

## **Greetings from Silicon Heaven: Postcards from the IoT Afterlife**

Greetings from Silicon Heaven

Postcards from the IoT Afterlife

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As the importance of minimising e-waste and increasing sustainability increase, exploring the design matters impacting the transience of digital technologies has become a key concern. In this workshop we will explore this through the metaphorical lens of the lives, deaths, and afterlives of electronic objects. The workshop creatively engages with this by participants creating obituaries for IoT objects and postcards from the afterlife that will help us question the emotional, ethical, aesthetic and ecological implications of objects reaching the end of their life. Drawing upon our work for the EPSRC Fixing the Future Project, we anticipate that the discussions and collaborations that emerge through the workshop will generate design themes that contribute to the wider agendas and communities advocating for the Right-to-Repair of IoT devices globally.

CCS CONCEPTS •Human-centered computing~ •Human-centered computing~Human computer interaction (HCI)•Human-centered computing~Human computer interaction (HCI)~HCI theory, concepts and models•Human-centered computing~Human computer interaction (HCI)~HCI design and evaluation methods•Social and professional topics~Computing / technology policy

**Additional Keywords and Phrases:** Internet of Things, e-waste, design fiction, design workshop, speculative design, participatory design, more-than-human design

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## 1 WORKSHOP MOTIVATION

In “I spot brand new TVs, here to be shredded’: the truth about our electronic waste” [27] Oliver Franklin-Wallis, writing for the Guardian, reports brand new TVs being destroyed to make room for new products. Such acts of blatant consumerism, along with planned obsolescence, advertising tactics, lack of repairability and poor legislation [2, 17, 51, 56], contribute to the transience of electronics and their propensity to be prematurely destroyed, discarded or dismissed. Apart from Phones, laptops and TVs, everyday objects such as toasters, refrigerators and watches are now being embedded with electronics and connected to the Internet [30]. We know that the number of connected everyday objects, known as the Internet of Things (IoT) is only projected to increase in the near future and is set to contribute to rising e-waste [29, 52]. Perhaps the most surprising part of Franklin-Wallis’ article, however, is not how most electronic waste is disposed of in landfills or recycling plants but that more than fifty percent of Waste Electronic and Electrical Equipment (WEEE) seems to be unaccounted for. Franklin-Wallis speculates that many electronic devices “are not disposed of but live on in perpetuity, tucked away, forgotten, like the old iPhones and headphones in my kitchen drawer, kept ‘just in case’” [27]

Whether they breakdown or are traded in favour of a newer technology, we anticipate more IoT objects being thrown away or forgotten and unaccounted for, perhaps tossed away or stuffed out of sight in drawers or cupboards, never to be seen again. In addition to WEEE that makes it to recycling plants or garbage dumps, we are curious about the fate of what have been identified as ‘unaccounted for’ objects [25, 27, 58] that may include ‘interstitial’ [45] electronic objects. In this workshop, we aim to investigate the design of digital objects as things to be forgotten by remembering them. We propose to act out remembering IoT objects through fictional obituaries and ‘keeping in touch’ with IoT objects through postcards from imagined destinations where these objects might end up. As designers working in the field of HCI, we ask how we might facilitate design activities and discussions around the fate of our IoT possessions by exploring, through design fiction, the life, death and afterlife of these electronic objects. By doing so, we will consider questions and design themes

for IoT end-of-life [39, 53] through an Object-Oriented-Ontology (OOO) [40, 42] and play-out the remembering of forgotten objects through imagined narratives.

In recent years, designers in HCI are beginning to embrace concepts that shift understandings of IoT technology away from human beings, such as in More-than-Human Design [1, 21] and Object-Oriented-Ontology [40]. This shift away from the human is part of a wider move towards considering what science and technology means beyond human experience and includes Bruno Latour's Actor-Network-Theory [38], James Lovelock's Gaia Hypothesis [43] and Mediation Theory [32, 55]. Methods that investigate technology from a non-anthropocentric lens have been emerging such as in work with the body in HCI [31], through speculative objects [21], fictional conversations and role-play [48], thought experiments [1] and through design workshops [20]. Recent developments in AI have also led researchers to speculate on designing for IoT objects with agency [29, 52]. While there is increasing motivation to understand technology from non-anthropocentric perspectives, methods of doing so in a participatory way have been limited. This workshop uses methods from Theatre [3, 15, 24, 37, 51] and role-play in conjunction with Design Fiction [41] to imagine experiences of the afterlife from the perspective of IoT objects.

