Bringing down the city walls: new ‘open innovation’ for new open cities

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BRINGING DOWN THE CITY WALLS: NEW 'OPEN INNOVATION' FOR NEWLY OPEN CITIES

As one enjoys the cultural and leisure experience of wandering around the narrow streets of historic town centres, often imprisoned within medieval walls, it is impossible not to reflect on how much cities have opened up. Once the fear and rivalry amongst neighbour cities or countries is overcome, cities have jumped over their old defensive walls and extended apparently endlessly across land, sometimes so much as to touch and even merge with other cities, creating extensive metropolitan areas or complex urban networks. Cities have also opened up to people from elsewhere, absorbing new cultures, styles and traditions. Many cities once famous for a single traditional sector have opened up to new businesses and services. Cities and their growth are in fact one of the key engines of a drastic change from a defensive and closed society towards an open global community. And at a time where open innovation is changing the way organisations across the world look at and take advantage of one of society's last "closed fortresses" – the world of research and development – it is worthwhile considering how cities are, turning their own ways, adopting and promoting such innovation methods to effectively 'open up'.

Open innovation – from closed labs to open spaces:

Although open innovation was first espoused as a theory by Henry Chesbrough as recently as 2003, its roots in reality go back at least as far as the Italian Renaissance. It emerged from what at the time were the most open and dynamic cities of the world—networks of apparel businesses in cities of the Piedmont and Tuscany regions were responsible for rapid innovation in techniques for producing silk and cotton fabric. Now established as a proven theory for firms, open innovation is making its own way back into city governance.

As a modern theory, open innovation starts with Chesbrough highlighting a dramatic change in the way in which Research & Development (R&D) is performed in US companies in the last 30 years. In 1981 over 70% of the R&D performed by US industry was conducted within companies with more than 25,000 employees. By 2003 the proportion of R&D conducted by these firms had reduced to around 40%. During the same period, firms with less than 1,000 employees, which had conducted around 4% of all R&D in 1981, had grown their R&D to over 20% of the total.

In short, we are now seeing a change in the way in which innovation is occurring, and will occur in the future, and the major force within the changing models of innovation is 'Open Innovation'. At the core of open innovation is the principle that innovation may come from anywhere, and not just the inventors, i.e. those individuals (usually scientists or marketers) who are specifically charged with the responsibility for this process. The organisations usually considered as major sources of innovation are research organizations and industry. However, there are many other potential sources of innovative output. Chesbrough defines open innovation as "a paradigm that assumes that firms can and should use external ideas and internal and external paths to market...[1]" The central idea is that companies which look outside their in-house resources for ideas and technologies, have better access to ideas, expertise and technology than those which rely solely on in-house support.

The basic principle of open innovation therefore relies on the fact that useful knowledge these days is so widely diffused that no one can have a monopoly on knowledge the way some large corporations – such as IBM, Xerox or Bell in the US – had in the past. And that when useful knowledge exists in companies of all sizes and also in universities, non-profits and individual minds, it makes sense to orient innovation efforts to accessing, building upon and integrating that external knowledge into useful products and services.

Under a "closed innovation" logic, organisations sought 'the best and the brightest' Ph.D's from the best universities, and hired them or worked with their universities in research projects that could be published in leading scholarly journals. It was accepted that this work would be many years away from the market (and that some work might never get to market at all), and that these ideas, once discovered, could be owned and controlled by the company who paid for the researchers to find them in the first place.

Most innovation systems around the world still rely on this model that sees universities and other research bodies as the "feeders" of the innovation process. Traditionally public funding for R&D has therefore concentrated on such structures hoping that its results (in the form of IP – Intellectual Property) will eventually be transferred to the market and made into commercial innovations.

The problem with such a model is that, as has been addressed in several studies before, the gap between universities and companies is too wide and has remained so in spite of many efforts to reduce it, either by science push (e.g. more agile IP regulation, creation of technology transfer offices in universities, …) or by market pull (e.g. more funding for industry research, tax incentives for licensing and collaborative R&D, …). As a result IP does not flow naturally from research to the market and the "feeding" of the system is far from efficient, regardless of the intrinsic quality of the research.

