# Digital Trust: An Analysis of Trust in the Adoption of Digital Support Services

EMILIE GLAZER
*SP+EE Ltd.*

ANNA MIECZAKOWSKI
*SP+EE Ltd.*

JAMES KING
*SP+EE Ltd.*

BEN FEHNERT
*SP+EE Ltd.*

*Adoption of digital support services is mediated by varying experiences of trust. This paper deconstructs the notion of trust in technology through a design-led research project on the long-term adoption of a telehealth service – a context at once complex and fragile. The investigated daily experience of patients and healthcare practitioners in the UK and Germany revealed negotiations of trust that blurred boundaries between domestic and medical, and between system smartness and individual responsibility. Implications extend to the role of technology in changing healthcare landscapes, what trust means in developing digital support services more generally, and how appreciating the fragility of trust can bring both risk and hope in uncertain and evolving worlds.*

## DECONSTRUCTING TRUST

Digital technology is ubiquitous. Daily rituals of the most mundane kind are enacted through smartphones, tablets or laptops. Through apps and platforms we connect, create and consume; we collaborate, we construct identities, we heal illness and we learn anew. With Internet access growing at staggering rates, it is more important than ever that the digital spaces on which we so depend are ones that we can trust.

As a notion so seemingly vital, trust however is slippery, nebulous, and fragile. Studies in Human Computer Interaction (HCI) that examine trust in technology favour functional models where trust is an enclosed transaction between an individual and digital service (McKnight, 2002; Wang, 2005; Wiedmann, 2010). Sociologist Gambetta (1988) builds towards a useful definition. "A device for coping with the freedom of others" (Gambetta, 1988 : 219), trust depends on probabilistic cost-benefit estimations of another's future

action. It is intimately connected to ambivalence, reliance and hope in the face of uncertainty and risk.

In every encounter the meaning that the concept of trust takes is inherently historically and culturally situated. Structures of moral accountability and knowledge management shift across place and time (Jimenez, 2011; Luhman, 1988) to determine where and how risk and trust are located, valued and experienced. For Gambetta (1988), research on trust is therefore most interesting in spaces where trust breaks down, intersects with culture, or emerges in complex or unexpected environments.

To fully understand how trust plays a role and is constructed in adopting emerging digital services, an investigation must begin by acknowledging its complexity and contingency, and explore this at the extremes – where boundaries pushed reveal the limitations of people's experience and the possibilities for engagement therein.

Healthcare is a landscape where these dynamics are especially pertinent. A realm of clinical trials, peer reviews, stringent regulations, and ethical boards, this is a forum which welcomes deep scrutiny, and in parallel where the importance of trust is acute. Patients are extreme versions of lay users, clinicians extreme versions of professional users, and data shared is of the most sensitive and personal kind. When it comes to medical technologies, narratives of progress and hope (Good, 2001) clash with concerns about power relations, and infringements on personal safety, privacy and agency in doctor-patient relations (Grimen, 2009). Developing a new medical technology becomes an extreme version of a design-led research challenge.

To scaffold any kind of understanding here, Latour's (1987) Actor Network Theory (ANT) and recent anthropological thinking on material culture offer compelling frameworks. In Latour's (1987) ANT every research field is composed of an interconnected web of actors, where inanimate objects play an active role. Ingold (2007) and Holbraad (2011) go further: the active role of a thing is not just about how people appropriate it, as Latour (1987) suggests, or how it is imbued with social properties, as Appadurai (1988) and Mauss' (1954) seminal work exposed, but how its inherent materiality (Ingold, 2007) endows it with agency all to itself, that can shape theory and behaviour (Holbraad, 2011).

Thus, for any digital health design-led research challenge, medical technologies operate in the relational matrix of healthcare. As a research landscape it has the potential to unravel the dynamics of trust in the adoption and immersion of digital support services more generally, and through this, contribute to a broader conceptual understanding of what trust is and whether it even matters at all.

