waag society
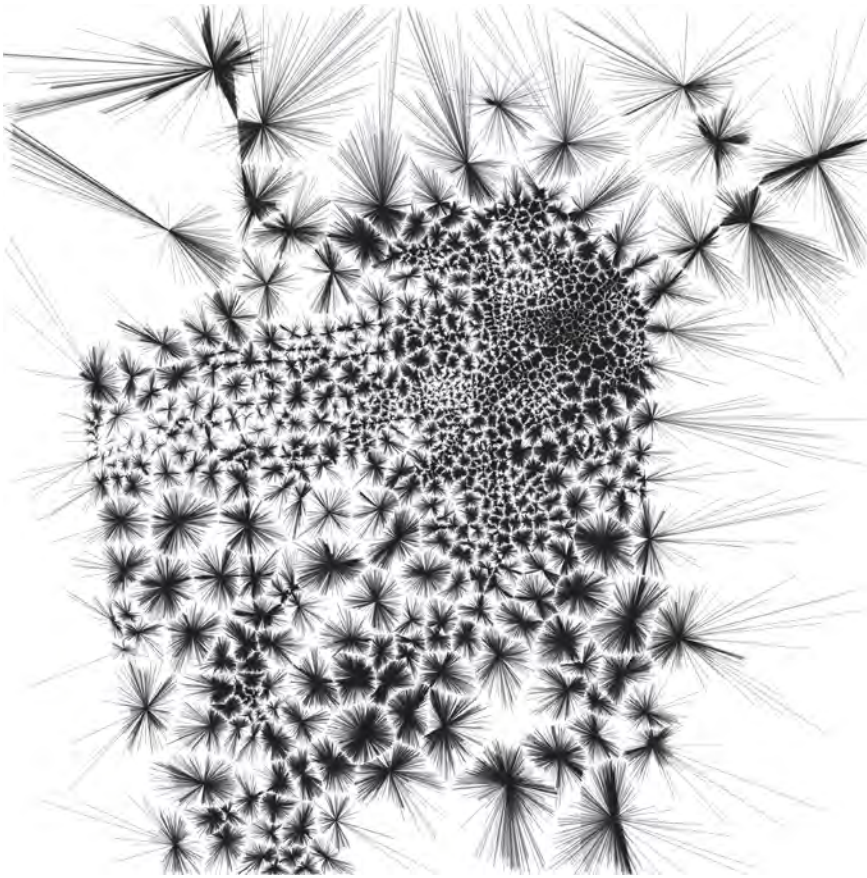### institute for art, science and technology

The discrepancy of transparency

three opinion leaders share their vision

Can we turn open data into business?

Apps for Europe

Fieke Jansen

About the Internet Protection Lab

future internet
special

Waag Society, institute for art, science & technology develops creative technology for social innovation. The foundation researches, develops concepts, pilots and prototypes and acts as an intermediate between the arts, science and the media. Waag Society cooperates with cultural, public and private parties.
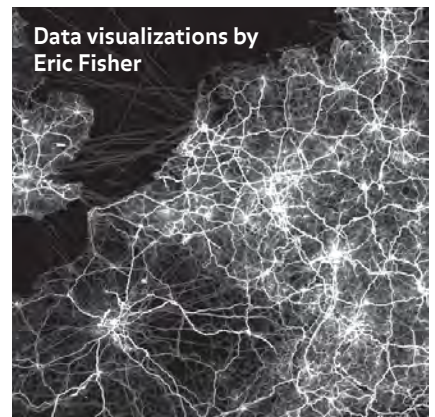
Tom Demeyer

About the internet, technology and the impact on society

Big, Open and Beautiful

Data visualization in five easy steps

Data visualizations by Eric Fisher

future internet lab
waag society

Introducing the Future Internet Lab

The Future Internet Lab examines the impact of technological developments and the development of the Internet on society, in the broadest possible sense. We believe that access to information is (in) valuable and that everybody should be able to access and control their own information. One of the main interests is to make and keep the Internet accessible to everybody, on their own terms, from governments to children and from senior citizens or Small & Medium enterprises to developers.

In our projects, we focus on developments in big- and open data, security, questions around identity and privacy. We seek to bring democratic processes and institutions into the Internet age, promote civic participation and transparency of the government.

waag.org/futureinternetlab

This data visualization is an example of the work of Jer Thorp, working with the data of UK's National DNA Database. More information about this work with another example can be found on page 4 of this magazine.

About the internet, technology and the impact on society

BY TOM DEMEYER

Our work in the Future Internet Lab deals with the impact on society of the developing Internet and emerging (internet) technologies. Our mission is to keep these technologies accessible and safe, and share information in order to allow everybody to participate in this new society on their own terms. Tom Demeyer leads the Future Internet Lab, and explains...

"Our culture evolves with the technological developments."

DATA

Big, open, linked... We prefer just to talk about data in general, even if 'open' and 'big' data are two very different things in terms of technology and policy. Big companies have and collect huge amounts of data, something that we research and follow with interest. In practice, most of our efforts at the moment deal with open data. We try to stimulate the public sector to open access to data, and others to re-use this data. We do this through organizing app contests, for instance, but also by building technical platforms and interfaces to facilitate development of applications.

