A REPORT ABOUT THE SCENE OF MOBILE AND MOBILE SERVICE INDUSTRY IN EUROPE AND HOW TO WIN BACK THE INITIATIVE

EUROPEAN Mobile & Mobility Industries ALLIANCE

EUROPEAN UNION

mobilise europe

A report about the scene of mobile and mobile service industry in Europe and how to win back

the initiative.

This publication has been produced as a part of the European Mobile & Mobility Industries Alliance. The view expressed in this report, as well as the information included in it, do not necessarily reflect the opinion or position of the European Commission and in no way commit the institution.

This publication is financed under the Competitiveness and Innovation Framework Programme (CIP), which aims to encourage the competetiveness of European enterprises.

Content

Introduction

This guide is produced in order to give some advice and recommendations to regions in Europe in the mobile and mobile service industries. It should be seen as a way to get inspired but also as a way to create future policy recommendations in this field.

This is the second, updated edition of the guide. It is meant to be seen as a way to describe how different types of policies work, how the market is built and how to get the highest impact from public policies.

This latest revision of the guide has been updated through an iterative process during the spring and summer of 2014. The process consisted of online reviewing, workshops for innovation partnerships in different regions, and industry feedback. It is important for us to continue to receive informed feedback regarding the quality of our conclusions and recommendations to put Europe back into a leading position for mobile services. Recommendations are useless unless they are implementable.

We look forward to your comments and input.

The authors

The following persons have contributed to this report:

Karin Drda-Kühn, Chair of European Mobile & Mobility Industry Alliance (EMMIA), Policy Learning Platform (PLP)

Jürgen Vogel, bavAIRia e.V., Coordinator EMMIA PLP Platform

Ludek Kühr and Pavel Vokáč, BIC-rtd, Case studies

Giampiero Orsini and Furio Gerace, Province of Rome

Francesco Filippi, Sapienza – University of Rome

Paul Bhatia and Stephen Fuller,GRACE, Case studies

Philippe Moretto, ENCADRE, Methodology

Helena Wiedling Fernandes, Cluster 55°, Case studies

Micael Gustafsson, Clusterland Sweden, Case studies, Conclusions, Recommendations, Implementation.

Invited authors are mentioned at beginning of their contribution or chapter.

Executive summary

The ”mobilise europe” report has been written within the European Mobility & Mobile Industry Alliance (EMMIA) initiative, as a result of work undertaken by the Policy Learning Platform (PLP). The aim is to show the drivers behind the emerging spots in Europe for mobile services, and how regions can act in order to drive innovation within this field.

After studies of quantitative facts, most of them from the Pricewaterhouse Coopers Report about Emerging Industries from summer 2012, twenty emerging spots were identified in Europe. Ten different indicators were used in the evaluation process:

- General Impression
- Growth of start ups
- Cluster strength
- Informal structures
- Formal support
- Important events
- Industrial history
- Financial tools
- Market
- Access to knowledge and talent

Out of these twenty spots, five where chosen in order to investigate deeper into the drivers behind growth in the mobile sector. The five spots where not chosen because they are the best ranked, but because they represent different types of environments. Therefore they include large metropolitan areas, places with or without clear policies, small regions, and nations. This was done in order to reflect different conditions in order to give a range of appropriate recommendations to regions of different sizes, stages of development and with different infrastructures. The five spots for those case studies are:

Barcelona

The city of Barcelona and region of Catalonia, has arguably the most well-defined public policies in Europe when it comes to mobile services, resulting in a vibrant community of start-ups; many of whom were drawn

to the city as it hosts the annual Mobile World Congress. Clear strengths are that it is easy to start a company, talent is relatively inexpensive, there are top universities to collaborate with and there is a strong commitment from those who have succeeded to help others. The favourable climate and the city itself are also an attraction. On the weak side we see a language barrier for international communication, the policies are directed more towards local companies, and most of the companies that have developed tend to be family owned; with no real ambition to become international. In that sense the public policies and incentives have failed.

Berlin

The start-up community within the mobile sector has seen and continues to see rapid growth over the past few years. It is now regarded as one of the most interesting start-up communities in Europe. Even though there are some great challenges for the city, Berlin is seen as a strong brand; therefore it is able to attract entrepreneurs and competence from all over the world. Salaries are low, which benefits companies, and the cost of living is low, which benefits workers. This is facilitated by having some of the most open immigration policies in Europe. Berlin possesses a young and creative population, with a "can do" attitude providing an inspirational and creative touch in the city. The international scene in Berlin means that the spoken language is invariably English, even though official language is German. A major weakness for the region is that the local home market is too weak to sustain the industry. The effect of this is to supresses the ability of companies to carry out R&D; leading to a limit on long-term growth of both the companies themselves, and the region in general. Therefore, even though the city is "cool" and has a large number of start-ups, not many companies succeed in the long-term. Most companies start-up and then die out. So, despite the ease with which companies can start-up in Berlin, keeping them alive and growing could become a problem.

Inner London

The rapid growth of London's mobile services start-up community (the fastest growth in Europe) has led to the epicentre of the cluster in Shoreditch being dubbed "Silicon Roundabout". Growth has been assisted by the clear business focus of the city. The city's clear strengths are the innovation clima-

te, the multi-cultural environment, excellent access to capital, a critical mass in start-ups and very good infrastructure. On the other hand, it is held back by the lack of collaboration with traditional R&D, the lack of large multinational companies within the mobile sector based in the city and the economic isolation of London from the rest of the UK.

Estonia

Estonia has a clear national agenda when it comes to the development of the mobile sector. It was one of the first countries to introduce a host of public mobile services that range from parking to voting. Strengths are: the high level of adoption of ICT within the public sector, a very good reputation, and that Estonia is a small country that enables easier implementation of national policies, driving good integration of local businesses into global innovation networks. On the weak side, we see that the rapid growth is not sustainable as Estonia has failed to reach critical mass. There is a decreasing population through migration, especially of graduates, exacerbating the shortage of qualified ICT professionals. In addition, there is a low level of R&D nationally as a result of the small number of universities that are able to support research in the area.

Malmo/Lund (Southern Sweden)

The story behind the Malmo/Lund area starts with two things: The invention of Bluetooth technology in Lund and Malmo's change from traditional heavy industry to the knowledge industry. Even though the area only consists of about 400,000 inhabitants, it hosts multinational companies like Sony, Microsoft, Ericsson, Huawei, Samsung and Intel. The long history within the mobile sector is one of the region's strengths, together with more recent success stories, excellent infrastructure, leading universities, multinational companies and very good collaboration within the region. Conversely, the region suffers from a lack of capital, a low international reputation, not enough commercial thinking, a small home market (which also can be an advantage in some cases) and a low acceptance of failure.

Conclusions and findings

Through the data and the qualitative analysis, there are some findings that have been very clear:

- Industry presence and access to capital beats policies
- The history of the area and the mind-set of the workforce cannot be overestimated
- Incentives as instruments have low impact (for instance tax deductions)
- A small home market is often an advantage
- Policies around infrastructure are important
- The public sector can play a role as a buyer

These general findings can be adapted to recommendations for regions on different levels. For instance is access to either capital or large industrial players crucial if you want to boost start-ups in the mobile sector?

Recommendations

Policy recommendations are hard to develop. They can be too generic - meaning they don't appeal to the people who are supposed to implement them; or they are too specific - and will only work in one type of environment. That is why this guide has three levels of general recommendations that can be applied to regions with different levels of experience.

Excellence level demonstrated by the regions selected in the original twenty studied and shared by regions with similar profiles. Recommendations for these regions are:

- Secure access to capital, especially for small regions
- Attract big brands
- Recognise the importance of indirect factors
- Don't interfere with the market

Climbing level is typified by regions that have some of the things that are needed to create excellence, but still need to build critical mass or infrastructure in order to get further up on the value chain. Recommendations for climbing regions are:

- Develop connections towards capital
- Focus on strengths
- Build up knowledge and access to it
- Invest in infrastructure
- Create policies around the public sector as a buyer

Challenger level is applied to regions that do not have an existing mobile or mobile service industry, and where other sectors are stronger. These regions may have a strong cluster within tourism or agriculture for instance. Therefore, mobile services will become a part of the core offer from these sectors but not an industry in itself.

- Focus on the region's strength
- Build infrastructure
- Mobile services based on existing strengths are more likely to succeed
- Build trust
- Build support systems like cluster organisations

Putting the recommendations into context

In order to find out how the recommendations work in reality, three innovation partnerships were created in regional innovation communities and the recommendations were tested during 2014. The results of those tests are documented in this guide.

The European Mobile & Mobility Industries Alliance

Introduction

Smartphones and tablet computers are now ubiquitous; they can be seen in use in the metro, at conferences, in schools and all public places. Any technology or social trend in the last five years is closely linked to the advances in mobile availability. Today, Europe has still to find its role in this fast paced business and rapidly developing market. The battle of hardware and standards was once the European success story led by brand names such as (Tele-) Nokia and Siemens, but it seems that the story is now down to Europe's role as merely holding the standards in international mobile communications. GSM, 3G and 4G are all held by ETSI (European Telecommunications Standards Institute) in Sophia Antipolis, France. ETSI was founded back in 1996 by an initiative of the European Commission. The real business based on these standards and the new jobs in this industry seem to be made somewhere else in the world, not by European companies.

A European action to reverse the trend

Especially in times of economic crisis, investments in maintaining existing infrastructures or manufacturing structures are favoured over budget-intensive new structural investments. Regions and municipalities in Europe own or co-own, and manage well-functioning and up-to-date mobility infrastructures such as harbours, airports, roads or public transport entities. Customer-oriented and mobile services on top of these infrastructures are in line with the European Commission's strategies and the coming implementation programmes. The European Mobile & Mobility Industries Alliance (EMMIA) follows the innovation policy framework set by the European Commission's Innovation Union flagship. It is a strategic initiative bringing together policy makers and industry representatives as announced in "An Integrated Industrial Policy for the Globalisation Era". The accuracy, reliability and variety of location-based services, which are a focus for EMMIA, will be improved by Galileo and EGNOS, Europe's own Global Navigation Satellite Systems (GNSS). These are Europe's biggest joint technology projects; Galileo is currently in the deployment stage, and EGNOS is already in operation and certified.

EMMIA 1: Galileo/EGNOS and the mobile internet

To fully unlock the potential of the mobile and mobility industries requires new policy approaches. Therefore, the European Commission's Directorate-General for Enterprise and Industry established the "European Mobile & Mobility Industries Alliance" in December 2011 following a call for proposal. The first wave of contracts, EMMIA 1, are all cross-sectoral policy initiatives, combining policy learning with additional concrete actions on better access to finance and on large-scale demonstrators in support of sustainable tourism in rural areas. Two of the concrete actions within EMMIA 1 target the "mobile" entrepreneurs' need for access to finance. MOBICAP and EMMINVEST seek new concepts to set up seed funds to increase investor readiness through training measures or to convince public fund holders to co-invest for example structural funds in this new emerging industry. Three tourism-oriented large-scale demonstrators (L-SDs) offer mobile services to the modern tourist - through smartphones or tablets. Some L-SDs such as GROW MOBILE focus on city tours. CULTWAyS provides information on cultural routes, examples of which include the Way of St. James or the Via Claudia Augusta. The LIMES initiative covers the German and Bulgarian parts of the Roman Limes, a historic defence line. Virtual reality schemes, hotel booking and weather services, eco-tourism, safety schemes or cultural information are just a few of the services the tourist can enjoy through these services.

Just as important as these concrete services are the policies that can be extracted, the economic or political barriers found or the standards that are missing; each of which have been taken up, and integrated into the work of the PLP. It is an open platform that brings together policy-makers and business support practitioners, which in the case of EMMIA 1, come from 31 partner organisations across 14 countries and from four European organisations.

The overall aim of EMMIA is to shape a community in Europe that actively supports mobile and mobility industries as a driver for competitiveness, job creation and structural change by developing and testing tomorrow's policies and tools for mobile and mobility industries. The objective of the Alliance is to raise additional public and private funding in support of mobile and mobility industries, through for example, better use of Structural Funds and by

co-ordinating current and planned mobile and mobility initiatives. It will promote a more effective use of mobile technologies, applications and services throughout the economy. In addition, it will promote the emergence of new industries that combine modern technologies, including those based on the European GNSS with innovative services. Thereby, the Alliance will contribute to the modernisation of the European economy in general, and to the implementation of the Europe 2020 Strategy in particular. To find out more about the European Mobile & Mobility Industries Alliance,
please visit:

http://www.mobilise-europe.eu or www.mobilise-europe.mobi.

The term "mobile services" is used for those services focused on mobile and wireless technologies embedded into mobile or fixed IT devices. "Mobile and mobility services" refer to those mobile services that provide solutions directly or indirectly that support the mobility of goods, machinery, livestock and persons. Such services might be designed to give direct support for mobility, such as transport and logistics services, or to provide indirect support via services connected to the needs arising from the location of goods, machinery, livestock and persons. Similar to the information technology industry, mobility is both an industry with unique products and services in itself, and an enabler of other industries through new technologies and services.

EMMIA 2 and 3: Boosting new services based on Copernicus and GNSS

The second and third wave of calls (EMMIA 2 and EMMIA 3) added more large-scale demonstrator service initiatives to promote both Galileo/EGNOS and Copernicus (the European Earth Observation programme that combines radar, multi-frequency optical and infrared reflection data for land, water and air monitoring).

In mid-2013 six new large-scale demonstrators in Copernicus and Galileo downstream services were launched under the "EMMIA 2" initiative of the EU in the framework of the European Competitiveness & Innovation Framework

Program (CIP). These L-SDs address specific challenges and facilitate the emergence of new industries by implementing innovative services on a local and national level, each funded with about € 0.5m. SeamlessCities is about intermodal mobility services and develops a mobility service App (which includes multimodal routing and booking), that provides seamless real-time indoor and outdoor navigation and environmental information. It will include Earth Observation (EO) and environmental data from Copernicus in order to demonstrate added value of EO data on mobile devices. myEOrganics uses data from Copernicus and Galileo in the organic food sector. The data are applied in sustainable agriculture to monitor crops in the areas of food security and safety to improve and create efficient certification schemes and lower cost quality controls via satellites. Using the concept of a citizens' observatory with data provided via the users CITI-SENSE-MOB exhibits the potential for mobile technologies in the environmental health and climate change domain. The demonstrator develops mobile services to support green growth in the Oslo Metropolitan area by providing citizens and authorities with information related to transport and the quality of the environment. Similarly, the other demonstrators Traffic Shaper, Galil-EU and LDA showcase the potential benefits and effectiveness of utilising the European Space infrastructure for a wide range of services that are of benefit to the citizens of Europe.

In parallel to the demonstrators, the innovation voucher scheme S2G2M2 accelerates the development of innovative services in the Copernicus and Galileo domains. This includes, among others, a training program, the "mini-MBA" focusing on the challenges start-ups face in launching knowledge-intensive products and services.

In September 2013 the Copernicus Services Unit of DG Enterprise and Industry published a third round of EMMIA calls, EMMIA 2013. Two contracts, funded by up to € 1.2m, started in summer 2014. Both followed the L-SD concept that demonstrates how innovative, added-value services based on Copernicus and the European GNSS can solve societal challenges or support emerging industries.

obsAIRveYourBusiness, coordinated in Bavaria, brings in the expertise of the previous obsAIRve consortium on air quality measurements and predictions.

Its capabilities are now extended to a higher spatial resolution suitable for cities. The measurement results, including one-day forecasts of O3, NO2 and aerosol concentrations are brought right to the citizens' smartphones based on their location coordinates. The focus is to increase accuracy of the data within cities such as Augsburg and Paris, while disseminating the capabilities through roadshows for interested cities in Europe and beyond.

The SATURN initiative, led by Aerospace Valley, implements an innovative regional GEO-information platform linked to Copernicus core services data. This creates a favorable eco-system for stimulating entrepreneurship and instigating new mobile and mobility services for citizens. Concrete activities answer the urban mobility challenges of Bordeaux City; they benefit from the experience of Regional Contact Offices across Europe and will take advantage of the key opportunity of the international ITS World Congress 2015 hosted in Bordeaux.

The figure below shows a table of the current EMMIA initiatives as of autumn 2014.

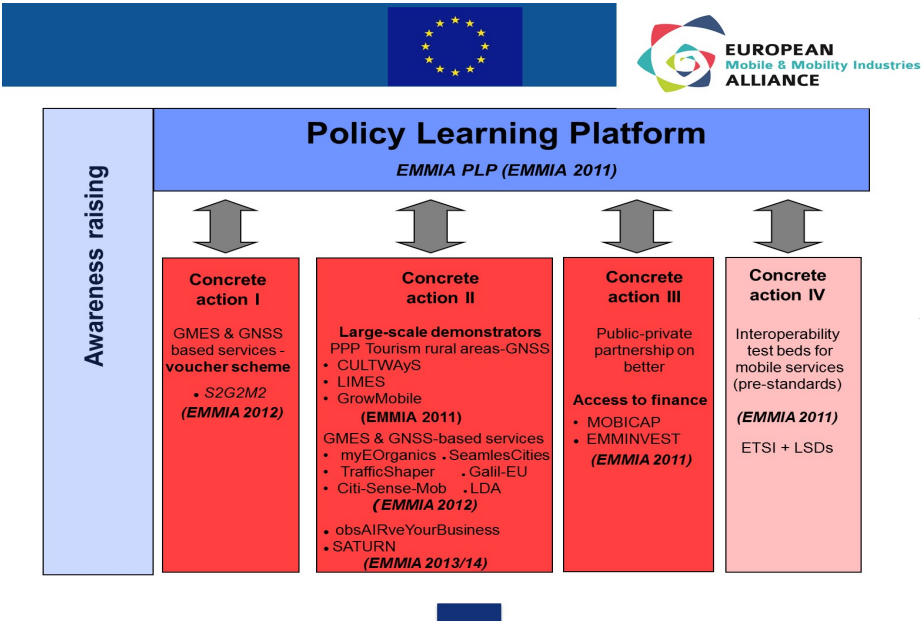


Fig. 2 EMMIA Initiative

The role and contribution of the EMMIA Policy Learning Platform (PLP)

The PLP of the European Mobile and Mobility Industries Alliance was set up within EMMIA 1 with the aim of bringing together regional, municipal and national policy makers, to develop "tomorrow's practice" in support of mobile and mobility industries. The main task of this platform is to steer and further promote EMMIA through the open method of coordination. It analyses, benchmarks and engages in mutual policy learning in the areas of access to finance, large-scale demonstrators and interoperability. In addition, it links with other sectors like space applications and creative arts.

To this end, the Alliance prepares policy recommendations and elaborates concrete master plans and implementation roadmaps. These will form the basis for a full roll-out of large-scale actions through regional, national and European programmes in support of mobile and mobility industries. The aim is to facilitate the development of new mobile services capable of reinforcing the growth and job creation potential of Europe's regions and cities.

The overall mandate of the Policy Learning Platform is to engage in strategic discussions on policies in support of mobile & mobility industries. It produces reports to the European Commission presenting a strategy for policy action to support mobile and mobility industries in Europe.

The Policy Learning Platform (PLP)

- Establishes a policy dialogue and peer review to leverage existing policy measures, such as from Structural Funds and other European programmes, in order to design better policies to support mobile and mobility industries, and to facilitate the emergence of new industries based on mobile services.
- Designs concrete master plans and roadmaps for future actions on the basis of the monitoring and validation of the results of the concrete actions of the Alliance
- Develops joint activities and transnational cooperation at policy level
- Facilitates collaboration with other stakeholders and initiatives at regional, national and European level
- Promotes the activities and results of EMMIA as a whole, including through the maintenance of its public web portal
- Informs SMEs about existing and new support measures for mobile and mobility industries enterprises

Composition of the Policy Learning Platform (PLP)

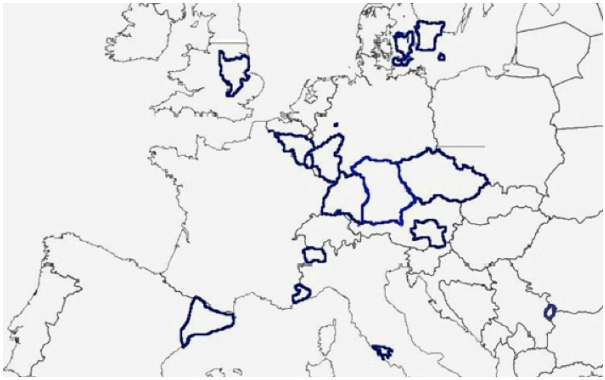
To achieve its objectives, the PLP needs partners with a strong commitment towards mobile & mobility industries. The ambition is to involve Europe's most committed regional, metropolitan and, when it comes to small countries, national policy makers in this initiative. These policy makers are those that support or want to support mobile and mobility industries as a matter of strategic choice, expertise, tradition or priority. The PLP must seek to gain active support from the highest level of the most experienced and committed "movers and shakers" in this field; at the same time it will show its openness towards a wider stakeholder community. To this end, the Platform is composed of 17 regions/cities representing a mix of national and/or regional authorities or organisations supporting mobile & mobility industries as well as up to two sectoral or sub-sectoral European associations in the field of mobile & mobility industries. Six founding regions, Bavaria, Alpes-Maritimes, Oresund, East-Midlands, the Czech Republic, and the Province of Rome – the EMMIA PLP consortium – have been selected through a call for proposals to establish and co-ordinate the PLP. The lead partners (coordinators) of the concrete actions plus representatives of the European Telecommunications Standards Institute (ETSI) are also members.

In order to draw upon a wider stakeholder community and build upon the best regional, national and European expertise and knowledge across Europe, the remaining members of the PLP were selected among policy-makers and organisations in agreement with the Commission services. This was through an open call for the expression of interest for members published on the Alliance's and other relevant websites. The task of establishing the PLP was assigned to the EMMIA PLP consortium led by bavAIRia e.V., Oberpfaffenhofen, which organises the process of setting up the Policy Leaning Platform in agreement with the Commission services.

The members of the platform give the Alliance a public face, represents it at important relevant events, and proactively launches political debates towards the implementation of its recommendations with a view to achieving a high leverage effect. The platform elected a formal representative of the PLP, who represents the platform externally and ensures the visibility of the political debate at the policy level. The EMMIA PLP is chaired by Karin Drda-Kühn, media K, Bad Mergentheim, D

The current 17 regional EMMIA members are shown on the map below, in addition to the three new EMMIA PLP Innovation partnership regions of Kyustentil, BG; Cork/Dublin, Ireland and Luxembourg.

EMMIA PLP member regions



+ Innovation Partnership Regions
• Kyustendil + Luxembourg + Ireland

17 regions:
• Alpes-Maritimes, FR
• Baden-Württemberg, DE
• Bavaria, DE
• Catalonia, ES
• Czech Republic, CR
• Dortmund City, DE
• East-Midlands, UK
• Luxembourg, LU
• Oresund, SWE
• Province of Rome, IT
• Rheinland-Pfalz, DE
• Styria, AT
• Tartu Region, EST
• Trollhättan, SWE
• Val dÀosta, IT
• Vidin, BG
• Wallonia, BE

Fig. 1: Map adapted showing the current EMMIA Member Regions (basic map adapted from www.freeworldmaps.net)

It is expected that further external expertise will be involved in the specific activities of the PLP and that consultation of relevant stakeholders on the proposed recommendations and the roadmaps for policy actions will be launched. Representatives from the European Commission, the European Space Agency (ESA) and the European GNSS Agency (GSA) also attend meetings and contribute to the discussions.Consequently, the specific activities shall not be viewed as close groups but as open fora for discussion.

Its six founding members were responsible for the planning and organisation of six meetings of the PLP, taking place between June 2012 and November 2014. The agenda of the meetings agreed between the Commission services, the chairperson of the PLP and the coordinator bavAIRia e.V. in Oberpfaffenhofen. The consortium prepares the agenda, ensures high-level input, invites and informs the members about the specificities of meetings. It is

also their role to provide secretarial, coordination and support services to the PLP, including the organisation and moderation of the meetings; launching relevant mini-studies, producing and proceedings reports documenting discussions and outcomes for publication on the Alliance's website. The working language of the PLP is English.

EMMIA PLP Innovation Partnerships

At the 4th Meeting of the EMMIA PLP in Brussels at the end of 2013 there was a call published for Expression of Interest for regions to undergo a close temporal partnership with the PLP. In March and April 2014 an expert committee evaluated the submissions and recommended to start negotiations with three regions to undergo such a relationship:

- Kyustendil, Bulgaria
- Cork/Dublin, Ireland and
- Luxembourg.

Each of the three regions committed itself to host two expert workshops as well as a voluntary public event on the support of mobile services and industries in their region. In return, the EMMIA PLP provides expertise, coaching and consulting services to the local authorities through site visits and by supporting the public events offered. The first series of workshops started out in April 2014. During the first round of visits key stakeholders of each region were invited to a one-day workshop, and an inventory of existing support measures and initiatives was created.

A second round of workshops was held in each of the three regions during May to July. They discussed the feedback from the findings of the PLP over one and a half days by up to twenty experts and coordinators of local initiatives.

The final round of public events between September and November 2014 discussed the suggested policies and initiatives in combination with the region's own strategies. These events were held in public and attracted a wide audience of stakeholders.

The PLP will offer this consultancy service for regions in the support of mobile service industries, beyond the runtime of the EU funding. For concrete offers and regular updates, please visit: www.mobilise-europe.eu

The EMMIA PLP is an exchange platform, which fosters interaction between the various EMMIA initiatives and channels the feedback to the regions and to the European Commission's Directorate General for Enterprise and Industry as the initiator. Currently, the Platform unites seventeen European regions, plus the coordinators of the EMMIA large-scale demonstrator and finance initiatives, plus representatives from agencies such as ESA and the GSA. ETSI has separate contracts with the European Commission and accompanies selected large-scale demonstrators in the tourism service industry in order to direct trans-national activities in the direction of potential pre-standards in this industry.

The PLP's activities are to give and gather policy recommendations in the support of mobile services for regions in Europe. This is done in close collaboration with its regional members which help to gather best practice in the support of mobile services, help to validate and discuss the findings and support techniques for its practical implementation.

This EMMIA Guide for policies in the support of mobile services in Europe gathers the set of experiences of five carefully chosen "model regions". They are: Barcelona, Berlin, Estonia, London and Oresund; with each taking a very different approach in giving active support to their mobile services entrepreneurs.

