my students benefit from this network.'

Gabrielle Colombo, researcher Visual Methodologies

"Collaboration within the AUAS on eHealth opens doors for me"

How can you bring about a behavioural change in the elderly and children so that they exercise more? Raoul Engelbert is conducting research into these and other themes, together with the Digital Life research group, amongst others. Engelbert is endowed professor of Paediatric Physiotherapy and professor at the Faculty of Health. In recent years, he has worked within the AUAS on various projects in the field of eHealth. For example, there was the VITAMINE project, where elderly people with an iPad were challenged to exercise more. They were also given advice on nutrition. 'Good results were achieved in the group that used the tablet and received nutritional advice,' says Engelbert.

Another new study will be launched soon: an eHealth application for parents of premature babies. 'Every year, two thousand children are born prematurely. This has a huge impact for the parents and it is also stressful for the rest of the family. With an application we want to better guide the parents and provide them with good information. I also see a lot of opportunities when it comes to collaboration between the faculties of the AUAS, for example with regard to eHealth. Professor Somaya Ben Allouch of Digital Life always thinks along with me critically but constructively. She opens doors, but also my eyes.'

Raoul Engelbert, Endowed Professor of Paediatric Physiotherapy and Professor in the Faculty of Health

"Why distinguish between education and research?"

Can you actually distinguish between education and research? This is what Dirk Reynders, director of the Amsterdam Fashion Institute (AMFI), wonders. One cannot do without the other. 'I myself obtained my PhD and I understand the importance of connecting research and education.'

'For example, the research group plays an important role in the development of a new master's degree at AMFI, and I am a member of the program council of the Centre of Expertise Creative Innovation. Together with Troy Nachtigall, the new Professor of the Fashion & Research Technology research group, we are working on a book about fashion and technology – with researchers worldwide. In addition, Learning Communities have been formed, where professors, researchers and students work together on specific themes. But the investigative attitude is especially important. In the process books of students, you can see how research skills have developed over the years.'

'I see plenty of options for more connections in the future. For example, researchers who participate in modules, professors who participate in participatory research projects or who work together on the social issue of diversity and inclusion. This can take many forms, such as concrete research projects, cases that lead to new programmes, new language use and new productions. I also strongly believe in professionalising the teaching teams and therefore want to integrate PhD projects into education. In this way, the research can contribute even more to the updating of educational practice. I have every confidence that this will be successful with our new professor. And if the AUAS emphasizes the importance of research, then more money really needs to be made available for PhD programmes.'

Dirk Reynders, director of Amsterdam Fashion Institute (AMFI)

Role for AUAS students in solving social issues in many areas.

'More than two years ago we started the Data Studio, a separate wing in the AUAS building de Leeuwenburg in which students, researchers and the business community work together on smart cities, services and products. They work in a safe way with real life data, which is also stored there in their own servers if necessary. Because different parties could meet here, interesting collaborations quickly arose. For example, with the port of Amsterdam, in the field of their energy transition, logistical challenges and safety on the water. The concept is very attractive to students; in the past three years the number of students for the minor Data Science has increased from 25 to 160 per year. These students end up in all kinds of places where they have a clear role in solving social issues, such as designing zero emission- distribution networks for wholesale and retail. The beauty of math is that you can use the same formulas to solve different problems. Whether it concerns the best planning for an inland vessel or the logistics of a corona rapid test street. Current issues that we are currently working on at the AUAS.'

Pieter Bons, lecturer-researcher Urban Analytics

In the spotlight

A selection of the various activities of the Centre for Applied Research FDMCI.

MoneyLab

MoneyLab investigates alternative revenue models in the art world. The topics that are being researched range from cryptocurrencies, blockchain and crowdfunding to discussions about basic incomes, paperless money and bread funds. MoneyLab is currently the largest active international network that emerged from the Insitute of Network Cultures and was founded in 2013. Even during the current difficult corona period, five international online conferences have taken place.