MACHINES

Data offers society a lot of opportunities, especially when combined with the more advanced algorithms that 'data science' comes up with. Through combining data mining technologies (focused - and serendipitous - search on combined large data sets) with technologies from artificial intelligence research, machines are capable of more and different tasks than ever, tasks that have been exclusively human so far. Last year an IBM computer beat the human champions of Jeopardy for the first time. An extremely complex task, as the questions are not limited to any specific domain, and the interaction is using natural language. The significance of this development is hard to predict; one quickly moves into the realm of science fiction. It is clear, however, that these developments will have a huge impact.

TRANSPARENT SOCIETY

Systems are getting more advanced, more data is becoming public. It is possible that we will soon live in a society that, by today's standards, will be considered extremely transparent; privacy is being redefined. Our culture evolves with the technological developments. It is very interesting to anticipate these changes and to research the implications in the context of institutions, security, education, democracy...

IDENTITY AND RECIPROCITY

A data society changes how we think about identity. The data that you generate living your everyday life, online, or even just shopping, determines who you are in the eyes of the businesses collecting and using this data. In the data society these identities are more important than who you 'really' are. The problem is, however, that control over this data is not yours; you have less and less influence on your identity, as it were. Access to and understanding of the applications of your data is a prerequisite for a relationship that is based on equal terms between you and the companies (and government agencies) that collect your data.

The Future Internet Lab tries to engage a broad audience in this discussion, and works on tools to increase the options that people have. One such tool, for instance, is the 'Shared Data Store', a (web) service that allows for management of personal data and selective sharing, without losing control over the applications.

SECURITY

Securing online systems and databases is increasingly difficult. The need for diverse and complex access strategies, together with increasing criminal interest, has already made simple password based access control insufficient.

The Future Internet Lab is interested, primarily, in how increased security and more versatile access control can be implemented in a way that is transparent, comprehensive, accessible and humane. Effectiveness of these solutions is directly related to usability and acceptance. We are so dependant on the security of critical systems that continuing education is paramount.

OPPORTUNITY

Technology and information systems offer many opportunities. Our basic attitude towards technical developments is a positive but critical one. We prefer to see technology as a liberating force, rather than a means of oppression. As with all liberating forces, use of and access to the technology needs to be conquered and, once acquired, defended, whether we are talking about information technology, agricultural technology or simply access to clean drinking water.

waag.org/futureinternetlab

Current
Future
Internet Lab
projects

CitySDK

The project Smart CitySDK aims to define services that can help open up data in the fields of participation, mobility and tourism in various cities in Europe. Within this project, Waag Society is responsible for the domain mobility. We are working on a Service Development Kit that helps developers to make applications that offer personalized travel advice. We will conduct a pilot study in Amsterdam. Then, the applicability of the services will be tested in Helsinki, Manchester, Barcelona, Rome, Istanbul and Lamia.

waag.org/citysdk

Arts Holland

Arts Holland is a cooperation between The Netherlands Board of Tourism (NTBC), Nederlands Uitburo (NUB) and Waag Society in the field of culture and tourism. Arts Holland lets visitors of the Netherlands experience the quality, density and richness of Dutch art, heritage, museums, design, fashion, theatre and more. Based on a linked open data platform that we have created, a series of tools will be developed that will guide any arts lover through the high-brow cultural landscape Holland has to offer.

waag.org/artsholland

Code for Europe

European cities face a scenario that is characterized by shrinking budgets, increasing demands of services from their citizens and the need to reinvent themselves in their quest to become Smart Cities. Within Code for Europe, Waag Society assists the Municipality of Amsterdam with Open Innovation. Challenges the city faces were described and three fellows work on a dedicated basis towards solving these challenges. They will share their knowledge with Amsterdam and with fellows in other European cities, creating an international network for global innovation.

waag.org/commons4eu

Highlighted project: Shared Data Store

Your collection of event memories ... now digital, in your pocket, everywhere.

An example event package. Each event organizer can implement his own visual theme, but the user will find familiar interface elements.

These elements include, for example, gyuides, (dynamic) time schemes, GPS'ed Maps, social features, memory storage (notes, pictures ...)

The average smartphone has over twenty sensors that track information, for instance about your travel distance or location. When you allow applications to use this information, it is stored and tracked by third parties, whether you want to or not. But what if you could decide which information you want to share and which data you want to keep private? The Shared Data Store (SDS) makes this possible.

EXAMPLES

With the SDS you always have access to your data, and you decide which parts are open and which remain for your eyes only. We can think of many situations in which you actually want to share data, but not all of it. For instance if you are using a 'Taxi-App' that allows you to share information about taxi-rates or the behaviour of a taxi driver. Sharing this information is very valuable. But you might want to keep private the exact route you take, or how you pay for the ride.

In short, the SDS is a web-service for personal data storage: it allows you to make parts of your data public whilst keeping other parts private. And it is a tool for developers to make applications that let end-users have the control and responsibility over their own data.

HOW DOES IT WORK?

