



European
Commission

Project no. 732027

VIRT-EU

Values and ethics in Innovation for Responsible Technology in Europe

Horizon 2020

ICT-35-2016

Enabling responsible ICT-related research and innovation

Start date: 1 January 2017 – Duration: 36 months

D7.3 Local Briefing Sessions

Due date: June 30, 2019

Actual submission date: June 28, 2019

Number of pages: 23

Lead beneficiary: ITU

Editors: Irina Shklovski & Barbara Nino

Contributors: all consortium members

Project Consortium

Beneficiary no.	Beneficiary name	Short name
1 (Coordinator)	IT University of Copenhagen	ITU
2	London School of Economics	LSE
3	Uppsala Universitet	UU
4	Politecnico Di Torino	POLITO
5	Copenhagen Institute of Interaction Design	CIID
6	Open Rights Group	ORG

Dissemination Level

PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	
EU-RES	Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)	
EU-CON	Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)	
EU-SEC	Classified Information: SECRET UE (Commission Decision 2005/444/EC)	

Dissemination Type

R	Document, report	X
DEM	Demonstrator, pilot, prototype	
DEC	Websites, patent filling, videos, etc.	
O	Other	
ETHICS	Ethics requirement	

Table of Content

<i>Executive Summary</i>	4
<i>Introduction</i>	5
<i>Briefing Sessions - Copenhagen</i>	5
Session 1. ThingsCon Salon: Ethical and Responsible IoT?.....	5
Sessions 2 & 3. IoT Day 2018 & 2019 in Copenhagen	7
IoT Day 2018 at ETHOS Lab	8
IoT Day 2019 at ETHOS Lab	9
<i>Briefing Sessions: London</i>	10
Sessions 4, 5 & 6. Workshops in London, Belgrade and Miera	11
Session 7. Wearables and Ethics in London.....	12
<i>Turin – IOT / Innovation: Data ethics, regulation and responsible design</i>	14
Session 8: Technology, regulation and society: AI Lecture series by POLITO	14
Design of IoT	14
Participation in IoT	16
Regulation of IoT.....	16
<i>Participation in IoT industry events</i>	17
Living Bits and Things in Bled, Slovenia	17
Internet of Things Meetup 81 in London	18
Uses and Misuses of Connected Devices at The Alan Turing Institute	19
On Connected Technologies at Impact Hub in Belgrade	19
Port talks by the Goodenough College.....	20
Thingscon 2019 in Berlin	20
Mind the Gaps '19 in Malmö Sweden	21
<i>Outcomes, lessons learned, and future local events</i>	22
Design Challenge – international competition hosted at ORGcon2019 in London	22
Copenhagen Techfestival – exhibiting tools for ethical design	23
ThingsCon Conference 2019, Rotterdam – VIRT-EU tools launch.....	23

Executive Summary

The VIRT-EU project has always maintained a strong commitment to direct engagement with the designer and developer communities that are both our object of study and the expected users of our ethical support tools. Throughout the project, direct engagement with the technical Internet of Things (IoT) communities in Europe has occurred through ethnographic fieldwork, co-design and co-creation workshops, stakeholder workshops, partner presentations at industry events and conferences, as well as consortium partner-organized local briefing sessions. As a part of VIRT-EU's dissemination strategy, the consortium has organized and conducted eight local briefing sessions across Europe in Belgrade, Copenhagen, London, Turin and Miera (an autonomous community in Northern Spain). Local briefing sessions are events that are designed as meeting points for local communities of developers, designers, and scholars interested in the development and use of IoT. These local and informal events allowed partners to reach a much wider audiences that moves significantly beyond academic circles including users of IoT, industry experts, designers and developers as well as other professionals working in design or technology organisations.

This outreach tactic is aligned with VIRT-EU's overall dissemination strategy in which event-organizing plays a central role in our efforts to communicate with a wider public. By broadening our network, we are committed to creating a direct and tangible impact that is represented in better and more ethical practices when creating and using IoT. This has allowed us to remain attuned to the real and immediate needs and concerns of these communities as well as to introduce our tools and findings, shedding light for example on ways to address the uncertainties and opaque data-processing practices within the development of IoT as connected services and products. Our local briefing sessions have been extremely valuable as these have been mutually beneficial by generating feedback mechanisms that enriched our critical analysis over the course of the project and by involving organisations to be part of our project as either co-hosts or sponsors.

Over the course of the project we learned that engagement with the technical IoT communities could take on different formats. This meant that alongside event-organizing, core activity in our dissemination strategy, we also saw a great opportunity in participating in industry-related events as speakers. The briefing sessions themselves have often lead to VIRT-EU members being invited to give keynotes or participate in panel debates at a broad range of IoT industry conferences and events. We include in this report a few representative examples of such participation in European industry events held in Bled, Berlin, Geneva and Malmö, reflecting on the lessons learned from these experiences.

This report provides details from the eight local briefing sessions and seven notable speaker engagements over the course of 2017, 2018 and 2019.

