



*The COOK Report on
Internet Protocol
Technology, Economics, and Policy*



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Citizen Involvement in Freenets

*Living Labs in Catalonia and Hackerspaces in Oakland California
-- Guifinet to Join i2Cat Foundation for Collaborative Use of Both
Infrastructures*

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Introduction

and Executive Summary

The development of integrated circuits led to digital computers and then to the Internet and digital media. This process, sometimes referred to as digitization, slashed the cost of the technology in which it was used and in doing so democratized the formerly expensive technology used by the 20th Century press and other media. It made it possible to make recordings and books for a fraction of the previous price. As such, with the Internet and with websites, anyone could become a publisher. The role of existing publishers based on selecting suitable content for the masses found that their gatekeeping functions slipped away from them. At the same time economies of scale offered by huge factories began to disappear as the application of computers to machine tool development made it economical to produce huge and often unneeded variations in new products. Goods could be produced anywhere and then shipped anywhere else. With the resulting globalization, national workforces were destroyed. With the use of computerized supply chains, products developed in one place could be made and assembled in still others and shipped anywhere to those who could afford them.

Next finance convinced politicians to “liberalize” trade and, in doing so, finance smelled fresh sources of money. Classes of financial manipulators sprung up from hubs in New York and London where they were freed to focus on financial schemes. They tried to call the schemes financial “innovation.” The reality was that casino like, they shuffled wealth around rather than produce anything new. The atmosphere was short term. It was for everyone for himself and fueled by the denial of the existence of “public interest” or public good, companies and even entire economies became predatory. The system of predation was designed to extract maximum revenues on recurring 90 day cycles designed to enrich corporate executives within system gamed for short-term profit.

A series of asset bubbles emerged at the turn-of-the-century as political ideology, fueled by media consolidation, trained the electorate to despise its central government. Driven by a social Darwinistic world view, the individual was glorified as self-centered Ayn Randian heroes. Talk radio bestowed on the man on the street the sacred goal of fending off government efforts to tax on behalf of those who were presumed to be shiftless. This opened the way for the dismantling of the regulatory protections built-in at the end of the Great Depression. With free trade enshrined by neoliberal governments as a magical way to lift all boats, the way was cleared for the .com asset bubble, followed immediately by the housing asset bubble and the crash of 2008.

Post crash Wall Street emerged triumphant as Obama sold out to the very financial elements that had just looted the country. Islamophobia replaced the Red Scare as the demon needed to justify Washington's cozy relationship with military contractors and with privatized virtually everything else including spy agencies. Official Washington along with most other capitals became run by corruption and with people trapped in debt, dissent became rather more difficult when finding elusive employment suddenly was the top priority.

What emerged in the first five years after the crisis was the stranglehold of the famed 1% who found themselves even better off during those five years while the 99% struggled to keep a roof over their heads. For the One Percent and the hangers on of next nine or so percent who hoped to be able to avoid falling out of the vanishing middle class, the focus post 2008 was mainly on keeping the 20th century economy alive. It was serving them exceedingly well as the federal reserve in the name of prming the economy with quantitative easing pumped out \$85 billion dollars per month of new money that the one percent used not to invest in infrastructure but rather to bid up euity markets from a Dow March 2009 low of 6500 to an all time high of 16,000 in November 2013.

The democratization of higher education that triumphed at the end of World War II was gradually strangled by the elevation of the private good above everything else including what was known as the national and public interest in a bygone time. This created a situation where the top-ranked universities became more dependent on privately financed schools of business and schools of engineering and research centers involving *bioscience* which looks to become the 21st century what digitization was to the 20th.

This has meant, especially since the turn-of-the-century, that private industry sets the research agenda with industrial partners calling the tune and deciding what kind of research gets funded and what does not. At the same time that university administrators exploded in numbers and are paid more and more. Buty paid for what? For running hand tailored education centers that train a handful of students for membership in the societal elite leaving the vast majority of all other recent graduates saddled by student loans that, without jobs, they can never pay off. Thus we have a picture where the economic goals of society is focused on trying to maintain the old pre-digital economy. This economy is simply not working anymore. Policies that might permit other alternatives are unlikely because they will also demand of the ruling elites that they have to give up their privileges.

But, given the democratization of opportunity inherent in digitization, what is happening at the same time is that an idealistic group of hackers and network builders is emerging to show some new ways. Furthermore in some universities there are faculty whose intentions are absolutely laudable. They want to bridge the digital divide that they saw emerging 20 years ago. Meet the Catalonian anthropologist Artur Serra whose formation of i2cat is described in this issue. At the same time meet Ramon Rocha who as an employee of Oracle wanted to return to his old family farm 50 miles north of Barcelona and have an adequate broadband connection to enable him to live and work from there than in the big city. Focus also on the huge progress of mesh wireless technologies along with the maturation of open source rather than proprietary approaches and you have a situation where a handful of ordinary people have in the last 10 years- 2004 to 2014 - been able to build a telecommunications infrastructure for a shoestring that would have required well over \$1 billion investment in a decade previously.

What we have is a situation where the real aims of Artur Serra and Ramon Roca are not that far apart. The one based at a the University base, the other on a family farm, are taking advantage of the new digital democracy to build a new telecommunications network for the public good rather than private profit.

Now also jump from the Iberian Peninsula to the factory worker part of Silicon Valley. Across the bay from San Francisco are the 400,000 people living in a city known as Oakland. A young American anthropologist accompanied by a Dane with aide from a network designer from Slovenia are building something even more radically democratic and public than what is happening on the Iberian Peninsula. They are building hacker spaces.



Guifinet Founder and Foundation Board Chair Ramon Roca at his home in Gurb in May 2013

These are areas established for digital experimentation and first played around with in Germany with c-bse as early as 1995. According to Wikipedia **c-bac-base e. V.** is a non-profit [association](#) of about 515 members located in [Berlin, Germany](#). The purpose of this association is to increase knowledge and skills pertaining to [computer software](#), [hardware](#) and [data networks](#). The association is engaged in numerous related activities. For example the society has had stands at large festivals, such as [Children's Day](#), where they introduce young people to topics like [robotics](#) and computer aided design. Marc Juul points out that the explosion of the modern hackerspace movement started with MetaLab in 2006. More specifically it started with a talk given about starting MetaLab at Chaos Communications Camp

2007. I would agree that they have migrated down to the US as the 21st-century equivalent of Andrew Carnegie's 19th century public libraries.

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These hacker spaces can serve as an outlet for those who are unemployed or underemployed to learn from the Internet and from each other and experiment in use of not only digital but also biotechnologies in doing what they love. Marc adds also those who are employed but yeah, the under/unemployed have more time to spend at hackerspaces and often end up being part of the core crew running a given hackerspace. For the users, as long as they can feed and clothe themselves, and keep a roof over their heads, there can be no stronger motivation than to simply dive in and experiment.

What we have now is a divided society of a privileged 20th-century industrial elite versus an open and free wheeling melting pot of ideas where committed people of all ages are encouraged to come to share and collaborate and to experiment for a common good.

Citizen Participation

This issue opens with the story of Artur Serra, i2cat and Living Labs in Catalonia. it covers i2cat's hoped for discovery that guifi.net is a rural version of their citizens living lab. something that can be made much more powerful by a decision to peer the two networks. And it ends with an exploration of what is happening in the digital and bio hacker spaces in Oakland where an alternative future is being built by those who have been left out all of the current Washington and Wall Street ruling elite.

Meanwhile Isaac in Kansas City completes his first stage build-out as on November 14 2013, Anita Dixon sent her low-power FM radio application the FCC and Kansas City may or may not put together its own hacker spaces. The goal for everyone the decentralized collaborative sustainable and humane economic environment that can serve as a cushion when the next blowup of international finance takes place.

In the end however we come down to business model issues. While we have complained about the wrong signals sent under the corporate model, the NGO 501(c)(3) model is not foolproof either. Marc comments: "Yes! sudo room and sudo mesh recently incorporated, and we had to conclude (after much research) that there was no viable way for us to remain fully non-hierarchical in the eyes of the law due to the requirement that we have a board of directors, and the difficulties of having everyone be on the board of directors. It has clients to serve and business expenses involved in doing so."

And as it works with a myriad of partners, if it is to build trust among them, it must be scrupulously careful that goals are shared and completely understood by all parties in a way that the interests of those who provide the funding do not interfere with the shared and open strategy held in common on the part of all partners.

Again if the NGO establishes monthly operating expenses in order for it to stay in existence there will likely be the pressure of making compromises in the overall goal merely to meet next month's office expenses. This may be one benefit of the Oakland San Francisco Bay approach that seems to exist routed very organically in a wide number of projects with parallel interests and without an overall NGO that has a mission show people how to help themselves. Marc adds "We tried to run sudo room for a year without incorporating. We were simply Doing Business As. We managed to find a bank that would let us have an account, but we had to get individuals to sign for the lease (giving them power over the group) and we have been unable to secure liability insurance which have limited our activities. This is why we've recently chosen to incorporate. Still, there is no over-arching NGO, there are many small NGOs that operate as independent and non-hierarchical organizations."

Perhaps the idea is to get people together with shared interests at a time and a place and let the process unfold from there. It seems that this is something only doable among small groups of like-minded people who can plan for and manage their own expenses and operational coordination. Marcj comments: perhaps, but having many small groups working together means that there are fewer central points of failure. It may be a case of sacrificing efficiency for heterarchy and resilience.

And in the end even the traditional role of the NGO might itself be disintermediated.

The Internet as an Agent of Local Empowerment

Calatonia and Oakland California

When the history of the years between 1950 and 2050 is written, it will contain a picture of huge progress in science and technology but one that is sadly short-circuited by the failure of the governments of the world's largest economies to rein in their unregulated systems that have enabled the [financialization of everything](#). Since the disaster of 2008 the question is "where has growth gone?" and a parallel question is "whatever happened to innovation?" Innovation is there. But far too often, it is a race to see whose walled garden can win as the most efficient way of suctioning up "consumer" dollars.

In telecommunications the maturation of the Internet has given unprecedented opportunity for growth and innovation. However, I contend that this is an opportunity that has been short-circuited by the ascendancy of a political ideology that holds government can do no right while private corporations working within a [financialized](#) framework can do no wrong. When everything operates within a political and economic situation set up to deliver vastly disproportionate awards to executives who deliver higher profit figures every 90 days, sort term profits exceed all other priorities and the state caught up in greed masked by platitude that its just rigged individualism at work devours its seed corn.

In this respect the situation is rigged against any kind of sane outcome in ways that we shall explore in this issue of the **COOK Report**. Research and education networks have done wonderful things but their economic model seems to me to be broken because they are set to serve the private sector and any public good, especially in the United States, that is delivered, comes in a distant second. What we see now is the situation where the National Science Foundation in the United States and equivalent agencies in other countries spend public money to give private industry test beds. The funding process rigidly controls the test beds such that only a narrow group of University professors and students can use the resulting networks and technologies until they are commercialized. Otherwise you would have the greivous sin that public funds would be competing with private industry. What this policy bequeaths is a narrow self-serving short term agenda that permits the sponsoring companies to milk public investment. They do this via markets and unregulated services where a small handful of companies, having market power, can set prices and establish maximum short-term profit at the expense of the rest of us.

In research and education networks this has meant the death of the only really good R&E network the United States is ever had namely National Lambda Rail as it was acquired in

2012 by the Los Angeles medical billionaire Dr. Patrick Soon Shiong. What is left – namely Internet2 - is a narrowly circumscribed group of academic practitioners run by University Chief Information officers who were most interested in getting continued Washington DC subsidies to decrease the price of University connectivity in the late 1990s. The major innovations in network technology were circuit switched light paths. They came from Canada and the Netherlands. Internet2 never bothered to light its own fiber until its five year long effort to merge with NLR left its innovative competitor broken and bleeding.

The need for constant funding to continue to justify their own existence has created the system of mastercraftsman noited by John Day in some of his talks on RINA. These well meaning men and women are not free to do science because the acceptable parameters of what they can do are determined by the short term corporate agendas of their all controlling public private partnerships. This framework calls all the shots. "Gordon we have to get this right, because if we don't it will be fifty years before we get another penny fromn the National Science Foundation" a key internet2 executive said to me at its annual spring meeting in 2011.

With its successful destruction of National Lambda Rail, Internet2 was left alone on the playing field to build the United States Coimmunity Anchor Institution Backbone. Nearly the years later most notable product has been Colorado's Eaglenet where 100 million dollars has been spent on a barely build system that was "privatized" in an 8 million dollar sale in June of 2013. Citizens of Colorado are angry but no one hears them.

Important insight into all this has come from a recent book titled [*The Entrepreneurial State*](#) This monograph demands a careful reading as it lays bare the investments on the part of the national government that developed the technologies that made Apple's mobile products incredibly successful. However, the financialized company itself set about to stave the very ecosystem that made its success possible. Apple did this by taking advantage of every tax law designed to feed the corporate controlled state and then moved its profits offshore so that it would not have to pay any taxes to the very government system that made it success possible.

Is the Financialization of the American Economy Sustainable?

The post crash economy is certainly not a sustainable system. This issue examines a Catalonian variant on the research and education network theme called i2cat where a small group of academics put together a partnership based on the local universities the city of Barcelona and provincial government and the "private sector" and decreed that the ultimate purpose would be to enable citizen innovation. Artur Serra has been at the nub of digiatl divide citizen involement from its beginning in the late 1990s when he was central to the early efforts in Catalonia involved in bringing about the assumed benefits of economic development that this new Internet technology would enable.

Artur was at the tipping point of digital divide efforts at the local universities. In the 1990s were still heavily funded by city and provincial government. As he explains in the first part of this issue, he worked very hard to develop a three-way partnership between local universities and local government and large corporations. The goal was to invest in infrastructure that the academics like Artur would show them how to use to involve ordinary citizens in the process of gaining access to this technology. From this access innovation was expected to flow.

Artur explains below how unique he believes i2cat to be within the European context. Indeed it was established in ways that made it rather autonomous from other European research networks such as Geant and SURFnet.

Artur was a part of the first generation of academics focused on how to cooperate with government and private industry in bringing the assumed benefits of these technology developments to the ordinary citizen. In Canada Michael Gursten was doing very similar things along with people like Doug Schuler and CPSR in the Seattle Washington area. In a recent interview Michael has told me that he has known Artur Serra and the role he has played in these developments since the end of the 1990s.

I would contend that Artur's end goals are desirable but I also suggest that the financialization of the global economy has made many of these goals very very difficult to achieve. Why? Because if the technology corporations have only one goal and that is to deliver the maximum amount of profits every 90 days for their shareholders. The motivation tends to be much more one of how much money can they extract from people who use their services rather than the development of any long-term innovative partnerships.

We need people who understand that everyone is a potential collaborator and leader.

Marc Juul adds: The other aspect of the same problem is that we have trained people to be consumers and 9-5 workers who expect to be sold a product or lead by a leader. The problems we are having are related both to how people think as a consequence, and to their lack of spare brain-cycles as they lease out their brain in increasingly mentally demanding jobs so they can pay rent. **We need people who understand that everyone is a potential collaborator and leader.** People who feel empowered and motivated to learn about, engage with and better their local community and the world at large.

Over the past 20 years one has had a situation where one part of the puzzle is merely the question of building and bringing basic infrastructure sufficiently into urban areas where it is available at affordable prices for citizen use and "innovation." i2cat started up from inside of Barcelona, which by virtue of being a city of more than 1,000,000 people already

had a variety of modern corporate-funded telecommunications networks and services. On the other hand, we've seen it developed out of the desire of a few private citizens to bring wireless broadband into an area of farms 40 miles north of Barcelona where Telefonica (the incumbent monopoly) had no motivation other than to extract rent by offering the locals minimal service. Guifi.net began its development between 2000-2003, and showed that it was possible for ordinary citizens to build and scale a mesh network of layer 2 services on which private content-oriented services could be offered by small private companies. This was a very new and different model.

Meanwhile, In the United States, in Kansas City Isaac Wilder has an urban variant of guifi.net where for a tiny tiny fraction of Google's investment, Isaac during the past year, has been established a mesh network of basic connectivity in the poorer parts of Kansas City. Here, as Anita Dixon points out in the Verge video released in September 2013, the idea of paying \$70 a month for Internet service is hugely beyond the means of anyone living in the parts of town along Troost Avenue. Consequently, Isaac has started out by having to establish bare-bones conductivity for citizens who otherwise couldn't afford any commercial offering. At the same time he understands that giving a person a refurbished computer for \$50 and two classes in digital life skills for \$10 is a step in the right direction but not a long term answer. Connectivity alone for residents of these Kansas City neighborhoods will not be something that makes any kind of economic difference for the part of the city in which they live.

This is where the Living Labs ideas of Artur Serra and the similar, but much more generic, ideas being developed by Marc and Jenny in Oakland California that I will describe below open up the possibility of giving ordinary citizens tools by which they can take back, potentially at least, control of their local neighborhoods from the large corporations that do a better job of extracting money from the local economy than anything else.

What we will see in part one of this issue is that Artur Serra is doing a job in Catalonia that absolutely needs to be done. However it is a job that, because so far he has been unable to make an alliance with guifinet -- something we hope that will be changed -- means that he has perhaps restricted himself in difficult ways. There as well as in the US, needs center around the necessity for a local economy under local economic control to provide a basic income, education, healthcare and a place to live to its citizens who are trying to better their own lives.

This is the greatest difficulty that we all face, especially in urban areas, where we tend to need jobs and income from corporations whose economic goals are more oriented to enriching their shareholders than to enabling their customers to build survivable economic platforms in the urban areas in which they live. This is a huge question to which we can offer no adequate answer. [Indeed in November 2013 Boeing in Seattle offered only insult to its citizens.](#) After winning a 8.7 billion dollar tax subsidy from Washington State designed so that the carbon fiber version of the 777 would

be build in state, Boeing promptly asked the machinists union to vote on a eight year contract with raises of 1% a year at a time of record profitability when the members of the Boeing executive suite were getting more than 20% a year. Two to one the machinists turned down their employers offer. The corrupt hacks inside Wall Street and Washington DC simply do not see that this is not sustainable.

Oakland California People's Open Net

However, in getting to know Jenny Ryan and Marc Juul in Oakland - as readers will see from the second part of this issue - I've learned of groups of independent citizens who have created, largely on their own, their own spaces and operational groups that are making it possible for hard-working young technologists to build their own infrastructure and their own platforms for local citizen involvement, self-governance and self-protection. These are all very difficult questions to which there are no short simple and easy answers.

I am sure that Artur, who strikes me as a very open honest and outgoing person who is genuinely sincere about the goals he follows and preaches, is beginning to see the kind of situation his middle institution pathway has locked him into. It is a situation where with new books like [**Open-Source Lab: How to Build Your Own Hardware and Reduce Research Costs**](#) coming out, [the costs of building infrastructure](#) are declining and the very middle person role that he plays is being disintermediated. Meanwhile, developments in Oakland California appear to be going on in a more or less spontaneous direction without any single person or group in a leadership role or with people taking on leadership roles in an ad-hock fashion as situations demand it.



The i2cat building in Barcelona

i2cat and Living Labs

Preface: Wither Grant-funded Sustainability?

What we have here in i2cat is an example of the all too common situation where academic researchers go to government entities that, increasingly are dependent on private-sector grants. When they are made the private sector gives the money on behalf of “pre-commercial” research. The grantee’s research will inform the grantor what must be done to launch a viable commercial product.

When such grants are made, they become examples of a private company taking advantage of what is written about in [The Entrepreneurial State: Debunking Public vs. Private Myths in Risk and Innovation](#). That is to say taking advantage of public monies invested in real research and innovation where increasingly risk averse private capital would prefer not to go. The point is well made in this book about the technologies on which Apple computers' wildly successful i-phone incorporates government sponsored technologies that have allowed Apple to become hugely profitable and technologies where in turn Apple uses every possible loophole to avoid paying any taxes on its profits to the very government research agencies whose investment in the very the technologies on which Apple depends in the first place to become profitable.

But once these grants are in place, as John Day describes in his critique of computer science as craftsmanship rather than research, the grantee's continuing health becomes dependent on keeping their corporate sponsors or venture capitalists happy. What happens is that you develop an organization with employees and a payroll. The existence of the resulting organization is dependent on doing corporate-sponsored research something that, before the financialization of the global economy over the last 25 to 30 years, would have been done in corporate laboratories but now with the new relationship between corporations government and universities, it has seemed to be cheaper to either shut down or greatly reduce in size internal corporate research and development and farm it out on a grant basis to a new set of laboratories contained in public universities funded by taxpayers within their respective nation states.

I have spent time in reading the [i2cat 2011 Annual Report](#) which, according to Google, appears to be the most recent released. There it becomes rather clear that i2cat is a kind of corporate sponsored technology development platform paid for by grants from approximately 75 different corporate partners. See pp.52-57 below. Of course, if one starts with MIT's world-famous media lab, this is for the most part the way things are done nowadays. But what seems to be missed is that he who has the money calls the tune. **Marc Juul** adds: This is why the Oakland groups (at least the ones we're involved with) don't allow recurring grants from the same entity to fund any critical part of operations.

In the case under debate - namely Artur Serra's Living Labs - I have not been able to determine by looking at the *2011 Report* who his sponsors are. During my visits on-site in May of this year it was pointed out to me by several people that i2cat relies on two significant fiber rings that stretch through Barcelona and I believe, but I am not certain through, other parts of Catalonia. What I am so far unable to determine is **who controls the fiber in question?**

At the most basic level it seems to me that these fiber loops are the physical foundation of the separate i2cat "platform" that Artur eloquently describes in what follows. But in one sense **how** this is a separate platform is less clear. And certainly the network that runs on on this fiber and using City of Barcelona wireless links as well and yes perhaps even some guifi.net wireless links running the basic Internet protocol. In other words there is nothing here that is especially unique except for the fact that it is available to and will carry the traffic all of i2cat's corporate-paid-for projects.

Artur comments: This is unfair. The corporate world doesn't pay for the i2cat research at all...unfortunately. The lack of innovation culture in the Catalan or Spanish companies is a burden not a help. i2cat was born in 1999 as an open and cooperative effort started by a group of university professors of UPC and a "crazy" anthropologist, that got the support of a small regional government. The Generalitat, had no special competency in working with university people in R and D. But we got together and talked about mutual benefit that could come from a voluntary effort with some final monetary contribution of a bunch of companies that expected to sell to the Generalitat their technologies. This is the true origin of i2cat.

Sorry but Guifi.net didn't exist at that time. What did exist was the concept of "community networks". I personally participated in the building of BCNet, the community network of Barcelona. In the 90s by community networks we understood the opening of Internet access to every citizen. This is what I did in Raval, helping to [create RavalNet](#), that still exists.

Editor's comment: As Michael Gurstein explained to me on November 5th this digital outreach is precisely what Artur and many like minded people were doing world over in the late 1990s. Many of their networks were called telecenters and were somewhat like laterday internet cafes except that they provided services for free.

Artur continues: i2cat was the creation of an experimental infrastructure created by a coalition of academic, public and corporate members. This was a revolution at the end of 90s in Spain and Europe. At that time we had only NRENs, as service networks for researchers. Telefonica participated in the early part of the project but then they didn't want to be part of i2cat Foundation in 2003. The Telefonica representative offered to give full support to i2cat if we expelled the rest of operators. We said "no". This is an open cooperative effort. You cannot criticize the role of the corporate world as a whole. Sorry, but without the "commercialization" of the Internet, bravely supported by Vint Cerf using MCI, Internet not have been able to expanding to its level 2 billion people of today.

COOK Report: After 15 years of internet expansion, it becomes rather hard for the outsider to see **(1.) who sets the rules** and **(2) what the rules are.** When on May 6 2013 Artur first explained to me the Living Labs concept of citizen involvement, the idea seemed outstanding. And it also seemed, in view of the fact that Catalonia had given birth to guifi.net which is really the ultimate global expression, at this point, of a citizen built network, that the most obvious question was why was there no cooperation between the two? Why did they not share each other's infrastructure unless corporate sponsored entities such as perhaps Vodafone, ORANGE and don't forget mighty Telefonica saw such sharing as a threat to their private networks where, because of their control over the last mile, they could charge exorbitant prices.

I started making many inquiries and in the process of doing so I'm afraid I've stumbled on the cobwebs of past misunderstandings. The [EU Bottom-up Broadband program](#) in which guifi.net is a participant had an open call in May for follow-up proposals. Artur told me that guifi.net would be welcome to participate but when I went to guifi.net, they told me that proposals for collaboration in the past and gone nowhere because i2cat insisted that guifi.net pay a membership fee that guifi.net was unable to pay.

