Intermediate Report: Art and Technology Task Force December 2015

Editor: Andrew Perkis, Hanna Musiol
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Executive Summary

This report provides an introduction to the interdisciplinary Art and Technology Task Force group, launched in March 2015 at NTNU. It also outlines the goals of Art and Technology Task Force, which include explore the potential of cross-disciplinary collaborations in the fields of art, humanities, and technology, sharpening NTNU's unique profile in Art and Technology as part of NTNU's national and global strategic positioning, seizing opportunities that may open in the process of academic reorganization (fusion) at the new NTNU; attracting more funding and support or interdisciplinary projects; and developing a vision for Art and Technology research and pedagogy at the new NTNU. Next, it covers the interdisciplinary debates about art and technology. It concludes with an overview of past, current, and planned initiatives, which will be presented in a Visions and Opportunities seminar on December 10, 2015

Introduction

The document introduces the Task Force's background and members, and describes its goals and its past and current activities. It also reports on the state of interdisciplinary conversations and directions of discussion about the intersections of technology, art, and the humanities, and presents suggestions for how to take advantage of the fusion process in order to sharpen NTNU's national and international research profile.

The Art and Technology Task Force was launched in March 2015 and has since had 5 meetings to discuss its goals, platform, visions, and activities. In addition, the group is planning an NTNU-wide event for December 10, 2015. This report provides an overview of the Art and Technology Task Force's work over the last 6 months as well as planned future interdisciplinary activities.

Background

The Art and Technology group was founded in March 2015 in connection with the appointment of Dr. Wendy Ann Mansilla as a postdoc at the Department of Electronics and Telecommunication at the IME faculty. Her postdoc is linked to the current developments of the Interactive Installation Park at Adressahuset in Trondheim. Her broader scientific research is within Immersive Media Technology Experiences (IMTE).

The Art and Technology group was then invited to establish an Art and Technology Task Force. The Task Force now includes 12 members, and its strength and innovative approach to research, NTNU's identity, and new funding opportunities derives from the interdisciplinary background of all of its members: experienced scholars and practitioners working at the intersection of multiple fields. Media art and technology activities at NTNU have been particularly important, and the Task Force sees art and technology as a crucial part of the new NTNU profile. The Task Force is currently working on its platform and on increasing the visibility of its work within NTNU.

Art and Technology Task Force Members

1. Prof. Andrew Perkis, (IET/IME)
2. Post doc. Wendy Ann Mansilla (IET/IME)
3. Prof. Florian Schneider, (KIT/AB)
4. Post. doc Alexander König (KIT/AB)
5. Prof. Dag Svanæs, (IDI/IME)
6. Asc. Prof. Ellen Foyn Bruun, (IKM/HF)
7. PhD student Elena Pérez (IKM/HF)
8. Prof. Øyvind Brandtsegg, (IM/HF)
9. Prof. David Rych (KIT/AB)/
10. Prof Jeremy Welch (KIT/AB)
11. Prof. Martin Steinert, (IPM/IVT)
12. Asc. Prof. Hanna Musiol, (ISL/HF)

Goals of the Art and Technology Task Force

By means of monthly meetings, informal gatherings, and public events, the Art and Technology Task Force aims to

- Explore the potential of cross-disciplinary collaborations in the fields of art, humanities, and technology.
- Sharpen NTNU's unique profile in Art and Technology as part of NTNU's national and global strategic positioning.
- Seize opportunities that may open in the process of academic reorganization (fusion) at the new NTNU.
- Attract more funding and support or interdisciplinary projects.
- Develop a vision for Art and Technology research and teaching at the new NTNU

Art, Technology, and NTNU

As an academic institution with an explicit emphasis on science and technology and now including additional partners outside of Trondheim, but also composed of strong local arts and humanities faculties, NTNU is uniquely positioned to lead interdisciplinary academic research and teaching in Norway and globally, in line with worldwide academic trends at top research institutions of a similar profile. This section focuses on the recent discussions about the interdisciplinary merging of art and technology and reflects on the implications and benefits of such approaches at the new NTNU.

Art and technology

Contemporary art is characterized by an expansion of material and affective modes towards notions of the documentary and the performatory, allowing for new spatial and participatory practices, which are based on a revaluation of concepts such as embodiment and abstraction, display and delay, image and event. This expansion has been enabled and negotiated through new encounters with technologies that allow for networked communication, multiplication, and dissemination on an unprecedented, global scale.