## DIGITAL TRUST IN HEALTH AND HOME

This was the backdrop for a project led by SP+EE Ltd. in 2013 – a collaboration between design-led research centre Eclipse Experience and design studio Science Practice, with a focus on design-led research and innovation in healthcare. Working with Swiss pharmaceutical company Novartis Pharma AG (Novartis), we sought to develop a home-based telehealth system targeted at self-management of Chronic Obstructive Pulmonary Disorder (COPD).

Derided for implicitly controlling vulnerable and marginalised patients (Cutchin, 2002; Bareiss, 2011; Cartwright, 2000), and celebrated for configuring more balanced patient-doctor relations to give agency, power and an active voice to the ill (Ahlins, 2011), telehealth is an already contested sphere. At the extremities of health and technology, it presents a fertile case study. The insights that emerged spanned multiple levels across adoption and immersion amongst patients and healthcare practitioners, with implications for design and self-management. Here our focal point is the role of trust in this matrix.

## Design-led ethnography

Our methodological approach was rooted in agile and iterative design-led research and user-centred participatory design. To begin, we established a set number of questions based on our ultimate aims and to guide our process.

Many of our questions revolved around how the service could be designed to engage all actors involved, and how the system could mediate patient and doctor relationships over time. We worked with naturally occurring care groups – with a set number of patients and the practitioners who regularly cared for them. We identified participants across geographies in London, UK, and Berlin and Frankfurt in Germany.

Sensitivity to the contextual environment meant that we gathered behavioural experience alongside attitudinal and usability data. Our mixed-methodological approach was grounded in real-world settings – the home, the GP surgery, the hospital – that acknowledged the complexity of the condition and the health care system within which we were intervening, as well as the fragility of how trust is negotiated across these plural spheres. Semi-structured interviews, diaries and observations happened in all of these places at two-week intervals over the course of eight weeks in two phases of research.

We nested a working prototype directly in this flow of care. It was designed as a home-based GSM connected device for patients, as a clinician-specific interface available on desktop and mobile devices, and with the ability to be tested through clinical trials and regulatory and standardisation bodies.

As we embedded the telehealth system in daily life – sitting in patient home kitchen-tops, living room tables, and GP surgery desks – the stimulus that we presented was always made to feel real in order to elicit a reaction that would be as just as possible to everyday experience. Design was thus actively used as part of the research process, in parallel to shaping the product itself.

We were also aware of our agency as researchers. We acted as IT support, taking on a role that was integral to the service itself, and using impromptu visits to fix digital bugs as chances for informal observation. Instances of hospitalisation broadened the field further, and as neighbours dropped by, care worker conversations were joined and routines were revealed. In this way, as roles blurred between service delivery and service research, the researcher's position extended towards interventions of an active and engaged ethnographic kind, much like the practice of 'correspondence' that Ingold and Gatt (2013) describe. Whilst ours was not classic participant observation, elements of our process echo this ethnography that is a holistic and transformative project.

Following this, participants' experiences also intentionally informed the research and design process. Through a continually reflexive exercise, their perspectives enabled us to challenge and reassess assumptions and directly adjust prototype designs with each iteration. The process draws parallels to the practice of design *with* anthropology that Gunn and Donovan (2012) speak of: rather than one discipline in service of the other, design and research acted in a mutually constitutive dialogue alongside participants, whose agency equally shaped the outcomes, bringing about more sustainable forms of engagement.

Everything was documented through film, field notes, and audio recordings and captured in a multi-media online platform. Anecdotal real life stories were then collated with quantitative usage data from software analytics to give a textured narrative. It revealed rich contextual understandings, meaningful designs and facilitated regular open conversations with the commercial, technical and research teams at Novartis.

### The everyday life of COPD

The patients who participated in our project represented the typical COPD profile in primary care: men and women aged 50 to 95, with COPD categorised as severe or very severe.

Like many with COPD, a number of patients suffered from other illnesses (Boeckxstaens et al, 2012). Daily routines involved streams of medications administered, care workers in and out of the home, hospital appointments puncturing otherwise uncluttered calendars on the wall. Co-morbidities blended into one another. When we first met, some patients were unable to distinguish COPD symptoms or medicine from those related to other ailments.