Perhaps this time it could be different? Toward the end of my stay I met [Miquel Oliver](#) who during the last 10 or 15 years has played a major role in icat2 and who was running the call for new proposals. The suggestion was made that if Artur would fill out a proposed plan for extending Living Labs citizen access to those dependent on the guifinet infrastructure for their connectivity, Artur would be given a PhD student to run the project on his behalf. I spent the last night in Barcelona talking with the proposed student about the possibilities. But unfortunately apparently the call died without the proposal ever being filled out.

Now virtually six months later having written out my research on guifi net I have turned to the interviews that I had done with Artur about Living Labs and I have been pleasantly surprised by Artur's friendly responses as readers will see from the following text. Artur is saying in effect that he had not adequately understood what guifi net was and where it was coming from, but now that he does understand, he is open to the idea of real collaboration once more between guifi.net and i2cat infrastructure where by means of peering of the two networks the ordinary citizen will have network conductivity and bandwidth adequate to various programs for innovation. This is all very well and good and the fact that the [EU sponsored Confine project](#) that guifi.net also participates in is in the final two weeks of its own open call is also fortuitous but the question now becomes one of what will happen?

Will Artur Serra and Sebastià Sallent meet with Ramon Roca and will they offer an open door to guifinet in the way that it seemed last May might have been possible? I really don't know. Of course I really certainly hope they will. I asked this question rhetorically in an earlier draft. They did meet in Thursday November 21 for a long working lunch and the outcome was good. Roger Baig sent me this summary on November 23: "The meeting

was positive. The outcomes in summary are: **1.** i2cat proposed to study the possibilities to incorporate Ramon/guifi.net to the i2cat Board. This is work-in-progress. **2.** i2cat proposed to collaborate doing some research: - For guifi is ok. The network is opened to everybody (as long as the agreement is respected) to do what they want. There are already some examples of this sort of collaborations (i.e. CONFINE) - The main fields of interest in research right now for guifi.net are socio-economic development and governance." **Editor's comment** - outstanding!

By way of background - earlier I had asked: ***Who controls the I2cat Infrastructure?*** For example who owns the fiber in the Barcelona loops? Does it belong to Telefonica; or to Orange; or to Vodafone or to someone else or even whether i2cat may be the owner of an IRU? When one is talking about citizen participation and about public or national interest, it seems to me that these are fair questions.

On November 5 **Artur** replied: "The members of the Foundation have put parts of their infrastructure in the hands of i2cat. This means, the telecom operators (Orange, Vodafone,) the public institutions that have fiber or wifi (City of Barcelona, Generalitat of Catalonia) and the equipment is from CISCO, Alcatel and other telecom providers. No secret. ***Who controls this infrastructure? The i2cat Foundation, the Board, the Delegate Commission and the Directorate. The principles are clear: we are using this infrastructure as a laboratory for doing network research and innovation.*** We don't provide access to commercial Internet, like the NREN in every country." Reading this **Marc** wondered: if this infrastructure is limited to research only, how is it interesting to guifi.net or the wider community? **Editor:** I would add that the explanation would likely be found in cultural differences and a very broad definition of "research."

COOK Report: What then is happening? We have Artur who has some of his students now occupying ICT related positions with Barcelona City Government talking to the city government about doing new and innovative things on behalf of giving citizens broadband connectivity. However, that connectivity is being discussed in the midst - in part at least - of meetings with Cisco executives with city alliances with companies like Telefonica being discussed in the background and in the material that I've been able to review, discussions with the citizen owned and operated and built infrastructure known as guifi.net simply do not so far appear.

In some sense I must apologize for asking the questions I have as a part of this obviously non objective essay. However, after a decade of watching the FCC, our regulator unabashedly sell our public assets like spectrum to conglomerates like Verizon and ATT who pay money to keep spectrum out of service in order to charge more for what they do use, I become cynical. But given Artur's further elucidation it now seems that i2cat was established as a kind of co-op, where the government, the university and the carriers agreed to share resources. Not bad. Perhaps, here I express more cynicism than it deserves. Artur says he agrees. As for myself I wonder how much is cultural. There

certainly are differences between Spain and the US. Having seen what I have in the past four years, my repugnance for the corprocracy and the Federal Reserve becomes every stronger. That the Dow and S&P Averages hit all time highs yet again on the 50th Anniversary today (11/22/2013) of Presidenty Kennedy's assasination thanks to the Fed's Quantitative Easing is - to me - morally repugnant. Artur says: "Collaboration is possible between the the two worlds, it is not necessary to have another war. Just step-by-step openness and changes. I think I have changed more than you in this wrestling exercise." I certainly do give Artur credit for arriving at a better understanding of guifinet as well as for initiating what we must all hope will become a fruitful rapprochement between i2cat and guifinet.

Certainly what i2cat is doing is good and commendable. But I certainly do not believe it depends on any kind of a special platform at least not in a technological sense. What it seems to me that it does depend on is fiber infrastructure contributed in 1998-99 by i2cat's founding partners. While, as Artur has made clear, the process and purpose of its design in the eyes of those involved was very special. My current level of understamnding is that it is established and run as a "co-op" by its members. Non profit foundation beingthe operative term.

A Weakness of the Triangular Relationship?

I am concerned that Artur's triangular relationship composed of the University, private business, and city government will ultimately be controlled by private business because of course that is where the money is, especially now that governments in Catalonia due to austerity have no funds left to invest in the public good. So how Artur's triple helix can ever become a quad helix that includes the ordinary citizen on terms that are decided in any way - other than by private corporations, I'm afraid that I simply do not understand.

In my opinion the most important issue is who benefits? The global financialized ICT corporation? If the ordinary citizen develops new technology that has market place value, who owns it? The citizen or the owner of the fiber over which the bits representing the effort of the citizen travel? When citizens build their own network infrastructure, can global tech firms put up walls to segregate the product of their minds from those who use their ownership of the turnpike to keep control of the peasants they favor as opposed to the ones who took things into their own hands and built their own network?

On November 5 **Artur** replied: I agree with you that Triple Helix is not enough. That we need to go beyond that. The Future Internet will be more and more in the hand of the citizens. I accept your criticism that i2cat has been too slow in offering Guifi.net an open collaboration. It is time to change. Although this collaboration has been offered to them in the are of living labs. Since 2006 we know in the living lab movement that the future of Internet will be citizen driven.

This is why i2cat proposed to Guifi.net to be part of ENoLL, European Network of Living labs. It is clear that the funding model of i2cat is still too dependant on European Funds and that his limits our efforts. Nevertheless, I have to tell you that thanks to our independent way of thinking in relation with the telecom operators, we have been ahead of the rest in areas like UCLP with Bill St Arnaud, and now in the Open Flow and Software Defined Networks. These are new technologies that could fit perfectly in the Guifi.net infrastructure.

This is why I think we should open a new phase in i2cat, adapting ourselves to a more citizen-centric Internet with the help of Guifi.net. In the area of Living Labs we already do it. We need only to match the social and technological approaches to convert Catalonia to a truly living lab of Future Internet. These questions are the outcome after spending three weeks wrestling with Artur on the original interview text that follows.

The Origins of i2cat

Discussion of May 6 and May 14 2013:

Serra: Let me explain how what we are doing complements what guifi.net is doing.

While our roots are found in the research and education Internet, we came on the scene after the commercialization of the Internet in the early 1990s. We focused our direction on the premise that, although the arrival of the commercial Internet was a real, an experimental Internet must also be maintained and nurtured. The purpose of the experimental net would be to transfer all the new developments and improvements and protocols and new approaches to the commercial sector as they matured.

Of course there was also a large anxiety about what we were doing because all the parties feared that what we did would be done in competition to incumbents like Vodafone and Telefonica. Now these events were going on in 1995 and 96 as Internet2 was getting started in the United States. While in the mid-to-late 90s, in the United States, you actually did have some competition, in Spain at this time competition did not exist. Then as now Telefonica controlled 90% or more of the deployed fiber in Spain. It was in this context, that we were able to build an experimental platform called i2cat by means of which we gave our Internet researchers access to the Internet. In doing this we even had some conflicts with our Anella Cientifica, the Catalan Regional Research and Education Network.

The [2011 i2cat Annual Report](#), points out that I2cat is founded on a "strategy of driving technology transfer with the aim of strengthening the development of new products and services and promoting economic activity." It continues: "The aim of i2CAT is to establish itself as a national and international point of reference in research and innovation, specialising in Internet technologies with a model of open innovation and an agile and efficient structure thus providing value to both the research groups and businesses. Artur explains

that i2CAT has an international mission whilst continuing to provide solutions for industry and the local community.” We work often on a contractual basis with several dozen ICT related companies and users bringing new product through the research phase and into the commercial market. **Editor’s comment:** Of course before the 1980s when Ronald Reagan and Margaret Thatcher poisoned the Anglo-American well with their privatization of public resources, technology companies did their own research in house and did not expect the taxpayers of their respective countries to foot the bill.

Artur continues: Consequently, the platform we built was very different than elsewhere in Europe. In the Netherlands Kees Neggers built SURFnet as a network for research. We built i2cat as a research and experimental network. Access to innovation was open to everyone. It was open to everyone in cities and all industrial sectors advancing the idea that anyone, even someone outside the formal boundaries of the University, could be an innovator on the Internet. . We connected even our opera house, El Liceu!

Because the Internet, had its origins in a experimental network (ARPANET) developed by researchers, experimenters, and innovators working for the government it was always developed apart from the telcos and their way of doing things. The Internet is a kind of work-in-progress experimental service that we want to keep. But from the very beginning we wished to broaden the research community that our network served. This community could be not only telecom researchers but people in small companies, people in healthcare, people in municipal government, people in networks like guifinet and also ordinary citizens. This is the foundation of our belief that Internet experimentation should be available to everyone. This is why we built i2cat as an open experimental infrastructure in Catalonia. This open experimental platform that is I2Cat allows us to operate free of conflict with the commercial telecommunications providers. This is i2cat’s secret.

COOK Report: How then do you move the dividing line of what is permissible to do closer to the public then appears to be the case with Kees Neggers and SURFnet? How did you do that?

Serra: Let me try to explain. Europe didn’t participate in the ARPANET as experimental network. The public-driven network research community has been very weak in Europe. We had telco labs, but not an “arpanet community”. When the Internet arrived in Europe during the era of the National Science Foundation Network in the 1990s, it arrived as NREN, National Research and Education Network as the Internet was known in just prior to its commercialization in late 1994.

When you enter the Internet in the context of National Science Foundation funding of the NSFnet in the 1990s, you are entering a universe created to function as a tool for scientists. Consequently, by focusing exclusively on scientists within an academic university context, the network that results can never be a strategic resource for the

population as a whole. Our position is that the Internet should be a strategic experimental infrastructure open to the entire nation and not just to academic scientists.

The Community Called Living Labs

But the Internet is essentially a new infrastructure. It impacts the society, but it was not a new social structure. In the 90s, the new Internet Society announced that it would create the [Internet Societal Task Force](#), a complementary body to the IETF, just for dealing with this issue. At that time, I was one of the founding members of the Catalan Chapter of Internet Society. This decision initiated an interesting and frustrating era.

Vint Cerf responded in the October 1999 interview linked to above: "The Internet Societal Task Force (ISTF) was set up to consider several problems, one of which is how to make the Internet accessible to everyone.

"Making the Internet accessible to everyone may require that governments change their regulatory policies to allow competition. Monopolies tend to move slowly when it comes to innovation. Having a liberal and competitive environment allows new ideas to enter the system."

"It also allows private capital to flow in. This need not come from government resources at all. That is a good thing because the private sector makes the investment in the continued growth of the Internet. I am convinced that as long as the barrier of entry into the Internet business is low, there will be lots and lots of entrepreneurial experiments taking place to try out new ideas on the Network."

COOK Report: During the 14 years that have followed this interview things didn't work out as Vint had hoped. Government regulatory policies in the US have stifled competition. Because ISP provision has been monopolized – or very close to it, we have an infrastructure that has not been well invested in. Cost of entry has soared because the revenues of the handful of surviving service providers are in the high tens of billions per year. We now have the opposite of a liberal and competitive environment that is far more friendly to rent extraction than to innovation.

That must have been frustrating.

Serra: Yes. But other opportunities are emerging. New social structures of innovation are emerging, for example the living labs. There are new societies in which everyone can participate in the innovation process as an individual. It is an open social community of innovators. From a physical infrastructure, it has become a social structure. It is open to everyone, from a small village to a big city to a university to a hospital, to a private company. As an innovator you can participate in this new social structure that rides upon the Internet. In fact, Guifi.net is a prime example of this new kind of social structure. While

their goal is to develop a new digital infrastructure but their main novelty is their new social model of organizing and building such network as a DIY network.

COOK Report: But the telcos don't like this - They feel that their fundamental interests are being challenged. Where do you draw the line between what they can influence and what they cannot?

Serra: Before this, the line has been drawn at the point of experimental on one side and commercial on the other. What is needed now is a new wave of innovation in the networking models themselves. The national research and education networks (NRENs) and commercial networks still work with the same models that we had twenty years ago. We need to explore new models of networking that are aligned in the direction to peer-to-peer infrastructures.

Guifi net is trying to do so. As I said before, in my opinion, Guifi.net more a social experiment than a technological one - this is why they are getting money from the European Commission because they are offering a kind of new model. A model of do-it-yourself telecommunications infrastructure as an hypothesis for the Internet of the future. Internet's new infrastructures should not repeat the bad example of the telco monopolies of the past but rather they must allow the emergence of new networking architectures and peer-to-peer models.

Guifi.net is a community of people, that creates its own infrastructure. And, in that sense it is more a living lab than a telecom operator. In fact, it was recognized by the [European Network of Living Labs](#) (ENoLL) as a living lab before it was recognized by the Spanish Telecom authorities. It belongs also to the [Catlab, the Catalan network of living labs](#).

Finally, there is an evolution of research in the Internet that favors the possibility that each of us could build our own piece of the network based on software. At this moment, i2cat is working in different projects in the field of NAS, network as a service. We have built a [Open Naas](#), a *a toolkit for IP Networks as a Service*. In that sense, there is the possibility that Guifi.net effort and the i2cat technology could converge.

COOK Report: With these new forms of organization every time you try to think in terms of the old boundaries, you have difficulty. Take for example my 2010 *Building a National Knowledge Infrastructure* about SURFnet. I have there a considerable discussion of a new area called "pre-commercial" that serves really as the boundary line between experimental and commercial. It is within this area that we are discussing where the boundary line should be as to who can do what and under what conditions I think?

Serra: The discussion in Europe is that, if you want to invent a new kind of Internet, you need this experimental gray area. With the commercial Internet you cannot do it. You cannot break commercial Internet because it is a service for which people are paying. If

you cannot do much with the Geant networks, and you need to build a new infrastructure. The question becomes how big should it be and how many people can participate?

COOK Report: Of course I cannot speak for Kees Neggers but I have the idea that, if he were sitting here, he would consider the Geant approach in Europe similar to what in the US we would call the Internet2 approach. The SURFnet approach I think is much closer to what we are talking about here?

Serra: Yes but this is really a strategic option just for the Netherlands. However, if you think that the society is becoming a lab for innovation, that new generations are more and more engage in innovation and entrepreneurial activities of all kind, you can imagine that a new Internet is possible, more experimental and open to everyone.

Because now with projects like Wikipedia and fab labs, there is an explosion of innovators in every city in the world. This is what we are building in Barcelona now **the Barcelona Laboratory -- the City as a living lab.**

When you have this arrangement, you can open your infrastructure to everyone in the city and ***you can say to corporate sponsors here is the community and the platform that can yield widely innovative benefits.***

Guifi.net does not differentiate between an experimental platform and a commercial platform. We do. The Guifi.net model is quite unusual because they are neither a private company nor a public company. In that sense they are working in a new territory where may be the distinction between experimental traffic and commercial traffic has less relevance. Looking back, perhaps the mistake of i2cat in relation with Guifi.net has been our not understanding this "third way", considering this community more a social innovation than a technological one. If we take this point of view, Guifi.net doesn't consider itself forced to behave as a telecom operator separating the commercial traffic and the experimental traffic. As a social organization, it seems this is not in their DNA.

Our situation has evolved differently. As i2cat we have an agreement with City of Barcelona and its digital infrastructure. ***Years ago we convinced them to separate the service traffic from the experimental one, giving them the opportunity to be part of i2cat platform and offering us the opportunity to cover the entire City.*** I will tell you now how we are working in the City of Barcelona to open up the infrastructure by including guifi.net in experimentation by citizens. We are looking at the City infrastructure, the guifi.net infrastructure, and the Orange infrastructure for 4G because you can now have experimental infrastructure for private companies.

For example look at this center on the next page. This factory in the city of Barcelona is called Fabrica de Creación. We have connected this to I2Cat infrastructure with 10 Gb links and it is open to every citizen to come and do innovation.

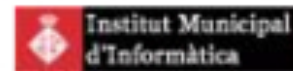
Opening digital infrastructure for innovation



Connecting Cultural Centers Fabra i Coats a 10GBps

As a starting point in Barcelona's position as a leader in the use of science and technology for the creative and cultural industries catalyst, BcnLab have considered strategic a broadband interconnection for a cultural creation space (Fabra i Coats).

Connected factory building at 10 Gbps with experimental network experiments, and has enabled a node of WiFi broadband network "(Guifinet)" for citizens.



We have connected i2cat with the infrastructure of the City of Barcelona and we are in the process of connecting with guifinet. All these infrastructures are open to the citizen for innovation. We have mapped not only all the Wi-Fi hotspots of guifi.net in Barcelona but also those belonging to the City. All of these Wi-Fi hotspots are open to citizen innovation and participation.

The commercial providers cannot complain because we are doing only experimenting with the citizens. The idea is that we have a small window of opportunity, because the Internet is expanding not only in service but also in experimental possibility, because the people want to do still more new things with the Internet.

Entire Cities as Citizen Laboratories

We are working out with entire cities as living laboratories. Do you know [Anthony Townsend](#) from New York University? He envisions a planet of civic laboratories. There are now some cities like New York and San Francisco for example and others who are installing Chief Innovation Officer's. **Marc Juul** comments: even more people are making the mistake of attempting to create bottom-up change from the top down.

San Francisco: The Office of Civic Innovation



<http://innovatesf.com/>

13

When they say they want New York City as a laboratory, we need to ask what does this mean? And I believe it means that they are saying they want the cities to be open laboratories for any kind of Internet innovation.

You can do Wi-Fi experiments; you can do fab labs; you can do health-related software activity because the city's are finding for the first time that they need innovation policies.

Global partners: NYC Innovation Initiatives



In New York you have people like Jerry Hultin, ex officio President of NY Politechnic, who came in October 2012 to Barcelona and said "hey we are interested in what you're doing." Jerry's institution is called New York Politechnic. Previously it was called Brooklyn Polytechnic University. Jerry helped merge the two institutions and the result - New York Polytechnic - now it is a school of NYU. We are working with three or four large cities around the world to find out if we can open up the urban infrastructure as a citizen's laboratory.

COOK Report: there's a group called Smart Cities I believe is this similar to what you're talking about?

Serra Oh no. Smart cities is currently more top-down we are talking about bottom-up. We are talking about a research driven approach between universities, guifi.net, the city and the citizens of Barcelona.

COOK Report: But research in universities certainly implies top-down? Where is the balance?

Serra: The best combination is all three. Because we are at universities we do tend to be top-down. Guifinet is bottom-up and the cities are in the middle. You need a strong argument to tip the balance of power into a truly bottom-up direction.

In Spain we have a true monopoly problem and that is Telefonica. This company is invested in by La Caixa, the large banking group. Telefonica of course did not want Xarxa oberta and said to the politicians: just listen to us and we will do whatever you want. If you want 10 gigabits, I will give you 10 gigabits. The Local Ret group did not have the strategy to make an argument against the global monopolies.

We have spent the last 15 years trying to figure out what should be the future of the Internet. We have tried several ways. The Kees Neggers way; the Internet2 way; and ultimately it seems that the only way is to open the Internet to citizen innovation.

Origin of the Living Lab Concept

The idea of living lab was started at MIT by William Mitchell and we are expanding that concept of open innovation and living labs to cities and to citizens. Here is the Wikipedia definition: "A **living lab** is a research concept. A living lab is a user-centered, [open-innovation](#) ecosystem,^{[1][2]} often operating in a territorial context (e.g. city, agglomeration, region), integrating concurrent research and innovation processes^[3] within a public-private-people partnership.^[4] [William J. Mitchell](#), head of the Media Lab's Smart Cities research group and former dean of MIT's School of Architecture and Planning, died on June 11, 2010 after a long battle with cancer.

The problem is that some of the people who are interested including the future Internet programs do not have the kind of infrastructure that we have at i2cat. Because we do not have the R&E network restriction to the university-based scientist we can easily further this kind of collaboration and achieve a bridging between top-down universities and bottom-up people.

We have been working on this for quite a while. But, until now, we did not really have the strong argument that it was possible for ordinary citizens working with not so expensive equipment to do serious innovation.

COOK Report: The point is that, in the past, the users have had not much other choice than to be passive recipients of whatever service they can afford.

Serra: That's true. But now in the cities we have these formations of innovative "tribes." The Open Data People. The Fablabers. The Wikipedian's. The Arduino people – to name a

few. They do not belong to any University or to any big company. They are just people who organize amongst themselves. And with a Barcelona Living Laboratory we can offer a link to them and facilitate what they've already begun to do. Guifi.net is a good example of this.

Marc Juul disagrees: this shows that he does not yet understand. The Open Data people are top down pretending and trying to be bottom up, as are the fablab people. By "arduino people" I'm sure he means makerspaces, which are more bottom-up but for me embody the co-optation of hackerspaces into "politically safe and uncontroversial" makerspaces, which are little more than hobby clubs.

Artur continues: We now have many groups of people who like your friend Isaac are doing informal innovation and this is thanks 20 years of the open Internet.

i2CAT Foundation, From Triple Helix...



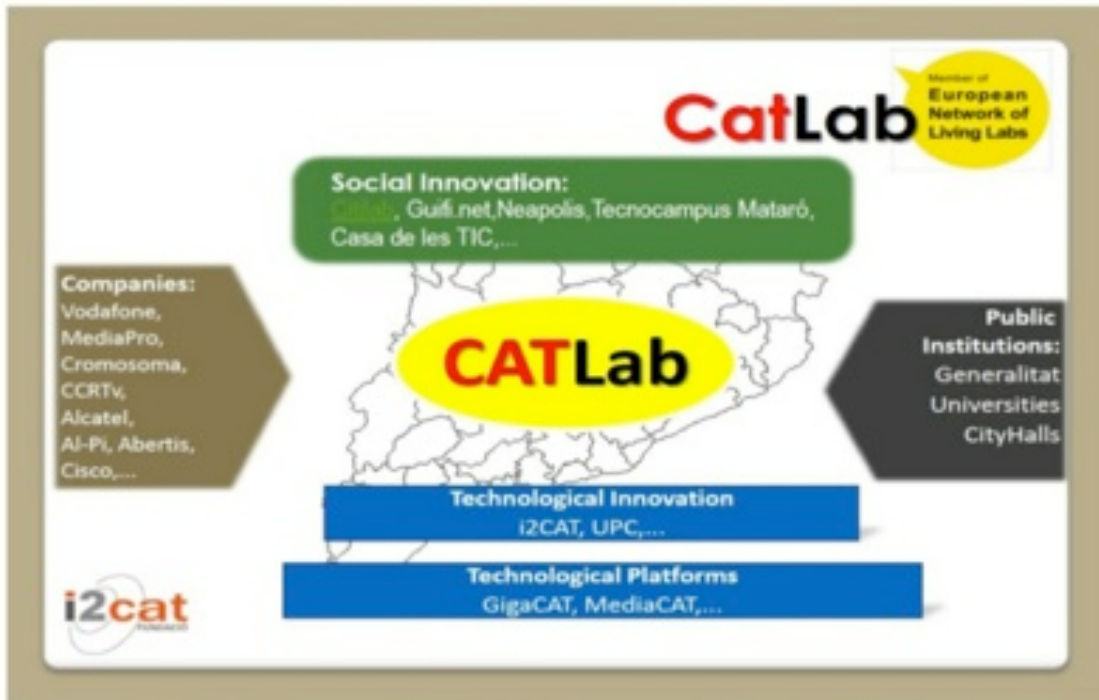
FI-CONTENT 2 Kick Off Meeting, Paris, 16-18 April 2013

Now the formal system of innovation is three-tiered – the big universities, the big companies, and the big institutions. But this is changing. Beyond this, an informal system of innovation is emerging, composed of all these groups organizing themselves. This new system is called the Fourth Helix. I believe that you need some kind of collaboration among

these groups. We are trying to put them together and into we call the Barcelona Living Laboratory and to figure out whether it should be a corporation or nonprofit.