By offering a single API, we have made it easier for developers to create applications in which both private and public data can be combined. The SDS is implemented on a CouchDB database. Everything is stored per person and per context. The non-public documents are stored in encrypted form, using AES-256.
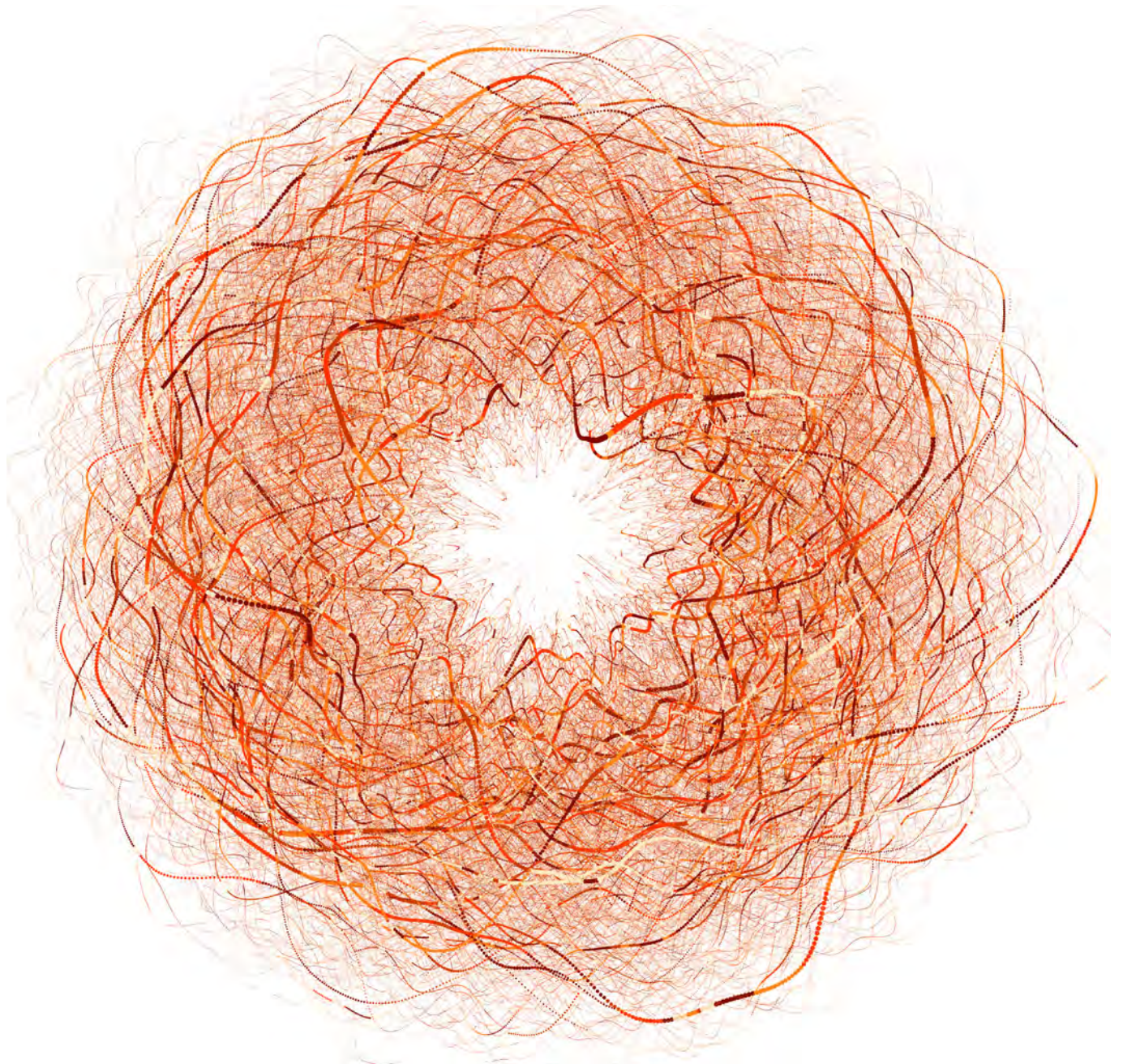
The storage server always stores the keys in an encrypted form. This means that nobody can decode the data other than the intended parties, including the administrator of the server. The data is safe even if the server is compromised. And even if a key is recovered, the data that is compromised is limited to a single document: there is no master key. This also means that the responsibility for management of the private keys for a

particular user lies with that user. Loss of the key means loss of data, no back doors.

CONTEXTS

The data model is free form, as is usual with document stores. The SDS itself does have a structure: data is stored in contexts. Every context can enforce a certain structure, which the context owner specifies as a Javascript validation function. This would be a minimal structure, but extra fields are always possible and do not necessarily need validation. In the extreme case the validation function could just be empty. In that case the existence of certain fields is not guaranteed and applications using these contexts need to be written to be functional in such an environment. By default all data is private, but every context has a publish function. The 'publish Javascript function' extracts that data that is available for public consumption.

waag.org/sds

What does the DNA of a nation look like?

This is the question Jer Thorp wanted to explore with his visualization of data associated with the UK's National DNA Database, which he built for the July issue 2009 of Wired UK.

The final graphic is composed of more than 5 million dots - one for each profile stored in the NDNAD. This graphic was constructed using a custom-written software program that he wrote. The large tangle of DNA is one continuous thread. There were a lot of variables to tweak to control the thickness, messiness and colours of the strands.

The work of Jer Thorp
Jer Thorp is an artist and educator from Vancouver, Canada, currently living in New York. Coming from a background in genetics, his digital art practice explores the many-folded boundaries between science, data, art, and culture. Recently,

his work has been featured by The Guardian, Scientific American, The New Yorker, and Popular Science. Thorp's award-winning software-based work has been exhibited in Europe, Asia, North America, South America, including in the Museum of Modern Art in Manhattan.

