

Open Innovation – The Driver for a Smart, Sustainable and Livable Europe

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Abstract: *Innovation in Europe, and especially Romania is lagging behind the State of the Art. The European Commission and policy makers are trying to learn from best practice examples, such as the big corporate models in USA and adapt innovation ecosystems to its specific context. European Universities, Cities, Policy makers are driven to work together in Digital Innovation Hubs, while building ecosystems designed to drive research and innovation to the foreground of European Development. As SME's are the main pillar for economic growth and Cities are the driver for sustainable social development, Europe's future depends in leveraging on their adaptability, resources and creativity, while bringing academia, users and communities to the co-creation and co-design table of goods, services and processes. Digital Innovation Hubs and Urban Innovative Actions provide the context for making these actors work together for the common good in a smart, sustainable and livable Europe.*

Keywords: *Open Innovation, Urban Innovative Action, European Context*

1 INTRODUCTION

Defined by Chesbrough et al in 2006 as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively", open innovation begins to represent a common reality in various domains (Brown, 2002). Although more than 50 years have passed since Xerox' Palo Alto Research Center experiment, that was the evolutionary step from closed to open innovation, the effects and outcomes of that experiment continue to transform the world. Though the experiment was meant for securing the company's top ranking amongst innovators and recruit the most innovative and creative researchers, it opened a Pandora's box that keeps causing unexpected outcomes in various domains. Palo Alto Research Centre was the place where, 50 years ago, the basis of integrating disruptive innovation and research with incremental and fundamental research and innovations were created. (Brown, 1991).

In his article published in 1991, John Seely Brown (former PARC director) stated the most important principles of PARC's innovation model:

- New process research is equally important to new product research
- Innovation is everywhere, the challenge is learning from it.
- Research cannot "produce" innovation. It needs co-producing
- The main partner for innovation departments is the end-user

1.1 Corporate failure

Although budgets available for Palo Alto Research Centre was virtually unlimited, the real challenge was integrating R&I results in the company's existing workflows and products. Amazing concepts developed in the PARC were brought to market by third party companies, often start-ups or spin-offs by former PARC employees. Corporate rules, procedures, the need to answer the market's constant pressure and competition often lead to the impression that PARC was poorly

integrated with its mother company, Xerox. (Mixer, 2017). Surprisingly, startup companies (at that moment) took parts of PARC's research, transforming into multinational success stories (e.g. Microsoft, Apple). (Mixer, 2017)

In his „Open Innovation – The New Imperative for Creating and Proffiting from Technology”, Chesbrough posed one of the toughest questions to answer: How can a company that owns the resources and vision to create an impressive research center let so many great ideas leave the company. (Chesbrough, 2003). It could be inefficient management, a poor choice of projects to pursuit, wrong decisions. We are analyzing, after all, a company that made it from startup to Fortune500 in less than 20 years. Moreover, budgets and the PARC's philosophy shaped trans-disciplinary teams offering products and solutions to market requirements and technical challenges of the moment. Surprisingly, many of the PARC's achievements have been creating economic value only after changing context (being taken from the company by start-ups created by researchers, investors. Although these companies seemed at disadvantage, being unable to vertically incorporate innovation into existing products or workflows, they managed to create new products outside of the PARC's protective umbrella. Confronted with market requirements and a need for sustainability and financial viability, these companies found innovative ways of delivering their products and creating high added value.

The main reason for the PARC's failure in incorporating or profiting from innovation it created and paid for is best illustrated by James McGroddy, a former Research Director of IBM, whom Chesbrough quotes:

„When you're targeting your technology to your current business, it's like a chess game. You know the pieces, you know what they can and cannot do. You know what your competition is going to do, and you know what your customer needs from you in order to win the game. You can think out many moves in advance, and in fact, you have to, if you're going to win.

In a new market, you have to plan your technology entirely differently. You're not playing chess anymore; now you're playing poker. You don't know all the

information in advance. Instead, you have to decide whether to spend additional money to stay in the game to see the next card.” (1)

1.2 European Context

The open innovation model started having traction in the late 1980’s in North America, and slowly made its presence in Europe. While large companies and start-ups have coexisted and co-created value in the USA for 50 years, the European backbone is represented by Small and Medium Enterprises (SME’s) (2). These SME’s provide 50% of the European Internal Gross Product and contribute to the development of the entire set of European products and services, bringing innovation, social cohesion, and supporting the innovation landscape. Furthermore, traditional and cultural heritage in Europe leads to a reduced risk appetite, while Venture Capital models are lagging behind.