Under an "open innovation" logic however, business planners should share their needs with the internal research people, but both groups would actively solicit inputs and proposals from external research providers (such as universities, partner companies or users) as well. They might even make contact with emerging start-up companies to see what they might offer and whether that might fit with their needs. Internal projects would be started to fill in the gaps, or to define the architectures that could connect the disparate external threads into a coherent whole. Meanwhile, ideas that were on the shelf should be periodically offered to external parties, so that they too would find some application in the market.

For private or public organisations alike, the concept of open innovation is reflected in a larger participation at all phases of the innovation process, with the early involvement of market agents in the conceptual stage, stronger partnerships in the

[1] Henry Chesbrough "Open Innovation: The New Imperative for Creating and Profiting from Technology" (HBS Press, 2003).

development and wider access in the deployment – be it for products or for social policies. The ultimate aim of open innovation is to get better access to a knowledge base that can no longer be kept within single organisation boundaries.

Innovation is coming out of the closed labs and is now played out in open spaces, by large and small firms alike, by researchers as well as end users, and increasingly by city administrations. All of this of course implies new urban infrastructure and policies, and in their quest for more competitiveness, cities must now learn to play with new rules and improve the game through their actions.

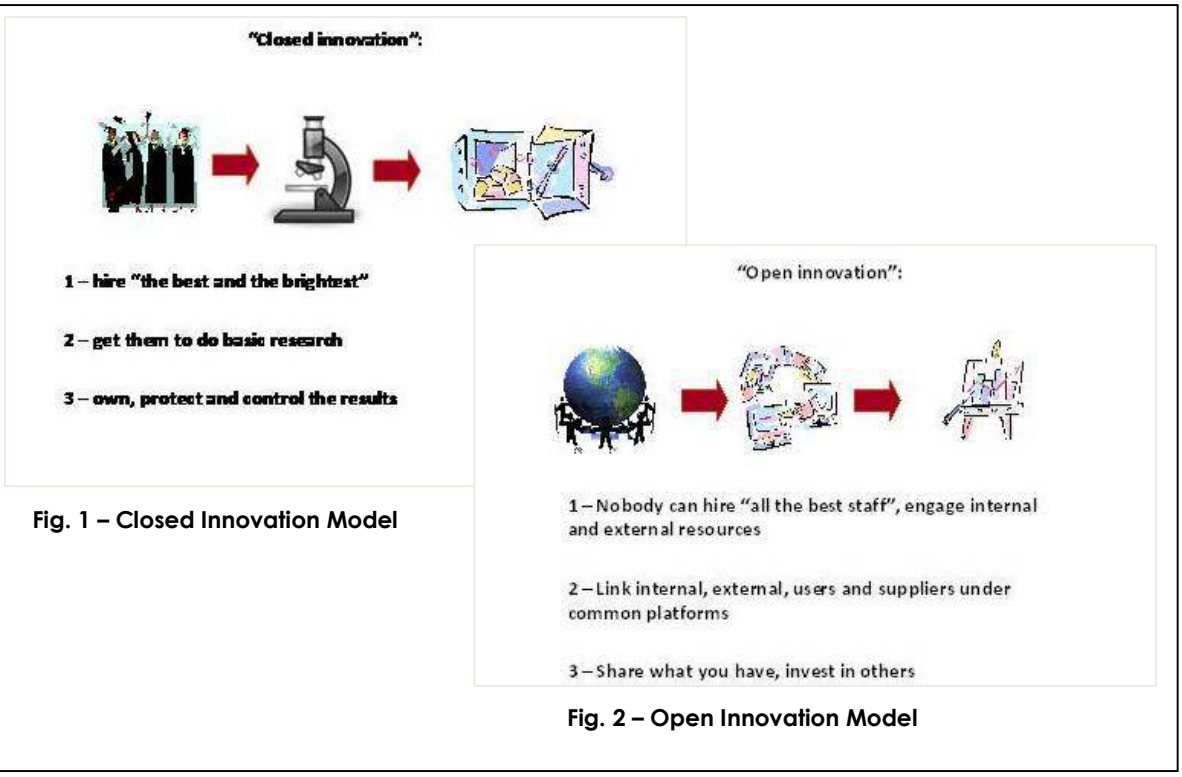

Fig. 1 – Closed Innovation Model

Fig. 2 – Open Innovation Model

Fig 1 & 2 Source: Inovamais S.A.