Introduction

The VIRT-EU project covers four countries across seven partners and we have engaged in all four of these countries and beyond through briefing sessions and industry event engagements. All partners participated in session organizing and actively engaged with local communities even if their activities were more academically oriented by necessity, given the project needs. This commitment to ensuring that project outcomes are shared broadly both within and beyond the walls of the academy is intrinsic to the project design. The selection of locations for briefing sessions was made based on availability of staff and to ensure coverage in concert with co-creation and stakeholder workshops organized by ORG and CIID. Some of the briefing sessions were done as collaborations with other organizations in order to promote relationship building.

As such, we conducted three briefing sessions in Copenhagen, two in London, one in Belgrade, one in Miera, and one in Turin. Of these, all of the sessions in Copenhagen and one session in London were collaborations with other organizations and served the dual purpose of local engagement and relationship building with key players in the IoT developer communities in Europe. To continue building relationships with European developer communities project members also participated in a broad range of non-academic events oriented towards industry players in IoT.

Below we document eight local briefing sessions. Special attention is given to the themes addressed in each session and the outcomes in terms of number of attendees, participation, and impact. We then discuss the representative examples of our participation in non-academic events and describe their importance as well as impact.

Briefing Sessions - Copenhagen

Throughout the project the ITU team has worked to develop strong relationships with several important industry actors in the responsible technologies and IoT space. As such, we have developed a close working relationship with the IoT Council, ThingsCon (a global IoT initiative) and the Copenhagen TechFestival (an industry conversation about responsible technology). All of the briefing sessions in Copenhagen were organized in cooperation with these partners.

Session 1. ThingsCon Salon: Ethical and Responsible IoT?

The launch of the annual Copenhagen Techfestival coincided with the launch of the VIRT-EU project in 2017, making the shared concerns about responsible technology a logical match for cooperation. At the same time, the VIRT-EU project came into contact with the founders of ThingsCon - a global initiative to explore and promote the development of fair, responsible, and human-centric technologies for the IoT and beyond. While ThingsCon would have liked to participate in and support the Copenhagen Techfestival, they lacked the resources to do so. The

VIRT-EU project was the logical meeting point for bringing ideas of ethics and IoT as well as introducing the ThingsCon initiative to TechFestival attendees.

In its first edition in 2017, Techfestival gathered 16,000 attendees in the meatpacking district, which is an urban and creative hub located in the centre of Copenhagen. As a part of the festival's program, VIRT-EU consortium members from ITU co-organized a ThingsCon salon to discuss the future of responsible and ethical hardware and connected devices. A ThingsCon salon is typically a smaller, more intimate gathering of people where discussions are kept engaging and highly interactive.

ThingsCon salons have been organized in many places worldwide from London to Shenzhen, China. VIRT-EU organized the first ever ThingsCon salon in Copenhagen. We aimed at creating a space for exploration and discussion of ethics and responsibility in the context of IoT development. These perspectives were presented as crucial for ensuring a more conscious development of IoT.

ITU and ThingsCon designed the evening as a “Meetup” which brought designers, developers, legal professionals, and curious individuals and collectives into dialogue for an evening. As the event’s tagline put it, ‘such reflections are crucial for ensuring a future we actually want to live in’.



Documentation from *ThingsCon Salon: Ethical and Responsible IoT?*
September 2017 at Techfestival in Copenhagen.

Notes on Participation and attendance

The evening started with an introduction by Irina Shklovski, VIRT-EU’s Principal Investigator and project coordinator, who opened the evening by sharing some of the goals and methods of the VIRT-EU research project and thanking everyone for joining. It was a full room, with over 30 people lined up on the bright red benches and many more crowding behind. At its peak we had nearly 60 people in the room and there was standing room only. Irina pointed everyone to the

cards scattered around and asked that folks would take a look before the presentations kicked off: we wanted people to be thinking up questions as they listened, and noting them down for the discussion session.

Lachlan Urquhart was our first invited speaker. Lachlan is a Research Fellow in Information Tech Law at the Horizon Digital Economy Research Institute in Nottingham, UK. His talk – coming from the intersection of IT Law, HCI and digital ethics – accessibly covered topics of IT law and governance he writes about under the heading of ‘regulation by design’. This connected perfectly with the event’s second speaker, Kajsa Westman who positioned her talk from a design perspective. Kajsa, a UX designer at Topp, reflected on the designer’s role in the development process as a ‘gatekeeper between bad ideas and final products. How far do these responsibilities extend? ‘just because it passed through our studio, does not mean we can wash our hands of it’, she argued. The Salon participants were asked if they had ever quit a job on ethical grounds. How many of them would just ‘not speak up and get the job done’?

We had a break so participants could get drinks and write on their postcards. The discussion session, lasting more than an hour, was filled with deeply felt concerns. Participants posed questions to the speakers, but also entered into a lively disagreement with each other, pointing to the role of legislation, work practices, and what it means to live a logged life. IoT technologies reach deeply into our lives. As one of the participants argued: “It needs to be an internet of things AND humans, so we can talk about these concerns”. The ThingsCon Salon was certainly a space where these dialogues began.