Jer is an adjunct Professor in New York University's ITP program, and a member of the World Economic Forum's Global Agenda Council on Design Innovation. He is a co-founder of The Office For Creative Research, a multi-disciplinary research group exploring new modes of engagement with data. From 2010 – 2012, Jer was the Data Artist in Residence at the New York Times.

blog.blprnt.com

Imagine you're a blogger writing critical pieces about the government. Suddenly your site goes down and you're hauled off by the police. The evidence against you? Your own documents, email messages and chat sessions. For critical bloggers, journalists and activists all over the world, this is a harsh reality. The Internet Protection Lab, founded by Hivos, XS4ALL and Free Press Unlimited, campaigns against this situation. Waag Society interviewed Fieke Jansen, Internet Protection Lab programme manager at Hivos.

Why did you launch this project?
"In Egypt, president Mubarak closed down all Internet and telephone networks completely for four days. Activists then broke into the offices of the National Intelligence Service, where they found lists of 'suspicious persons' – including themselves! The evidence against them turned out to be all kinds of confidential material: their email messages, chat sessions, and telephone conversations. This kind of situation underlines the importance of providing secure networks for bloggers, journalists and activists."

Lots of people want security. Why did you choose to support this particular group?
"Activists, bloggers and journalists are society's guard dogs. They tend to expose politically sensitive issues and therefore run extra risks. At the same time, they are less well organised: there's no union they can go to if their rights are violated, and they have no direct contact with experts on digital security. And attacks on journalists and bloggers are getting increasingly sophisticated."

What kind of attacks?
"These days many regimes have access to dual use technology: technology that can be used both for good and for questionable purposes. For instance, software that helps to keep mailboxes spam-free, but which can also read their contents, so it can then be used to scan journalists' mailboxes for 'incriminating' material. Or they use malware: for instance, to install a virus in your computer that provides access to all your documents, or that can remotely turn on your webcam to watch you during meetings. You name it, it's been done."

Who can you hold responsible for this sort of attack? Who wields the power?
"The exciting and complex thing about working in this area is that in every situation so many different parties are vying for power. End users, for instance, because if no-one uses the web, it's worthless. But Internet giants too, like Google, or the nation states that control the infrastructure. Because although Internet might be in the air, it's always in the ground at some point. There are always physical 'points of entry' where the Internet actually enters the country. And let's not forget the big telecom companies."

So what's the answer?
"Firstly, it is important to make bloggers and activists aware of the risks they might be running. You'd be amazed at the lack of well-secured mail accounts and laptops. Next, it is important to be able to provide alternative uplinks if the network in a given area is brought down. Or make sure that activists can leave the country if things start getting too dangerous. The Internet Protection Lab Lid Chokepoint also does real time Internet monitoring, collecting real-time information on Internet conditions: the areas with the most cyber attacks, the regions with the slowest connections, or those with the most traffic. Having this information means we can take faster and more effective action, such as talking with governments."

We can't all enter talks with a government. What else can people do?
"To get round censorship, to identify and locate it, or to support our target group in other ways we regularly assist in software projects in which anyone can help as a tester or data analyst. And we call on other organisations to share their knowledge with us, so we can form a larger network and work together to protect Internet freedom."
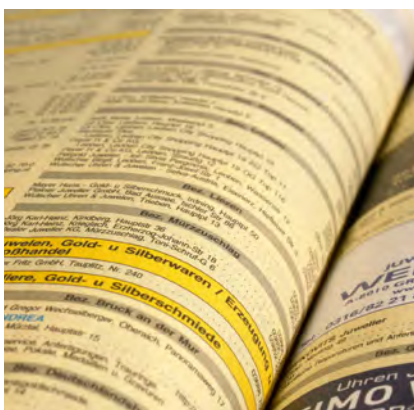
Big, Open and Beautiful
Data visualization in five easy steps

BY ELIZABETH TURNER

Data visualization is a big topic, and interactive graphics are only part of it. What do you need to make a successful user experience?

1. Raw materials

There's an old joke about how boring it is to read the phone book, but it's only boring because the human brain can't process it. In fact, the phone book contains all the information you need to discover the demographics and cultural life of the city.

We can organize the contents of the phone book in many different ways. We can look up a cafe at random, or count the number of cafes and compare that to last year. But it's far more interesting to take all the cafe locations and make them into a walking tour on a map.

We're only just beginning to use interactive techniques to explore information in a meaningful way. Our ultimate goal is to interpret data so quickly and easily that we don't know we're doing it.

2. Building blocks

It's meaningless to talk about bricks at street level, where our mental picture is a map we use to find our way around. But that map is a conceptual representation of all the buildings in the city, and what are buildings but bricks arranged according to architectural drawings?

A single brick is a tiny component, invisible on the map yet still very present. We notice the bricks when they make a nice decorative pattern or when they stick out in the road and trip us up.

Data is like bricks. Tens of thousands of data items would confuse us if they all appeared at once and we'd see nothing but noise in the information. But at some point we return to those essential building blocks to find out what's in there.

To understand our data, we need graphical representations of the right scale for our circumstances. They need the appropriate level of context and detail: not too much, not too little, but just right.

3. Patterns

Real data is messy. It's never as regular as this jelly mould. It grows out in different directions, forming clusters of different shapes and sizes. The more data we have, the less we can control it. All we can do is work with it, using the meaningful shapes it makes on its own. By discovering self-organizing patterns, we introduce new structures that follow them. By organizing things into forms and frameworks, we fulfill function.

