WORLD ECONOMIC FORUM

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The Local Data Revolution

The Impact of Human Centered Design

Barcelona, Spain, 4 March 2015

World Economic Forum

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2015 Mobile World Congress
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Summary

As part of its global dialogue on strengthening the principled use of data for sustainable development, the World Economic Forum hosted a workshop as part of its ongoing Data Driven Development initiative on the occasion of the 2015 Mobile World Congress.

The focus of the event highlighted the importance of engaging individuals and communities by embracing the principles of human-centered design. Participants noted if the "Data Revolution" could more explicitly embrace engagement and co-creation at the local level, the unique needs, challenges and aspirations of individuals would be more likely to emerge. This would help foster a more trustworthy, resilient, inclusive and sustainable data ecosystem.

Key priorities from the workshop included:

- Raise global awareness on the impact of human-centered design. Build a community of design practioners and researchers that could design and conduct appropriate research to deepen understanding of the challenges and potential opportunities for a truly inclusive data revolution.

- Establish a set of tools for implementers and create a library of use cases that frame the combined benefits of design thinking and information ecosystems as a foundation for ensuring impact.

- Promote the need for a global research study where the impact of design thinking and local information ecosystem mapping could be used to more effectively inform, guide and assess data-driven interventions and impacts.

Introduction

The core objective of the Barcelona workshop was to more effectively engage individuals and communities in the use of data for sustainable development. By raising awareness on human centered design, the intent was to provide practioners with the means for co-creating and discerning critical human dimensions of the complex situations that arise in today's networked economy. Through human-centered design, risks are reduced, needs are discovered and intended impacts more effectively delivered.

But what exactly is human-centered design? It's a term that can be defined in multiple ways and is in some ways an intuitively obvious. We all nod our heads when we think about human centered design as it elicits "of course we need to do that" responses. But in general we are quite far from actually doing anything.

At the core of this concept is the notion of inclusion and the need to discern the aspirations and challenges of *all* individuals. It's a process which promotes the value of empathy as a way of strengthening trust and being mindful. It brings an awareness of the explicit and implicit needs of individuals to the design process and helps adapt to the constant change of today's world.

Most of all, being human centered is about putting people at the center of a given challenge and allowing the complex processes to reveal themselves. Through a systemic and iterative process, these approaches provide a holistic means to reveal and interpret the challenges that individuals and communities face. With these insights it is then possible to iteratively design appropriate and resonant solutions with impacts that are resilient and sustainable.

Applying the insights of design thinking with approaches which provide insights on information ecosystems provides a unique framework for strengthening the trust and resilience of the data

ecosystem. Using a framework developed by Internews (see figure 1), participants looked at social trust, influence, information needs, tools for creation and information distribution mechanisms for understanding how information flows within a given context. This lens becomes a means for identifying and testing the assumption sets guiding the flow of information. It also provided a means for nudging practioners to go beyond what we *think* are the best solutions to what emerges from local individuals themselves. It's a catalyst for creatively moving beyond incremental thinking to see new opportunities, reduce risk and embrace uncertainty.

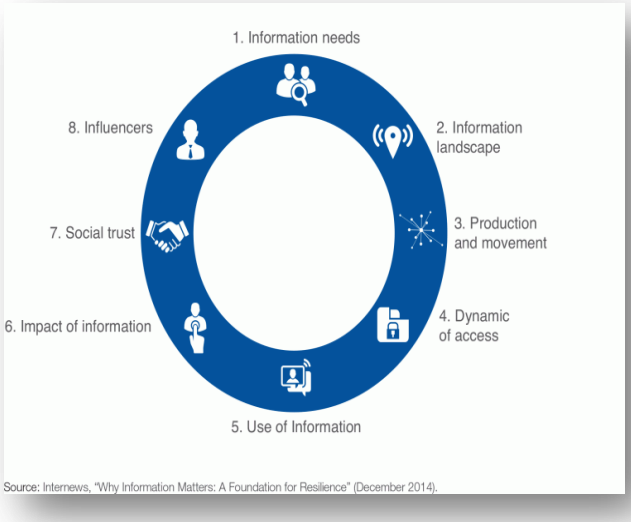

Figure 1: Elements of the information Ecosystem. Source Internews 2014

Designing for Impact

Combining human-centered design with a richer understanding of how information flows is being increasingly recognized as an essential foundation for planning effective development and humanitarian interventions. In that spirit, the workshop focused on three use cases to show how these concepts can be put into practice to create value.