Media Architecture Biennale

The Media Architecture Biennale is an example of the way in which the Centre for Applied Research contributes to setting up international knowledge networks of researchers and professionals. The Media Architecture Biennale is a leading international event that, following editions in Vienna, Aarhus, Sydney and Beijing in 2021, was hosted from the AUAS in Amsterdam. For this edition, the research groups Civic Interaction Design and Building Transformation (Faculty of Technology) were the main organizers. Together with Utrecht University and the Media Architecture Institute from Vienna, they organized a three-day (online) conference which attracted more than 600 visitors, with keynote speakers, symposia, papers, award ceremonies and (online) exhibitions. The event also led to various publications. In collaboration with the Learning Community Urban Interaction Design, a guide was made in which training courses worldwide in the field of media architecture are described.

Makers Lab

In this open workspace, students and employees of the AUAS can give shape to ideas in materials such as wood, plastic, paper and textile. Instructors are present here every day. You can also make intensely coloured prints with the RISO-printer or print full colour on almost all materials with the UV- printer. In the digital creating room you will also find 3D-printers, laser cutters, a foam cutter and a sticker cutter. The production area with analog tools is equipped with a drill press, a band saw, a sander and many hand tools. There is also a minor Makers Lab, which challenges students to think critically about the way they create and design.

Frictie

Frictie, by former colleague Miriam Rasch, won the Socrates Cup this year for the best Dutch-language philosophy book. Frictie is about ethics in times of dataïsm (the belief that everything can be translated into data). The publication of the book generated a lot of publicity, including a major interview with Miriam Rasch in Het Financieele Dagblad.

Scientific output

Ben Allouch, S., De Graaf, M., & Sabanovic, S. (2020). Introduction to the Special Issue on the Mutual Shaping of Human-Robot Interaction. INTERNATIONAL JOURNAL OF SOCIAL ROBOTICS. https://doi.org/10.1007/s12369-020-00681-6

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De Vries, P. (2019). Algorithmic Anxiety in Contemporary Art: A Kierkegaardian Inquiry into the Imaginary of Possibility. (Theory on Demand; No. 33). Institute of Network Cultures.

Haaker, T., Groot, W., & Hekman, E. (2019). A design method for data driven business models. In F. Lüdeke-Freund, & T. Froese (Eds.), 4th International Conference on New Business Models: New Business Models for Sustainable Entrepreneurship, Innovation, and Transformation (pp. 554-560). ESCP Europe Berlin.

Laan, C. M., & Piersma, N. (2021). Accessibility of green areas for local residents. Environmental and Sustainability Indicators, 10, 1-8. [100114]. https://doi.org/10.1016/j.indic.2021.100114

Maldini, I., & Stappers, P. J. (2019). The wardrobe as a system: exploring clothing consumption through design fiction. Journal of Design Research, 17(1), 3-25. https://doi.org/10.1504/JDR.2019.102229

Niederer, S. (2018). The Study of Networked Content: Five Considerations for Digital Research in the Humanities. In G. Schiuma, & D. Carlucci (Eds.), Big Data in the Arts and Humanities: Theory and Practice (pp. 89-100). (Data Analytics Applications). CRC Press. https://doi.org/10.1201/b19744

Fieldlab 3D Knit

The 3D KnitFieldlab is organizing a series of projects with industrial and social partners to look at a fully automated robotic knitted garment made with a Shima Seiki Whole Garment Knit machine. The fieldlab's projects focus on local production, reshoring, knitted light therapy and embodied shape shifting. This project investigates automated robotic fashion production and human computer interaction with complex production systems. The project is a run-up to the New European Bauhaus and aims to develop more sustainable, localized and distributed forms of production in the clothing, soft goods and interior items sectors. The Fieldlab 3D Knit is a collaboration between AMFI and the Fashion Research & Technology research group.

Hipper

The elderly go home earlier and earlier after hip surgery, whereby the rehabilitation process is increasingly carried out in the home situation. In the SIA RAAK Publiek project Hipper, a treatment protocol with sensor technology has been developed that provides both patients and healthcare professionals with more insight into the progress of rehabilitation. A total of 41 healthcare professionals was involved in the project from the rehabilitation institutions Vivium Naarderheem, Cordaan, Zorgcirkel and the Zonnehuisgroep. Within the AUAS, the Faculty of Health and the Digital Life research group also participated in the research. As a result, knowledge about treatment methods was combined with knowledge about technology.