The support of mobile services is a challenge for Europe's regions as it is probable that the successful policies of today will be of no use for tomorrow. Measures to support this fast paced industry and its members that may be decided today in a city council, often come too late, are implemented too slowly and require long-winded applications for support. Mobile entrepreneurs will move to another city and not wait for measures rather than risk their business in such an environment. So, listen to your "mobile" entrepreneurs carefully and respond to their needs, the alternative is to lose them.

Modelling a business ecosystem in/for emerging industries

Contribution to mobilise europe
by Prof. Dr. Eckehard Fozzy Moritz,
innovationsmanufaktur, Munich

Executive summary

In this chapter, the development and first concept of a model of a business ecosystem in or for emerging industries is illustrated. It is intended to be or become useful not only as a basis for analysis and understanding, but even more so as a tool aiding the development of policy recommendations.

The core reasoning: Why do we need a model for a business ecosystem?

The idea to understand and foster business ecosystems that constitute the basis for a sustainable creation of wealth in emerging industries is increasingly gaining interest and acceptance within the European Union. And rightfully so: Focusing on the support of industry, academia and innovation alone suffices less and less, for at least two reasons: First, the best of innovative ideas and start up drives will never succeed if the environment does not support, in some cases not even allow, its emergence. And second, in an ever more complex industrial world it is important to understand the overall setting of innovation ventures, to be able to address all related stakeholders and create synergies or at least an understanding and an acceptance of novel solutions as a basis for success.

Today, there is an increasing amount of useful publications on what constitutes a business ecosystem, the correspondent dimensions and descriptors, success factors, as well as good and bad practices. What you are holding in your hands right now is one publication, important because it addresses almost all of those issues. What is still often missing, however, is a systemic understanding of all important factors contributing to a holistic view of the interrelation of all those factors – which is, however, needed to transfer conclusions into another context, and develop and prioritise recommendations for policy developments. On that account, we have been striving to develop the model introduced in this chapter, which has already been used as a mirror for designing the research approach of the EMMIA PLP project, and will continue to be used as a basis for interpretations and the development of a guideline for policy recommendations.

Setting and basic concepts: What does "business ecosystem in/ for emerging industries" mean?

In what follows, I will just give you an idea about how we defined the terms "business ecosystem" and "emerging industry" – not to start a discussion on definitions, but to circumscribe the understanding used for the creation of the model illustrated here, and for the resulting development of policy recommendations:

• A business ecosystem sums up all relevant aspects of a supportive, efficient, and resilient environment for actors who pursue the creation of sustainable wealth. This includes the set-up, organisation and administration of stakeholders, resources and infrastructure, but also the embedding of all these factors in their respective socio-cultural settings and in its infrastructure. Thus, this concept is much broader than the idea of a cluster or a network – concepts that mainly concentrate on actors, relationships, and resources. The frame of reference for a business ecosystem may be any pre-defined socio-industrial system large enough to host more than the critical amount of stakeholders and the necessary diversity. It often refers to metropolitan areas or regions, but may also be related to a state, a country, or even an entity as big as the European Union.

• An emerging industry is a promising opportunity for the creation of sustainable wealth due to new products and/or services based on innovative answers to tomorrow´s challenges. They may utilise new technologies, materials, processes, or organisations, but also or additionally be founded on new synergies, transformations or new thinking and acting of any other kind. Hence, focusing on an emerging industry in the attempt to create sustainable wealth necessarily implies dealing with innovation, be it as prime mover, follower, or simply copier – note that copying is often the cheapest way but is rarely sustainable: If you just copy others, your region will never leave the rat-race for continuous cost-cutting.

Methodology in a nutshell: How we developed the model for a business ecosystem in emerging industries

The model we are presenting here has been developed on the basis of quite a number of preparatory activities, some in parallel, some sequential. Among them are the following:

- We applied the methodology of Holistic Innovation and our experiences from related projects by systematically developing a system representation of a business ecosystem.
- We adapted the results of a project for the German Ministry of Education and Research, in which we had developed a model for the long-term effective integration of stakeholders into innovation activities (Holistic Innovation Center).
- We wrote a draft discussion paper and optimised it in continuous interaction with the EMMIA PLP expert group.
- We developed a first model, which also was discussed with core members of the EMMIA project ensuring that the results of existing studies are represented.
- We developed a second model, and again put it to discussion.
- Finally, we designed the system to be easily understandable, resulting in what we introduce in this chapter.

Depicting the result: A model for a business ecosystem in/ for emerging industries

Having been restricted to “a few pages only…” I will, contrary to my usual preferred procedure, show the model first (Fig. 1) and then add some explaining comments.

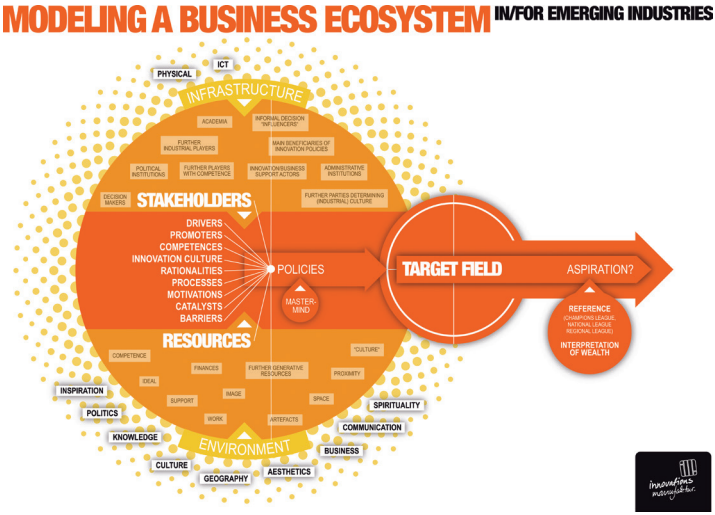


Fig. 1 A Model for a Business Ecosystem in/for Emerging Industries

Now, how do we read the model?

First of all, the focus of the model was explicitly put on highlighting the role of policies; not least in order to understand how they are framed and what sort of issues and system considerations may/must be addressed in the development of new policies. Hence, policies were put in the centre. Looking to the right, to the future, in the basic orientation of policies one needs to decide which target field is or should be addressed (i.e. mobility and mobile services), and which aspiration the respective city/region has.
Do they want to be in the champions' league, leading region in Europe, even the world? Or do they "only" aspire to become a regional hero? And what is their interpretation of "wealth": Do they want more free enterprise or more social cohesion; rather focus on Gross (National) Product or Gross (National) Happiness?

Looking to the right, all actors and instances are listed that otherwise enable and/or determine the policies: Apart from stakeholders and resources, which are depicted in more detail, we find drivers, promoters and catalysts, motivations and barriers, competences, processes and rationalities and, as a sort of catch-all, the innovation culture.

One important element that has been put directly under policies is the mastermind. We maintain that it is good and necessary to have a person, better yet a network or institution that combines all of the knowledge, objectives and interests to define consistent policies. We are not sure, however, whether a mastermind always exists: Rather, the emergence of policies often seems to be a result of reacting and compromising, often under strong lobby influence.

Stakeholders and resources are listed in more detail. Here, we particularly like to point out the scope of both categories. Especially the understanding of resources must definitely transcend the idea of just capital and manpower and include factors such as competences, image, ideals, cultural assets, and all of the environmental aspects listed below.

The embedding environment, thus, must be seen as a complex system able to determine between success and failure of business ecosystems and related policies. One rather practical aspect of the environment that can be influenced quite easily, and is thus depicted above as a separate category, is the infrastructure, both physical and ICT.

Now what: How can the model help in the development of policy recommendations?

Admittedly, this concept is still at a conceptual stage and needs further improvement, so it is certainly premature to assign a definite use value to it. Nevertheless, a few instances can already be summarised in/for which this model can be of good help:

- Most important of all, the model shall help to understand and consider the complexity of all aspects and interrelations of how a business ecosystem is constituted
- Regarding the development of policies, it helps to steer directions and processes, starting with aspirations and a target field, then understanding the forces behind policies, and finally also embedding policies in the core aspects of the determining environment. Furthermore, the call for a mastermind is small but present and important
- With regard to stakeholders, resources environment, the model may serve as a checklist to remember all important aspects and/or perspectives.

The European APP economy

Source: VisionMobile.
VisionMobile is the leading research company on the apps economy and mobile business models. Our research helps clients track app developer trends and master mobile business models.

Introduction

A snapshot of the EU app economy in 2014

- 406,000 professional app developers
- 667,000 thousand direct app economy jobs
- 1 million direct and indirect jobs
- $16.5 billion in revenues
- 19% of global app economy revenues
- 12% annual growth rate

Business processes are being mobilised

For enterprises, mobilising processes, assets and workforces is becoming a competitive differentiator, driving down costs and increasing productivity. Business demand for apps is already outstripping supply, making developers a hot commodity and app software houses easy acquisition targets.

Mobile is redefining eCommerce

Mobile is redefining commerce and retail. Apps are becoming must-have loyalty and engagement tools for brands. Apps are also the shelf space for services, and goods – both digital and physical, which makes developers the new resellers. Our research shows that eCommerce is the most lucrative revenue model for app developers, and we expect that its significance will continue to grow. In the UK, mCommerce is expected to reach 27% of eCommerce sales in 2014.

Asia is driving growth in the app economy

The European Union countries accounted for 25% of the app economy in 2012 but dropped to 19% in 2014. China and India will drive smartphone growth in the next few years, while the balance of the app economy is shifting away from Europe and the US.

Apps driving economic growth in the EU

On a regional level, the European Union benefits from the app economy in two ways. First: directly via jobs and revenues associated with sales of apps

and app development services. Second: indirectly via efficiency and productivity gains associated with adoption of mobile apps and services by both consumers and industry.

VisionMobile findings are based on our Developer Economics survey series, their 7th edition reaching over 10,000 app developers.

Insight

The European Union has a growing app economy but is losing ground to Asian giants

App development is contributing $16.5 billion to the EU GDP

Smartphone apps and mobile services are continuing to penetrate markets and industries. The app economy is growing at an annual rate of 27% globally, according to VisionMobile's App Economy Forecasts 2013 - 2016 report, with global revenues from apps and app related products and services forecast at $886 billion for 2014.

Europe is a key player in the global app economy, but its share of global app production has shrunk to 19% of global app revenues, down from 24% of global app revenues in 2012.

EU app economy growing much slower than Asia

App production in the European Union is still growing, albeit at a slower rate than the global app economy. We estimate that app production in the European Union will reach $816.5 billion in 2014, compared to $813 billion in 2012, equivalent to a 12% annual growth rate. At 27%, the growth rate of the global app economy is more than double that of the EU.

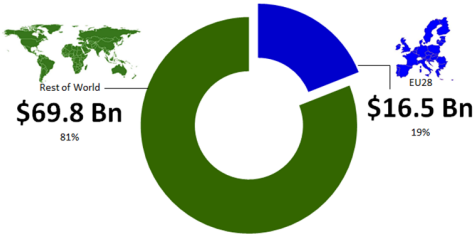
In the European App Economy 2013 report, VisionMobile forecast that the global app economy will be growing at a faster rate than the EU countries'. This is due to the rising importance of developing markets that are driven by an unprecedented demand for smartphones and apps.

In 2013 Asia accounted for approximately 3 times the smartphone sales volume of Europe, with a large share of sales to new users. In 2014, India and China alone are expected to add over 400 million new smartphone users. This demand is partly fulfilled through local supply of apps and app development services.

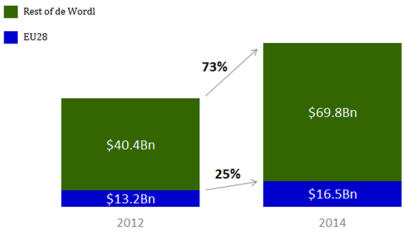
While EU developers are well positioned to capture a large share of Western markets (North America, South America), they should also aim to extend their reach into fast-growing Asian markets such as China and India.

Language and cultural barriers are significantly higher for EU developers aiming to target these markets and therefore local partnerships will be essential to compete successfully.

THE EU ACCOUNTS FOR 19% OF GLOBAL APP REVENEUS IN 2014
Reveneus from apps and app related products services, EU28 vs. Rest of World, 2014



THE APP ECONOMY IS GROWING MUCH FASTER OUTSIDE EU28
Reveneus from apps and app related products services, EU28 vs. Rest of World, 2014



Number of global app developers growing to 2.9 million in 2014
With the installed base of smart mobile devices approaching 2 billion, developers have rushed to capitalise on both direct access to consumers and direct access to revenues.

Mobile platforms and app stores have dramatically reduced the cost of app development and the user acquisition cost. As a result developers are flocking to the mobile promised-land in droves.

VisionMobile estimates that the number of mobile app developers globally in 2014 is 2.9 million. Still, we believe that demand outstrips supply, with every self-respecting CIO or brand manager commissioning their own apps.
At the same time, there has been an explosion in developer tools, from app prototyping to monetisation and support, with over 1,000 SDK (software development kits) and tools available for app developers. To address the demand for app development, many tools allow apps to be developed and published without writing a single line of code.

The App Economy contributes 1 million jobs in the European Union

In 2013, VisionMobile estimated that approximately 530,000 jobs in the EU were directly attributed to the app economy. These are jobs that directly support the app business, that is: development, production, marketing and sales of apps or app-related products and services. VisionMobile estimates that the number of direct app economy jobs in the European Union is 670,000 in 2014, representing an increase of 26% compared to 2013.
Out of these, 406,000 jobs are developer jobs. The number of people involved in app development is actually higher if Hobbyist and Explorer segments are also accounted for, an additional 255,000 developers (see VisionMobile's Developer Segmentation report for a definition of segments).

As we noted in the EU App Economy 2013-2016, the app economy has a wider impact on employment, for example creating new jobs in industries that leverage app-related products and services (e.g. health care, automotive, entertainment, education). We had previously used a conservative 1.5 multiplier to arrive at the number of jobs created via spill-over effects of apps into the wider economy. Using the same multiplier we arrive at a minimum

of 1 million direct, plus indirect jobs in the EU in 2014, as a result of the app economy.

As the app economy becomes more entrenched in everyday business, spill-over effects are increasing and therefore this jobs multiplier should be adjusted accordingly. According to Mandel's study of the US App [1] Economy, other studies have used a multiplier between 2.4 and 3.4 in the past, based on the impact of broadband on job creation.

Key indicators for UK, Germany and France 2013

Indicators	UK	Germany	France
Smartphone penetration (% of mobile users)	64%	51%	53%
Internet access on mobile phone (% of mobile users)	65%	43%	59%
Start-up environment ranking Total app downloads	London 7th 7.8Bn	Berlin 15th 4.8Bn	Paris 11th 4Bn
App downloads in June 2013	357M	217M	154M
% of global app downloads	7%	4%	3%
% of one-person companies	40.2%	31%	18%
% of companies employing less than 5p	57.8%	43.9%	36.7%
Average experience in mobile	3.2 yrs	3.4 yrs	4.33 yrs
% of mobile devs earning < $1000/mo	35%	19%	14%

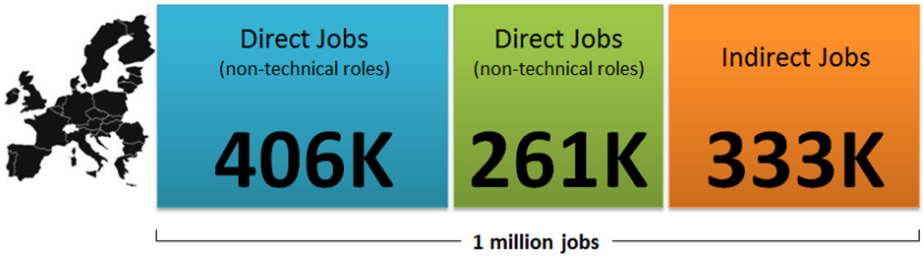
Source: VisionMobile, ComScore, Priori, Startup Genome

iOS accounts for half the app economy jobs in the European Union

We estimate that at least 497,000 jobs or approximately 50% of all direct and indirect app economy jobs in the EU can be directly attributed to iOS. While Android is used by more developers in the EU compared to iOS; iOS is the preferred platform for professional developers (i.e. excluding Hobbyists and Explorers). It is prioritised by 43% of professional developers vs. 35% for Android. Our research also showed that companies that prioritised iOS also have a higher ratio of non-technical to technical staff.

[1] *Mandel, Michael. "Where the jobs are: The app economy." South Mountain Economics, LLC. Retrieved June 28 (2012): 2012.*

ONE MILLION APP ECONOMY JOBS IN EU28 IN 2014
Breakdown of jobs by type, 2014



31% of app developers in the European Union develop commissioned apps

App developers in the EU are more focused on contract development compared to developers elsewhere. Almost a third of the EU developer force (31%), generate revenues via contract development, making it the top revenue source for app developers in the EU. In comparison, most developers in other regions (31%) rely on advertising as their primary revenue source.

Contract app development is one of the most lucrative revenue models, while advertising is one of poorest, as we have shown in our Developer Economics Ql 2014 research.

Business and Enterprise apps market to grow to $58 billion by 2016

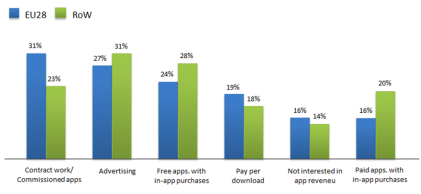
The popularity of contract development among EU developers is a strong indicator that there is considerable demand from EU verticals entering the app economy and creating a demand for commissioned apps. As smart phone penetration starts to level out in the European Union, businesses will play an increasingly important role in the growth of the app economy in the region.

As VisionMobile highlighted in our Business and Productivity Apps report, this sector will experience a rapid growth and we expect that it will reach 858 billion globally by 2016. The enterprise app sector presents new opportunities and better revenue potential for developers, compared to the consumer sector.

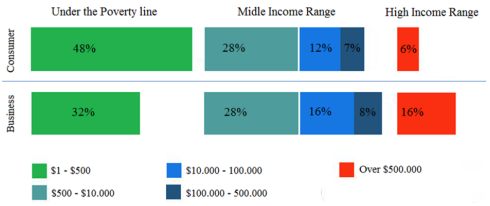
VisionMobile has identified 5 areas where app developers and start-ups can add value in the business & enterprise app sector:

- Vertical market specialisation
- Productivity/BYO apps
- Mobile SaaS
- Bespoke enterprise apps
- Mobile application and device management

31% OF APP DEVELOPERS IN EU28 MAKE MONEY VIA CONTRACT APP DEVELOPMENT
EU28 vs. Rest of World (n=10,484)



BUSINESS APPS PROVIDE MORE OPPORTUNITY
Excludes developers that are not interested in revenue



GNSS and location-based services trends

Source: GSA Market Report 2013

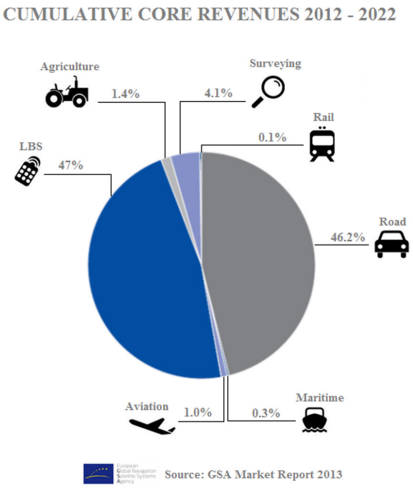
Market segmentation

The GNSS market comprises products (receivers and devices) and services using GNSS-based positioning as a significant enabler. The GSA segments the market according to the following 7 market domains:

- Location-Based Services (LBS), where GNSS is used to enable a vast range of LBS
- Road, whereas GNSS is used for navigation, Road User Charging, Pay-Per-Use-Insurance, and to support the provision of Intelligent Transport Systems (ITS) applications (such as eCall and Advanced Driver Assistance Systems)
- Aviation, including GNSS-certified devices for commercial, regional, general & business aviation, and uncertified devices aiding pilots flying under Visual Flight Rules (VFR)
- Rail, in which GNSS is used in safety-critical devices supporting and non-safety devices supporting other applications (e.g. asset management and passenger information)
- Maritime, whereas GNSS is used to support general navigation, the Automatic Identification System, the Long Range Identification and Tracking System, port operations, dredging and search & rescue beacons
- Agriculture, including GNSS devices used for tractor guidance, automatic steering, asset management and Variable Rate Technology (VRT)
- Surveying, where devices are GNSS-enabled to support land surveying (including cadastral, mining, construction, and mapping) and marine surveying (including hydrographic and off-shore surveys)

According to the GSA "GNSS Market report Issue 3" [2] the LBS segment leads global GNSS revenues, which are expected to account for the 47% of the worldwide cumulative core revenue for the years 2012-2022. LBS is also forecast to be the largest market segment by revenue, overtaking Road, where the Portable Navigation Device market continues to decline, being cannibalised by the use of smartphones in cars. Moreover, LBS devices are also being increasingly used in general aviation and leisure maritime.

[2] *http://www.gsa.europa.eu/sites/default/files/GSA%20-Market%20Report%202013%20new.pdf*



Market development

LBS market has shown a phenomenal in the last years: global shipments of GNSS-enabled LBS devices have grown from 150 million to 800 million between 2007 and 2012 (40% CAGR). In addition, the integration of GNSS and other positioning technologies in devices traditionally unrelated to location, together with the emergence into the market of new devices, has triggered an unprecedented demand for LBS. In fact, on top of smartphones - clearly representing the champion of the LBS market - GNSS capability is now a common feature in an increasing number of portable devices:

- Tablets normally integrates GNSS capabilities to provide location enhanced apps
- More and more portable computers are GNSS-enabled to best take advantage of LBS
- Most of digital cameras available into the market employs GNSS capabilities to geo-tag video clips and photos
- Fitness devices track the distance covered by runners thanks to integrated GNSS receivers
- People Tracking use GNSS to track persons
  Moreover, smart watches and other wearable technologies (e.g. Google

glasses) recently entered into the market and often integrate built-in GNSS receivers to provide innovative services such as location based information in camera view (augmented reality).

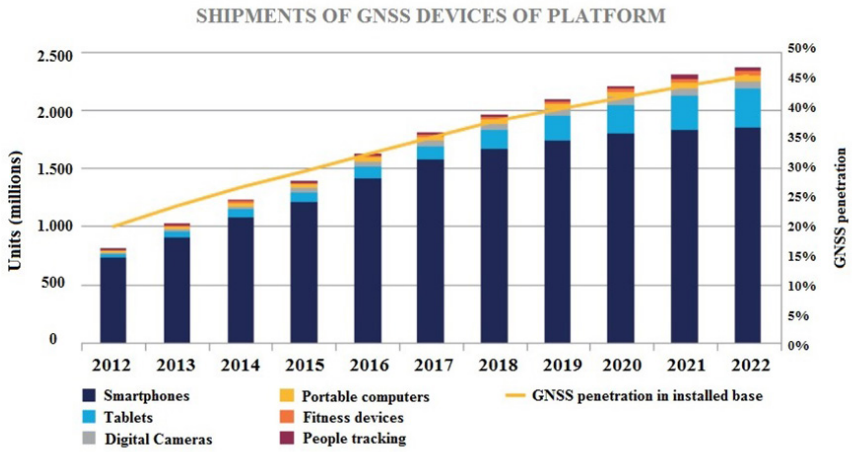
The mass diffusion of such devices together with the fact that they integrate other positioning technologies such as Cell ID, Wi-Fi and INS has led to an upsurge in number of available apps (c. 700,000 apps are now available in Google Play store compared to 88,000 in 2011) and even more applications were available in Apple App Store. Out of these, a significant number make use of location information: GSA estimates that 40% of available applications use location information, normally provided by built-in GNSS receivers. Among successful applications relying on positioning information are:

- Mobility-related ones, such as personal navigation and point of interest search
- Applications contributing emergency services providers and individuals to locate persons or objects, such as emergency caller location and person and objects tracking
- Apps aimed at providing entertainment, e.g. location based gaming, sport and entertainment and social networking
- Location based advertising, integrating mobile advertising with location based services to best target potential customers
- Applications dedicated to provide information according to persons' location, e.g. weather information and news

Such LBS, commonly used nowadays by millions of persons, represent a perfect fit with the increasingly fast pace of life, especially in large cities. With an outlook towards the future, clear signs suggest that an even a higher diffusion of LBS is expected to come in the next years. Indeed, recent technological trends, such as the emergence of augmented reality and indoor positioning technologies, the improvement in the quality and capacity of data connectivity and the continuous improvements in cost and power consumption of devices suggest that application developers will be able to create new and more powerful Location Based applications. Moreover, positioning performances will strongly benefit of the introduction of new GNSS such as Galileo. As a part of a multi-constellation solution, Galileo can

respond to the need for higher accuracy for some more demanding applications. Similarly, availability and Time To First Fix will be further improved by the use of Galileo satellites, enhancing continuity of service in urban environments. In addition, state-of-the-art signal characteristics of Galileo will have better resistance to multipath interference (interference from reflected signals). In light of the fact that GNSS remains the primary positioning solution outdoors, offering better accuracy than Cell ID and Wi-Fi, app developers will be empowered with the possibility of enhancing the functioning of already established apps or the creation of new ones. Finally, the proliferation of different typologies of GNSS-enabled devices combined with a drop in the price of the devices will further boost the global shipments of GNSS-based devices. Consequently, an increasing number of consumers in developed countries will make use of more than just one device while more and more persons will be able to afford the purchase of a GNSS enabled smartphone in developing countries.