At the same time, it has become evident that technology is no longer restricted to a set of purposefully designed objects or artefacts through which we exercise power over nature; it also and increasingly relates to an array of structured actions through which we govern ourselves. Experiences, entertainment, interaction, and immersion are pushing the technical limits of the self as much as they are mediated through technological devices.

Leading contemporary scholars, designers, builders, and artists argue that it is time for a discussion about possible new relationships between art and technology to take center stage.

How can science and technology benefit from an exchange with art?

Interdisciplinary collaborations: experimenting with technology through art. Affective—as opposed to purely cognitive—knowledge formations emphasize ‘doing’ or ‘making’ as an investigative process.

- Interdisciplinary collaborations: experimenting with technology through art. Affective, as opposed to purely cognitive, knowledge formations emphasize ‘doing’ or ‘making’ as an investigative process.
- Thinking outside the box, reading against the grain, cracking the code. Art teaches the value of exploring the importance of non-reproducible results. On a conceptual level, it asks whether social logics can alter technical capacities, and, if yes, how?

- Transition from STEM to STEAM. Several of the world's leading university and policy institutions advocate that in order to innovate in the 21st century STEM fields such as Science, Technology, Engineering and Math must be linked to Art, Design, and Humanities, changing STEM to *STEAM.* The movement signals a shift in understanding of innovation and knowledge production on a global scale but also a shift in education policy in preparation for how STEAM is to change our economy in the 21st century.

What are the specific gains for these fields?

Each discipline has its own, strong research tradition, and the task force sees no need for developing a new unified theory; however, our cross-disciplinary goals require translations between the different fields and mutual respect between all involved scientific traditions.

How can art education and artistic research advance at a university for science and technology?

- Dialogue with STEM fields. Artistic research, production, and teaching gain from a dialog between paradigmatic and non-paradigmatic knowledge: the challenge is the unexpected encounter at the borders of logical empiricist frameworks, represented by STEM, while producing singular, multi-sited forms of partial knowledge. Such a dialogue requires new structures, platforms, and arenas for making and showing art: it calls for works that are produced, presented, and collected for and in engagement with a scientific, technological, or academic context—rather than for the art market or a hermetic art world.
- Collocation is key. A sharp and critical understanding of technologies and their impact on society cannot be achieved remotely. It requires shortening the distance and the possibility to interact and take part, to encounter and to mutually reshape each field. Collaboration, in other words, happens in the noise and the dirt, and the results are unforeseeable and unpredictable and enhance artistic innovation and creativity.

How can we develop an NTNU approach to the relationships between art and technology?

- *Global Problem Solving*. From migration to climate change, from human rights to smart cities—the complex challenges of today's world require new configurations of knowledge based on new technologies but also diverse visions in the literal sense of new ways of seeing and understanding the world. Across the different disciplines of art, humanities, and technology, we can contribute to solving global issues conceptually rather than thinking of the creative arts as good only for decorating and illustrating or facilitating and optimizing.
- *Research*. We can mediate, or destabilize, the divide between the aesthetic value and the utilitarian value which is the constitutive norm for our current

society and research how the different disciplines in art, humanities, and technology can contribute to new understating of use and design.
- *Assessment.* Often artistic endeavor is dependent for its very emphasis on enigma, ambiguity, and de-familiarization; for its artistic significance on non-linear, non-hierarchical meaning-making. Usually art is to be appreciated for its very failure of a complete understanding. At NTNU, we have to develop new parameters and concepts of quality of what is not traditionally measurable, unaccountable, or unrepeatable.

Art and Technology Task Force and Vision for the New NTNU

Through our initiative we will

- Emphasize the tremendous potential for innovative, interdisciplinary, and critical approaches to research and pedagogy at NTNU, and seek to draw on the unique strengths of NTNU (technology, sciences, art, humanities, etc.) in order to develop research and pedagogical innovation across diverse fields.
- Gain cutting-edge technological and artistic expertise by being involved in projects like "Parken." The technological challenges open up for exploring new and innovative interaction techniques like full-body interaction (e.g. Kinect), wearable computing (e.g. wireless biosensors) and VR/AR (e.g. Oculus Rift).
- Use art projects to explore the subjective user experience in complex and interactive settings.
- Further the innovation and design process in interaction design by learning how artists work.
- Gain from the collaboration with technological fields to probe deeper into the technologies we use and develop. This can be within math, signal processing, software design, user interaction design, and more.
- Gain from the collaboration with the humanities to test how artworks work at the perceptual, and social, ethical, and political levels; to become aware of key areas of interdisciplinary investigation (e.g. language, cultural studies, and philosophy), harvest ideas for artistic concepts, and become aware of areas where such work may have impact.
- Gain from collaboration with the fine arts a more precise formulation of artistic concepts and become aware of new (to us) kinds of artistic interventions.
- Provide a mediating space between the three fields (technology, art, humanities), as we already are meddling in all of them.
- Gain from jointly creating art and technology consortia for entering Horizon2020.

