4D Cities
Health innovation as a growth driver

Business Opportunities of Local Health Innovation

I Output Report

February 2014

URBACT II

European Union
European Regional Development Fund

Connecting cities
Building successes

URBACT

Index

I. Project overview

URBACT (http://urbact.eu) is a European exchange and learning programme promoting sustainable urban development. It enables cities to work together to develop solutions to major urban challenges. It helps them to develop solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. URBACT projects yield and share good practices and lessons learned with all professionals involved in urban policy throughout Europe.

URBACT II 4D Cities Project (http://urbact.eu/en/projects/innovation-creativity/4d-cities/homepage) aims at determining key factors of innovation in Health that promote local economic and social development by developing integrated policies. The project brings eight European cities together as shown below in the map:

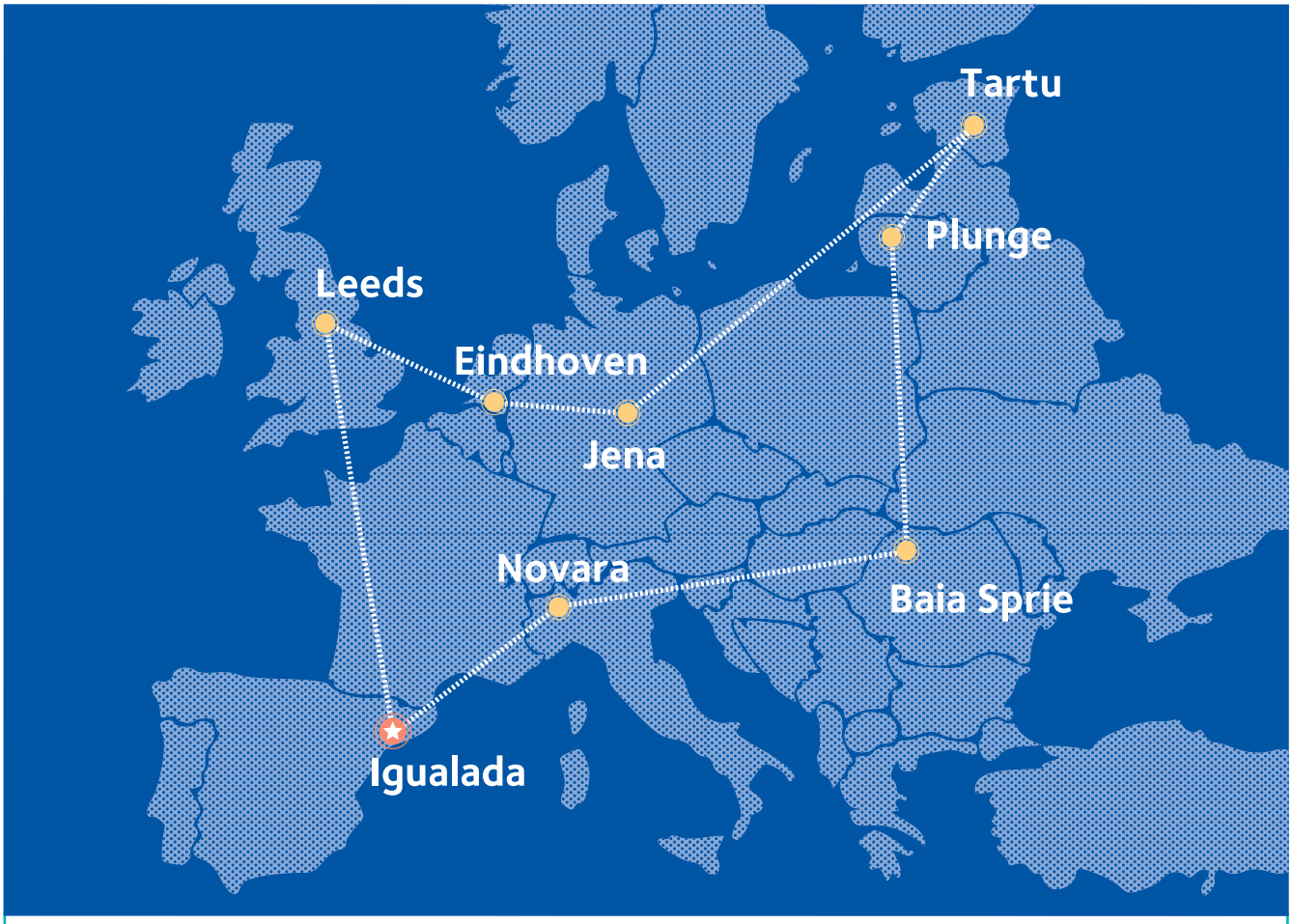
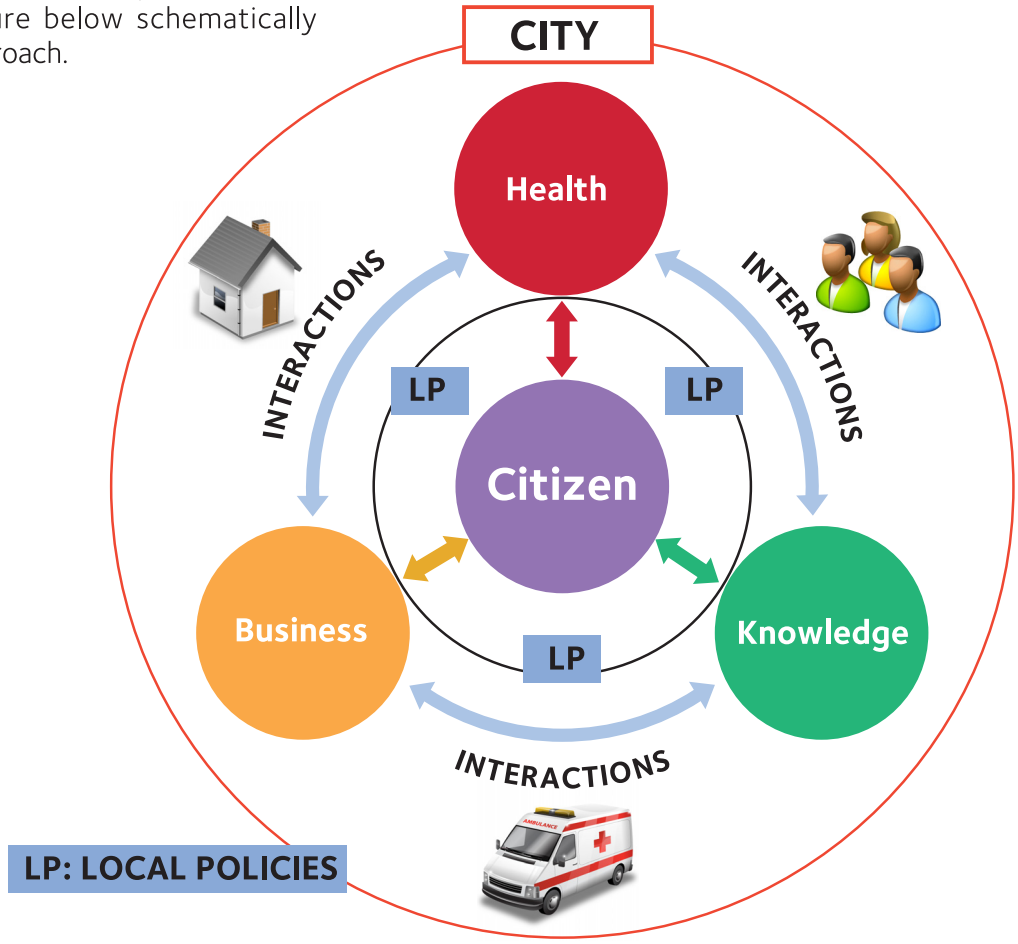