.... To Fourth Helix

People, Private, Public Partnership



We are thinking of shaping our Barcelona effort by following the model offered by the Barcelona football club. This is a football club built by its members. They have approximately 100,000 members to undertake activities in support of the club. But we are not trying to get the citizens united against the big companies. This is not Los Indignados. We want to make a framework that can be used by everyone. Local citizens, local government, and big companies and everyone involved in research and innovation.

Marc very vocally disagrees: this is a direct attempt at co-opting what we are doing as just another pillar of what they are doing.

Artur continues: European, and I believe American, cities are open environments. You may have a lot of closed, private, shops within them, but it is not allowed that one shop be the owner of the whole environment and set the terms for everyone else. This is our model. I am hopeful because we now have a new generation of students graduating and taking positions within those cities who understand the importance of what we are talking about and can and will explain to those who run the city's why they need to pay attention. And paying attention is very important because as you say given the way the economy is and working conditions are if we don't make some collaborative breakthroughs, we could

be faced with very very difficult problems of social and political strife. **Editor's comment:** from the point of view of March and Jenny, Artur's role is top down because it is one of explaining to the parties what they must do. In Oakland as readers will see the parties know what is required.

Artur: Anthony Townsend is working at the NYU Wagner School in New York University. You should get to know him.



When the Internet Arrived in Europe It Was Too Much Focused on the Scientist and His Research

May 14 - A week later we continued the discussion.

As I earlier said: We never knew the Arpanet era in Europe and when things took off, the environment was already the one of the science oriented NSFNet. Consequently all European policies have been centered on the goal of supporting Geant as a tool for science.

This is the both strength and weakness of SURFnet: they did not know the substance of ARPANET.

So the European model is twofold: on the one hand Geant as a tool for science and on the other hand merely the commercial Internet. However now we see that, after 20 years, the European Union is becoming interested in an experimental Internet and in programs like Genie in the United States. And it is now, after 20 years of the commercial Internet, people are beginning to realize that there are shortcomings and **that we may need to really redesign the network. To achieve this redesign we need an experimental Internet in order to open the innovation community to everyone.**

The big question is it really necessary to redefine in the architecture of the Internet or not? RINA is one possibility. i2cat is working on one that envisions a planet of Internets. Van Jacobson is working on another possibility a content-based architecture. And now in 2013 we see that in addition to these technical architectural problems there are **also social and economic problems** that were not really considered at the beginning of the Internet because those involved have no idea how extraordinary rapid growth would be.

PPP Future Internet CONTENT+
BLC com European Testbed for Future Internet

The screenshot shows the homepage of the Future Internet PPP website. At the top, there is a navigation menu with links for HOME, ABOUT US, BROADCASTS, OPPORTUNITIES, DOWNLOADS, SERVICES, CALENDAR, CONTACT, FOLLOW US, and LOGIN. The main headline reads "THE FUTURE. NOW." Below this, there is a featured event: "Future Internet PPP event: Engage! Towards cross-border experimentation with European stakeholders" from Feb 28 - Mar 1, 2013. A "NEWS" section highlights the "Launch of CIP Project MobiCloud: 'Moving into the Cloud'". There are also sections for "BLOGS" with two articles: "The Future Internet: Policy Challenges in Creating European-scale Markets" and "Interim Assessment of the Future Internet Public-Private Partnership - May 2012". An "EVENTS" calendar shows dates 25 and 28. A "PROJECTS" section lists various initiatives like CONCORDE, ENVIRSI, F-ware, FInet, and OUTSMART. The URL "http://www.fi-ppp.eu/" is visible at the bottom of the page.

One of the mistakes we are repeating in our redesign of the Internet is thinking that the future Internet will be invented by the same kind of researchers that invented the old one, that is to say, mostly computer scientists and engineers.

SPECIFI is a project to open the field of Future Internet to artists and researchers from the creative industries. Our "arpanet" is called the Creative Ring: a network of artists creative people and computer scientists and engineers The goal is to imagine Internet as a new art platform. Remember the cinematograph? Back then it was a tool in the hands of the Lumiere Brothers but then George Melies created the cinema as an artistic show, and finally Chaplin, Murnau, Griffith created the language of movies, referred to as the 7th art. Why not consider Internet as the 8th art and beyond?

Projecte SPECIFI / Creative Ring

SPECIFI "Smart Platforms Enabling the Creative Industries for the Future Internet" project aims to establish a European Creative ring, which through technology and broadband connections, allowing the creative and cultural industries in the regions Catalonia (Barcelona), Flanders (Kortrijk) and Trent to experiment with new services and cultural and creative formats. With a total budget of € 5,774,002 where the EU has awarded a grant of € 2,887,000.

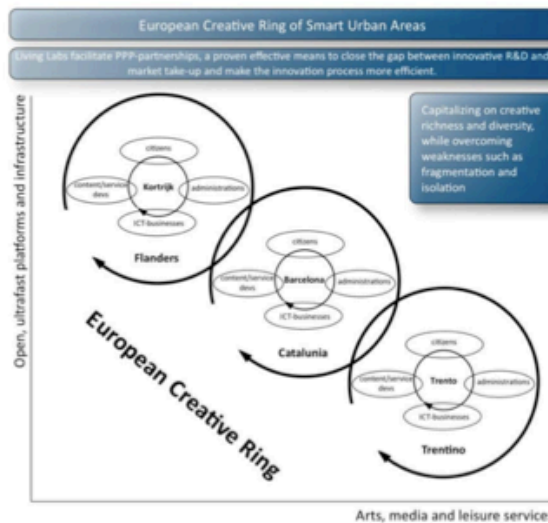
SPECIFI project aims to go beyond the concept of Smart City, Smart Creative City to not only innovate about infrastructure, sensors and technology. The knowledge, creativity and citizens becomes a very important role in innovation and to define the Future Internet.

Key activities in 2013:

- Signatura del Consortium Agreement
- Kick off meeting (Gener 2013)
- FIA event (Maig 2013)

Subvenció Consorci Català:

ICUB: 60.000 € 2013 – 60.000 € 2014 – 46.650 € 2015
 i2CAT i Gencat 164.900 € i 92.550 € respectivament.



Projecte SPECIFI / Participants

Catalunya:

- ICUB
- Generalitat de Catalunya
- Fundació i2CAT

Flandes:

- Interdisciplinary Institute for Broadband Technology
- Buda
- Stad Kortrijk
- The Egg
- European Network of Living Labs
- Alcatel Lucent
- Zeticon
- Belgacom

Trentino:

- Alcatel Lucent
- CREATE-NET
- Interplay Software
- Gruppo Editoriale Trentino

Grècia:

- National and Kapodistrian University of Athens

Holanda:

- Dialogic



Internet as a Platform for National Innovation Policy

Now it is necessary to look beyond the purely technical aspects of Internet and to consider its social aspects – in other words its social impact. It is important to realize that the Internet is changing the national innovation system within each country. The Internet is a laboratory for the economy for the society and so on. It is a laboratory for the field of social innovation too.

In around 1989 William Wulff at the National Science Foundation came up with the word collaboratory - a laboratory for collaboration without walls. The Internet is the infrastructure of such a universal kind of laboratory in that its effects are not limited just to technology or to the economy but focus on transitional boundaries across the whole of society. Internet is bringing a new culture of innovation to every aspect of society. The breadth of this impact means the whole society is becoming in some ways a living laboratory.

But Internet, The Net, is essentially an infrastructure. It cannot change the whole society on its own. We need to invent new economic, societal and cultural structures. We need **The Lab**, a metaphor for what the knowledge era can achieve: a new social structure that allows every citizen, every human being, the opportunity to learn how to innovate. Cities are beginning to discover that they need Chief Innovation Officers. The question becomes "What kind of innovation models they will follow?" Are they ready to bring ICT innovation to every part of the city government and into every aspect of the city's interfacing with the lives of its citizens?

Marc Juul comments again: the top down is only a co-optation of that. This sounds like yet another person/organization that are fighting to keep their position of power in the face of their rapidly diminishing relevance by grabbing on to what they see as the "new hip thing" but getting it all wrong in the process.

Artur continues: Please also note that i2cat is not the only actor in the living lab movement. You could talk with other international leaders of the movement like Jarmo Eskelinen from Forum Virium in Helsinki or Miram de Magdala Pinto in Vitoria Brasil. I can put in contact with them. I think that the Fablab movement could also be part of this global trend towards "The Lab" or "The Labs," as the **new social structure that could correspond to the Internet infrastructure**. Internet is for everyone and it can connect everything but it is not everyone and everything. It is just an infrastructure as Vint says and says again.

Nevertheless, human societies organize themselves at least in two other layers, social-economic-political structures and knowledge-ideological superstructures. The problem I see more and more is the danger of breaking the Internet if we don't do an extraordinary effort of innovation to change the other two layers that lie beyond the infrastructure.

Democratizing Innovation

Innovation is not the monopoly of the science and technology elite. It is not even the daily job of the energetic entrepreneurs. More and more it is the new language to be learned in schools and in cultural institutions, in families and civic centers, in hospitals and sport clubs, in urban and rural areas, everywhere.

Marc adds: I find that the people using the word Innovation are rarely the people actually doing it. It also has a very corporate/commercial association. **Editor:** I am not meaning to bash Artur and hope to be helpful by pointing out that there a widely divergent opinions. Certainly it is apparent to me that in the Bay area of California there is a whole other world beyond the one inhabited by the Chief Innovation Officer of Sn Francisco.

Artur: What you have here in the slide set is a bit of the evolution of the city of Barcelona The **city is trying to make a new strategy by combining urban planning, ICT and environmental planning.** This is the first time that this is happened. Normally urban planning has nothing to do with ICT nor with environmental issues.

But city management decided to put all of this together as a strategy for the Smart cities program. They want an alliance between the urban planners and the ICT architects. They want **“a city of self-sufficient neighborhoods. Ecologically sustainable and hyper-connected. Many small cities in a smart city”.**

Give humans a social/technological/financial structure, and they may use it until it collapses. Get humans to build and run their own social/technological/financial structures and they will never need you again.

Marc adds: Again, people see the problem but don't understand that you cannot build these things from the top down. It is like the old saying "give a man a fish / teach a man to fish". Give humans a social/technological/financial structure, and they may use it until it collapses. Get humans to build and run their own social/technological/financial structures and they will never need you again.

Artur: This is the new mantra of the city of Barcelona that they are building now with Cisco. Now Barcelona will have a laboratory of innovation with Cisco for this kind of smart city. They call it the "Institute for the Technology of the Habitat."

COOK Report: Well where big ICT business is found, you get **big companies like Cisco jockeying for city money by offering what look like free consulting services.** I found some interesting material on this – [including this report](#):

"I interviewed Josep Ramon Ferrer i Escoda, the Director of the Barcelona City Council's smart city and IT programme.

It was a relief, at first, to hear that Ferrer Escoda dislikes the concept of 'technology for technology's sake.' For him, smart urban planning is first and foremost about improving quality of life. Technology is simply a means to that end."

"Of course, we want Barcelona to be highly connected, with high-speed broadband and the sort of facilities that attract new businesses," he told me. "But we don't want to lose our identity as a Mediterranean city, and we don't want to change people's lifestyle."

"The Catalan city is placing itself at the forefront of the smart cities movement. It was one of the first European cities to use smartphone technology to make life easier for its citizens. In 2011, it launched [iBeach](#), an app to inform people which beaches are the least crowded and the best way to reach them. It now claims to have developed up to 60 apps designed to improve the delivery of other public services, including museum opening times, complaints to the council, and traffic information."

"Barcelona is also leading the new City Protocol Society, which was [discussed this week on Future Cities](#). In short, the City Protocol Society is a 200-strong network of city leaders, businesses, and academics that will aim to set standards for future cities and lobby energy providers and technology companies to roll out smart initiatives across the world. Cisco has already joined the movement, as have other businesses and representatives from cities such as Amsterdam, Buenos Aires, Derby, Moscow, New York, and Tokyo."

"The first step the Council took was to merge the resources it allocated for ICT, housing and infrastructure, the natural environment, water, waste, and energy into one department called Urban Habitat. This accounts for around 60 percent of the Council's services."

"The council's second step was to start forging partnerships with large corporates to launch smart initiatives. Microsoft is providing the council with a data system that measures the city's performance across a range of indicators, including energy efficiency. Gaz de France has installed small-scale, renewable heating and cooling plants in new homes, and the City Council is in talks with Cisco to rewire the city with ultra-fast fibre optic broadband. And, with Telefónica, it has launched a contactless payment system called Tap and Go."

"We like the idea of people being able to do everything from their phone," Ferrer said. "We call it, 'Barcelona in the pocket.'" [End of Cisco report.]

Editor's comment: Here we see the unfortunate payback of financialization and its attendant privatization of almost everything. Because the money now is in the hands of Cisco and not the university nor the city government, Cisco can in effect take over the public interest role and offer Barcelona the "gift" of its services because, after the financial predation of 2008, Barcelona has had no funds to put this sort of work out to any kinds of neutral bid. I will not soon forget how in November of 2007 I interviewed the director of Cisco's first program for the City of Amsterdam. A well known Arch-econ List member member wrote back to the list that Cisco was just acting like another phone company and advised list members not to believe a word of it. The Cisco executive

privately wrote to me how grievously he was insulted and that he would have nothing further to do with anyone. I regret to say I bowed to the pressure and removed the well known person from the list. The interview did come out and in February 2008 I did attend the kickoff meeting in San Francisco.

Serra: We need an Internet of cities which Cisco is helping to develop. We also have an agreement between the City of Barcelona and the Association of Mobile Phone Companies nytimes.com for the world mobile capital in 2018.

“But the Problem is that, in Some of These Initiatives. the Citizen is Missing. Citi-Labs

COOK Report: Amen. The quote from “Future Cities” that I just excerpted above shows that in spades. [The piece dates from November 29 2012](#) when you were getting your neighborhood groups together. And the big boys in the City Council; appear to be getting in bed with Telefonica, Microsoft and Cisco. The slogan “Barcelona in the pocket” has an interesting double entendre.

Serra: I see your point. But getting back to our efforts to make sure the citizen is not forgotten: Citilab was the first citizen experiment within the city of Barcelona, It is called “citilab” or citizens laboratory. We started it in Cornellà de Llobregat, one small city neighborhood in the metropolitan area of Barcelona, within an old textile factory and we have developed a community of citizens.



We work with musicians and make a Music lab. We work with digital artists, and we work with video games. We started a new project called Laborlab designed to “invent your job”. This is a program for creating new jobs. Now you use the Internet to “look for jobs” but what happens if you don’t find a job? You can do two things: One, you can complain. Or, two, in collaboration with other colleagues you can think about things that there may be a need for and invent your own job. **Editor:** There is a [third possibility](#).

Well there are the jobs associated with the old IT culture involved in website making and social networks. But then you have a new set of jobs associated with “makers” those people who bring Bits to Atoms. Fab labs which are related to making things with hands and not just manipulating symbols. And then there are a group of jobs associated with education and healthcare. And then you can use the Internet to reach out among families and offer the possibility for professional care of family members without direct state support.

As the state reduces money available for family support, families must fend more for themselves and one of the ways they are doing this is through immigrants from Latin America. There are younger people from Latin America who are interested in finding an opportunity to care for the older generation.

Another way is education. All the people educated in the building industry now have no jobs and need to be recycled. That means there is much opportunity to use the Internet for training displaced workers with new skills

Citizens laboratories are living labs that are innovating and training other citizens working on projects. In some respects they are branching out into areas that universities are very slow to deal with. These people are more dynamic in working with those areas. Fab labs started up, not within the University, but rather within these localized job oriented centers. You see an explosion, a lot of co-working space in Barcelona now and universities tend to be too slow to deal with these fast-changing solutions and technologies.

There are freelance possibilities where you have a project and contract people to get it done and, when the project is done, you must find new projects for them to work on. This kind of coming together and splitting apart we are now seeing in the world of technology projects as well. Prior to this it might have been where prior to this it might have been more stable by being focused on making a movie or a television program.

Project Based Jobs

This is how we are innovating in dealing with the employment of citizens in the City of Barcelona. Urban planning is done by big corporations in Barcelona. Open data is not yet a big business in the city. But when you move to culture, creativity, and artistic innova-

tion, there is a lot of excitement. This area is closer to the creative communities, civic centers, libraries, and facilities spread through neighborhoods and districts.

A new Area of the City of Barcelona



Consequently City Hall has created a new area of Culture, Knowledge, Creativity and Innovation. And they have created a new position for an ICUB Director of Creativity and Innovation for the City of Barcelona. Her responsibility as Director is that of fostering of new jobs and new activities for these freelance communities. Innes Garriga is a computer engineer in charge of this new activity in a department serving technology and young citizens.

We have discovered that this is not a unique aspect of life in Barcelona because other cities like New York and San Francisco are discovering the need to have these municipal chief innovation officer's. It's a way of having someone to take some responsibility to move innovation policies in the direction of the citizen.

And then we moved to this Barcelona Laboratory project where a potentially smart and creative city meets its citizens. What we are doing is giving a kind materialization to this model that I described before. The Laboratory Project is the organization that provide some focus for the city's efforts and does so in ways that the ordinary citizen can grasp.

Then it is important to move to the next layer of these relationships. This layer is the result of one year of work in relation to the idea of the Barcelona Citizen Laboratory and there is a short summary here of cities and laboratories committed to innovation in a transformative way and open to innovation systems and public administration. But at this apex of the pyramid you cover only a small percentage of the population. Now what we

are seeing in the cities is the emergence of innovation communities and this is all in the next layer of the pyramid: freelancers, entrepreneurs, fab-labers, Wikipedians. Arduinists.

A Big Innovative Party

a) The new innovative and creative communities.

- *By expertise: "arduinaires", "wikipedians", "Catdrois", "open source", fablabers, digital artists, citizen scientists, social innovators, digital designers, livinglabers, open innovators...*
- *By districts and neighborhoods: Sants, Raval, Gracia, NouBarris,...*

b) Plus the "official innovation community": Univ,corporations,SMEs, public labs,...

Normally these people are outside of the official innovation system. They do not have PhD's. They are just freelancers. This school system is more and more engaged with this kind of talk about the need to innovate. (See the blue slide below: The Innovation Ecosystem of the City)

This is a very passionate amateur innovative level. It is one that puts in contact the citizens level with that of the newly emerging professionals.. The majority of society is down here and what we are doing with the city of Barcelona is saying "okay let's try to put together these innovative communities that make up the official innovation system but do so with the goal of opening everything to every citizen because this is our goal." The final goal is the citizens at the bottom of the pyramid but we need to understand how the citizens can participate in this middle area.

COOK Report: But the direction is top-down.

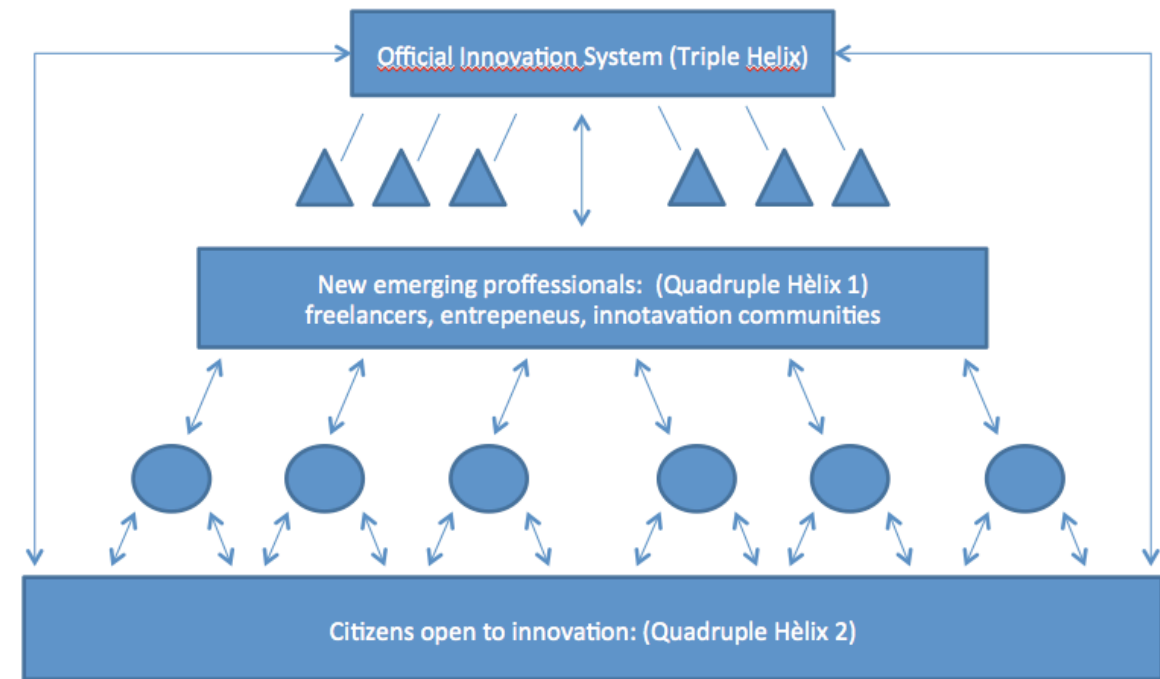
Serra: It is top down -- but it is also bottom-up.

COOK Report: How do you ensure the bottom up part?

Emerging Innovation Ecosystems Require a Change in Attitude on the Part of City Government

Organization Model

Emerging Innovation Ecosystems of the City



3

Serra: You ensure bottom up by changing the attitude of the municipality. ***The municipal people are not used to having to work with and trust the ordinary citizen.*** We are saying let's try to change the discourse, change the conversation. We are saying to the municipality that they should open a dialogue with the community. And if you do this well, you will enable the citizens to work with the municipality and with the Universities. This is a cultural change and it is the key to all the processes involved. ***It is possible to create a dialogue between these official institutions and these unofficial bodies.***

Is it possible to do this or not? We still don't know but we are trying to build this kind of trust and confidence. The way we started is that i2cat worked with -the City of Barcelona promoting this "political measure" finally agreed to by the Plenary Council of the City in June of 2012. The following is a screen shot of the first page.

We are coming from the Internet culture we know how this Internet culture works. But we need to do so in a way that makes an alliance between the emerging professional institutions and the citizens at large.

Government Measure**Barcelona Innovació. A programme to foster a culture of innovation in the city.**

Plenary Council. June 2012.

Creativity and innovation lie at the heart of Barcelona's plan for the future. The city's economic, social and cultural future in the coming decades depends on our ability to include creativity and innovation in our action, in one form or another.

Barcelona has an entrepreneurial and social fabric that has traditionally been attracted by innovation. There are manifold examples: the city has an entrepreneurial industry and foundation that has always sought to become more international; its scientific research parks have sought the best talent and strived for scientific excellence; and its cultural facilities and institutions have made the city widely acclaimed as a cultural capital.

And the first step in this alliance is that ***you as a city need to change the discourse. You cannot patronize people. You need to work with everyone on a peer-to-peer basis.*** We are here to say that, if you cannot accept the peer-to-peer dialogue, there is no possibility that this can work. They will consider you as the old elephant that does everything possible to maintain control. [**Editor's comment** and this is the reason that i2cat needs to set the example by peering with guifi.net when they meet in mid November.]

We are trying to create a peer-to-peer organizational infrastructure among these communities. In i2cat we have a public private partnership and have worked with a lot of communities. The Chief Innovation Officer of Barcelona is considered a part of these communities.