In short, the development of Open Innovation can be summarised in the four steps below:

1. a stronger will for participation of firms, users, citizens,… in the knowledge creation process be it in companies, cities or other forms of organisation;
2. in response to a greater knowledge demand from organisations, the fostering of a set of more dynamic and agile knowledge-developers which may take several organisational forms such as associations, user groups, public-private institutions, etc.;
3. the widening of innovation processes to other partners and players, outside the traditional knowledge creation sector (universities and research labs), building on technology tools and social network trends;
4. the deepening and inherent formalisation of links between innovative organisations and their extended network of innovation partners (e.g. clients, suppliers, individual knowledge providers, users, citizens, …) including sharing of Intellectual Property, cross shared investments and ownership, policy participation and others.

Repositioning Cities through innovation and creativity

Cities have long embraced the need for innovation – as a driver of competitiveness and economic growth – amongst their top priorities. But most remain strongly traditional in their approach to the topic, with a clear focus on the promotion of the triple helix model through incentives to academic research, support to industry (often through the promotion of industrial or scientific areas, including incubators) and some intervention at the level of local policies, including tax incentives and funding programmes. In short, cities promote innovation by making use of the traditional tools they have at hand, which are awards, land and money. To promote local innovation, cities traditionally try to attract the "right type" of higher education institutions and research centres, the "right type" of businesses and the "right type" of people, and wait for them to play their respective role in the (closed) innovation chain: universities produce people and scientific knowledge, both of which should eventually be

used by local businesses to innovate, taking advantage of the "proximity factor" and making ample use of the locally available work force.

But in our quickly evolving times, the "right type of people" has changed (see Fig.3 below). And so has the "right type of businesses"; now they are knowledge intensive and local education institutions, no matter how good or how big they are, can no longer satisfy their need for (open) innovation and knowledge.

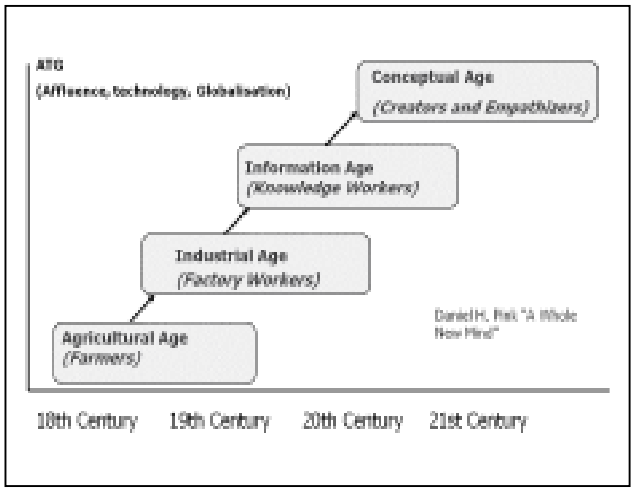

Figure 3

At the same time, cities themselves are facing new and demanding challenges of their own – such as affordable public housing, quality schools, safe neighbourhoods, clean streets, sustainable transport, amongst many others – and must actively involve citizens to solve them. Cities must not only promote open innovation, they also need to adopt it as an innovative problem solving solution.

Embedding Innovation & Creativity into City-Making:

There are at present two clear, distinct and competing innovation scenarios for local economies:

1. 'Hollowing-out: Local companies reaching farther afield to tap into the global network of ideas and skills, and eventually moving out altogether if unable to find them locally.
2. 'Agglomeration: Local companies strengthening their local ties; and Local/regional economy emerging as a centre of new knowledge creation and application, stimulating and attracting new enterprise.

In closed innovation days, regional innovation was very much an "agglomeration" game – i.e. developing "***local links***" and thus creating the local conditions to attract and retain the most competitive firms, and thus secure economic growth and jobs. But today, high technology companies once tied to their locations can now move their production to anywhere in the world. And in a global and competitive world, even the most competitive region will eventually lose in some competitiveness factor to another city or region, and will as a consequence lose companies if playing only the "agglomeration" game. The key nowadays is to create the conditions for companies to be able to "hollow-out" (and "hollow-in") without having to leave at all – because their region or city has become an "***urban hub***" in the global network of ideas and talents.

Urban innovation in the new open innovation paradigm must combine the creation of local links (that will tie local firms to their local partners and markets) with the conditions for urban hubs (which will be the "highways" connecting local companies with the global base of ideas, skills and organisations), as pictured in Fig. 4 below.