Figure 1: Igualada (Catalonia, Spain), as the Lead Partner, Leeds (UK), Eindhoven (The Netherlands), Jena (Germany), Tartu (Estonia), Plunge (Lithuania), Baia Sprie (Romania) and Novara (Italy).

This is the first of a total of **four thematic reports** issued form the transnational meetings that the 4D Cities project partners held in 2013. The 4 thematic meetings focused on the project's **4 dimensions**: **Business**, **Health Sector**, **Citizens and Knowledge** and they present results and practical findings shared and learned at the international gatherings. The information is organized in a **360º perspective that places the patient at the centre of the Health system**, while the local government is accountable for the policies to promote and harmonize it. The picture below schematically presents the project approach.

Figure 2: 4D Cities Project view.
4 Dimensions' Interactivity within a local context



II. Introduction

What can a city do to meet citizens' expectations and needs on healthcare services while at the same time promote local economic growth based on the Health sector? How can local policies simultaneously reverse the trend of increasing healthcare expenditures and stimulate a profitable model?

With an aim of achieving higher quality health services and making the local health system more efficient and cost-effective, city governments are strategically positioned to ease and promote interactions between the business actors, the local population, the health system and the knowledge and training sector.

Companies, entrepreneurs, business associations, chamber of commerce, municipal economic and employment department... will benefit from tighter cooperation with health sector stakeholders, including doctors and medical professionals, but also health facilities managing staff, carers, patients and their relatives, voluntary and social organizations, universities, vocational education and training centres and students, etc.

This first report focuses on the **Business dimension** of this **4 Helix integrated** approach and the role that the private sector can play in a local strategy of Health Innovation. Cities participating in this project are involved in innovative plans to improve healthcare services and people's quality of life, projecting a new productive sector that promotes diversification and competitiveness locally.

The report is based on the results of the **first thematic transnational meeting** of the project, held in **Eindhoven 28-29 May 2013**. The meeting dealt with the potential for economic growth for territories seeking integrated policies on a health innovation model based on a patient-centred approach. Partner cities identified public policies to meet citizens' expectations of quality Health services while at the same time make it attractive for external companies and local entrepreneurship to invest. Best practices from the 4D Cities partners illustrated the contents and experts' presentations contributed with a broad perspective of the topic.

In addition to the Business sector, the other three international gatherings held in 2013 tackled the **Citizens and Patients**, the **Knowledge Sector** and the **Healthcare System**. The results are presented in the form of the relations that each of the project dimensions establishes with the rest of them.

The report's structure consists of this Introduction; the presentation of the **methodology**; **five sections** dedicated to the contents shared and presenting meeting outputs; and a short section of **closing remarks**. **Five annexes** include the 1) meeting agenda; 2) the list of participants; 3) pictures taken during the sessions; 4) a glossary; and, 5) a short bibliography of documents and references used for the report and shared with the project partners.

III. Methodology

At the kick off meeting held in Igualada in March 2013, 4D Cities partners agreed to hold four thematic gatherings to analyse and learn from each other's experience on the four thematic areas of the project. Best practices and success (or less-than-success) stories on **Business**, **Health**, **Knowledge and Citizens** and the **interactions** of the actors operating in each area were discussed and shared.

Also, members of the cities' **local support groups** and stakeholders as well as experts on each topic, were invited to present and participate. Visits to the most relevant assets and facilities of each hosting city completed the international meetings.

HOST CITY	EXPERTS	TOPIC	LEARNERS
Eindhoven 28-29 May 2013	**Jena** **Novara** **Leeds**	**BUSINESS**	**Novara** **Plunge** **Tartu** **Igualada** **Baia Sprie**
Baia Sprie 18-19 June 2013	**Igualada** **Tartu** **Plunge**	**CITIZENS**	**Novara** **Eindhoven** **Leeds** **Baia Sprie** **Jena**
Leeds 3-4 Oct 2013	**Novara** **Plunge**	**HEALTH SECTOR**	**Eindhoven** **Baia Sprie** **Igualada** **Tartu** **Jena**
Jena 7-8 Nov 2013	**Tartu** **Igualada**	**KNOWLEDGE**	**Plunge** **Baia Sprie**
Novara 17-18 Feb 2014		**LOCAL ACTION PLANS & SPECIFIC INFO REQUESTS**	
Plunge 26-27 May 2014		**LOCAL ACTION PLANS & SPECIFIC INFO REQUESTS**	
Tartu 29-30 Sept 2014		**LOCAL ACTIONS PLANS & COMMUNICATION**	
Igualada 17-18 Nov 2014		**FINAL MEETING**	

Table 1: Calendar of 4D Cities Transnational Meetings

The methodological tools that the project has produced are aimed at capturing the relationships between the 4 drivers within the local context of health innovation policies.

The first of them is a **mapping of the policies, tools and measures** undertaken in each of the thematic dimensions of the project. The second is a **matrix of sector to sector engagement** that can be used to build integrated policies in Health innovation. Finally an individual **assessment of the local government competences and capacities** that local governments have to regulate in critical health and innovation related policies.

In the mapping document[1], the information is shaped in the form of identified action areas where the local government can undertake activities to promote relations and collaboration among Health Innovation stakeholders. e.g. the healthcare services and professionals with the patients and their relatives (Health-Citizen), the private sector companies with the Universities and research centres (Business-Knowledge), the research and testing living labs with the patients and users (Knowledge-Citizen), etc. Examples illustrating the best practices presented complete the document.

The utility of the mapping exercise is to offer cities a wider range of actions and tools to develop their **Local Action Plans (LAPs)**. The LAPs include the 4 dimensions that should need further development to integrate the 4 Helix approach in a balanced way. On the right are two diagrams that illustrate the proposed evolution to reach the 4D Cities Health Innovation model with a citizen-centred approach.