Masters, minoren and Digital Society School

The research groups are actively involved in setting up and conducting various minors, such as Festivals, Immersive Environments, Designing User Research, Makers Lab, Critical Making, AI, and Internet of Things. They also participate in the development of new masters in Fashion and Applied Artificial Intelligence. The Centre for Applied Research was closely involved in the establishment of the Digital Society School and the Master Digital Design, with which the collaboration with a number of research groups has been very intensive ever since. The Digital Design master is often involved in the development phase of new research projects and students make an active contribution to research processes.

Data Studio

The research group Urban Analytics is the founder and developer of the Data Studio. In a separate wing at the AUAS Leeuwenburg location, students, researchers and the business community work together on smart cities, services and products. They work in a safe way with real-life data, which, if necessary, is also stored there on their own servers. Because different parties could meet here, interesting collaborations quickly arose, for example with the port of Amsterdam in the field of their energy transition, logistical challenges and safety on the water.

Mapping disinformation

Mapping disinformation is a study into the urgent theme of 'disinformation', which was carried out in collaboration with the University of Amsterdam, on behalf of the Minister of the Interior and Kingdom Relations. The research resulted in two bundles at Amsterdam University Press and an EU application on small-scale media. The reporting contained articles in Trouw and de Volkskrant.

The Exhibition Maker of the 21st Century. Designing for experience

In recent years, the research group Creative Media for Social Change (previously Crossmedia) has conducted practical research into 'museum experience' together with thirteen museums and five design agencies. The aim of the research was to develop an evaluation and management model that allows exhibition makers to gain more insight into offering a visitor experience, so that visitors learn more about the content of the exhibition and be inspired and touched. This resulted in the publication De Tentoonstellingsmaker van de 21e eeuw. Ontwerpen voor beleving (The Exhibition Maker of the 21st Century. Designing for experience). In addition, a toolkit/game board of TM21 has been developed (additionally), in which the methodology comes back once again.

Circulate

Circulate is a RAAK MKB research project into the design of digital platforms for resource communities: groups of citizens who want to jointly manage a resource. An example is energy communities in which residents generate and use energy together. Researchers from four research groups collaborated with architectural firms, developers, blockchain developers, circular economy companies and residents to explore how a platform for managing such resources can be designed to contribute to a commons-based circular economy. In addition to scientific articles, the research resulted in a 'design canvas' with six design dilemmas, three video documentaries, and a series of (online) debates organized together with Pakhuis de Zwijger and Het Nieuwe Instituut about the blockchain society. Almost all parties involved are now part of a follow-up application.

Podcast and magazine (K)NOW

The magazine (K)NOW was created to show more of what is going on within the Centre for Applied Research. This includes amongst others interviews with researchers, in which they talk about research projects that have impact on society and appeal to a broad target group. A podcast was also recorded with these researchers in the radio studio of the AUAS. Creating a magazine and a podcast makes the valuable knowledge of the Centre for Applied Reserch accessible to a wider audience.

Food for Thought Inspiration Sessions

The Food for Thought inspiration sessions take place every month, with researchers and partners on stage. Due to corona, these sessions have continued online. Meetings were about very diverse topics, such as dealing responsibly with Artificial Intelligence and the use of design methods and tools and the insights gained from the project Spectacular ArenA eXperiences.

The Responsible IT research group (RIT) focuses on the development of digital technology, with an eye for social values and the human dimension. The municipality of Amsterdam and the University of Applied Sciences enter into a long-term partnership with the research group based on their shared values and vision of responsible development and use of IT. The research group includes the professorships by special appointment Quantum Computing, Cyber Security and, since 2020, Urban Analytics. Urban Analytics was a collaboration between FDMCI, the Faculty of Technology and the Centre for Mathematics & Informatica (CWI) and will expire at the end of 2021, after which time the research lines will partly continue at RIT. Urban Analytics investigates how various parties in the city can gain better insight into their data by using data science techniques, including data analysis, algorithms and business analytics. Researchers use these techniques with the aim of realizing a sustainable, inclusive and liveable city. Urban Analytics is the founder and developer of the Data Studio. In this separate wing within the Leeuwenburg location, students, researchers and the business community work together on smart cities, services and products.