Sessions 2 & 3. IoT Day 2018 & 2019 in Copenhagen

The IoT day on April 9th was initiated by the IoT Council in 2010 and every year there are dozens of celebrations worldwide. However in 2018 and 2019, there were no other organizations or groups interested in hosting an IoT day celebration in Copenhagen. The VIRT-EU project saw this as an opportunity both to engage more closely with the IoT Council as well as to use these events to discuss and publicize project activities with the interested public and the local IoT community.

Thus ITU’s consortium members have co-hosted this annual event at ITU’s ETHOS Lab dedicated to the celebration of the IoT day. Taking the event’s theme, IoT at the centre of the celebration, ethical and critical perspectives where brought to the main activities of this yearly event. Given the wide range of open events hosted at ETHOS Lab, dedicated to critical perspectives regarding the use of technologies in practice, this space was a perfect fit for such a meetup. We were able to invite people who were interested in IoT or the lab’s events and not necessarily where affiliated with the university. For these events we especially focused on students from various universities in Copenhagen, graduated students working in industry, designers, researchers, and developers.

IoT Day 2018 at ETHOS Lab

In the opening talk of 2018's IoT Day at ETHOS Lab, ITU's consortium members Irina Shklovski (Coordinator) and Rachel Douglas-Jones (Associate Professor at ITU and PI) presented the VIRT-EU project – and its intention to support developers in reflecting on the ethical decisions that they make as part of the design and development process for future devices.



Documentation photos IoT Day at ETHOS Lab 2018.

Notes on Participation and attendance

Firstly, participants (15 people mostly students and designers) were introduced to several recent IoT manifestoes in which developers showed increasing concerns about ethics. Following the manifesto review, subsequent interactions with Alexa and Google Home enabled first-hand experiences with the devices. The participants asked various questions illustrating different levels of concern and playfulness when interacting with these apparatuses.

One participant, a design student, asked Alexa 'Hi Alexa, what should I do with my life' to which Alexa replied "I don't know". Another participant asked both Alexa and Google Home whether they are connected to the CIA – Alexa replied that she only worked for Amazon while Google Home said that "no government entity had direct access to the data because privacy and security is of great concern to them". When participants asked if Alexa was recording them, the device replied affirmatively.

At this event, improvisation and participation from both the organizers and the interdisciplinary group of attendees was extremely valuable as it raised important questions regarding accountability and the need for more ethical design processes. Asking questions in various ways to the devices made participants reflect on the nature of the responses received and lead to

questioning design and business initiatives behind Alexa and Google Home. Finally, at the end of this meetup participants concluded with an open question and focus: Who are the people behind the technology? This event received press coverage in Version2 – a premier Danish technical news outlet.

IoT Day 2019 at ETHOS Lab

In 2019 we repeated our hosting of a local node of the international IoT Day celebration at the IT University of Copenhagen's ETHOS Lab. The ETHOS Lab space, which is an interdisciplinary methods space designed to host interaction between teaching, research and publics. The event was registered on the IoT Day website two months ahead of time, and circulated via the @ETHOSitu twitter account. We invited Annelie Berner VIRT-EU's Principal Investigator from the Copenhagen Institute of Interaction Design (CIID). Annelie came for a lunch hour at the IT University of Copenhagen and presented one of the prototypes she and her team were working on: Bear & Co.



Documentation photo of IoT Day at ETHOS Lab 2019.

Notes on Participation and attendance

The lunch-hour had a chilled and open vibe, with 8 attendees from across the university. Marie Blønd from the ETHOS Lab loaded a live stream of the event from the ETHOSLab Facebook page, where it is now archived. This was particularly well received by the subscribers of the IoT Council email and discussion list that reaches worldwide. ITU researcher Rachel Douglas-Jones introduced the overall project and the different subprojects, and handed over to Annelie Berner for the Bear & Co presentation. Bear & Co is a fictitious digital narrative, and Annelie took participants through the story of the development and presentation of the prototype at Ars Technica.

Bear & Co. takes users through a journey where they become part of a tech start-up which is producing smart teddy bears that are able to interact with children. Users interacting with the prototype's narrative are then taken through a fictitious journey where, as employees of the company, they have to take difficult decisions that may challenge their ethical values.



Documentation of Annelie's process with value cards, 2019.

Annelie presented 12 dilemmas implicit in the interaction with Bear & Co. These were designed to be realistic and challenging. Because the story part of the interaction was fictitious, the scenarios were carefully orchestrated. Moreover, the prototype had a strong focus on making the decisions genuinely hard as well as trying to make the user realize how decision-making processes could contradict previous and later decisions and one's own values. This project was what Annelie called 'towards tools', which created situations that push the user to confront ethical challenges part of the developing process of IoT while rehearsing ethics.

At this event, the utilization of role play and simulation was felt to be an extremely powerful way of making designers and students participating at this event to confront the potential division between their beliefs and actions in real world settings. The physical nature of the exercise was an important part of the process and was brought up in the Q&A session at the end of the presentation. In this last section, participants asked about the need for human interaction with the manager. The possibility of the experience being moved to an online platform allowed Annelie to explain that a large part of the project was to create reflection and friction, and to create a situation which presented ethical challenges related to developing IoT products or services.

