Doctoral summer school on Sustainable ICT

– Brief summary –

August 30th (Mon) – September 3rd (Fri), 2021
Louvain-la-Neuve, Belgium

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Introduction

SICT2021 aims to bridge the gap between research in the Information and Communications Technology (ICT) and the overarching and inter-related social, environmental, and economic questions of our time. This second edition of this doctoral summer school will critically look at the current state of ICT, challenge its mainstream research agenda and underlying assumptions, and discuss the role(s) ICT researchers can play to build a sustainable and desirable future in a finite world. Far from limited to researchers with an engineering background, the event wishes to promote trans-disciplinary interactions on ICT topics by bringing together individuals with a broad range of expertise.

The program of the doctoral summer school has been built to offer a multi-disciplinary and holistic system-view approach to sustainable ICT. While the first edition put the focus on the impact of production steps such as raw materials extraction, SICT2021 aims to build on these insights to delve into another key aspect in the system life cycle: the use phase. This choice naturally orients the discussion towards software-related aspects, which will stand as the central theme addressed throughout the week. From data centers’ power consumption to the development of lightweight websites, from mitigating user footprint through Human-Computer Interaction to exploring limits-aware computing for post growth contexts, SICT2021 aims to provide attendees with a broad yet coherent view of the sustainable ICT perspectives through talks, workshops, collective reflections sessions, hands-on sessions, expert panels, and more!

Building upon our experience from the first edition, SICT2021 aims to combine the concept of doctoral school while taking inspiration from sprint events, where participants from various backgrounds join forces to produce concrete deliverables. To that end, lectures, talks and expert panels will be intertwined with workshop sessions, leading up to a hackaton day. Groups of attendees will have the opportunity to work on their own sustainable-ICT-related research projects, benefiting from the expertise and feedback of the SICT speakers, and possibly leading to follow-up research or future publications.

Importantly, this summer school does not aim to introduce specific and highly technical content. Instead, SICT2021 wants participants to take a step back from narrow and very specific research objectives, and rather question the purpose, fate, and impact of the technology we contribute at creating as researchers. While enabling tremendous possibilities once on the market, ICT innovations are rarely questioned in term of societal necessity / pertinence with respect to their footprint, especially previous to their development. Universities exist for the long term: they have a critical role to play on long-term thinking and are responsible for growing the seeds of tomorrow. It is of decisive importance that values governing Universities differ from those dominating the for-profit world.

It is in this context that the SICT doctoral summer school has been created. Some researchers and professors from the UCLouvain/ICTEAM (Science & Technology) were concerned about the socio-environmental impacts of technology as much as global trend pushing towards more performance at the expense of weakened resilience. By wondering how people with different backgrounds could be gathered to question ICT impacts from several perspectives, they came up with SICT2020, the first edition of the project. Indeed, UCLouvain as many other Universities brings many research fields together in one place. Improving interactions between these different fields seemed an interesting way to stimulate research on technology for needs and not for desires allowing also to better sort between what we could do and what we want to do. In order to encourage people with different skills to share with each others, interactive social workshops and collective intelligence modules are in place with ICT as common theme.
Program overview

**Monday - The vast landscape of ICT**  This first day aims at leveraging SICT2020 to summarise the current debate on global trends regarding ICT, the industry’s footprint, and to broadly introduce sustainability in the ICT sector. We do this also by contrasting speakers with different approaches. The enabling effects of ICT with respect to the environmental challenges of our time will be put in perspective with the footprint of the sector. The latter must be evaluated taking a systemic approach, tackling the subject from material extraction to rebound effects. The attendees will have the opportunity to challenge the speakers through a collective generation of questions in perspective of the afternoon debate.

The **workshop** will be introduced and will span throughout the whole week to allow the participants to build on the insights from the conferences. A wide variety of topics and production format will be encouraged during this week workshop, ranging from technology impact assessment and feasibility study to the expression of a critical opinion on the week’s content.

**Tuesday - IT with purpose for tomorrow’s society**  The following day takes a multi-disciplinary approach to understand how IT can be used with purpose in social, economical and environmental contexts. Speakers such as economists, computer scientists, and artists will explore its impact on both the environment and individuals. How can we get inspiration from the digital sobriety of developing countries to both bridge disparities brought by ICT, and pave the way for a post-growth resource limited world? This is a typical example of question explored, introducing research area as ICT4D, Human Computer Interaction, and so forth.

To give the participants a chance to get to know each others, they will have the opportunity to pitch their thesis subject during short, non-formal speeches in the My Thesis in 180 seconds workshop. The goal: find an accessible way to share their research, and try to tackle the sustainability challenges it will need to address.

**Wednesday - Joining forces between research and industry**  This third day brings together experts from Big Tech companies and smaller bodies, to investigate strategies adopted by industries when addressing environmental and social issues in their operations. The goal is to connect research concerns to practical issues, using once again a multi-disciplinary approach. Experts from industries such as smartphone manufacturing, data center services, website development, smart nodes will be followed by researchers of related fields in a sequence of short presentations. These will serve as a base for an interactive expert panel. The day ends with a hands-on practical workshop by Fairphone together with a local student organization, focused on circular economy in the smartphone world.