TOP 3 PROJECTS

Sensing Streetscapes
How can we create a human dimension at street level through extreme densification in cities? In collaboration with the research group Building Transformation, the research groups Urban Analytics and Civic Interaction Design are researching this in collaboration with a consortium of spatial design agencies, clients and an international sounding board group of experts. The researchers use open data for this, whereas other projects increasingly use expensive data sets.

Empowering Citizens
Energy transition project in which we study various energy initiatives in local communities in Northern Europe and translate them into training courses for local authorities. How can such initiatives be encouraged? AI innovation is used to find inspiring pilots and information about energy transition projects. There is nice spin-off from student projects and international collaboration.

IDO-laad
Roll-out of public charging station network in major cities in the Netherlands (and later beyond). Here we have fully worked out the role of data and used it for an optimal roll-out and use of public charging stations. A professional data infrastructure with data management has been built from a dataset in Excel and several mathematical models have been developed to make the charging stations smart. It resulted in nice spin-off of student projects and involvement of the complete chain of electric charging.

OUTPUT

- Data Studio: a new set-up of data science education.
- Accessibility of green areas for local citizens: Greenery plays an important role in urban areas. We study the accessibility of green urban areas by combining open green datasets with population size data. We develop a mathematical model to determine the population density of a green area and calculate the available green space depending on the location. We do not only look at the walking distance to and the size of the greenery, but also at the local population size. Our model quantifies how the available green space depends on the location in the city, so that densely populated areas have little green available, even if they are close to a green area.
- www.sciencedirect.com: Collaboration with Knowledge Mile and the municipality. Various data sources were tried and, in the end, a good model was created that works. Spin-off of student projects and a dashboard.
- Flexpower project: implementation of an algorithm to control 400 public charging stations. By adapting the charging speeds to the time (at night or during the day), more use is made of solar energy and the load on the energy network is reduced during peak times.

The Civic Interaction Design research group investigates how the design of interactive experiences, digital platforms and online services can contribute to social life. In the network society, new ways of social and societal organisation, new types of public spaces and new forms of citizenship emerge, which are reflected in a changing field of forces between governments, market parties, tech companies and social initiatives.
How can public values in the field of democracy, diversity and sustainability be anchored in such a network society? How and under what conditions can interactive media technologies be designed in such a way that they will contribute to the creation of meaningful relationships between citizens themselves, and between citizens and governments? And in what ways can they offer diverse parties a perspective for action to contribute to social missions? The research group combines social science research into social practices related to media and technology use and a critical humanities perspective with an approach from design disciplines.

TOP 3 PROJECTS

Co-reUS: Co-creating Responsive Urban Spaces
Together with the Building Transformation research group, the Civic Interaction Design research group investigated how interactive and responsive media can be used as a design element that contributes to the quality of urban public spaces. Together with a community of practice of (landscape) architects, interaction designers and local stakeholders, we designed a number of prototypes for the ArenA Boulevard in Amsterdam.

Trust in Play: European School of Urban Game Design
In this Creative Europe project – an initiative of the Goethe-Institute in Athens – we guided a group of young designers from different disciplines in a capacity building project in which they learned to develop a number of urban games. Researchers from the research group guided the makers during the process and reflected on the process and its outcomes together with them, with the aim of acquiring insights that contribute to the emerging discipline of urban game design.

VR for Diversity
Virtual Reality is still not a 'living room medium', but we are seeing a growing interest in this technology at, for example, museums, charities and major festivals. Such institutions are often interested in complex interactive VR installations with a clear message, because VR appears to be ideally suited to offer viewers new perspectives on a variety of subjects. In October of 2020, the RAAK MKB project VR for Diversity was launched, a continuation of previous research projects on storytelling for VR in this research group.