Fire Sensors in the Slums of Nairobi

The Opportunity

As part of an ongoing innovation initiative to help 1 billion people become more resilient and safe, the Red Cross is exploring a project in the slums of Nairobi to help prevent household fires. The intent is to place low cost, solar powered heat/fire sensors which send SMS alerts to mobile devices and firefighters.

The Challenge

To date the project has undertaken a human-centered design approach with participatory and iterative design sessions with local communities. Multi-sector innovation teams have adapted products and services to ensure the local individuals are actively participating in the process. But despite these efforts, there are still assumptions on the information flows and potential blind spots shaping this work. Will this new technology actually deliver the intended impact? Are there new risks created by placing digital sensors in the homes of vulnerable individuals? Are possible harms that could be brought to the community fully understood? Are there other factors which could have a greater impact in reducing harms?

Insights from the Workshop

After recognizing the complex dimensions of how new data flows could impact individuals and the community, one of the core insights from group's discussion related to private sector interest in the sensor data and ways that the community could benefit (economically and politically) from leveraging the data. Further applications of human-centered design could reveal the answers to these questions. Participants also reinforced the notion that if the sensors could be used to strengthen social trust and cohesion the ability for individuals to coordinate in the event of fires might be strengthened.

Data for Climate Action

The Opportunity
As part of the United Nations' Climate Change Initiative, UN Global Pulse and a coalition of partners are hosting the largest data innovation challenge in history. By pooling anonymous data sets from multiple mobile operators, retailers, banks and logistics corporations, the intent is to create a shared data resource for researchers to discover how human behaviour can be better understood to help strengthen resilience. Insights on how populations are adapting to the effects of climate change will then be featured at COP21 in Paris in December (www.dataforclimateaction.org).

The Challenge
The core challenge from a design perspective centers on how to more effectively engage technology companies to participate in this open innovation opportunity. The lack of sharing of private sector data is constrained by an entangled set of perceived regulatory, societal, commercial and technical risks which prevent the data from flowing. A variety of conflated and misguided assumptions have created a general atmosphere of anxiety and mistrusts. Identifying and mitigating those concerns is a top priority.

Insights from the Workshop
There is an execution gap between senior leadership and those that implement. While Senior business leaders see the value of leveraging anonymous data sets for research purposes (and lend their support), the actual execution is often delayed and inefficient at lower echelons.

As a response, one proposal was if senior leaders could receive an "information pack" with a variety of insights and support tools to help shorten decision cycle times as well as operationalize the decision to share the highly anonymized data for research purposes.

The Toolbox.Org

The Opportunity
The toolbox.org is a digital platform with more than 700 tools for providing local activists with easy access to information, tools for social change and ways to take meaningful action. Actively connecting individuals, organizations and networks into a community of advocates for positive impact, the Toolbox.org aggregates applications ranging from educational tools, anti-human trafficking, gender equality and array or other apps for social innovation.

The Challenge
The Toolbox.org has been in beta for more than a year with moderate success. The opportunity is to take a step back and do a general assessment of some of its core assumptions and to ensure that this platform is delivering genuine value to its community. What are the biggest needs? Is this a solution in search of problem? Are the tools being offered actually being used? How many apps are being used in a meaningful way?

Insights from the Workshop
A key insight was to flip the model and pivot to a more demand-based situation. By creating an "inventory of needs", it was suggested that appropriate "systems of applications" could be configured to address those needs. An additional insight was to create a dynamic to rate and rank the tools so that developers would know what to focus upon and where there was expressed needs.

Conclusions

The use of data to deliver positive social impact holds unique potential for the global development community. It provides a lens for uncovering new discoveries, strengthening coordination, improving traditional statistical measurements and providing new opportunities for social innovation and inclusion. Yet despite this tremendous opportunity, significant risks and uncertainties exist which constrain innovation and scale.

Many of the uncertainties on protecting the interests of individuals and communities originate from a lack of understanding of the local context. A wider adoption of human-centered design and holistic understandings of information flows can uncover some of these issues and point to new ways for sustainable progress. Encouraging those with a "top down" perspective to listen and let go, to include the individual at the earliest point, to question existing assumptions, to be open and neutral and to acquire an appetite for the unknown are all vital attributes for building a genuinely transformative data revolution.

The voice of the design and research community needs to more effectively articulate the value of human centered design. While the impact and return of this discipline may be difficult to empirically measure, the use cases and evidence need to be more efficiently packaged.