However, COPD was a constant presence both inescapable and irrevocable. The daily effort to breathe and irreversible nature of the condition generated apathy towards exercise or smoking – the former known to prevent exacerbations and the latter the leading aetiology. Patients were adamant to 'get on with life'. Homes drew windows closed to stave off cold air sharp to the lungs, capturing in the smell of cigarettes – ash trays hidden though butts and ash trailing surfaces. While COPD was seen to constrict possibilities, it was also dismissed; a presence, though ubiquitous, met with passive disengagement.

Amongst this older demographic, technology use was constrained. Although we saw a range of competencies, despite familiarity with emerging technologies many patients were novice digital users.

In the stories that follow, we focus on a few specific patients. All are given pseudonyms, and personal details are amended for anonymity.

### The lifecycle of trust

During this project anecdotes of telehealth adoption, immersion, and rejection emerged to shape an image of technology and self-management engagement with ambivalent and multiple experiences of trust.

To hang our findings, we suggest thinking of trust as existing on a continuum that extends from faith (Hart, 1988), familiarity and confidence (Luhman, 1988) and tends towards uncertainty, scepticism and distrust. It depends on conditions environmental (e.g.

cultural, societal, physical, political), behavioural and psychological. At each point, benefits and risks are balanced in evaluations that reinforce or erode trust.

Along this trajectory, six key insights emerged:

1. 'As if' trust
2. Mediating expectations
3. A portal to social relations
4. Supporting healthcare practitioners
5. Domesticating the medical
6. Active self-management

These are elaborated in full below.

### *'As if' trust*

From the start patients' engagement with the service measured scepticism in the unfamiliar with motivation for self-management. Doubts revolved around technical competence, as well as concerns about data privacy.

But for most patients the device promised a hope they had never before been given: the possibility of slowing illness deterioration, of independence – otherwise slipping away. And for many, this was incentive enough to begin service use.

Samuel lived alone in a South London estate, with a community of neighbours who looked out for each other. Having suffered from COPD for years, Samuel thought that no assistive technology could support him beyond his existing routines. Still, when describing his needs Samuel defiantly spoke of how the service could return the independence he so craved, "*I like to be independent and I'd like to be able to put in that I did it, instead of people doing that for me.*"

Adam lived in a similar setting. Occupying a single flat in London's East end, Adam's COPD was very severe. When asked if the involvement of a pharmaceutical company worried him he said, "*If it helps me, of course not!*" It could be that Adam's dismissal of privacy risks was less due to deliberate calculation and more reflective of a deference towards the healthcare system, common amongst this older generation (Campbell et al, 2001). Clinicians, on the other hand, did acknowledge the potential threat to privacy and questioned the motivations of a pharmaceutical company's involvement. Nonetheless, Adam's response hints at a simple determinant of service engagement: the answer to the question, "will it help me; is it worth it?"

Both Adam and Samuel thus began using the service. They willingly shared personal data about their condition, as did other participants. So, even though trust might not necessarily have been present, motivation was sufficient to act as if it was there. This leap of faith echoes Gambetta's (1988) study of the Sicilian mafia: when the conditions for trust are absent players act 'as if' trust exists to ensure fluid social worlds.

Here, patients' tentative first steps led to service use into following weeks. Acting 'as if' trust opened up the possibility for a deeper form to eventually be forged.

### Mediating expectations

Patient engagement was further determined by expectations about what a digital service should deliver and how it would deliver it. An awareness of connected devices, touch-screen technology and personalised apps led to anticipations that the system would be similarly advanced: the system should be smart and it should be personalised to them. In fact, for many patients, the outcome of system smartness was a tailored service.

On a daily basis, this meant that intelligent analysis of patient inputs (answering questionnaires about their condition, selecting icons to represent activity completed that day) should enable the system to learn about them and personalise messaging and advice in return.