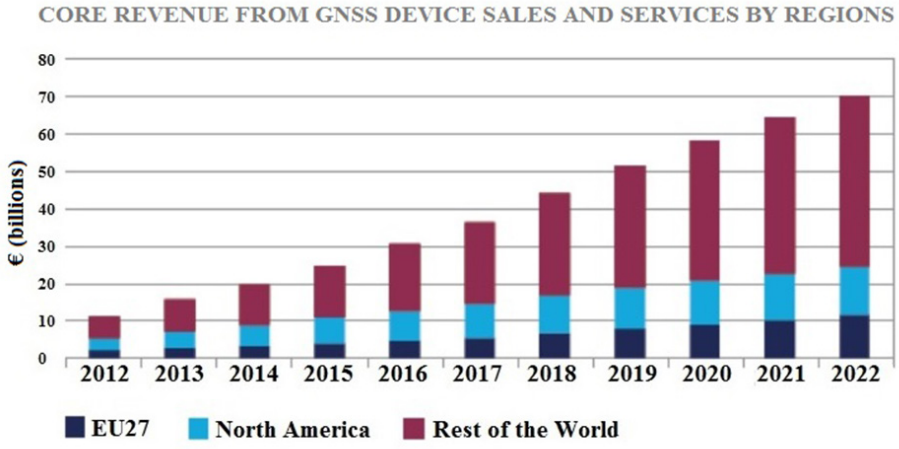
This trend is fully acknowledged by GSA, which estimates the future worldwide growth of the LBS market, in terms of yearly shipments, to be 11% CAGR over the next decade, with devices more and more relying on GNSS capabilities (i.e c. 45% GNSS penetration in 2022).



From a geographic perspective, the EU LBS market will continue to grow, both in terms of shipments and revenues:

- EU27 installed base is expected to top 1.28 billion of units in 2022 (13% CAGR over 2012)
- EU27 core revenues are estimated to be in the order of 11.6 €billion in 2022 (19% CAGR over 2012)

It indicates that even in developed countries the market remains far from saturated and, according to GSA, it makes EU27 the second fastest growing LBS market in terms of revenue in the world, behind the "rest of the world" (CAGR 23%) and before "North America" (CAGR 15%).



Empowering women entrepreneurship with mobile services

Contribution to mobilise europe
by Karin Drda-Kühn
"European Ambassador for Women Entrepreneurship", Chair of European Mobile & Mobility Industries Alliance- PLP

Executive summary

Unlocking the economic power of mobile services is the main target of the EMMIA PLP. [3] Twenty European regions and the cities within them are striving to benefit from the mobile economy. However, it seems that the gender aspects of the processes behind these efforts have not been sufficiently considered. Due to missing data, it is difficult to assess in what way women as users and entrepreneurs profit from this development. The fact is that they are not visible in the development and deployment of mobile services, although it can be assumed that the proportion of women users of mobile applications is constantly increasing. The following article is concerned with what kind of support would specifically encourage and foster women in the development and implementation of mobile services, in order to create economic benefit.

Women in ICT – disappointing state of the art

Following experiences in the EMMIA PLP initiative, the exploitation of the potential of mobile services sector, specifically services based on mobile applications, the area is dominated by male entrepreneurs. This may not be surprising as the information and communication technology (ICT) sector in general has a higher share of male workers, just as the majority of technology driven sectors still have. Only 30% of the around seven million people working in the European ICT sector are women. Only nine in 100 European app developers are female. Only 19% of ICT managers are women (45% women in other service sectors). Only 19% of ICT entrepreneurs are women (54% women in other service sectors). They are under-represented at all levels in this sector, especially in decision-making positions.

The ICT sector is rapidly growing, creating around 120,000 new jobs every year. Due to differences in demand and skills – and despite soaring unemployment in several European countries – there may be a lack of 900,000 skilled ICT workers in 2020 [4] . It seems as if the well-known phenomena of female employment also prevails in the ICT sector. Following a stu-

[3] *http://www.mobilise-europe.mobi/*

[4] *All data provided is published in "Women Active in the ICT Sector" – A study prepared for the European Commission DG Communications Networks, Content & Technology, 2013*

dy covering ICT business sector in Sweden and Baltic countries, "women earn less than their male counterparts, are underrepresented in decision making spheres and are overrepresented in the sphere of familial responsibilities." [5] Data specifically concerning gender aspects in mobile services in the ICT sector seems insufficiently collected and analysed, but available ICT data in general offer most probable transferable trends and indicators.

Mobile services – little helpers and business opportunities

The main aspect of mobile services is the service character, which targets the support of everyday life as well as business opportunities. In fact, mobile services created incredible support infrastructure during the last five years. The development and sales of mobile apps, speak for themselves. According to the forecasts of Portio Research [6] the use of mobile apps will grow worldwide at a rate of 29.8% each year, to reach 4.4 billion users by the end of 2017.

The number of apps that aim to facilitate the organisation of professional life is enormous; they help us balance our schedule, research on issues, and allow the registration in conferences and check-in on aircrafts. In private life they keep us informed about special offers of our favourite dealers and opening hours of the nearest grocery store, help us to search for the right kindergarten for our children, support health care for senior citizens in rural areas, put holiday deals together individually and organise by 3 o'clock in the morning a taxi in the wood.

Mobile services meet the needs of working women; they serve as brilliant helpers for personal and professional requirements and assist in the organisation of family labour. Does this mean that these apps have been designed by women for women? Can we assume that there are very many business owners, developers and sales women in the field of mobile services?

---

[5] *Merle Jacob: "Women and Leadership in the ICT Business Sectors of the Baltic and Scandinavian Region", Lund 2009, p. 17*

[6] *http://www.portioresearch.com/en/home.aspx (as of September 10th, 2014)*

Statistically speaking, no! So far gender aspects in the collection and analysis of data about mobile services play little or no role. The common perception is that is mainly men who dominate the market, communicating decisions and presenting new technologies. The contradiction is therefore clear; on the one hand, many mobile services are aimed straight at tasks and requirements traditionally done by a high percentage of women. However, at a business level, it is not the case that women dominate the scene.

So where are the successful women entrepreneurs of app development? Do specifically gender aspects really matter to them? How do they view their work from a female perspective?

Women as users of mobile services

In 2012, Ronda Zelezny-Green of Pyramid Research[7], a world-wide operating consultancy, identified end user fields for mobile services specifically targeting women: mobile health, mobile education, mobile agriculture, mobile money/banking, mobile social networks. These fields demonstrated that women in particular can benefit both directly and indirectly through time and cost savings, access to life-saving information, the ability to communicate with others (regardless of distance), and even nurturing their ability to read and write. Clearly spoken - the deals are out there, and growing every day. Women are getting more and more used to making the best of it on a private and business level.

Mobile services as economic drivers for women entrepreneurs

In 2012, the London based Cherie Blair Foundation published a comprehensive study which was conducted to understand women entrepreneurs' needs in relation to mobile applications and services. The resulting report studied the main business challenges faced by women entrepreneurs in developing countries, identified existing and new mobile value added services that could be used to address these challenges, and prepared a business case for sca-

[1] *http://www.pyramidresearch.com/store/mWomen-opportunity-for-mobile-operators.htm?sc=GL020912_INSGL33CS3 (as of September 10th, 2014)*

ling up those services that would likely have the greatest impact on women entrepreneurs. The study is specifically relevant to show that mobile services are economic drivers in developing economies[8].

Though studies focused on countries like Indonesia, Nigeria and Egypt, the overall results are relevant for women entrepreneurs worldwide:

- Specifically, micro-entrepreneurs might benefit strongly from mobile services for their company. This is relevant for emerging business fields like the creative industries, which are dominated by micro enterprises and women.
- Access to digital channels, affordable resources and access to marketplaces were prioritised as having the greatest potential impact on women enterprises.
- Women entrepreneurs are willing to use mobile services to address the core challenges they face in their businesses.
- Women entrepreneurs indicated a willingness to pay for these services.
- Mobile services offer business opportunities for under developed regions e.g. in rural areas. This is specifically interesting as mobile services might help women in many European regions beyond the metropolitan areas to start and successfully operate their business.

European research needed

Much more research is needed to get more detail on the obstacles, challenges and chances faced by women acting in the mobile services market. An in-depth study based on European conditions is urgently required in order to get into concrete action. “While these services can benefit all people in regions under-served by traditional infrastructure, women may benefit in particular”, writes Jason Kohn in a Cisco Blog[9], referring to the results of the study of the Cherie Blair Foundation.

[8] *http://www.cherieblairfoundation.org/ (as of September 10th, 2014)*

[9] *http://blogs.cisco.com/cle/empowering-women-with-mobile-services/ (as of September 10th, 2014)*

This statement is underlined by EMMIA PLP's experiences in the rural parts of the twenty highlighted European regions and cities, which are shown to be consistent with this assessment. They are also consistent with experiences in the so called "Large Scale Demonstrator (LSD)" initiatives implemented by EMMIA[10] (e. g. in the "LIMES" – LSD[11], which aimed at creating cultural touristic business opportunities along the former Roman fortification lines throughout rural Europe where specifically women entrepreneurs joined the activities). This observation is worth further study within a specific, separate evaluation.

It seems that to date gender aspects of mobile services have only been studied in developing countries. The study of the Cherie Blair Foundation and a special programme of the GSMA initiative: mWoman[12] for developing countries seem to be the only initiatives so far. No doubt, these initiatives are of great value for developing countries and clearly show chances and opportunities. A similar study for European countries is strongly desirable as the gender aspects of mobile services are underestimated and not sufficiently identified yet. The starting point for these initiatives is relevant not only for under-developed or rural European regions, but could also support women as entrepreneurs with mobile services and to help in their private life.

Conclusions

EMMIA PLP experiences confirmed that women are still a minority in the ICT sector: they are barely visible, are under-represented at management and entrepreneur level, participate less in professional conferences and panel discussions. However, this is only one side of the whole issue; we may find the presence of women elsewhere in mobile services. If we are to believe simple observations during the implementation of EMMIA PLP, then women are less active as entrepreneurs and app developers, but rather in the control

[10] *http://www.mobilise-europe.mobi/large-scale-demonstrators (as of September 10th, 2014)*

[11] *http://limes.per-rlp.de/?lang=en (as of September 10th, 2014)*

[12] *http://www.gsma.com/mobilefordevelopment/programmes/mwomen (as of September 10th, 2014)*

of work processes, customer contact and the acquisition, in app design and usability testing. They may feel more comfortable in work areas that give more flexibility over time, in which creativity and direct communication with demanding clients is equally important for the success of a product or service.

Mobile services offer access to business opportunities for women worldwide and European women should have their share on this big and future orientated market. And we need more European role models like Sheryl Sandberg, Chief Operating Officer (COO) of Facebook or Google executive Megan Smith (who was appointed US Chief Technology Officer recently) for paving the way for women in technology in Europe and worldwide.

Links and Literature:

"Women Active in the ICT Sector" – A study prepared for the European Commission DG Communications Networks, Content & Technology, 2013

Despite strong evidence regarding the importance of fully incorporating women into the Information and Communication Technologies (ICT) sector, a gender ICT gap still remains in Europe. Moreover, women are underrepresented in the sector, particularly in technical and decision-making positions. Women's active participation in the ICT sector is essential for Europe's long-term growth and economic sustainability. The study: Women Active in the ICT Sector is another step in the on-going efforts to tackle the problem. This is achieved by:

1. updating current data regarding females' roles in the sector;
2. identifying role models and career paths to inspire women and girls;
3. assessing the economic impact of incorporating women into the sector;
4. reviewing the status of the European Code of Best Practices for Women and ICT; and
5. analysing successful social media campaigns.

The conclusions of this study provide useful insights, which it is hoped will help to attract women to, and encourage them to remain in the ICT sector.

Based on these insights several recommendations are proposed:

1. build a renewed image of the sector;
2. empower women in the sector;
3. increase the number of women entrepreneurs in the ICT sector and
4. improve working conditions in the sector

"Mobile Value Added Services: A Business Growth Opportunity for Women Entrepreneurs", Cherie Blair Foundation for Women, London 2012

The study is specifically relevant to show that mobile services are economic drivers in developing economies. Additional research is currently being implemented. The foundation offers a Mobile Technology Programme which aims to create sustainable economic opportunities for women entrepreneurs through the use of mobile phones and services:
http://www.cherieblairfoundation.org/mobile/

How to unlock the potential of mobile money was identified in a focused way by the British "The Guardian" based on the outcome of the study of the Cherie Blair Foundation:
http://www.theguardian.com/global-development-professionals-network/dai-partner-zone/how-to-unlock-the-potential-of-mobile-money

Increasing women's access to and use of mobile and life-enhancing, value-added services in the developing world is the main objective of the GSMA mWomen initiative:
http://www.gsma.com/mobilefordevelopment/programmes/mwomen

Acknowledgement

Special thanks for offering expertise and links to persons and publications go to Lisbeth Bahl-Poulsen (European Commission DG Enterprise and Industries), Jürgen Vogel and Micael Gustafsson (EMMIA PLP), Franziska Sprenger (AereA NetworX, Kahla), Katrin Heckmann (Enterprise Europe Network, Stuttgart), Katja von der Bey (Weiberwirtschaft eG,Berlin), Merle Fuchs (Thüringer Netzwerk für Innovative Gründungen, Erfurt), Yvette Dinse (bundesweite

gründerinnenagentur, Rostock), Ruth Davis (University College London) and Nana Fatimah Ognfemi (Techsis Ltd, London).

The author

Dr. Karin Drda-Kühn was appointed "European Ambassador for Women Entrepreneurship" by the European Commission in 2010 and chairs since 2012 the European Mobile & Mobility Industries Alliance (EMMIA) - PLP http://www.mobilise-europe.mobi/; https://www.facebook.com/mobiliseeurope .

Case Studies

Introducion

In order to understand what mechanisms are the drivers behind some of the most interesting emerging spots in Europe with the field of mobile technology and mobile services, this report looks into five different areas that all are amongst the twenty emerging hot-spots in Europe identified in the PricewatwerhouseCoopers study (see Annex for the full study).

The methodology behind the report (more deeply described in the Annex) has been to look at performance across 10 different factors, and from them give a picture of where in Europe we find emerging hot-spots. The evaluation is based on different types of reports (see Annex) and also the knowledge about the mobile sector that exists within the EMMIA PLP group.

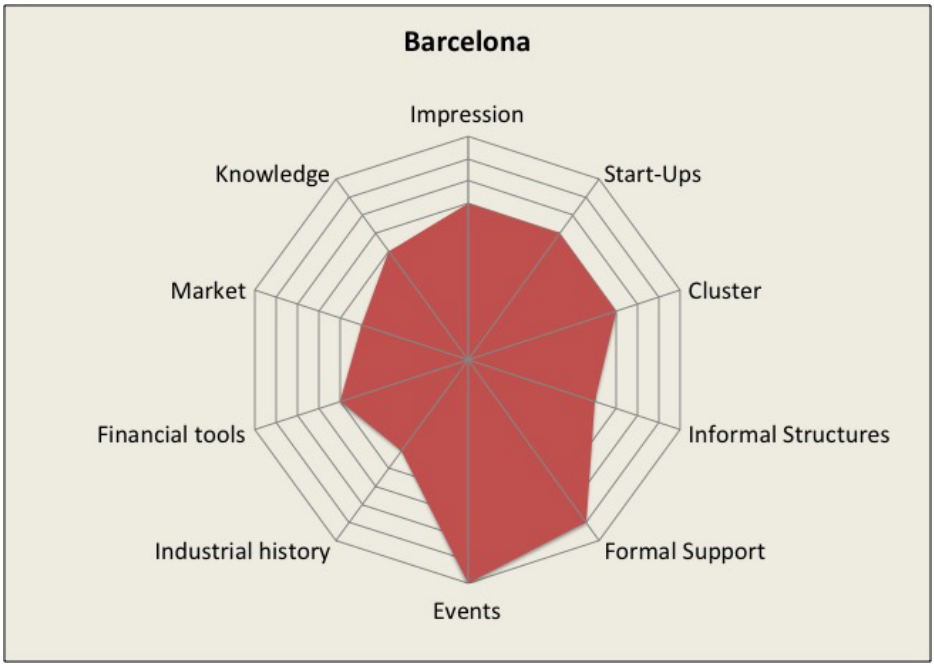
As an example: does the presence of cluster organisations give higher ranking to a region, together with the presence of large mobile actors and formal structures as policies. This has given us a good picture of the mobile sector in Europe, but of course it is still research based on statistical material.

In order to better understand what is behind growth in the mobile sector, the statistical data have been complemented by interviews made in five different regions (or clusters within a region). These regions were chosen in order to reflect different conditions: A metropolitan area (London, Berlin, Barcelona), a nation (Estonia), a small region (Malmo/Lund), areas with well-defined policies (Barcelona) and areas with a bottom up structure (Berlin). This has given a good understanding of the drivers behind growth, and what we can learn from them. The five case studies were not chosen because they are the five “best” regions amongst the emerging regions, they were chosen because they represent the different environments described.

Case study:

Barcelona

– Mobile World Capital!?



Background and facts

Barcelona has the reputation of being the centre of the mobile industry at the moment. It has hosted the Mobile World Congress (MWC) for the past five years, and this was recently extended for another five. In addition, the organisation Mobile World Capital was founded in 2013 in Barcelona. The area has strong regional policies to help boost the mobile services industry.

Barcelona and the region of Catalonia are interesting for another reason: Despite the fact that Spain has been badly hit by the financial crisis, being one of the PIIGS countries (Portugal, Italy, Ireland, Greece and Spain), Catalonia has remained strong. Although Barcelona has just 16 % of the total population of Spain, the region accounts for 30 % of the exports of the whole country.

Innovation climate

There is a strong tradition of starting and running family owned companies in Catalonia, and the trend is continuing. Very favourable incentives for foreign companies to relocate to the region have created a big community of international SMEs in the city.

Throughout the interviews, it became clear that there is a high entrepreneurial feeling in the city. The high number of start-ups and SMEs is probably due to Barcelona having among the highest educated entrepreneurs in the world. The city has top tier universities, especially, when it comes to business schools, the universities have good entrepreneurial education and incubators related to them. But the majority of the companies tend to stay local, and rarely expand outside of the region.

Compared to other major cities in Spain, Barcelona is said to be younger and more innovative. It is faster, more things are happening here, which drives the innovative and entrepreneurial feeling of the city. The industrial revolution in Spain started in the northern parts - Catalonia and the Basque regions. These parts are still better at adapting to trends and react faster to what is happening in the world, creating a more dynamic and creative environment.

Access to capital

In previous years, focus has been mainly on public funding of companies, from regional as well national sources. It has been rather generous, but a lot has changed since the start of the financial crisis. While the public funds are running out of money, private initiatives are beginning to emerge. For example, most Spanish banks have set up funds that companies can apply for. There are also different initiatives to help companies recruit people, like helping pay the salary for interns. This is something that big companies offer for smaller companies to apply for. The interns come from one of the major universities in Barcelona, which have top tier education, especially in business, thus providing the companies with a highly educated, but cheap workforce.

The ICO (Instituto de Crédito Oficial), runs an EU financed loans program, that help companies to buy IT equipment, company cars or with investments. However, the process for applying for these loans is complex and usually requires the help of consultants to manage the applications, which makes it impossible for small companies to even consider starting the process.

Public infrastructure

The city of Barcelona has done a lot to help companies and the community. There is public free Wi-Fi accessible all over the city, enabling tourists and visitors to use their smartphones everywhere. There is good public communication within the city and to other parts of the region as well as to the airport. The airport has great connections to the rest of the Europe and beyond.

Catalonian Technology and innovation support mechanisms

22@ in Barcelona is an area in the central business district. The project

started about 10 years ago to convert the former industrial area to a technology and innovation district. It includes almost 85,000 business premises, test beds, R&D centres, and incubators in addition to residential buildings.

The industry in Catalonia benefits from having the MWC in Barcelona. It attracts all major players within the mobile industry to the city once a year. To enable the local players to benefit from this, smaller companies are invited to be part of the Catalonian pavilion during the congress, getting exposure to all the visitors. An opportunity that is invaluable for an SME or a start-up.

The region consists of several different public initiatives that support the industry, ACC10 being one of them. They have 35 offices around the world and help companies with export. Through different programmes they can help with financing for attending fairs, missions, and pay for transportation costs.

If you recruit someone younger than 25 or older than 50 you will get an automatic discount on the employment tax.

Key elements for growth

Spain has one of the highest penetrations of smartphones in the world; about 80 % of the population has a smartphone. The reason for this is that households usually only have one computer with internet connection; therefore the smartphone is a means for young people to be online in their own room rather than where their parents can watch over their shoulder. This creates a huge internal market for companies to test their mobile solutions as long as the products are in Spanish; which can be a limitation later on when going for an international market. South America is a predominantly Spanish-speaking continent where Spain has excellent relationships. Being Spanish, or based in Spain, gives companies access to a huge global market - a major reason for non-Spanish companies to set up in Barcelona/Catalonia.

Large multinationals

Several multinational companies are located in the city of Barcelona. The Spanish operator, Telefonica has their digital R&D facilities in Barcelona, and you can also find companies like Cisco here. There is good collaboration between the global companies located in the region and the smaller companies through different financial programs, competence activities etc. Wayra the incubator at Telefonica has a location in the Telefoncia building in Barcelona. About 20 start-ups can take part in the incubation programme. Cisco has a range of programmes with the universities. They pay researchers for doing R&D and if Cisco likes the outcome, they will buy it and implement it in the company.

Mobile World Capital

Since 2009 Barcelona has hosted the Mobile World Congress, the biggest event in the mobile industry. Being the host of the congress gives Barcelona a lot of attention and the notion that Barcelona is the centre for the mobile industry in the world. In 2011 Mobile World Capital was founded, an initiative from GSMA, the organisation behind Mobile World Congress. It was started in collaboration with the City of Barcelona, the region of Catalonia and the government of Spain. The project will run until the end of the current agre-

ement to host the Mobile World Congress in 2018. Being the Mobile World Capital is giving Barcelona the opportunity to transform into the global mobile flagship. However, the mission is not only to revolutionise the mobile industry in Barcelona, but in the whole world. The organisation puts the citizen and the user as the focus and encourages industry to adapt to these. However, in addition to the annual Mobile World Congress, there should be cross-sectoral events going on throughout the year.

Strengths and weaknesses

Talking to the persons interviewed, they all mentioned more or less the same strengths and weaknesses:

Strengths

- Location, weather and quality of life
- Low bureaucracy to start up a company
- Easy and cheap to hire employees
- Top universities to collaborate (R&D) with and recruit from (students)
- People from the city help out others once they have succeeded

Weaknesses

– Language barriers for accessing an international market
– Regional support only to local start-ups, not international entrepreneurs starting up their business in Barcelona
– Companies remain small and family owned
– Many of the small companies never leave the garage

Challenges

One of the major challenges for the region is the language. Companies are developed in Spanish, which will be a limitation when wanting to go for an international market. However, there is still all of South America to conquer, which is a significant market. Companies from Barcelona have two major advantages in the South America market: a common language and the

openness to Spanish companies in South America. Since most Spanish global companies, such as Telefonica have a strong presence in South America as well, gaining them as a customer will open up amazing opportunities.

The fact that the companies do not grow considerably is a limitation and a challenge that needs to be overcome. For the region to be able to really compete with the stars, such as Silicon Valley it is not only important that companies are started, but also that they grow and reach an international market. There are lots of support mechanisms to help companies with exports, they seem to be aware of the challenge, and ready to tackle it to make a change happen.

Barcelona derives great benefits from having the Mobile World Congress in the city. It is not certain what will happen if the congress is moved to another location. Over the coming years it is important to grow the mobile services industry so that Barcelona's reputation is not wholly dependent on the MWC.

Sustainability and the future

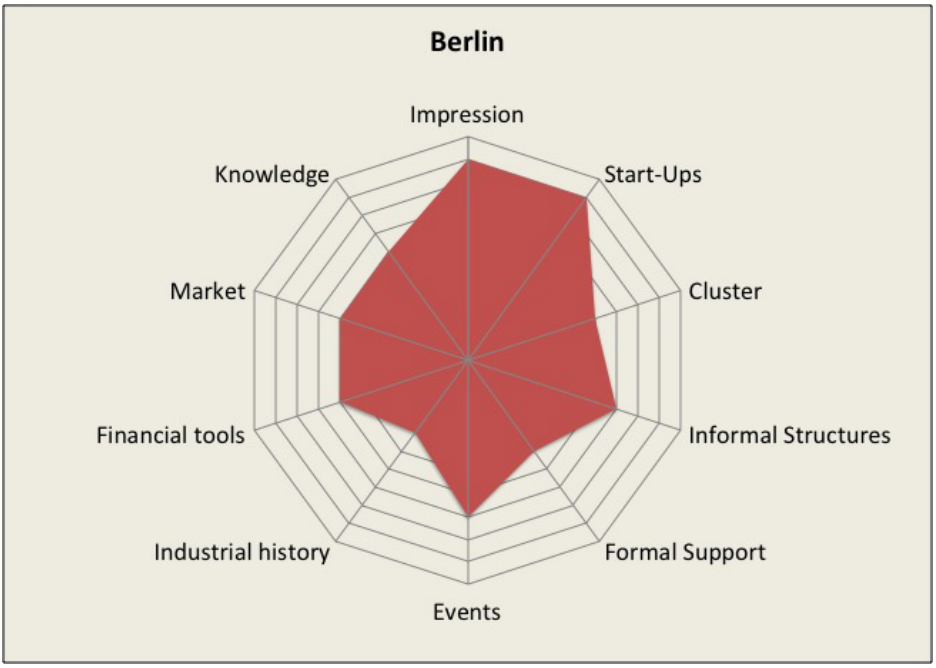
The spirit and innovation climate in Barcelona is very positive and will play an important role for the future of the city. They have managed to fight the financial crisis and are standing strong for the future. Thanks to the MWC, Barcelona has a strong profile in the sector, and most of the major companies are familiar with the city. The advantage that local companies get from being able to be part of the exhibition is invaluable and needs to be exploited to its full potential.

Barcelona has a great location on the Mediterranean Sea, an international airport, a good business environment, the most extensive public support system in Europe, and great weather, and so there is no problem in getting people to move to the city. This applies to both entrepreneurs and the workforce. Being able to have a good work/life balance with low salaries makes Barcelona a great spot for being a booming spot for the mobile services industry.

Case study:

Berlin

– Bottom-up driven start-up community



Background and facts

If you are in the creative, art, or tech scene and you are in your twenties or lower thirties, Berlin is probably where you want to be! Berlin is arguably the trendiest place in Europe, if not the world, at the moment. It is still cheap so you can get by very easily with next to nothing, which makes it an ideal place to start up your mobile services company.

Berlin is one of six hubs in Germany, the other ones being Hamburg, Munich, Karlsruhe/Stuttgardt, Cologne and Düsseldorf. Of these, Berlin is the hub for social apps and commerce. The city not only attracts entrepreneurs and talents from all over the world, it is also very attractive to investors, especially Americans, who come here to look for interesting prospects to invest in. The start-up community is completely bottom up driven with basically no support from national, regional or local authorities.