The tools and approaches to pragmatically embrace design thinking in real-world deployments also need to be supported. For this new mindset to take root, the ways to implement it need to be simplified and made more accessible.

But most importantly, there needs to be a wider recognition of how little is known about this promising domain. Placing the need for more qualitative and localized research on the social impact of data and information needs to be made a global priority. Having the resources and support to embrace more iterative design processes, the freedom to observe environments (with empathy) to allow innovation to emerge locally and to more fully embrace the world of "unknown unknowns" should be placed on the global data revolution agenda. The cost of not doing this may be measured in decades of failed technology interventions.

Prioritizing the means for more fully understanding how individuals engage with and use information is not on the global agenda. That's a blind spot. We assume far too easily that simply being able to reach billions of individuals is good enough to deliver meaningful impact. We're trapped in the carefully orchestrated, techno-utopian myth that scaling the distribution of information (via devices and services which get faster, cheaper and better every day) is all we need for meaningful change. That's lazy and misguided thinking: a shared assumption we would all benefit from questioning.

-Amanda Noonan, Internews

Overall, the Local data Revolution workshop focused on how we can proactively balance the complex dilemmas of a digitally connected world and apply the insights mined from valuable data in a manner that keeps everyday citizens and their needs at the center. A design is only as effective as the empathy that goes into the creative process. For this reason, co-creating methods and tools with the people we aim to serve in local communities is imperative in building trust, establishing data ethics, cultivating more connectivity, and producing sustainable solutions. As shared in Davos at the 2015 Annual Meeting, "Data won't save lives…people will." The principles, values and ways we embrace the data revolution will help create the world we want.

In Search of a Theory: Discovery, Response and Fundamental Change

Dr. Linnet Taylor, Marie Curie Research Fellow, Governance and Inclusive University of Amsterdam

Data does not always behave as it should around humanitarian crises – people forget to collect it, can't access it when they need it, or keep it for themselves when they should be spreading it around. Sometimes they also spread it around when they should be keeping it to themselves. In all these processes, the humans who should be at the centre of the activity – those in need – sometimes disappear entirely, or become addressed as the passive recipients of aid or 'data subjects' (a term which, for me, pretty much does what it says on the tin).

In the workshop discussions I attended, one thread I kept picking up was the search for a coherent theory of change. 'Human-centered design' is really just a way to denote the kind of process that should define all development and humanitarian activities – a focus on the individuals who are in need, and an effort to understand how their lives work. In the absence of this, interventions of any kind are at best a band-aid that will eventually fall off.

When I worked in grantmaking, we used to refer to a 'theory of change', which was something you had to have before you made a grant to someone. You had to understand and be able to articulate how you thought making that grant would lead to a particular outcome, even if it would later turn out you were incorrect. This is something I've been searching for in my own, and other people's, view of technological intervention in developing countries and amongst populations suffering crises. Technology is often quite far removed from the reality of events. Why do we engage with data or design new objects or processes, rather than going there and digging people out from rubble, or dressing up in protective gear and going to treat Ebola patients?

Sometimes we do it because it's easier, or because we don't have the skills or resources to help directly. But sometimes (ideally) we do it in the hope of dealing with the root causes of a problem, so that we can change it or stop it happening again. For instance, the Data for Climate Action challenge has both these features: it will involve data scientists sitting in offices, in very little immediate danger from storms or flooding, doing data analytics that bring together previously unavailable datasets to produce understanding of how to build resilience to climate change. In an example of the second, the Red Cross has been working on a project to provide fire sensors in Nairobi's slums, because house fires in crowded slums can result in much greater devastation than in areas with formal housing.

What is the theory of change here? Why focus on data about the bigger picture with regard to climate change, rather than on how people can change their day-to-day actions to cause less of it? Why put fire sensors in slums instead of provide some other intervention more directly related to people's immediate wellbeing, like food or clothing?

Thinking about this from the data/research point of view, it is about discovery versus response. Discovery is something that is possible with very large, complex datasets: it denotes a process where you mine the data for questions or issues you didn't know were in there, which pop up in the form of correlations (perhaps people survive flooding better when they live off certain crops rather than others, or when they have the right to move to another area in a legal way) which the analyst might not have hypothesised originally. So the data can be smarter than the analyst. Response is when you know what's needed, and you do your best to respond to it in an appropriate way (i.e. the process the Red Cross went through to come up with the fire sensor project). You look at a difficult situation – a slum, for example – and break down the problems you see, responding to each individually. Human-centered design should, ideally, bring these two processes together: you analyse people's needs in ways that bring up responses you didn't originally know were necessary.