When the system did not do as expected, patients remained sceptical: a lack of personalisation was a signal that the system was not smart. Samuel, for instance, spoke with frustration when the system failed to acknowledge personal daily experience, "*I'd like to be able to add more, like what you've done. I'd like to say that I've been able to go to Iceland [a low cost supermarket].*"

Conversely, when patients observed interactions that resonated, familiarity and responsiveness nurtured trust. Asked about service accuracy, one patient said, *"Yes, it is good. For example yesterday it was back in the normal range again. Three days before the scores had worsened. No wonder, because I could not breathe well and it is good if you always fill that in." And you think it understands that? "Yes, you notice the differences."*

Equally, however, fulfilment of expectations also brought a risk: when the service demonstrated smartness, personalisation, and successful self-management, some hopes were fuelled so much so that telehealth was seen as able to abate exacerbation patterns altogether.

Adam was hospitalised during a cold rainy week in November. When he returned home, he talked of his disappointment in the system. "*It didn't spot my exacerbation (…) the machine should do that – alert to the fact that something is wrong and say 'I think you better seek medical advice'*". And yet, Adam picked up service use immediately when back from the ward. Experience of being let down was balanced with hope for the future, and the latter won. In his ambivalence – between his words and later action – Adam showed himself to have simultaneously lost trust and yet act 'as if' he trusted still.

Samuel also experienced an exacerbation that led to a week in a hospital lung unit. He spoke about the ensuing apathy, "*For a day or two when I came home from the hospital I wasn't up for it, just not in the mood for anything.*" Before this interview, Samuel was smoking a cigarette. Bashful, he explained, "*I even started smoking. Just from boredom, I'm fed up*". Samuel's receding trust in the system linked to this broader loss of motivation.

At the beginning of the project, and during each scheduled interview, the premise of the service had been repeated to patients – so the overreach of expectations was not a matter of lack of awareness or education. Perhaps, however, given the patients' generation, lapses in memory occurred, or previous digital experience was so limited that far too much hope was invested in this new piece of technology – regardless of what might have initially been promised.

Moreover, neither instance should be seen as unique. In COPD exacerbations are inevitable. Depression rates are especially high (Schneider et al., 2010), hinting at weaker

motivation for self-management and greater incidences of exacerbation (Quint et al., 2008). So if additionally faith in telehealth soars beyond the capacity of the service, at some point trust will be lost: it's not a matter of whether this will happen but when. The daily reality of living with the device will always be evaluated against expectations. At times – even for the same individual – the comparison may generate a perfect fit. At others it might reveal a gap that begs to be filled. Any digital support service for COPD must therefore continually mediate and build in sensitivity to the diverse expectations and experiences that a single patient – let alone the breadth of a population – will have.

### A portal to social relations

Beyond its core functionality, the system took meaning in patients' lives because it was integrated in care networks. The service only worked when appropriately embedded in social relations.

Many patients gained reassurance just from knowing that they were being monitored by someone who cared; even if no action was taken, even if that person was unknown.

This was very much the case for Charles. Living in a single London council flat, few friends and family out of town, he kept blinds closed and was mistrustful of his carers. Nevertheless when asked who had access to the information he provided the system he said, *"I haven't a clue! (…) It'd be nice to know that someone is looking after you, even if it is on the other end of the cable."* Despite its abstract level, the clinical relationship symbolised had clear impact.

Little value was seen in the service if this connection was not felt. When both Samuel and Adam were hospitalized, for example, part of their disappointment revolved around a perceived failure in the system to facilitate immediate support from their care workers. During these instances of potential lapse, patient re-engagement was all the more dependent on healthcare practitioners adequately responding to their role in the system.

This was expressed in an exchange with a UK pulmonologist, *"I think it's getting people that they trust back involved and in contact. So ultimately if they are already in a care group, they know [community nurse] very well then that phone call makes a huge difference […] I think having that personal touch is very important".* Patient interactions with the digital service mirrored the growth of trust and social relations with their healthcare practitioners in the real world.

Given that the device also sat in people's homes, it became part of informal social networks as well. A novel thing, an intrigue, it was a focal point in discussions with neighbours, friends who were informal carers, and family members. Some even helped the patient interact with the system directly. Samuel had problems with his eyesight; on most days a neighbour would sit with him to read messages and make daily entries. As a home based self-management system, telehealth acted to collectivise care as well as put it in the patients' own hands.