Data can make many different shapes. Which are the most useful to organize things into? If it's a map does it need a timeline? Are there quantities and hierarchies? What compares with what? Which shape answers the most important questions? How do we get from one view to the next?
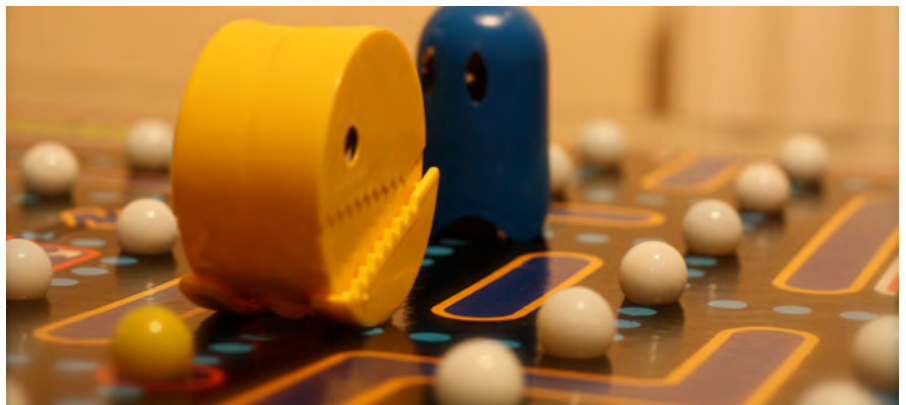
4. Filters

A sieve refines and separates. We need to work out what to use, and what to throw away.

How much of this you do yourself and how much you leave to the user is a delicate balance. Too few choices, and you loose essential meaning, missing something useful or surprising. Too many choices, and it quickly becomes hard to understand at all.

This is power at the expense of clarity. The more power to the user, the more generic the visualization, the harder it is to understand. Good curation and editorial choices are key.

5. Stories and games

Working with live data in large volumes, inputs are analytical with a view to discovering things on the fly. Stay flexible in your view on the data, and don't try too hard to control the output. It's a game in which to find and track an important piece of information.

But once you've drilled down and refined to a closed system, you can frame information into a well-directed narrative. It's a story with a message to communicate and a point to prove.

Are you playing a game or telling a story? Either way, impose reasonable limits on the user experience, and find ways to help people discover the information in ways that make sense to them. Help them learn the data as they go.

We like to think that by offering different perspectives on data we can stay neutral. But the choices we make in presentation direct users in how they understand the information. We have to think carefully about what data is telling us, and how much control we have over that.

This is a responsibility and in some senses a superpower. Data transparency serves many agendas in which the "who" and "how" become very important. But how many data owners know all the secrets their databases could tell them? Probably very few.

This is technology too powerful to be left to politicians and journalists. Could it lead us to become a more aware, critical and data-literate society? We should hope for that.

The discrepancy of transparency

INTERVIEW WITH LIESBET VAN ZOONEN, ROB VAN KRANENBURG AND MARLEEN STIKKER

Quantified Self, open data, The Internet of Things, Smart Cities… reading about the latest technological developments, you'd think we were moving inexorably towards an increasingly transparent society. Information, including government information, seems to be increasingly openly available, and it is easier than ever to share data. But this raises many questions. How does this affect our privacy and identity? And how much control over these things do we have, or for that matter, want? Waag Society gazes into the future, in conversation with Liesbet van Zoonen, Rob van Kranenburg and Marleen Stikker.

The transparent future: how close is it, really?
"The idea that we can look forward to a society in which everything is shared is a complete fallacy, and a mistake regularly made by spearheaders," begins Liesbet van Zoonen. "It is by no means a given that everything is becoming transparent. On the contrary, many companies and government bodies do everything they can to keep their affairs hidden or closed. And while it costs providers a lot of trouble to keep everything private, end users don't always feel the need to know everything. So I don't expect the 'transparent society' to emerge any time soon."

"Information would no longer be a state monopoly, but would belong to society"
- Liesbet van Zoonen

Marleen Stikker also has reservations about the concept of full transparency. "There are two sides to transparency, because every attempt to achieve transparency is also an opportunity to conceal. I've been researching since the early 1990s into ways the Internet could be used to make government more open, and what I've seen is that government, both then and now, is very keen to be regarded as 'open' – but that this is often more about clever marketing than any fundamental changes in the underlying process."

Rob van Kranenburg does see a trend towards the sharing and opening up of data, but considers that nothing of real importance has yet been shared or thrown open. In his eyes the underlying basic systems are unchanged: "Half of our tax money still goes to the army. And while some data is being opened up, it's actually a very limited amount. Try asking the police whether you can have a look at some security camera footage; I think the answer will still be 'No'."

Let's imagine the transparent society has arrived. What would it look like?
Liesbet sketches two scenarios. First she describes a future organised along commercial, top-down lines: "In this world the default option is that your data is used, stored and traded. You have to pay for privacy." She bases her second scenario on David Brin's book The Transparent Society, which asks whether technology will force us to choose between freedom and privacy. The concept of 'total transparency' is central to his work. "In this scenario you get to see straight away what happens with your data," explains Liesbet. "When your passport is scanned at the airport, you would get to see which datasets are being consulted. Powerful bodies, such as governments, would also be expected to make their data available. Surveillance camera images would be shared on internet as a matter of course. In this future scenario, information would no longer be a state monopoly but would belong to individuals within society."