Organization Model

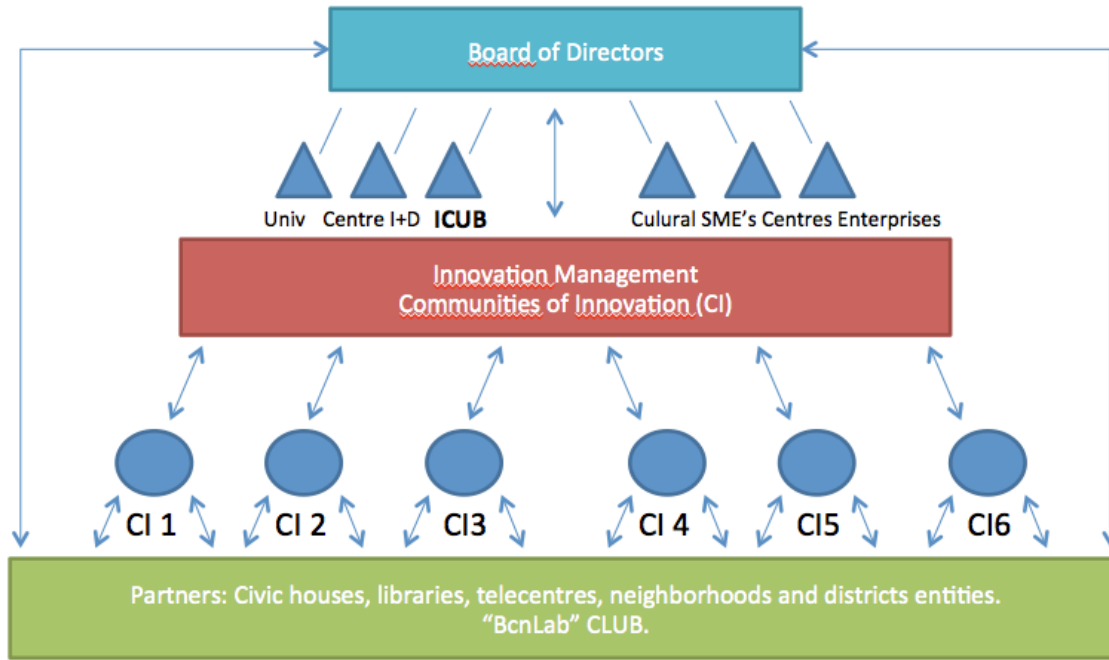
Roadmap

By 2013 BcnLab should appear as a new type of structure in Barcelona:

- *Structure of open innovation to all citizens. Any citizen can approach BcnLab communities through innovation communities. BcnLab work is defined by these communities and its annual work plan.*
- *Based on an institutional partnership between the City and the large institutions in favor of creativity, research and innovation in the city. The Council does not act alone. Has plenty support of major institutions of research, creativity and innovation.*
- *Not located in a concrete building. Uses spaces in the city to spread and reach all layers of the population. Acts on all types of large, medium and small areas of the city, in addition to the network. It is a "center without walls".*

The Chart that follows is the specific Barcelona Laboratory structure super imposed on the more general innovation pyramid shown a few paragraphs above.

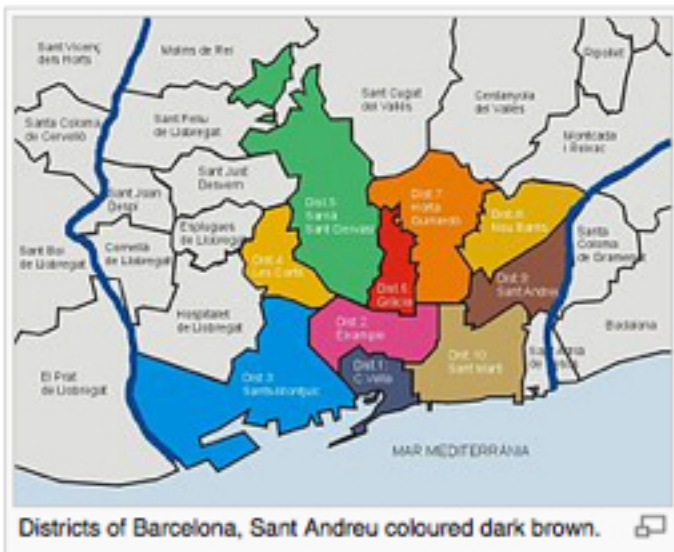
Barcelona Laboratori Structure



6

Barcelona Districts

Now there is the City as a whole. But there are also ten distinct neighborhoods. A neighborhood we are working in is Sant Andreu del Palomar, in the city of Barcelona. It is a quite popular district where we have done some ethnographic research in order to discover the new innovators and entrepreneurs for Barcelona Lab.



Sant Andreu dePalomar is one of ten Barcelona Districts

Serra: In Sant Andreu we are just in an exploration phase. What we are discovering is the existence of a web of informal innovators and the need of a professional local innovator who could act as social change agent helping informal innovators to become professional innovators and entrepreneurs.

2013 BcnLab Work Plan for neighborhoods and districts

1. Monitoring Sant Andreu del Palomar.
2. Coordination with the CANODROM project, exploring its impact on the neighborhood and district.
3. Start a systematic work with the libraries system and civic centers. Creation factories and other structures in connection with the public scale? Neighborhood and district.
4. Explore international experiences to consolidate creativity and innovation locally ("Tactical urbanism," "Urban prototyping" ...)
5. Coordination with other initiatives at neighborhood scale. Fablabs network or similar.

Action Plan for St Andrew's Palomar, 2013

1. BcnLab Club Creation at Sant Andreu del Palomar. Christmas 2013.
2. Training course for first year agents of creativity and innovation in collaboration with research centers, professional associations and universities. Sept 2013
3. Creating an association of professionals. Dec 2013
4. Monitoring and evaluation of the program to foster creativity and innovation in neighborhoods through a system of indicators. Even in 2013
5. Design and promotion of a BcnLab Summer House Creativity and Innovation for young children, in collaboration with companies. July-August 2013

The Living labs Neighborhood Organizational Meeting at the end of November 2012

The slide below refers to a meeting that we had between November 30 and December 1 of 2012. It was a formal presentation to representatives of 150 communities from within the City of Barcelona.

2012 - Sant Andreu del Palomar

1. **Ethnographic census for innovation activities in the neighborhood.**

- The district generates hobbies, vocations and guides emerging professions.
- Amateur groups in different cultural and technological.
- "Proto-innovative," "innovative fans."

2. **Problemes Detection**

- Difficulty to connect social innovation and artistic creativity and technological innovation.
- Difficult to highlight innovations scale neighborhood.
- Need to work at the level of city and internationally.

Barcelona The Lab

A PUBLIC OPEN SPACE FOR INNOVATION

Event held on 30 November and 1 December 2012 (location: Fabra i Coats)
First meeting for creative communities of digital culture, academic research groups, companies, innovation networks, associations, public institutions and the City Council.
Purpose of the meeting: Conduct an open innovation process and share it to everyone.

Initial Format: The initial format of Barcelona The Lab is based on project / community.

We have projects that are creating community, open to all communities.
Using a first job talk, meet, gather information, make a first selection of projects and communities in Barcelona invite you to submit your contributions BcnTheLab.

This is where we invited Jerry Hultin from NYU Poly and Jarmo Eskelinen from Helsinki, and finally Carmen McWilliams from GrassRoot Arts in Cologne. This is the team that organized the meeting at the and we developed an agreement that says "yes we want to collaborate and we will organize five groups in this kind of laboratory."

Results

More than 140 participants

Working / collaborating for two days. Divided into six areas:

- Creative Communities
- Citizen Science
- Digital Culture
- Infrastructure
- Business and Entrepreneurship
- Social Innovation

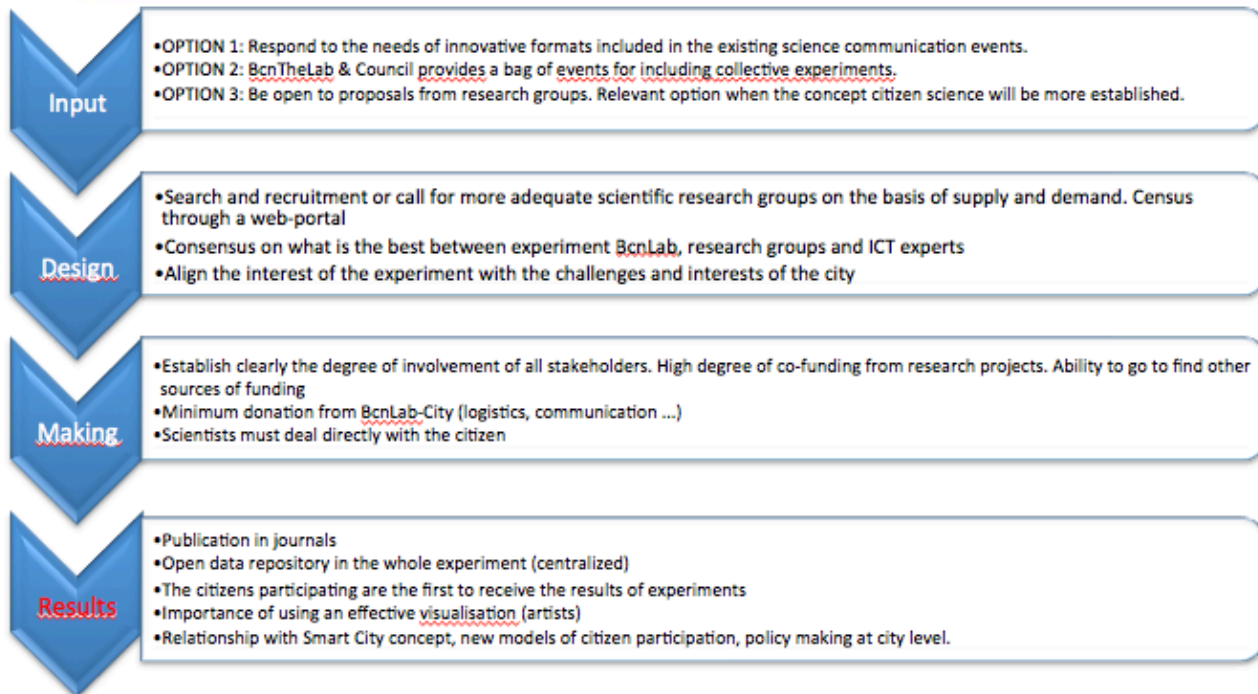
Two days of work emerged:

- 18 problems identified
- 23 wishes formulated
- 23 specific projects
- 71 defined actions

2013: continues to work with communities

The first group is devoted to digital culture. It is where you have the Wikipedians and the Arduinins. You have another called creative communities where you have the digital artists. And you have another called citizen science.

Systematization action model for experiments collective in citizen science



Here physicists, environmentalists, and scientists from the University level can work with citizens. And then you have a group devoted to open infrastructures. This is very important. I will explain it in a moment. And finally you have a group devoted to entrepreneurship. These groups are now meeting and they are generating projects.

Now we need to connect the centers of infrastructure within the city and we started connecting some of these cultural centers to each other through the infrastructure of the city, the infrastructure of i2cat, and the infrastructure of guifi.net.

As we agreed to during our first meeting, extensive citizen involvement is quite critical in trying to achieve sustainable economic stability. The open infrastructure is one of the main areas that we can offer. To attain collaboration within this area of open infrastructure, it is important to make sure your activity will be sustainable.

For us it would be very helpful to develop an area of direct collaboration with New York City. One person there is [Michael Salvato](#) who works for the New York City Transit Authority and is working with Anthony Townsend at Wagner NYU School of Public administration. They have a group they are working on transport issues and a living lab in Brooklyn near the CUSP. They are very well connected with Jerry Hulltin as NYU Poly and they want to develop Brooklyn as an open innovation hub. Now this next slide shows how the infrastructure within the City of Barcelona connects to the GLIF. We have now 10 Gb links from Barcelona to Amsterdam and a connection to the GLIF at the Amsterdam Gole.

Opening academic networks for citizen innovation Experimenta, Anella Científica, GEANT, GLIF...

Interconnection of local area networks (network of libraries, community centers, building factories, research centers, users, ...) as well as the interconnection of the city itself to the world.



So far we have used the links for a real-time demonstration of music played simultaneously in four different cities in Europe. And the musicians in Barcelona are normal musicians who are not in a professional orchestra or conservatory. An ordinary citizen could be one of the musicians. Opening this advanced infrastructure to the ordinary citizen is one of the first goals that we have now achieved.

COOK Report: And with regard to the collaboration between I2 Cat's Living Labs and guifi.net that we have discussed, it occurs to me that one of the goals that you could have would be to show your corporate sponsors that the world doesn't end because the citizens outside the i2cat Infrastructure could be included within the heretofore rarefied atmosphere of your sponsored fiber inside of i2cat.

Serra: We do not want to embarrass our corporate sponsors. What we want is to show them that Internet revolution is just beginning. That new disruptive technologies are coming with new business opportunities, but for that, we need to open our infrastructures to innovative people like guifi.net and a new generation of innovators citizens and entrepreneurs that will come up with surprising ideas.

COOK Report: I am afraid I would be more tough: We need to show the corporate world that they have to stop fighting against this. That they must accept this because if they do not, there may be social collapse and then they lose everything.

Serra: Well a better more friendly way to help them go about this would be not to threaten economic collapse but to help them understand that if the doors to ordinary citizens are open that new models of innovation become possible and that these innovation models do not have to hurt corporate interests. A radical new model of innovation is needed as is a less intimidating way to put these interests forward. **Editor:** Ironically as we "go to press" it seems that the model is in Oakland, California, However there are many cultural political differences between Oakland and Barcelona and it is very likely that i2cat and living labs is pushing the limits of the possible in Barcelona s well.

Conclusion and a Challenge

Many thanks Artur. This is most enlightening. If I were a scholar of Jane Jacobs and similar work on city's growth, economics, ecology, and so on, I probably would have more sophisticated questions. But nevertheless, I have some conclusions that I do want to share.

It seems to me that just as cities provide parks and roadways and bridges and paths for commerce for their citizens and that in the 20th century they also needed to provide infrastructure such as a water systems, sewer systems electrical grids and now a telecommunications fabric.

What you have traversing Barcelona are some well-placed fiber rings and interconnection of those fiber rings to key global Internet exchanges where by virtue of your access to the GLIF you have lightpath Bandwidth to perhaps 60 or so nations on all five continents. But much more significant the role you also play is the **pivotal role** right in the middle of in a triangle made up of **(1) city government and politicians; (2) Barcelonan and Catalan citizens and (3) the international and national corporate sectors.**

You have correctly identified the anthropological nature of the Social Network of "Tribes" each interested in doing differing things with their connectivity. And in your alliance with the Barcelona City government, you have also positioned your self precisely at the key nexus between the citizen and the government and the global technology – telecommunications corporations.

As the Catalonian people have found out since 2008 playing with the financialized global corporate world is like playing blindfolded with your hands tied behind your back in a faceoff with a giant vampire bat. If your decision-makers who will be wined and dined and promised many fine things for alliances with these wonderful global companies, if your city Innovation Officers make the wrong moves, the city and its people will be sucked dry. Just ask Greece about the "help" it got from Goldman Sachs in qualifying for EU membership.

Now not all of these companies are necessarily bad but, given the fact that, if they are publicly held, they are all equally trapped by the need to extract short-term profits for their highly paid executives and shareholders. This means that their relationship with their customers tends to be overwhelmingly one of rent extraction – get them to spend the most money possible for proprietary products that likely do not interoperate well outside the walled gardens for which they are designed.

In Contrast to This

You have established a role for yourself as a leader to guide and a tutor to inform the other two legs of the triangle the city government and its citizens -- a role that is highly commendable and necessary in the fast-moving chaos of our current civilization. Having in 2008 observed first hand the beginning part of Cisco's program in San Francisco and later that year in Amsterdam and Greece, I found the Barcelona variant quite fascinating. It seems very obvious to me that the name of the game is to befriend the city administration and say we are here to help you because if you work with us will give you a head start over other cities. In these other cities the people are probably really just as smart as they are in Barcelona but, if you work with us, you can be first out of the starting gate to buy and adopt our new technology. Don't miss out. Take the leap – now.

At the same time this is happening in a world where the international financial system has not yet been brought under control; where banks in the Iberian Peninsula are not in sound condition; and where Telefonica the national incumbent telecommunications company is protected by Madrid as a means of projecting Spanish technology and economic power

elsewhere in the world. And these sorts of private practices continually throw off economic barriers for ordinary people's like myself that I encountered when I could not reach a website in Ecuador that was chosen by the Ecuadorian government to implement a repositioning of the Ecuadorian economy because my monopolistic international provider, Verizon, was unable to interoperate with the Ecuadorian provider that depended on Telefonica.

Now, as we have noted, there are promising new ways of doing things on the horizon. The commodification of technology indeed enables the citizen innovator and the individual citizen entrepreneur to operate in a collaborative horizontal peer-to-peer manner in contrast the vertical monopolies sponsored by the governments and banks.

You and I know the new humane and ecologically sustainable peer-to-peer ways of organizing human society. In Catalonia you have a critical educational and organizational role to play in bringing in outside experts like Anthony Townsend who know and can teach all the amazing things that cities can do with this new and inexpensive commoditized technology. Assuming that you have IRUs on your fiber rings, your only costs are the annual fees for those and whatever fees are involved in interconnecting in place like the CATNix.

Now that you realize the true nature of guifinet as a social innovation you have the ability to open gateways from your high-end network to the basic layer two TCP/IP fabric of guifinet. An alliance between the two of you - one as simple as establishing peering -- would leave Orange and Vodafone out in the cold. I expect they would soon be offering you very attractive rates to interconnect with your citizen's fabric. What most people don't yet grasp is that ***guifi.net has found out how to make a horizontal volunteer organization scale.***

Consequently, as an outsider, I still don't know the contractual details of your sponsorship and your deliverables and I would like to know these. But given that you have established very good relationships with the City of Barcelona government and politicians, I would think that you could embark on a program where, if they wanted to be reelected, while companies like Cisco, IBM, Oracle, and Ericsson would still have specialized products that city government might want -- the very same city government --given the path to which you have shown them the way --would understand that, if they would align with their own people, they have the prospect of opening paths to local self-sufficiency and local innovation. If they do it this way, the resulting intellectual property would belong to the people in the city rather than to an outside corporation or bank. This would be the overwhelmingly logical direction in which to travel.

It also seems clear that there is no reason for you and guifi.net should not to join forces. You have made it very clear that for the last 20 years in establishing i2cat, you have had this new open-source peer-to-peer kind of a platform in mind. Like Florence and the Renaissance you and guifi.net will be able to offer a complete telecommunications fabric

on which all the remaining concepts of the Living Labs depend.

Guifi.net is a fait accompli. It exists. It is fully functional unlike Localret. I don't see how Telefonica can complain because guifinet has done what it has done despite them. Moreover assuming that the City of Barcelona has control over its rights-of-way and has not been foolish enough to give them to Telefonica, it seems that there might not be too much that Telefonica do to try to stop Catalonia and its citizens.

So, in short, it seems to me that you are carrying out a wonderful organizational educational role and while I have a hard time understanding how you could manage innovation per se, you certainly can play a critical role in showing city government how much there is to be gained by cooperating with you and with guifinet.

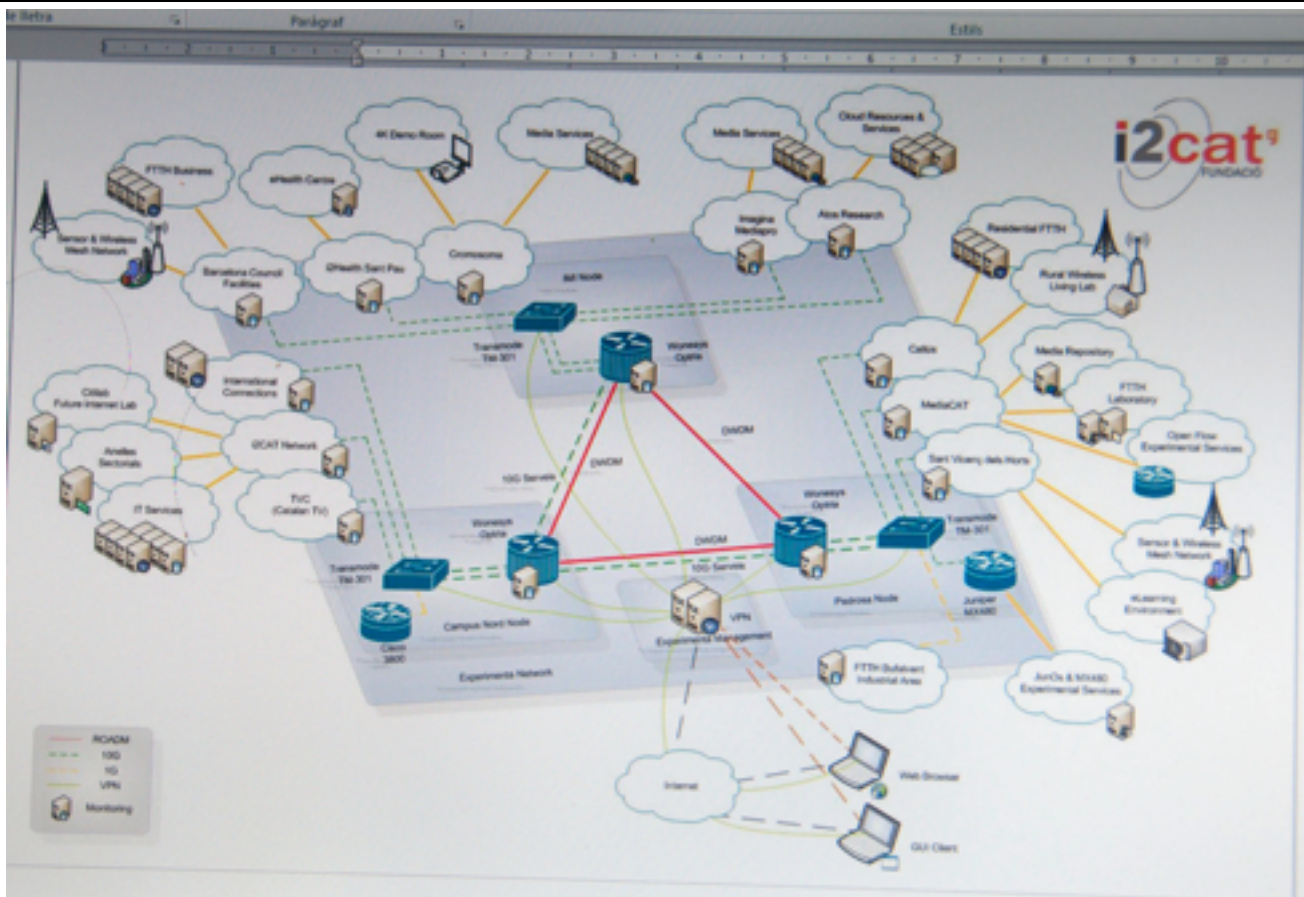
Now I probably have missed things regarding your project sponsors and I still don't know who they are. (As I now understand it, finishing up this issue in mid November, they are the founding members of i2cat.) Also I am not sure other than the memorandum of understanding with Barcelona City government what your deliverables are. Also the extent to which the EU is a sponsor or not and the extent then to which your interaction with the European organization of Living Labs and Living Labs in other places in the world is an issue and I would welcome and, indeed hope that you will fill in the blanks of what I have just outlined.

In view of the arrogance displayed by the American and American paid for United Kingdom surveillance agencies, it would also seem wise to think about a Latin version of the Entrepreneurial State to work together and apart from the "yanks" in order to build a more multipolar world.

Serra: Thanks a lot Gordon, for your generosity and openness. You are helping us to understand better what we are doing.

But let me emphasize that i2cat is not the only actor in the living lab movement. You could talk with other international leaders of the movement like Jarmo Eskelinen from Forum Virium in Helsinki or Miram de Magdala Pinto in Vitoria Brasil. I can put in contact with them. I think IMHO the Fablab movement could also be part of this global trend towards The Lab or The Labs, the new social structure that could correspond to the Internet infrastructure. Internet is for everyone and it can connect everything but it is not everyone and everything. It is just an infrastructure as Vint says and says again. Nevertheless, human societies organize themselves at least in two other layers, social-economic-political structures and knowledge-ideological superstructures. The problem I see more and more is the danger of breaking the Internet if we don't do an extraordinary effort of innovation to change the other two layers.

Thanks, my American friend.