### Supporting healthcare practitioners

Clinicians' trust in the service also depended on how it connected them to patients and gave value to the day-to-day.

At first they were concerned that telehealth would undermine their relationship with patients and automate their role in the care system. Some clinicians feared it would add

further administration to paperwork already weighing them down. As a new technology infringing on their profession, the telehealth service posed a threat to their sense of power and control.

A doctor in Germany voiced this reticence, *"Isn't the relationship between the patient and doctor still most important, without an intermediate device in between?"* A UK nurse similarly stressed the importance of maintaining a human connection, *"With patients with COPD, when they have exacerbations, what they need is reassurance, somebody to be there, somebody to talk them through the exacerbation stage when they're scared that they can't breathe. Would this be able to provide this for them?"*

What many clinicians found, however, was that instead of replacing their job the service helped them do their job. According to a German doctor, *"First I was worried - 'Oh my goodness, what have I got to do every evening?' But it wasn't like that, it was brief and clearly laid out […] For this message, 'didn't take meds for 5 days', I would need to know it more precisely, has he been delayed for 5 minutes or 5 hours? This makes a big difference."*

Once healthcare practitioners began using the system they saw it as a new source of knowledge. Beyond reassuring them about job security, valuing the system for its information demanded trust in patient reported outcomes. Clinicians who doubted the accuracy of patient reports were equally in doubt about the service itself. The design of the clinical interface therefore aimed to imbue trust in it as a valuable tool: clear and efficient overviews of patient data along with granular detail gave clinicians a sense of control in analyses, and as a result enriched understandings. At face-to-face interactions clinicians were then able to have more meaningful conversations with patients based on knowledge of their recent condition history – data that otherwise might have passed unknown.

### Domesticating the medical: the meaning of telehealth in everyday households and lives

With the device firmly integrated in social care networks, the home environment within which interactions took place shaped patient sentiments. Domestic settings were already filled with medical technologies. Pillboxes and prescriptions covered living room tables; oxygen tanks sat next to sofas, and beds, baths and toilets were wrapped in assistive technologies more akin to hospital rooms than the home. The invasion of material artefacts from the clinical sphere into home life was all too familiar.

Compared to these explicit medical things, the system seemed far more neutral. Looking more like an iPad than a clinical monitor, it adopted an informal tone of voice and spanned generic topics (e.g. physical activity, the weather) in addition to symptoms and medication. As a medical service that appeared less medical than the usual, it was perhaps more easy to accept. Charles at first said, *"I'll give it a go, it's just like a normal routine thing."*

After three months within this domestic environment, telehealth became a part of daily routines and seemed to act as a companion – almost anthropomorphised. Thinking about the prospect of no longer using the system, Charles observed, *"I'm used to it […] I'll miss not doing it. I look forward to that light coming on at eight o'clock."*

Like Charles, Edward lived alone in a London flat. He often mentioned his family who lived abroad. A sprightly 70 year-old man, Edward's COPD was increasingly a daily burden. During a later interview, Edward looked at the device fondly and said, *"strangely enough the*

*[telehealth system] has been a comfort for me and I feel I have a contact (…) you feel you've got an outlet (…) I still think of it as an old friend."*

Both socially isolated, the service filled a void in the lives of Charles and Edward as a social entity in itself. The tangible qualities of the device – its informal look and tone, its aesthetic similar to lifestyle technology brands – enabled it to become a part of the home ecosystem. As the device was creatively appropriated as friendly companion the medical was domesticized. Even Samuel echoed this sentiment. Asked if he would miss the device, he admitted, "*nobody will miss it except for me*".

### *Active self-management*

Embedding the system in daily routines led to new routines created in turn. Now a positive habitual presence, patients' trust in the system developed into a form of self-confidence in their own ability for self-management. Along the way telehealth became a conduit for education and behaviour change.