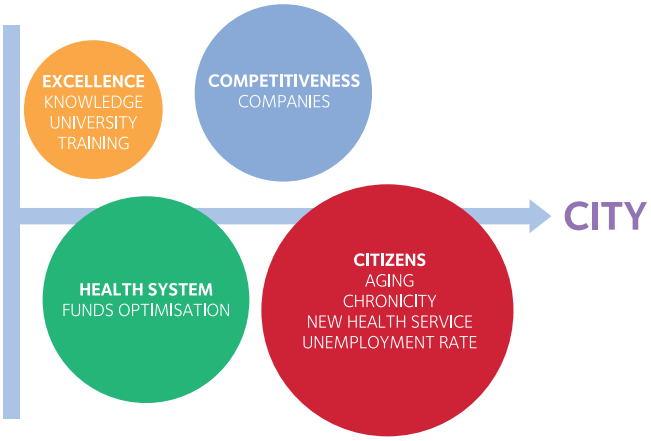


Figure 3: Unbalanced & non-integrated Health Innovation

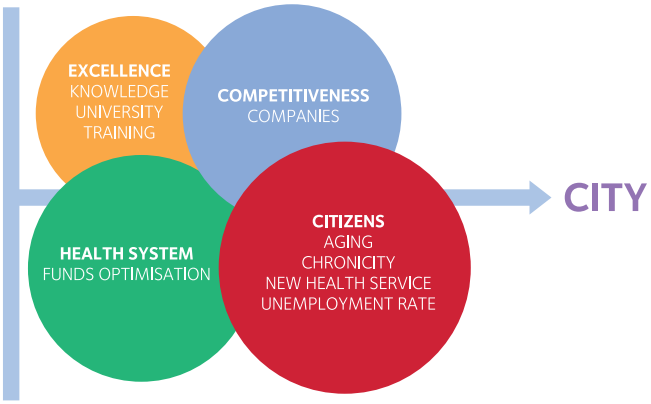


Figure 4: More Balanced & integrated Health Innovation

[1] See 4D Cities *Concept Map.* Tools, practices, policies of local governments to promote citizens' centred health and innovation with an economic growth at http://urbact.eu/en/projects/innovation-creativity/4d-cities/homepage/

City partners come from different traditions and culture, as to be expected. Political and development models confer distinctive profiles and health systems to the cities. We thus find different degrees of public-private share of health services; different levels of decentralized structures and competences, various forms of engaging citizens in participative processes, etc. we have seen that some partners perform a business-knowledge partnership well developed at local level but have little experience in citizens' participation in general and particularly in health services' provision. Some others have strong commitment of patients and citizens in local policies but are seeking greater economic opportunities for local health business players.

To organize this complexity we developed a **second tool**, a grading exercise in a **matrix**, according to increasing levels of development and stakeholders' involvement[2]. This gives each partner the capacity to identify the potential of progress in each project dimension (business development, health services integration, patients' involvement, etc.). Successful practices, policies and tools were dissected and reordered in the matrix.

We discovered a series of small actions that a city can undertake to engage local stakeholders in an integrated policy towards health innovation: these actions range from the simple to the more complex –from information provision on through consulting, involving, partnering and real, citizen-focused empowerment.

The approach is based loosely on the idea of learning organizations, and learning by individuals. It is inspired by internationally applied taxonomies in the health sector as well as on Bloom's taxonomy of learning[3]. At the core of the approach is the idea people and institutions can not only learn but become empowered. The flip-side to this, the caveat for any investment in health innovation, is that a city government's process of engaging citizens and stakeholders may only be as effective as its weakest link.

The matrix provides a way to organize the complex and disperse information from a project involving different, wide-ranging strategic components that, in turn, present a wide range of possible combinations for citizen, business, knowledge industry, and government interactions in support of health care innovation.

Examples

1. A city might be good at getting partnerships with citizens' representatives signed and put into action, but completely fail at getting their feedback on the partnership's direction, its work and impact. Such information gaps can result in skewed investments and faulty partnership projects. The matrix identified options and opportunities for taking specific actions to improve citizen's engagement and get feedback in a purposeful, systematic way.

2. A city government may want to invest in a health cluster based on existing sector activity, but before any infrastructure project, local authorities will need to assess companies and health sector needs as well as priorities and capacities, and involve them in the project. Otherwise, the chances of success in such project investment run the risk of failure. The matrix allows representatives of the local government to notice strategic gaps and the needs to carry out robust needs-based analyses and project designs that maximize the potential of stakeholders.

[2] See 4D Cities *Matrix of Sector Engagement* at http://urbact.eu/en/projects/innovation-creativity/4d-cities/homepage/

[3] Documents used to work on the Matrix: European Health Management Association – Citizen involvement matrix. And the OECD indicator on innovation output, based on four components chosen for their policy relevance, data quality (international availability and cross-country comparability) and robustness of results: http://www.oecd-ilibrary.org/science-and-technology/measuring-innovation_9789264059474-en

Finally, the **third tool** relates to **regulation and funding capacities** of partner cities[4]. It consists of a survey distributed to all project partners to help them assess the policies and funding capacities they have as regulation bodies so as to understand the potential to assume new measures, relationships or actions locally, regarding the 4 dimensions. Some examples of key points that were asked include:

Does your local government have

- regulation capacity to address Social-healthcare needs and services?
- any responsibilities on the promotion of direct investment? Does it provide funds for retraining and/or internship programs directly or in collaboration with business actors?
- the capacity to engage in agreements with the University or other health-related study centres?
- the possibility to fund or co-fund for new studies and curricula at the local level?
- interrelations with other municipal Departments or Services to assess Health system needs and define changes and improvements?
- interrelations with patient associations or other interest groups, such as elderly or chronic population?

Working on these and other questions regarding three main areas –**Policy competences, funding capacities and level of policy integration**– allowed those responsible of the project to reflect on the capacities and opportunities for implementing local policies and the tools required, even if they came from a non-policy making position.

[4] See abstract of the assessment exercise in the Summary Table of Political Competences for Health Innovation at http://urbact.eu/en/projects/innovation-creativity/4d-cities/homepage/

IV. Outputs

This section outlines the key findings so far regarding the business dimension of the project.

The **first section** presents an overview of the role that the private sector plays in Health as a source of innovation and the opportunities for business development, derived from its interactions within a local Health system.

The **second** focuses on the support that a city can offer to the private sector by encouraging a favourable health business ecosystem and by offering companies customized coaching on their pathways in the field.

The **third** shows positive interactions between the knowledge and the private sector within a 4Helix approach including the public policies that favour a good strategic fit.

The **fourth** is about the advantages of gearing towards a more transparent health sector, especially in favour of SMEs (Small and Medium-sized Enterprises) which often find funding and incentives too difficult to access.