Above i2cat network map and below municipal building immediately to the west of the i2cat building in Barcelona



Appendix: i2Cat Related Projects in 2011

More than 75 institutions and collaborating companies have completed joint R+D projects or dissemination activities with the Foundation during 2011. A few of those are: Idiada, Seat, Firma Profesional, IGLOR, King e-Cli-ent Fundació Vodafone, Tradia, Farell Instruments, Redsauce, Doxa, Orange Catalunya, Hospital de Sant Pau, Red.es, Indra, Pulso Ediciones, ADTEL Sistemas de Telecomunicación, Ajuntament de Viladecans, Ajuntament de Rubí, Ajuntament de Cornellà, Androme, Cromosoma, CTTC, Hospital Clínic, Hospital General de Vic, Hospital General Vall d'Hebrón, iSOCO, KeepU, MicroART, Nadir, Sensing and Control, Tecsidel, Tempus21, Ingenis, TFO, T-Systems, W-Onesys

With regards to billing of services, a very significant increase, with respect to 2010, was attained, in particular when taking into consideration the environment in times of the economic crisis and the challenges of selling services to companies. Lastly, the total amount of the invoice had an increase of around 19%, exceeding in absolute values of 1.455.000 euros.



Artur Serra explains i2cat Loving Labs to the author in May 2013 in Barcelona

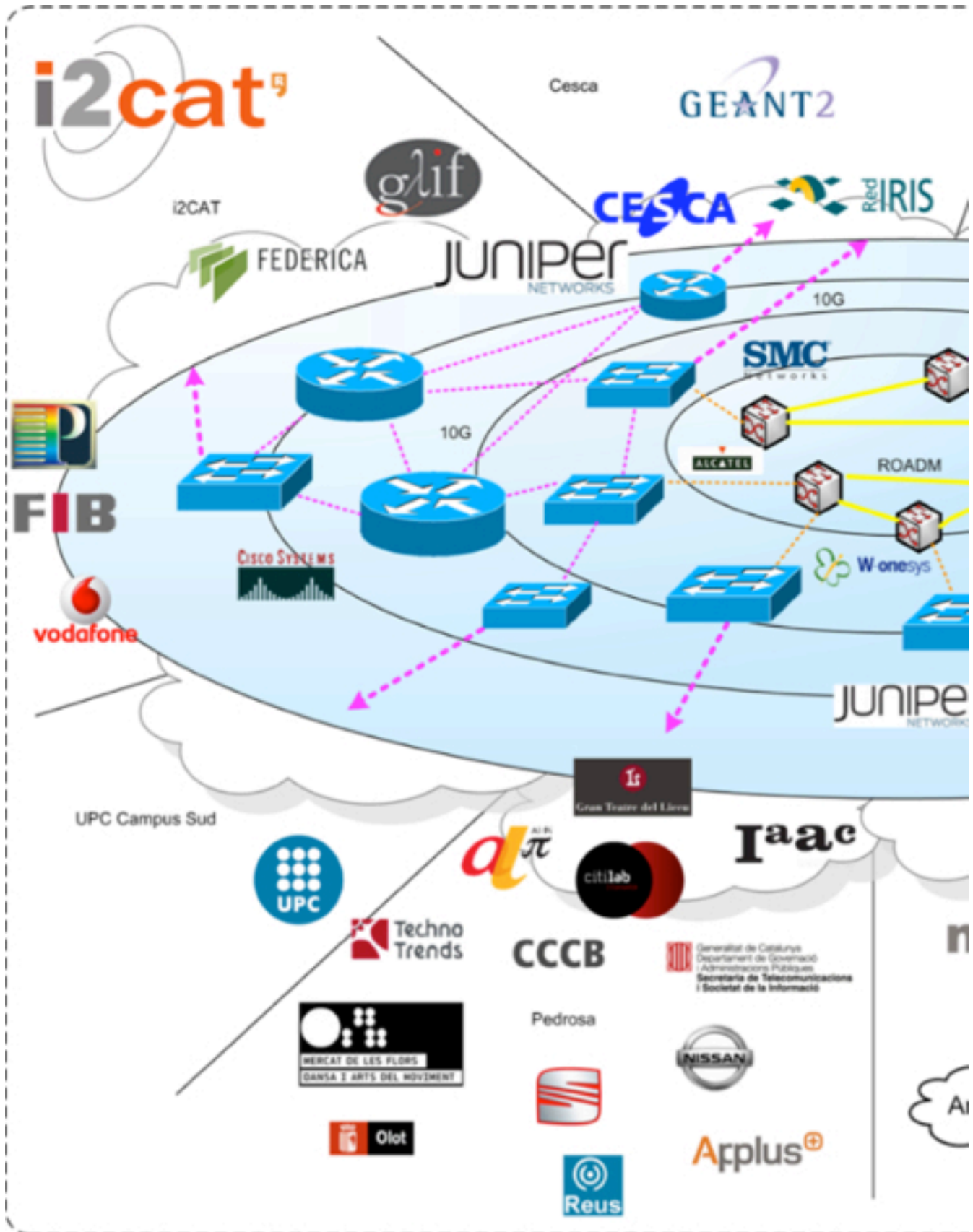
The rise in billing of services to companies and entities was motivated to a great extent by adopting the role of contractor in a number of projects, rather than taking part as a collaborating participant. Another factor that contributed to it was the increase in the business activities in order to sell innovation services to companies carried out not only by the management of i2CAT but also by those responsible for the different areas and units.

Activities developed during 2011

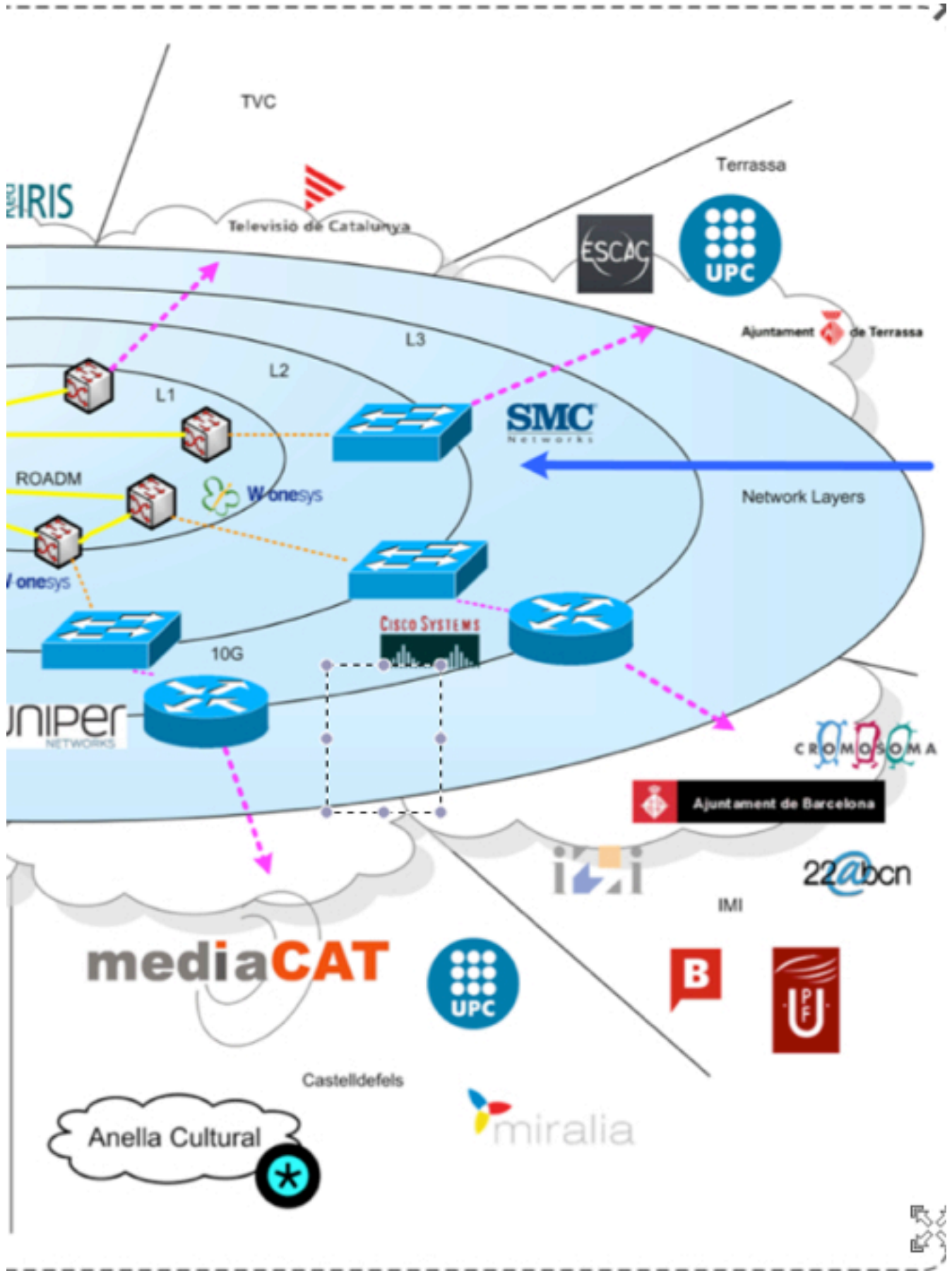


Technology transfer

The mission of the Technology Transfer Area is to provide the means for the knowledge and information technology developed by i2CAT to be transformed into products and services which carry an added value to the market and which allow for the competitiveness of the companies to be improved. The key to ensuring that this knowledge arrives swiftly to the market can be found in the technological cooperation with companies, establishing collaborations where the company contributes its vision of the market and i2CAT contributes the technological knowledge, with the aims of: Linking technologies to market opportunities. Converting R+D+i technologies and results into added value for companies. Boosting the development of applications and technologies oriented towards the necessities of the market.

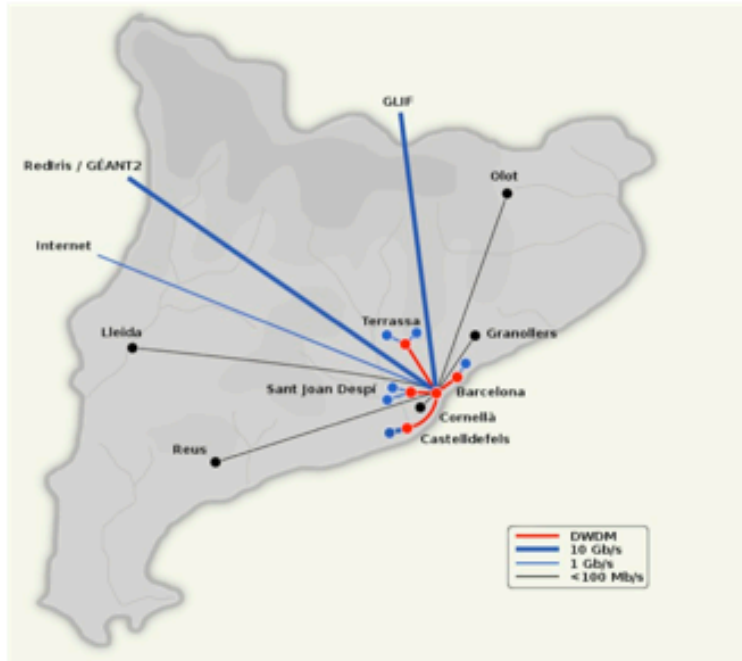


Adapting and applying technologies in new market segments. With the overall aim of
This page and following offer a detailed i2cat network map



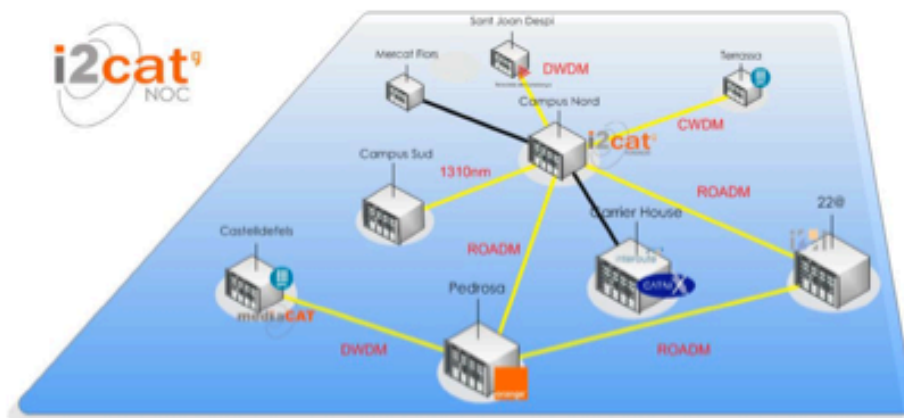
Network Technologies

iiS used advanced networking technologies in order to connect with the rest of the world with available bandwidth up to 10Gbps full-duplex. This enable the transmission of multimedia data at super high definition uncompressed, fact that with preterit technologies was simply unimaginable. The platform makes an extensive use of data communications through the national research network (RedIRIS) and international through the optical network of GÉANT2 and GLIF. Also along with the rest of Areas puts into service the latest technologies investigated by the founding i2CAT allowing the platform to be always up to date on the latest developments.



Network Topology

iiS provides a advanced hardware to deliver multimedia and infrastructure services on the transport layer, creating a 1 Gbps network for connecting servers, personal and hardware to the rest of the world and also allowing national and international connections up to 10 Gbps.



promoting collaboration and technology transfer, i2CAT offers multiple ways to cooperate with them which provide solutions to the companies’ needs. [This page offers the contextual source for the network maps on the preceding pages.](#)

Areas and Units

- [Audiovisual](#)
- [DANA](#)
- [Education](#)
- [eHealth and eInclusion](#)
- [Industry](#)
- [Infrastructure and Services](#)
- [Living Labs Unity](#)
- [Research](#)
- [Technology Transfer](#)
- [Ubiquitous Internet Technology Unit](#)

Living Labs Unity

Definition

Projects

Technology, culture, living labs, users and applied ethnography. The Living Labs Unit (LLU) is created to facilitate the processes of technological, social and cultural innovation. And to act as a bridge between the social sciences and the world of engineering. At LLU social scientists cooperate with engineers. We use basically qualitative and ethnographic methods to explore the social uses of technology and the interpretation that users make of their experiences with technology.

In particular, from the LLU we do,

- Research design focused on users
- Creation and dinamization of user groups
- Exploration of the uses of technology users
- Collection of user requirements from technologies their explore
- Co-design of technologies with users
- Collection of requirements and demand of new technology
- Mentoring and consulting on Living Labs creation
- Fostering of thematic living labs (microlivinglabs)
- Workshops and activities on knowledge of the environment, creativity and entrepreneurship
- Specialized training on Cultural Design, Culture of Innovation, Techn-Anthropology, Techno-Culture and Living Labs and Livinglabization

Coordination

- [Jordi Colobrans](#)

Participants

- [Artur Serra](#)

And finally [this page](#) immediately above from the i2cat website gives valuable information on the Living Labs work that Artur does for i2cat Clients.

A guifinet - i2cat Collaboration Scenario

COOK Report in early November: I'd like to check out my understanding of i2cat and guifinet by asking some questions. It seems that i2cat was a kind of community network put together in the late 1990s in a manner similar to a co-op. Apparently one or both technical universities in Barcelona got together with the Government of Catalonia and the Government of Barcelona. This University and governmental complement was joined by an industry component made up of ORANGE and Vodafone with Cisco contributing the switches and routers. If, after several back and forths with Artur, I understand things correctly now, (and I want to compliment Artur for being exceedingly cooperative in the face of my hardball questions,) the resulting network, known as I2cat, appears to the outsider as a plain-vanilla European research and education network. But, in reality, such a view is absolutely incorrect.

I2cat was set up with Artur and Sebastia Salent in the lead as part of a movement that existed in many countries in the late 1990s. The purpose of this movement was to make sure the Internet technology was available to ordinary citizens. Thus Artur's emphasis on living labs and making solid broadband infrastructure available to ordinary citizens for innovation "broadly defined."

Now elsewhere in Europe, the research and education networks have generally been established with the begrudging acceptance of incumbent carriers and with the understanding that use of the resulting bandwidth is highly restricted to noncommercial purposes only. As practically defined this leaves the ordinary citizen who is not enrolled in a university and who may wish to have a connection from home out in the cold. And because public funds are involved it leaves efforts similar to those of Artur and [guifi.net](#) out in the cold as well because EU rules very strictly forbid public investment in what can be supplied by the so called "free market."

As I have been working on this issue, I have been focusing on the i2cat part of Catalonia network infrastructure. Having already said a very large amount about [guifi.net](#), I have also just taken a foray into the Oakland California free net. What I am finding in Oakland is quite extraordinary and it is a story of open citizen innovation with hacker spaces and bio hacking labs and experiments in drawing ordinary city inhabitants into the economic and political processes of the city by use of open source tools that result in such projects as the Oakland wiki. (Imagine what might happen if Bill deBlasio the newly elected mayor of New York City facilitated a wiki for New York City!)

Oakland is unique in its own way. It is a really bottom-up effort without any overall coordinating agency other than what the various groups establish for themselves to

exchange information. It strikes me that a part of this movement toward open source and now open hardware and virtually open everything that vast numbers of the roles of what used to be called "middle management" for lack of better term are being once again disintermediated. Where all this leads, I submit, is a very important unknown.

I am all in favor of making it possible for university-based programs to provide guidance and coordination for the grassroots efforts involved. Yet I see that in Oakland and perhaps in the general San Francisco Bay area a huge amount seems to be happening without any need for higher level leadership and coordination. Just as I recognize that, if I were starting the *COOK Report* in the year 2000 or later, rather than in 1992, the possibility of my being able to do what I have done would be almost nonexistent. I would have been too late. I would be disintermediated six ways from Sunday. Indeed every now and then I get a private message wondering why this hasn't happened anyway. It has not and I am very grateful for the loyalty I have established. So this is a very difficult, very touchy subject. But the tsunami of economic change that is pushing forward continues, I think, to sweep most of the old models from its path.

But all of this is just some context setting on my part. And the critical question at hand right now is whether or not i2cat and guifi.net can – in some fashion - combine their networks – very likely by means of shared gateways. Could i2cat and guifi.net successfully strengthen the platform that both entities have built by opening their networks to each other?

On November 20 Sergi Figuerola who runs the i2cat network responded. "i2CAT can combine its infrastructure with guifi.net indeed, but only for research/innovation/experimentation/testing or validation purposes. **We are not an operator and we do not offer network connectivity services either.** As an example, we are very keen to combine our infrastructure with Guifi.net towards innovating, developing and testing new SDN solutions applied to radio networks, or by testing new types of services and applications, which, if successful, can be taken by guifi.net to be deployed on their operational network. We are open to 'open' our infrastructure, not only to guifi.net but to whoever is interested to establish a collaboration to experiment on new technologies, services or application. Those are people, organizations and companies who requires an infrastructure and users to test and validate the outcomes of research and innovation activities. In other words, we do not offer connectivity services for internet delivery, but our experimental services on top of our platforms/infrastructure (i.e. we have over 12 OpenFlow distributed switches, from different vendors, over a DWDM 10Gb transport infrastructure). Thus, I foresee very good synergies with guif-net on that topic, since they have an infrastructure that I think is also very well used on EU research programs like FI-PPP."

"In terms of membership fee, we have several models that are applied depending on the project /experiment we deal with. If an industry wants to use our experimental infrastructure to test their developments, then we have a fee, since someone has to take care of it

too. But, for example, we set up a collaborate with organizations to develop projects where partners have common interests, then the infrastructure is used as an in-kind contribution. Let's say that we only charge fee to those that aims at making business –profit- (offer services to third parties, or private companies with specific interests) from the usage of our infrastructure. We always need a win-win situation, otherwise the model is not sustainable at all.” On November 25 Sergi added: “At the IP level, I2CAT is a sub-network of the CESCO (our addresses belong to the CESCO. CESCO is the AS). CESCO is the Catalan –regional- NREN (National Research and Education Network). CESCO is in connected to the CATNIX and Guifi.net too, which is the place were peering is performed. Thus we peer through CESCO and CATNIX. CATNIX is that Catalan IX.

To Peer or Not to Peer: that is the Question

While waiting for Sergi to reply I had written: The move might be facilitated by the fact that **i2cat was originally set up as a cooperative** or certainly something very close thereto. The resulting i2cat infrastructure again, if it was established by the founding members as I understand it, is controlled by the I2 Board and if the combination of a university government and private industry that makes up the board, such infrastructure ought to be able to be used according to the rules established by the i2cat Foundation Board,

In other words, if the board were say that a sharing of the two infrastructures were okay, then hopefully there would be nothing to stop it. Telefonica might try but again as I understand the situation Telefonica tried to muscle in during the period of the founding and was firmly rejected. Telefonica thus is not legally at least part of the equation.

Now here a potential immediate major issue is that the guifi.net infrastructure has been very carefully built on the legal foundation of a commons. Namely it is an infrastructure held legally, economically, AND politically by a foundation on behalf of its users in such a way that it can never be acquired by or sold out to a third party. Now the governing structure of i2cat is also in the hands of such a foundation and for the moment unfortunately I do not know whether or not there are similar covenants at work here on the i2cat side of the house I do believe that if anything on the part of i2cat were to disturb the central idea of guifi.net infrastructure as a commons, then sharing of the infrastructure would be a nonstarter.

However let's hope this is not the case. The question then very likely becomes what are the business model implications for both parties? A few years ago when the prospect of collaboration was first raised, there was a requirement that guifi.net pay a membership fee. This torpedoed those efforts. I believe that this time the outcome can be very different. Overnight I asked for comment and received a reply from the guifinet side of the house that seems jaw droppingly obvious.

Peering! This is the key. When two entities that see each other equally they do share their infrastructures and they do not charge each other. This requires them to change how they look at us, I guess. We are not customers who contact them to solve a specific need. We have some resources (in commons) and the question is if they want to put their resources in commons [i would recommend the words "into a shared pool"] to make the pool bigger (no need to say the bigger the pool is the better for all its participants). Simple, isn't it?

There would likely be some costs to both parties in deciding to share in the infrastructure. But, it seems to me, that there would be no reason why these costs could not be determined and an agreement made to share them down the middle.

Guifi.net concluded: In a peering agreement I take care of the costs of my infrastructure and you take care of yours. That's all.

There certainly have been some misunderstandings between the two networks during the past decade. But as readers will see when I publish what is now a very detailed description of I2cat, that focuses on the i2cat side of the house, there now seems on the i2cat side to be a understanding of [guifi.net](#) that was not there before. Now as they both look at the objectives in front of them, it could well be that they discover that working out a program of collaboration and peering between the two could be the best way to ensure that the objectives held by both for the future well-being of their constituencies are achieved.

As Sergi pointed out not being an operator means that i2cat is more of a test bed than your typical R and E network. A real network in the internet must have an ASN number (autonomous system number) that enables the network to operate internally and using its ASN number and the Border Gateway protocol; to exchange traffic with other networks. [See the clarification from Sergi at top of page 60.]

Guifinet [has an AS 49835](#). Its transit provider is Cogent AS 174. It has several peers. Not being an operator presumably means that you are not responsible for commercial traffic to and from other networks and that you have operational limits that cannot be exceeded without running afoul of the regulator.

On November 21 Sebastià Sallent the Director of i2cat, and Artur Serra, Assistant Director of i2cat met with Ramon Roca for long lunch. Some hours later early on the 22nd european time Arther emailed me: **"I proposed to Ramon that he become a member of our Foundation in order to make a formal commitment to further collaboration. No cash contribution. Simply the possibility of using [Guifi.net](#) net and community for experimentation. In return Guifi.net will benefit from i2cat community and infrastructures. He agreed."**

Homage to Working Together - I2cat and guifi

Editor: Hooray for all concerned! A very very positive step, Whether this means the networks will peer with each other is not entirely clear. It seems that the i2cat "sandbox" that was not open to guifinet now will be and that network software tools developed there will become generally available for guifinet users. The "research" aspect of the i2cat network will be maintained. This is why I wrote "sandbox". What the difference will be for ordinary users to me at the moment are not clear. I hope to will not take too long to find out.



Homage to collaboration: Catalan custom - castelling. Only two "stories" here. Smaller and lighter students climb to the top nine stories high have been accomplished. To the right is a [screen shot from youtube](#). This video offers an excellent cultural history of castelling.

Let's now go nine time zones Westward.



Seizing One's Local Economy From the Bottom Up in Oakland California

Marc Juul and Jenny Ryan

Editor's Note: Marc Juul and Jenny Ryan are the leads in the People's Open Network. Also known as the Oakland Freenet. I interviewed them on October 31, 2013. (Marc adds: the way we structured it, [People's Open Network](#) is the name of the network that anyone can join if they agree to the Network License (peering agreement) and [sudo mesh](#) is our local mesh organization and the first organization in People's Open Network.)

COOK Report: Please give me a brief introduction to what you were doing in 2011 and how those events have helped to push you into what you are doing now in Oakland, both with the hacker space, and the free net.

