

“*The ITaaU network is positioned at the heart of design-led interaction between people, digital services and information technology. It brings together social and technology research for intelligent and effective innovation.*”

Jeremy Frey, PI, ITaaU Network+

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IT as a Utility



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IT becomes a utility

Are apps the new taps? Can we imagine a future in which IT resources pour as effortlessly and transparently into our lives as electricity and water?

IT as a Utility Network+ is a community of researchers, practitioners and policymakers interested in interdisciplinary collaborative activity around IT utilities.

This booklet provides a flavour of some of the areas we have investigated, prototyped, discussed and funded. IT utilities enable platforms to be created upon which more services, businesses and communities can thrive. As the Internet of Things, smart cities and innovative manufacturing practices are embraced, who knows what can be built next?

IT as a Utility (ITaaU) is one of the four challenge areas of the Research Councils UK Digital Economy programme.

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People now talk about a ‘device’ rather than a ‘computer’. That represents an important change in the vocabulary. ‘Computer’ is a technical word whereas a device is a piece of equipment that is task- or user-centric, designed for a particular use. It’s a combination of hardware and software that satisfies a consumer need.

Apps are to software as device is to computer. They are not meant to be complicated – they are lightweight, simple and easily installed. Apps are critical to cloud usage. We’re moving away from a world defined by software and hardware to connected devices, apps and cloud services.”

Rob Fraser, principal technical evangelist of cloud strategy at Microsoft UK

Designing for user experience

“*Design for diversity is the key to inclusive design. The definition of inclusive design is different from universal design. The latter has been a good model and took us a long way but inclusive design turns it on its head. Instead of having a mainstream and an extreme, we see that we are all equally abled – all of us at the centre with nobody at the edge. We need a responsible open innovation approach to inclusive design so that everybody’s experience is included.*”

Lizbeth Goodman, founder of SMARTlab

“*One of the most interesting aspects of IT as a utility is to understand how end users can become involved in co-designing Internet of Things services. In the ITaaU-funded Trusted Tiny Things project we embraced this idea and, as a result of our participatory design activities, participants commented that they now have a better understanding of the privacy implications of Internet of Things devices.*”

Edoardo Pignotti,
ITaaU-funded project Trusted Tiny Things

Lean user experience (UX), the focus of our workshops with top digital product studio ustwo, brings together design thinking, agile approaches from software development and Eric Reis’s Lean Startup ideas.

Capturing the subjective dynamics of user experience involves many aspects of human computer interaction approaches and has an important role to play in the development and implementation of IT utilities across all domains.

WE’VE EXPLORED DESIGN THROUGH:

- Five UX boot camps at ustwo, Shoreditch, London for funded teams
- One design workshop at IBM, London
- Three smart spaces and diversity workshops

Cloud

WE'VE EXPLORED THE CLOUD THROUGH:

- One healthcare, cloud and clusters workshop
- Two cloud computing workshops

WE'VE FUNDED:

- **CloudMaker:** an internet utility to support collaborative design between young people. It's an extension of Minecraft and includes the social online sharing of designs and a 3D printing server, crossing the physical/digital divide

WE'RE WORKING WITH:

- **CloudSME:** creating a cloud-based simulation platform for manufacturing and engineering SMEs

“Now, with cloud computing, it's possible to have an idea and grab all the resources to get going with the analysis within a few minutes.”

Professor Paul Watson, e-Science Central



Food safety and security

“Food safety is much like a sleeping volcano. It must be monitored, regardless of how dormant it might seem, otherwise one is setting oneself up for peril. And - if and when - the volcano goes bang, quick crisis management and a communication strategy are essential.”

Alan Reilly,
Chief executive of the Food Safety Authority of Ireland

FOOD SECURITY



35% more mouths
to feed by 2025

60% increase
in global food
demand



925 million people were estimated
to be undernourished in 2010
(16% of the population of developing countries)

Global food waste:
1.3 billion tonnes
a year
(approx one third of edible food
intended for human consumption)



Obesity timebomb
cost the UK more
than £15bn in 2007

Around 765,000 cases of
food poisoning occur in
the UK every year



HOW CAN ITAAU HELP?

- Precision agriculture
- Tracking and tagging
- Smart packaging
- Surveillance and detection
- Data mapping, mashing, sharing and linking
- Apps for personal behavioural change

WE'VE INVESTIGATED FOOD THROUGH:

- Two food security workshops
- One two-day international food security conference
- One Food Standards Agency event
- One healthcare apps workshop

WE'VE FUNDED:

- TOLIVS: a vaccine tracking system using ITaaU technologies to improve the quality, quantity and timeliness of the data available and reduce wastage. It operates along the chain of shipment using ubiquitous GPS. It is managed in the cloud

The social life of IT

We bring people together from different backgrounds and support and encourage them to talk to each other about what IT can do for them.

