How to negotiate IoT into a political reality.

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One third of all cars at any given moment in the city is searching for parking in the centre. Yet car sharing is not immediately an option for most people. It has to meet certain standards and be convenient. The negatives of too many cars are obvious: pollution, traffic jams, congestion of public transport as well. Currently the time tables on the busses do not yet show real-time waiting minutes. Yet, as one third of all cars in the city are looking for a parking spot sharing information about parking spaces in real time would help to solve the parking problem, needless fuel consumption and traffic jams.

In mapping the stakeholders we see who is involved: citizens, commuters, city council, city planning; maintenance, public transport, pedestrian, city bike renting bikes, parking services, traffic police, and taxi drivers. The main issue is on routing and timing. It takes places mainly in the city center but also the problem is seen to be spreading out over the city. The problem is worse during the morning (parents drive their children to school), in the weekend and during the rains. We have different groups of people who are faced with the issue because of different reasons. It seems that what they need is some kind of city dashboard that shows them open spaces, traffic congestions, planned maintenance, potential upload of alerts (fix my street) that pushes notifications to smartphone apps (or wearables), on hyper-local climate, hyper-local news for individuals and groups (for example parents allow their children to bike to school through traffic free zones during the morning, escorted by students) offering citizens information on the best time to leave the home, which route to take, which people are taking the same route at the same time (potential car-sharing) and what type of weather is expected throughout the day. Interesting scenarios evolve around microclimate; is it possible to predict hyper-local weather and thus steer biking, walking and bus routes?

One of the key elements that runs as a thread through the ideas in the first IoT and Smart City workshops that we held in Novi Sad and Santander as part of the EU project Sociotal.eu was the notion of exchange and facilitating exchange. It built on the fix my street and smart gardening where the idea is that incentives drive behaviour: "As the area gets cleaner, all the people in the street benefit. As you have helped to make the street cleaner or water the plants you feel more part of the process, you get a feeling of self-satisfaction and maybe a feeling of ownership, like in I did that! This feeling of 'pride' and being recognized for having done what you did in the street can give more motivation then money. And from these small steps we have to work on the mentality change that is needed. Positive feedback is essential for everybody in the process to stimulate self-organization and a sense of community."

It was therefore decided that further work in Novi sad will be around this exchange platform with key stakeholders in that case; the building janitors and selected occupants, building management professionals, (chosen by the inhabitants) presidents of apartment blocks, maintenance professionals, and a representative of DUNAVNET, developers partnering in Sociotal.eu

Janitors and building managers are pragmatic and solution oriented people. They quickly decided to focus not on community issues around the houses and in the neighborhood but on internal question in the building management. A recent law stipulates that every building has a chosen president. In the meeting we learned that some presidents want to professionalize more in what they do and service more buildings. Could SOCIOTAL assist them and build incentivizing mechanisms for different stakeholders to facilitate this?

Inside the building a number of issues can be investigated: flat roofs leaking water, fire security not up to date, sewage and heating systems, security, the noise of different life-rhythms in community spaces, the community police not being taken seriously, and the issue of the maintenance of the elevators. The participants decided on the latter as the key issue:
- a new law requires certification but there are only three institutions who are able to do this. Remote management would be a huge time gain as now the permits take very long and the elevator can not function without the certificate
- every elevator has its own closed software system. There is no back up of its history, only a maintenance book that could be anywhere in the bulding and is a single copy that could get lost
- quality control could be ensured by monitoring the elevator
- monitoring the elevator could also give insight into its use

The notion of a *passport for the elevator* was proposed (which could be extended to 'heating', 'boiler'…) which could be triggered on a smartphone through RFID or NFC or a QR code. It would link to a webpage where data can be added and stored by different stakeholders: the owner, the companies, the building manager, the maintenance and the inhabitants of the building. It could also be read by the certification authorities that what need less on sight inspections. Such a system will bring transparency to the entire value model.