Innovation climate

What became most obvious during the interviews in Berlin was the lack of innovation history in the region. The legacy of World War II was to turn what was previously a cradle for innovation into an industrial no-mans-land. Before the split into East and West Germany, German companies relocated to the West. Before the reunion of the country, the Soviet Union relocated the industries and businesses they had set up, leaving the region with nothing. Even today, the region is the poorest of the metropolitan regions in Germany, even though the country as a whole is rich.

Even though the government, which began its relocation to Berlin soon after the Wall fell, a process completed in 1999, there have not been any initiatives or even pressure from politicians for companies to relocate or set up in the Berlin area. On the other hand, this means that rents are low, and cost of living is very affordable. Berlin is probably the capital of the underground scene in Europe, many artists and other creative people have moved to the city. Young entrepreneurs seldom have much money to live on, making Berlin the perfect spot to set up your business. Together with the cultural scene, Berlin is today one of the hottest places to be.

A large community of people from “the creative class”

Just like the Shoreditch area of London, Berlin has a large community from the creative class. Within the city you will find not only entrepreneurs, but artists, DJ’s, musicians etc. Berlin is the underground club Mecca of Europe, and the centre for electronic music in Europe. The population is young and up-to-speed with what is happening in the world.

One of Berlin’s biggest assets is its name; the city attracts people from all over the world. Every month people move in from all over the world to the city, to start their own business or work for someone that they met on the beach in Bali. This creates a big cultural diversity, which can be maintained thanks to the fact that it is relatively easy to get a work visa for Germany.

Throughout almost all interviews it was made clear that the regional market can never be the target market for any company coming out of Berlin. The buying power is too low, due to the fact that incomes are low, and there

are not enough large companies to support the community - even though Deutsche Telecom have set up T-labs facilities in Berlin at the university campus.

Bottom-up driven community

It was very clear from the interviews that the start-up community in Berlin is very engaged. There is something going on every day for entrepreneurs to get involved in, most of which are hosted by the entrepreneurs themselves, making it a true bottom-up driven community with a real drive and spark. But they also feel like they have to fight each step. It is neither straight forward nor cheap to set up a business, there is too much red tape. On the other hand, work space is cheap and there is a lot of peer assistance. The Facebook group Berlin start-ups allows entrepreneurs share knowledge, network, welcome new entrepreneurs etc. There are regular hackathons, in addition to international events, exhibitions and matchmaking events.

Easy to employ cheap but highly qualified staff

Companies in Berlin find it easy to recruit people from outside the city, country or even Europe. All around the world, Berlin is respected as a city and is famous for its “hip” factor. The low cost of living allows people to accept low salaries and Germany’s generous immigration polities allow start-ups to recruit even non-EU citizens. However, after a few years many of the employees realise that they can achieve higher salaries by moving out of the city.

There are many universities in the area able to provide a skilled graduate workforce. Some, like the Hasso Plattner Institute have partnerships Ivy League universities in the US. Unfortunately many of the graduates from the local universities choose to move south to better paid engineering jobs in regions such as Bavaria.

Low acceptance of failure

Like most of Europe, failure is not an option in Germany. Unlike Silicon Valley where failing is seen as a process on the road to success, the mentality in Germany is succeed - or you are out! Even though Berlin is more tolerant

of failure than other parts of Germany, the problem still exists. Anyone who goes into personal bankruptcy cannot start another company for seven years. (However, from January 2014 this restriction may be lowered to three years under certain circumstances)

Access to capital

Berlin does not only attract people to move in to the city. It also attracts investors to come. Berlin is increasingly becoming a hub in Europe where external investors meet with European companies. Also, investors from other parts of Germany come here to scout, or to set up funds. But, they admit that the majority of their investments go into companies outside Berlin. The Berlin area has the largest number of ICT start-ups per capita in Europe this year. Globally, this is only beaten by Silicon Valley and Israel. This of course attracts money to the city. There are grants for university graduates to apply to start their own business. However, without an education you cannot get this money.

Public infrastructure

It is twenty five years since the Berlin Wall fell, but there are still huge differences between former East and West Germany. The West remains one of the richest regions of Europe, while the East is one of the poorest. However, the infrastructure is good and is getting better. Berlin is the hub for the former East; but Frankfurt remains the major hub for Germany as a whole and even Europe. Lufthansa use Frankfurt as its main airport, and do not have any international flights departing from either one of Berlin's airports. This creates a disadvantage for Berlin compared to south-west Germany as well as other capital regions in Europe.

German Technology and innovation support mechanisms

There are few initiatives from public authorities in Berlin to support the innovation climate and a lot of red tape to start up a company. Private initiatives are however booming. Privately funded incubators to support companies are being built, and cluster organisations to support companies are being for-

med. In Brandenburg the cluster organisation is located in the same building as the regional finance organisation, which eases access to public funding.

The EIT-ICT KIC a European initiative, but supported by the federal government in Germany has a node in Berlin, and is located in the same building as the Hasso Plattner Institute and T-labs. Even though the EIT-ICT KIC supports business throughout Europe, the close proximity of this centre for entrepreneurship within ICT is anadvantage to companies that want to take advantage of its services: office space, pitch training, business model development, and matchmaking.

R & D

Even though there are good universities in the city, the companies coming out of Berlin have a low level of R&D. On a university level there is high level research, e.g. the Hasso Plattner Institute started in 2010 the HPI Future SOC Lab focusing on service oriented computing. If they manage to transfer research from the universities into start-ups in the region there is great potential in what they can achieve. The lack of buying power in the region leads to the creation of solutions that are low-end and inexpensive. But one has to remember that the start-up community is not more than five years old.

Large multinationals

The lack of large global companies in the region is another issue for potential growth. Deutsche Telecom's T-labs seems to be the most important in the city and are engaged in the start-up community, which shows potential. Nokia (now Microsoft) have a big office here for apps. Siemens and SAP have offices, but their headquarters are located in other parts of Germany. The lack of big companies and heavy industry can however be positive, as well as the lack of engagement from public authorities. There is no one that defines what the community should look like and how they should act, start-ups can chose their own path, which is a positive environment for the creative sector.

Strengths and weaknesses

There are several recurrent themes from all interviewees:

Strengths

Berlin is a good brand, and easily attracts entrepreneurs and competence from all over the world. Salaries are low, which benefits companies, and the cost of living is low which benefits workers. Having the most open immigration politics in Europe enables this. A young and creative population, with a "can do" attitude sets an inspirational and creative touch in the city. At the moment Berlin is one of the most attractive places in Europe for investors. The international scene in Berlin means that the spoken language is English in the region, even though it is German generally in Germany.

Weaknesses

The local home market can never be seen as a potential market for companies, since the buying power is too weak. This affects the R&D quality of the companies, which can have a negative effect in the long run on the growth of the region. Even though the city is "cool" and has a large number of start-ups, not many companies succeed in the long term. Most companies start up and then die out. The star of the region so far SoundCloud (started by Swedes, note). Even though most of the city speaks English, language is still a barrier and any product targeting the German market needs to be translated to German. It is easy to start-up a company in
Berlin, but creating sustainability will sooner or later become a problem.

Challenges

The focus is mainly on apps, e-commerce, music and art. These types of companies are usually lightweight and with apps the challenge is how to make it profitable. There are also a growing number of high-tech and bio-tech start-ups, which have been partially created by authorities. In the future there is a need to develop companies whose products have greater use of high level R&D, and whose employees stay in the city. It will be a difficult balance to maintain the current climate with low cost for a good quality of life,

and at the same time grow in to a more mature mobile services city. With a fairly young population that is mobile and online, it should be a good test market. The lack of buying power makes it difficult to launch and test more expensive products at home, which can have a negative effect on the R&D level in the medium to long-term.

Sustainability and future

Berlin has good potential to be one of the strongest regions within mobile services if it continues to develop. The cultural diversity and the lack of historical influences make it possible for Berlin to define its own future and path. American investors are happy to come to Berlin to scout for new companies, making access to large-scale finance for Berlin-based companies easier. With high quality universities and research institutions in the area there is a constant supply of young highly skilled workers, but they need to have a bigger incentive to stay, rather than move on for higher salaries.

Case study:

Berlin

– Why Berlin – moving back from Silicon Valley

David Hanf

I decided to move from Silicon Valley to Berlin in 2008. It was apparent something is growing in Berlin - a start-up scene of global relevance - and I wanted to be part of it.

The hype around Berlin started in 2009/10. Though Berlin has yet to prove it can fulfil this hype by constantly creating start-ups which become international players, realising valuations north of half a billion, the hype is helping make it happen. It is sort of a self-fulfilling hype. It helps drive Anglo-Saxon investors into the city, which fill the huge gap of later stage funding (series B, € 5m and upwards) as we have seen e.g. with Sequoia Capital, a VC which has financed Apple, Google und Facebook in the past, with is first European invest into Berlin based 6Wunderkinder; or earlier Kleiner Perkins into Soundcloud, Thrive along with Bill Gates into Research Gate, Balderton into Wooga, to name just a few. The hype helps bring leading startup events to the city like Techcrunch Disrupt, it helps make one of the world's leading Entrepreneurs Peter Thiel say "Berlin has the most potential of all cities in Europe." For years Berlin startups where successful with the principle "fake it (or copy it) until you make it" but this gradually changes into a "make it" attitude. By far, the most important asset Berlin has, is its talent. Excellent people, be it Entrepreneurs or employees, are floating into the city from all over the world. Moving to Berlin is a "Nobrainer" due to its low cost of living, its fun factor and cultural and creative scene. Berlin is simply inspiring and one of the few cities in Germany, where you do not have to speak German. Berlin pours charm of constant change and re-invention as the city itself has shown several times in history; it is a place to fulfil oneself. And money follows talent. So the Berlin story has just begun.

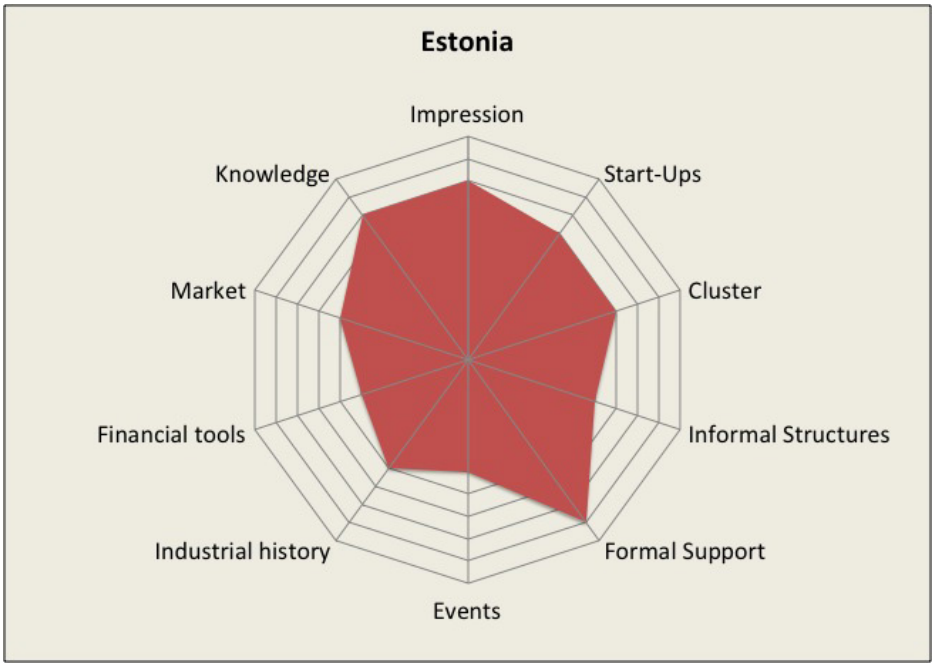
However, most of the work lies ahead. Berlin needs more success stories: companies which are global market leaders and realise exits of a couple of hundred millions. To some extent, Berlin itself is a startup still which has to grow up. Entrepreneurs and employees exiting successful startups will finance other startups, or they will found their own company. This creates an eco-system which Silicon Valley, New York, Tel-Aviv and London already have. Berlin's startup industry is naturally-grown but politics can help support its further growth by lowering obstacles. The newly by Entrepreneurs created startup association is just another sign of Berlin growing up. And Berlin needs more capital. Nevertheless, the city has a good chance to beco-

me an outstanding location for startups and international growth. Hard and detailed work, passion, vision, persistence and grit are the components to make that happen and let Berlin experience a new “Gruenderzeit” (founding period).

Case study:

Estonia

– European MI Start-up Tiger



Background and facts

Estonia is a small country by the Baltic Sea, with a population of only about 1.3 million people. Over the last 20 years it has become one of the most advanced and successful information societies in the world. The roots of the Information Society's potential in Estonia can be traced quite deeply into the Soviet era, when the country was one of the scientific centres of the Soviet Empire. The Institute of Cybernetics along with a major centre for research into Artificial Intelligence were created in Estonia. The main focus of technology at the time was naturally military development and manufacturing. This technological heritage is one of the factors that explain the Estonians' receptiveness to advanced technology.

The whole country is very highly penetrated by high speed internet and mobile networks, including very remote rural areas, the vast of majority of citizens own and use ICT technologies. Estonians across all age groups are

accustomed to using the Internet and mobile applications in their everyday lives in relation to public services (e-healthcare, e-banking, e-parking, e-elections, e-tax etc.). Most administrative communication amongst citizens and government is also implemented via the Internet or mobile applications. So Estonians, even the older generation, are a very ICT literate people.

Innovation climate

The ICT friendly environment is just one of the key factors that in the last few years have generated a large number of successful start-ups of small and medium companies focused on the ICT sector, mainly in mobile applications. Many of them currently cross the Estonian borders and are very successful on the global scene. Skype and Fortumo are just two of the best known brands.

Estonia's story is a good example of how, little by little, through logical steps and systematic cooperation, the private and public sectors can work together to achieve the established visions successfully. The whole genesis of the Estonian information society development, from the very beginning to the present, including all its constraints, mistakes and problems, could be a great inspiration for other countries which are trying to reach success in implementing similar ICT technologies and services.

Innovation activities in Estonia are concentrated in the two largest cities: Tallinn and Tartu. Where the engines of innovation are the technological parks: Tehnopol is closely linked to Tallinn University of Technology, and similarly, Tartu Science Park which has links to the University of Tartu. The technological parks provide a supportive environment for innovative business ideas and the interconnection of science and entrepreneurship; which has resulted in an increase of successful ICT companies and start-ups and contributed to an acceleration of their growth.

R & D foundation

Advanced Research and Development and Innovations (RD&I) in ICT are essential for the permanent growth of the Information Society. Policies such as the "Research and Development and Innovation Strategy" are run by the

Ministry of Education, and the Ministry of Economic Affairs and Communications. Advanced RD&I, requires an appropriate amount of expenditure; as Estonian economics and industry relies on ICT, the government raised the total expenditure on Research and Development from 1,5% in 2008 to 1,9% of GDP in 2010. This will be increased to 3% of GDP (1,6% private sector) by 2014.

The benefits of innovative entrepreneurship are long-term, and forecasts of profitability are not an exact science; therefore, the private sector was not always prepared to take the risk. Initially the state took a key role in supporting and motivating enterprises to invest in RD&I. Close and functional Public Private Partnerships in RD&I have developed over the period and now provide the basis of dynamic Estonian ICT development. Although the share of private investments is lower than in more developed countries, such as the USA or neighbouring Finland, it reflects the structure of Estonian economy, which is dominated by small and medium enterprises.

Co-working structure

Estonia has a fast growing ICT start-up community consisting mainly of young creative and open-minded people (designers, developers, freelancers, start-up founders, entrepreneurs etc.). These people enjoy personal interaction, exchanging their experiences, making new contacts and networking. An example of one of these co-working spaces is the Garage 48 Hub that was opened in Tallinn in 2010 and offers a central place for informal independent co-working, and making new contacts, including from abroad, which is a valuable addition to the local scene.

Strong national ICT policy

Estonia has built its growth within the mobile application sector on a very strong public ICT agenda including:

– The establishment of an Information Society as a key policy of the new democratic government. This visionary policy is mainly connected with Prime minister Mart Laar (1992-2002), who nurtured the e-society visions through its early years, and current president Toomas Hendrik Ilves (elected in 2006), who is known for his passion for modern technologies.

- the development of the information society in Estonia is a strategic choice with the public sector leading the way in pursuing its principles
- the information society is developed in a co-ordinated manner in co-operation between the public, private and third sector
- the public sector is a smart customer, ensuring that in public procurements as much freedom as possible is left for innovative solutions
- the information society is created for all Estonian residents, whereas particular attention is paid to the integration of social groups with special needs, to regional development and to the strengthening of local self-initiative
- the consistency of the Estonian language and culture is ensured
- the interests of both the creators and the users of intellectual property are taken into account
- the protection of basic rights, personal data and identity must be ensured, and mitigation of non-acceptable risks in information systems must be guaranteed
- activities aimed at the development of the information society are linked to the R&D efforts in Estonia
- the public sector employs the already existing technological solutions (i.e. the ID card, the data exchange layer X-Road) and avoids duplication of IT solutions.

Public infrastructure

The basic element for the realisation of the Information Society policy in Estonia was to build a digital infrastructure as densely as possible, including in remote rural areas. Wi-Fi is widespread in urban areas. Rapid Wi-Fi connection is available from about 1,200 public places. 100% of schools and government organisations, and 75% of homes have a broadband connection. Estonia is completely covered by the 3G mobile network, and the 4G mobile network currently covers major cities and is rapidly spreading across the country. The EstWin project was launched in 2011, this aims to bring high speed Internet to rural areas. All major cities are now covered by fibre optic cables, and by 2015 Estonia should have a fully developed fibre-optic trunk network. The vision is that by 2015, 100 Mbps Internet will be in every home.

ICT Education, Awareness and literacy background

A precondition for the successful implementation of the Information Society vision is to ensure that the public awareness of ICT and ICT literacy should keep up with technological progress. “No users, no Information society”. It could be said that the young generation of users is general strongly ICT literate, because they have grown up with these technologies. ICT use and following current trends in ICT are a natural part of their everyday lives. It does not mean that there is no need for a systematic ICT education for the young. Most ICT educational programs for pupils were initiated by the Tiger Leap foundation. The Tiger Leap programme was started in 1997; it rebuilt the educational system to be compatible with the Information Society. The Proge Tiger project was launched in 2012, which teaches pupils as young as the first grade; coding for mobile and web apps, and website creation. This is done through schools, and hobby clubs. The aim of this project is to support logical and creative thinking, and mathematical skills through practical activity. The potential of this project will only be fully realised when this generation become adults.

ICT literacy among the older generation is far lower. The rapid developments in ICT and the lack of access to technology, especially in rural areas with no Internet affect them most. In 2001 ten major Estonian companies created the Look@World Foundation in order to increase the number of Internet users. One of their aims was to provide basic computer training for 100,000 persons, and the opening of more than 500 public internet access points (http://www.id.ee). In 2009 the Foundation launched another project called Come Along! Through this program 100,000 people got help and advice for using the Internet and e-services. 35 Computer Clubs across Estonia with were opened following a Microsoft grant. Around 300 instructors and organisations took part in the Come Along project, holding free training sessions all over Estonia

Access to capital:

The Estonian Development Fund and Enterprise Estonia are responsible for Government information and financial support for Entrepreneurs and start-ups in Estonia. However, the main source of investments in the ICT sector is in the private sector. Estonian private investment activity can be dated back

to the sale of Skype to eBay in 2005. This created a group of investors who had made millions on their shareholdings and were willing to utilize their experiences and invest their money back into ICT start-up businesses in Estonia. However, at that point, Skype was regarded as a one-off and the Estonian ICT market was still disregarded by European and American investors. International capital on a larger scale only started to become available after there had been several waves of successful startups to inspire confidence. During 2012 more than €17 million was invested in Estonian start- ups (Estonian capital contributed €2 million to that total). In the first two months of 2013 alone, over €8 million were invested. This indicates the increased ability of Estonian start-ups to raise capital in this sector. "Estonia is emerging as a centre for start-ups, where people come to from all over the world" (Krõõt Kilvet, board member of Enterprise Estonia)

Key elements for growth

Estonia's growth into a nation with an emerging sector within mobile is basically built on two key elements:

Strong national agenda

The government policy that was introduced in the 90's has played a significant role in building a modern information society but also the fact that the public sector has been acting as a competent buyer of advanced mobile solutions has played a role. The agenda has included:

- Government policy focused on ICT sector
- E-government (M-government)
- Education system focused on ICT literacy
- Widespread of high speed internet and mobile network penetration
- Creation of a well defined innovation system
- Public private partnerships as a way to boost SME:s
- Public private partnerships as a way to boost SME:s

Access to capital

On an early stage the Estonian government realised that access to capital was a key issue when creating a strong environment for startups within the mobile sector. In the early phase government focused on the emergence of

strong domestic investors, but after success stories like Skype the international investors have also entered the Estonian market.

Strengths and weaknesses:

Strengths

The strong internal environment for R&D within the field of mobile technology comes directly from the governmental policy around ICT and the fact that Estonia has ICT development as a key priority. Also, due to success stories, the international reputation of Estonia is very good when it comes to ICT.

Another strength is that, since Estonia is a small country, it is easier to create links between individual actors, which creates greater dynamics. This is also reflected by the fact that there are a limited number of local players, which makes them forced to link with the global innovation networks.

Weaknesses

The rapid economic growth of Estonia led by foreign capital is still not sustainable, which is one of the nation's most obvious weaknesses. The rapid growth of foreign capital has also lead to a very rapid development within the ICT sector, which has lead to a shortage of qualified people. This problem is also closely connected with the fact that there is a net migration problem in Estonia; since 2004 the country has lost 5 % of its population.
Compared to other regions, that has been studied for this book, the brand Estonia is not strong enough to easily attract workforce to move to the country.

Even though Estonia has a strong R & D history, the level is still low. The country does not have enough technology management skills in order to both remain the position in the international networks or to develop the business models of the ICT companies since they are still on a very basic level. This is also connected to the fact that Estonia is a small country and therefor the critical mass of research will be on a lower level compared to countries with larger population.

Challenges

Estonia is facing a lack of trained IT specialists, most people in the industry have entrepreneurial or management training but no IT training. The education system and ICT Association have reacted to this by providing courses with a high emphasis on combined IT and management training. The new courses will cover topics like: gaming and mobile broadcasting, which are currently unavailable, and are needed to continue the development of the mobile services industry. In the short term IT companies use IT specialists from Belorussia and Ukraine to bridge this gap.

The mobile services industry in Estonia has several well-publicised success stories; they along with the shooting stars and the very high number of small start-ups, benefit from the well-developed infrastructure and a very simple administrative system.

The low living costs in Estonia allow small micro companies of young students and freelancers to start a business with extremely low hurdles. This is a good way for the founder to get into work, but they tend to remain independent of institutional support and do not look for export opportunities.

Still, the main challenge for Estonia is how to handle the migration problem. The population of Estonia is decreasing and many of those who move away from the country are highly educated. With the increasing needs from the ICT sector (about 50 000 persons are expected to work in that sector in 2020, compared to about 17 000 today), the main challenge will be to provide the industry with relevant people. This must probably be solved with a refined educational system, but also with labour import from for instance other former east-block countries.

Sustainability and future

As mentioned before the financial system in Estonia is still not on a sustainable level, leaving the mobile technology and service sector in a vulnerable situation. But with more strong influence from international capital and also with new public incentives this can most probably be solved, also since Estonia is a very small country with the advantages that this means when it comes to implementing public policies.

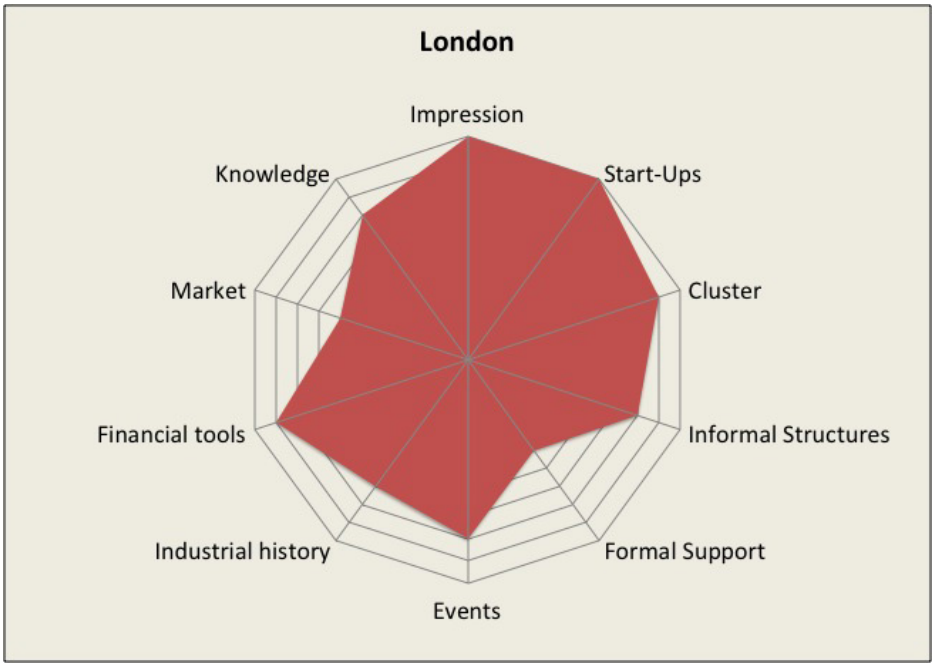
Also the migration problem can affect the sustainability of the mobile sector in Estonia, if start-ups discover that there is a lack of talent they will most probably move to other places where access to talent is easier. We can also see a number of Estonian companies moving to the US, but also to for instance Berlin, London or Stockholm.

If the Estonian government can handle these two challenges in a good way, the future for the mobile technology and service sector in Estonia is very bright. The start-up culture is in place, there are working public-private-partnership solutions and the general infrastructure is good. But in order to remain amongst the top regions in Europe, governmental policies needs to be refined and migration issues needs to be solved.