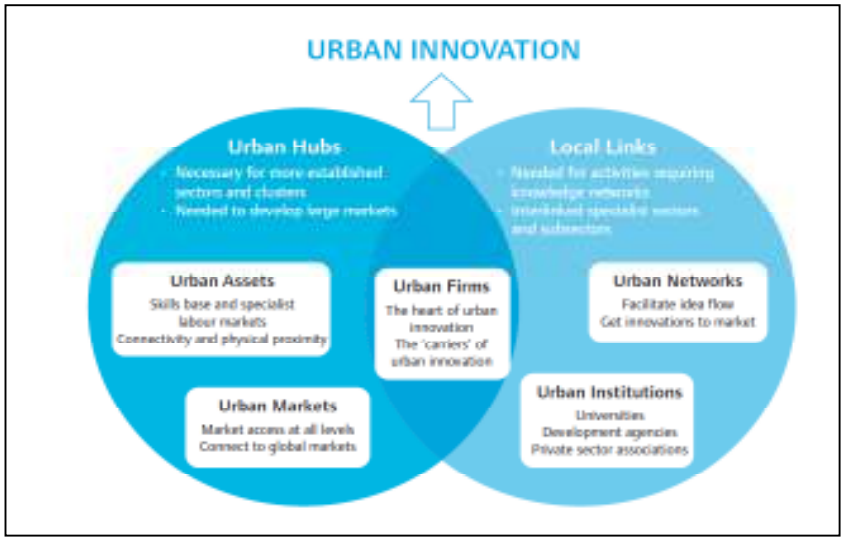

Fig. 4 – Urban Innovation in an Open Innovation context (Source: Tom Fleming Consultancy Company)

Putting Urban Innovation in motion:

Different cities may address Urban Innovation in different ways, but it is commonly understood that cities can and should play a key role in:

Creating Spaces Where Interactions Take Place: Connected, Interdisciplinary Environments as Living Labs

In contrast with the type of innovation intermediaries described by Chesbrough consisting of private firms operating largely globally, Living Labs are commonly Public Private Partnerships (PPP) committed to communities that contribute to their funding, often through city councils (such as Oulu, presented as a case study at the end of this article). Living Labs (short for 'Living Laboratories') try to involve users in the innovation process by designing, developing and validating new technologies, products and services with users in real life environments, often using a whole city as a laboratory. Living Labs become an innovation area where users co-create with developers and researchers. It may be argued that they are a first attempt to structure and provide governance to user involvement in a way that can be addressed by companies, research institutions, public organizations and policy makers, e.g. at city level. Also they provide a wide range of services and play diverse roles in the quest for articulating user involvement, from support to leading entrepreneurial users to needs-finding or user experience services. Their goal is the creation of "innovation arenas" where multiple actors can experiment in an open, real life environment. It would be difficult to imagine a better context for Open Innovation.

➔ Within the URBACT II Programme, the REDIS project is addressing a similar issue of public space and its role in open innovation, focusing on how municipalities can re-shape districts into Science Quarters, and how to create liveliness and diversity in science locations. (More info on: http://urbact.eu/en/projects/innovation-creativity/redis/homepage/)

Attracting talent and skills to innovation processes

Cities can also play a key role in increasing participation in areas of innovation and entrepreneurship, especially by those who are under-represented, by creating conditions that attract a wide range of locals including young people, women, and migrants to the projects being developed in the city. This may include leveraging 'experienced people' (maybe retired) who can pass on skills and lessons to those starting off so that experience is reinvested. This could also include efforts to increase the participation of women (50% of workforce) in all areas of business innovation, as women are often much less likely to start a new businesses or to drive innovation within existing businesses.

Another promising area that clearly may fall under the responsibility of public authorities such as city councils is the expansion of entrepreneurship support measures to target young people, who have not attended university and reside in disadvantaged areas, as they are often excluded from regular support schemes although they may possibly be the target group with the greater need and will to take entrepreneurial initiative. The combination of a variety of types of people working together in new working environments is an approach that promises successful results.