In these co-creation workshops that were done with Nathalie Stembert (http://stembertdesign.com/#subnav) it became clear that a key prerequisite for a smart city supported by citizens is transparency of the data and information flows for all the stakeholders involved. In the context of SOCIOTAL.eu this means in this case:
ν an ecology of enablers: RFID, NFC, QR codes, barcodes
ν a policy ecology of regulations (local, national and EU) on elevators
ν developer communities that will be invited to participate in the SOCIOTAL toolkit and professional communities that SOCIOTAL provides incentivizing mechanisms for (in this case the Novi Sad building community) for further professionalization in becoming a Stakeholder Coordinator in IoT
ν citizens that are invited to co-create scenarios that are meaningful to them, in this case by giving input to and receiving better services

The key elements of the vision as they were voiced during the discussion in the first and second workshop were:

• *a mentality change:* "How can we all (ourselves included) make the switch from 'This is their building', to 'This is our building, our street, our park?. This is a mindset change and extremely complex. Pretty much a lot of citizens are depressed. Youth unemployment is very high, much to high. There is a sense of togetherness that is missing."

- *mixing public and private responsibilities:* The funding should come partly from the government and partly from crowd funding and private donors as ownership must be taken by citizens and it should not feel as if everything is already decided. A business model could be on some basis of vouchers: I can donate time, money or can I buy a plant or tree? I have certain skills, can you use them? In exchange of what?

- *not inventing the wheel:* use for example taskrabbit.com in the idea for the portal where citizens can log in and subscribe to donate a gift – time, money, a tool to a problem or cause in the street or neighbourhood.

Internet of Things can be the best possible feedback on my physical and mental health, the best possible deals based on real time monitoring for resource allocation, the best possible decision making based on real time data and information from open sources and the best possible alignments of my local providers with the global potential of wider communities.

Internet of Things is in its essence the seamless flow between the
- BAN (body area network): the ambient hearing aide, the smart t-shirts…
- LAN (local area network): the smart meter as a home interface,
- WAN (wide area network): the bike, car, train, bus, drone…
- VWAN (very wide area network): the 'wise' city as e-gov services everywhere no longer tied to physical locations
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Whoever ensures traceability, sustainability and security linking up the gateways is de facto and de jure the new power. We see Google trying to achieve this with the Glass and Lense, the Google Power meter and NEST, the Car and automotive and the wooing discourse of public office by Eric Schmidt and google.org It is crucial that we organize to create an open source competitor to these gateways to ensure that the future is not old style corporate but truly open, public and inclusive. It means that the hacking community stops hacking dying systems (actually keeping them alive by even bothering) and start building these gateways.

Where to start is not that difficult. Any period that is able to negotiate its way onto a new level, not blocked by revolution or breakdown, uses the last remnants of power as leverage. In our case the last stronghold of nation states is Identity Management; the passport. Currently this passport holds an RFID chip in a piece of paper. Logically, the next iteration will be a device. The next democracy will no longer have politicians, governments or voting every four years. It will build social organization based on (semi-autonomous) real time decision making monitoring, actuating systems – direct democracy -, harnessed in the next passport as an IoT device and controller. The EU, for example, (or Brazil) offers a trusted platform (based on possibly Fi-Ware, IoT-A and other open source architectures) where citizens can manage all services. The device talks to only one set of platforms build on the same architectural principles. In the service store citizens manage their taxes, their health, education, energy…. The device acts as a controller and can assign objects to it (for example your car or washing machine…). DPC (Digital Personal Coach) allows a 500 million zone (Europe) or a 200 million zone (Brazil) to build new social networks, search engines and sharing mechanisms as well as it own hardcoded security protocols, set of preferred currencies and business models. Responsibility in this context translates as a new form of CSR; ethics in business models, these have to be developed alongside the DPC.