Case study:

London

– Innovation growth in a roundabout way



Summary

The area known as East London Tech City, usually shortened to Tech City, and commonly known as Silicon Roundabout, is a former run-down area of the capital, that is now the most talked about and vibrant area in the country for high-tech companies. The early popularity was generated by media and ICT Small and Medium Enterprises (SMEs) and start-ups who wanted easy access to clients and markets in the City of London, but since the collapse of the dotcom boom did not have much money to spend on accommodation. The embryonic cluster of companies working in media and hi-tech industries with non-traditional business models, started to draw in other like-minded entrepreneurs.

Local and national governments have been sensitive to the needs of the companies involved through: policy, financial support and ensuring the investment being made for the Olympics in 2012 benefitted local business in the longer term. Larger companies were attracted once they recognised the importance of the companies and this area for their business.

Old Street Junction transformed into Silicon Roundabout

In order for a company to succeed it needs the right people with the right attitude and the right skills. The London area has a highly diverse cultural and ethnic population which creates a melting pot of innovative and creative ideas. Talented young people from the immediate area, and those who move from elsewhere in the UK, are able to access training to develop their skills through the development of relevant courses at local colleges to meet the demand. In addition, Universities in London as well as Loughborough University have become academic partners for projects in the area. However, most companies are far too small to have their own research departments, and there is a problem with access to high level, world class research facilities.

The business community is largely drawn from the first generation to have grown up with social networks. It is therefore unsurprising that this has led to a high volume of electronic communication. However, they also value face to face networking, and one of the biggest attractions of the area is that this is where you can meet and socialise with like-minded people, and a huge support service has developed to meet that demand.

The history of Tech City

A popular saying in the UK is that the streets of London are “paved with gold”. Anyone with ambition is naturally attracted to the capital in the hope that they can share in that wealth.

In 2008, the UK was struck by the effects of the Global recession. However, in the previously run-down Shoreditch and Hoxton area, there were signs that high-tech businesses and internet start-ups were bucking the global economic slow-down. The centre of activity was the area around the uninspiring Old Street junction to the north-east of the financial centre of London. As activity increased and the number of high-tech companies of the type usually associated with Silicon Valley in California, multiplied; this was dubbed Silicon Roundabout.

The image of London as the place to be was boosted by other serendipitous factors. In 2008 London elected a new and highly idiosyncratic Mayor - Boris Johnson. Mayor Johnson is committed to promoting the city as a dynamic and business friendly place to be; he was given a World stage as London prepared itself for the 2012 Olympics. The Olympic preparations included billions of pounds being invested in improvements to transport and facilities in the area around Tech City.

In 2010, the recently elected Conservative – Liberal Democrat Coalition government were keen to be associated with economic success stories. In a landmark speech for the industry, on the 4th November 2010, Prime-Minister Cameron announced: “We are firmly on the side of the high-growth, highly innovative companies of the future... Our ambition is to bring together the creativity and energy of Shoreditch and the incredible possibilities of the Olympic Park to help make East London one of the world’s great technology centres.”

Silicon Valley was held up as the model for how to create a success in the high-tech and innovation sectors. Cameron acknowledged that Silicon Valley’s success did not come from any grand plan. He said that the crea-

tive people who drove that success were not there because of government policies [this is debateable]; they wanted to be there because they liked the climate and the local cultural scene. Once they were there, industry friendly government policies made it possible for them to stay and thrive. So, Cameron's belief was that government should "...Go with the grain of what is already there. Don't interfere so much that you smother. But do help out wherever you can."

The new coalition government was committed to supporting industrial innovation, and Cameron was able to announce: £200 million to develop the Catapult Programme, which would create seven Catapult centres for promoting technology and innovation in key areas of industry. In addition, he wanted to leverage £200 million of private equity finance for businesses with high growth potential. Following months of discussions with the companies already in the Shoreditch area over what help they wanted he announced £15 million for East London Tech City initiative.

Traditionally, Conservative governments have had clear anti-immigration credentials, but in this speech he issued a global invitation to anyone who had an idea that will create jobs and had the ambition to build a world-beating company. "...We want you; we'll make it easy for you; we'll put out the red carpet for you. With our new Entrepreneur Visa we want the world to know that Britain wants to become the land of opportunity."

It was not just foreign entrepreneurs that the government wanted to encourage in to Tech City. A new body, the Tech City Investment Organisation (TCIO) was set up in April 2011 to bring in foreign direct investment, engage with overseas venture capitalists and raise the profile of the cluster internationally.

In December 2012, TCIO announced they were going to build a £50 million technical and creative institute. This would provide a permanent space to train and engage young people in high tech industries, and be a resource for local companies and the industry in general. This publicly funded centre is in addition to a number of commercially funded projects offering similar facilities that have been announced during 2012.

What makes a good climate for innovation?

Inner London and Tech City in particular, was chosen as a case study because it provides evidence for many of the drivers of innovation that researchers look for. The following information is the result of interviews with the people who live and work in the area, and representatives of the organisations that support them.

A large community of people from "the creative class"

Every study of the industry stresses the importance of attracting the right people in order to create the conditions for a climate of innovation. Young entrepreneurs do not want to work for others, they want to be free to express their own ideas and create new ideas by working with people who share their vision. They are often associated with free-thinking and progressive political views, alternative lifestyles, "indie" music, and non-main- stream fashion. Sometimes described as 'Hipster', this lifestyle and look is not always encouraged in 'traditional' industry.

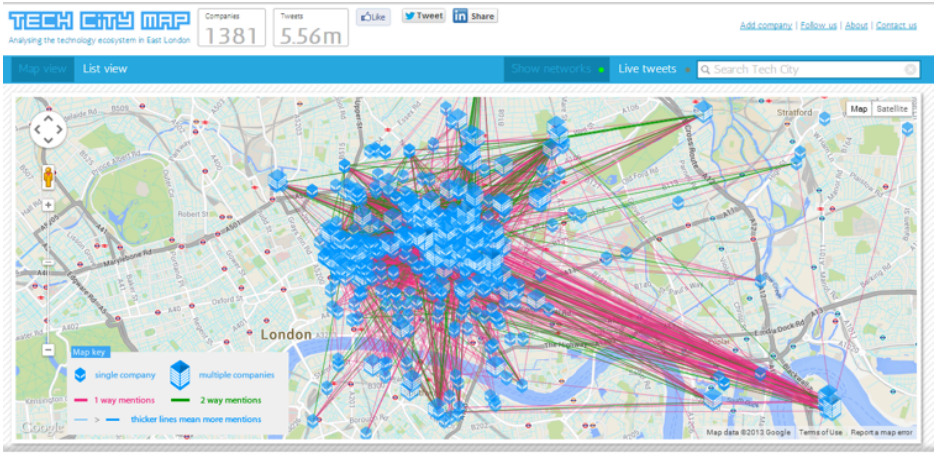
Tech City quickly achieved the critical mass of people who see entrepreneurship as a lifestyle to create a suitable climate for innovation. Networking activities like the regular "Silicon Drinkabouts" provide an opportunity to relax with peers, and to get support and advice for business ideas from people who share their ideals and ambitions.

A networking environment

Most studies show that being within walking distance of a large number of your peers, clients and access to finance has a positive effect on the innovation climate. The close community on University Road in Palo Alto, Silicon Valley is the best example.

Tech City is a very compact business community with a wealth of events and thousands of start-ups within walking distance.

In addition networking through social media is important in maintaining business and personal relationships. The screenshot below of the Tech City Map shows the volume of Twitter use, and just how local this is. Tech City is buried at the centre of the activity.



Cultural diversity

London is undoubtedly a multi-cultural city, the UK Office of National Statistics estimates that in addition to English, there are over 300 languages spoken in the Greater London area. The majority of speakers of these minority languages are at least bi-lingual in their native tongue and English. It has been argued that the ability to speak more than one language enhances cognitive development. A greater understanding of how languages work and syntax can also be an advantage in developing computer programming skills. Blending different cultural backgrounds brings together different ways of thinking and can create unique solutions.

Good communication

Good communication is considered an important factor in supporting innovative environments. In addition to Heathrow, one of the largest airports in the world, London is served by four more international airports: London Gatwick, London Stansted, London Luton and London City Airport. It has good rail links to northern Europe via the Channel tunnel and is the man hub for rail and road communication in the UK.

In addition to the ease with which people can move in and out of the area, Tech City has been given priority in the roll-out of digital communication and access to improvements in broadband speeds.
and access to improvements in broadband speeds.

Conclusions from the interviews about the innovation climate

The majority of interviewees regarded the innovation climate in Tech City as open, easily accessible and with high output.

There was however a note of caution about the access to high level research. Advanced research carried out by the universities of Oxford and Cambridge which are less than an hour away by train, are considered distant by Silicon Roundabout standards.

External support for innovation

As previously discussed, the Government's approach has been to provide help where it is needed, but 'cheer from the side-lines' when it is not. The following factors cannot be generated internally by a cluster; they are made possible through high-level support at governmental level or through larger industry and businesses recognising the value of working with the cluster.

Access to capital

Both people running start ups and those providing financing agree that the amount of capital in London is probably the highest in Europe and also that access to capital for those who have a good idea is quite easy. Even for the travel-averse Tech City community, direct access to the central London money markets is close at hand.

US investors have looked at SMEs in London, Berlin and the Nordic countries working in the ICT sector (which includes mobile), as good value for money in comparison to what they can get in California or New York. However, there is no guarantee that this will continue to be the case in the long-term. There is concern in the financial sector that there may be a "backlash" in the financial values of companies; the fight to place investments could lead to unrealistic values within the sector. This was the background to the collapse of the dotcom boom in the early 2000's where mercurial companies like Boo.com lost hundreds of millions for investors. Most interviewees were aware of this history, but believe that the valuations placed on companies are still at a moderate level.

Boo.com

In late 1999, Ernst Malmsten, Kajsa Leander and Patrik Hedelin, who had a previous history as successful e-retailers, launched Boo.com. Just 18 months and $135 million of venture capital later, the company was placed into receivership and liquidated.

Public infrastructure

The Government primed the high-tech innovation scene with £200 million of investment and has worked to ensure that private resources can at least match that. Tech City has been a major beneficiary of those resources. In addition, the regeneration of the area as part of the preparations for the 2012 Olympics, has achieved significant improvements in public infrastructure; making the area a more attractive place to live and work. In November 2012, the government announced a further £50 million aimed specifically at Tech City through the Tech City Investment Organisation (TCIO).

The current programme of improvements to public transport will continue which will include refurbishment of tube stations.

UK technology and innovation support mechanisms

The TCIO was set up in 2010 with the purpose of making company establishments easier in the area. Opinions of the organisation are divided, and there was no clear evidence on the ground of what value TCIO has created. What was clear was that the TCIO was a major factor in the large amount of public attention focussed on the area. TCIO is now working in collaboration with UK Trade and Industry (a government department) to attract large multinationals to the UK.

Since 2010, Innovate UK (formerly The Technology Strategy Board), a government innovation agency, part of the Department for Business, Innovation and Skills (BIS),has been offering support and funding to businesses that are bringing new products and services to market. As part of its support Innovate UK holds ‘Dragon’s Den’ style pitching opportunities. The £100,000 of awards

delivered so far through the scheme have also un-locked much larger sums of investment through Venture Capitalists and Business Angels who have greater confidence in the businesses that had survived the dragon's den.

As part of their activity, Innovate UK has created a series of seven "Catapults" to accelerate growth in key areas of UK industry. The Catapults are part public and part commercially funded. The Connected Digital Economy Catapult is working to boost the commercial opportunities, and encourage the growth, of the digital economy - which includes the mobile services sector. Their support is intended to help innovative companies reduce the time-to-market of disruptive products and services whilst limiting the cost and risk to the companies.

In addition to government driven support for the industry and Tech City in particular, there are several peer support and mentoring organisations working in the area.

Intellect is a trade body that provides a collective voice for over 850 technology companies, ranging from SMEs to multinationals. It provides start-ups and SMEs with support on how to operate efficiently, legal matters, training of staff and networking at all levels.

Key elements for growth

The sheer volume of opportunity for business, and the fact that London is a major financial sector has underpinned the set-up and growth of companies. Most of those companies have responded to market opportunities, and attrition was not seen as an issue by interviewees.

It is not easy to say with confidence how many high tech companies are located in the area. In 2008 there were probably 18 media and high tech companies. When the Government announced its plans to help in 2010 they were aware of 85 companies. In 2011 this was believed to have risen to 200. In 2012 insiders believed that there could be as many as 5,000. One factor in that uncertainty, and the reason for the growth of start-ups, is the dynamic nature of start-ups. It is very easy for individuals to have an idea, create an app, and start a company. The cost of office space is very low (for

London) and short-term lets are available, even small offices can be shared by multiple companies. The ease of networking and mentoring opportunities creates the conditions for those companies to combine or merge with others.

The above factors give the area a very good innovation climate, but in order for that to grow and companies to have longer term stability with financial growth and the ability to create jobs, other factors must be present.

Research and Development

Most people interviewed say that even though both Oxford and Cambridge are within commuting distance, the collaboration between the innovative areas in London and the traditional research heavy universities is not sufficient. The average start up in the Tech City area has a very low level of research driven development, which in the long term can be a problem if you want to create large companies with many employees.

Large multinationals

Another key element is the presence of large companies that are able to employ large numbers of people and become potential customers for startups and SMEs. This has yet to happen in Tech City, but the multinationals are beginning to make their presence felt.

In March 2012 Google opened the Google Campus in the area which provides incubation space, holds "hackthons" and training courses. This has quickly gained a support and has 10,000 members. However, this falls short of a genuine research and development facility that would provide business for local companies.

In late 2012 a series of high profile commitments by major companies were publicised: a multinational consortium that includes University College London, announced they would be creating an innovation centre IDEALondon. Microsoft promised to build a Technology Development Centre. KPMG and IBM also announced that they would be launching major initiatives to support companies in the area.

Most people that have been interviewed say that even though there are of course, large companies in London; there are no really large ones in the mobile sector. The long term future of the cluster could well depend on attracting multinationals into the area and set up advanced research facilities, or having some of the existing companies make the transition themselves.

Hackathon

An intensive event typically lasting between a day and a week which brings together a group of people with the skills to develop software. This is usually focussed on a particular problem or topic.

Strengths and weaknesses

Throughout the course of the interviews, there was a common set of perceived strengths and weaknesses:

Strengths

- The innovative climate
- The multi-cultural environment
- Good access to capital
- A large number of start ups on a small area
- Good infrastructure and communications

Weaknesses

- Lack of collaboration with traditional research and development
- No really large multinational companies within the mobile services sector
- Isolation towards the rest of UK

Challenges

Probably the largest challenge to the area is to turn the fast growing start up community within the mobile sector into larger companies. There are both historical and physical challenges related to this. The UK has historically created a large number of multinational companies in the heavy industry and

manufacturing sectors. Today that work is often carried out in developing countries with lower labour costs.

The presence of a large multinational, well known mobile brand cannot be underestimated and compared to for instance the Southern Sweden area (which holds companies like Sony Mobile, Huawei, Ericsson and Intel) the London area needs to focus on getting some brands to establish themselves in the region.

The large multinational companies demand close access to knowledge to support their research and development programmes. Even though London has several well established universities they do not have the kudos of Oxford and Cambridge to entice major companies. It is a future challenge for London to ensure that the high level research facilities for the mobile sector at the existing universities gain an international reputation for quality.

Sustainability and future

Taken into account the results from the interviews; London probably has a bright future within the mobile sector, and should retain its position as one of the emerging spots in Europe. This is supported by the continuing development of an ecosystem that supports and encourages innovation and strong business and social networks within the Tech City community. However, it is essential to work continuously in addressing the challenges, especially with the access to high level research if London wants to move to the next level. Sustainability from a job creation perspective is a balance between building new companies and attracting and retaining large multinationals, this will be essential to create a sustainable mobile services sector

Case study:

London

– What makes London a "hotspot"?

Martin Malii Karlsson

London is attracting people from across the globe. Some factors that are contributing to the London status as a World city and making it a good place to be are:

– it's location in the centre of the world's times-zones.
– it's leading global financial centre.
– it's high density of multi national companies.
– it's English-speaking language, the language of the tech industry.
– it's rich mix of different cultures- it's many renowned universities.

Mapping of the London technology scene

The London Silicon Roundabout

Strategic organisations in the U.K have undertaken research to understand what is happening in Silicon Valley and how to replicate and adapt a European model that would work for London. A recipe for success, has been collaboration between universities, start up communities, mature businesses and VC's.

The London tech scene have recently seen a number of clusters emerge, the most prominent one, the 'London silicon roundabout', is located around the old street roundabout, in Hackney in East London.

Rewind 10 years and Hackney and the Shoreditch area were a 'no go' place. Christian Ahlert, Founder of Minibar, U.K's largest tech communities with 7,000 members, says that area around Old street was a cheap place to live and therefore attracting a young creative crowd, who could afford to rent a place in the area. They turned the area in to a fun place to hang out, home to the coolest pubs and clubs. Start–ups spotted the opportunity of getting a cheap desk space. The area started to become attractive and other crowds with more money who invested in the area. Gentrification is now transforming the area into a very expensive area. Google is currently developing a plot of land in the Kings cross area for $ 1 billion to establish their new

office. This operation inspires others to follow, such as Amazon, Salesforce, Microsoft, Twitter and Facebook. Facebook set up their European development office in London after comparing with other cities such as Berlin.

Co-working spaces and accelerators

To meet the demands of start-ups who still want to be in the area, the concept of co-working space has been proven successful, offering affordable desk space in a shared collaborative environment. Startups are incubated at co-working spaces and accelerator programmes such as Tech hub at the Google campus, White bear yard, Central working and Tech stars the U.S accelerator programme.

Tech stars U.K is the first establishment outside the U.S, based at Warner Yard, who also hosts an angel investor network and UKTI. These hubs are entrepreneur friendly, adding more value to the start-ups by offering mentorship and incubator services for a small member fee and sometimes seed money in return for equity.

Access to key people

Clusters and co-working spaces have managed to bridge the gap between the start-up community and big companies, making it is easier for key people to meet. Regular events are organised around themed topics such as innovation within specific industries; mobile, advertising, music, tv/film, big data, how to raise investment, how to find the right skills and how to protect IP.

Collaboration between corporations and start-ups

It is proved that clusters increase the value for both start-ups and established companies. London has a very strong TMT industry and in a fast paced digital market big companies are struggling to innovate and adapt fast enough to satisfy the market need for new products and services. This is a brilliant opportunity for innovative lean startups that can quickly adapt to changes and build products fairly cheap to meet this demand. Big companies with the financial power are looking to acquire products and solutions at the

right stage, rather than spending a fortune building it in-house. This explains why some startups are building products without making revenues, with the aim to make an exit/buyout from a financially strong company. This strategy comes with a very high risk, very few startups actually succeed being acquired, leaving them often in cash flow problems because of the lack of a sustainable business model.

Angel investors have also started to collaborate, Federico Pirzio-Birolli, Founder at Warner Yard share his view on the benefits of clusters and being around the silicon roundabout. 'It has simplified the communication between angel investors and sometimes makes it easier to syndicate. Business angels might think it would be competitive but is has actually become more collaborative; we are not alone in investment rounds anymore. It works well as an angel cluster, but I think bigger VC's or traditional investors are still afraid of this'.

Importance of success stories and new learning

Success stories contribute to build up confidence and a 'we can do it attitude' for new ventures. It also contributes by feeding back new learning to the start-up community, for an example how new business models works and how to distribute a new software service etc. The London tech scene has seen success stories such as Last.fm, Tweetdeck, Songkick, Last minute.com, Mooshi monster and Love film. There is still need to be more of those success stories and an arena to share the new learning, for it to become a new Silicon Valley.

New clusters

The London Silicon roundabout effect is starting to spread to other locations in London, who are jumping on the trend of building clusters and setting up hubs for entrepreneurship and innovation.

When rental prices are rocketing in the Shoreditch area, people are speculating where the next hot area will be. Hackney Wick, close to the Olympic Park with new infrastructure in place and the most artist dense area in Europe's

per sq meter is a strong candidate. The area around Greenwich, recently rebranded as the “Greenwich Peninsula” with Ravensbourne College as a driving force, and the O2 centre is another candidate.

User-friendly technology attracts new tech entrepreneurs.

The fact that technology has become easier to understand and more user-friendly, has attracted a new breed of people, without previous tech expertise to explore the tech start up scene. Before the focus was more on the technical solution, today the focus has changed towards a broader perspective of problem solving for and example within health care or how to find new communication and analytic tools. Mobile apps have become part of everyone’s life’s and the market is growing exponentially.

Taking a planned risk

People in London have previously been very risk averse, due to the high living expenses and the fear of failure. One factor that has contributed in the increase of start-ups has been the turbulent job market, where secure employment and permanent contracts are less common. This has forced people to adapt and become more flexible in their employability. More people decide to freelance as sole traders. The attitude towards entrepreneurs and being a start up has also changed to a much more positive view. London entrepreneurs still seems to be taking a calculated risk before starting up a new venture. It comes with the benefits of being more prepared as a start-up. Good planning gives a start up a better chance to survive the critical start-up phase and grow into a sustainable business.

Simon Devonshire, European Director of Wayra, a start up accelerator programme owned by Telefonica, confirms that Ireland and U.K produce a lot more entrepreneurial talents, compared to for an example Spain. The current insecure economic climate in Spain can explain why less people are willing to taking a risk starting a business there. One of the benefits joining the Wayra community Simon says is that once your idea has a brilliant customer proposition, Wayra can offer access to a huge customer base.

Government support

The Government has realised the value of the Silicon roundabout cluster and its positive effect on the London start-up scene. The new Governmental initiative Tech City is now supporting the Silicon Roundabout and has announced a £50M investment into the area to boost the U.K economy.
Tech City's role is to promote the Tech City cluster and attract foreign direct investment. A vision is to guide a significant number of mature start-ups to IPO's.

Governmental support as SEIS (Seed enterprise investment scheme) and EIS (enterprise investment scheme) allowing private investors to invest in a start-ups and get substantial tax breaks has given access to more investments for seed and early stage companies. Federico thinks that SEIS and EIS have been great but also to a degree attracted not so experienced or passionate angels that just want the tax break.

The challenges

Support from the financial market

There is a positive spirit in the London tech start up scene.
To keep the competitive edge there are challenges that needs to be addressed. The market is crowded with start-ups in need of getting to the next level, attracting critical mass, acquire enough paying customers to be sustainable and be able to raise enough Series A investment. Federico confirms that there has been a start up boom that needs to see IPO's soon. Leading up to the IPO's there will be a huge demand for series A investment. At the moment there is a lack of investments in the region of £500K to £4M.

London is a global financial powerhouse, but there are views that the wealth of the London financial markets doesn't support the tech sector in London and the U.K enough. In comparison to other countries such as Israel and U.S relatively small investments go to R&D, start-ups and early stage companies in the tech sector. The average M&A deals are much lower in U.K (£40M) than U.S (£160M) and rest of EU and Asia (£110M)

Factors that could explain this is that for an example in the U.S the culture of taking risk has fostered an appetite for risk and high ambition. In the U.K there is still a degree of people being risk averse and afraid of failure. More success stories in U.K start-up scene will help to change this behaviour. Tech City is lobbying for Foreign Investments, Foreign investors. Wealthy U.S angels have started to look outside their own border for lucrative investments. There is a knowledge gap to bridge between new wealthy U.S angels and U.K tech start up's in need of investment.

Bridge the skills gap

There are difficulties in finding skilled talents who are willing to take a risk, such as senior developers and CTO's. Senior developers are often recruited by established companies who can offer them great salaries and benefits. Initiatives such as Silicon milk roundabout, Minibar labs and Techmeetups. com organize match making events for start-ups who need developers. The need for new technology skills have been taken on board by the U.K education policy makers who are adding coding skills to the curriculum with initiatives such as the Code academy who has volunteer programmers teaching primary children to code.

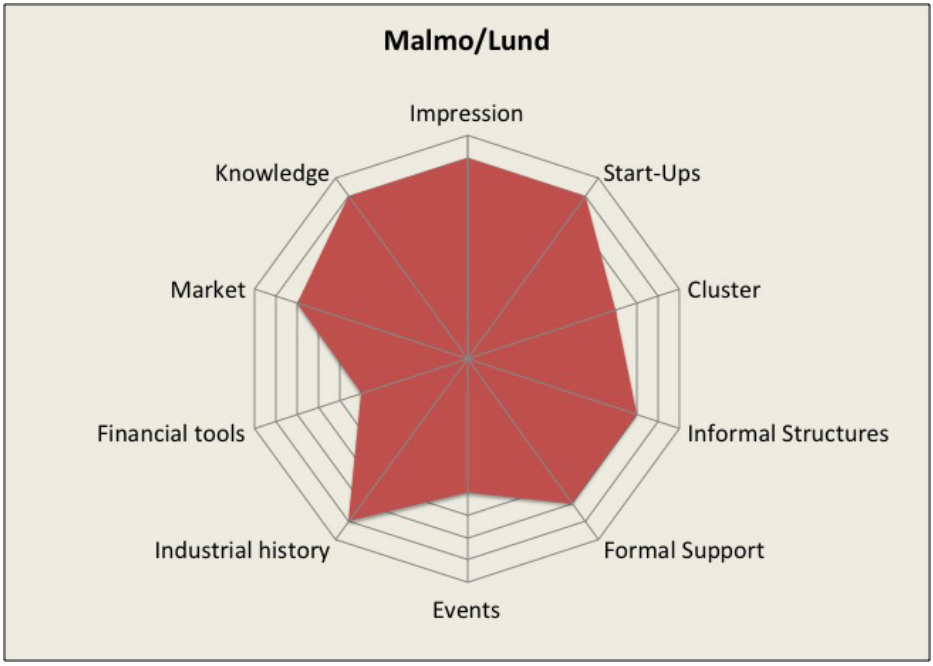
Other

UK companies may miss out of opportunities from EU because they are not aware of EU's investment schemes, perhaps due to the government's resentfulness towards EU and it's policies.

Incubators and businesses that are offering to help start-up's, are flooding the market and it has become an industry of its own.

Voices from other creative regions are worried to lose out on necessary investment opportunities if a number of exclusive hotspots are becoming the focus for European support initiatives.


Case study:
Malmo/Lund
– One Region / Two Worlds



Background and facts

The Nordic countries have a strong history of being leaders in the mobile sector, most known are the three capital cities; Stockholm, Copenhagen and Helsinki; in Sweden, Denmark and Finland respectively. What most people outside the Nordic region tend to forget is the Malmö/Lund area in southern Sweden. The region holds Northern Europe's largest university, Lund University, the largest Science Park and a strong history of being an innovative region, some even claim that the mobile phone was actually born here.

