



Welcome!

Mozilla's Open IoT Studio welcomes you to read about our activities and insights from January - June, 2017. Together with partners and network members around the globe, we are researching, building and learning about what it means to strive for a "healthy Internet of Things."

Reading the news of late, you may be mortified by all the ways that IoT is going wrong: stuffed toys leaking the data of half a million users. Commonplace IoT devices are targeted by intelligence agencies. Siloed platforms of voice-controlled devices are limiting user choice and excluding the voices of many people.

We believe that IoT can and should be better—that it can be more like the open Web. For the last months, we focused on four themes: craft, decentralization, voice, and trust. We organized events, conducted field research, built research prototypes, and published books about what we're learning so far. This poster captures some of the highlights from this work so far.

In the following months, we will publish a feature in Mozilla's Internet Health Report about the voice-enabled internet, accompanied by a film and data visualizations. We will grow a portfolio of research making the case for a craft approach to technology. We will deepen our understanding of mechanisms that foster trust, be that consumer advocacy, certifications or more transparent products. This work will be showcased at the London Design Festival, Mozfest 2017, and in our upcoming magazine.

We warmly welcome your thoughts and are eager to work with you towards a healthy IoT!

—Michelle Thorne, Jon Rogers and Martin Skelly
@openiotstudio

Voice: Planning for a Healthy Future

Bellagio Center, Italy

There's a physical materiality to voice technology.
— Vlado Joler, Share Lab

Voice-enabled objects today may seem enchanting, as they enable us to talk to and control our environment in unprecedented ways. However, we find that the current voice offerings fall short in very significant aspects. To put it bluntly, we don't trust them. That is because they are often designed and controlled by actors who do not have our best interests at heart. These products do not provide sufficient mechanisms to audit and modify the ways in which our data is collected, processed and acted upon. The artificial intelligence that drives these objects is not in itself magical—the technology has been available in some cases for decades. What has changed, however, is the speed and breadth of computation available, as well as its pervasiveness in everyday life.

Today, just a handful of companies control the voice-enabled internet. It is a patent minefield, and the companies that have managed to carve out a space are holding on to it tightly. There are not a lot of incentives for these companies to make products that understand people speaking "non-lucrative" languages or dialects. As voice becomes an increasingly important interface to computing and the internet, we are concerned about who will be excluded because of how they speak. Evidence also suggests voice data will be used to increase the biases already built into the systems that already greatly influence our lives: credit ratings, testing scores, employability, insurance and whether or not we should be detained by the authorities.

In June, we convened a group of academics, technologists, designers and internet advocates to investigate the voice-enabled internet. We asked not what is possible, but what is responsible. What does a healthy voice-enabled internet look like? And how do we get there?

Coming soon on internethealthreport.org

Decentralization: Localizing IoT

Dundee Design Festival, Scotland

"We must manufacture IoT locally and rethink how we own things on the cloud."
— Rachel Rayns, inventor

Today, IoT is primarily made in a highly centralized way: software is developed in Silicon Valley and hardware is produced in Shenzhen. Code and manufacture happens in pockets elsewhere, such as Japan, Korea, and India, but the majority of consumer IoT is made in just two places. Why does this matter? For one, there's an inherent risk when production relies on a single site. What happens if there is a natural disaster or political turmoil, and California shuts down?

If you care about the democratic possibilities of technology, and the right for people to access the internet and use it in their language and on their terms, then centralization is problematic. The concerns of a minor language in the mountains of Spain, or of a fishing village in Scotland, or of migrant communities in the Indian diaspora are not economically interesting to the big centralized companies. In May, we sought to deepen partnerships with universities, galleries, museums and governmental organizations. We prepared for several upcoming festivals, including London Design Week, Mozfest, and Unbox, and identified more ways our work could travel.

At the Dundee Design Festival, our network showcased ways they are building locally relevant, decentralized IoT. These projects also revealed the social and environmental implications of making technology. Currently, the amount of labor and planetary resources that go into an IoT object are invisible. How can we first see these relationships, and then work towards fairer working practices, better governance, and sustainable models?

2017.dundeedesignfestival.com/event-entry/voice-works-speech-recognition-the-internet-of-things/

Craft: Field Research and Retreat

Unbox Caravan, India

"The internet is like a crafted object. It is made by many hands."
— Jayne Wallace, Northumbria University.

Craft may guide us to a more sustainable and thoughtful approach to technology. Craft is a tool that's been part of humanity for millennia. It's about care for materials, for longevity, and for suitability of the object within the context of a specific person or group. Instead of making tens of millions, which is the industrial design approach, we could take a more crafted approach and look at making millions of tens. Traditional industrial design assumes that one size fits all and asserts a smoothness or frictionlessness. However, that's not how our lives work. Craft embraces the messiness of real life and adapts to local contexts.

In conversation with the author John Thackara, he described that what's missing from the Internet of Things is a value benchmark against which to analyse the data being generated. He argues that we've created a global infrastructure that is brilliant on means, but blind when it comes to ends. In response to this, we hosted an event in February with Quicksand in their studio in Goa, India and later on the campus of the National Institute of Design in Ahmedabad. We explored how crafted objects are in fact formed by many hands over a long period of time. This was followed by field research and a growing portfolio of examples of what the craft approach is and how we might apply it to IoT.

We're continuing to articulate what a craft approach to technology would be. With ongoing discussion and building objects to validate this approach, we hope to offer a responsible alternative to making IoT. Experimentation, open learning and testing in local contexts creates more resilient things—just like the internet itself.

superworkbook.com/loT

Provocative Prototyping

Berlin, Taipei, Ahmedabad, Dundee and Bellagio

"The object should suspend disbelief that it could exist, but should not look so similar to market solutions that it is accepted."
— Participant at Dundee Design Festival

Provocative prototyping is the creation of objects or artifacts that ask questions, explore design issues and enable discussion around a topic. This is something we have started to explore with the voice-enabled internet. You can see the first version of these prototypes on the poster image overleaf. The purpose of this project is to raise awareness of the systems behind voice-control and to help people understand that there are alternative ways for this technology to develop. We were deliberately not making a market-ready product, but rather a market-critical one.

In this project, we created research prototypes that exaggerate and draw attention to issues around voice-enabled IoT. These objects were used in a series of facilitated workshops with members of the public as well as designers and engineers to debate the current direction of the voice enabled internet. Some of the things we heard were that we should embrace weirdness and humor, that we should design in mystery and that we should allow objects to pose questions to the people using them.

This approach opens up the process of making physical things. It fosters a culture of development and dialog with people who may or may not use these technologies. In turn, this process yields objects that are built with more trust and users who are more aware of the choices they can make.

github.com/openiotstudio/general/blob/master/publications/voice_workbook.pdf

"BEHIND EVERY ARTIFACT IS AN IDEOLOGY"

— Gillian Crampton-Smith, H-Farm

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