There will be strong objections to such schemes. Not only will it break IP and the current dependencies of the ARPA/Internet, redistributing value, wealth and power; effectively ending the American digital hegemony, this approach takes Identity Management to an extreme level of transparency of individuals in a (federated) system. The strongest reason for implementing this fast is that failure to do so leads not to an inclusive smart society, but a set of smart gated communities or smart cities that are build for 10-15.000 people. If one does not believe that this is the current trajectory of IoT then this is a pragmatic clean slate approach that buys time to negotiate with all stakeholders; citizens, SME and startups, industry and .gov what kind of smart society they really want, becomes less appealing.

IoT is a paradigm shift and an ontological change. Our very notions of what it means to be human and what it means to be ‚in the world' are based on subject-object dichotomies. IoT brings a third party into the equation, a database, algos and scenario reality that is always present in any interaction between object and subject. This is not an indifferent reality, however, but one of real stakeholders and investors. The consortia that will decide the validity of that reality is the new raw power, much in the same way as some groups claim to represent or know the validity of ‚God', the ‚law', 'democracy' , or the ‚normal'. The protocols and procedures then that will build the IoT; driven by the need to individuate all objects; RFID, and SAAS in every object that can hold some software, Ipv6 are not neutral in a technological but also not in a political sense. When EAN and UCC merged into GS1 and became from ‚dumb' (barcode) organizations the potential Google of the 21th century proposing an Object Name Server, a database for all objects or ‚goods'), no standard bodies saw these potentialities. Since then - as organizations became aware of the enormous power that GS1 would have holding this position - there has been work on federation, but the basic premise still stands. IP too has huge dependencies. It is essentially a situation where we are using patch after patch trying to remedy flaws of a systemic approach for which it was not build or intended.

We know that the Internet and even the web as we know it were flukes, never intended to end up as they are know. That is the very reason that they came to exist. Engineering paradigm shift in broad daylight having everyone's attention is far more difficult, if not impossible. You have to find a hinge somewhere, an opening that can really crack a system wide open. It has never worked by trying to persuade policy makers, standard bodies and a general audience. The ‚normal', however brief in times of Internet and web (browser being just 21 years old) is too comforting and strong. Google did it with one patch on a search engine algo, Facebook did by grabbing the timing of Orkut and even succeeded with a Founder who called his first ‚friends' ‚dumb fucks', so it is not impossible that a service, a product or a wearable can grab that same kind of energy and enforce a new systemic approach. The strongest candidate, however, remains the passport. It is a product, service, potential controller (of car registration systems, and other identification schemes) and enabler/entrance to a system, all in one.

The main and basically only benchmark that we have to address in hacking into a zone of normality when the arguments to do so are not shared by a majority, is to prove that such a systematic approach would potentially lead to less evil. We can not prove that it will lead to a better distribution of wealth and value per se, or that Climate Change could be harnessed by full traceability of energy from consumer to industry to resource gathering, nor that direct democracy on all local decisions would lead to better resource allocation, nor that full traceability will eradicate corruption, nor that the IoT as a new

ontology will bring out more naturally the talents in people and the resources for them to develop them. But we can set up an argument on the main reason why we would want a system that feels more just to dealing with diversity in species – animals, plants, humans, machines - allocating resources for specific purposes, identifying the side effects of particular materials (plastic, nuclear waste…) early and finding alternatives, in short a system that redistributes uncertainty and violence in such a way that all actors share equally its burden. We would prefer such a system to the current state of affairs, and believe such a system would systematically lessen the very potentiality of evil occurring.

John Kekes defines evil as follows: "The evil of an action consists in the combination of three components: the malevolent motivation of evildoers; the serious, excessive harm caused by their actions, and the lack of morally acceptable excuse for the actions. " (*Roots of Evil*, John Kekes, Cornell University Press, Ithaca and London, 2005, p. 2) He continues to say that the explanation of evil has the following general characteristics: it is

"*Mixed* because it involves the combination of internal-active, internal-passive, external-active and external-passive conditions;
Multi-causal because the conditions that jointly cause it vary with individuals, societies, times and places;
Particular because it involves the detailed consideration of conditions that differ from case to case"

It is important to realize this complexity can never be addressed in any systematic cybernetic scheme, but even more that according to Kekes: "Coping with evil depends on meeting these requirements, but meeting them will not make evil disappear once and for all because human motivation and the contingencies of life make evil a permanent threat to human well-being."