Patients spoke about how the service helped them exercise more. In a conversation with Edward, he said, *""this sort of kick-started me into becoming more active"*; it was "*giving me new ideas*" about how to manage COPD. Encouragement from the service supported every new step, *"it gives me a certain amount of satisfaction (…) at the end of the week it's like a pat on the back."*

Patients did continue to rely on the system somewhat passively: a desire for system smartness and personalisation meant that they expected it to do a significant amount of work for them. Still, interactions came to develop new meaning, where the locus of responsibility for COPD management tipped in favour of patients' on control. Over time these became moments where patients took a more active role in their healthcare – discrete periods of intervention which evolved to permeate regular life. The daily psychological and physiological reflexivity that the service brought opened up the possibility for patients to change routines to improve their condition, to gain more knowledge, and to feel more empowered that they could do something as a result – all the while engendering a greater sense of agency, control and awareness of their bodies and their selves.

## TRUST IN TELEHEALTH

The stories collected here tell a narrative of hope placed in medical technology, of inherently social foundations in healthcare, and of the possibility for transformations of the self. Experiences of patients and healthcare practitioners offer a lens to look at what healthcare means in the 21st century and how trust operates in this sphere.

Telehealth mediated not just a functional transaction of trust but a highly affective experience. Similar to how Hart (1988) understands friendship as a facilitator to trust, as the telehealth device came to be seen by patients as a friend, trust originally enacted 'as if' it was there began to consolidate into deeper sentiments. Contrary to Foucault's (1967) early medicalization critique, what we found was closer to Good's (2001) concept of the 'biotechnical embrace'. Rather than telehealth acting as a utilitarian object of institutional control, the effect on patients was tied to caring relationships and a warm affinity to the technology in itself, welcomed for its comfort and promise to heal.

Trust in telehealth thereby enabled patients who were far more active than what the Foucauldian (1967) discourse suggests: going beyond a model where medical technologies are disciplinary tools of clinical surveillance, where dominant structural powers (e.g. Western ideals of illness and health, embodied in the modern medical system) manipulate the bodies of the weak. Rose's (2004) perspective on medicalization refreshes the original term and chimes here. Medical technologies can enable new identities, here in part by shifting the balance of power between patient and doctor. Whilst differentials inevitably still prevailed, patients from a characteristically trusting generation developed control over their healthcare management and an empowered sense of personal agency.

Crucial in these experiences was the system's immersion in domestic and social environments – in terms of product development this meant embedding both local and concrete contextualisation. Nestled in these landscapes the service became a material embodiment of care in a mutually transformative entangled 'assemblage' (Latour's, 1987). As trust emerged amongst patients and healthcare practitioners, the service both took and endowed agency. In ways that Ingold (2007) describes about encounters between people and things, interactions with the device were creatively interpreted, contested, and embodied by individuals in unanticipated ways. The material properties of the system had agency, too (Holbraad, 2011). A familiar domestic design, friendly tone of voice, and simple interface acted to reassure and set novel patterns in the lives of patients and healthcare practitioners.

The outcome of trust in these new digital actors was a system both more individualised and collective: care became more personal but it also drew in and depicted social networks through virtual platforms and data generated. The locus of where healthcare was also distributed across daily life. Healthcare provision became enmeshed in the domestic, the material mediators and habitual routines created as mundane as a television set or making a cup of tea. As Lupton (1997) notes, preventative health avoids medicalization in a clinical sense and takes another more pervasive and personal daily form. With increasingly sophisticated sensor technologies, this might become all the more the case. In 21st century healthcare, boundaries blur between lifestyle and healthcare, medical and domestic, patient and carer.

## CONSTRUCTING TRUST

The insights from this project are tethered to a healthcare context, but they translate across a far wider range of fields.