Since Ericsson established a R&D site in the region in 1970's, Lund has played an important role in the mobile sector, today hosting R&D offices for companies such as Sony Mobile, Huawei, Nokia (Microsoft) and Intel amongst others. Malmö was formerly a shipwright city, but that industry moved from the city in the early 1990's. Since then Malmö has managed to reform as a

centre for mobile and digital industries and was in 2011 named the "appi-centre" of Europe, due to top education for app developers as well as the app companies such as TAT (the Astonishing Tribe, acquired by RIM [Blackberry] in 2010), Crunchfish and King (created Candy Crush Saga). Together these two cities create a unique combination of skills to create an almost complete ecosystem for the mobile sector, from hardware to applications and services.

Innovation climate

One region two worlds

Being a region consisting of two cities, there are different drivers for innovations within. While Lund, a city over 1,000 years old, and with a university dating back to the 1600's, there is a profound history of research. Few people know that for example, the inkjet printer and Bluetooth technology were invented there. The innovation climate got a boost in the 1970's when the research park IDEON was born and Ericsson established a R&D facility in the city. Ericsson's new office became their centre for developing the Ericsson mobile phone. Having such a big player in the city has led to a number of start-ups popping up in the mobile sector.

Malmö on the other hand went through a big transformation in the 1990's repositioning themselves from being a grey working class city with many societal problems to being one of the trendiest places in Sweden booming not only within mobile services but also other creative industries such as media, fashion and gaming.

The walls between the two cities are slowly breaking down, but still it can be seen as two different worlds. This is both the advantage and the challenge of the region. The regional and local authorities are all very much aware of the situation and are building bridges through different collaborations such as joint meetings and including each other in processes. However on the entrepreneurial level there is still a schism between the two cities, where Lund is considered old, slow and too heavy by the Malmö people and on the other hand Malmö is perceived as too young and hip by Lund.

Cultural diversity

Both Malmö and Lund have big international communities. Malmö has over 170 nationalities represented in the city making it the most multicultural city in Sweden. Lund on the other hand attracts people from all over the world much thanks to the university, (e.g. the Masters in Entrepreneurship holds about 10 spots for international students for each class and usually gets hundreds of applications). What can be noticed in the start-up community is a significant representation of international entrepreneurs or mixed cultural background, especially amongst the most successful start-ups. This is reflecting one of the most mentioned issues that the authorities needs to deal with from the interviews, that we need to create a visa for entrepreneurs so that they can come, stay and get to start up new business.

Communication and infrastructure

Thanks to the closeness to Copenhagen, approximately 20 min by train from the airport, Malmö and Lund can easily be accessed from the rest of Europe and the world. Trains run frequently every 20 min during the day, every 10 min during rush hours, and every hour during night between Sweden and Denmark. The first highway (E22) in Sweden was built between Malmö and Lund in 1953 and trains and buses run between the two cities several times every hour all day and night, as well as local alternatives.

Thanks to a national initiative in the 1990's broadband was made accessible for the whole population and the possibility for anyone to get a tax reduction when buying a home PC for the home, making Sweden the country with highest penetration of PC's in homes. A side effect of this have been that Sweden constantly have been on the top in e- and network readiness in the world which has helped the country being early adopters and first movers among the public as well as the companies. This creates a good test market for new products in the mobile services industry.

Access to capital

One of the main challenges for start-ups from the Malmö/Lund region is access to finance. Not being a known brand on a global scale makes it difficult to attract international VC's to come to the region; they tend to go to

Stockholm, Copenhagen or Helsinki instead. Thanks to collaborations with the start-up community in Copenhagen and Stockholm companies can benefit from going there instead, and it has led to some major investments and acquisitions in the region. E.g. Apple recently acquired its second company founded in Malmö (Algotrim). The first one (Polar Rose) is still considered to be their most successful acquisition to date. On top of this there have been acquisitions made by Blackberry (then RIM), Intel and ARM in recent years, which has created a success wave many wants to be a part of. The region has also been lucky with the money being to a large majority reinvested in companies in the region and the entrepreneurs becoming serial entrepreneurs. Otherwise the general feeling from the interviews is that there is a lack of VC money in the region as well as in Sweden generally, and that investors are too risk averse.

Innovation support mechanisms

The most successful incubator in Sweden is located in Malmö, MINC, contributing to the success of the region. The university together with Ingvar Kamprad, the founder of IKEA, founded IDEON Science Park in the 70's, today the biggest Science Park in northern Europe. Success stories from the park are e.g. Scalado, the company behind Internet in the cell phone, acquired in 2012 by Nokia, and the Bluetooth technology in 1994.

Both the municipalities of Malmö and Lund as well as the region of Scania (southern Sweden) invest money in creating different support mechanisms to elevate the industry in the region. There is both direct support such as the cities have their incubators (IDEON Innovation and MINC respectively), the region supports cluster initiatives etc. But there is also indirect support of e.g. vocational training programs and creation of networks, both within the region between different sectors, but mainly internationally. After three years of discussions there has now been an initiative started from the Research and Innovation Council where there will be a focus on three different areas; personal health, smart cities and smart materials, where mobile is an important part of all three areas. The project is just started so it is difficult to draw any conclusions from it today.

Key elements for growth

The Malmö Lund region have maintained a strong position through the latest financial crisis and shown a growth within mobile services, in the growth of companies growth and in investments made. Success breeds success is one factor.

R & D

The combination of a top 100 university in the region with several R&D facilities for global companies is the backbone of this highly innovative region. The region also holds a unique set competences. The ability to go from radio to user experience and the different layers in between, combining mechanics and technology with gaming and music can probably only be compared with South Korea. The region is good at inventions, but falls back when it comes to bring it to the market. This is shown in recent reports, with the Malmö/ Lund region in the top three as one of the most inventive cities in the world. The ranking was made on patents coming out of different regions. However when it comes to creating new incomes, the region is lagging behind.

Large multinationals

The presence of large multinational companies in the region is a key for the success the region has seen. The large multinationals in themselves does not create new successful companies, but being able to get your first global customer in your home region have advantages. It is easier to access the big players if they are located close to home as well it is more likely to get an introduction to them. Being able to invite investment from a global player to the business has also been said to be valuable when going international and exploiting new markets.

On the other hand, having strong global companies in the region created an oligopoly in the market and the changes that are happening now can be seen as very positive with new companies being able to gain market shares.

Openness

Even though the interviewees have pointed out that there is no place like Silicon Valley when it comes to openness, there is a proven openness that can be found in the Malmö/Lund region as well. Several open spaces and networking places boost the mindset for opening up and sharing. But also some initiatives such as Mobile Heights Business Center where entrepreneurs get to meet with representatives from some of the large multinationals in the region and get feedback on their ideas/technology. This encourages entrepreneurs to not only share with potential customers but also other entrepreneurs to generate success.

Strengths and weaknesses

Talking to the persons interviewed they all mention more or less the same strengths and weaknesses:

Strengths

- Strong history in the region
- Success stories in recent years
- Excellent infrastructure and communications
- Leading University in the region
- Multinational Companies
- Good collaboration between companies and support organisations

Weaknesses

- Lack of capital
- Region not a good brand in itself
- Not enough commercial thinking
- Failing is not considered to be the road to success
- Home market too small

Challenges

The main challenge concluded from the interviews is changing the mind set in the region. It has to be more forgiving; failing should not be seen as a

mistake rather a process to succeeding. The trend is changing and there are initiatives for this, where entrepreneurs actually share how they failed; what went wrong and what they learnt in the process. If Silicon Valley is the star, the mind set has to be more like theirs as well. Waiting too long and missing on market opportunities have been said to be one of the main reasons for not succeeding.

With the recent changes in the mobile industry in the region, such as Sony Ericsson splitting up to Sony Mobile: the latest with Nokia being acquired by Microsoft and the question is how much longer these giants will remain in the region. However with the current output of companies it is not likely that it will change in the short run. One of the biggest challenges the region is facing at the moment is to be able to maintain the competences and the position the region has. It can change quickly and start to lag behind other regions.

To be able to keep multinationals as well as SME's there has to be a base to recruit from. Not being a strong brand in itself can lead to problem in attracting workforce to move to the region, and thus maintaining companies to keep their offices and headquarters there.

Sustainability and future

The future for the region is difficult to predict. Recent changes in the industry may make it look unstable. But companies as well as policy makers seems to be on top of what is going on to be able to adapt to the new world. The region can ride on the advantages that both Sweden and Denmark bring, Sweden in particular is proven to be an excellent brand around the world.

If the region manages to do what it has done in the past, with reinventing itself to keep up with new trends and demands in the world it has a good chance to continue growing and creating new start-ups. The environment is well suited for entrepreneurs and start-ups. However, with a big support system and different activities for them weekly, entrepreneurs also support each other. The fact that the multinationals are participating in the start up community creates a positive vibe. With a fairly advanced community of users and companies surrounding the companies there is a good test

market, but also first market to release a product or technology on. This increases the probability of the region maintaining its position. It will be interesting to follow the new initiatives during the coming years, to better bridge the two cities together, and see the outcomes. It is already moving in the right direction and if successful the Malmö/Lund region can gain unique advantages.

The Nordics
– Inspiration for innovation

Ariane Van De Ven

By Ariane van de Ven – Global Trends Expert at Telefonica Digital
As published in eKISS Bulletin No 285 – Knowledge Netork.
Business & Technology Strategy

We must go beyond textbooks, go out into the bypaths and untrodden depths of the wilderness and travel and explore and tell the world the glories of our journey.

John Hope Franklin

This quote from John Hope Franklin summarises the reason behind undertaking an innovation tour to the Nordics very well [note: done by Telefónica Digital]. Indeed, to ensure our added value and place in the future, we need to venture into the unknown and draw inspiration from successful innovative places & people.

Why the Nordics?

The Nordic cluster is one of the most innovative regions in the world, not just from a technological perspective but also from a societal one.

The Economist recently coined the region the "next supermodel" as "the Nordics cluster is at the top of league tables of everything from economic competitiveness to social health and happiness".

"these small countries… have reached the future first. They are grappling with problems that other countries too will have to deal with in due course, such as what to do when you reach the limits of big government and how to organize society when almost all women work" (http://www.economist.com/news/leaders/21571136-politicias-both-right-and-left-could-learn-nordic-countries-next-supermodel)

The Nordic cluster is interesting because it tackles challenges differently, resulting in innovations across the board from public to private, and often involving technology as a core enabler.

For the purpose of this innovation report, we [read Telefónica Digital] focused on the following Nordic countries: Denmark, Sweden, Finland and Estonia.

Key Findings

Overall, the Nordics appear to be a happy and positive place with high levels of life satisfaction and wellbeing. We found this to be conducive to an innovative mind-set and culture.

The Nordics high levels of innovation activities are happening on three levels:

- society
- technology
- business

Nordic society is characterised by a flat, open and transparent system. Almost all of the people we met felt that having few problems that impact their everyday life enables them to put trust in the government. Indeed, a recent poll found that half (51%) of Swedes believe politicians will help save the world compared with less than a fifth (18%) of Britons (Future Poll's Sweden Consumer Attitudes Audit spring/summer 2013). Additionally, the Nordics report high level of honesty due to policies that are geared at increasing transparency of both government and citizens. As a result, people don't have to worry about security, and having their basic needs met, they are able to think in terms of opportunities instead of limitations.

Furthermore, the famous Nordic welfare system enables people to take risks with little fear and to challenge the established rules, because they know the state will help them if they fail.

Nordic countries are also known for their alternative and disruptive education approaches that generate a highly competent workforce. For instance, in Denmark parents are allowed to take their public funds to private schools with them but also to top them up (within limits) with their own money. Finland is recognised for having the best educational system in the world (as measured by the PISA tests [http://www.minedu.fi/pisa/2009. html) by emphasising creativity and group learning.

Nordic societies are also characterised by an egalitarian and flat system which enables people to believe that anyone can succeed regardless of their background. They celebrate local heroes. This was specifically pronounced in

Helsinki where game companies like Rovio (the creators of one of the most popular games in the world, Angry Birds) and SuperCell have earned tremendous respect and given a new direction to Finnish innovation and technology.

As a result, Nordic citizens have a 'can do' attitude and display a strong sense of individual duty to create positive collective impact. Individuals look for their added value to the collective as they are driven by a desire to positively impact society. Nordic citizens define success beyond material pursuits. This provides them with a strong sense of achievement and purpose.

Finally, because of their geographic location characterised by a tough climate and remoteness to the rest of the world, Nordic countries tend to plan ahead and face future issues head on. They also display an international mind-set. This can explain why so many Nordic innovations are global successes.

Technology is perceived as a positive source of future growth.
Nordic countries have for a long time, shown an interest for the new and a desire to try different things. As a result they are often used as test markets by multinationals.

Additionally, due to their geographical location and the fact that populations are widespread across the territory, it is commonly understood by Nordic citizens that technology can enhance many aspects of their life. Estonia for example has in a decade achieved mass adoption and reports some of the most innovative types of e-government services. The mobile ID for instance, has become the new form of identification. Since the 1980's all Nordic countries have ambitious tech adoption plans. They are characterised by a strong ecosystem that promote the adoption of technology and access to world-class technological education.

Technology is perceived as a democratic force in the Nordics: it brings young and old, rich and poor access to information, education, health, and entertainment. Indeed, tech innovations are often perceived as having the potential and the duty to positively impact on society. As a result, instead of protecting innovations, the Nordics have a history for developing new international standards. For example, the first fully automatic first generation cellular system was the Nordic Mobile Telephone (NMT) system, simultaneously

launched in 1981 in Denmark, Finland, Norway and Sweden. NMT was the first mobile phone network featuring international roaming. Additionally, the open source movement has a very strong hold in the Nordics, contributing to challenge the status quo and develop disruptive technologies.

Finally, one can conclude that the success of tech innovations often comes from the strong collaboration systems that exist between business, start-ups, academia and research & design institutions. The Aalto University in Finland is a great example of this as it creates highly skilled and complementary teams.

Regardless of the industry, in the Nordics there is a clear belief that technology can help enhance performance, efficiency and mass adoption of various products and services and create a better future for Nordic companies.

Nordics' business mindset is characterised by a discerning global and challenger approach

Nordic businesses have learnt how to turn their disadvantages into advantages. As their home market is small and therefore limited, Nordic business, even start-ups, tend to have a global mind-set and the ambition to be an international success. They also tend to create strong networks among Nordic countries to play on each other's strengths.

Most of the entrepreneurs we met expressed the fact that they feel they need to work harder than entrepreneurs in other countries in order to succeed - because they have a lot to prove. As a result, we see a real Nordic collaborative culture being created between industries, competitors, and across different disciplines. This is based around the philosophy that by working together they can all do better.

Nordic businesses tend to re-invest (at least partly) their successes into the local community. It is common for young start-ups to get access to local VCs, angels and to speak with members of the government or large corporations in order to get support and advice.

Most startups are driven by the need to solve real problems instead of ego. Generally speaking they seem to want to make the world a better place, for most people. As a result, there is a very ambitious and disruptive business culture that is purpose driven not process driven as exemplified by Skype, Spotify and new start-ups such as Flattr, Holvi and FundedbyMe.

Governments in the Nordics are very supportive of entrepreneurship and innovation. They are creating innovation centres and encouraging more partnership between corporate and academic worlds. However, if there is a real push for innovation and entrepreneurship, it is understood that taking risk and failing needs to be done fast and cheaply and that individuals have to be responsible for their own actions instead of being taken care of by the whole community.

Innovation trends

Our research in the Nordics demonstrated that in many ways, these countries are already experimenting with the future opportunities and challenges we have identified in the Global Trends Report 2013.

For instance, the Labour of Love Trend reveals the importance of creating solutions to support specialists. Nordics start-ups such as Kiosked, a smart-content platform, and Eliademy and GrabCAD, which are learning platforms, enable people to achieve mastery and to exchange and grow their expertise.

The Personal Odyssey Trend stresses the importance of helping people discover more about themselves and the world around them. In the Nordics, video services from VionLabs and Magine or content services such as Tunaspot, Vamos and Surftrain enhance the content discovery experience.
In the Nordics we discover many start-ups with a strong focus on sustainability that echoes the Sustainable Utopia Trend. For example, Terranet provides connectivity to remote locations and start-ups like Enevo and ZenRobotics offer innovative solutions for better resource management.
The Intelligent Disobedience Trend shows that people increasingly leverage technology to challenge the status quo and create alternative systems. During our Nordic research we found innovative services such as Crypho of-

fering encrypted safe and secure communications and Holvi, which provides an alternative to the traditional banking system.

Nordic start-ups like Uplause and Opphos, provide ways to link real-life gaming with digital gaming, bringing more physical and embedded interaction as we identified in the Physical Pixels Trend. Another interesting start-up, Volumental, is experimenting with Kinect and 3D to create a scan to print app, which will allow makers to turn their dreams into physical realities.

Finally, we found some great start-ups in the fields of wearable technology with Memoto, a small wearable life logging camera that enables users to create a continuous life log, and Korulab, a fine software and user interface for social jewellery products. We also found some interesting start-ups in health monitoring such as OmegaWave and Moves.

Conclusions

In many ways the Nordics give us a glimpse of how mass adoption of technology will impact on society: more participation, more demand for transparency, more egalitarian and meritocratic systems, but also more rebellion and challenges from informed and educated citizens.

Many aspects of Nordic culture contribute to foster a favourable environment for innovation and entrepreneurship.

The innovation successes are often the results of great collaborations

Findings and conclusions

Findings and conclusions

Studies of the twenty emerging spots and the five case studies have highlighted important patterns that demonstrate what factors are important when it comes to an emerging spot. Some of the findings are from people that we have interviewed; others come from the data we have gathered and are seen in the comparative analysis that has been made.

The emerging spot backbone

In all of the places where we see a growing number of start-ups within the field of mobile services, we also see a large presence of what we call **"the creative class"** (an expression from the US researcher Richard Florida). All of the places in the top 20 list have a large creative class community, and in the five cases that we have studied more deeply, the presence of artists, developers, media people and other knowledge workers is significant. Very good examples of this are: the Shoreditch area in London, Kreuzberg in Berlin and Möllan in Malmo; only five years ago all these areas were regarded as rough neighbourhoods, and today they are regarded as the hippest places in the region. The combination of cool clubs, new restaurants and well-educated inhabitants seem to be the most important factors when we look at the start-up scene in Europe.

The **ability to attract the right talent** should not be underestimated, but if you look into policy documents from most regions in Europe, this is still an area where more work needs to be done. Of course everybody realises that talent is important, but few regions have a clear strategy on how to attract talent (not only within Europe). All of the interviewees in our research have said more or less the same thing: A rich cultural life, top class restaurants, openness, a democratic society, multicultural environment and so on, are key factors. Researchers like Richard Florida and Daniel Pink have already pointed out most of these things. Very few regions in Europe though, have, for instance pointed out that the **cultural sector is a key element** to attract the right talent; even though this and many other studies show a very clear connection between culture and the creative class.

Correlation between different factors

We have also seen that successful regions often have the right mix between different important factors. You don't have to be strong in everything, but, if you are weak in one part, you need to put more effort into other areas. However, when the values of the parts in the market mix are more equal, we do see that **some factors play a larger role** than others in those regions that have succeeded. Some of the very clear correlations found were:

Industry presence and access to capital beats policies

Some of the regions in our study have very well developed regional policies. Amongst the five case studies, Barcelona and Catalonia where exceptional with very well-developed policies, probably one of the best defined in Europe. But, we could also see that a region with almost no policy at all (like Berlin) or with a very general policy (like London or Malmo) had a higher success rate due to the fact that either access to capital or industry presence was higher. Looking at other studies has also strengthened our finding that **policies** alone are insufficient if the industry presence is low and access to capital is **limited.**

History is more important than we believe

When looking at the different regions we can see a clear pattern, those who have a history within the mobile industry, research in mobile technology or areas that are close to the mobile industry have a higher success rate than those who have none at all. We can also see that regions with a history of heavy industry where the transformation to a more knowledge-based society has taken place are over represented in the statistics. This leads us to believe that **"telling the story"** about the region is important especially for the image the region and its inhabitants have about themselves. We can see this very clearly in for instance Estonia, where the nation has been very successful in telling the story about Estonia and giving a positive image to both the Estonians and also to people from outside the country. This has certainly affected the output for the mobile sector in the country. Recent activity during the past 4-5 years can be important, for instance in

the Malmo/Lund case, where a number of acquisitions of SMEs by Apple, Microsoft, Intel and Huawei has helped to build the image of an innovative region.

Incentives has low impact

Many regions have tried different types of financial incentives in order to attract SMEs into the region. Tax deductions, cheap office space, business developers etc. have been used by regions in order to increase the flow of start-ups from other parts of Europe. During the interviews with the start-ups it is very clear: financial incentives are of course interesting but the final decision is often about other things such as access to **talent**, low levels of **bureaucracy**, closeness to the **market** and **critical mass in start-ups** (more start-ups is regarded as good). We see this very clearly in the case from Catalonia/Barcelona where some of the companies we talked to had decided to move due to the complicated tax systems and the fact that the initial tax deduction they got when they started had ended.

A small home market is often an advantage

Why is it that countries like Sweden, Denmark, Finland and Estonia can produce company after company that reach the world markets, even though they are countries with a very small population? The answer is probably (and confirmed by interviews) that **when you have a small home market, you are forced to think about internationalisation from the start.** There is also a significant difference between for instance an SME in Southern France whose main focus is trying to get into the market in Paris and a start up in Estonia or Lund who are focused on starting selling in Silicon Valley. Regions could probably make a difference in how business support is set up with focus on internationalisation outside the country.

Infrastructure, infrastructure, infrastructure

If we name only one factor that we think (as-well as the SMEs interviewed) is important, then it is infrastructure. The best example from this report is London, where the national government has **focused mainly on infrastructure investments and not on butilding advanced innovation systems.** This has paid out in the Shoreditch area. The infrastructure has helped the

start-up community to grow rapidly over the past five years. We can also see this clearly in Berlin where there is a huge number of start-ups located around the number 7 metro line, or in Barcelona where the area of 22@ Barcelona has the entire infrastructure that is needed.

But we can also see that it is not enough to provide just a company oriented infrastructure. **The creative class demands good public transport, 3G and 4G connections all over the city,** Wi-Fi in cafes and bars and of course, fast internet connections to peoples homes. This is something that we have seen as a problem for people, in for instance, Barcelona where there are still problems in getting fast domestic internet connections (and where also the delivery time is too long). This is an area where public authorities can have a great impact on how to provide infrastructure investments, based on a sound understanding of business needs.

Public sector can play a role as a buyer

As we have seen in Estonia, the public sector can help the mobile sector to grow by introducing a number of advanced mobile services. Estonia is still the most mobilised country in Europe with everything from tax declaration to voting in public elections possible on your mobile. It was also amongst the first countries in Europe to introduce for instance, mobile parking systems, text message payments and mobile bank transfers. There is still a lot that could be done in this area and there is a very **clear correlation between systems of well-developed public services that are mobile and a growing start up community** within mobile services. A simple service such as mobile payment for using public transport is something that will create growth within mobile start-ups.

Lack of capital can be compensated

Another finding is that some of the regions in the study suffer from a lack of capital, for instance the Malmo/Lund region and Estonia. In Estonia this has been mitigated by a very **clear national agenda** where the state has been a buyer. In Malmo/Lund the **presence of large companies** like Sony Mobile, Ericsson, Microsoft, Huawei and Intel has provided the injection the start-up community has needed to start growing. In both Estonia and

Malmo/Lund the ecosystem with large potential customers shows that lack of capital can be compensated for and that in the long term the ecosystem itself will attract traditional actors like VC companies.

Finally – what more?

Out of the 106 interviews that have been made some findings have been very clear whilst others are more complex and not so easy to validate. We have in this report chosen to put the spotlight on those factors that have been validated by the people interviewed and by the results that we have seen from the different regions. Of course there are other findings, personal opinions and things to think about. But, in order not to jump into any vague conclusions, we have chosen not to publicise them.

Some recommendations

Giving recommendations is something that you should do with humility and caution. People will usually look for an easy solution, but the reality is that there are no easy solutions and no “one size fits all” that could easily be implemented.

Our aim when writing this report has been to provide answers where appropriate. In some cases we supply recommendations, and where we see a trend developing we have highlighted the factors that are of great importance in creating excellence in the field of mobile.

We also believe that not all of the regions across Europe are suited to build clusters of companies within the mobile sector. The environment that is needed in order to create the excellence required doesn’t exist everywhere and we can’t do anything about that. It doesn’t mean that we should stop trying to develop new mobile services available for all regions across Europe, but it does mean that excellence within the field of mobile and mobile service industry only can be created in those regions where the right conditions are in place

We have chosen to divide the recommendations into different levels, based on how unique the conditions in a region are. This doesn’t mean that some regions are better than others; it just means that there are different levels of maturity in regions across Europe and that we need to adjust the regional policies to the prevailing conditions. The recommendations are therefore given according to three different levels of maturity that have been identified:

Excellence level is for those regions that are amongst the 20 emerging regions that we have identified in this report. It is also for those who are very close to being included in the top 20 list.

Climbing level is for those regions that have some of the things that are needed to create excellence, but still need to build critical mass or infrastructure in order to get further up on the value chain.

Challenger level is for those regions that don’t have an existing mobile or mobile service industry and where other sectors are stronger. They can be regions with a strong cluster within tourism or agriculture for instance, whe-

re mobile services will be a part of the core offer from these sectors but not an industry in itself.
Recommendations for the excellence level
Based on our findings, regions that are already very strong in the field of mobile or mobile service industry are advised to:

Secure access to capital

Especially for smaller regions, access to capital is crucial for a sustainable community of start-ups within the mobile and mobile service industry. This includes both public and private capital. It also includes different incentives regarding investments in start-ups (like the tax incentives that exist in the UK for instance). Very often, private VC companies also look at the possibilities to leverage on public money, this should also be considered in a regional policy. Accelerators should also be considered, since these are still initiatives that we see much more of in the USA.

Attract large brands

The presence of a well-known brand provides an injection into a region in many ways, but often not the ways that regional developers think. Big brands are often connected to job creation, but as we see for instance in London even the presence of name itself can provide a huge boost. When Google started its Google campus in London, it gave a boost to the region that nobody could have predicted. Google only hired a few people, but the inclusion of the name in itself has probably attracted thousands of jobs.