HCI researchers are recognising a shift in our view of computers from 'value neutral' to 'value sensitive' [4, 5, 9, 9, 16]. A growing interest in Design Fiction [7, 8, 10, 11, 22, 24, 41] and speculative methods [23, 24, 28, 34, 34, 46, 50, 56] amongst HCI researchers is "reflective of our growing need to consider the broader impacts and consequences of technological infrastructures" [7]. There is noticeable interest in the potential of design fiction to engage with the critical, socio-cultural, ethical [7, 8, 41] and 'felt-life' [11, 12, 44] aspects of technology and we see immense potential in furthering these efforts. While the aim of Design Fiction has been the creation of text, artefacts, videos, scenarios, fictional worlds or diegetic prototypes that can promote critical discussions around technology [7, 10, 11, 22, 41], Design Fiction has increasingly been used in workshops [3, 13, 33, 35, 56]. Design Fiction has also been able to use fun, play, imagination, role-play and magic to structure activities around complex themes [3, 13, 14, 56]. We wish to build upon these recent developments in value sensitive design fiction to engage participants in new formats of participatory design activity.

In this workshop, we consider how methods from theatre and Design Fiction might act as a gateway into discussions around IoT that do not begin and end with human beings as the main character. Although considering things and planet from outside our own human perspective is understandably difficult, Larsen and Friss argue that theatre can become a gateway to talking about difficult themes since theatre allows participants to begin with their own experience [37], which is translated into understanding the other. We draw inspiration for this workshop from methods in HCI that have borrowed from theatre and improvisation, including body-storming [49], role-playing [26] and speculative enactments [24], from participatory design workshops such as magic machine workshops [3] and anti-solutionist enactments with fictional technologies [13]. We also build upon work in theatre and participation such as Cage's method of Chance [18], Boal's improvisation methods [15] and Ranciere's idea of emancipated spectators [51] as methods of enabling people to contribute, reflect upon and critically discuss issues that have broad social, political or ethical significance. Our motivation for this workshop is to involve designers in creative discussions around IoT end of life through new methods that borrow from design and theatre practices. We question how alternative understandings of technology, without human experience at the centre, can be used as a space for design thinking around IoT end-of-life.

## 1.1 Intended Outcomes

This workshop is a way to help generate critical discussions and design themes around IoT end-of-life. We expect that the participants will have fun and suspend belief for a time. In doing so, we expect that the discussions will be creative and tangential. We hope that they will be at times absurd and humorous. The word theatre comes from the Ancient Greek

théatron, meaning ‘a seeing place’, where audiences would sit atop a hill to watch a performance [36]. and this essentially, sums up the aim of the workshop. We intend to create an alternate vantage point from which we, the researchers, together with the participants can observe IoT waste and repair. This new view will be from the imagined experiences of IoT objects and, in essence the outcome for the workshop will be to create ‘a place for viewing’. The fictional artefacts that participants create during the workshop – postcards and obituaries we see as contributing to an anthology of fictional artefacts exploring More-than-Human design. The format of this workshop is relatively experimental, and we expect our methods to add to ways of involving ways people in playing out non-anthropocentric views on technology. We plan to compile the postcards, obituaries and interviews from the workshop into an anthology, paper or pictorial to disseminate to the design and repair communities.

### **1.2 Value to the NordiCHI community**

This workshop aims to contribute to emerging HCI discussions around IoT repair through a More-than-Human lens. Attendees will gain an understanding of issues related to IoT repair through the assigned readings, activities and discussions in the workshop. The participatory nature of the workshop will help to involve attendees in new ways of using fiction for design, while building upon our expertise in Internet of Things, Design Fiction, Participatory Design, Object-Oriented-Ontology, and Legal Studies. Participants will get the opportunity to engage with new methods in Design Fiction and in HCI. This workshop will be part of a wider collaborative movement around the Right-to-Repair and Equal IoT that will continue after the conference.

## **2 PLANNING**

### **2.1 Pre-Workshop**

A website will be set up with a call for participation. The workshop hosts will reach out through their universities and networks with the call for participation. With hosts associated with many different universities and organisations across the UK, we will be able to reach many potential participants with our call for participation. Participants will be asked to provide their profile and submit a position paper, stating their contribution, interest and expertise in relation to the workshop themes. A sample call for participation can be found below. We will select participants based on their interest in the topic of IoT and repair, in design fiction, speculative or creative methods in HCI. We would like to have participants with a broad range of skills and interests in the workshop. Selected participants will be asked to access a set of resources including news articles and papers as background reading prior to the workshop. These resources will be provided on the workshop website.