1.3 European Universities

European universities are focused strongly on knowledge and fundamental research, rather than practical approaches and face major difficulties in getting involved in contractual research or bringing research results to the market. Only a handful of sustainable, innovative university spin-offs exist.

According to (3), European universities that were able to bring innovative spin-offs to life are the ones with a very broad range of specializations and the ones focusing on very narrow niches. All in between have generally failed to create high added value around their research transformed in innovation.

1.4 European Cities

In its report on the State of European Cities (2016), the authors state that in 4 out of 5 European countries, local authorities are the most important sub-national administrative body. This transforms the European cities into engines for local (sustainable) development in terms of urban, economic, social and cultural progress. European cities are responsible for 68% of Europe’s GDP, while being inhabited by 58% of the continent’s population. (4). According to the same study, European cities are centers for innovation, education and major contributors for achieving the Sustainable Development Goals and the Europa 2020 strategy objectives, promoting inclusive, smart and sustainable development. On the other hand, European Cities face multiple challenges, such as housing, air quality, green mobility, while compensating by efficiency, autonomy and opportunities.

1.5 European Policy

”The old continent” has stopped being the center of economic, education, research, agriculture or trade development, despite its important resources, high quality fundamental research and socio-economic development. The European Commission identified the need for economic competitiveness growth by maximizing resource valorization and stimulating cooperation amongst relevant stakeholders in the innovation

landscape. The Open Innovation Strategy and Policy Group (OIPSG) is one of the most relevant entities contributing to shaping public policy for European innovation and envisages the creation of an open-innovation environment and a user/citizen involvement to enhance real-life prototyping for fast development of innovative ideas from concept (TRL1) to real environment tested/validated prototype (TRL7/TRL8).

The European model proposes bringing research and innovation in the foreground of economic development, while solving the aforementioned issues of the EU innovation ecosystem. Health, transport, climate change, employment for the young, financial stability, prosperity and sustainable development are the main systems that require rapid and major improvements (5). Traditional solutions have proven inefficient to answer these challenges and this fact can be a driver for change.

One of the strongpoints of the European innovation ecosystem are the opportunities for cooperation between academia, companies, local authorities and local communities. The issue at hand is that all these actors have a self-centered approach, lacking vision towards the other 3. This problem constitutes an opportunity for cooperation, enabling each of the actors to keep the self-centered approach but utilize the other’s outputs as inputs for their own component.

The Open Innovation 2.0, as a new paradigm based on principles of cooperation, co-creation of common value, nurturing innovation ecosystems, utilizing technological potential and quick prototyping and adaptation. (5) consider that modern innovation cannot be the output of a brilliant researcher, but, rather, the result of multi-disciplinary, visionary teams. Another important characteristic of Open Innovation 2.0 is the end-user’s involvement as co-creator of products/services and its involvement in research-development-innovation chains.

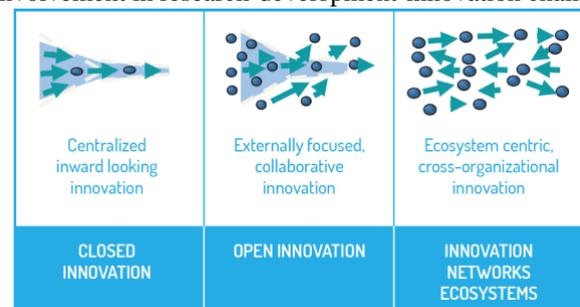


Figure 1 – The evolution of innovation. Source : (Curley&Salmelin, n.d.)

Funding innovation through research-development-innovation programs has brought on a European level, important but isolated success stories. In 2014-2020, the Horizon 2020 framework program stimulated cooperation actions in RIA – Research-Innovation Actions, as well as IA – Innovation Actions and Innovation in SME’s (SME Instrument). The European model has evolved from specific action to ecosystem building, initially focusing on development clusters, innovation clusters and recently – Digital Innovation Hubs.

Turning back to European sustainable development pillars – cities and SME's, the European Commission is striving to build local models aiming at sustaining (open) innovation at a local level.

Europe is facing complex socio-economic challenges, such as population ageing or economic stagnation, but provides extraordinary opportunities in terms of market, society and emerging technologies. (6)

1.6 Digital Innovation Hubs

According to European Commission's statistics, only 1 in 5 companies is highly digitalized, while over 90% of SME's are laggards in terms of digitalization (7). According to the same source, a great part of these companies desire to benefit from the digital revolution, but lack the knowledge regarding technologies, risk appetite in terms of testing solutions or financial resources to test and adapt market relevant tools according to their own workflows and specific processes.