➔ The WEED project of the URBACT II Programme targets specifically the issue of women participation in urban processes and their role in entrepreneurship development, with a strong impact in the goals of the Lisbon strategy in terms of competitiveness. (More info on: http://urbact.eu/en/projects/human-capital-entrepreneurship/weed/homepage/)

➔ The Open Cities project of the URBACT II Programme explores the opportunities for innovation and progress in social, economic and cultural development associated with the arrival of large numbers of new residents, as well as how cities can attract and retain migrant populations. (More info on: http://urbact.eu/en/projects/human-capital-entrepreneurship/open-cities/homepage/)

Setting the technological infrastructure

A fundamental principle of open innovation is communication, and a wide range of information technologies are now available which allow users to communicate with each other and with product developers so as to inform, if not determine, product development. At a basic level, it is arguable that global open innovation would not be practical without the email and web facilities which are now standard industry tools. In the meantime, more sophisticated tools have also been developed to inform and assist the process, including web-based tools for management of dispersed innovative communities or websites offering specific forms of expertise of relevance to innovation.

But technology can also be used to assist in the innovation process itself. These 'Innovation Technologies' help to create new environments in which people can think about new options; to engage other parties, such as users, in design; to play or experiment with different virtual scenarios and to ensure that other technologies are used to maximum effect in the delivery of product, process, and service innovation. Such technologies may influence the ways in which knowledge is constructed, shared and used. They affect the ways in which we think about and conceive innovations and they affect the way we develop, test and prototype new products, processes and services. These technologies build upon the massive computing power, infrastructure and tools provided by ICT, such as broadband and open systems.

To favour open innovation, cities must of course provide the necessary infrastructures and applications (as illustrated in the Manor City case study at the end of the article), and go along with three main trends:

- The world is becoming equipped with all sorts of 'instruments'. We now have the ability to measure and observe almost anything with precision. Sensors are being embedded everywhere: in cars, appliances, cameras, roads, pipelines…even in medicine and livestock. Cities should take advantage of the data and instruments available to them.
- The world is becoming interconnected. People, systems and objects can communicate and interact with each other in entirely new ways.
- All things are becoming intelligent. These instrumented and interconnected things are being linked to powerful new back-end systems that can process the data and advanced analytics are capable of turning it into real insight, in real time.

➔ The importance of a suitable technology infrastructure open to everyone for the development of innovation in different sectors is illustrated in the EVUE project of the URBACT II Programme which addresses the role of cities in providing the right conditions for the spread of the use of electric vehicles. (More info on: http://urbact.eu/en/projects/low-carbon-urban-environments/evue/homepage/)

Investing Across Boundaries

Even if intended for a particular group or sector, most of cities' innovative policies and actions end up affecting most if not all of its citizens. Cities must recognize this fact and invest and promote working together across boundaries, sectors and professions. Innovative policies often require long-term commitment and genuine collaboration between many different agencies, departments and public and private interests and it's the city's governance role to bring them together and try to align them.

➔ The importance of mobilising local actors for innovative urban policies is reflected in the URBACT II Programme in the requirement for every city partner in all projects to set up a Local Support Group which should contribute to the development and actively participate in the validation of all policies and actions that will result from the project. The UNIC project for transition into the knowledge economy of a group of cities with a strong cultural and economic background in ceramics (headed by the City of Limoges) is a good example of this "cross-boundary" approach with Local Support Groups where university professors and company managers sit side by side with handicraftsmen, artists and small shop owners. (More info on: http://urbact.eu/en/projects/innovation-creativity/unic/homepage/)

Urban open innovation case studies

Manor, Texas, United States

Manor is a city fully committed to open innovation as expressed by the Manor Labs project, in partnership with Stanford University.

Manor Labs is the official research and development division of the City of Manor, which is a small but growing community of about 5,800 innovators (citizens) located on the outskirts of Austin. It conducts research and development on new, emerging technologies and works with numerous companies across the world to bring its residents cutting-edge technology as well as helping to shape technology for other government agencies as well. The innovation process is open to the public via an open innovation platform. It is designed to allow citizens to help the city council solve problems (such as a broken streetlight for example), and submit ideas on how the city can do things better. It is hoped that many of the proposed ideas and solutions from this platform will help other agencies overcome similar challenges. This platform is not restricted to just citizens of the City of Manor; it is open to the world--anyone can participate and help drive innovation in the community.

A recent output of Manor Labs is the customized version of the 'SeeClickFix Plus' application for iPhone (pictured above right).