What we propose as a model of trust puts emphasis on it as dynamic, non-linear, mutable and contingent on time, place, and culture. Although interconnected with hope, faith, and confidence, trust distinguishes itself through the decision, deliberate or not, and dependent in part on the benefits and risks perceived and experienced, to behave in a way that involves a risk, to act so that one's self – one's own information, identity, safety or health – is placed into someone else's hands. Trust is experienced in different ways across individuals and instances. It can extend from low levels where it exists as a shadow, 'as if' it was there, to then be consolidated more strongly once benefits begin to show. Losing trust can happen in an instant, especially when risks are viscerally felt. Throughout, trust depends on socio-cultural, political, historical and physical environments, and on previous and lived

experience just as much as the quality of the thing itself. It includes cognitive elements as well as affective ones. Even if on the surface dynamics appear passive, trust takes resources to create, maintain and re-build – all of which are involved acts, socially embedded and creatively appropriated, interpreted and transformed.

Trust in digital support services can mediate new kinds of assemblages. Emerging education technology, for instance, enacts itself in multiple settings where the role of teachers blend with other social actors, the classroom expands into physical environments beyond school walls and digital artefacts generate novel forms of engagement. To gain trust the platform must acknowledge individuality; adapt to personal experience all the while constructing affordances towards familiarity, hope and reassurance. No matter how challenging it might be from the standpoint of software design, it must connect to social actors who matter – educators, peers, and mentors – in a way that reflects the profound impact and fluidity of real world interactions. Inbuilt must be mechanisms to teach new skills and understandings.

Throughout, however, the spectre of potential risk always lurks. This goes for behaviour in digital technologies across education, finance or government services as well as in health. The inherently fragile nature of trust though is no bad thing. Hesitation, trust 'as if', or even distrust implies a thoughtful engagement with implications, without which blind trust or misplaced confidence could lead to any number of dangers. Elusiveness enables agency, resistance and control just as much as trust can do. While in the past, neoliberal institutions might have concealed knowledge and information underneath sheaths of technological jargon and corporate management (Jimenez, 2011), our observations depict an alternative where resistance and creativity call for more direct and visible modes. In doing so, perhaps the particularly Western sociological interest in trust as an issue (Jimenez, 2011) might even erase itself. If emerging technologies make risks fully visible and give people greater, clearer knowledge and control, it might be that the implications of trust become shared and seen across known social actors and so its management at a structural level is less of a concern. Importantly, this puts the onus on services to be designed mindfully and sustainably with and for those who use them. Only in so doing can a new thing be created to answer hopes and validate expectations.

In each instance, the value of getting these intricate nuances right applies to every actor in any given network. People can connect to others and things in more meaningful ways; extensions of trust create the possibility for rebalanced power relations, self-transformations, novel understandings and behaviours newly formed. Ultimately, however it is negotiated, contested, and created – and in whatever way it might morph across future geographies and time – trust in all its plurality will continue to shape the experience of everyday life. It is up to us to continue to question it, to examine it, and to discover ways to mediate it in ways that are ethical and sustainable in full.

**Emilie Glazer** – Design Researcher, Eclipse Experience. Emilie's work explores the intersections of science, medicine and technology, environment and society, with an interest in design anthropology as a practice to actively and sustainably engage in these spaces. She also runs an inter-disciplinary innovation competition for young people in the UK. emilie.glazer@eclipse-experience.com

**Anna Mieczakowski** is a Design Research Lead at Eclipse Experience. Anna's work focuses on unravelling the intricacies of users' socio-psychological factors in adoption and sustained usage of interventions in healthcare, education and telecommunications. She is also an honorary Industrial Fellow in inclusive design at the Cambridge University's Engineering Design Centre. anna@eclipse-experience.com

**James King** is the founder of Science Practice and co-founder of SP+EE. James is a designer with an interest in science, medicine and technology. James' work has been exhibited and published internationally and has been added to the permanent collection at MoMA. At Science Practice, James works with scientists to connect their research to the world outside the lab. At SP+EE James collaborates on the design of healthcare interventions that are effective, engaging and safe. james@science-practice.com

**Ben Fehnert** Founder of Eclipse Experience and co-founder of SP+EE. He is interested the role of design-led research in decision making and meaningful change across education, healthcare, mobile technology, public services and shared spaces. Ben's work in healthcare focuses on contextual and behavioural input into clinical studies. ben@eclipse-experience.com

## NOTES

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