OUTPUT

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- Cila, Nazli, Gabriele Ferri, Martijn de Waal, Inte Gloerich, and Tara Karpinski. 2020. "The Blockchain and the Commons: Dilemmas in the Design of Local Platforms." CHI '20: Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, 1–14. https://dl.acm.org/doi/abs/10.1145/3313831.3376660.
- Dijck, José van, Thomas Poell, and Martijn de Waal. 2018. The Platform Society. Public Values in a Connective World. Oxford: Oxford University Press.

FASHION RESEARCH & TECHNOLOGY

The Fashion Research & Technology group is engaged in design, scientific and artistic research into the multiple aspects of technology on and near the body. The group uses a broad definition of technology, including the material (structures and constructions that make up clothing, accessories and the culture around worn (embodied artifacts).

The group's research program is divided into three frameworks that inform each other: Future Means of Making, Future Ways of Wearing and Data as a Fashion Material. The group works from a practice-based research perspective by creating demonstrators and tools that focus on the practice of fashion. These tools, toolkits and demonstrators provide insight into sustainability, circularity and usability, driven by a design-oriented intelligence of physical-digital relationships.

TOP 3 PROJECTS

Fieldlab 3D Knit (CLICKNL Fieldlab 2019-2022)
The 3D Knitwear Fieldlab is organizing a series of projects with industrial and social partners to look at fully automated robotic knitted garments. The projects focus on local fabrication, reshoring, knitted light therapy and embodied shape shifting. This project investigates automated robotic fashion production and human computer interaction with complex production systems.

Passende mode via het internet (SIA RAAK MKB 2016-2018)
The project 'Passende mode via het internet' (Fitting/appropriate fashion via the Internet) was aimed at reducing the number of unwanted returns of clothing. At the start of the project, the Netherlands held the record for the number of returns of goods, with fashion being the most prominent. Improper fit was an important argument for returning the goods. This project provided a range of methods to help industrial partners and other parties in Europe reduce the return of clothing.

Measuring the Dutch clothing mountain (SIA KIEM 2016-2017)
The Measuring the Dutch clothing mountain project looked deeply into the wardrobe of people living in the Netherlands. The findings show that Dutch consumers buy about 46 new items of clothing every year at an average price of sixteen euros. This project enabled future work in the field of clothing consumption, reduction, reuse, remaking and recycling.

OUTPUT

- The dissertation "Can design confront consumerism? A critical study of clothing volumes, personalization, and the wardrobe", represents four years of research within the group. This dissertation takes a deep dive into the work done within the Dutch Circular Textile Valley Project. The dissertation takes a closer look at the use of clothing and makes recommendations on how the use of fashion can be made more sustainable and better.
- The article "Designing ultra-personalized product service systems" in the Journal of CoDesign shows how first-person fashion apparel design can support the creation of complex product service systems by the same designers. This work was done in collaboration with TU/Eindhoven and is an example of how researchers in the group collaborate with universities in the Netherlands and examines how research can change education, as the research group does at AMFI.
- The illustrated "Crafting a Leather Self-Tracking Device for Pollen Allergies" is a good example of how fashion and its materiality can be used in other fields, such as medicine; in this case, Vegtan leather is being used in allergy trackers to make the electronic device more acceptable to the population that will need to start using it. The paper is also a good example of how the research group collaborates internationally to realize transdisciplinary knowledge.

CREATIVE MEDIA FOR SOCIAL CHANGE (FORMERLY CROSSMEDIA)

With the power of media, we can make the world a better place. That is what the Creative Media for Social Change research group believes in. That is why we (co-)develop creative media tools, such as virtual environments, board games and interactive artworks. We also investigate how these can be used effectively for a more inclusive and sustainable world.

We don't do this alone. Together with students and professionals, we are looking for new ways in which we can use media to tell stories, connect people and stimulate target groups to make more social and greener choices. We question methods, offer perspective and measure impact. In this way we bring an inclusive and sustainable future closer through the power of media.

TOP 3 PROJECTS

The exhibition maker of the 21st century. Designing for experience
In recent years, the research group has conducted practical research into 'museum experience' together with thirteen museums and five design offices. The aim of the research was to develop an evaluation and management model that allows exhibition makers to gain more insight into offering a visitor experience, so that visitors learn more about the content of the exhibition and are left inspired and impressed. This resulted in the publication The Exhibition Maker of the 21st Century. Designing for experience. In addition, a toolkit/game board of TM21 has been developed (additionally), in which the methodology comes back.