Briefing Sessions: London

The London School of Economics (LSE) created a range of different events in the last three years. Most broadly, LSE has travelled to organize workshops organized in London, Belgrade (Serbia) and Miera (Spain) that focused on various aspects of IoT development and brought considerations of

ethics into these discussions. Moreover, the LSE team also cooperated with important external stakeholders such as IoT MeetUp London and Women of Wearables (WoW) to organize local London events.

Sessions 4, 5 & 6. Workshops in London, Belgrade and Miera

In the first half of the project LSE, in collaboration with CIID and ORG, developed a workshop for interdisciplinary audiences to discuss different aspects of IoT design and development, and to reflect on the ethical issues that might arise.

Below we provide a list of the workshops and respective co-organizers and locations:

- Workshop 1: On October 2018 (organized by LSE), at Belgrade Hacker spaces and Coworking Spaces + Descon 2018.
- Workshop 2: From November 30th to December 2nd, 2018 (one workshop as a part of Civic Hub Sprint 5 AI, Open Data, IoT and Crowdsourcing of Citizen Data) in Miera, Spain.
- Workshop 3: On November 6th organized by LSE in London in cooperation with IoT MeetUp London.

Notes on Participation and Attendance

Workshop 1 engaged with 7 participants while workshops 3 and 4 increased in number of participants to 15 and 10 attendees respectively. Most participants were entrepreneurs working with IoT.

While the first part of each workshop helped participants becoming familiar with specific concepts such as ethics and care within discussions of IoT development; the second part of the workshop primarily aimed at creating a reflection on the participants' working practices.

These workshops were extremely valuable to the consortium as they brought up findings such as how most developers participating, did not prioritise ethics in their work flow – unless they defined their business as an ethical one. Envisioning a future in which all users across the globe would use their products or services was therefore key. This imaginary context allowed developers to uncover challenges and ethical considerations that were not apparent or crucial before attending the workshop.

Specifically, the overall analytical section of the workshop was structured as follow:

1. Value mapping (30 min). In this exercise, LSE grouped participants into teams and they discuss values, things (IoT or other technologies), scenarios and key roles involved in decision making. The moderators planned a 15-minutes introduction of what they meant by ethical values and ethics in design.
2. Brainstorm (45 min): In this exercise, small groups were asked to brainstorm on a product/business/company idea that they would like to work on and then work on the scenario building exercises. This exercise took into account specific theoretical concepts such as consequentialism, care, virtue and ethics which were briefly explained to participants.

3. Building an ethical product (45 min): In this third part of the workshop, participants worked on coming up with an idea for an ethical product that will foster ethical thinking in business, design, and product development.
4. Wrap up (30 min): Moderators of the workshop summed up the session by recapitulating and reflecting on the results from the different exercises. In addition, the organizers allowed participants to reflect in plenum on their own business and ethical values.

These workshops helped us gain the following insights:

1. There are significant differences in how developers and designers engage with ethical questions across London, Mieres and Belgrade. LSE found that funding agendas influence significantly how ethical issues come to be discussed.
2. Job roles are important for not only reflecting on ethical issues in connected technologies, but also for reflecting on the individuals' capacities to act differently.
3. Ethics was usually understood as privacy and security and it was difficult for participants to think beyond these limited conceptions.
4. Ethical concerns went hand in hand with fear of fines or persecution and thus compliance was an important consideration but often fell short of real ethical reflection.
5. Developers reflected upon how a higher revenue may result in less preoccupation or reflection on ethical considerations.

Session 7. Wearables and Ethics in London

Under the umbrella organization Women of Wearables (WoW), LSE in collaboration with ORG participated in an event entitled ‘Wearables and Ethics’ co-organized and hosted by MHPC Communication, international consultancy agency based in central London. This event was notably valuable as it focused on the development process of Internet of Things within the WoW goals aiming at inspiring, supporting and connecting women who work with wearable and digital technologies.

At the event, consortium members from the London School of Economics (LSE) Funda Ustek-Spilda (PostDoc at LSE), Alison Powell (Assistant Professor at LSE) and Javier Ruiz (Lead on policy at the UK based advocacy organization Open Rights Group) were part of a panel discussion. Alongside, Dr Kat Hadjimatheou (moral philosopher and criminologist at the University of Essex) and Terrie Smith (creative technologist committed to innovation and wearable technology) debated on the ethical and important challenges embedded in IoT and connected wearables.

The event was well publicized and well received with local media coverage and a report produced by the WoW organization.



Documentation photo of panellists who took part in *Wearables and Ethics* at MHPC Communication
May 2019, London.

For this panel discussion the organizers decided to focus the kind of ethical visions that wearables carry or are embedded in its design. Furthermore, seeking to understand how developers of wearable and connected technologies engage and represent ethical visions in their products.



Documentation photo of panellists and audience part of *Wearables and Ethics*
at MHPC Communication in May 2019, London.