This has happened because the infrastructure required was already in place and the environment that supports start-ups is already there. Simply attracting a large brand (unless of course it is a factory) will probably not provide a sustainable solution for a region.

Indirect factors need to be pushed in policies

It has been said throughout this report that the human talent that is needed in those regions that are striving for excellence is of people who demand: a rich cultural life, a multicultural society & good public transport etc. This means that policies supporting the creation of excellence within the field of

mobile must be coordinated with policies around everything from culture to public transport. Those regions that are already in the "excellence group" needs to have a clear strategy on how to attract and keep talent in the region and it must be connected with the other factors that have been mentioned.

Don't interfere with the market

Most people would say that this is so obvious that it is unnecessary advice. But, unfortunately we have seen, during our work on this book, some examples where regions think that they can create a market. Our advice, based on our findings is not to attempt that. Those regions that rank highly on market access do so because the markets work there. Creating an artificial market through public incentives will not create sustainability, industries will move once the incentives disappear.

This advice should not be confused with public private partnership solutions that do of course work when the conditions are right. Also, the public sector can act as a buyer of new technology in order to create a start-up community - as we have seen in Estonia. Regions on the excellence level have probably already done these things. Institutional money should be invested in public infrastructure, support to culture & educational systems etc. This will provide a much better return on investment, whilst creating sustainable solutions that don't interfere with the market.

Recommendation for regions on the climbing level

Develop connections towards capital

Access to capital is one of the key factors to be considered when looking at start-up communities. Public policies should try to include incentives to attract private VC but also public financial instruments. VC companies want to see leverage of their funds together with public risk money and that should be part of a regional policy.

Policies should also include ways to communicate the strengths of the region to VC communities. This can of course be done in many different ways.

Policies should also include ways to communicate the regions strengths towards VC communities. This can of course be done in different ways.

Focus on strengths

All regions have strengths and even if the climbing region has a community of start-ups within the field of mobile, it will probably be wise to try to focus on other industrial areas that are already traditional strengths. This should probably be formulated in a smart specialisation strategy, focusing on areas that could help the region to achieve strength also within the mobile sector.

Build up knowledge and access to knowledge

When climbing, access to knowledge will at some point be the factor that decides if a region will be successful or not. There are some findings that are particularly interesting and that should be taken into account to affect regional policies.

Firstly, building knowledge within a region is a long-term action. It will take many years to increase the knowledge base, but there are some measures that can help in this process: Knowledge building should take place in close collaboration with industry. Industry knows what it needs much better than the traditional stakeholders in higher education. For example, the sector is in a great need of developers and to become a good developer you don't need to be an engineer.

Out of this comes the second finding: Vocational training has a much higher impact on knowledge access when it comes to developers, and this should be taken into account when developing regional policy. Therefore, policies should point towards industry and vocational training, rather than traditional stakeholders like universities (this is only valid for developing resources, not when it comes to R & D).

Attracting knowledge is also closely connected to indirect factors such as culture and the others that have been mentioned before. A policy supporting

the attraction of new talent should be focused on. Thereby building up an attractive society rather than just relying on financial incentives - which only seem to work only in the short term.

Invest in infrastructure

Infrastructure includes everything from public transport to high speed Internet. Regions that want to climb need a 360 degree infrastructure investment plan. Policies should therefore include long term plans for public infrastructure investments as well as strategies for how to, for instance, go from 3G to 4G and how to implement Wi-Fi spots across public areas.

Without good and sustainable infrastructure the region will not be able to attract the right talent. But, infrastructure investments must be directed towards the right goals. A region that provides companies with fast Internet connections and forgets about the public will probably have problems attracting talent. Therefore, a joined-up regional policy is essential.

Create policies around public sector as a buyer

PPP instruments and other types of activities where the public sector act as a buyer can stimulate SMEs in a region and help them to grow. A public sector who acts as a buyer with great knowledge or who acts via a public company will increase the speed in which R & D gets out into the market. A well-defined public policy supporting how the public sector can act act as a buyer of new innovations will help the start-up community to grow. We can clearly see this from the experience of Sweden, where mobile giants like Ericsson got a jump start in the 50s and 60s though joint R&D with the state owned telecom operator Televerket. So, active regions that can put demands on start-ups within the mobile sector in order to buy new mobile services will probably in the long term, create a sustainable mobile start-up community.

Recommendations for regions on the challenger level

Focus on the regions strength

A region with a non-existent or very small mobile or mobile service industry will do better by focussing regional policies on traditionally strong sectors. Mobile solutions should be seen as a tool in order to create excellence within a traditional sector. This means that a smart specialisation strategy must include how to cross fertilise a traditional sector such as tourism with the new possibilities that are opened up through mobile services. It also means that the focus from the region should be on trying to find the latest technology amongst other regions in Europe, and then building up knowledge on how to adopt these technologies across the region.

Build infrastructure

Challenger regions must very often focus on improving existing infrastructure. Regional policies should focus on how to improve infrastructure in order to improve the take up of new mobile technologies by traditional industries. In order to make this happen the region needs, for instance, to invest in efficient networks for data traffic. In urban areas additional Wi-Fi spots should be considered, or even, equivalent technologies should be installed.

Build trust

Innovation comes from collaboration between people. If a region is on the challenger level, it is very often that the level of trust is equally low. This causes problems when it comes to innovation.

Building trust is not easy, but public policies can help if they address the key question: How do we get people to start talking to each other? In this sense we need policies to create meeting places in a region where entrepreneurs can meet and share ideas. The role model for this is of course University Road in Palo Alto (Silicon Valley) where the open environment really encourages people to talk to each other and share ideas. The region should encourage open innovation processes, events for entrepreneurs and co-working

spaces for SMEs. Simple solutions are often the best, virtual meeting places have very low impact according to research.

Creating meeting places is also about using existing infrastructure like cafes and restaurants. Public policies should enable cafes to have flexible opening times, so that entrepreneurs can use them as meeting places and venues for discussions and sparking new ideas.

Build support systems for instance cluster organisations

In order to build trust, which probably is the most important thing for regions on this level, supporting public structures should also be developed. This study shows that regions with well-defined and experienced cluster organisations also have higher trust between companies than those regions without cluster organisations.

For a region in the challenger level, cluster organisations should be created to support growth and networks. Cluster managers need to have insight in the industry sector as well as in-depth knowledge about mobile services. The main activities for the cluster organisation should be: networking, knowledge building, matchmaking and internationalisation. Most of the activities can be provided through events, which will lead to people starting to meet and build trust with each other.

In order to get continuity, programs should be formed that support cluster organisations for at least 7-8 years. Since it normally takes 5-8 years for a cluster to start deliver results the funding programmes need to reflect this.

Putting the recommendations into a context

Policy recommendations are hard to develop. Either they get to generic so they don't appeal to the persons who are supposed to implement them or they are to specific so they more or less only work for one type of environment. That is why the project decided to develop recommendations on three different levels.

In order to find out how the recommendations work in reality, 3 innovation partnerships where created. Together with 3 different regions in Europe the recommendations has been put into a context, tested towards the regional innovation community and then transformed into contextualised specific recommendations that could be implemented on a regional level.

The methodology used was a combination of research of the region and crowdsourced information gathering using iterative techniques in order to involve as many relevant persons as possible. In each region the project performed an initial workshop with stakeholders from the regional innovation system, a second workshop with participation from different actors in the innovation system (also including SME:s) and then a final presentation also including feedback from the actors.

For each region a report has been produced which is downloadable from the EMMIA website.

Luxembourg - climbing towards excellence

The general findings and recommendations was put into a context and more specified:

- combine mobile technology with already existing industries for instance financial sector
- increase activities attracting talent
- make it easier to start up a company
- create test beds and large scale demonstrators
- create an open data portal in order to create new business opportunities

- build capacity through new digital ways of sharing knowledge
- introduce free wifi in Luxembourg
- increase collaboration between industry and university

The work has resulted in a policy brief with concrete actions to take for the public sector and a public presentation with feedback from the innovation community.

Kyustendil - challenging old mindsets and habits

The region of Kyustendil in Bulgaria faces many challenges: Old infrastructure, lack of talent, bureaucratic administration for SME:s, low self confidence and lack of financial resources. Even though there is a huge will to take steps forward in order to increase job growth and attractiveness of the region. The involvement of key persons within the regional public structure combined with experience from EU funded structural programmes, made it possible to put the general recommendations into a context and make them more specific:

- Focus on the existing industry (agricultural and tourism) and create a smart specialisation strategy around them. The strategy should address concrete actions in order to improve the possibilities to implement mobile services connected to smart agriculture, functional food industry and experience based tourism.
- Invest in infrastructure that makes it possible to be connected. The region needs fiber connections, upgraded 3G nets and access to public wifi. There is also a need for meeting places, preferably connected to existing industry structures for instance tourism.
- Increase education level by starting up higher education in the field of agriculture, functional food and tourism. This could be done in collaboration with either the university in Sofia or international universities.
- Work with trust building by creating for instance cluster organisation using the models existing in Europe. Activities should concentrate on networking and building trust.

Dublin - taking excellence one step further

The city of Dublin is one of those spots in Europe that already has achieved excellence in the field of mobile development. Involving stakeholders from both public sector, universities and industry recommendations ended up concentrating around finance and market access:

- Create better connections between public funding and private venture capital. This includes further development accelerators such as Wayra
- Develop long term relationships with the large brands in order to minimize the risk when multinationals leave
- Connect public policies around culture with enterprise policies. In order to maintain excellence talent must stay in the region and more talent needs to be attracted. Culture plays an important role.
- Improve existing policies with a sustainability module, with the goal to “make things work without interference from the government
- Create a map over what funding that is needed and connect this to the public policies

Some lessons learned

Putting general and often generic policy advice into a real context shows us how hard it is to develop policies that work. During the reality check we learned that the reality always is more complex than you imagine and that some things will take long time to change. But we also learned that Europe is filled with engaged, passionate and skilled people that wants to create changes in order to improve conditions in their region.

Reflections made:

- Words don't always mean the same thing. We need a common vocabulary in order to understand each other
- The more people you meet the better recommendations can you give. Crowdsourcing works perfectly well when doing policy recommendations
- Physical presence is essential. If you want to give advice to a region, you need to go there. Seems obvious but we have realised that this not always happens
- If you find the passionate persons on an early stage, life will be much easier.

Building excellence throughout Europe

This book was made with the intention to show how policies can help creating excellent regions throughout Europe using mobile technology. For some regions the technology in itself will create new jobs in the ICT sector, for other regions the technology will help boost existing industry sectors to become excellent in the future.

We will though finish of where we started - there are no easy "one size fits all" solutions that can be implemented in order to achieve competitiveness in the future. All regions have different strengths, prerequisites and culture. So think of the recommendations in this book as something that needs local adaption in order to work.

Follow the future implementation and the development for the innovation partners on www.mobilise-europe.eu and get inspired.

Annex

Methodology

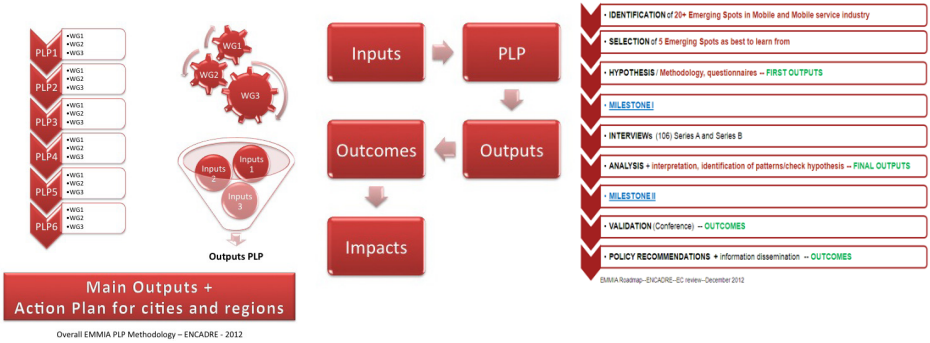
In order to foster mobile and mobile service industries in Europe a methodology to evaluate emerging european spots has been developed.
A massive convergence is underway today: social media, mobile & internet communication, clouds and large scale information databases (such as information from Copernicus and signals from Galileo) are transforming and building upon new user experiences and engagement while creating new business opportunities at the same time.

Although these forces are disruptive by themselves, taken together at a systems level they are reshaping the whole of society and the business world; shaking up old business models and creating exciting opportunities for new leaders. As such, the convergence of these forces is creating the basis of the technology platforms for the future. In this convergence of forces, information is the context for delivering enhanced mobile services like new location-based services (LBS) around the concept of “Place” and new mobile experiences on a larger scale.

Understanding how to capture the power of the ubiquity of information and focus on the smaller subset that is applicable to a specific company, product, service and/or client at a specific point in time, are critical factors driving new opportunities. Developing a discipline of innovation through information will enable organisations to adapt to client, employee, product or environ-mental changes. It will enable companies to move ahead of their competition. Ventures must take into account and respond to trends such as social media, mobile & internet communication, clouds and large scale information databases. In a world where everything is connected, every company has now become a technology company.

Mobilise Europe is an initiative that has been set up with the aim of understanding the drivers and barriers that enable the development of a strong Mobile and Mobile service Industry across Europe thereby creating more jobs and economic activity. The European Mobile & Mobility Industry Alliance (EMMIA) which is responsible for the mobilise europe campaign has been created with the support of the European Commission. The EMMIA Policy Learning Platform (PLP) was set-up right at the beginning of the initiative.

It drafted an EMMIA Terms of Reference and Roadmap (D2.1.1) in order to better assist and address the challenges ahead. The EMMIA PLP has set up a number of eco-system support working groups (WGs) to prepare individual implementation roadmaps for validation through consultation with external stakeholders. Three working groups have been set up in the areas of better business support (BBS), access to finance (A2F), and Large Scale Demonstrators & Interoperability (LSDI). The three WGs have gathered experts who have deep knowledge and experience in the related fields at regional level.



Overall EMMIA PLP Methodology – ENCADRE - 2012

The EMMIA methodology was presented in December 2012 and validated by the European Commission. This methodology consists of the following five steps:

Step 1: To gather statistics on emerging spots for mobile and mobile service industries and their related policies, without excluding professional “feelings” based on a proven know how (“gut feeling”);

Step 2: To generate a long list of (20+) of these European emerging spots (with and without rankings);

Step 3: To study the “real cases” mainly in a Face to Face manner with a unified and consistent methodology (how to do it) and to come up with a list of five emerging spots selected as “best to learn from” cases. To define robust indicators (10 indicators were defined) on policies implemented for comparisons defined by spider diagrams (mapping) or indexes;

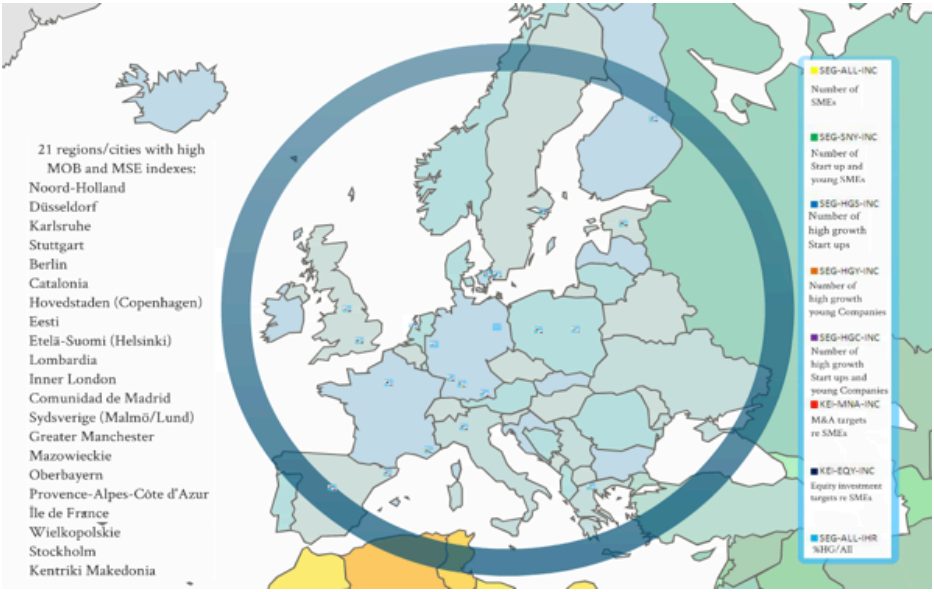
Step 4: To validate the first set of results/outputs and outcomes for recommendations for future policies (EC DGs, regions and cities);

Step 5: To disseminate the information with clear, visible and understandable results.

Five Steps and One Methodology

ENCADRE-EMMIA-Methodology

Based on a study of the European Cluster Observatory (ECO) and the methodology developed by the consulting firm PricewaterhouseCoopers, 21 NUTS regions were identified that were all being affected both with a mobility index (MOB index) and a mobile service index (MSE index), constituted by eight uncorrelated indicators of concentration.



ENCADRE presentation based on PWC indexes _ PLP3_Brussels_April2013

In parallel, an important gathering of data (quantitative and qualitative) took place between January and April 2013, enriched by inputs from ECIAP (European Creative Industry Alliance Platform), Mobicap partners (EMMIA Access to Finance – concrete action), PLP experts (including ENCADRE President – Cluster 55 Manager).

Regarding step 2, the results are summarised in Map 1 and Map 2 depicted on next page:

Identification of 20 + Emerging Spots

Map 1:

- Top of mind/international reputation monstly based on international studies.
- Startups (presence, concentration, growing rate, entrepreneurship spirit).
- Cluster (presence of clusters dealing with MMS, clear regional cluster policy, clear cluster organisation/identified cluster, focused and active/strong cluster).
- Informal structure and environment
- Political and regional support, clear agenda
- Major interntional events
- Industrial Tradition in mobilen and/or mobility industries
- Financial support
- Smart phones penetration
- Education

Map 2:

- MMS early adapters
- Startups (presence, concentration, growing rate, entrepreneurship spirit).
- Cluster (presence of clusters dealing with MMS, clear regional cluster policy, clear cluster organisation/identified cluster, focused and active/strong cluster).
- Informal structure and environment
- Political and regional support, clear agenda
- Major interntional events
- Industrial Tradition in mobilen and/or mobility industries
- Financial support
- Smart phones penetration
- Education

In step 3, the main objective was to select the best 5 cases “to learn the most” from the above list of the 20+ selected regions and then to determine robust indicators for index analysis and mapping (spider diagrams). For that, a series of interviews (series A) was held directly on site before the PLP3 experts’ meeting. The PWC questionnaire was used as a basis for this, aiming particularly at better understanding the regional business environment i.e. the framework conditions (FC) by assessing key factors such as Financial supports, Industry presence, Market conditions, Knowledge excellence, Regulatory and Policy environment, Support measures and Cultural development. The PLP interviewers also evaluated the Firms Strengths (FS) present in the

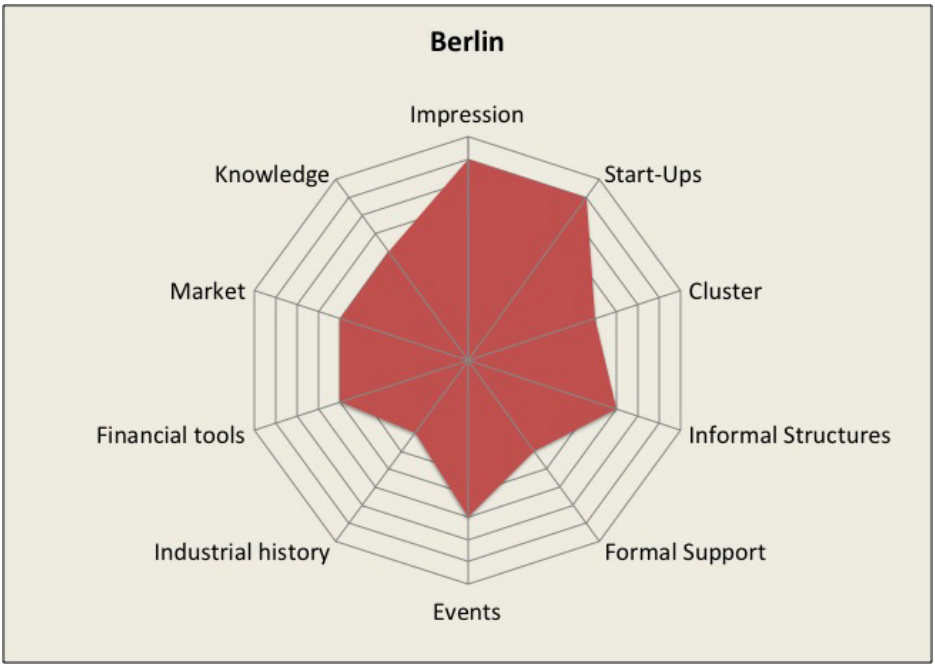
selected regions by using indicators such as Access to Funding, National and International contracts, Internationalisation, Human Capital, Entrepreneurship, Market Knowledge and Innovation Capacity. Finally, the PLP interviewers assessed the provided business regional supports (BS) at clusters' level evaluating at the same time the availability and effectiveness of the provided services. This PWC questionnaire (FC, FS and BS) is the tool to produce the indexes used in the PWC Emerging Industries scoreboard.

The PLP3 meeting (step 4) was then an ideal place for validating the first obtained "real results". At that occasion, the PWC questionnaire (which is a general tool for Emerging Industries) was refined during the different vertical WGs sessions.

With the outputs gathered, a new series of interviews (series B) was completed with key stakeholders groups such as firms, investors, business accelerators, policy makers, regional authorities, cluster organisations, research departments and technology transfer organisations in London, Berlin, Barcelona, Estonia and Malmö/Lund.

10 indicators (ranging from 1 to 10) were used for assessment and comparisons (they are depicted in details in the annex). The 10 indicators are:

- General impression
- Start Ups
- Clusters
- Informal structures
- Formal support
- Events
- Industrial history and synergies
- Financial tools and support
- Market
- Knowledge



To capture the essence of the ongoing changes were not so difficult when fully understanding that the web is the most powerful driving force behind all these new emerging mobile and mobile service industries. “The web will be everything and it will be nothing. It will be like electricity“, explained Eric Schmidt, Google, during a recent keynote. But when it comes to predict exactly which technologies will enable a new service to access the market and to be developed on a larger scale or where this will take place, the task becomes really hard.

In this very fast changing environment and more especially in this field where mobile and mobile service industries are both the driving forces for the creation of Emerging Industries and the receptacle of these changes, drafting policy recommendations is not so an easy task. And this was the case for drafting the methodology as well.

Emerging spots in mobile and mobile service industry across Europe

To identify emerging spots with the help of statistics is of course not a simple thing to and it is not so easy to provide the full picture. In order to make the picture as good as possible, several different statistical analyses have been the input into our analysis and combined with expert knowledge about the mobile industry and mobile service sector.

There will of course be other places and regions across Europe that could be regarded as emerging, but since this report has been created with the objectives of presenting some findings and also to try to learn something about conditions, policies, success factors etc. we have drawn the line at 20 spots. This also makes it easier for the reader to draw their own conclusions.

We have considered different types of regions across different parts of Europe. This provides a comprehensive picture of the mobile and mobile services industry across Europe. If we had only concentrated on statistical data the result would have been slightly different, with cities like Rome and Prague appearing higher on the list. Instead, we have taken into account aspects such as: start-up culture, support for SMEs and development within the mobile industry as well as a ranking of Venture Capital companies and as a result, the picture is different.

Assumptions made

Finding hotspots in Europe regarding mobile services and usage of these services with a connection to a clear regional strategy is not easy. But, in order to find 20 interesting spots, we have used the following assumptions:

- There is a correlation between high smartphone penetration and a large number of mobile services
- Places with existing mobile industry have also developed a high ratio of businesses within mobile services
- There is a clear correlation between a high mri (Mobile Readiness Index) and a high level of mobile services

10 different indicators

We have used 10 indicators to identify emerging spots on a scale from 1 (lowest) to 10 (highest):

General impression

Included: ranking amongst US VC companies, number of articles in relevant publications, general impressions from start-ups in the city.

Start ups

Number of start-ups in the field of mobile gives the ranking. However, what the start-ups say them-selves about the region is also important.

Clusters

Well defined policies and support from public authorities give a higher ranking. Taking into account complicated bureaucracy (like in Italy and France) also affects the indicator.

Informal structures

A large number of "bottom up" activities (like we see in places like London, Berlin and Malmo) give a higher ranking.

Formal support

Well defined policies and support from public authorities give a higher ranking. Taking into account complicated bureaucracy (like in Italy and France) also affects the indicator.

Events

If the region is able attract international events within the field of mobile gives it a higher ranking.

Industrial history and synergies

Those regions that have a history within the field of mobile and mobile technology rank higher. Rankings also reflect the R & D intensity in the industry (higher intensity will give a higher ranking).

Financial tools and support

Access to capital will give a higher ranking, but also tax systems (and levels) will affect the ranking. The general picture from VC companies is also taken into account.

Market

A high smartphone penetration and easy access to market gives a higher ranking. The indicator also reflects how well internationalisation strategies within the region are implemented as-well as a ranking on mobile readiness index.

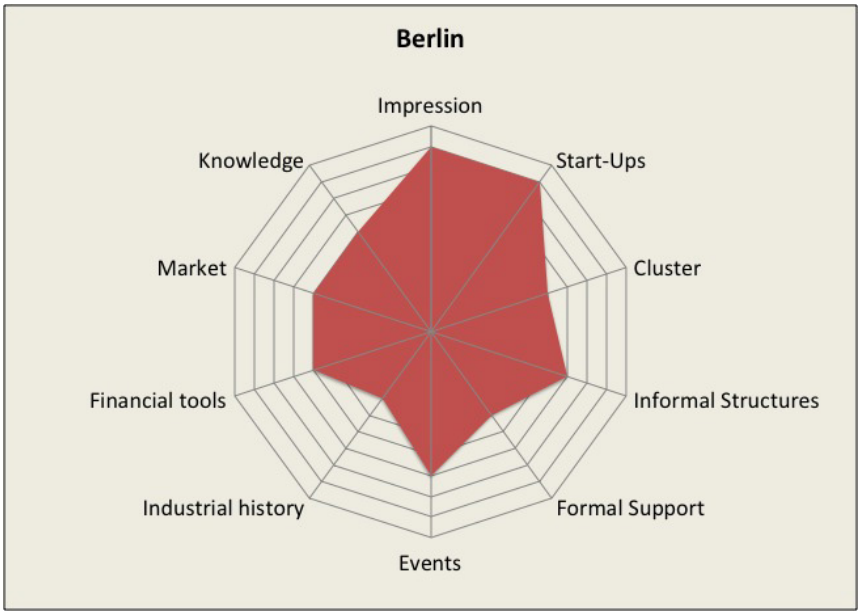
Knowledge

Being close to a well-known university with a history within the field of mobile technology gives a higher ranking, together with the general access to, for instance, developers within the field of mobile development.