The **last section** highlights success factors to take into account by health companies. Here is involved the issue why the citizens and the patients need to be at the centre of any health innovation strategy, including business projects, and how this can affect current business models. While offering a preliminary set of ideas of the Business-Citizens interactions in this report, more on the role of the Citizen in Health innovation will be described in the other, complementary Output Reports.

a. The Private Sector in Health Innovation

Context Questions: What are critical factors that make a city attractive for health companies? Which is the role that the local government plays in promoting the setting up of companies in this health sector? What positive interactions exist between the business actors and the other health stakeholders in the city –health system, education and research institutions, patients– that bring about economic activity and growth? These were some of the opening questions to approach the business dimension in the meeting in Eindhoven.

Local government budgets are facing increasing strain with regards to the demands for higher quality health services, personalised care, and professional social services. The trend between 2008 and 2011 has been a reduction in Health expenditure in most of OECD countries[5].

Mobility and dependent adult services, rehabilitation, care for dementia or other mental health condition, health care for chronic diseases such as diabetes and age-prevalent illnesses, etc. are services that fall within **competences largely assumed by the cities** which require suitable and localized care services to cope with quality living standards.

At the same time, innovation in healthcare has a unique potential in terms of increasing quality of care for patients and reducing healthcare costs. Given the fact that many age-related health conditions can be helped with **smart innovations**, there is a niche for small and medium-size companies to develop appliances and software to meet these demands.

[5] "Per capita health spending grew by 4.1% annually in real terms over 2000-2009, but this slowed to 0.2% in 2009-10 and 2010-11 as many countries reduced health spending to help cut budget deficits and government debt, especially in Europe". OECD Health at a Glance 2013

E-health sector is a powerful driver of socio-economic development, economic growth and high-value jobs. The medical device industry alone represents more than €70bn. in Europe. Also, most novel technologies originate mainly from SMEs, rather than the large multinationals. 80% of the companies are SMEs and approximately 7.000 medical technology SMEs are in Europe[6].

Along with the e-health, **patients' information and data** collection and treatment is another activity in health innovation that employs smart systems and skilled entrepreneurship. As some cities have demonstrated by its experience, one of the acknowledged aspects of innovation for better and safer health system is a closer integration of Health services.

Europe2020 three flagship initiatives significant for medical device SMEs:

European 2020 strategy underlines the importance of SMEs in the health sector of European countries

1. **Innovation Union** calls for a refocusing of R&D and innovation policy towards the challenges facing our society such as climate change, health and demographic change. The Innovation Partnerships on Healthy Ageing, as part of the Innovation Union initiative, is intended to create a coordinated effort to increase investment, fast-track necessary regulation and use public procurement strategically to ensure that breakthrough innovations are brought to market.

2. The **Digital Agenda for Europe** principally relates to improving access to high speed Internet infrastructure, but includes deployment and usage of eHealth solutions.

3. **European Platform against Poverty** is an initiative that aims to identify ways to ensure better access to healthcare and ensure adequate income support.

[6] EUCOMED Medical Technology Position Paper, March 2011

In the partner city of Leeds, the Leeds Innovation Health Hub strategy contemplates the creation of a health and **digital infrastructure and the single electronic patient record**. ICT platforms for patients' information and data sharing and treatment require newly developed software within a regulated privacy protection.

As seen above, Health is recognised as one of the promising employment sectors. What's more, healthier ageing is increasingly seen as an income source rather than an expense. However, creating new medical solutions in the e-health sector depends very much on the interactions between the private business company and the final user. This opens one of the most important and innovative areas of health innovation tackled in the 4D Cities project.

In a nutshell, to be able to understand the needs and the acceptance of a new product, **companies have to be more social in their approach**. Health-related companies that think of the patient first and foremost will end up designing and developing their products to be more marketable. But this new market approach requires a new business model to sustain it, too. Such new models will need to draw on the talents and expertise of multidisciplinary teams and be based on the end-user focused interactions between the private business sector and the patients associations, healthcare staff, relatives, etc. (For example - when a company understands patients' needs and jointly develops solutions, it results in a better fit and usability of new devices and medical and pharmaceutical products).

Finally, another crucial aspect is the relationship between the health companies and industry with the knowledge sector. Specialized Universities and research centres are a fountain of relevant knowledge for the business activity. Cities seeking investment of companies in the Health sector will therefore be more attractive if they implement policies that facilitate **access to knowledge based capital** and R&D incentives, as well as favour the **value chain from research to patents and to spin-offs**.

Knowledge though, is not seen in the 4D Cities project only at the level of University and medical specialized sector's R&D but also at the level of the training and education required to support the sector's needs and meet its demands. Not all 4D Cities partners have research centres of regional reference, nor have big industry and important University centres. Yet, they still promote excellence in ways that meet their project model as innovative and quality health services for their citizens. In this sense, **skills forecasting**, **local workforce development and demand-led skills initiatives** ensure a local presence of trained workforce to meet health sector companies' requirements[7]. Secondary education and vocational training institutions, life-long learning programs and **cooperation between companies and training centres** provide skills development required by the companies.

[7] For deeper information on workforce development and skills forecasting in medium-sized cities see URBACT II project ESIMeC documents: *Cookbook of Workforce Development Recipes for Economic Recovery*: http://urbact.eu/uploads/tx_projectsresultsdocuments/ESIMeC_Cookbook__2_.pdf and the *ESIMeC Skills Forecasting Manual and Tool*: http://urbact.eu/uploads/tx_projectsresultsdocuments/Skills_forecasting_manual_01.pdf

b. Local Policies in Support of an Ecosystem for Health Companies

Improved context and coach

Creating a favourable context and the right environment and support for health entrepreneurship in cities can be achieved through a wide range of tools and actions of increasing complexity: from informing companies of business development support services to involving them in the process of boosting and shaping the sector[8].

As presented by the project partners in the Eindhoven meeting, local governments can opt for a variety of particular actions and measures to support the economic and business model around Health:

- Igualada, with no specialized local development agency, has designated an **information service for companies**, acting as an interface with the administration. One clear and identifiable interlocutor pays attention to individual companies' needs, simplifies accessibility and gives quick response in local-level orientation. One single and permanent reference of information was recognised by partners as timesaving.

- One step further for the local government to stimulate companies' set up is creating the post of a **prospector** at the municipal level to visit companies and collect their profile and needs (professional profiles required, present and future training needs, knowledge, technology, etc.) and at the same time present municipal services: job bank, business assessment, grants for hiring unemployed people, local legislation and tax benefits when available etc. The local government can also customize the message and the offer to each company according to the profile of investment to attract, in view of its own strategy and development model.

- Among the project partners, we also find higher structured services such as **local development agencies** in Tartu, Jena or Eindhoven. Business development agencies with specialized services in the health economic sector provide coaching and professional advice at local level, particularly valuable for SMEs. Other partners find this type of support located at higher regional levels but have allocated technical staff to directly deal with entrepreneurs and investors, business associations and other economic stakeholders.