Within two weeks of the launch of the application, the City of Manor made a customized version available to citizens so that they can take a photo of an issue, get and verify the address using GPS, describe the issue, and report it to all who are connected. Citizens and other entities who want to help 'fix' or receive alerts can also follow Manor from the town's homepage on the application. From that homepage citizens can see top issues and other top users in their area. And users can attach the application to their facebook account for easy tracking and to earn "Civic Points".

For city inspectors and other city employees, the application allows for viewing issues on the map by service request type or filtering by keyword. Blackberry and Android applications will also be launched soon to allow users to easily submit problems regardless of the mobile platform they are using.

Oulu, Finland

The City of Oulu (Finland), with a population of 130.000 inhabitants is the largest city in Northern Finland and the sixth largest of the country. However small, Oulu has a place in the world of wireless technology. The world's first wristwatch rate monitor, GSM telephone call, and WCDMA telephone call were developed in Oulu, likely influenced by the proximity of an active Nokia research center.

Nevertheless, much of the responsibility for this dynamism is due to the Innovation and Marketing group of the City of Oulu that acts as a Living Lab, setting up and analyzing user experiences and laying out the service model. This group coordinates its work with a research group at the university of Oulu, VTT (the technical research center of Finland with close links to funding agencies), the owner of the services, the mobile phone company (Nokia), the platform operator (TeliaSonera) and a business network.

Even if the city has projects in many traditional fields such as healthcare, education, and culture, its recent 'Smart Touch' initiative is getting attention as a good example of how Living Lab can be conducted and embedded in the life of a small town.

The objective of the project was to test the use of Near Field Communication (NFC) technology. Although this type of technology is widely commercially implemented in Asia, this was the largest piloting effort in the European Union.

Working together with users, service owners and project stakeholders, several subprojects were put in place, and Nokia phones equipped with first and second generation RFID readers were distributed. Some examples of these subprojects are:

- Bus ticketing (2004-2008): City of Oulu bus operators and Fara were piloting electronic ticketing public transport, allowing passengers to pay using NFC-enabled phones on nine buses. To complete the solution, an inspector phone was developed. In addition, both the buses and the bus stations were equipped with info tags allowing access to the latest news, and bus stations provided information on the next bus arrival time and location in real time.

- Lock management in public sports halls (2006, Fara, City of Oulu, VTT): Citizens (10) using the sport facilities of Pohjankartano School in the evenings used NFC enabled smart phones to access the facilities at given times and on given dates.

- Elderly Meal Service (2006, City of Oulu, TOP Tunniste, Nokia and VTT): The application consisted of piloting with 10 users the use of a NFC-enabled phone for both meal ordering and distribution. Meal orders were placed by touching a picture tag enabled menu. Meal delivery used tagged cars and routes to distribute the food, providing traceability.

- Info Tags (2007, City of Oulu, Telia Sonera, VTT): Around 1.500 “Info tags” were distributed throughout the city in buses, at bus stops, a theatre, a restaurant (Pannu), and the Public House, Leskinen. This allowed users to get news, order a taxi, load video material or visit the partners’ web sites.

- Theater Evening Services (2007, City of Oulu, Telia Sonnera): Around 160 users validated NFC technology related to the Oulu City Theatre experience. The ticket for the theater could be purchased using a mobile phone, and information was provided through tag enabled posters where videos could be downloaded and refreshments could also be ordered through mobile phones.

- NFC in School Environment (2008): Around 1.000 students were able to get individual school timetables and classroom changes—receiving updated location information for physical education, homework, etc.—by touching an infoposter.

The projects outlined above provide just a sample of the projects in NFC area in Oulu. The small size of the tests and the reduced number of users is what we find important is the fusion between TestBeds and Living Lab methodologies. In fact, actual TestBeds represent only the first part of the value chain of platforms whose contribution and value largely depends on how the last part, the service, is implemented. Services must be embedded into the social fabric and the business model has to fit. For this reason, Living Labs can provide an important contribution in this area. The inclusion of users together with broader stakeholders allows for the creation of “innovation arenas” that permit experimentation in a broad sense (business model, services, etc.) and not only in terms of technology—also facilitating the type of societal and organizational change that the platform requires to successfully add value.

Conclusions

No matter how pleasant narrow streets and medieval city centres may be for tourists, cities can no longer be confined within walls—they must continue to open up. Following physical and demographic expansion, many cities are now embracing innovation expansion by adhering to open innovation policies. This means opening to their infrastructures and citizens as a real living lab, to the development of new products through public-private partnerships, motivating end users to participate in solving city problems, enhancing creativity by tapping new skills and talents, and creating the necessary technological backbone to become real urban hubs from which local companies can connect to global networks of ideas, skills, organizations and markets.