FIXING THE FUTURE

## GREETINGS FROM SILICON HEAVEN!

POSTCARDS FROM THE DIGITAL AFTERLIFE

As the importance of minimising waste and increasing sustainability increase, exploring the design matters impacting the transience of digital technologies has become a key concern. In this workshop we will explore this through the metaphorical lens of the lives, deaths, and afterlives of electronic objects. The workshop creatively engage with this by participants creating postcards from the afterlife that will help us question the emotional, ethical, aesthetic and ecological implications of objects reaching the end of their life.



Sunday, 14th October 2024  
10am - 5pm

Drawing upon our work for the EPSRC Fixing the Future Project, we anticipate that the discussions and collaborations that emerge through the workshop will generate design themes that contribute to the wider agendas and communities advocating for the Right-to-Repair of IoT devices globally.

Register Here - <https://www.epshorizon.ac.uk/>

NordiCHI '24  
Biskopsgatan  
3, 753 10  
Uppsala

Figure 1. Sample call for participation for the Greetings from Silicon Heaven at NordiCHI 2024. Authors' Image.

## 2.2 Format of the Workshop

### 2.2.1 Overview.

This would ideally be an in-person, full day workshop. However, this workshop format can be modified to either online or even a half-day workshop, if need be. The workshop is intended to play out in five acts, like a play. We envision activities to be a mix between Theatre and Design Fiction. Character, fictions and role-play will be used as tools to encourage discussion and to arrive at fictional artefacts. Through the five acts, different activities and created artefacts will be used as methods and tools to immerse the participants in role-playing the characters of IoT objects and other fictional characters, ending with open-ended discussion. The format is designed to allow differing levels of participation including group discussions, writing and drawing as well as performance and role-play. Participants will get a chance to participate on their own terms and contribute in ways that they are most comfortable with. However, we will encourage participants to open up and perform, hopefully by creating a fun and light-hearted atmosphere.

### 2.2.2 Number of Participants.

We would ideally hope to have around 20 participants for this workshop; however, the format is able to adjust to significantly more or less participants. We plan to have 4-5 groups of 4 participants in a group. If we cannot get 20 participants, the group size can be reduced, or we can change the group activities to individual activities. This would not significantly affect the format of the workshop. Similarly, we could accommodate up to 30 participants, if necessary, by have 6 groups and 5 members per group.

### 2.2.3 Time Frame

“Time flies when you’re having fun.” (English Proverb)

This workshop is designed to be six hours long. The workshop will be divided into five acts which are 1 – 1.5 hours long, with breaks in between. The table below describes the the planned workshop schedule.

Table 2. Schedule of workshop activities.

<i>Acts</i>	<i>Activity</i>	<i>Time</i>
<i>Act 1 (1 hour)</i>	Introduction and Overview of Workshop, Group Formation	30 mins
	Objects appear from a hat	30 mins
<i>Act 2 (1 hour)</i>	Obituary Prompts and Writing	30 mins
	Obituary presentation and discussion	30 mins
<i>Break</i>		
<i>Act 3 (1.5 hours)</i>	Postcard prompts and Postcard Creation	45 mins
	Postcard role-play and presentation	30 mins
	Posting and discussion	15 mins
<i>Break</i>		
<i>Act 4 (1.5 hours)</i>	Interview question writing	45 mins
	Interviews play out	45 mins
<i>Act 5 (1 hour)</i>	Discussion	45 mins
	Wrap up	15 mins

## 2.3 Overview of Activities

### 2.3.1 Act 1: Objects appear from a hat.

Participants, in groups, will be asked to draw from a hat which contains ephemera of digital objects such as advertisement posters, manuals and marketing brochures. The word ‘Ephemera’ refers to things that have a transitory existence, from the Greek ephēmeros ‘lasting only a day’ (O.E.D). Ephemera [54], such as posters and advertisements are items that were not originally meant to be preserved, but have ended up being collected. We use such ephemera of IoT objects in this workshop as a kind of remembrance, memento or souvenir of an electronic object. Through the ephemera, participants are introduced to the IoT object - what it was made for, it’s functions and what it looked like. Participants will also be provided with scissors, glue and pens to cut up [6] and use the images and text from the ephemera in the fictional postcards and obituaries that they create in the workshop.



Figure 3. Examples of Ephemera that might be drawn from the hat. Left: An advert for a TV and Right: Packaging for an Apple Watch.