Jenny: My background, I guess, was what you would call academic. Previously, I'd written an [extensive ethnography](#) of online social networking for my Master's in Anthropology, and had done some research with the Harvard Berkman Center for Internet and Society on on-line self-harm communities and the ethics surrounding pro-suicide websites. I'm interested in what comes after nationalism - neo-tribal lifestyle communities formed around shared interests, that have no geographic bound? Proximal identities based on a reinvigoration of the neighborhood commons? I was enrolled in an interdisciplinary communications Ph.D program at the University of California San Diego, looking at the anthropology of online communities, DIY culture, intentional communities, and the history of communications media.

COOK Report: Tell me a bit about the program's professors.

Jenny: My advisor was Mike Cole, author of a book called *Cross Cultural Psychology*. He is one of the founders of the movement, applying an anthropological approach to psychology and looks at how cultural factors influence human behavior. Many professors in this program are engaged in applying and extending their knowledge to surrounding communities through active, engaged, collaborative projects, an approach termed 'Participatory Action Research'.

COOK Report: In general where do the graduates of that program wind up?

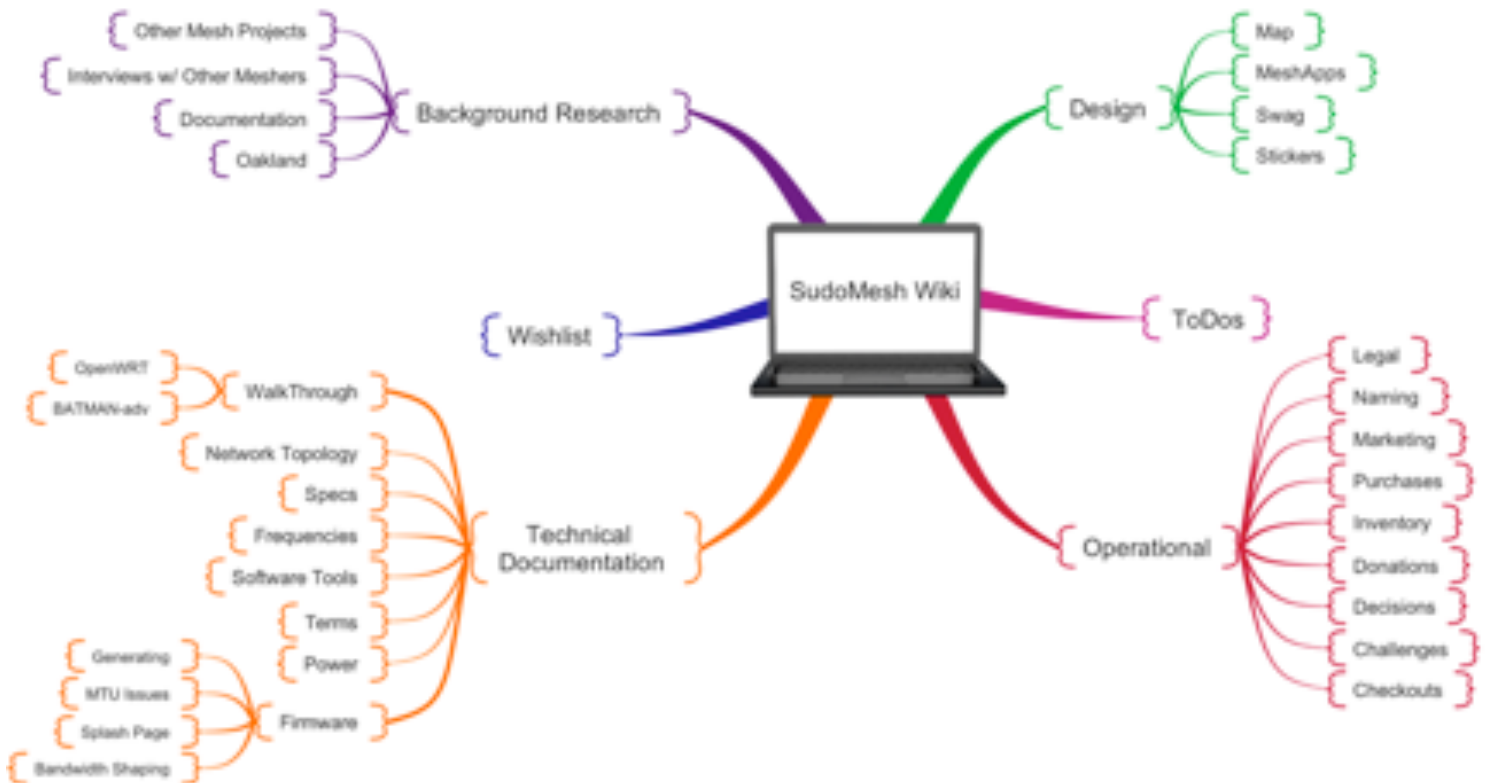
Jenny: Most of them go on to teach in critical theory or media studies programs at other institutions. The program is very much critical theory-oriented, examining how power and inequality play out from the macro sociopolitical level, to cultural institutions and prejudices, to internal psychology and interpersonal communication. Consequently, most of the

graduates are not really interested in mass communication careers, but pursue teaching, research, and non-profit positions.

Things changed for me around the end of my second year when I was introduced to the Noisebridge hackerspace, located in the Mission District of San Francisco, and the free and open source community and hacker culture. **Editor:** According to Wikipedia "**Noisebridge** is an award winning^{[1][2]} anarchistic educational [hackerspace](#) in [San Francisco](#), inspired by hackerspaces in Europe, like the [Metalab](#) in Vienna and [c-base](#) in Berlin. It is a registered non-profit California corporation, with [IRS 501\(c\)\(3\)](#) charitable status.^[3] According to the Noisebridge website's Vision page, "Noisebridge is a space for sharing, creation, collaboration, research, development, mentoring, and of course, learning."

And a few months after finding Noisebridge in the Fall of 2011, Occupy began and I got involved with the OccupySF website and communication team. I went back to school in January 2012 and finished up my Masters, then came back here to Oakland to start a hackerspace which we called sudo room.

The name "sudo" It's a play on the unix command sudo, which stands for super user do and temporarily grants super user privileges to a command. Sudo room is a place where everyone is a super user. The idea was to start in a single room and expand to become sudo space later. We are currently spending a lot of energy closing a deal (we hope) on a 25,000 square foot space (with other groups).



Above is Map of the Sudo Mesh Wiki Content & below is Jenny Ryan on sudo Room Stairway



In developing sudo room, we were inspired by a nonhierarchical ethos. I like the attitude of do-ocracy which encourages people to do rather than have someone else suggest what some third party might do for them. Also, co-learning and cultivating curiosity and realizing that there is no need to follow a hierarchical master-apprentice relationship - but rather, the idea that learning by doing is more fruitful. Hackerspaces carve out a 'third space' that is neither professional nor domestic, but something else entirely.

The idea of using the Internet to help each other learn appealed to me greatly. I was very frustrated by the lack of action available to me in my highly theoretical Ph.D program. I

find a sense of being able to actually learn, build and create with others in the space opened up by sudo room to be very motivational and fulfilling. It's all a grand social experiment, and we're certainly not alone. This is beginning in many places at the same time. It's a reclamation of the commons, the sense of shared creation (rather than ownership or consumption) and mutual aid that allows us to survive and thrive.

COOK Report: Awesome. That makes sense. Marc tell me something about where you're coming from.

Marc: I think that hacker space is more about providing the tools and freedom to [experiment in a nonhierarchical way](#). When I got involved with the open source movement and realized the freedom available therein, I wound up co-founding [the first hacker space in](#) Denmark.

My interests are centered around open tools that promote heterarchical and decentralized social and technological structures. I also got very interested in open source biology (also referred to as bio-hacking) and in the Chaos Communication Congress (a hackers' conference organized by the Chaos Computer Club) in Berlin every year between Christmas and New Years. The Chaos Communications Camp happens every four years. There is one in Holland that alternates with the four-year Berlin camp making a camp meeting available every other year.



I am Danish by birth and took a degree in IT and digital electronics engineering. But when I saw this talk about hacking biology and programming DNA by an MIT professor. I became fascinated and decided to experiment with bio hacking and not surprisingly had trouble gaining lab access. Europe has very strict rules regarding genetically modified organisms and in these rules make it almost impossible to set up your own lab compared to the way you can here in San Francisco.

I wound up going into a Masters program in order to get lab access and in that program ended up working with the same MIT professor who in the Bay Area has since become a professor at Stanford. His name is [Drew Endy](#). I worked in his lab for a while and then became engaged with the sudo Room and with Counter Culture Labs a DIY bio community in the East Bay..

In your Economics and Architecture of IP Networks mail list I see that a lot of discussions around politics and economics center around how things *should* be structured. ***It is very difficult to agree on how things should be structured, but it is perhaps not as difficult to agree on certain patterns that we wish to attenuate and others that we wish to amplify,*** which can then lead into discussions of concrete action items.

I, and the people I work with are focused on building commons infrastructure, both as alternatives to essential infrastructures and infrastructure that is simply missing. We are starting with some of the relatively low-hanging fruit, such as communications tools and infrastructure, third places (hackerspaces), prototype fabrication tools and open science laboratories. ***However, the long term plan is to slowly build alternatives to all parts of critical infrastructure, in essence providing different, but not separate, societies based on values of openness and collaboration.***

However, the long term plan is to slowly build alternatives to all parts of critical infrastructure, in essence providing different, but not separate, societies based on values of openness and collaboration.

COOK Report: In other words you are saying that you have to take what you have at hand right now and build something that works for your group of people in their specific locations and then figure out what to do? Is the hackerspace meant to be a space where you can develop anything that would produce any kind of income?

Marc: No. But DIY Bio labs are. They are designed to enable people to come in and sit down and learn how to work with the basic tools in order to do things like write DNA. [Basically what we have is a citizen science area](#) where people can come in and be shown how to use the tools and have the real prospect of doing citizen science.

COOK Report: How did you get involved with the freenet movement?

Marc: I have been playing around with these ideas and talking to people at conferences. I met one of the developers of [Batman Advanced](#) at one of the communication's camps. So some years ago I became somewhat familiar with the ideas behind mesh networks and in Copenhagen we began playing around with the idea of a mesh network based on radios in church steeples.

COOK Report: Tell me, if you would, how you got started in building some connectivity in the Bay Area.

Jenny: We have a friend named Mark Burdett who started the network in the East Bay. They were using open mesh routers in 2009. The [Open Mesh Project](#) is based up in Portland Oregon and is a "fork" off the [MIT Roofnet project](#). They created custom hardware routers and preset firmware. They were able to route around having to do a lot of things from scratch. They called their network [510PEN](#) and had about 20 nodes. They ran for about two years. You can see some of the history [on their blog](#). But hey did not get the funding they had applied for. Their people on a local map were organizing but had shifting priorities. Mark Burdette went to work for the EFF (Electronic Frontier Foundation). And in December 2012 we had a [big unconference](#) at the Sudo-room where Mark Burdette gave a presentation on 510pen and Mark Juul and I had a previous interest in mesh networks anyway and said to ourselves [let's try and reboot this](#). We are calling our effort the [People's Open Network](#).

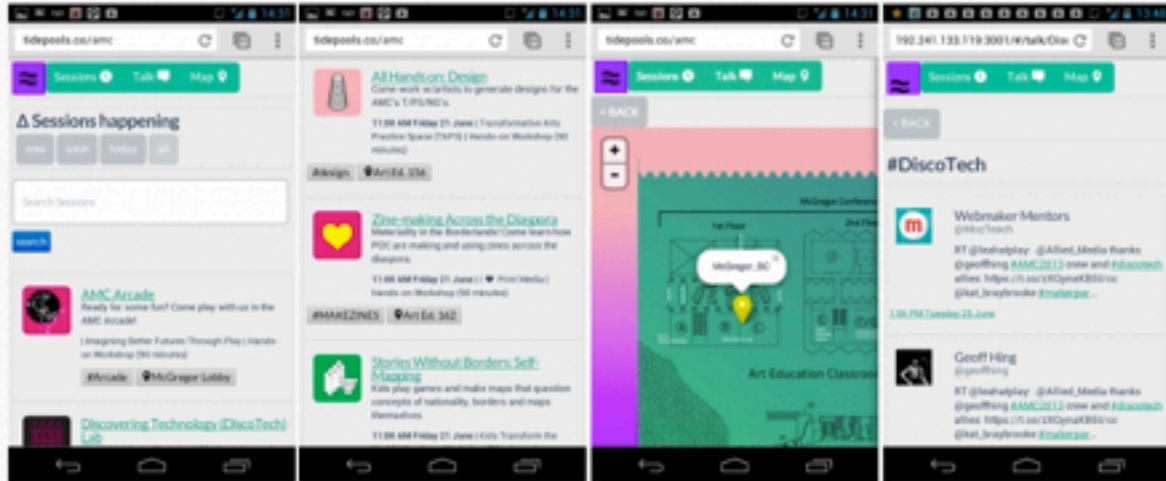
At the beginning of 2013 I also applied for an internship with the [Open Technology Institute](#) which is a program that promotes [Commotion](#) as one of its projects. (**Editor:** Commotion is promoted by Sascha Meinrath and 2 million dollars from the State Department and operational in Detroit. The freenet people I have been working with find it outdated by protocols such as Batman-adv).

Tidepools Collaborative Mobile Mapping & Social Hub

Meanwhile, at the Open Technology Institute, I was working on a project called [Tidepools](#) which is a mobile mapping application designed to run on a decentralized network. I was



• Tidepools is Mobile Ready!



- Where's the Tear Gas? Turkey's Protest Movement, Mapped.
- The Revolution Will Be Live-Mapped
- Case Study: Red Hook Initiative WiFi & Tidepools



Community Design Process

Great tools are driven by community needs. Tidepools emerged alongside the Red Hook WiFi Mesh Network, from brainstorming & collaborative design sessions with folks at the [Red Hook Initiative \(RHI\)](#), in Brooklyn NY. It continues to evolve, as it is modified by other communities to suit their needs.



In-Depth Customization

Visualize your community's vibe. Tidepools is designed modularly, making it easy to customize maps, tools, and themes.




Rich Interaction

Unlike many mapping tools, which require users to fill out a form, or have location services turned on, Tidepools allows users to interact via drag and drop. Users can engage in threaded conversations about multiple types of content and add to the map via SMS text. All content is stored not just by location but also time, allowing landmarks to grow and change with fluctuating activity.

doing user research and designing user cases around a process that involved interviewing people about what kind of data they would like to have on a local map. A related question was "What kind of local information which you would like to have running on a mesh network?"

[Create account](#) [Log in](#)



TidePools
Social WiFi

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Current Design & Development
Documentation
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Toolbox
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Ethnography/Interviews/Ricardo/Communications

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Jenny Ryan <jenny at theyre dot org>
Mar 19 (3 days ago) to Ricardo

We met a few weeks ago at LOLspace's 1 year anniversary event, and chatted briefly about sudo room (another East Bay hackerspace). I'm doing some work with the Open Technology Institute on an application called Tidepools, which facilitates hyperlocal mapping and open data integration.

I'm writing to ask about the mappable aspects of the work you're doing with the SELC. Here are a few pertinent organizations / communities I think would be great to integrate with a local map:

- worker-owned cooperatives
- CSAs and community gardens
- cohousing communities

Would love your feedback on further additions to this list, and suggestions as to what sorts of data could be integrated on such a map (eg; prices of produce, public events..) if you have the time! It'd be great to collaborate with the SELC moving forward, and of course any developments would be open source and publicly available :-)

Cheers, Jenny Ryan

Ricardo Nuñez
Mar 19 (3 days ago)
to Yassi, Chris, Jenny Hi Jenny,
Thanks for getting in touch!

I'm CCing Yassi, our City Policies Program Director (who is working on car-sharing and shared housing) and Chris, our Development Director who deals with with Complimentary Currencies. They were actually talking about mapping this info yesterday!

I think it would be great to map out different co-ops, CSAs, community gardens, and other community supported enterprises. The housing is a little questionable, just because I would want the household's permission before we put their address on blast. Does that make sense?

I think there is a lot of overlap and collaboration we could do moving forward.

I don't know if you know about communitycommons.org or resilience.org, but how are the maps those maps different than the ones you envision?

Thanks!
-Ricardo

I started going to an Open Oakland meeting where every week, [a group of hackers](#) that spun off of Code for America, met in a [City of Oakland building](#) and basically worked with public data to create things like crime maps. We developed an [Open Oakland Wiki](#) and I was working specifically with Oakland oriented the digital divide groups. A sub group is


called the P2P University. It is designed to show users how to get involved in city government

Open Oakland

**Join the
Community**
It's free!

**Learn anything, with your
peers.**

At P2PU, people work together to learn a particular topic by completing tasks, assessing individual and group work, and providing constructive feedback.



An open curriculum and set of tasks to achieve tech (and other) literacies helpful to participate in Open Oakland, a Code for America Brigade.

This course is for current or prospective Open Oakland members, City of Oakland employees, other Code for America Brigades, and the public at large.

By joining this course, you will complete tasks to gain learning achievements toward tech (and other) literacies critical to work with the Open Oakland team, city governments, civic applications, and tech generally.

These tasks will be achieved at your own pace. This challenge is a vehicle to connect you with support as you go.

Open Oakland holds itself to high standards, but not to be exclusive—we want to support each others' development of literacies to engage in civic technology projects in Oakland.

Start Challenge

View Discussions

Tasks
Discussions

- 1. Learn about Oakland's City Government**

Whether you're a city government employee, an open oakland member, or new to both, this task will help you orient your understanding of the city.
- 2. Open Government 101**

Learn the basics of open government and improve the lesson for others!
- 3. Oakland City Budget 101**

Intro to City-level budgeting and Oakland's City Budget in particular
- 4. Civic Hacking 101**

Explore examples that contextualize hacking (being creative) and inspire you to seek elegant solutions to tackle civic problems.
- 5. Add content to OaklandWiki.org**

This task includes gaining basic competency in using the LocalWiki software employed for OaklandWiki.org
- 6. Add data to data.OpenOakland.org**

Give data.openoakland a whirl, engage just a bit (a few minutes), slightly more than that (30 minutes), or a whole lot (a few hours, or ongoing)
- 7. Sign up for Github**

Sign up for Github, a company that provides online repository hosting for content managed with the version control system "git"
- 8. Dabble in Programming (play with Python!)**

Spend some time on this task if you're new to programming entirely, unfamiliar with python, or even an experienced python user.

We were basically coming up with a map of organizations addressing the digital divide and going out and interviewing involved people and figuring out how we could help connect each other better in getting our daily projects done most expeditiously. In designing things like open-ended interview questions my training in anthropology definitely was useful. I was already participating in the community that I wanted to get involved with and the mapping was something that helped the process of discovering and collaborating with existing organizations.

COOK Report: While having affordable connectivity to the Internet seems to be a good thing, it also seems to me that the more critical question is “what can the citizens of Oakland California do with this connectivity and access to these tools to begin to create a sustainable local economy the existence of which is independent of the twins of these huge global corporations?” It seems to me that this is the most critical question?

Oakland Wiki [log in](#) or [create account](#)

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Front Page [Edit](#) [Info](#)

Welcome to Oakland Wiki! A **FREE** website about Oakland that you can edit

I want to make a page about [Search or create page](#)

[Explore some of our 4000+ entries](#)

Oakland Neighborhoods

Learn more about all Oakland [neighborhoods](#).

Districts	Featured Hoods	Historic Places	Disputed Boundaries
North Oakland	Downtown	ACORN	East Oakland
West Oakland	Adams Point	Chinatown	Golden Gate
Chinatown and Central	Longfellow	Peralta	Lynn
Lower Hills	Lakeside	Hacienda	Rockridge
San Antonio	Trestle Glen	Rancho San Antonio	Ghosttown
Southeast Hills	Glenview	Brooklyn	Harrington
Elmhurst	Millsmont	Elmhurst	
Fruitvale	Laurel	Port of Oakland	
Northwest Hills	Castlemont	Lake Merritt	
Central East Oakland	Harrison/Oakland	Mills College	
		Old Oakland	

Oakland Wiki is yours!

Learn [about us](#)

Contribute what you know about Oakland. We have [31](#) [so many topics](#). Not even kidding. [Not sure how to contribute?](#)

[Edit with us](#) every other Thursday 7pm

Come to one of our [events](#)

Follow us on [twitter](#) or join one of our lists: [31 announcements](#), [31 discussion](#)

Jenny: Definitely.

COOK Report: What are your ideas on this? It would seem that connecting with the groups that you just told me about would be a good way to begin. Can you go on from there?

Jenny: I think it's being involved with community groups that have been doing this sort of thing some of them for upwards of 20 years, whether it is distributing refurbished computers are working with groups to build digital literacy skills. [The Oakland Technology Exchange West's](#) been refurbishing computers and giving them away to youth in Oakland for nearly 15 years.

OAKLAND TECHNOLOGY EXCHANGE WEST


1680 14th Street Oakland Ca. 94607 Phone 510-893-4822 Fax 510-893-1205

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MON-FRI 9-6

HELP US END THE DIGITAL DIVIDE

VISIT OUR INTERNET OPTIONS


OTX West is dedicated to eliminating the digital divide in Oakland, California. We seek to enhance educational opportunities and increase the accessibility of technology to low-income members of our community. OTX West recognizes the need for people of all socioeconomic and cultural backgrounds to gain access to the digital world by owning a home computer and acquiring technological knowledge and skills in steps toward individual self-sufficiency and empowerment.

The organization also employs an environmentally sustainable, re-use model by refurbishing donated personal computers and other technological equipment,* and supplying them to students who successfully complete our training class. We take proactive measures to directly confront persisting inequalities by teaching basic computer skills to parents and children and providing ongoing technical support free of charge.

OTX West is a Microsoft Authorized Refurbisher

Since 1999 OTX-West has provided over:

- 10,000 computers to Oakland Public School families free of charge
- 10,000 computers to Oakland Public School classrooms and community access labs across Oakland

To make a contribution press  **DONATE** remember to specify OTXWest in the designation box

The Take Home Computer Program

FOR OAKLAND CA. STUDENTS ONLY!
Next Class Thurs. 11/14/13 5:30-8:30 PM


THCP is for Oakland students grades 6-12

In order for a student to receive a free computer he/she must attend a one time only 3 hour training class accompanied with an adult.

Classes are posted on our calendar below. Check for the next available class and [register here](#) or call us at 510-893-4822

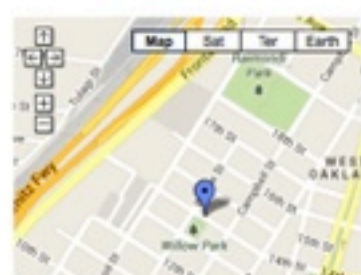
OTX Training and Events

November 2013							Week	Month	Agenda
Sun	Mon	Tue	Wed	Thu	Fri	Sat			
27	28	29	30	31	Nov 1	2			
			5:30am	2:30pm					-2:00pm
3	4	5	6	7	8	9			
				2:30pm					
10	11	12	13	14	15	16			-2:00pm
				2:30pm					
17	18	19	20	21	22	23			
				2:30pm					
24	25	26	27	28	29	30			-2:00pm



Press for big calendar

- About
- Mission
- History
- Staff
- Computers
- Home
- School
- Store
- Links
- Educational
- For Students
- Technology
- Employment & Other Services
- Cultural
- Internet Options
- Downloads
- Classes
- THCP
- eClasses
- Registration
- Donations
- Partners
- Volunteers
- Support
- F.A.Q.
- Contact
- Press
- Gallery



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COOK NETWORK CONSULTANTS 431 GREENWAY AVE. EWING, NJ 08618-2711 USA

PAGE 73

They are funded from a mix of grants and community support because they also offer technical help and repair services. They are largely volunteer driven. [Youth radio](#) in downtown Oakland is another group that's been around for about twenty years.

CONTACT

YOUTH RADIO

Announcements:
 10.15.13 Youth Radio's 20th Anniversary Kickoff
 09.26.13 Youth Radio Receives NSF Grant
 09.20.13 Congratulations To Our Graduates!
 08.09.13 A Fresh, New Look Online

Cultivating Media and Minds

Producing top level media is what we do. Providing education and career opportunities for diverse youth is how we do it. Youth Radio merges professional training in media arts and technology with health and academic support, while providing a platform for youth participation in the national dialogue.

[MORE](#)

[Newsroom](#) [Classroom](#) [Creative Studio](#)

Equipping students with the tools to produce professional media and a skill set for success in the new economy.