Status of Current and Planned Activities

Cross disciplinary work within Art and Technology has been going on for a long time at both NTH and the University of Trondheim as well as NTNU. Appendix 1 gives a snapshot of some of the more recent relevant initiatives and project, planned, current, and past. .

Building on this strong tradition, the Task Force held 5 meetings between March and November 2015. The current schedule is to meet monthly. To increase visibility, the group has also planned an event for December 10. The Task Force members represent 8 departments over 4 faculties at NTNU. Each member will actively recruit participants to the event as well as circulate the general announcement through NTNU channels.

Program for December 10, 20015 Visions and Opportunities for Art & Technology @ the New NTNU

The event will celebrate the launch of the NTNU Art and Technology Task Force on December 10, 2015 at EL4, Elektroblokken, Gløshaugen (10-14.00). We will discuss the plans for the future of the new NTNU and our platform. The event will feature

- a presentation of the visions and opportunities for the new NTNU, coinciding with the Digital Agenda for Europe (Horizon2020) within art, creativity and technology
- a discussion of future funding opportunities
- a showcase of NTNU's interdisciplinary projects from across 8 Departments and 4 Faculties

Note that the event is limited to the first 50 participants and you will need to register for it on **https://attfn.hoopla.no/sales/kickoff/.** Lunch from Godt Brød will be served.

Event Organizers & Presenters: Prof. Andrew Perkis, Institutt for elektronikk og telekommunikasjon (IET/IME) // Post doc. Wendy Ann Mansilla (IET/IME) // Prof. Florian Schneider, Institutt for billedkunst (KiT/AB) // Post. doc Alexander Koenig (KiT/HF) // Prof. Dag Svanæs, Institutt for datateknologi og informasjonvitenskap (IDI/IME) // Asc. Prof. Ellen Foyn Bruun Institutt for kunst- og mediavitenskap (IKM/HF) // PhD student Elena Pérez (IKM/HF) //Prof. Øyvind Brandtsegg Institutt for musikk (IM/HF) // Prof. David Rych (KiT/AB)/Prof Jeremy Welch (KiT/AB) // Prof. Martin Steinert Institutt for produktutvikling og materialer (IPM/IVT) // Asc. Prof. Hanna Musiol Institutt for språk og litteratur (ISL/HF)

Time	Title	Presenter	Status
10.00-10:15	Introduction and welcome address	Andrew Perkis & Johan Hustad	Confirmed
Session 1 Platform and visions			
10.15-10.30	How does Art benefit from the exchange with Technology	Florian Schneider?	Confirmed
10.30-10.45	Show case 1: Product design	Martin Steinart	Confirmed
3 min	Show Case 2: Parken – the video	Wendy Ann	Confirmed
10.45-11.00	How does technology benefit from the exchange with art?	Andrew Perkis	Confirmed

Time	Title	Presenter	Status
11.05-11.20	Show case 3: Intermediality in MA Theatre Performance	Ellen Foyn Bruun student Mia Marie Bråthen	Confirmed
11.20 – 11.35	Show case 4: Example of interviews rewrite/make more specific	Alexander Koenig	Confirmed
11:35-12:00	Short lunch break		
Session 2 The NTNU way			
12.00-12:15	Show case 5:Drums performance?	Øyvind Brandtsegg and Carl Håkon Waadeland	Confirmed
12:15-12:30	Show case 6: Digital Humanities & Futurescapes/ Meta.Morph	Hanna Musiol	Confirmed
12:30-12:45	Quality assessment of multi/cross/single disciplinary work	Florian Schneider	Confirmed
12:45-13:00	Show case 7: Tangible interaction – the tail	Dag Svanæs	Confirmed
13:00	Discussion	Moderated Panel and Q&A	
14:00	End		

Appendix 1 – A Overview of relevant planned, current and past projects and events

Below is a *selected* list of planned, current and past projects including innovation and inter disciplinary participation from NTNU. All projects have an element of Art, humanities and technology and serve as examples of activities that can benefit and influence NTNUs work within Art and Technology.