Then there is the overarching problem, which is that crisis, poverty and disadvantage occur more in some places than others, and people in some places lack the means to save themselves from bad situations. Those means could be fire sensors to stop their houses burning down, or previously unknown insights arising from large-scale data mining. But fundamentally, people need the resources to survive setbacks, the leverage to make their own governments respond to their needs, and avenues to seek remedy if their needs are not met. These things are structural: they require political will, which is built in complex and sometimes unexpected ways. It's definitely easier to recover from a hurricane in New York than in Manila, and you're less likely to die if your neighbour's house burns down. But it takes a whole lot of different perspectives on the problem – all of them aiming to deal with its causes – to encircle it and change things for the better, and only some of them can be addressed from a distance.

Why Design Thinking Can Save the Data Revolution

Amanda Noonan, Director, Research, Design and Learning Internews

When it comes to the potential of the Data Revolution, we can easily become inspired by the enormous potential, challenges and dare I say hype. Perhaps it is no surprise we can easily miss a key point. It's not about the data. Impact and effective outcomes are about how people and institutions use data.

Of course the accessibility and openness of data is hugely important. But it goes much further. How people engage with and turn data into information is where value is created. Moreover, how that engagement in turn guides meaningful choices is a vital and often overlooked facet of the Data Revolution. In fact, it's really not a Data Revolution at all. It's a revolution centered on empowering people with an expanding set of opportunities to access, engage and make meaningful decisions based upon how information is consumed.

Prioritizing the means for more fully understanding how individuals engage with and use information is not on the global agenda. That's a blind spot. We assume far too easily that simply being able to reach billions of individuals is good enough to deliver meaningful impact. We're trapped in the carefully orchestrated, techno-utopian myth that scaling the distribution of information (via devices and services which get faster, cheaper and better every day) is all we need for meaningful change. That's lazy and misguided thinking: a shared assumption we would all benefit from questioning.

We would also benefit from revisiting some of our current assumptions on how equitably the benefits of "Big/Open Data" are being applied in emerging economies. They're not. For a variety of reasons, whether technical (i.e. lack of Internet), sociocultural (i.e. English as the predominant language used in data portals) or economic (i.e. need for a certain level of education to access the by-products of data) 'openness' has a lot of cultural biases. Open access is mistakenly equated with empowerment, accountability, better decisions, adaptive policies etc. Again, there's some lazy thinking with all those assumptions that might benefit from more rigorous and critical assessment.

Maybe it's time for all of the "Data Revolutionaries" to hold up a mirror and do some honest and open self-reflection. Maybe the first so called transformation could start with the "data evangelists" becoming "data agnostics" and willing to admit that some of their underlying assumptions shaping the Data Revolution are still largely unknown.

One big assumption to be more carefully examined is that the risks, benefits and impacts at the local community and individual level are understood. More inclusive processes need to be advanced which enhance the data literacy of individuals and communities to make better decisions for themselves. To truly embrace the local context, data literacy approaches must move beyond "data science" and other tech-laden disciplines. Approaches which introduce the "illiterate" to the techniques and vocabulary of data need to be revisited. Instead, to truly be inclusive, we need to meet people where they are. Greater emphasis needs to be placed on observing local needs and finding ways to augment them with trusted and influential information flows.

Busting the assumptions shaping the "Big/Open Data" narrative takes courage. Does "open" or "big" actually make a meaningful difference in the lives of the most vulnerable? Do they genuinely influence what people think and consequently guide how they might act? Who knows? But we need the means to start asking those questions.

This is where knowledge of local information ecosystems – how information moves, reaches, engages and impacts individuals—can add value. Investigating the information ecosystem through deep human-centered research and synthesis provides insights on the experiences and impact at the individual and community level. It also provides a new holistic lens for understanding how to inclusively design and co-create approaches for those we seek to support. There's nothing new or complicated here. Marketers have understood the need to find unmet needs at a granular level for a long, long time. It lowers business risk. But somehow development communities have been a bit slow to let go of collectively held assumptions. It's time for that to change.

It's also a question of owning up to the ethics and responsibilities of data-driven development. Trust, transparency and better control over the flow of data and information are central to establishing a healthy information ecosystem. The deficit in trust across all actors is broken and must be addressed for sustainable impact.