The act of drawing from a hat has been used in design workshops to signify magic and magical activity [56]. In drawing from a hat, we invite participants to suspend disbelief and enter into a space of imagination, magic, fiction and play. The hat is also an intentional disconnection from the ways in which our electronic devices come to be. While the production and origins of electronic objects are an important issue, our goal for this workshop is to shift the focus to the end of life of objects and so we substitute magic for the production process. As often, in our own lives, consumer goods are marketed as rather magical-seeming objects that seem to appear out of nowhere, with no history, no past and no hint towards their material origins or the physical resources that might go into their production. Science fiction author Arthur C. Clarke famously remarked that “Any sufficiently advanced technology is indistinguishable from magic” [19]. For the purposes of this workshop, our phones, laptops and refrigerators might as well have appeared out of a hat, as if by magic.

### 2.3.2 Act 2: Obituary

A few fictional obituaries created by the hosts will be shown to the participants as prompts. The obituary prompts are pastiches of obituaries from Barry Nelson and Tom Schecker’s collection of fictional obituaries in *Mr. Ed – Dead And Other Obituaries of the Most Famous People Who Never Lived* [47]. Participants are asked to imagine how the object from the hat lived and died. Where did the object live, who were its family, what did it do for a living? What happened to it, how did it die? – an accident, old age, a poor business model? Participants are invited to write an obituary for the object in question. Groups will be invited to present their obituaries in the workshop, followed by discussion.

## SAMSUNG FULL HD LED TV (2019), 5



### TECHNOLOGY FIRM MOURNS LOSS OF "POPULAR BUT DUMB" TV MODEL

Samsung Full HD LED TV (2019) designed to give viewers butterflies died at Samsung headquarters yesterday. "We're flummoxed - she was in terrific shape. I just watched her in my TV lounge yesterday," said a Samsung spokesperson.

Rumours that the icon had been suffering from a lack of smart features and failure to upgrade to the latest IoT technology for the last 2 years were, according to the spokesperson "A pack of lies- she was a robust 5 and probably had another 3 years in her.

The TV was retired from her position representing the merits of 2019 TV technology and went into hiding after consumer groups threatened her life due to high power consumption and unethical business models. She surfaced again in Asia, performing philanthropic pursuits consisting chiefly of screening movies for children in poor neighbourhoods in Vietnam, Laos and Thailand.

Samsung TV will be cremated after being treated with a thousand toxic chemicals and shredded into small pieces. The pieces will be buried in a landfill in Vietnam.

Figure 4. An obituary prompt for participants.

### 2.3.3 Act 3: Afterlife

Participants will be shown example postcards created by the workshop hosts as prompts. Participants will then be invited to create their own Postcards addressed from the electronic object they have picked from the hat. By creating postcards from the afterlife, participants will get a chance to role-play their chosen digital objects and imagine places where these objects go to after they have 'died'. This could be, for example, a garbage dump, an attic, a recycling centre, a memory box or a fictional place like Silicon Heaven. Participants will be invited to use mixed media, including pen, collage and AI to create three images of their imagined afterlife. One participant from each group will be asked to role-play the object and present their postcard in the workshop. Participants are then asked to 'post' their postcards to another group.



Figure 5. A postcard create by the hosts as prompt for participants. The postcard depicts an AI generated image of a laptop on a virtual beach in the fictional place called 'Silicon Heaven'.



#### *2.3.4 Act 4: Interview*

Groups will be asked to use the postcards they receive to create a set of 5 questions to ask the object about its life, death and afterlife. One member from a group that received the postcard will be invited to play ‘the interviewer’ who may or not be named and described by the Group. A member of the group that sent the postcards will be invited to role-play their chosen object in a fictional interview with ‘The Interviewer’.

#### *2.3.5 Act 5: Discussion*

At the end of the workshop, participants will be invited to a discussion of the workshop such as themes, questions or design ideas, their experience with role-playing objects as well as reflections on the format of the activities.

### **2.4 On-site requirements**

We will require the following arrangements for the workshop,

Tables for group activity (6 nos.)

Chairs (30 nos.)

Large size chart papers

A4 size papers

Post-its

Marker pens and writing pens.

PowerPoint presentation and laptop set-up (optional)

Microphone (optional)

We will bring the hat, templates and ephemera.

### **3 WORKSHOP HOSTS**

**Namrata Primlani** is a Research Associate at Edinburgh Napier University, part of the Fixing the Future project. She has previously been a Marie Curie Research Fellow at Northumbria University and a Mozilla Fellow. Her research investigates the Internet of Things through Research-through-Design (RtD) and Design Fiction methodologies.