Period	Activity	Comment
Planned	Multimediateater og Planetarium ved Vitensenteret	Vitensenteret is seeking funding and partners for a planned multimedia theater and planetarium. This is intended to be a laboratory for experimentation of new digital storytelling and new digital media.
Planned	Futurescapes Symposium in New Media, Technology and the Humanities	The Symposium will bring together leading international STEAM scholars and practitioners to present and model Art and Technology work at the new NTNU. http://typecraft.org/tc2wiki/Futurescapes
Current	The park	Design, building, opening and running an Interactive installation park http://www.ntnu.no/parken NTNU is the main Technology and Art partner. There are several activities across the task force members and the Park is intended to be an outdoor experimental facility for NTNU
Current	Sense-IT	The multimdialabs at IET run by Andrew Perkis. http://www.iet-multimedialabs.org/. The labs were established during SFF Q2S and continue to be a place for research and teaching within Immersive Media technology Experiences.
Current	IMTE—Immersive Media technology Experiences	Research direction at IET headed by Andrew Perkis. Forms research umbrella for PhD and MSc. Current research and teaching is focused in sensor based interactive digital storytelling.
Current	NxtMedia	http://nxtmedia.no/ NxtMedia is an association for the next generation media technology. A strong industry/academia cluster—currently 50+ members. NTNU was a founding member. Activates mainly at IDI and IET.

Period	Activity	Comment
Current	Kunnskapsvegg en NTNU MF and St. Olavs hospital	Contributions from IKM (Barbro Rønning), IET (Andrew Perkis), KiT and other activities across the Task Force members
Current	Motion Composer	Motion Composer is a device that makes movement into music through video, 3D tracking and custom-built software. It is primarily developed for people with disabilities, but is also used in making interactive dance art for professional dancers. It is developed by a team from four European countries, and Andreas Bergsland at NTNU Music Technology has contributed as composer/sound designer since 2011. www.motioncomposer.com
Current	IMEs skrytevegg	Dissemination tool in Glassgården at IME. Interactive and Visual screen
Current	Trondheim Ensemble for Electroacoustic Music Performance (T-EMP)	Trondheim Ensemble for Electroacoustic Music Performance (T-EMP) was established to do research on new modes of communication and interplay in a technologically based environment. Development of new technology for musical performance. https://www.researchcatalogue.net/view/48123/48124
Current	The Hadron Particle Synthesizer	The Hadron Particle Synthesizer is an audio transformation and synthesis tool. Development enabled by close collaborations between music technology, acoustics and product design at NTNU. The user interface gives intuitive access to a 200-dimensional parameter space for flexible sound transformation. Over 150.000 downloads worldwide. www.partikkelaudio.com
Current	Digital Dokkhuset	Research and experimentation platform for NTNU at Dokkhuset. Collaboration with UNINETT
Past	Rockheim	http://www.rockheim.no/ Museum as an attractive Horizon2020 partner.
Past	"Just Fiction," a global pilot seminar co-taught with a university in the US by Hanna Musiol	Acknowledged by Stanford University's Teaching Collaboratory & Wallenberg Institute as a model of interdisciplinary pedagogical innovation. Musiol invited to advise the Collaboratory on the design of the teaching platform for future projects.

Period	Activity	Comment
Past	Performativitet	Strategic work at HF, headed by Ellen Foyn Bruun. Collaboration with IME within Digital Storytelling tools
Past	Midgard Media Lab	A 10 year initiative developing cross disciplinary work between Technology and Humaniora (art)
Past	Picturing the brain	NFR project with 2 PhDs, one from IKM and one from IET
Past	Lydinstallasjon en Flyndre	Sound installation based on environmental sensing, where music is generated continuously anew 24/7 for 10 years (2006–2016). The installation was made by Øyvind Brandtsegg. Computer hosting by ITEA/NTNU
Past	VLBI Music	Sound installation based on signals from distant quasars and the processes involved in reading these signals to calibrate satellite navigation systems. By Øyvind Brandtsegg for the Norwegian Mapping authority. https://www.researchcatalogue.net/view/55360/55361 & http://gemini.no/2013/12/stjernenes-bevegelser-blir-musikk/
Past	Self	An artificial intelligence and an art project to study and display learning processes and communication of an artificial sentient being by Øyvind Brandtsegg and Axel Tidemann. See http://gemini.no/en/2015/06/the-robot-that-learns-everything-from-scratch/ , https://www.youtube.com/watch?v=u6xX87ybrCM , http://eandt.theiet.org/news/2015/jun/child-like-robot.cfm,