Digital Innovation Hubs are unique contact points helping companies to become more competitive in terms of business and production processes, products or services, through digital technologies. They provide technical expertise and experimentation opportunities, so that companies can test before they invest in digitalization and automation services. Furthermore, DIH's provide innovation support services, consulting for funding, training and skills development for a successful digital transformation. (7).

The creation of Digital Innovation Hubs is the public policy response to digitalization challenges and competitiveness in European countries and regions. Digital Maturity of public sector is also lagging behind, creating huge potential for this market segment, while being a public policy issue. (8)

A Digital Innovation Hub is a regional structure, where multiple partners like research organizations, universities, industrial associations, commerce chambers, incubators, accelerators, local development agencies and public administration actors work together to increase the competitiveness on a regional level, through automation and digitalization. (9)

Following several successful experiments funded through Horizon 2020 framework programme, the Commission has decided that, for Horizon Europe (2021-2027 funding period), it would create a financing framework for European Digital Innovation Hubs (eDIH). This program places, for the first time, the private actors on the same level as public authorities, local, regional or national. To facilitate the implementation of policies and strategies for smart development in European regions, and considering the limited success in stimulating innovation achieved through regional programmes (e.g. Regional Operational Programme – Romania), as well as the huge differences between Regional Development Agencies, a European competition was launched to select the best organizations or partnerships to orchestrate the future eDIH's. Based on common evaluation criteria, member

states have evaluated candidate eligibility. In April 2021, through a the European competition, the Commission will select the entities to be funded as eDIH's (1 per European region). These eDIH's will receive funding through multiple programmes and will cascade fund private and public entities striving for digitalization, through grants between 50 and 200 thousand euros.

Functioning as an organization (NGO) or a simple partnership agreement, (European) Digital Innovation Hubs have heterogeneous, polymorphic structures, including

- Research organizations
- Start-ups and start-up communities
- SME's
- Large companies
- Professional or industrial associations
- Incubators
- Accelerators
- Local authorities
- Investors
- Venture capital
- Others
- At the centre of the DIH, an "orchestrator" manages the partnership and ensures a common vision and sustainable development.

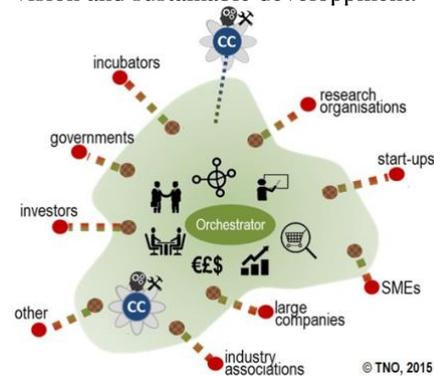


Figure 2 - DIH Structure - source: (European Commission, 2020)

Most often, the orchestrator is an innovation cluster, already reuniting many of the important actors.

1.7 Urban Innovative Action

Urban Innovative Action (UIA) is an initiative by the European Union that provides urban areas in Europe the resources to test new solutions that have never been used or demonstrated before, in order to answer urban challenges (10). The solutions are meant to transform urban ecosystems (cities, suburbs, metropolitan areas, or urban functional zones), to identify new, innovative, dynamic solutions to challenges regarding employment, migration, demography, clean water, soil or air pollution. The program's relevance comes from it addressing 72% of the European population (359 million inhabitants), while its replication opportunities are huge. (10)

Although research in urban planning is extremely well represented in Europe, local authorities are resistant to utilizing funds to test ideas that have never been validated.

UIA implements the European Urban Agenda Policies and encourages participatory approaches, where local authorities cooperate with complex structures of partners including academia, private companies and the civil society. (11)

According to (10), the Urban Innovative Action projects need to meet some criteria to be acceptable:

- Be innovative: bold, creative, proposing something that has never been done before in Europe. Demonstrating that the idea is experimental and not part of current tasks.
- Have participatory approaches: involving (local) key stakeholders that bring expertise and knowledge for project design and implementation.
- Have good quality: they define realistic, achievable objectives and prove efficient management. Activities are coherent and the workplan and budget are well structured.

- Are measurable, defining metrics and key performance indicators.
- Are transferable: can be replicated by other local authorities in Europe, that could benefit from good practice examples, lessons learned, instruments and policies.

The main topics for this program are digital transformation, air quality, soil pollution, urban poverty, urban security, circular economy, culture and cultural heritage, demographic change, adaptation to climate change, housing, employment, local economies, integration of migrants and refugees, urban mobility, energetic transition. 5 calls for proposals have attracted in 2016-2020 over 1165 candidate cities, while funding 85 projects, being the most challenging European funding competition after the Horizon 2020 SME Instrument.

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