Notes on Participation and Attendance

By focusing on the developer's point of view, rather than the risks and challenges of the products that users may encounter, a new discussion was brought up in the field of IoT about how wearables can be *done* ethically and responsibly. Importantly, the event brought together over 20 people who were founders, researchers and technologists. These audiences members shared their stories and views on ethics and wearables, IoT, machine learning, AI, blockchain, and everything in between wearables and data-intensive devices.

Turin – IOT / Innovation: Data ethics, regulation and responsible design

On February 21st, 2019, during the annual VIRT-EU meeting, the host partner POLITO organised a public seminar at the Polytechnic University of Turin titled *IOT / Innovation: Data ethics, regulation and responsible design*. The primary focus in this seminar concerned data-intensive products or services and the challenges, ethical considerations, and critical questioning, deriving from the values embedded in these types of artefacts and business projects. This was part of the well attended AI Lecture series that the university has used to engage with the local community of designers, developers and the vibrant maker community of Turin.

Session 8: Technology, regulation and society: AI Lecture series by POLITICO

For this event it was extremely valuable to address collective issues concerning the ethical and social impact of data uses when interacting with this particular type of data-processing designs and activities. This was paramount as recent findings identified specific ethical challenges embedded in how data-intensive products and services collect and processed information to profile and classify individuals and groups. Furthermore, it was key to reflect on the type of design tools needed that could support ethical reflection and self-assessment for IoT developers.

Notes on Participation and attendance

In total 50 attendees engaged in the seminar. Taking into consideration the above-mentioned approach to data-intensive products and services, the seminar included a series of lectures at the intersection of design, law and qualitative research under the title ‘Technology, regulation and society: AI Lecture series’. These lectures were divided in three different sections: design, participation and regulation and were coordinated by VIRT-EU's consortium member Alessandro Mantelero, Professor at the Polytechnic University of Turin.

Lecture presenters included a mix of local academics, designers and developers as well as VIRT-EU project members who debated on stage and answered audience questions.

Design of IoT

The first section on design included two VIRT-EU consortium members (Irina Shklovski (ITU) and Annelie Berner (CIID)), as well as, Ruggero Castagnola (Front-end Developer at the innovation firm Accurat) and Andrea Di Salvo (Researcher at the Department of Architecture and Design at the Polytechnic University of Turin). From different standpoints, the participants of this roundtable highlighted the importance of considering design choices in the creation and development processes concerning IoT devices and the ethical issues these might entail.



Documentation image from Design section at
Technology, regulation and society: AI lecture series
hosted at the Polytechnic University of Turin, February 21st, 2019.



Documentation image from Participation section at
Technology, regulation and society: AI lecture series
hosted at the Polytechnic University of Turin, February 21st, 2019.

Participation in IoT

The second session was dedicated to participation and included VIRT-EU members Alison Powell (LSE), Matteo Magnani (UU) and Luca Rossi (ITU). They were joined by Silvia Chiusano (Associate Professor of Computer Science at Politecnico di Torino) to discuss the role of participation in IoT environments.

In this section participants emphasized the analysis of existing relationships between the various networks of developers working with data-intensive products and services. In this regard, the speakers pointed out the value of promoting open and participatory solutions for IoT development and the role of network analysis as valuable research tool.



Documentation image from Regulation section at
Technology, regulation and society: AI lecture series
hosted at the Polytechnic University of Turin, February 21st, 2019.

Regulation of IoT

Finally, a third panel addressed legal issues concerning data regulation included two VIRT-EU consortium members Alessandro Mantelero (POLITO) and Javier Ruiz (ORG). Specifically, in this session speakers discussed the impact of GDPR on the IoT sector and suggested how audiences might want to think beyond the existing legal frameworks. This broader approach was presented as crucial to develop guidelines and impact assessment procedures which consider both the aspects concerning data processing and the ethical and social values underpinning IoT devices and services.

Overall, audience questions and further discussions made clear that increased awareness of the societal consequences of data use are crucial for practitioners, academics and regular users alike

and that open and participatory solutions are sorely needed. In this regard, it was pointed out how a central role is played by the engagement of IoT designers and developers at the point of design. This was argued to help making ethical considerations in a collaborative way when developing IoT products and services whilst complementing the existing legal requirements.

Participation in IoT industry events

In addition to local briefing sessions organized by the consortium members, we found it extremely valuable to support consortium member participation in industry events dedicated to IoT in order to bring a discussion of ethics to broader audiences. We have selected seven talks as representative examples of such engagement.

Living Bits and Things in Bled, Slovenia

Living bits and things is an event that started in 2011 in Ljubljana and was held for one day only. It attracted attendees mostly from academia and those related to diverse European IoT projects. It was organized in cooperation with Rob van Kranenburg, an IoT guru and took the advantage of the national IoT project Competence center OpComm. In its 2017 edition in Bled (Slovenia), VIRT-EU's Irina Shklovski participated as a keynote speaker and talked about ethics and IoT.