"Every attempt to achieve transparency is also an opportunity to conceal" - Marleen Stikker

Can individuals really handle that much knowledge and power?
Marleen Stikker: "In my view individuals should definitely be more involved in the decision-making process. We are already seeing lots of broad-based social initiatives, but government has not built on them. Too many responsibilities are being taken away from the individual – responsibilities which, with the right knowledge and tools, can be effectively shouldered by individuals and groups of civilians."

While Rob van Kranenburg hopes that individuals will take this active a role in the future, he is concerned about the level of involvement of young people. "I'm seeing a generation of people, between 20 and 25, who have grown up in a sort of 'like age'. This generation is very different from the last. Youngsters these days have a huge range of options and expertise for organising themselves, in part through developments on the Internet. They are in a position to profoundly affect their own quality of life, but so far little has changed. There seems to be a lack of political consciousness. I see a generation with lots of tools but no goals."

Marleen does not see a new generation, so much as a distinction between three groups of people: "There is a group of vulnerable people who depend on others because of their age or because of a mental handicap. Then there is the largest group, which consists of people who are basically indifferent. They behave as consumers and trust that everything is run properly. In fact their trust is regularly betrayed, but they are unaware of it. The third group is made up of 'sovereign citizens' who want to be in control of their own lives. They will always struggle against existing hierarchical systems, and they are today's pioneers with regard to open data and the quantified-self movement. This group is responsible for disruptive innovation."

In the course of their lives people can move from group to group, and Marleen finds this particularly interesting. "For

instance, look at our care system. We could say that it seems to have been designed on behalf of the lowest common denominator – that is, the very dependent client. They would seem to be the most vulnerable group, and it's the easiest approach to design and build a system that assumes that civilians cannot act for themselves. However, this is a missed opportunity. It's better to build a system based on the sovereign citizen, and then within that system to provide a variety of protection options for vulnerable groups and indifferent consumers. This way, you give people the greatest possible sense of ownership and responsibility. These kinds of system are open by definition. The 'if you can't open it you don't own it' philosophy is crucial to a society that is reciprocal and in which everyone has the same rights, opportunities and duties."

But what does this kind of system mean for our identity? How are we going to identify ourselves online and offline?
Liesbet sees a trend towards reducing the number of one's online identities to just one. "We've been getting used to the idea of multiple identities for almost 30 years. For instance, I am a woman, a professor, a mother, and a resident of North Holland. These identities are articulated at different moments. Online, this plurality is now gradually being pushed back. You are no longer expected to have identities; you are seen as an entity. Google is trying to streamline Gmail addresses and YouTube accounts so that they can offer better services. So these sorts of companies are pushing for unification. If one thing remains, it's this: a rising tension between an institutional desire for simplicity and identifiability, and the individuals unwilling to be pigeon-holed in this way."

What developments are currently taking place in the area of identification? And what would an 'ideal' future be?
"My personal ideal would be an identification system that you no longer even notice," says Liesbet. As an example she mentions the identification systems being used in the UK in which the actual

identification moments are increasingly invisible, such as the Trusted Travelers service which performs identification on the basis of your travel profile. "You are recognized by an iris scan and you don't even have to show your passport – the system knows whether you are trustworthy or not. But in exchange you have to make your data available to the system, and this involves a certain risk. For instance, what happens if the system decides you're 'untrustworthy'? How are you supposed to prove the contrary? If we could solve these sorts of problems, I think it would be fantastic!"

Marleen also dreams of smart systems, such as a really secure Electronic Patient Dossier (EPD). "That would be a holy grail, where different datasets could be combined in one place. A system like that means that doctors can help you faster, because they know your blood group, for instance. But it also means that a Russian hacker could get access to this sort of information. So it's important that more freedom and more power is given to the system's end users. At this moment, the authorisation structure surrounding EPD data is leaky. And if you create an authorisation structure that is not based on end users' insight and capacity to act, the system will never be transparent or reciprocal. And this is absolutely necessary. Because we're not here to serve the system; the system should serve us."

Can we make a link from the EPD to future health care?
"An important aspect of the Internet of Things, but also of the Quantified Self movement, is that sensors are being used to collect lots of qualitative data, and these trends are definitely going to change the nature of healthcare," states Rob. "We are collecting much more information about our bodies and behaviour." In Rob's view this is a positive development that could, for instance, contribute towards better mental health care. "This is becoming increasingly important. In England there are more people stuck at home with mental problems than with physical ailments."

If we assume that 'you can only create the future', what can we do now to make a start?
"Launch a public debate! The field is wide open," is Rob's answer. "We need more people to wake up and start taking action. They could then start making the world look more like a browser – more collaboration, less exploitation, less competition, no intellectual property or patents, and no more barricades put

up by the ones with the money. The young generation will have to act in an organised way. Take everything over, and stop putting energy into old institutions. Stop voting, stop the university, stop working. And start making real choices. What kind of future do you want? What kind of life do you think we should live? What kinds of things should we pay for collectively, and what not? What data should stay private, and what data should we share? We need to start a public debate, so that we can turn the whole of this country into a Smart City."

"Today's generation is growing up in a 'like age'; they have lots of tools but no goals" - Rob van Kranenburg

About the interviewees

Liesbet van Zoonen is professor of Communication and Media Studies at Loughborough University, and Erasmus University Rotterdam. She was trained as a political scientist, but wrote her PhD in 1991 about the media (and the women's movement). Ever since she has written about gender and (new) media, politics and popular culture.