Field lab SAX
As a representative of program partner AUAS, the research group is directly involved in the Fieldlab SAX (Spectacular ArenA eXperiences) in the Johan Cruijff ArenA. This research focuses on the effects of innovative new (media) techniques, services and content on fan experience. In addition, the research group ensures the connection with the broader research and education of FDMCI. Partners, in addition to AUAS, include the Johan Cruijff ArenA, Media Perspectives and TNO.

More visitors to my shop
Online competition and changing consumer behaviour are reducing the number of store visitors and the turnover in physical stores. To turn the tide, SME retailers want to gain more knowledge about the possibilities that innovative technology offers them to attract more visitors. They expect the most from a mobile loyalty app, interactive digital screens, location-specific messages (geofencing) and augmented reality. The research group conducts research into these innovative technologies in two Amsterdam shopping areas.

OUTPUT

- Publication (Ruyg, Schrandt, Hallema & Kuijper, 2019): https://www.hva.nl/create-it/gedeelde-content/nieuws/nieuwsbericht/2019/09/onderzoek-helpt-exhibitionmakers-met-evaluation- from-visitor-comments.html
- Toolkit (Schrandt, Van Vliet, Hallema & Kuijper, 2019): https://designingexperiencescapes.com/tools/toolkit-de-exposmaker-van-de-21ste-eeuw-evalueren-van-ontwerpbesluiten/
- Video toolkit TM21, 2020: https://youtu.be/IE1dD4p2u7s
- Publication: (Haaker, Groot, Hekman): https://research.hva.nl/en/publications/a-design-method-for-data-driven-business-models
- Website output (Groot, Logjes, Kuijper): https://www.valuable-experiences.eu/
- Report Step-by-step plan: https://pure.hva.nl/admin/files/6456554/D4.1_Data_Driven_Business_Models_.pdf
- Publication: https://pure.hva.nl/admin/files/6578468/Moes_Verhagen_VanVliet_Weltevreden2018.pdf

The Digital Life research group of the Amsterdam University of Applied Sciences focuses on innovative technology, sensors and digital information in everyday life. Staff of the research group conduct applied research into technology, big data and user-oriented design methods. The Amsterdam region and beyond is the living lab for Digital Life.

TOP 3 PROJECTS

Playful Data-driven Active Urban Living (PAUL)
In large cities, health is worse and life expectancy is shorter than in rural areas. This is partly a result of a lower physical activity of the residents. In this project we try to gain more insight into how the physical activity of the inhabitants can be increased by using personalized app technology, tailored to the user.

Hipper-project
The elderly go home earlier and earlier after hip surgery, whereby the rehabilitation process is increasingly carried out in the home situation. In the RAAK public project Hipper, a treatment protocol with sensor technology is being developed that provides both patients and healthcare professionals with more insight into the progress of rehabilitation.

VITAMINE
How do you ensure that people remain healthy for as long as possible and can continue to function independently? An active lifestyle and a healthy diet make a big difference, especially for older people with starting functional limitations. The AUAS project VITAMINE is developing a home training program as a supplement to the national program More Exercise for the Elderly (MBvO). The training is digitally supported and protein-rich food is used to optimize the effect.

OUTPUT

- Publication: Introduction to the Special issue on the Mutual shaping of Human-Robot Interaction (International Journal of Social Robotics, 2020). https://link.springer.com/article/10.1007/s12369-020-00681-6
- Video: Guiding Environment - The Empathetic Dwelling. Based on the Guiding Environment project. Often used to show the idea. https://www.youtube.com/watch?v=3yb4S0GkCSw
- Hipper Therapeutics (https://hippertx.nl/ ; spin-off). Based on a research project

The Visual Methodologies research group develops visual methods for practice-based research into social issues and debates. Visual Methodologies studies, amongst other things, the role of images in digital culture. Which images are shared on social media about important social topics? How do they differ from each other? And how can we involve different target groups in a social debate with on-line and on-site visualizations? The research group also produces its own visual material that is used as a tool for research. The research group works closely with education and is active in all educational programs of the faculty. In addition, the research group participates in the Digital Society School, in the track Data Driven Transformation.