Irina's talk illustrated the identification of ethics in IoT development. The concept of 'ethics' was proposed in alignment with other terms such as security, community development, financial decisions or design concerns. Often, the idea of ethics is discussed with respect to privacy and compliance with the EU General Data Protection Regulation (EU GDPR). In relation to this conception, Irina offered a discussion of common ethical concerns in IoT products and services, covering the EU GDPR requirements. Her talk also considered questions such as: at what stage do and should ethical questions arise? What are the sites of discussion for ethics, and what techniques or tools are currently available to facilitate ethical deliberation about IoT?



Documentation image from Living Bits and Things at eConference Bled, Slovenia, in 2017.

Notes on Participation and attendance

Over 250 participants attended from approximately 30 countries from all around the world. The event was co-organized as a part of the 301th Bled eConference – a mixed research and industry venue focusing on business applications of digital technologies. The city of Bled was a stunning location with views of an alpine lake surrounded by castles and mountains.

The Living Bits and Things event organized a number of thoughtful and interesting presentations concerned with topics ranging from the future of IoT and the implications of GDPR to discussions of success stories and best practices. Speakers considered future visions, the known past over-estimations of digital technologies (for example sales of e-books are dropping but sales of vinyl are on the rise) and the tricky proposition of IoT products and services for general consumers.

There was agreement about IoT's significant potential in the industrial sector but from the different talks we learned that for consumers to seriously consider IoT, more attention paid to security is key. Furthermore, developers and designers have to make a greater effort in evoking trust towards these new devices and services. After all, as the world is largely reinvented in code, it is important to consider what sort of social contracts are implied in the technical infrastructures that we are building.

Overall, the conversations ranged from demos of available IoT platforms to best practices in community system development but the frequency with which concerns about privacy and social impact were mentioned was encouraging to VIRT-EU's consortium. Certainly, we identified traction for IoT in the industrial sector but more questioning was needed to locate and uncover what kinds of changes GDPR and innovation will bring to consumers of IoT.

Internet of Things Meetup 81 in London

On October 30th, 2018, Sebastian Lehuede (VIRT-EU's Ph.D Fellow at LSE) participated in the 81st edition of London Internet of Things meetup. The IoT London meetup has, since 2011, invited experts in the field and scholars working with IoT. These events consist of a series of workshops and talks covering themes spanning, urban infrastructure, smart grid, open hardware, quantified self, open data, environmental monitoring, smart products, smart homes, and other upcoming hybrids penetrating the IoT market.

Notes on Participation and Attendance

This particular meetup gathered in total 136 attendees, most of them being professionals in the field of design and tech. What makes this event extremely valuable is how they build strong and long-lasting networks of professionals. These, become members of IoT Meetup and follow up discussions after each event which also leads them to actually collaborate in design and business endeavours. Furthermore, as a community this meetup was a perfect platform to introduce recent findings from VIRT-EU's research and our experimentation with design tools and regulatory frameworks.

Uses and Misuses of Connected Devices at The Alan Turing Institute

In April of 2019, Alison Powell (VIRT-EU's Principal Investigator at LSE) participated in a meetup organized by the prestigious Alan Turing Institute based at the British Library in London. This national institution dedicated to data science and artificial intelligence, hosted the event 'Uses and Misuses of Connected Devices' in which Alison provided perspectives and findings from VIRT-EU's project.

Notes on Participation and Attendance

Over 40 people attended Alison's talk. In her presentation titled: "Doing, Postponing and Evading Ethics: the politics and economics of ethics in IoT start-ups", Alison reflected on accountability for the decisions made when developing IoT as innovative and commercially valuable products and services. Furthermore, she emphasized questions regarding the individual and collective challenges embedded in the incorporation of IoT in everyday life.

Specific concepts such as virtue, capability, and care were proposed and reflected upon. In addition to her theoretical framework, Alison illustrated VIRT-EU's empirical tools and data collection methodologies to inform audiences about the ways in which the project had been evolving and being informed by ethnographic and participatory methods and practices. Finally, she then concluded with a series of recommendations and proactive standpoints to implement ethical values in the creation and design of IoT. Her main takeaways listed were to focus on how to 1) evaluate the values embedded in the design of IoT progressively – taking into account its network and supply chain mechanisms and dependencies, 2) use regulatory frameworks as enablers for inspiration and creation of new IoT models, 3) pivot projects with small organizations, and 4) ensure the right to refuse to specific IoT products and services.

On Connected Technologies at Impact Hub in Belgrade

At the Belgrade-based conference Descon 2018, Funda Ustek-Spilda (VIRT-EU's Researcher at LSE), was part of a panel discussion covering the future of IoT development and its ethical and legal repercussions.

Notes on Participation and Attendance

Alongside Funda, there was a multi-stakeholder panel team working with IoT, networks, identifiers and data privacy. The participants were Vladimir Rđunović (Director, E-diplomacy and Cybersecurity Programmes at DiploFoundation), Jeff Wilbur ISOC (Technical Director, Online Trust Alliance,), Irini Reljin (working at the Ministry of Trade, Tourism and Telecommunications), Srđan Krčo (CEO at IoT enterprise DunavNET) and Michael Richardson Sandelman (CEO at Software Works).