Rob van Kranenburg is a teacher and the author of The Internet of Things, a critique of ambient technology and the all-seeing network of RFID. He is the Co-Founder of Bricolabs and the Founder of the IOT Council. He ranks number 6 on the top 100 Internet of Things (IoT) thinkers list on Postscapes.

Marleen Stikker is co-founder and director of Waag Society. Marleen Stikker (1962) is founder of De Digitale Stad (The Digital City) in 1994, the first virtual community introducing free public access to the internet. Marleen Stikker strongly adheres to the Maker's Bill of Rights motto "If You Can't Open It, You Don't Own It".

Let's explain...

Big data
Big data is a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications. The challenges include capture, curation, storage, search, sharing, transfer, analysis, and visualization. The trend to larger data sets is due to the additional information derivable from analysis of a single large set of related data, as compared to separate smaller sets with the same total amount of data, allowing correlations to be found to "spot business trends, determine quality of research, prevent diseases, link legal citations, combat crime, and determine real-time roadway traffic conditions.

Open data
Open data is the idea that certain data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control. The goals of the open data movement are similar to those of other "Open" movements such as open source, open hardware, open content, and open access. The philosophy behind open data has been long established (for example in the Mertonian tradition of science), but the term "open data" itself is recent, gaining popularity with the rise of the Internet and World Wide Web and, especially, with the launch of open-data government initiatives such as Data.gov and Data.gov.uk.

Internet of Things
The Internet of Things refers to uniquely identifiable objects and their virtual representations in an Internet-like structure. The term Internet of Things was proposed by Kevin Ashton in 1999. The concept of the Internet of Things first became popular through the Auto-ID Center at MIT and related market analysts publications. Radio-frequency identification (RFID) is often seen as a prerequisite for the Internet of Things. If all objects and people in daily life were equipped with identifiers, they could be managed and inventoried by computers. Tagging of things may be achieved through such technologies as near field communication, barcodes, QR codes and digital watermarking.

Equipping all objects in the world with minuscule identifying devices could be transformative of daily life. For instance, business may no longer run out of stock or generate waste products, as involved parties would know which products are required and consumed. One's ability to interact with objects could be altered remotely based on immediate or present needs, in accordance with existing end-user agreements.

Smart cities
Urban performance currently depends not only on the city's endowment of hard infrastructure ('physical capital'), but also, and increasingly so, on the availability and quality of knowledge communication and social infrastructure ('intellectual capital and social capital'). The latter form of capital is decisive for urban competitiveness. It is against this background that the concept of the smart city has been introduced as a strategic device to encompass modern urban production factors in a common framework and to highlight the growing importance of Information and Communication Technologies (ICTs), social and environmental capital in profiling the competitiveness of cities.

The significance of these two assets - social and environmental capital - itself goes a long way to distinguish smart cities from their more technology-laden counterparts, drawing a clear line between them and what goes under the name of either digital or intelligent cities.

Smart(er) cities have also been used as a marketing concept by companies and by cities.

(Source: Wikipedia, the Free Encyclopedia)

Column

Open by default

BY RUFUS POLLOCK

Open data contests raise awareness about the possibilities and the potential of data: both for governments and for developers. The contests provide us with new ideas for concrete prototypes or products.

Open data challenges are great as showcase moments to built awareness. However, to make sure the contests have economic impact, they have to be part of a bigger process. If you are expecting economically viable apps or concepts, the investment that you make has to be different. For instance, the prize should not just consist of money but also of mentoring and incubation.

With the Open Knowledge Foundation, we believe it is important to focus on making data "used and useful" - not just having it be open. This has been behind our work to create projects like CKAN (CKAN.org) and the School of Data (schoolofdata.org).

With growing amounts of open government data, especially in the UK, what we need is to grow the uses of that data. To stimulate this, we are expanding our efforts to connect data providers with users whether those are businesses, civil society organizations or coders and data wranglers.

In other parts of Europe it is still important to show governments the possibilities that opening up data creates. Open data contests play an important role in this, since they help in persuading governments to join the open data movement. We believe in a world where data is open by default. I encourage governments to seize the great potential that open data offers, to be governments of the future, not of the past.

About the author
Rufus Pollock is a Founder and Director of the Open Knowledge Foundation (okf.org) and a Shuttleworth Foundation Fellow.

(Photo: Open Knowledge Foundation)

ABOUT THE OPEN KNOWLEDGE FOUNDATION
The Open Knowledge Foundation (OKF) is a non-profit organisation founded in 2004 and dedicated to promoting open data and open content in all their forms – including government data, publicly funded research and public domain cultural content.

The Foundation is an international leader in its field and has extensive experience in building tools and a community around open material. For example, the CKAN project is the world's leading open source data portal platform – used by data.gov, data.gov.uk, the European Commission's open data portal, and numerous national, regional and local portals from Austria to Brazil.

WHAT IS OPEN KNOWLEDGE?
'Open knowledge' is any content, information or data that people are free to use, re-use and redistribute — without any legal, technological or social restriction. The main principles are:
• Free and open access to the material
• Freedom to redistribute the material
• Freedom to reuse the material
• No restriction of the above based on who someone is (e.g. their nationality) or their field of endeavour (e.g. commercial or non-commercial)

Open knowledge is what open data becomes when it's useful, usable and used.

okf.org

"Open data challenges are great as showcase moments to built awareness"

Can we turn open data into business?