If the Data Revolution is to succeed it needs to transform into a more networked, inclusive process, where all actors and elements of the system are interconnected…especially the individuals and communities which are most vulnerable. To really have an impact on the knowledge and actions of communities, data collection, analysis and communication needs to be inclusive engaging all participants in the data ecosystem to provide the most appropriate, useful and actionable information – it's not what we think would be useful data, it's about the community finding and creating data that resonate and is meaningful for them. This could lead to whole range of new metrics where the metrics were derived from community utility not funders assumed impacts. That's a bit radical. That's a data revolution.

A Political Economy Perspective on the Data Revolution

Dr. Laura Mann, Leiden University

Reflecting on this workshop there was no shortage of buzz words circulating such as “development,” “resilience,” “problems,” “solutions” and “community” but there was no clear discussion of what these words might mean to the different people in the two rooms. Amanda Noonan quoted Henry Ford as saying, “If I’d have asked people what they wanted, they’d have said faster horses”. I think the quote was meant to show that designers should be far-sighted in thinking through the problems of the age. But to me and other scholars of political economy, Henry Ford’s biggest contribution to America might not have been cars, but jobs.

Africa too, will never really “develop” and African citizens will never become “resilient”, unless African people, leaders and businesses find ways to reduce their countries’ reliance on aid and primary commodities and transform their economies. In other words, if we really want to get serious about human-centred design, frugal innovation or big data benefitting poor people, we need to stop seeing “users” and “poor people” as mere consumers of developmental products and services and start seeing them as potential producers. A number of models were shown during the two workshops. They depicted human-centred design by putting the ‘user’ at the centre of the diagram. Value chains or business models were often placed far off to one side. This conceptualization also came out in a number of presentations: that designers first build the products, they then try to find a business model to launch it and make its production ‘sustainable’. My big suggestion is that maybe we should start putting the value chain in the centre of human-centred designs and start seeing stronger connections between the products and services, and the production process itself.

I was very happy that Abi Weaver told us that the Red Cross’ fire alarms were being manufactured in South Africa. Many other ‘frugal innovations’ designed for Africa and perhaps designed in Africa are produced elsewhere. For what good does a specially designed thermometer or a cheap car do for a poor country in the long run if its citizens were not involved in the production process and if its engineers did not learn from the design process? The domestic demand for goods and services driving excitement around the ‘Bottom of the Pyramid’ and the ‘frugal innovation’ world should be seen as a golden opportunity to stimulate African-based and African-employed production processes. This may involve new business models, but it will no doubt also involve talking about industrial policy-making and strategic thinking on the part of national governments in Africa.

If we take this thinking further, we might also apply the same reasoning to the data produced by such products (for example, the data about slums produced by the American Red Cross’s fire alarms). While there has been much discussion about the risks for the poor people involved in big data for development challenges and the need for ‘governance’ to protect their privacy, there has been much less discussion about how poor people might actually profit from their data (and indeed the need for corresponding discussions about economic governance models). Likewise, the “business model” presented in much of the D4D literature tends to involve risks or ‘public goods’ for poor people but business opportunities for companies (often very large companies). Indeed, Robert Kirkpatrick from Global Pulse conceptualized companies as the ‘users’ in his workshop activity. But what about African businesses and workers? Can’t we think of business models that might allow them to capture value from big data? For example, if the fire alarms produce data of commercial value, how can the local community capture some of that value? Are there local insurance schemes and other enterprises that might profit from it? What about user-shareholding models that would give each user a share of the profits? Let’s innovate here too!

So as someone coming from a Political Economy perspective looking in on this world of human-centred design and frugal innovation, I would urge the workshop participants and other interested parties to think more about big data’s and ICT4D’s potential contribution to economic transformation. How can the demand for humanitarian products like fire alarms, social media tools and community health kits create jobs and knowledge transfer opportunities for people in poor countries? This kind of thinking does indeed require us to see beyond faster horses, even beyond cars, and look at the jobs and training involved.

Moving Forward

The Data Driven Development project will continue to advance the dialogue on these important issues by collaborating on an array of activities and a series of open meetings throughout 2015,

Data for Development Challenge
April 10, Cambridge, MA

Cartagena Data Summit
April 22-24, Cartagena, Colombia

World Economic Forum on Africa
June 3, Capetown, South Africa

Thanks
Sincere thanks are extended to the experts who contributed their unique insights to this workshop. The event would not have been possible without the strong support of the American Red Cross, Earth Institute, frog design, Internews, IMPACT, ONE and Stanford d.school.

Additional reports and information can be found on the Forum website at
www.weforum.org/personaldata

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