Over the course of this panel, participants exposed challenges related to the adoption of IoT and the role that governments can play in helping to achieve the economic potential of IoT while reducing risks associated with pervasive and connected technologies. To the event, Open Trust Alliance was invited as the Internet Society initiative that could offer various Policy Frameworks to guide actors on how to enhance online trust. As part of the discussion in which Funda participated, panellist mainly discussed how to protect parts of the Internet infrastructure.

Port talks by the Goodenough College

Goodenough College is a residential college and intellectual community that brings together postgraduate scholars from around the world. For their meetup titled Port Talks they invited Alison Powell (research part of VIRT-EU at LSE) who provided a talk in which she covered the shortcomings of consequentialist perspectives on ethics within technology design. In her talk, she identified some of the features of data-based economies and the more expansive ethical risks and concerns that emerge from these.

Notes on Participation and attendance

Approximately 40 people attended Alison's talk which was titled: "Beyond Surveillance: Data, Ethics and Connected Devices". The talk wound together the threads of virtue, capability and care as they are articulated within the VIRT-EU project's ethical framework. Overall, she provided her audience with insights from the project's fieldwork and received feedback from the attendants who engaged in her talk over the course and after her presentation.

Thingscon 2019 in Berlin

On May 6th, Thingscon (a global initiative promoting research, events and meetups on fair, responsible and human-centric technologies for IoT and other emerging technologies) organized a Salon in Berlin focused on the ethics of how to make better IoT products, and their lifecycles. For this specific meetup, Thingscon invited Ester Fritsch (VIRT-EU's Ph.D. candidate from ITU), Isabel Ordóñez (Industrial Designer) and Chris Adams (Developer).

Notes on Participation and attendance

Over 20 attendees engaged in this event mostly coming from industry (designers and developers). In her presentation, Ester Fritsch talked about a range of different initiatives and efforts focused on how ethics is enacted in relation to IoT development. These considerations were connected to Ester's research findings over the course of her first two years as a Ph.D. fellow. From her study, attendants learned about the apparent multiple versions of ethics in relation to IoT which are flourishing across Europe, all situated differently and emerging from diverse contexts and with a range of various agendas (e.g., EU, UNESCO, diverse networks of IoT developers and designers, tech activists or artists). In her own words Ester explained: "Whenever something is highlighted in relation to ethics, something else steps into the background." Throughout her presentation she tried to evoke discussions among the salon's participants. Ester then invited participants to take a closer look at all the different initiatives mentioned concerning ethics and IoT collectively and critically.

Specific questions such as "can we always take claims about ethics in IoT development as inherently good? Or do claims about ethics in IoT have a dark side as well?" were helpful to engage attendees in an open and dynamic discussion. Finally, open questions such as: "Do we need a revolution? Or can an evolution do it? What is the relation between ethics and policy-making? What about other continents than Europe? Will these initiatives seeking to strike ethics make a difference?" led to informal one-to-one discussions followed up the end of the event.

Mind the Gaps '19 in Malmö Sweden

On May 21, Annelie Berner (PI at CIID) participated in an industry-focused conference at the innovation and conference venue, Studio Malmö. This event primarily covered the use of ‘hands-on tools for building responsible tech to create products aligned with people’s values’. The meetup was complemented with a discussion on digital ethics.

Notes on Participation and Attendance

The audience consisted of consultants, freelancers, people from large corporations, workers from the public sector, and activists. These interdisciplinary group of people join to learn more about the design and ethical principles part of the speaker line-up. In total the event counted with 35 engaged attendees. The organizers of the event estimated that 70% of the audience where designers and design leads, a few developers showed up in addition to public sector employees and activists working with tech-companies.



Documentation image from Mind the Gaps '19 in Malmo, 2019.

Specifically, Annelie Berner – as one of the keynote speakers – provided a talk titled ‘Backing Ethics with Research’. Through her presentation she proposed different future scenarios where the development of IoT could have both negative and positive effects in everyday life: ‘If technology has a far-reaching impact on our lives: As much as it offers potential for us to improve our social, environmental, and economic conditions, it also has the power to impact those areas negatively. ‘How could we empower and support developers and designers to engage in ethical reflections to prevent such scenarios?’

Through VIRT-EU's research framework Annelie explained how her research as part of VIRT-EU aims at fostering ethical thinking and develop actionable tools to encourage reflection on the relationship between technological innovation and societal concerns. The work-in-progress tools she is designing were presented to the audience. Thanks to her participation she was able to receive valuable feedback and iterate in her working process, improving her prototypes and testing them