- Leeds local team suggested a higher level of involvement for the business sector. This counts on companies' participation and contributions in the decision making process from the very beginning. **Integrated joint working of the decision makers (at different institutional levels) and the private sector**, on the development of a Health model allows for companies to understand business opportunities from the beginning and thus become an engine for the Health sector. Engaging the private sector in the definition of an innovative Health model from the very start of the process can create opportunities for inward investment. Participation of the business sector helps understanding and developing meaningful products and services that favour citizens' wellbeing. It is not only about sitting companies, health services practitioners and citizens down together to discuss the issues at hand, but it's about engaging them –empowering them– in the process of developing practical, viable and durable solutions to local problems.

[8] See 4D Cities *Matrix of Sector Engagement* at http://urbact.eu/en/projects/innovation-creativity/4d-cities/homepage/

Tartu Business Support System

The business support system in Tartu consists of several different organisations with various tasks that complement each other creating a business ecosystem that favours health research and innovation:

Tartu **Biotechnology Park** provides physical infrastructure as well as business development and consultancy services to companies and R&D institutions in the fields of biotechnology, medicine and veterinary medicine. It also supports companies in finding partners and in the establishment process.

Tartu **Science Park** supports business innovation activities in the region by networking with universities, public and private sector. Companies have access to business development units such as the Business Incubator, which offers start-up companies services and supporting environment to share ideas with other entrepreneurs and experts.

Smart City Lab is a cluster of smart e- and m-city solutions designed to create an innovative environment in Tartu bringing together businesses, citizens, public authorities, R&D institutes and structures that support innovation.

The University of Tartu with several business support units, includes The Centre for Entrepreneurship, to raise awareness and offer entrepreneurship training for students and university's staff, supports commercialization of technological and scientific achievements, and facilitates research in entrepreneurship and innovation, among others. **The Idea Lab** offers students of all faculties an opportunity to implement their most (positively) outrageous ideas, try out new concepts and build prototypes in multidisciplinary teams.

The **Centre for Creative Industries** is the coordinator of creative industries providing related information and training, legal and economic consulting for creative entrepreneurs, as well as business incubation (and pre- and post-incubation) services (including infrastructure for new companies).

The **Business Advisory Services Foundation** focused on business development in new and established companies in Tartu region, increasing the share of young people in business, increasing the efficiency of the development activities of local governments and increasing the competencies and capabilities of non-profit organisations via consultations and trainings.

Several other business support organisations (for example Estonian Chamber of Commerce and Industry) are initiatives active in Tartu. The City Government is partly financing the activities of Tartu Science Park, Tartu Centre for Creative Industries and Tartu Business Advisory Services Foundation.

In any of the above cases, what project partners in Eindhoven agreed was that companies highly appreciate and find most useful an attitude of **proactive and individualized support**. Coaching companies with customized approaches, close interaction and understanding of needs, is key in the decision for implantation and investment.

Help Business meet Business

The size of economic players in the health sector differs from one city to the other in the 4D Cities partnership. While Eindhoven, Jena or Novara have big companies from the biotechnological and pharmaceutical sector working in clusters and science parks, other cities lack such big players but their aim is to develop a health economic model counting on a network of small entrepreneurs.

Creating conditions for **cluster development** with a wide range of stakeholders to interact and complement is a key contribution to sector specialization. However, not all cities have the capacity and can compete with such initiatives. Clusters usually start with infrastructure plans. Although not necessarily wrong, clusters are not just about projects to build buildings, they're also about people projects[9]. This is why assessing and selecting competitive business profiles, attracting companies from Health ancillary services and equipment required (ICT and software companies, social enterprises, mechanical, etc.), support to the modernisation, strengthening the business fabric, offering networking and facilitating interactions with other companies, both horizontal and vertical – all hinging on people's knowledge and capacities, can also encourage strong sector development.

As seen, SMEs are an important source of growth and employment in the health sector, especially in e-health.

But **Health is often a complex and opaque sector for smaller companies**. Moreover, they need extra care and support being fragile, especially in risky context as it is the health innovation sector. Thus some key drivers of the process that facilitate SMEs access to the Health sector and activity include:

- Supporting services and training of SMEs in the development of new business models, products and services.
- Supporting SMEs in getting investor-ready in the healthcare sector.
- Implementing policies that stimulate the organisation of an efficiently working health care structure.

Other actions to ease cooperation and bring about business opportunities are found in the area of creating **exchange opportunities**:

- Regular **gatherings and focused meetings** of the Health sector related industry and companies, including technology, software, pharmacy... to help companies to meet the right partners for business synergies.
- **Networking** and supporting measures to help SMEs and big companies meet other entrepreneurs through socialising and brokerage events within the medical sector.
- Provide **training** through courses, seminars, experts' participation and international exchanges as well as roundtables for exchange and facilitate B2B meetings. Complement training and networking with guiding services for finding industrial partners.

Finally strong **business networks** to be internationally competitive can be a platform for companies and at the same time can attract new investments.

[9] From the presentation within the Health4Growth project: "Incubating Innovative entrepreneurship in healthcare", Dr Martin Hinoul, Business Development Manager KU Leuven R&D.

Synthens Innovation Centre, the agency of the Brainport Area (the Netherlands)

In the national strategy of the Netherlands, the specialization of the Brainport area is focused in smart and technology industry. Among others, health and health innovation industry is a key one that contributes to the economy with a value-added contribution of € 6.5 billion and 8.5% to Brabant's gross regional product. The sector employs 18% of workforce in Brabant. (Sociaal-Economische Raad Brabant and Provinciale Raad Gezondheid, April 2012).

Synthens is a regional public agency offering companies the possibility to interact and relate with other health industry stakeholders, mainly other companies. The institution helps advancing the Health-based development model by supporting the private business sector, particularly SMEs.

It provides business support services with an Innovation added value. It helps understanding the business principles of entrepreneurship in the health sector, such as the demands on development and application of medical technology; ways to involve end-users in order to understand acceptation of innovation in the field, and purchasing policies for innovations.

Synthens coaches companies, especially SMEs, to go through project implementation, allows crossovers, builds a strong European network for export, fosters cooperation in the development of new business models, products and services, shares best practices, etc.

c. Collaboration between the Knowledge Institutions and the Business sector

Creating conditions for investment in Health innovation requires specific public policies in the knowledge sector. Below are presented **three main areas of interactions** between the knowledge and the private sector that locate the citizen at the centre either acting as a patient or as a worker.

The first is about using **experiential knowledge** to understand patients' needs and address them with the correct service and product. This helps thinking of the patient wellbeing as the centre of a Health System. The second is about creating a favourable legal and regulatory system on the **management of knowledge** produced by the local companies. This can ease the path for start-ups and spin-offs. Finally, **skills forecasting** ensures a local presence of trained workforce to meet health sector companies' requirements.