Erinma Ochu uses film to tell personal stories about innovative technology and its relevance to society. She wanted to explore the idea of using story as a utility to connect people, ideas and place, and she did this by featuring three ITaaU-funded projects - Blupoint, Uplands Rescue Resilience and Cloudmaker - in a film, The Social Life of IT.

Watch it: <https://vimeo.com/102601182>



Health



IT as a utility offers the potential for huge advances in healthcare, from health apps on wearable devices providing personalised data to clinicians, to impressively big data mining that helps researchers to see and reveal health truths that were not previously apparent.

But these advances come with knotty issues to be tackled: security and trust, accessibility, data confidentiality, data ownership, business models and ethics.

WE'VE EXPLORED IT UTILITIES AND HEALTH THROUGH:

- One workshop on healthcare and apps
- One workshop on health and big data analysis

“ *I feel that the time is ripe for a major overhaul of the public sector user-facing health informatics systems in primary and secondary care.*

There is a very real practical importance to excellence in IT interface design in the efficient delivery of clinical services. **”**

David Rew TD MA MChir FRCS,
Consultant surgeon at University Hospital Southampton

Security and trust

“Trust – it takes years to build, seconds to break and forever to repair.”

Koen Willaert, iMinds

“People do not trust technology. Unless it is technology they use on a regular basis and then they trust it insanely.”

Professor Andrew Martin, Oxford University

WE'VE EXPLORED TRUST THROUGH:

- One security scoping event
- One two-day conference on security and trust
- Several events with IBM, eBay and ustwo

WE'VE FUNDED:

- **Trusted Tiny Things:** making those devices (such as RFIDs, sensors, smart appliances) used to make the Internet of Things more transparent to users
- **Project Abacá:** testing how to sensitivity-review digital government documents with a test collection of 120,000 and a sensitivity classifier tool

WE'VE SECONDED:

- **Ashiq Anjum** from the University of Derby to a company in Bristol to spend four months working on video analytics as a service for security, surveillance and object tracking





Libraries

COLLECTING

CURATING

CONNECTING

CREATING

“People take information (and getting them to that information is part of a library’s role) and they turn it into something new. In business we would call it innovation, in academia we call it scholarship. The library’s role is to provide a set of services that help people in that process: to get people from information to new knowledge.”

Christine Madsen,
Head of digital programmes at the Bodleian Libraries

WE’VE EXPLORED THE LIBRARY OF THE FUTURE:

- At events at the Bodleian, the British Library and the Sir Duncan Rice library at Aberdeen

LOOKING AT:

- Mobile data, big data, the semantic web, libraries as social spaces, the role of the information professional, the potential for libraries to offer data and information curation services

WHERE NEXT?

- Hybrid digital-physical projects; library innovation survey; digital aura app; accessibility study; librarian-technology interaction project; new economic models network study; community user engagement study; business value; and impact of shared catalogues and systems...

Emergency response in challenging environments

WE'VE EXPLORED EMERGENCY RESPONSE THROUGH

- One workshop on emerging economies
- One workshop at the International Conference on Utility and Cloud Computing

WE'VE FUNDED:

- **Using Wireless Networks to Support First Responders and Resilience in Upland Areas:** trialling emergency communication in the Lake District, linking sms to gps
- **Blupoint:** providing free community access to trusted digital information via mobiles, using solar powered servers

“Blupoint brings the internet, the cloud, down to earth for people in rural communities. The funding from ITaaU enabled me to run workshops in India and Africa to test out Blupoint and ask people what sort of information would be useful to them and how they would use that information.”

Mike Santer, Blupoint



Clusters and hubs

Our collaborative workshops with the top digital product studio ustwo and the Open Data Institute have provided insight into activity in Tech City, London.

Further understanding was provided by Anisah Osman Britton, operations director at business accelerator The Bakery London, who also directs the government's Sirius Programme which aims to bring more start-ups to the UK. More than 30,000 new businesses were started in the Silicon Roundabout postcode in the two years to 2014.

WE'VE FUNDED:

Business models for CDIT clusters: workshop exploring the nature, characteristics and phenomena of IT-structured hubs such as Tech City, Salford Docks, Brighton and Bournemouth

Communities in the cloud: exploring technology's role for people living in high rise developments

WE'VE SECONDED:

Karen Martin to Mapping for Change, which helps community-led projects to use mapping and GIS to achieve their aims, to create a map for food banks to show clients where else they can get help locally