Open innovation will require from many city officials a strong change of perspective and attitude. The traditional tools– awards, land, money–are no longer sufficient. What is crucial is to listen, to share ideas, and to provide opportunities to those who often have none. In sum, open innovation in practice is very much about applying basic democratic principles to innovation processes, And as cities have often been pillars of democracy, this shouldn’t be too difficult an adaptation to make.

References

"Open Innovation – technology approach", **Neves 2009***,* Study for Scottish Enterprise.

"Open Innovation: The New Imperative for Creating and Profiting from Technology", **Henry Chesbrough 2003**, HBS Press.

"*Innovation Skills and Talents*", **Robson, de la Maza, Neves, ProInno Europe 2007**, http://www.proinno-europe.eu/www.proinno-europe.eu/admin/uploaded_documents/Innovation_SklillsTalents.pdf

"*Mapping of Innovation Support Measures*", **Cunningham, Robson, Neves, ProInno Europe 2008,** http://www.proinno-europe.eu/www.proinno-europe.eu/admin/uploaded_documents/Mini-study_1-final.pdf

"*Da empresa industrial à empresa inovadora*", **Neves, Publicações D. Quixote, Lisboa 2001**

Urbact database of projects, http://urbact.eu/en/header-main/our-projects/#

"*Living Labs and Open Innovation: roles and applicability*", Almirall, ESADE 2008, http://www.ejov.org/projects/264/Issues/eJOV%20Special%20Issue%20on%20Living%20Labs%202008/eJOV10_SPILL3_Almirall_Living%20Labs%20and%20open%20Innovation_2.pdf

City of Manor website, http://cityofmanor.org/

CLIQ Project website, http://www.cliqproject.eu/en/cliq_project/interreg_ivc/?id=27

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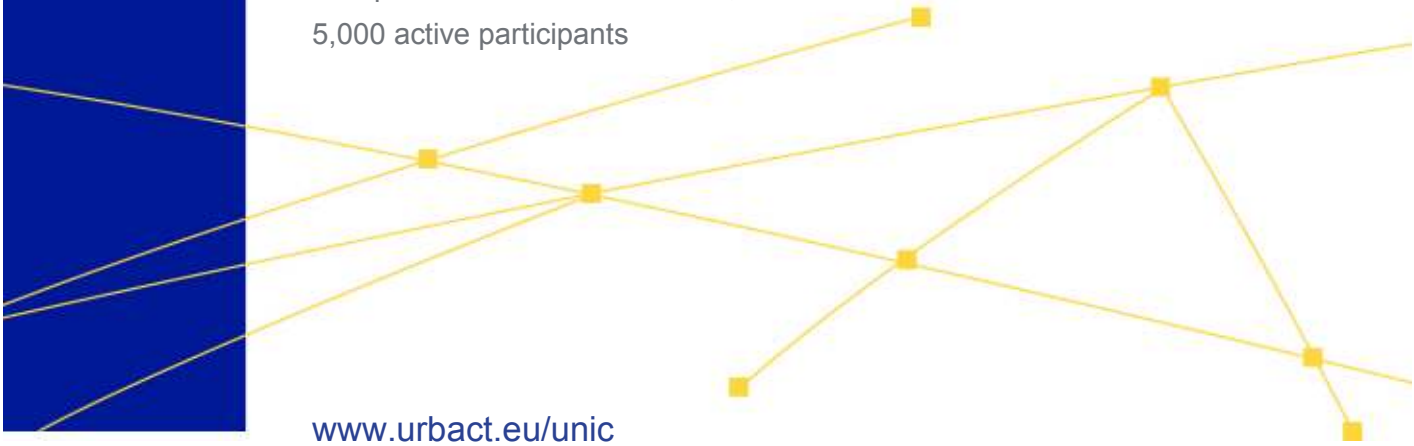
URBACT is a European exchange and learning programme promoting sustainable urban development.

It enables cities to work together to develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal challenges. It helps them to develop pragmatic solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. It enables cities to share good practices and lessons learned with all professionals involved in urban policy throughout Europe. URBACT is 255 cities, 29 countries, and 5,000 active participants



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