Knowledge can bridge between patients' needs and the private sector

Understanding patients' requests is increasingly important for health companies. Bridging the gap between the ivory tower of research and the economic opportunities in Health requires innovation. In the case of health innovation, this has to be fostered with citizens' participation; otherwise, there are great chances of failure.

The Knowledge sector can act here as the intermediate actor between the citizen and the private sector through **pilot research projects undertaken by students**, **in living labs**, **etc**. Engaging citizens and patients such as elderly people in research programs allows for better understanding of measures and products that aim at improving living conditions.

This approach also calls for **multidisciplinary teams**, as the most innovative companies have put in practice. For example, technological companies from the health sector are recruiting and incorporating students from social disciplines to form the interdisciplinary working teams. Health industry and business companies increasingly require social profiles to be able to understand people's and patients demands. Thus, for cities to be able to offer skilled people from the different professional disciplines, besides the medical or technological, the training system needs to produce social scientists (sociologists, psychologists), social workers, business administrators, etc. that complement the medical profiles.

Amsterdam Health-Lab

The Amsterdam Health-Lab supports a platform for care including organisations playing a role in health care. Universities, healthcare institutions, patients and students and the private companies work closely together. The Lab aims to establish an environment which supports the creation and implementation of innovative care technologies. The program focuses on increased care efficiency, resulting in greater end-user independence. The potential of ICT based technologies plays an important role.

Students and companies can develop solutions for elderly people to enable them to live independent in their own home. It mainly consists of designing technology to support people, especially elderly. Students are an integrated part in the living lab, undertaking a 6 month programme which is included in their curricula. They can learn how to design products centred in the user. Old people are involved and participate in the tests, in a way that they don't see themselves as "testers".

From the patients and citizens perspective, the Health-Lab seeks solutions for particular patients' needs thanks to their direct participation. The program supports and stimulates the set-up of several living lab locations where new solutions can be tested and improved, together with users, in their daily lives.

From the academic point of view, promotes the creation of new curricula focusing on the implementation of these solutions in educational settings.

Finally it supports and stimulates Digital Health developments through companies' development.

> *"... Innovation in care needs the cooperation of many different organizations. Companies are needed to produce technologies and service the market. Education institutions need to incorporate the use of technology in their curricula. Care institutions will have to adapt to new possibilities... Government will have to play their role in terms of regulations and stimulation. This is why Health-Lab is a cooperation of the care institutions in the Amsterdam Metropolitan Area, the local universities, the government and several companies."*
>
> From http://amsterdamsmartcity.com/projects/detail/label/Health-Lab?lang=en

Management of knowledge

Management of knowledge is of importance for companies when seeking a balance between open research and the Intellectual Property Rights protection. As a general rule a local government has limited competences to regulate in the area of IP and patents. However, measures to bridge between research innovation and economic incentive may include a number of **support and facilitating services** not strictly legal or regulatory.

Research in the medical technology industry is usually a result of small or micro collaborations between health professionals, academia and SMEs. This research model brings rapid innovation, which quickly tackles current and emerging medical needs. But there are significant barriers that these companies face, preventing them from reaching their potential[10]. In order to ease interactions between the private sector and the knowledge and research areas, cities can support companies, particularly SMEs in:

- Bureaucracy and paperwork regarding patent management, license agreements, etc.
- Set research agreements and rewarding schemes for successful companies, encouraging researchers and research groups as well as instruments for technology transfer support.
- Information and support in product registration, reimbursement, procurement, health technology assessment and access to R&D incentives.
- Assessing feasibility, patentability and market potential of an invention.
- Informing of the state public protection policies of intellectual property.
- Validating business models, offering legal support through a public agency or service, easing conditions for young firms to develop and commercialize new ideas, etc.

Companies need open innovation but also a certain protection of research and investment revenues. As precised by **Rob Webster**, from **Leeds** Community Healthcare NHS Trust and member of the City of Leeds team put it: *"mind differences between new and existing companies: work on* **remuneration for the 'clever' things that companies have developed, protect research results in an open context***"*.

Needs of skilled workforce

In seeking excellence in the health system, not only locally based University and R&D activity is significant to private companies operating in the health sector but also professional profiles to meet business activity and related health professions need to be assured.

As important as the access to the appropriate research and innovation centres is **developing and upgrading curricula**. The local government may facilitate the availability of workforce through promoting new training centres or modernized curricula in the existing ones. University, secondary, vocational and professional training, life-long learning programs and cooperation between companies and training centres provide skills development required by the companies and meet sector's needs at different management and service levels.

[10] EUCOMED Medical Technology Position Paper, March 2011

In order to **estimate present and future requirements** of human resources to match Health sector and companies' needs, the decision makers need to be aware of available skilled workforce. An assessment will help understand whether it responds sufficiently and adequately to the sector needs. This appraisal will require the development of assessment and performance indicators which facilitate creating policies and measures to undertake today but also to cover future expected needs.

Then, promoting new curricula in areas in which companies need professionals and provide professional retraining and lifelong learning through the educational offer will help to match the job offer in the health sector. The **involvement of employers** in this process is key because they can take responsibility for workforce development within their sectors and develop solutions that meet their rapidly evolving needs.

Best practice: Dual training system in Germany, Jena

In the Dual system in place in Germany, training is mainly provided in the company and supported by teaching in part-time vocational school. General and vocational knowledge is taught within the framework of compulsory education. Relation is established under a contractual agreement by law between the company and the training school and examined by the Chamber of Industry and commerce.

It implies different sectors and both cross sectorial and specialised professions. The benefits for enterprises include influence on content and organisation of vocational training, low recruitment costs, next generation of skilled workers assured.

The benefits for trainees include labour market relevant training, acquisition of social skills, personality development, motivating situations (earning and learning).

The general benefits for the government are that private sector contribution eases the burden on public budgets, the relatively low rate of youth unemployment.

Dual training has proved to be a formula that increases employment rates, in particular for young people.

Because of the changing priorities and preferences of population, **attracting and retaining skilled people** has become a priority in many of the cities, also within the 4D Cities project partnership, to prevent young people to leave for better job opportunities in bigger cities.

To ensure continuing of the availability of trained **workforce family friendly and youth policies** help keeping students to the near or local Universities and training centres and also make job offers more attractive. In the case of Jena, for example, the outlined URBACT II Local Action Plan envisages measures towards interacting with local youth with the aim of raising their interest and engaging in health related studies in the local educational institutions and Universities.

Collaboration between companies and research institutions ensures that the research and knowledge revert to the citizen. Some partners of the 4D Cities project have presented formulas for favouring entrepreneurial climate within the University, for example fostering the creation of start-ups facilitating advice from experts, promoting interdisciplinary collaboration or organizing business promotion activities for students (seminars, gatherings).

Best practice: The Competence Centres, Tartu

The Competence Centres of Tartu are research organisations focusing on the long-term cooperation between research institutions and companies. The main aim is to increase the international competitiveness of companies by facilitating their cooperation with research institutions. In the case of Tartu, the initiative is funded from the involved universities, the industry (companies involved in the CC) and public sources (2007-13 structural funds).