BY IVONNE JANSEN-DINGS AND KAREN VAN DER MOOLEN

Open data contests and challenges have been successful on many aspects. By stimulating the usage of open data for the creation of prototypes, the value of datasets has become apparent. In this way, the contests have shown the possibilities that opening up offers to government officials. But what if creating prototypes and showing possibilities is not enough? Waag Society's Ivonne Janssen-Dings and Karen van der Moolen discuss the future of open data contests.

Since 2010, many European countries have organized national, regional or local open data competitions to stimulate developers and companies to make use of open data. These contests have been successful in promoting open data within cities. They have contributed to opening up new datasets using open standards and they have stimulated developers, students, start-ups and entrepreneurs to create new applications. For instance for the web, mobile use, business-to-business or business-to-client: apps that show the potential of the datasets that the public sector has to offer.

OPENING UP

The focus of the competitions format until now has mostly been on getting the open data 'gospel' out there: convincing policy makers of the value of opening up data, connecting the developers community to this newfound source of information and creating awareness with the general public. The competitions have lead to hundreds of new and innovative ideas and concepts for a whole range of digital technologies. The competitions have had a catalysing effect on the discussion about, and the release of, data. We believe that the potential for monetary value delivered through apps will rise as even more data becomes available.

IDEAS ARE NOT ENOUGH

Typically, competition organisers find that it is easy to gain support and appraisal. And after a contest, there are often loads of inspiring prototypes and concepts. Nevertheless, the monetary value delivered has fallen short of the expectations. It has proven difficult to create sustainable results that lead to economic investments and viable businesses. Most prize-winning developers do not manage to bring their applications to the next level because of a lack of sustainable open data, knowledge and experience, or networks and capital investments. Also, restrictions on the use of data, both legal and technical, exist. Finally, there is an absence of business spirit and experience within the community of developers. There is a need to gain insight on which apps have a business potential and to get access to investors that will help turn prototypes into start-ups and beyond. Great ideas simply are not enough.

WHAT CAN WE DO?

The failure to take apps based on open data to the next level will be detrimental to both the willingness of developers to invest their time and efforts into the development of new applications using open data, and the eagerness of the data owning institutions to advance the opening of their data in a usable and timely fashion.

It is apparent that many developers lack the knowledge needed to turn their idea into business. On the other hand, investors are often not aware of the ocean of viable concepts that arise from the open data contests. For those concepts that have a realistic chance on the market, and for the developers that are eager and motivated to turn their idea into reality, Waag Society is working on a Business Lounge. This lounge will be developed within the project Apps for Europe and the main goal is creating successful open data startups. The Business Lounge can be seen as an 'add-on' for the existing open data contests and hackathons.

We could for instance assign 'coaches', or experienced entrepreneurs, to provide feedback on the concepts that the developers are working on. They can share their knowledge with developers. Furthermore, we want to offer business canvas sessions, pitch trainings, group-consults or speeddates with investors. These activities are organized during hackathons or other meetups that are related to the contest.

As we have stated before, the existing format of open data competitions has had a catalysing effect on the release of data and on the creation of ideas and concepts. Now, it is time to start catalysing actual business with open data.

About Apps for Europe

The project Apps for Europe started in January 2013 and consists of 19 European organisations from the field of open data, coordinated by Waag Society. The main goal of the project is to stimulate the economic and social impact of open data, by stimulating developers to become entrepreneurs that will go to market with their open data applications.

waag.org/appsforeurope

San Francisco from the perspective of runners

Eric Fisher about his data visualization:
"After seeing Cooper Smith's visualizations of data from runners in New York City, I wanted to see what similar data sets would look like for other cities. Nike+ doesn't have public GPS logs, but MapMyRun does, if you are willing to spend several hours clicking through search results to hit the "Download" buttons, so that's what I did to get the tracks for these 771 runs (from June 13 through August 9) in San Francisco.

As Open Source Planning has pointed out, uploaded runs come from a fairly small, self-selected group of people, the most obvious result of which is the total absence of the southeastern corner of the city from this map. It is also a very self-conscious process, so it is biased toward intentional, and often intentionally difficult, trips made for their own sake, and away from the repetitive patterns of everyday life.

Unfortunately the MapMyRun tracklogs do not have date and time stamps, so it is not possible to do the time of day, pace, and interruption analyses that Cooper Smith did. I should have done direction of travel, though."

Eric Fisher
www.flickr.com/photos/walkingsf/6029057191

The Geotaggers' World Atlas: Amsterdam

BY ERIC FISHER

The maps in this series are ordered by the number of pictures taken in the central cluster of each one. This is a little unfair to aggressively polycentric cities like Tokyo and Los Angeles, which probably get lower placement than they really deserve because there are gaps where no one took any pictures. The central cluster of each map is not necessarily in the center of each image, because the image bounds are chosen to include as many geotagged locations as possible near the central cluster. All the maps are to the same scale (a square measuring 15 miles on each side), chosen to be just large enough for the central New York cluster to fit. The photo locations come from the public Flickr and Picasa search APIs.

This Locals and Tourists version tries to map which of these pictures are taken by locals and which by tourists. Blue pictures are by locals. Red pictures are by tourists. Yellow pictures might be by either.

Base map © OpenStreetMap, CC-BY-SA

waag society