**Thursday - SICT Hackaton**  The hackaton day will give time to freely formed groups to define individual research topics around sustainable ICT, and building on the insights acquired throughout the week. Once pitched publicly, the participants will work on their projects throughout the day, aiming to present initial results of Friday. By collaborating with like-minded researchers and joining expertise from multiple disciplines and approaches, the goal is to produce opinions and concrete tracks for sustainable solution to ICT-related challenges.

**Friday - Thinking and researching differently**  The last day of this doctoral school will allow participants to share their work and reflections, while receiving feedback from other attendees and experts. The last speakers have been selected to spark questions about the societal relevance of the innovations we are driving as researchers, to shed some light on low techs initiatives and how we could orientate our research towards more holistic considerations and more consciousness for sustainability challenges.

The SICT week ends here, but your production and the fruit of your discussion with other attendees and speakers will hopefully live on further through your own research, future articles and even possibly larger scale sustainable projects!
# Proposed Schedule

This is a draft outline of topics and speakers whom we would like to contribute to SICT2021. We are currently in the process of inviting speakers and confirmed contributions will appear on the website.

| August 30th  
Day 1 | August 31th  
Day 2 | September 1st  
Day 3 | September 2nd  
Day 4 | September 3rd  
Day 5 |
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<td>Joining forces between research and industry</td>
<td>SICT Hackaton</td>
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| Stefan Lange, Tilman Santarius (ITQW)  
Can ICT help reducing energy demand? | Julia Steinberger  
[UNIL]  
Economic models within planetary boundaries | Jay Chen (ICSI)  
ICT4D, Limits-aware computing | Jan Tobias Mühlberg  
(KULeuven)  
Hackaton kickoff | **Speaker conference**  
(confirmed) |
| Jacques Combaz  
(Verimag)  
Rebound effects in ICT | Elina Eriksson  
(KTH)  
Sustainability and human-computer interaction | Matti Pärssinen  
(Aalto University)  
Footprint of online advertising | **Hackaton**  
Topics pitching | **Interaction with expert panel** |
| Lorenz Hilfli (LZH)  
ICT’s enabling effects: smart grids and cities | Joanna Moll  
(Critical Interface Politics Research Group)  
Sustainability in the web | Joanna Moll  
(Critical Interface Politics Research Group)  
Sustainability in the web | **Hackaton**  
Methodology session or Group work | **Work by small groups** |
| Reyma Ubeda (ITU-T)  
Smart swim pool | Timnit Gebru  
Ethics in AI at Big Techs | Timnit Gebru  
Ethics in AI at Big Techs | **Hackaton**  
Group presentations | **Group presentations** |
| Jean Pierre Roakin,  
David Bol  
(UC Louvain)  
Look back on SICT2020: The impact of raw material extraction | **Collective generation of questions**  
Interactive discussion with expert panel | **Feedback and ranking**  
from expert panel | **Hackaton**  
Group work | **Closure** |
| **Afternoon** | **Afternoon** | **Afternoon** | **Afternoon** | **Afternoon** |
| Debate between expert panel | Workshop  
My thesis in 180 seconds | Workshop  
My thesis in 180 seconds | Workshop  
My thesis in 180 seconds | Workshop  
My thesis in 180 seconds |
| Jan Tobias Mühlberg  
(KULeuven)  
Workshop kickoff  
Presentation of thematics and deliverables examples | Marina Proske  
(Fraunhofer IZM Berlin)  
Workshop introduction  
Fairphone 2’s LCA | Marina Proske  
(Fraunhofer IZM Berlin)  
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Workshop introduction  
Fairphone 2’s LCA | Marina Proske  
(Fraunhofer IZM Berlin)  
Workshop introduction  
Fairphone 2’s LCA |
| Workshop  
(Additional time) | Workshop  
(Additional time) | Workshop  
(Additional time) | Workshop  
(Additional time) | Workshop  
(Additional time) |
| Hands-on workshop with Fairphone  
Circular economy in the smartphone world | **Hands-on workshop with Fairphone**  
Circular economy in the smartphone world | **Hands-on workshop with Fairphone**  
Circular economy in the smartphone world | **Hands-on workshop with Fairphone**  
Circular economy in the smartphone world | **Hands-on workshop with Fairphone**  
Circular economy in the smartphone world |
| **Evening** | **Evening** | **Evening** | **Evening** | **Evening** |
| Big Public Debate  
Interdisciplinary panel of invited speakers | **Big Public Debate**  
Interdisciplinary panel of invited speakers | **Big Public Debate**  
Interdisciplinary panel of invited speakers | **Big Public Debate**  
Interdisciplinary panel of invited speakers | **Organizer word** |
| Sustainable Dinner | Sustainable Dinner | Sustainable Dinner | Sustainable Dinner | Sustainable Dinner |