TOP 3 PROJECTS

Climate Futures: (Machine) Learning from Cli-Fi
The transdisciplinary research project Climate Futures focuses on imagining our future with climate change. With artistic research using digital and visual research methods, the work breaks through the well-worn imagery of climate change (polar bears on melting ice) and creates new images and metaphors that invite reflection on our relationship to the climate in the present and future.

Mapping disinformation
Exploring the urgent theme of disinformation. A collaboration with the University of Amsterdam on behalf of the Ministry of Foreign Affairs, which has led to two bundles at Amsterdam University Press and an EU application for small-scale media. The reporting contained articles in Trouw and de Volkskrant. The research results have been compiled in a book, published in 2020 by Amsterdam University Press.

Critical Making
Critical Making is a research program that considers 'making' as a critical research practice. Results include the publication and launch of The Critical Makers Reader. The first edition soon spread all over the world. The material archive (a Comenius project led by Loes Bogers) is a good example of research through design education. We use visual ways to organize and connect tangible objects and online content.

OUTPUT

- Bundles about disinformation (2020 and 2021), see previous description in the Etalage.
- Material archive, read the previous description on page 42.
- During You Make the City, an event organized by The Healthy City and several collaboration partners on April 6, 2017, we held a plot party as an engaging way to gather information and personal opinions from the 300 participants who gathered to talk about ways to improve the city. A plot party is a (series of) joint visual intervention(s) to elicit responses to certain issues, formulate (better) research questions, gather opinions and initiate a discussion, or establish priorities around a specific topic. The information and insights collected have been used to formulate and refine questions for further applied research projects to support citizens and professionals in making the city greener and healthier.

INSTITUTE OF NETWORK CULTURES

The Institute of Network Cultures (INC) analyses and shapes the field of network cultures with events, publications and online dialogue. The group's projects revolve around urgent publications, alternative revenue models, critical design and production, digital counterculture and much more. An important point of attention is setting up sustainable research networks. Emerging critical topics are identified and shaped in a practical sense. INC is interdisciplinary in nature and brings together researchers, artists, activists, programmers, designers, students and teachers. The topics studied include but are not limited to internet revenue models (MoneyLab), the current state of online video (VideoVortex), experiments in digital publishing (Making Public), hybrid events during and after the corona crisis, critical meme research and technology criticism (in the Education).

TOP 3 PROJECTS

Making Public
Making Public was a two-year RAAK MKB project that ran from 2018 to 2020. In this research, we looked for new ways of urgent and hybrid (online as epub and physical in print) publishing. The publications that resulted from the research were also part of the research itself.

MoneyLab
MoneyLab, which was founded in 2013, is currently the largest active international network that has emerged from INC. Even during the current difficult corona period, five international online conferences have taken place. MoneyLab investigates alternative revenue models in the art world. The topics that are being researched range from cryptocurrencies, blockchain and crowdfunding to discussions about basic income, paperless money and bread funds.

The Art of Criticism
INC has played an important supporting role in addressing the future of art criticism in the broadest sense of the word. The Art of Criticism was a project that ran from 2016 to 2019, consisting of critical experiments, reflections, publications and events, and has since grown into a European network. This project will be continued in 2020-2021 under a new name and will focus even more on alternative revenue models in the art sector.

OUTPUT

- Frictie by Miriam Rasch: Former colleague Miriam Rasch won the Socrates Cup this year for the best Dutch-language philosophy book. Frictie is about ethics in times of dataïsm (the belief that everything can be translated into data).
- The Critical Makers Reader, edited by Loes Bogers: The reader with essays on critical making was a collaboration between the research group and the Makers Lab of the AUAS and is used as teaching material for the minor Critical Making.
- Sad by Design: Sad by Design was published in 2019 and is written by Professor Geert Lovink and translated into English, German, Italian, Spanish and Russian. The essay collection is about the sad stagnation of internet culture in the era of Brexit and Trump.