NEWSROOM

Syndicating Youth Voices Across the Globe

Partnering with professional journalists, our student-led media brings youth perspectives on pressing issues of the day via syndication to major outlets like NPR, Marketplace, The Huffington Post, and National Geographic. Youth Radio's coverage has earned some of the industry's highest honors, including the Peabody Award, duPont-Columbia Award, Edward R. Murrow Award, and the Robert F. Kennedy Journalism Award.

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Students Challenge College Sexual Assault Policies
 November 1st, 2013 by Robyn Gee

Youth Radio Staff Embraces Halloween!
 October 29th, 2013

What Does Halloween Mean To You?
 October 29th, 2013 by Danyelle Brown

Youth Radio Podcast: Shopping While Black
 October 29th, 2013


FEATURED MEDIA

Are Problems with the Common Application Overhyped?
 October 29th, 2013 by Bianca Brooks

I have documented all almost all of this in the Tidepools wiki under [user research](#) (see your screenshot on page 70 above). The Oakland wiki (page 72 above) also has this mapped out with more descriptive detail.

COOK Report: So how do you divide all these activities? The ones with regard to the freenet. The others that we have just listed are breath taking. For example: The [Sustainable Economies Law Center](#).

Home About Us Get Involved Events Support Us Contact



Sustainable Economies Law Center




Education, research, advice, and advocacy for just and resilient local economies.

Programs: Food Cooperatives Community Enterprise Rethinking Home Work in the New Economy
 City Policies Community Currencies Resilient Communities Legal Cafe Legal Profession in the New Economy
 Community Renewable Energy

Thanks to everyone who contributed to the Campaign! Keep supporting SELC
 Posted on October 10, 2013


Dear friends, Thank you to everyone who stepped up to contribute during our Shareable Cities Campaign. The fundraising drive is now over, but you can support SELC's work removing barriers to the sharing economy by contributing a tax deductible donation any time. SELC touches the lives of people in your community every day. We inspire innovation and...
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RELEASED TODAY – First-Ever Sharing Economy City Policy Brief
 Posted on September 10, 2013


Share this with every urban leader, mayor, city planner, or council member you know. Today, the Sustainable Economies Law Center and Shareable released the first ever policy brief of its kind, called Policies for Shareable Cities: A Sharing Economy Policy Primer for Urban Leaders. It details 32 specific policy steps that local leaders can take to benefit from the growing sharing economy and support...
[Continue Reading](#)

Fall 2013 Sharing Economy Law Workshop Series
 Posted on August 30, 2013

This fall, SELC is offering an 11-part workshop series for attorneys and legal professionals seeking to build skills and knowledge to meet the legal needs of the sharing economy. Click here for the full listing of workshops. This is the first workshop series of its kind! The curriculum for the workshop expands upon SELC's groundbreaking book, Practicing...
[Continue Reading](#)


20 Ways SELC is Changing the World this Summer!
 Posted on July 12, 2013

Read the latest news from your favorite sharing economy nonprofit law center! (There's a LOT we've been up to!) SELC has been working hard since our last newsletter and we want you, our friends and supporters, to know what we've been up to. Read below about the exciting programs, advocacy, and collaborative endeavors we've been...
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 Click for SELC's Blog About Training Lawyers Who Don't Go To Law School

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But again with regard to the freenet, what part of them are showing people how to hack firmware and put up and implement new nodes to increase connectivity and what part of the effort is figuring out how to introduce and interweave potential network users with some of these new technologies like the hacker space, Fab labs, bio-hacking, 3-D printing and so on?

There is, I think, a suspicion that some kind of decentralized localized economy may exist somewhere out there. There is also some interesting [writing on decentralized economy here](#).

Marc: I think there is a [great mass of people thinking](#) about these things especially in Oakland right now. It seems that a lot of things are trying to happen but it's difficult to determine right now how many of them will be successful. Information about Bay Area trends is [available on this page – scroll down](#). There are several groups right now starting up about the ideas of decentralized economy and structuring decentralized networks.

Actually just this week there is a group that is committed to buying a really big building at a central location in Oakland. That will hopefully be occupied by a bunch of these groups that are interested in creating a critical mass of people focused on this kind of change.

COOK Report: Are you and Jenny unusual in the respect then you are both trying to build conductivity but also both highly interested in bringing out a localized independent economy from that conductivity?

Marc: Of the two of us I'm probably the more technical while Jenny is the more expert of connecting to and developing new communities. But the both of us right now are focused on trying to establish the first 20 nodes all on our own in order to open a new Bay Area Freenet which is to say that the time has come to take the hardware that we crowd-sourced over the summer put it together, install it, and see if we can get a viable operational network running from it.

But to properly address the question you asked: No I don't think we're unique. From my experiences with the european hacker scene I would say that the interest in decentralized networks and independent/alternate economies and social structures usually go hand in hand.

COOK Report: Any maps that identify where these nodes will be would be useful.

Jenny: Actually that's what I need to work on after we finish talking. [We do have a map of central nodes](#) that people have selected on the [sudo room site](#). But let me first offer you my sharable article on the birth of Sudo Room and relate events in the bay area "do-ocracy culture."

2012: Designing Organizing and Building the Sudo Room in Oakland as a Part of a Community of Hackerspaces

Jenny: A year ago I wrote a published on [Shareable a short summary](#) of hackerspace in Oakland that included my work with the sudo room and a listing of other Oakland efforts. What follows is the central focus of the Sharable article.

“With visions of a federation of Bay Area DIY communities dancing in our brains, we'd invited nearly a dozen ethically aligned groups and individuals to check out the other rooms available for rent that surround the common space in the building we will be moving into this week. As such, our group today includes representatives from [Liberating Ourselves Locally \(LOL\)](#), [Ace Monster Toys](#), [Noisebridge](#), and the [Anarchafeminist Hackerhive](#).

To rewind a bit and cover any confusion over the oft-misunderstood term “hacker,” allow me to clarify: A hacker is not necessarily someone who maliciously breaks into computer systems – as mass media portrayals would have you assume. A hacker is a learning enthusiast, someone who is so curious as to take something apart completely in order to discover the fundamental components of a system. To “hack,” then, is to learn the process of creating something through doing it, and through modifying it to do what you want it to do (a more detailed explanation can be found [here](#)). Put simply, in the words of McKenzie Wark (author of *The Hacker Manifesto*): “The slogan of the hacker class is not the workers of the world united, but the workings of the world untied.”

Among our group today, I count at least two biohackers, three writers, half a dozen software developers and web geeks, and a bevy of folks with interests ranging from 3D printing to building robots to starting a cooperative business. What unites us is a shared passion for citizen science and open access to tools and education – as well as a strong desire for community.

Events in the Life of Sudo Room

This month marks the one-year anniversary of Sudo Room's first meeting. From the beginning, we committed ourselves to the active practice of openness, transparency and collaboration. Drawing from prior experience as well as the [Hackerspace Design Patterns](#) guide, we set up a [mailing list](#), [wiki](#), and [IRC channel](#). We take notes together using an [etherpad shared document](#), and post them on the wiki after each meeting. We decided to run by consensus without fastening ourselves to a binding agreement; iteration is invaluable, and we wanted to leave room for growth and change.

The first Sudo Room meetings were held at an Oakland technology salon, [Tech Liminal](#), every Wednesday night for more than 6 months. There, we incubated at somewhere between 5 and 12 folks per meeting, regularly overlapping with local techie non-profits who showed up to meet, organize, and hack on innovative civic projects. During this time we also created a collaboratively written mission statement:

Sudo Room is an open, non-hierarchical, collaborative community of humans, including tech developers, citizen scientists, activists, artists--and all combinations in between and beyond!--who are interested in and working towards social change. Our goal is to create the first inclusive, dedicated hackerspace in downtown Oakland, to share ideas and projects in citizen science, digital citizenship and literacy, environmental sustainability, community engagement, and self-government.

Sudo Room is committed to access, empowerment, transparency, and public/social good. Sudoers have a great diversity of interests and we emphasize respect and solidarity among ourselves and with others.

In May, we had a kickstarter/fundraiser (calling it a 'kickraiser') featuring a panel of Bay Area hackerspace representatives, including [BioCurious](#) (a DIY biotech space in Sunnyvale), [HackerMoms](#) (a

hackerspace for moms in Berkeley) and [The Crucible](#) (a fine and industrial arts education space in Oakland) as well as the aforementioned (Noisebridge, LOL and Ace Monster Toys). Participants spoke on the topic of "Hackerspaces: The Necessity for Community Spaces Here and Everywhere."

[SNIP]

Sudo Room has also been in a courtship with [Coyote Counter Collective](#), an Oakland-based workers' cooperative workshop and retail space for fashion designers, leatherworkers, and other kinds of functional, sustainable artistry. Our [clothes-hacking night](#) during September's Art Murmur featured electronic conductive thread and LEDs sewn onto donated clothing and homemade hats.

Just this week, Sudo Room voted unanimously to move into the larger space at 2141 Broadway St. We intend to hold a series of fundraisers throughout Oakland throughout the end of November and the first week of December to ensure we keep member dues as low as possible.

Toward a Federation of Bay Area DIY Communities

Our kickraiser helped us raise the funds we needed to get our initial space, but more importantly, it brought together other Bay Area hackerspaces in a spirit of cooperation, camaraderie and support.

There is something truly exciting about the interconnections between subcultures and the value of their hybridization in the spirit of creativity. What happens, for instance, when you combine botany buffs and hackers? You might get something like [BioBridge](#), the amorphous DIYbio contingent of Noisebridgers, working on experiments in oyster mushroom growing and developing [Arduino-controlled sensors](#) for monitoring temperature and pH levels in kombucha brews and sourdough starters. Here you would also find overlap with [Tastebridge's Vegan Hackers night](#) and perhaps some friendly [Food Not Bombs](#) volunteers.

While Sudo Room embraces an inclusive model of "hacking" that goes beyond hardware and software - to wetware, wearables, and even culture itself - there is certainly reason to resist confining ourselves to hacker culture alone. While not disregarding the admirable ethical core of lifelong learning, decentralization, and collaboration, the term is also connotative of an elite culture consisting of a privileged class of internet savants.

Jen-Mei Wu, co-founder of Liberating Ourselves Locally, wrote the following in response to our invitation for Saturday:

"I really liked the way you called the proposed federation a DIY federation and not a hackerspace federation. Often when I talk w/ hacktivists, I get the feeling they think everyone should hack, that hacking == DIY. But ... there's this whole amazing universe of DIY groups that live outside (sometimes waaaay outside) hacktivist circles, and they are doing great things.

I think hackerspaces really could learn a lot from each other, but that they could gain even more by being part of a larger community of DIY organizations."

LOL, short for Liberating Ourselves Locally, is an Oakland maker space founded and run by people of color. The group works closely with other local grassroots organizations dedicated to fostering self-sufficiency and community-based commerce. Their events have ranged from weekly carpentry

classes to yoga classes, meditation sessions, Decolonize study groups and political co-education (with pancakes!), demonstrating the wide swath of possibilities for creating an inclusive community education model.

Considerations Toward the Future Network Economy

As we move forward into the future of increased access to technologies, citizen science, and DIY engineering, we'd do well to be wary of those who would seek to co-op and capitalize off of this movement. Maker Faire's announcement early this year that they are now accepting funding from DARPA – who are also [sponsoring 'makerspaces' in high schools nationwide](#) – has introduced some [deep questioning](#) over the ethical responsibilities of hackers and DIY enthusiasts. Are we still DIY if dependent on funding from the US Defense Advanced Research Projects Agency? Do we want to support military-funded and run projects in our schools?

The solution may well be to foster the kind of grassroots coalition-building that would connect DIY spaces and tools with neighborhood community organizations, worker-owned business cooperatives, local investors, and new opportunities for crowd funding. The JOBS Act, which passed through the House earlier this year and comes into action in January, would allow the public up to \$1 million in shared equity through crowd funding platforms – bypassing the typical route through Wall Street by which companies and investors were previously obligated to navigate.

These are a few of the matters we are trying to hack in our efforts to manifest solutions in the spirit of collaboration. Have any ideas or questions? Make them shareable! We'd love to hear your thoughts and impressions on the potential of community creative spaces and how best to align our highest dreams with our deepest principles.”

Oakland People's Network Firmware, NCL and Related Matters

COOK Report: Would you tell me something of your thinking about the Free Network Commons License and the question of whether or not you will be developing your own firmware? Isaac, after he came through to visit you about a month ago told me that you were enthusiastic about the Commons license but that you probably were developing your own firmware snack. Would you comment on those questions?

Marc We are excited to be participating in the Network Commons License effort. As for Libre Mesh, the goal seems to be a mesh firmware offering the ultimate in ease of deployment for everyone, which is a tall order. It is especially difficult because so many of the technological choices in a mesh network are based on decisions that will vary between different mesh groups. Will they want centralized control of firmware updates? Will they want to route all Internet traffic through a VPN run by the mesh organization? Since Libre Mesh does not yet support the technological choices made by our group, we decided that it would be better to quickly develop a firmware that does what we need, and does it well, instead of starting out with a more ambitious goal that could risk burning out our developers before getting any pay-off in the form of a deployed functioning mesh. [**Editor:** the [Mesh Decisions page](#) in the SR Wiki Screen shot on the next page (p.80 below) is an extremely rich resource.]



Page [Discussion](#) [Read](#) [Edit](#) [View history](#)

Mesh/Decisions

Each new community mesh project faces a set of decisions. This page contains a discussion of some of these decisions.

Contents [\[hide\]](#)

- 1 Mesh router as primary access point
 - 1.1 Decision
- 2 Commercial II non-commercial
 - 2.1 Decision
- 3 Internet
 - 3.1 Internet connected mesh II LAN only
 - 3.1.1 Decision
 - 3.2 Sharing of Internet by node-owners
 - 3.2.1 Decision
 - 3.3 Connecting isolated mesh nodes over the internet
 - 3.3.1 Decision
 - 3.4 Hiding node-owners source IP
 - 3.4.1 Decision
- 4 Organizational structure
 - 4.1 Formal organization II No centralized entity II Separation of organization and network
 - 4.2 Non-profit II For profit
 - 4.2.1 501c3
 - 4.2.2 B-corp certified for-profit
 - 4.3 Membership / peering requirements
 - 4.3.1 Membership
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 - 4.4 Decision
- 5 Ownership of and access to infrastructure
 - 5.1 Centrally owned II Distributed ownership
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- 6 Sensors / add-ons
- 7 Captive portal / splash page
 - 7.1 Full captive portal
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 - 7.3 Block captive portal detection only
 - 7.4 No captive portal
 - 7.5 Decision
- 8 Network neutrality
- 9 Logging
- 10 Encryption
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 - 11.1 Decision
- 12 Abuse
 - 12.1 Decision
- 13 Support
- 14 Naming
 - 14.1 Meaning vs. non-meaning
 - 14.2 Generic vs. non-generic

Are we going to have an organization with more central nodes or would we tend to leave a lot of users by themselves? I did not want to make a lot of decisions that would lock people in until we had some more experience of our own in actually running a small network. With ether mesh we were looking at a pretty grand goal. But I didn't want to postpone

the experience of actually running the community network. The next step for us after we do these things first, might be to have something like libre mesh that works for everyone.

COOK Report: You have to take what you have at hand and then just to start using it and see how it works for the people involved?

Marc: Yes and this will give us the opportunity to start building some local expertise in such matters as how the firmware fits together and then we can just start managing it in troubleshooting it. It seemed to us that we do not have the years of experience necessary to make libre mesh work. Consequently we are borrowing some ideas from mesh network [WLAN Slovenia](#).

WLAN Slovenija



The story of wlan slovenija open wireless network of Slovenia <http://wlan-si.net>

[Luka Mustafa musti@wlan-si.net](mailto:Luka.Mustafa.musti@wlan-si.net)

22. December 2011

How it all begin?

2006

FunkFeuer community presentation in Slovenia. Enthusiasts pick up the idea.

2009

wlan ljubljana - city wide open wireless network 28 nodes, 13000 non-unique users

2011

wlan slovenija - country wide open wireless network 150+ nodes, 140000 non-unique users

The situation in Slovenia.

broadband (xDSL or cable) - 60% of households - '10 FTTH in bigger cities

76% of population uses Internet

500% broadband connection growth '05-'10 poor coverage of rural areas

The problem.

Abundance of broadband capacity in cities. Sharing covers public areas.

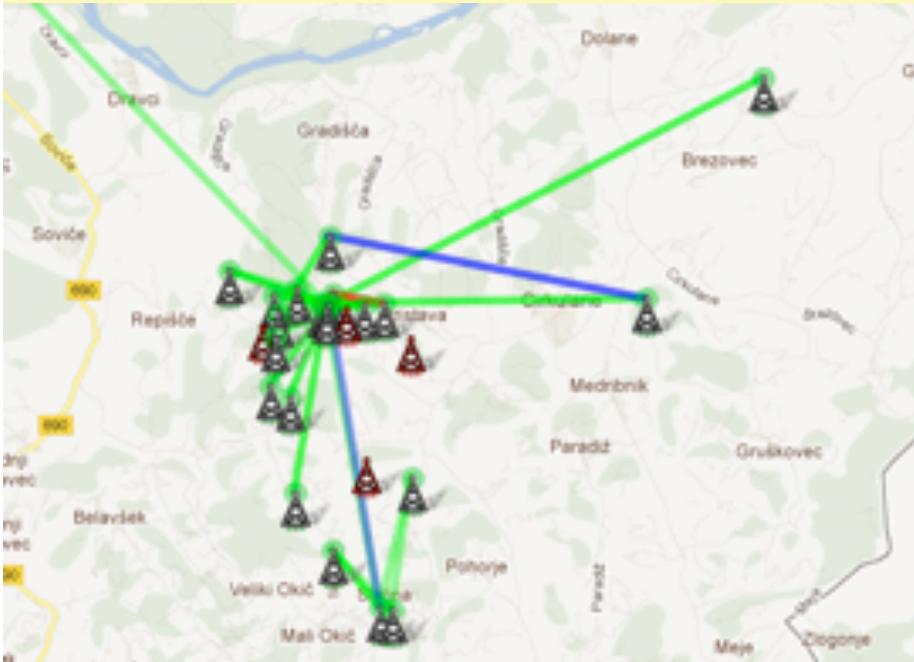
No infrastructure in hilly, low population density regions. Sharing enables basic connectivity.

Fail!

Haloze county creates a county web portal. 80% households do no have internet access.

Residents build their own network.

Win!



The Goal.

Enable people to easily build networks. Develop simple, time saving and open source systems. Promote community networks.

Share the best-practice.

wlan slovenija – open wireless mesh network of Slovenia <http://wlan-si.net>

<http://grow.wlan-si.net> <http://dev.wlan-si.net>

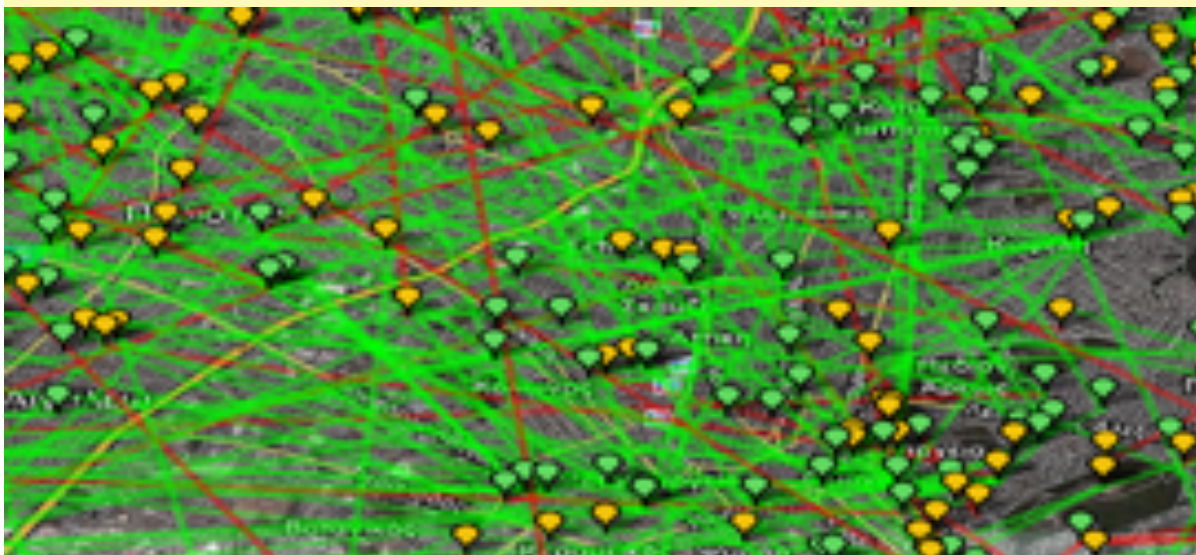
What does it look in reality?



Slika: wlan slovenija network map



Results.
Autonomous network. Unlimited connectivity. Free.
New medium for communication.





Slovenian Mesh Network Characteristics

I think the most interesting thing that the Slovenian Mesh Network did was having automatic network tunnels that would connect nodes via Ethernet relay nodes. If they had two nodes that were not connected directly by the mesh, these nodes that might be very far away from each other and could not see each other directly. In such a situation, they could enter the Internet and route a hop or two through the Internet until they reached exit point where they could exit the Internet by connecting back to the Freenet.

And the next thing they did was to use a second VPN called exit node where every mesh packet traveling through the mesh network that leaves the mesh network and goes into the Internet, passes through one of these exit nodes. Every exit node's IP address has the mesh organization listed as the abuse contact such that legal inquiries will be dealt with by this organization. This leaves the people running the mesh and are donating some of their bandwidth to the mesh with peace of mind that they won't be besieged by piracy issues.

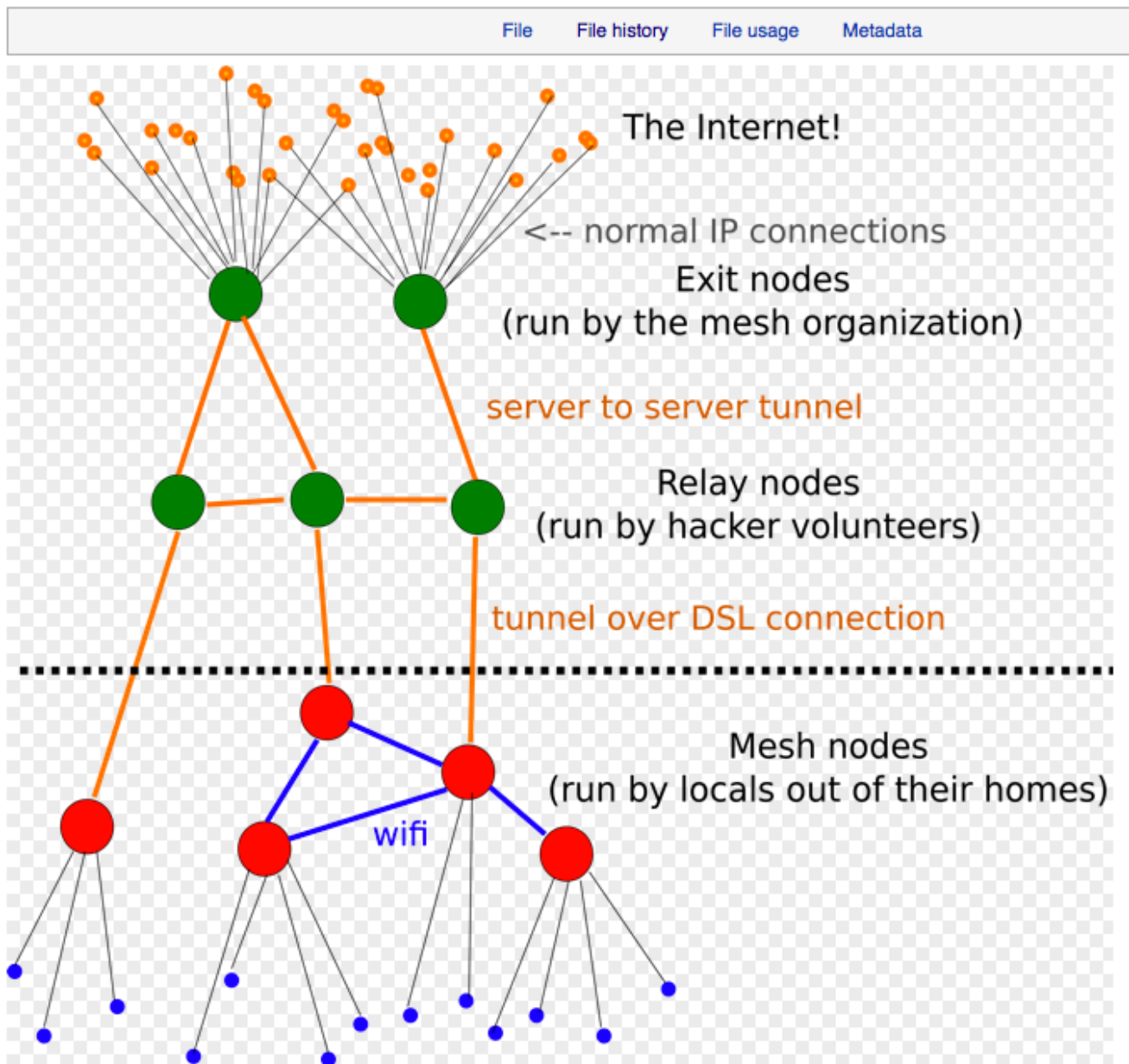
COOK Report: Is some of what you are talking about here a situation where someone who is paying for a commercial broadband Internet connection would be taking their wireless router for that connection and leaving it unlocked so that other people without such paid for connection could login and use the first party's bandwidth?