The CCs are separate legal entities and the research institutions and the companies are the shareholders.

d. Transparent and collaborative Health Sector

The health care sector is often perceived by companies, particularly the smaller ones, as anti-innovative, opaque, complex and rigid. The public administration has multiple agendas, sometimes conflicting, and innovation is not always a priority. Removing obstacles to healthcare innovation, easing access to information and making more transparent the Health sector (public procurement, administration and bureaucracy) makes collaboration with companies more likely and smooth, facilitating start-ups, particularly SMEs.

Partners pointed out some measures to help companies **overcome difficulties before public health administration** system:

- Prevent companies from having to talk with several municipal services by designating a key account manager or director for innovation in health care, a figure to act as a focal point.
- Clarify the structure of responsibilities and create a signpost system for companies, to enhance transparency.
- Avoid institutional rigidity and complex quality regulations that are perceived as limiting, that is, be flexible to adjust administration procedures.

As an example, **public procurement** is a troublesome procedure for many. Understanding health procurement needs and regulations will facilitate the interaction with providers and allows the entrance of SMEs. Innovation in public procurement is increasingly considered by pilot projects.

Co-operative bidding of SMEs in health care sector (Mezgár I, Kovács G, Bonfatti F.)

Tendering becomes an important process for customers in the health care sector to select products and services from the market for the lowest price, with the highest quality and with the shortest delivery time. The number of SMEs (Small and Medium-sized Enterprises) delivering products or services for the health care sector is increasing, but they have usually limited capital and expertise to participate in tenders. The paper introduces a possible solution for this problem, when SMEs form special groups, so called Smart Bidding Organisations (SBO), to prepare a bid for the tender jointly. The SBO appears for the customer (tender issuer) as a single enterprise and the bidding procedure will be faster and less expensive in this way.

e. Citizens at the centre

In Health Innovation, as conceived by the 4D Cities project partners, the citizen is at the centre of the Health system. **This is also true for companies involved in this field**. The centrality of the patient will be further explained in the report addressed to the Citizens Dimension of the project, but it is important to mention here that only by consulting and understanding the patient and his needs, will the health services and products (including pharmaceutical products) be able to match and adapt to the patient[11].

Mobility problems related to age, dementia or other mental health condition, chronic diseases such as diabetes, are but some of the health problems that may benefit from technology supported innovations for which business and research companies may offer solutions. However **creating new medical solutions needs the participation and engagement of the patient and user** not only at the testing process but from the very beginning, to identify real needs. Companies need to understand patients' capacities and profiles. **Segmentation** is a useful tool that helps accommodating the product to the users' profiles.

Health-related companies that put the patient at the front create products and services close to the patient's needs and have better chances of success in obtaining and marketing the right solution. As seen above, multidisciplinary teams in companies are an increasing practice, incorporating patient's associations, relatives, community services, healthcare staff, etc. and jointly developing solutions will result in a better adequacy and usability of new devices and medical and pharmaceutical products.

Policies from the local government may contribute to this collaboration and engagement of the citizens with health professionals (nurses, carers) and companies, using local facilities and health structures that range from living labs to simulation centres.

Best practice: 4D Health, Hospital Simulator, Igualada

4D Health project in Igualada consists of a simulated hospital that brings together a wide variety of hospital and care services organized with an integrated and patient centred approach. It allows medical students to train in close to real situations and facilitates interrelation among all health stakeholders in a unique and common shared place.

The Simulator Centre is a catalyst element of the agents involved in a 4Helix model that agglutinates all relevant stakeholders in the health system: the healthcare professionals, companies, universities, patients and citizens, scientific societies, research centres and health centres, to better understand and work on the basis of the patients' needs.

The centre can recreate scenarios as home healthcare, hospital, primary care, emergencies and pharmacy facilitating an interdisciplinary work. In doing such, companies can work in an integrated manner with the Health system to understand and test new products and technology.

[11] See examples and articles on *Co-creation in Open Innovation and co-creation in Health, Co-creating new business in health, pharma and wellbeing*, at http://healthcocreation.wordpress.com/

V. Closing remarks

Health Innovation as a growth driver with a patient centred approach is a broad and complex issue tackling many different domains: entrepreneurship, knowledge, regulatory and financial aspects, healthcare domain and citizens' participation.

The present document has pointed to the principal areas of policy work that a local government can undertake to promote economic activity in this sector according to the experience and knowledge provided by the 4D Cities project partners. Evidently, the report does not exhaust all the possibilities of action: it is the reflection of what project partners have implemented or projected in their cities –a starting point for discussion for some, a more practical, idea-inspiring tool for others.

A great extent of actions and tools can be deployed by the local health stakeholders, many of them collected in the matrix of sector engagement. However, **every specific action needs to be studied and adjusted to each city** model and specificities. The methodological tools developed are projected to be helpful in the choosing and deciding which of the policies and actions can better complement and promote the progress of the model to evolve by the 4D Cities partners but also by any other city envisioning a development model based on health innovation.

Annex 1: Meeting agenda

4D Cities

Health innovation as a growth driver

URBACT II

1st TRANSNATIONAL MEETING

IMPLEMENTATION PHASE

28-29 MAY 2013 EINDHOVEN

Objectives of the meeting

- To share the eight models of political responsibilities and decision making processes at local level of the health system.
- To learn from partners' case studies and invited experts on the topic of economic growth and business promotion related to the health sector.
- To participate in exchanging and peer review activities that help identify key interest points in the business dimension.
- To identify particular lessons learnt potentially assumed by the partners to incorporate in their Local Action Plans.
- To discuss and agree on thematic topics to be further developed and analysed on the business dimension.
- To hold a Steering Committee meeting to evaluate the 1st Transnational meeting and suggest changes for the following.

Preparation before the meeting

- Read the 8 reports on the decision making context of the different health systems.
- The 4 "expert" partners present their reports and presentations.
- Read the 4 case studies of the "expert" partners on business dimension.
- Prepare questions according to own interest focus points to be raised at the meeting in Eindhoven.