**Dr. Dimitrios Darzentas** is a lecturer in the School of Computing, Engineering and the Built Environment (SCEBE) at Edinburgh Napier University and formerly a multidisciplinary Research Fellow in the Mixed Reality Lab of the University of Nottingham. His work is situated at an intersection between Human-Computer Interaction and Design with a broad scope including Mixed Reality Technologies, Experience Design, MXR Storytelling and Cultural Heritage, Physical/Digital Service Design, Playful Interactions, Wellbeing, Sustainability and Political Engagement, among others.

**Dr. Joseph Lindley** is a Senior Research Fellow at Lancaster University. He currently runs Design Research Works, this is a UKRI Future Leaders Fellowship which aims to understand, gather evidence about, and promote leadership for Design Research. He is particularly interested in the role that Design Research plays in understanding rapidly changing relationships between individuals, society, and technology.

**Professor Paul Coulton** is Professor of Speculative and Game Design at Lancaster University. His research can more generally be considered as Speculative Design. Speculative Design combines real and/or hypothetical extrapolations of the development of emerging technologies with a consideration of the cultural landscape into which they may be deployed. This activity is embodied as ‘research through design’ and, in particular, to the design of speculative physical/digital interactive games, playful experiences, and artefacts.

**Dr. Neelima Sailaja** is a Transitional Assistant Professor at the Horizon Digital Economy Hub, Department of Computer Science, University of Nottingham. She researches the socio-technical challenges of personal data use, particularly within data driven media experiences (in partnership with the BBC ). She works on interdisciplinary projects involving edge computing, HDI, HCI, media, legal tech and digital economy.

**Dr. Michael Stead** is Lecturer in Sustainable Design Futures at Lancaster University's School of Design and the Imagination Design Research lab. He leads the Imagination Sustainability Special Interest Group and is departmental representative on the Sustainability Knowledge Exchange group. Michael's current research applies and advances approaches including Research through Design and Speculative Design to prototype and evaluate radical new visions for low carbon futures which critically and creatively interrogate the evolving relationship between emerging data-driven technologies and key sustainability challenges such as Net Zero 2050 and the Circular Economy.

**Dr. Lachlan Urquhart** is a Senior Lecturer in Technology Law and Human-Computer Interaction at the Edinburgh Law School. He is Founder and Director of the Regulation and Design (RAD) Lab. He is a Director of both the Centre for Research into Information, Surveillance, and Privacy (CRISP) and the Scottish Research Centre for Intellectual Property and Technology Law (SCRIPT). He is part of the management team of the Designing Responsible NLP Centre for Doctoral Training, and the Institute of Design Informatics. His main research interests are in the socio-technical aspects of designing, living with, and regulating emerging information technologies. He has a multidisciplinary background in computer science (PhD) and law (LL.B; LL.M) and has studied at the Universities of Edinburgh, Strathclyde, and Nottingham.

**Dr. Teresa Castle-Green** is a Research Fellow, Faculty of Science at the University of Nottingham's Mixed Reality Laboratory. Teresa's research is focused on unpacking the socio-technical complexities of the design and repair of Internet of Things (IoT) products, services and infrastructures. Her academic background spans Psychology, Sociology, Human-Computer Interaction, Human-Data Interaction, and Technology Design. Teresa is currently working on the EPSRC funded Fixing the Future: Right to Repair and Equal IoT project, looking at ways in which HCI and HDI approaches can support the growing culture of community-based repair work. This involves engaging directly with the UK repair community to gain insights into the organisation of and challenges faced by community repair groups.

**Dr. Susan Lechelt** is a Lecturer in Design Informatics at Edinburgh University. Her work is in the domains of human-computer interaction and interaction design and ties together the themes of data literacy, creativity, playfulness, sustainability, and responsible innovation. Her research is concerned with understanding and augmenting people's perceptions and uses of data-driven technologies. The overarching goal of her research is to support diverse audiences in viewing technologies in new ways, towards stimulating creative practice and developing responsible and environmentally sustainable relationships with emerging technologies. Currently, Susan is an affiliate researcher on the AHRC Creative

Informatics cluster, as well as a Co-Investigator on the EPSRC “Fixing the Future: The Right to Repair and Equal-IoT” grant.

**Violet Owen** is a Senior Research Associate, Fixing the Future and a PhD researcher at Lancaster University. Violet has worked in the secondary and further education sector since 2012 and is an experienced design education practitioner. Her interests are evaluation, community engagement and policy design. Her research focuses on how Creative Evaluation can help to establish the impacts of Social Innovations. She uses a mixed media approach to her designs - combining traditional illustration, textiles and collage with digital image manipulation and digital illustration.

**Nidhi Dubey** is a Research Assistant on the Fixing the Future Project at Edinburgh Law School. She has MSc in Service Management and Design from the Edinburgh Futures Institute.

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