Marc: Yes. With our firmware there is an SSID that comes out at people's open.mesh and if so connect to my wireless router to that SSID then all my traffic will be routed through the nearest commercial DSL connection. A second SSID is used by the mesh nodes to talk

to each-other internally. There is a third SSID that pops up that is password-protected and people using it will be able to have this for their own private use. They can use that SS ID to administer their node or for a simplified web admin page and they can determine how much bandwidth they will share ranging from 0% on up. [This sudo room page explains our firmware.](#)

[We have a little diagram that shows how all this works.](#) We have this also on a poster from the Berlin conference from last month.

File:Mesh topology diagram.png



Upstream Connectivity

COOK Report: Given your geography getting connectivity to major Internet exchanges ought not to be difficult. How is that working out for you?

Marc: The Internet Archive already has a wifi node there that provides 100 Mb per second connectivity and within two or three hops we can reach it fairly easily.

Jenny: Another benefit of our geography is that, as you drive East and leave Oakland it becomes quite hilly and radios on rooftops to the East can broadcast bandwidth westwards down into Oakland.

Marc: We have a local ISP that provides quite low-cost connectivity to apartment complexes but will do so only if some percentage of people in the complex sign up. We will be talking to these guys to see if they are willing to cooperate with us and I provide either the ISP or apartments.

COOK Report: Are you building any really diversified hardware? How would you summarize where you're putting your nodes?

Jenny: A lot of the core team lives in West and North Oakland so probably the first 20 nodes will go there.

Marc: The idea is that these people being reasonably technical will be able to troubleshoot fairly well the problems likely to be encountered in the initial launch of the freenet.

Jenny: We will be launching the first 20 nodes and we have another hundred that we raised money for and by crowdsourcing this past summer. After the first 20 we would like to focus on areas further out in East Oakland where there is less connectivity.

COOK Report: Are you building any really diverse hardware? Like Isaac's freedom towers for example where such devices would be used for backbone nodes as opposed to less powerful less expensive devices that would be used in people's homes or apartments to communicate with the local antenna.

Marc: We are looking for people with good rooftop locations where we can mount antennas you sold to run a backbone at 5 GHz some of these nodes will use 90 to 120° antennas and be able to cover consequently a wide area. So in every neighborhood we are really looking for people with a house on a hill on the rooftop of which we can put one of these semi-directional antennas or multiple directional antennas. We also have a team member, Adrian, who is working on open source TDMA support which is important for the point to multipoint connections. We are using primarily Ubiquiti radios for the 5 GHz coverage.

Jenny: We crowdfunded during the summer the initial round of hardware off an eBay deal. A lot of the gear came from Texas from a previous generation ISP. This is okay because the majority of the nodes will not need to be operating at a very high speed anyway. And to begin with, more than 50 Mb per second will not be needed. We do have about five nodes that should operate in the hundred megabit per second range.

COOK Report: To whom are you talking at the Internet archive?

Marc: Brewster Kale is the guy I've been emailing with and he said we could use all the bandwidth we could get from their Richmond node. We need to be establishing connectivity with his major technical person who is Tim Pozar.

Open Garden

COOK Report: that's sounds excellent and I really urge you to get in touch with Tim Pozar as soon as is possible because I'm beginning to wonder if there is any usable infrastructure from years gone by in the hills around the bay. Tom Jennings ISP of a dozen or more years ago I believe was called the Little Garden. Now speaking of garden tell me about [your open garden project](#).

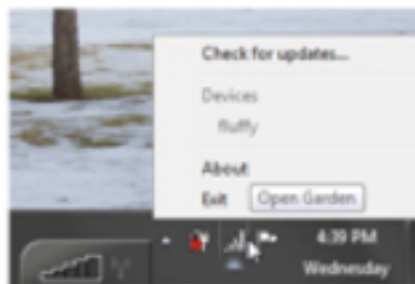
The image is a screenshot of a website banner for 'Open Garden'. The banner has a green background with a close-up of a child's face on the right, blowing a dandelion seed. The text on the banner reads: 'Open Garden', 'Share your mobile Internet among all your devices', 'Download for Mac' (with a tree icon), 'Free for Windows and Google play' (with the Google Play logo), and 'WATCH DEMO'. In the top right corner, there is a blue button that says 'We're hiring'. A small tree icon is in the top left corner.

Screenshots Install Open Garden on all your devices.

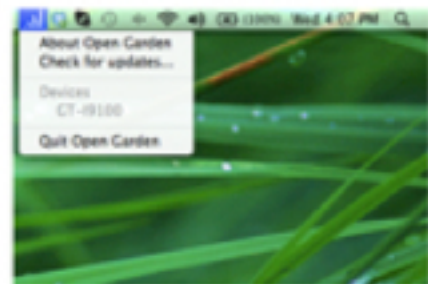
Android App Screenshots



PC Screenshot



Mac Screenshot



Jenny: Open Garden has developed a technology for sharing Internet connections between mobile devices - specifically Android devices and Windows and Mac laptops. It was towards the end of my internship that was focused on doing interviews with them to develop decentralized applications that the CEO asked me in April 2013 if I was looking for a job. The internship was with the Open Technology Institute (OTI). It was a three-month internship sponsored by the [Outreach Program for Women sponsored by GNOME](#). The program is made up of about a dozen open source companies who each hired between two and seven woman interns.

Last week we won a big international competition for best startup at the [Global Mobile Innovation Conference \(GMIC\)](#). There were 10,000 attendees and we were competing with a couple hundred other start ups. It was a scene of round-the-clock press, interviews and meetings. I'm learning a lot about start-up cultures by working with them and confirming some of my previous views about what motivates them. I am also hoping that in the near future there will be open source developments, and there is discussion about setting up a parallel nonprofit along with the for-profit branch of the organization.

If I stay on with them, I would like to be involved in that parallel branch acting along the lines of a technological anthropologist working with projects in underserved communities.

COOK Report: If you are focused on connecting people in underserved areas with kinds of activities that they could begin to make a decent living from, I cannot imagine a better or more significant or more important area be working in.

Jenny: I don't yet have all the answers but I am very excited to be working in this area.

COOK Report: And meanwhile I am trying to become the connectivist and documentarian for much of this. A critical question it seems to me in for people with interests such as we have is how do you go out to a community and spread the word to the innate talent that is lying there uncultivated. Activities and tools that can be used to release of economic sustainability where presently they do not exist

Marc: It seems to me that hacker space networks are very probably a significant answer to what you are describing

Jenny: I have [an article that I wrote on the founding of Sudo-Room](#) and where the ideas came from and the information about the timelines involved. We have been called cyber areas of hacker space in our wiki is very heavy with discussions and citations. But we have already mentioned this and quoted the majority of it above.

The screenshot shows the Sudo Room Wiki Main Page. At the top left is the 'SR' logo. Below it is a navigation sidebar with links like Home, www.sudo-room.org, Welcome FAQ, Getting Here, Current Events, Things We Need, Crisis Resources, Recent Changes, Random Page, and Help. The main content area is titled 'Main Page' and includes a 'Welcome to the sudo room wiki' section with a sub-header 'So far we have 186 articles'. Below this is a paragraph describing Sudo Room as an open membership, non-hierarchical, collaborative community. To the right is a 'Quick Navigation' section with links to Articles of Association, Organism Portal, Money Portal, Projects, and Events. Further right is a 'Documented Objects' table with a grid of object IDs. Below the welcome message is an 'Explore the sudo room' section with a calendar icon and text about weekly meetings. To the right is a 'Featured Page' section for the Sudo Smart Phone (Q-211). At the bottom is a 'Distinguished User' section for User:Vicky, with a photo and text about her work on Oakland Wiki and Sudo Room.

COOK Report: Do call the various entities we have discussed radiate out from city government, the school system, libraries, community gardening groups? Do they seem to have sprung up spontaneously?

Jenny: Most of the groups in Oakland have no formal ties to each other or to city government. Open Oakland is an exception. There may be others. The hackerspaces are beginning to connect to the schools in the area. This is happening both in the form of

individual hackerspaces and schools and colleges reaching out to each-other, and in the form of Hacker Scouts. Hacker Scouts is more out of the maker community than the hacker community, and we can and should get into a discussion of the difference sometime soon.



Hacker Scouts

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About Us

Submitted by Samantha on Thu, 10/04/2012 - 9:32pm

Hacker Scouts is a national non profit organization, founded in the Fall of 2012 in Oakland CA, that focuses on STEAM (science, technology, engineering, art, and math) education, skill building and community engagement with the aspiration to help our children develop skills in the areas they are truly interested in, abilities that would allow them to dream big and create big.

Our mission:

Hacker Scouts is a non-profit, inclusive organization dedicated to addressing the needs of the global maker community through STEAM education and skill building. The Hacker Scouts model provides knowledge, application, and retention of concepts and skills while supporting independence and interest. Our innovative open source programs promote learning through a variety of developmental and educational methods which prepare our children to adapt to new technology and give them the ability to achieve individual goals. Hacker Scouts encourages the relentless pursuit of knowledge through relevant hands-on activities, mentorship, community and family engagement, and the development of a strong moral character and leadership skills through our core values.

Follow Hacker Scouts on:

 [Facebook](#)
 [This site \(RSS\)](#)

User login

[Log in/Register](#)

Support Hacker Scouts



Hacker Scouts Oakland I
by Hacker Scouts

Marc: I'd say that these groups function mostly autonomously, with some overlap of members, but we've initiated efforts at better inter-group communication and coordination through both [BACH \(The Bay Area Consortium of hackerspaces\)](#) and through a software project called Mycelia which Jenny and myself are working on but which has only launched in a very minimal form in sudo room and Labitat.



hackerspaces

[create account](#) [Log in](#)

page

discussion

edit

history

Hackerspaces

Communication

Active hackerspaces

ALL hackerspaces

> add a hackerspace

List of events

> add an event

List of projects

> add a project

Job Listings

> add a job offer

Recent changes

What links here

Related changes

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Bay Area Consortium of Hackerspaces

The **Bay Area Consortium of Hackerspaces** (BACH pronounced "bah-kh" as in [Johannes Sebastian Bach](#)) is a loosely-organized association of hackerspaces in the wider San Francisco Bay area.

Join the email lists: [announce](#) and the [discuss](#)

Principles [\[edit\]](#)

BACH should operate under principles in the same vein or spirit as these:

- BACH should be very thin, with almost no over-head.
- BACH should exist to help its member spaces coordinate, communicate, and collaborate with one another.
- BACH should, above all, support the Bay Area hackerspace community's *existent inter-dependence and resilience*.
- BACH should, if possible, help articulate shared values between the spaces.

Meeting Minutes [\[edit\]](#)

- [April 26, 2013](#)
- [May 24, 2013](#)
- [June 15, 2013](#)
- [July 20, 2013](#)

Newsletters [\[edit\]](#)

- [Newsletter 0](#)

Projects [\[edit\]](#)

Some potential projects include:

Simple [\[edit\]](#)

- Event / calendar coordination to help indicate overlapping events, as well as opportunities to attend each other's events.
- Resource sharing, under mutually agreed-upon terms.
 - To this end, setting up [inventory tracking](#) such as Labitrack, currently in use at [Labitat](#) and [sudo room](#).
 - Labitrack is currently being rewritten and expanded to include project and skill matchmaking on a map-based interface. Contact [User:Juul](#) or [User:Tunabanas](#) for more info!
- Annual "BACH" Conference to converge the community and prepare for the coming year.
- Have a single event for sharing some updates / progress / etc for a few hackerspaces (e.g. Dorkbot).

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Mycelia* @ <http://mycelia.cc> *mycelia* | *connecting the commons

Mycelia is a decentralized documentation and inventory tool, enabling individuals and communities to self-organize their own projects and associated data. Much of these projects are also being documented on <http://oaklandwiki.org>. In particular we've started mapping out especially relevant projects [at Oakland Map Jam](#). Here is the write up of that.

The Oakland Map Jam

The **Oakland Map Jam** was an event on Oct. 18, 2013 that was an effort to map out and make visible the collaborative community spaces and organizations that already exist in Oakland. We are documenting everything that's part of the open/p2p/collaborative/free/sharing landscape in Oakland including worker-owned cooperatives, farmer's markets, hackerspaces, coworking spaces, intentional communities, community gardens, urban farms, tool and seed libraries, free stores, art collectives, public parks, bike kitchens and infoshops – to name a few of the wonderful things happening in our city!

This event is part of the blog Shareable's [nationwide map jam](#).

Join the Sharing Cities Map Jam



Share on Facebook



Share on Twitter



Hey sharing folks, Shareable is hosting the Sharing Cities Map Jam October 12th through the 26th. This is the kickoff action of our just announced [Sharing Cities Network](#).

We want to collaborate with you to map all the sharing goodness in as many cities as possible around the world. You know all that good stuff we've been writing about for the last four years, like coworking, hackerspaces, public parks, lending libraries, carsharing, bikesharing, and more (I could go on)? Yeah, it's time to map it where you live and set the stage to grow sharing in your city.

By [Neal Gorenflo](#)

October 8, 2013

COOK Report: I see that the sudo room entry referenced above instructs people on how to just "do it." I am reminded of Jenny's remark in favor of a "do-ocracy at the beginning of this discussion. Can hacker spaces be alternative forms of agency and direction. What was it like 6 to 8 years ago? 4 years ago? Two years ago?

Marc: Definitely. The modern hackerspace movement exploded in 2007 based on a talk given at Chaos Communications Camp in Berlin. Some of the major hackerspaces started immediately after (like Noisebridge) while others were a bit slower to start (Labitat was the first hackerspace in Denmark in 2009 even though I attended the 2007 talk)

Here's a recent talk on hackerspaces by Noisebridge co-founder Mitch Altman: <http://www.youtube.com/embed/WkiX7R1-kaY>

As Mitch says at the end of his talk. "First of all, real education happens at hacker spaces. As education bureaucracies around the world continue to fail, hackerspaces around the world will continue to fill in more of the void. These spaces are where people teach because they love teaching where people learn because they love learning. They are all geared towards living the life you want to live."

"And secondly local economies grow at hacker spaces. If you do what you love, the chances are that other people will love that to and in a capitalist society people will pay you to do it. If your idea begins to grow and you need help, you can hire from the local economy and this creates a local economy that works for every one and the future of a local economy is created and hackerspaces are fantastic places to explore your **creativity an hundreds of thousands, and even of millions of us who have been abandoned by the old order build something far better the new.** Look up and explore your local hackerspace on hackerspace.org."

Jenny: My [Shareable article that you have extensively excerpted](#) above also outlines some of the core values of hackerspaces.

On the note of agency, Sudo Room is called as such after the Unix command 'sudo', which gives a user root access to the server. We seek to empower every human to actively create the world they wish to live in.

COOK Report: Are there occupy nodules left?

Marc: Yes definitely, and many of the former occupiers are working on related projects. A lot of this is being fed by the gentrification and lack of accessible cheap housing in San Francisco. Many interesting people have been moving from San Francisco to Oakland over the past 2-3 years.

Jenny: I think the last sentence Marc wrote here is confusing. Many interesting people have been moving here, but this city is and has been for a long time composed of interesting people :)

Of note, both Sudo Room and the people Marc and I live with arose out of both Occupy and the longer DIY / anarchist ethos that predates that particular movement. I don't think Occupy failed, but rather, that it helped activated people find each other, and helped many people to become activated :)

The "do ocracy" is great.... but what are they doing? Many different things. Hacking the system or "repurposing dominant culture to make it more accessible for all participants" (from a sign defining 'Hacking' that we have at Sudo Room).

COOK Report: What is Mitar doing?

Marc: A phd at UC Berkeley :-) also advising sudo mesh / peoplesopen.net

Jenny: He is specifically focused on Open Science. His dissertation project is called PeerLibrary - an open source platform for sharing annotations on academic articles.

COOK Report: This is been a real education for me. it seems that if people who were screwed by the 2008 collapse can find basic food shelter and clothing and begin to join these movements what they can absolutely do is build their own new world as independent as need be of the old society.

Perhaps the 1% will become so fearful that they institute a crack down. But let's not even look at that danger and proceed on the assumption that these movements can succeed. That they can do this by drawing people together who do what they love and although their existence may be difficult, if you can do something with passion and a desire for a sense of accomplishment, you can develop sufficiently rewarding outcomes that one would hope to keep on going no matter what the impediments put in your way. And in this sense what we might expect is the development of an alternative way of living -- a way that genetically may become superior to the neo-feudal autocracy of the 1%.

It is a time fraught with risk but it is also a time of great challenge and opportunity.

Conclusion

The technologies that can be applied to these problems, especially as Oakland shows, are extremely impressive. However, something our technology innovators all too often forget is, that a positive way forward, boils down to a deep understanding of the motivations of those to whom the technology would be offered. Additional motivations also include community understanding all of the issues faced and oftentimes strategic concerns whether or not it is the appropriate time to move forward.

As we have just seen, it seems likely that with Living Labs and guifi.net, the depth and level of detail to which all parties are now exposed can be useful in paving over prior misunderstandings. What wasn't understood two years ago, or even one year ago, can be understood and acted upon today. Indeed each network population may be seen as somewhat like a tribe. Creating a neutral fabric where there had been none before has been the driving factor behind guifi.net.

By way of contrast, in Oakland, California you have a roughly four decade long period of citizen activism that is deeply and directly involved with their local government which, in the wake of Occupy that was stronger in Oakland than probably anywhere else in the United States outside Wall Street. It was also probably much more broadly supported in Oakland than even in Manhattan. Oakland offers a stunning demonstration of what is possible when there is not only an understanding of the technology out there but a shared feeling among the citizens that it is definitely in their interest to participate and become involved.

Oakland and Kansas City Compared and Contrasted

Under Tom Pendergast, Kansas City had its own "set a part." But since then things seem to have degenerated into the cultural isolation affecting most of our large urban inner city areas. Internet connectivity is great, but it looks like Kansas City may take a few more years before the FNF and its partners figures out what they want to do with what they have built. Here is a real chicken and egg situation. Isaac has built a network and invited a cross-section of inner-city groups to use the infrastructure. There is a mix of black culture and economic development seasoned with a mixture of white Christian public assistance groups. They have moved extraordinarily fast. So fast that they have not yet had time to develop a shared sense of purpose and responsibility. One wants things to happen overnight. Unfortunately it doesn't seem to work that way. Once an organizational mistake is made, the critical question becomes how is it dealt with and how is trust reestablished?

All of this goes back to my friend Jeff Michka's life long interest in building community organizations. I want to extend to Jeff a hearty thanks for helping me think these issues through. Without an deep understanding of and connection with the community you are serving as an NGO, you are no better than Christian missionaries bearing gifts to the natives. You don't know the natives and what makes them tick, you just assume you have something to "bestow" on them - in this case internet access which is important to them. But can you explain to them specifically why? Or are you just like the first generation of missionaries? In other words you know it's important but how can you articulate why without having lived within and worked within the community to whom you come bearing "gifts."

Do you run an NGO and are you fixated on first and foremost the survival of your NGO? What do you do when you find out that the its survival depends on satisfying grant giving agencies outside the community? Do you merely bring gifts to the people or do you walk and talk and live "among them" for one would hope many years. Compared to Kansas City, in Oakland it seems as though things have gone in reverse. The network in Oakland is emerging organically out of the culture and people in Oakland and this is probably better. I am not aware of any community nets that have been brought from the outside to a community and ten years or more later still survive. This is one reason I have invested a lot of effort in trying to assist Isaac.

In support of its own citizens in their economic pursuits, Oakland has built quite possibly the most outstanding citizen;s infrastructure in the nation. Having done this since perhaps 2006 or seven, the wireless mesh network follows in 2013 and 14 almost as an after-thought firmly positioned on the initial foundation.

One of the greatest policy conundrums that this whole exercise has raised has been to witness how the top down expert guidance provided from within well-meaning academia is being dis-intermediated by the open source nature of the global arena and specifically by the ad hoc "do-ocracies" of hackerspaces. In an open source world citizens don't need the expert guidance that once came from the research labs of corporate scientists. And after Corporations ditch those labs replacing them with their own university funded projects we find Artur Serra's well-meaning efforts are in danger of being superseded by the efforts of the sudo room and related projects in Oakland California. But Artur has just shown admirable flexibility. In flexibility lies strength and endurance.

Along these lines, cities need to pay very close attention to their relationships with corporate sponsors. Cisco's assistance may seem like donated training but it is very much weighted down by the need to make sales. The architecture of the Cisco ecology of switches and routers and radios is heavily copper based. The copper based architecture is laden with implications for cities on the basis of carbon emissions and electricity costs. But Barcelona and those helping out need to realize Cisco is not alone among the top enterprise Ethernet switch vendors - see also Dell and Hewlett Packard. Companies with large

commodity inventories of “time tested” products are always going to be eager to move their inventory

Counterbalancing state-of-the-art information “govern” to cities like Barcelona may come from truly independent consultants. But contrarian input from a public-private partnership is unlikely. I say this because I have a friend of 20 years standing who recently re-launched his entire consulting business on the premise that large enterprises would be in a much stronger economic position by running fiber to the desktop rather than using the so called “industry powerhouse vendor” ethernet switch technology. The trap is an “industry-proven” copper ecology where about 10% of the space of every floor of a larger enterprise office building had to be devoted to a power hungry wiring closet. After 24 months of little contact I asked him in November 2013 if the situation had changed. “No. It is worse,” he replied. In every trade magazine, paid for of course, by vendor advertisements you will find no information that there is any other way to do things beyond the traditional. Caveat emptor.

And a final point, one to which I certainly do not have the answer is that, in a truly open source world, large numbers of additional jobs will be lost when there are no proprietary solutions left to employ the people needed to keep them proprietary. Of course, if we assume that in the late stages of capitalism, as we trend in the direction of the free and open society based on the Commons, not being tied down to the uncertainty of having to satisfy one’s corporate employer could turn out to be a blessing - especially if the societies of the decaying nation states were reoriented by their citizens away from the propagandistic “rugged individualism” and “winner take all” point of view.

We see articles warning about the [increased pace at which computerization is eliminating jobs](#). But when we see these, we would do well to remember that this issue is not technology, per se, but the uses to which political power puts social and economic wealth. The [FLOK Society project in Ecuador](#) may soon pose an important illustration of this principle.

Especially with a movement as young and vital as the global Free Network movement, it is tempting to multitask. To fundraise, to attend global face-to-face conferences, and to keep things on track at home with allied organizations is a difficult process. Given the precarious state of the world, it is tempting to go for the speediest possible build-out. However, in an effort that is largely volunteer, a deliberate forward effort - one with measured pace of understanding and trust amongst all parties - will go a long way,

Participants will quickly find that not only is all politics local but that the politics of localities differs hugely, and that slowing down and taking a deep breath, and making sure that all parties have a shared understanding of why they are doing with they are doing will go a long way toward building the trust and sustainability of a humane local economy.

Next Issue

Approximately February 1, 2014

Economic development in Trenton NJ. Interview with Eric Maywar. Forstalling a sacrifice zone? Living labs in New York City Jerry Hultin. Open source hardware review. Ecuador FLOK Society Project. Terra Fredrichs interview done 11/24/13. These are possibilities and not guaranteed. As of publication the interview with Eric Maywar is complete.