The explanation of evil has the following particular characteristics:

If evil is *unintentional*, the explanation must identify the particular motive (internal-active condition), failure of misunderstanding (internal-passive condition), circumstances eliciting response n(external-active condition), and weak prohibitions of evil (external-passive condition) that jointly are the causes of evil;
If evil is *intentional*, the explanation must identify the motive and the circumstances eliciting response, but there will be no failure of understanding, and prohibitions of evil may not be weak

Given this explanation, coping with evil has the following requirements:

The *cultivation of moral imagination* because it changes the internal conditions and makes evildoing less likely
The *enforcement of strong prohibitions* because it changes the external conditions and may deter evildoing;
Enforecement by threatened or actual punishment for violations;
Holding evildoers responsible for both their intentional and unintentional violations, provided they have the capacity to foresee the readily foreseeable consequences of their actions; or excusing them if they lack the capacity." (242-244)

We now have to argue that a cybernetic system of give and take 500 million people in a federated (privacies- build) platform would have a better chance of *enforcement, prohibition,*

and *responsibility upholding.* If this is the case, the combination of these three requirements will lead to less evil and how can one not be for such a situation? In *New Instruments of Governance for our Societies* van Kranenburg and Gluhak argue for ICT technologies to play a more prominent role in supporting the governance of our society and explore the vision of how a pervasively deployed Internet of Things together with recent advances in social signal processing and persuasive technologies can enable new ways of decentralized governance. (PerCom Workshops 2012: 191-196) The smart city projects all demonstrate a level of control over situations, domains and infrastructure. The very nature of the drivers of IoT, RFID and Ipv6 embody authentication, friend-foe, traceability and accountability. We can then safely state that IoT and the proposed cybernetic system meets three out of four requirements that Kekes holds to be crucial to cope with evil: *enforcement of strong prohibitions*, *enforcement by threatened or actual punishment for violation,* and *holding evildoers responsible.*

If we can argue positively that IoT and the proposed scheme is instrumental in identifying personal talent as well as offering potential assistance in nurturing these talents, in giving feedback on physical and mental health in a way that is unmatched by current medical facilities, and in creating social cohesion because of the transparency and balance in providing resources, then we also have a positive match with the first requirement: the "*cultivation of moral imagination* because it changes the internal conditions and makes evildoing less likely." It is then no coincidence that key elements coming from the co-creation workshops with citizens and developers above were:

• *a mentality change:* "How can we all (ourselves included) make the switch from 'This is their building', to 'This is our building, our street, our park?. This is a mindset change and extremely complex. Pretty much a lot of citizens are depressed. Youth unemployment is very high, much to high. There is a sense of togetherness that is missing."

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They are basically reiterating the requirements of Kekes, but are not aware of the deep level of human intentionality they are basing their preferences and urgencies. To speak in terms of 'good' or 'evil' needs a specific context that is difficult to situate in everyday practices, yet the three requirements that citizens feel to be key in shifting into a connected world match the requirements of Kekes: a *mentality change* that can only be fuelled by debate, discussion of alternatives, thus in stories and in the *imagination*, and *managing external conditions* by mixing public and private responsibilities. I want to argue to *not inventing the wheel,* points to the proposed passport-device plan. Simple, elegant and easy to implement in our current connected world. More importantly, I believe to have demonstrated to implementing this scheme will lead to less evil. Do not tell me, that you want otherwise? Or, if you do and want to keep the current situation stable, do then have

the guts to speak, out and say; I willingly and purposefully choose the current state of affairs over a course that would bring less evil. I guess that would make you….:)