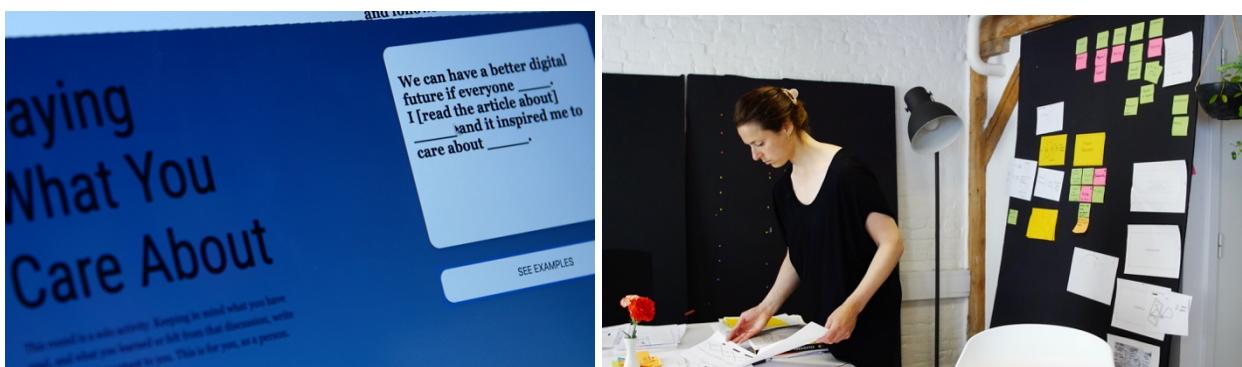
Outcomes, lessons learned, and future local events

The local briefing sessions and speaker participations in industry events has allowed us to create a stronger network of working professionals, ensure tangible dissemination and impact results, and provided valuable feedback mechanisms enriching our findings.

In addition, we have been able to test findings with diverse audiences and in diverse contexts (from less to more informal locations and setups). Thanks to these various events, the project as a whole has gained a better understanding of current values and ideas related to the creation of IoT and its regulatory and ethical dimensions beyond purely academic spheres. In doing so, allowing the project's outcome to have a long-term impact with valuable connections with industry leaders, experts, and young or emerging talents at the forefront of IoT development.

For the future, project members will continue to engage with industry events as broadly as possible. For example, Irina Shklovski (ITU) will be giving a keynote presentation at the High Tech Summit organized by the Danish Technical University targeting industry professionals and thought leaders on the future of AI and connected systems.

The VIRT-EU project also has planned three larger-scale local events in London, Copenhagen and Rotterdam for the summer and fall of 2019. As such, we will continue to reach out to audiences beyond academic contexts and aiming at creating an impact in development practices and uses of IoT. We specifically have a stronger focus in reinforcing our network with experts in the field of technology, innovation, regulation and design.



Left: Photo of desktop-prototype given to participants of VIRT-EU's Design Challenge 2019. Right: Documentation of Annelie Berner (PI) working on prototypes at CIID that will be presented at Techfestival in 2019 in Copenhagen.

Design Challenge – international competition hosted at ORGcon2019 in London

In July of 2019, we will host a Design Challenge at ORGcon 2019 (UK's largest human and digital rights conference). Taking the opportunity of this international event we will be able to create tangible impact with actual collaborations with industry representatives participating in the competition and using our tools. In this particular case, competitors' part of the design challenge

will be able to co-create new products or services with VIRT-EU's design tools. As VIRT-EU's lead coordinator, Irina Shklovski, explains: 'We are seeking ideas about how to balance personalization, privacy, and the experience with the interests and preferences of different people who live together and apart. What kinds of creative interventions are possible using connected devices to provide for life together and apart as interconnected social beings, not only as individuals?'

The ideas resulting from the Design Challenge will make an impact in a long-term perspective. Firstly, participants will appropriate our tools and regulatory frameworks as a part of their working process and portfolio. Moreover, the ideas and concepts resulting from this event will have the chance to enter IoT markets as examples of innovative and ethical solutions. Last but not least, the participants selected will gain visibility and new connections at ORGcon 2019, UK's largest digital rights conference subject of relevant media coverage.

Copenhagen Techfestival – exhibiting tools for ethical design

In September of 2019, ITU and CIID will present current tool prototypes and discuss project insights with a broad selection of TechFest participants in 2-hour interactive panel. In a similar way to our first participation in Techfestival in 2017, we hope to create a dynamic event where interdisciplinary audiences will be able to test and challenge the tools and their own working practices. For this occasion, we are also focusing on an exhibition format that will be aesthetically and conceptually stronger than previous events.

Notably, this exhibition-panel event is of great relevance since the tools planned to be shown are a result of the collaborative work made over the course of VIRT-EU's research by all members of the consortium. These collaborative efforts combining regulation, data-ethics and qualitative findings will materialize in design tools that can be tested and implemented in real working practices.

For this event, we hope to collaborate with working professionals and start-ups already part of different events and meetups happening during Techfestival. Overall, we aim at strengthening our network and to create an impact alongside experienced developers and designers at the forefront of IoT development.

ThingsCon Conference 2019, Rotterdam – VIRT-EU tools launch

In December of 2019, the VIRT-EU project will use ThingsCon Conference 2019 as a stage to launch the final version of the VIRT-EU tools, presented to a diverse audience of European designers and developers working with a range of differing connected systems. This event will include a keynote presentation and extensive tool demonstrations. We will also man a booth at the event to provide hands-on demos to interested attendees and to promote project output.