MONDAY 28TH MAY 2013

9:00-9:30	**Welcome & introduction Brainport triple helix model** Vice-director of Brainport Development: Joep Brouwers
9:30-9:45	**Who is who** Round of quick personal introductions.
9:45-10:15	**Presentation, revision and agreement of the Decision making context template and information** Mireia Sanabria, Lead Expert
10:15-10:45	**Eindhoven case study: Care Circles** Jacqueline Kuppens
10:45-11:15	**Coffe break**
11:15-11:45	**Jena case study: House of vision** Wilfried Roepke
11:45-12:15	**Leeds case study** Colin Mawhinney
12:45-14:15	**Lunch break**
14:15-14:45	**Novara case study**
14:45-15:00	**Clarification questions**
15:00-15:15	**Departure to Study visit**
15:30-16:30	**Study visit**
16:30-17:00	**Round up closing session and presentation of next day's agenda**
19:30	**Dinner in the city centre of Eindhoven**

TUESDAY 29TH MAY 2013

8:30-9:30	**Expert presentation "European trends on business opportunities of the health sector"**
9:30-10:15	**Group work. Session I** Partner's group meetings for questions on cases presented and peer review
10:15-11:00	**Group work. Session II** Partner's group meetings for questions on cases presented and peer review
11:00-11:20	**Coffee break and informal contacts**
11:20-12:00	**Flea market session** 4 tables set for partners to partners: go around to discuss specific interest points, share and exchange opinions, establish bilateral contacts, etc.
12:30-12:50	**Individual work** Each partner prepares a 5 minutes presentation of lessons learnt and topics to be further developed in the business dimension
13:00-14:30	**Lunch break**
14:30-15:30	**Presentation of partners' lessons learnt and group agreement on topics to be further studied.**
15:30-16:00	**Group meeting on next steps** Work to be done and reports to be presented and received in the following days and weeks.
16:00-17:00	**Steering Committee Evaluation Meeting**

MEETING VENUE:
Pullman Hotels & Resorts
Vestdijk 47 5611 CA EINDHOVEN

Annex 2: List of participants

Eindhoven	**Marieke van Beurden**, Project Leader, Brainport Development NV **Joep Browers**, Brainport Development
Baia Sprie	**Szakacs Levente Istvan**, UAT Baia Sprie **Claudia Brevan**, UAT Baia Sprie
Igualada	**Àngels Chacón**, Project Coordinator **Enric Macarulla**, Thematic Expert **Núria Cañamares**, Communication Officer **Raquel Garcia**, Technical Officer
Jena	**Wilfried Roepke**, Managing Director of Business Development Corporation Jena **Angelika Stenzel**, Jena Business Development
Leeds	**Susan Tuck**, Senior policy officer **Colin Mawhinney**, Head of Economic Policy & Programmes, Economic Development **Rob Webster**, Leeds Community Healthcare NHS Trust
Novara	**Maurizio Foddai**, Territory Government and Urban Planning Department Manager **Marcelo Sarino**, Novara Business Incubator **Luca Ragazzoni**, Novara Crimedim
Plunge	**Oresta Gerulskien**, Plunge Municipality **Tomas Zamulskis**, Plunge Municipality **Asta Beierle Eigirdienea**, Plunge Municipality
Tartu	**Siim Espenberg**, Chief Specialist in Business Development **Argo Annuk**, Tartu City Government
Lead Expert	**Mireia Sanabria**, Invenies

Annex 3: Meeting pictures

Working sessions at the Eindhoven 1st Transnational Meeting of the 4D Cities Project

Picture 1: Meeting presentations.

Picture 2: 4D Cities photo family.

Picture 3: Experts' presentations.

Picture 4: Novara presentation.

Annex 4: Glossary

- **4 Helix approach**: In the 4D Cities project it refers to the Business, Knowledge, Citizens and Health sectors, as drivers for city development, with the local government as the promoter.

- **Biotechnology**: Bio-molecular and cellular processes to create products and technologies applied to health, energy and food industries. Currently, there are more than 250 biotechnology health care products and vaccines available to patients, many for previously untreatable diseases. Also has veterinarian and agricultural applications.

- **Business incubator**: Infrastructure and services to provide support for development of entrepreneurial companies through an array of resources and services, developed and orchestrated by incubator management and offered both in the incubator and through its network of contacts. Incubators differ from research and technology parks in their dedication to start-up and early-stage companies.

- **Cluster**: Concentration of interconnected businesses, suppliers, and associated institutions in a particular sector and a geographical location. Clusters increase the productivity of companies by driving innovation in the field and stimulating new businesses in the same sector. Concentration of resources and competences give a key position in a given economic branch of activity with a decisive sustainable competitive advantage over other places.

- **Dual training system**: Education training system which allows for collaboration of vocational and professional training centres with companies (from small- and medium-sized enterprises to major companies) as a way to integrate young people in the labour market. Training is mainly provided in the company and supported by teaching in part-time vocational school. Learning at both venues is governed by different but coordinated regulations.

- **E-health sector**: Companies and public services that integrate ICT in the Health sector.

- **Multidisciplinary teams**: In the health sector, working groups that integrate professional profiles form different specialties ranging from the scientific profiles to professionals from the social and psychological disciplines.

- **Patient-centred approach**: Forms of health services organization in which the patient is seen in the centre of the health system, as a primary source of information for professionals and within a context of integrated services and information sharing.

- **Prospector**: A local hired professional for entrepreneurial support to identify and collect companies' needs and demands (professional profiles required, training needs...) and provide general business information and assistance regarding services offered by the municipality (job bank, hiring grants, training offer...).

- **Smart Bidding Organisations (SBO)**: A group of organisations or companies, especially SMEs, made to jointly prepare a bid for tender. The SBO appears for the customer (tender issuer) as a single enterprise and the bidding procedure becomes faster and less expensive.

- **Single Electronic Patient Record**: Individualized patient information collected, integrated and shared through ICT systems among health services and facilities (General practitioners, hospitals, primary care centres, etc.) providing secure and audited access to these records by authorised health professionals and patients. Patients also are enabled to have access to their records.

- **SMEs**: Small and Medium-sized Enterprises

- **Spin-off**: In the 4D Cities context, new business entity formed to commercialize one or more related inventions generated from the research work from a parent institution. Forming a Spin-off company may sometimes be an alternative to licensing the IP to an established business.

- **Start up**: Company, generally newly created, in a phase of development and research for markets. It is distinguished by its risk/reward profile and scalability. Start-ups commonly have low initial investment costs, higher risk, and higher potential return of investment. They can potentially grow rapidly with limited investment of capital, labour or land than bigger companies.

Annex 5: Bibliography and web references

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Ajuntament d'Igualada

Leeds City Council

Comune di Novara

Tartu city of good thoughts

Plunge District Municipality

Brainport Region Eindhoven

JENA Wirtschaft Business Development

Municipality Baia Sprie

URBACT II

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 500 cities, 29 countries, and 7.000 active participants.

4D Cities is an URBACT project that aims to develop cities through the interaction of the actors which operate in the fields of Health and Innovation such as the knowledge, the healthcare system, the business and the citizens. It involves 8 European cities that would like to create a new productive sector which contributes to the diversification and enhancement of the economic activities and social cohesion of their territories. The partners are Igualada (Catalonia, Spain) as a leader, Leeds (United Kingdom), Novara (Italy), Tartu (Estonia), Plunge (Lithuania), Brainport Eindhoven Region (Netherlands), Business Development Corporation of Jena (Germany) and Baia Sprie (Romania).

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