The spots in no particular order

Berlin

Berlin is one of the fastest growing communities in Europe in the field of mobile and mobile services. The number of start-ups is high this has resulted in the attraction of a large number of venture capital companies.



Plus

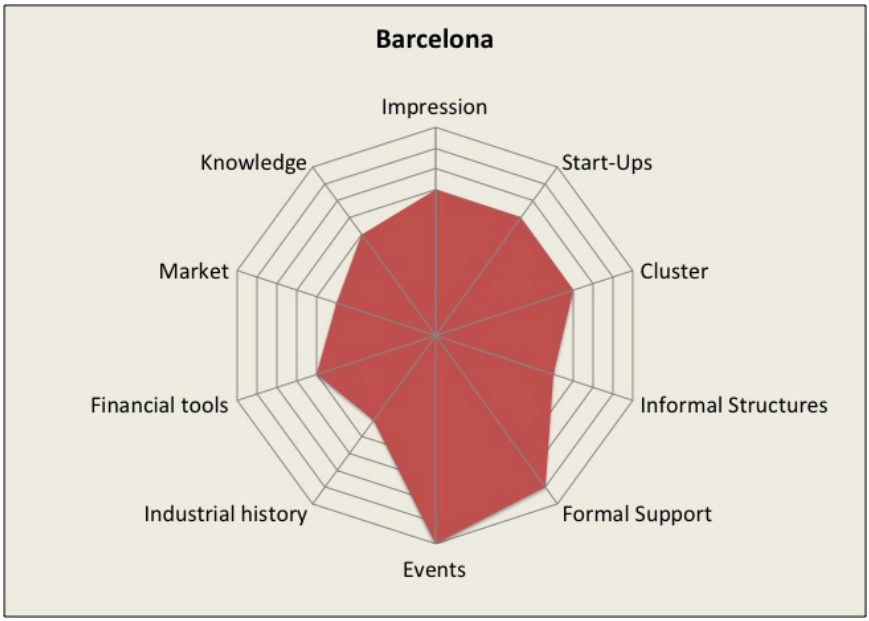
Together with London Berlin is the hottest place in Europe right now when it comes to mobile/start-ups
A lot of start-ups within mobile services
Several cluster organisations that support the mobile industry
A crowd-sourced environment

Minus

No clear regional policy
A very fragmented environment

Catalonia

Catalonia, with the city of Barcelona, have for many years regarded themselves as the capital of mobile, especially since the region has the largest event within the mobile industry – Mobile World Congress – and all the infrastructure around it. The region is also very well developed when it comes to public policies even though the output in some sense could be seen as disappointing.



Plus

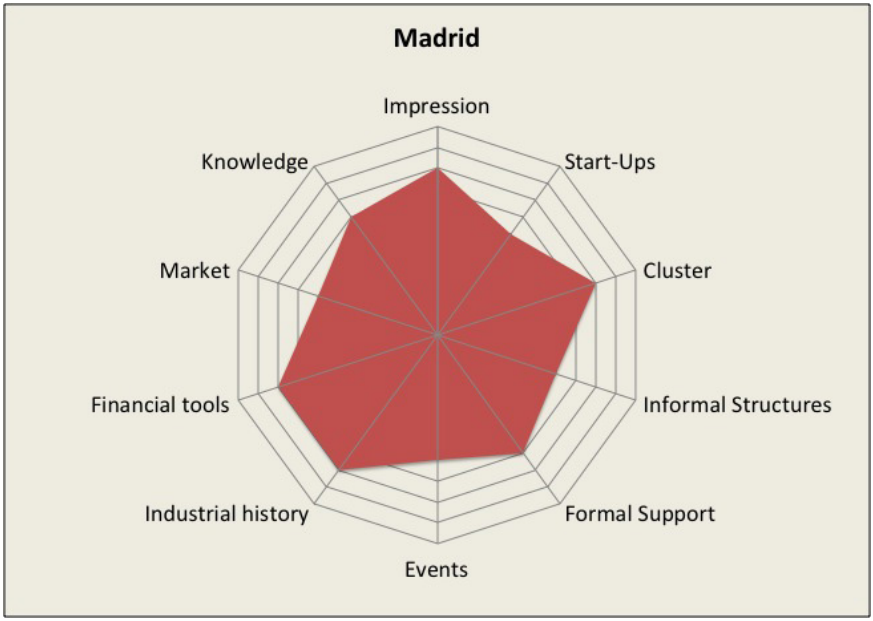
Hosts Mobile World Congress, making it the mobile world capital
A concentration of start-ups in for instance the 22@ area
Clear regional policies and cluster organisations Benefits from long term development

Minus

Hasn't had the development you would expect considering the amount of money invested
"More talk, less hockey" feeling
Only a few very concentrated spots

Madrid region

Madrid has the largest ICT cluster in Spain and one of the largest in Europe. During the latest years, the region also has been growing fast when it comes to start-ups and ecosystems for SMEs.



Plus

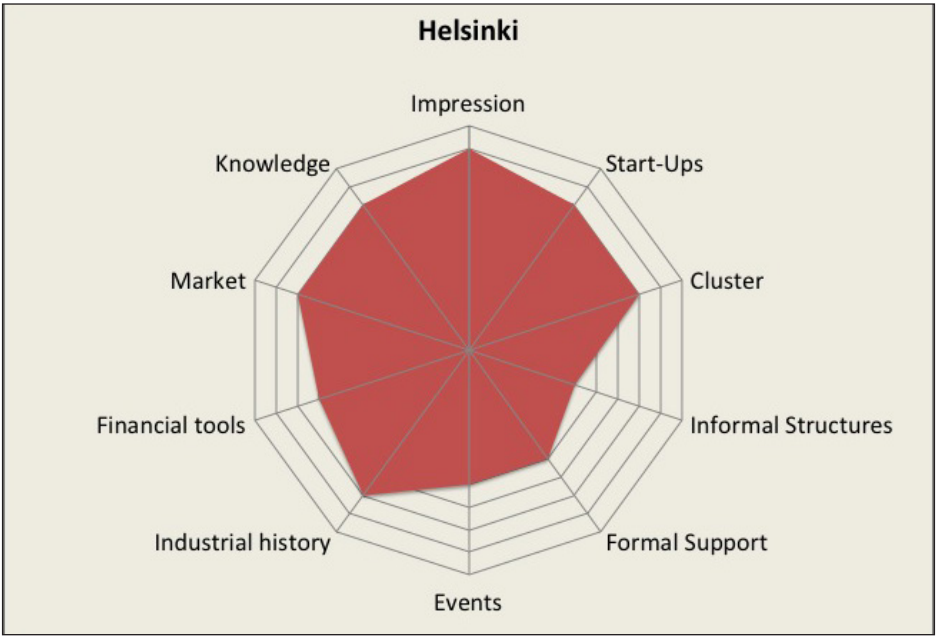
Highly ranked in studies, for instance the PricewaterhouseCoopers´study
Attracts a lot of capital
A growing start-up community
A traditional mobile industry structure

Minus

No real tradition in the field of mobile
No large interest from international investors
Lack of high profile companies
Low penetration of smart phones

Helsinki

The traditional mobile industry and, more latterly, different mobile services are very strong in Finland especially in the capital region – Helsinki. A number of new companies like Rovio (creator of Angry Birds) have turned the spotlight on Finland as a country that can not only create hardware but also applications and services.



Plus

Long tradition in the field of mobile
Very high smartphone penetration
High profiled brands in the region
A growing start-up community Clear cluster organisations

Minus

Very dependent on one large brand (Nokia/Microsoft)
Uncertainties in regional and national policies
Traditional industry focus
Weak start up tradition

Thessaloniki region

Even though Greece has been through several years of hard financial times, the region of Thessaloniki has created a vibrant start-up community within mobile services. There is a growing start-up mind set supported by regional policies, which probably will lead to even further growth in the future.

Plus

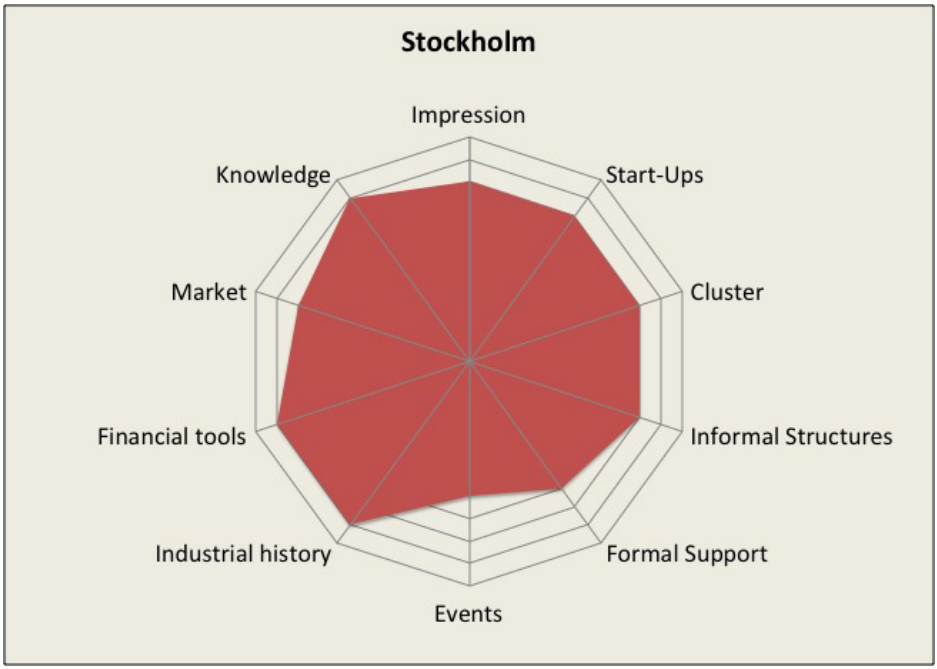
Very concentrated region
Strong focus on mobile services
Strong policy level involvement

Minus

Weak financials
Low smart phone penetration (and Internet penetration)
Weak tradition in technology start-ups

Stockholm

Stockholm is one of the places in Europe with the longest history in mobile technology. During the past years it has made a successful switch from traditional mobile industry to growth within the mobile services industry.



Plus

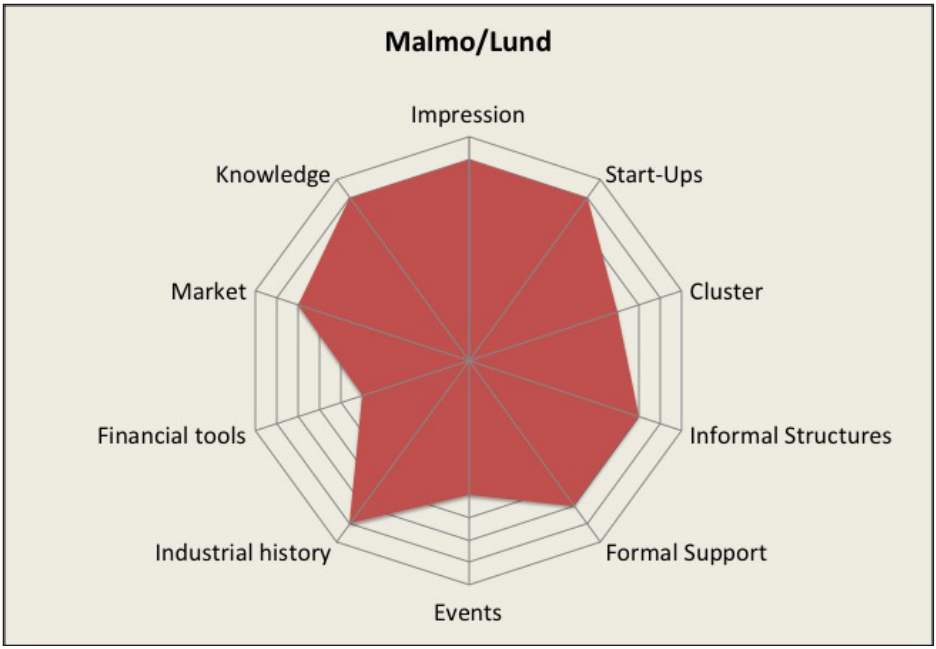
High smartphone penetration
Well-developed start-up community and culture
Good access to finance
Long tradition within mobile and mobile services

Minus

Very fragmented community
Low presence of cluster organisations
Lack of regional innovation strategies involving mobile

Malmö/Lund

The 3rd largest city in Sweden (Malmo) combined with the largest university in Sweden (Lund) has enabled the region to emerge as one of the most vibrant places within mobile technology and mobile services in Europe. This is demonstrated by the fact that several companies have been bought by Apple, Microsoft, Intel and Huawei during the last few years.



Plus

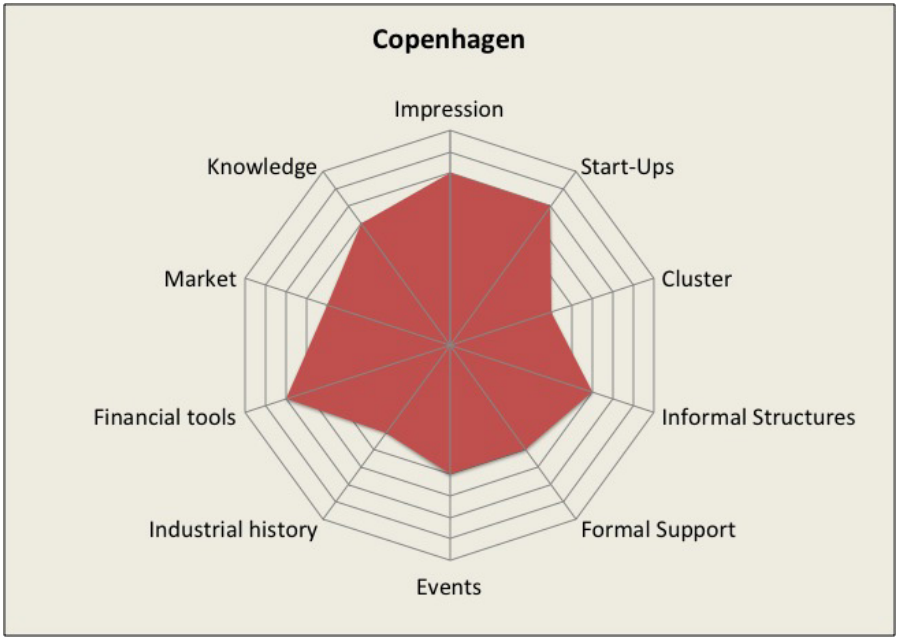
High smartphone penetration
Regional innovation policies that involve mobile
Focused and active cluster organisations
Long tradition within the mobile industry
Highest (per capita) number of mobile start-ups in Europe

Minus

Dependent on one large brand (Sony Mobile)
Low access to finance
Too much technology focus

Copenhagen

After the shut-down of the Nokia R & D facility in 2010, the start-up scene in Copenhagen has had one of the fastest growth rates in Europe. The sudden access to knowledge in the market gave a boost to the mobile sector in the city, combined with a large interest from US investors.



Plus

High smartphone penetration
Large start-up community (especially after the Nokia shut down)
Good access to finance
Strong creative industry

Minus

No presence of mobile actors
Mobile not part of the regional strategy
Weak tradition within mobile start-ups

Inner London

Together with Berlin, Inner London is currently the “hottest” place in Europe when it comes to mobile start-ups. Heavy investments from the UK government in infrastructure in Shoreditch for example, combined with the best access to finance in Europe have provided fertile soil for the growing start-up community.

Plus

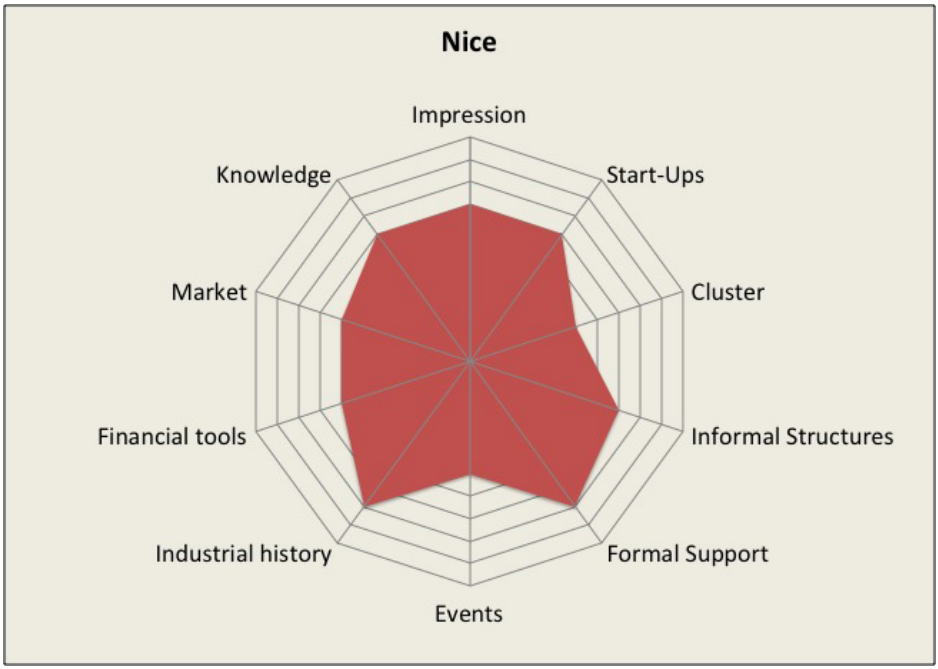
Strong access to finance
Clear connections with creative industries
Large critical mass in start-ups
One large concentration (Silicon Roundabout) of tech start-ups High smartphone penetration

Minus

No governmental support to cluster organisations
A very fragmented region
No tradition in mobile technology

Nice

With Sophia-Antipolis the Nice region still has a concentration of advanced ICT research and mobile technology within Europe. Even though the research park has had some setbacks when for instance IBM scaled down, the start-up community got an injection through access to knowledge.



Plus

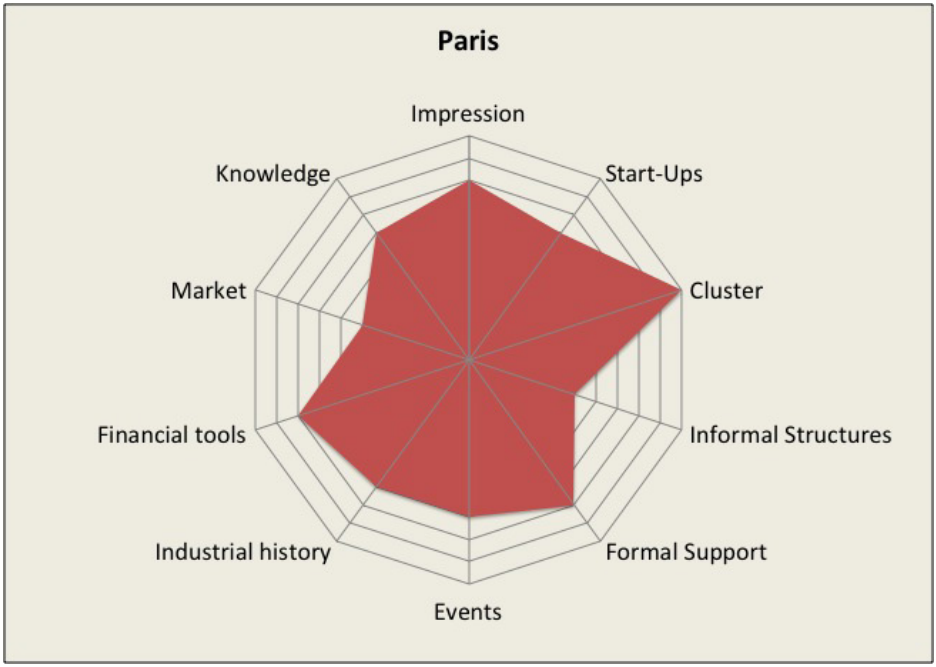
Well-structured regional policy
Highest ranked ICT-research in Europe (Sophia-Antipolis)
Growing start-up community Strong cluster organisations

Minus

A very fragmented start up community
Lack of large brands within mobile
Too much technology focus

Paris (Ile de France)

Paris has the largest ICT cluster in all of Europe. Of course this means that the Paris region is emerging in the mobile sector. It also has a good concentration of start-ups in mobile and mobile services.



Plus

Well-structured regional policy
Strong cluster organisations
Good access to finance
Tradition of highly developed technology solutions The largest ICT cluster in Europe

Minus

Weak tradition in SME growth
Tradition of using non-standardised solutions
No “early adopter” tradition

Amsterdam

Amsterdam always gets a high ranking on innovation and support for start-ups. The city has been active when it comes to attracting mobile start-ups. It also has a very well defined strategy for attracting ICT companies in general, which has paid off lately.

Plus

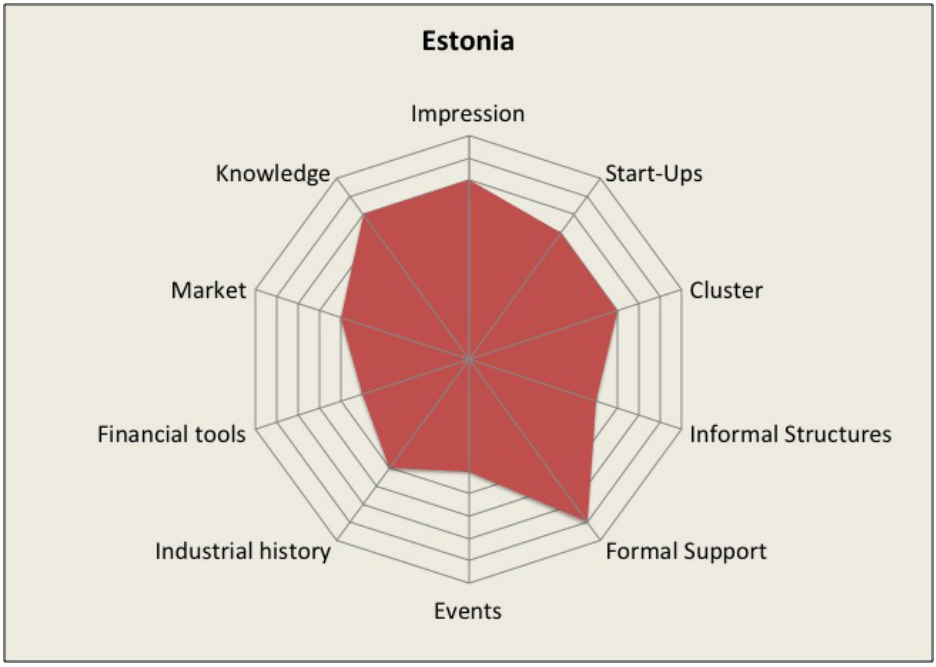
High ranking in different innovation scoreboards
A fast growing start up community
High smartphone penetration
Good connections to creative industries

Minus

No tradition from mobile industry actors
Depending on one large MNE (Philips)
No regional mobile policy agenda

Estonia (Tartu and Tallinn)

As one of the emerging countries in the former Eastern bloc, Estonia has shown that national policies work as a way of boosting the economy and start-ups. Also, the large availability of public e-services have provided a boost to the growing start-up community that we now see in Estonia.



Plus

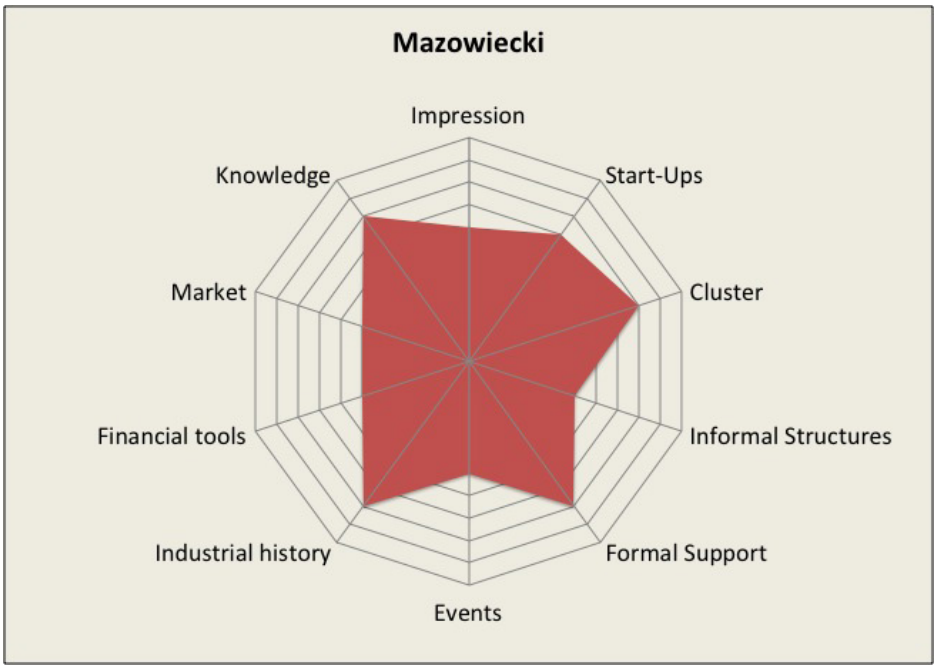
Early adopters of technology
Very high ranking on innovation scoreboards
Large number of public mobile services (for instance polls) Large number of start-ups

Minus

Low access to finance
No large MNEs to support SMEs

Mazowieckie

The capital region of Poland has the country's highest concentration of mobile technology companies and has developed a well-defined strategy in how to build a start-up community within mobile services. Access to knowledge in the Polish capital is also good and public infrastructure investment has been high during latest years.



Plus

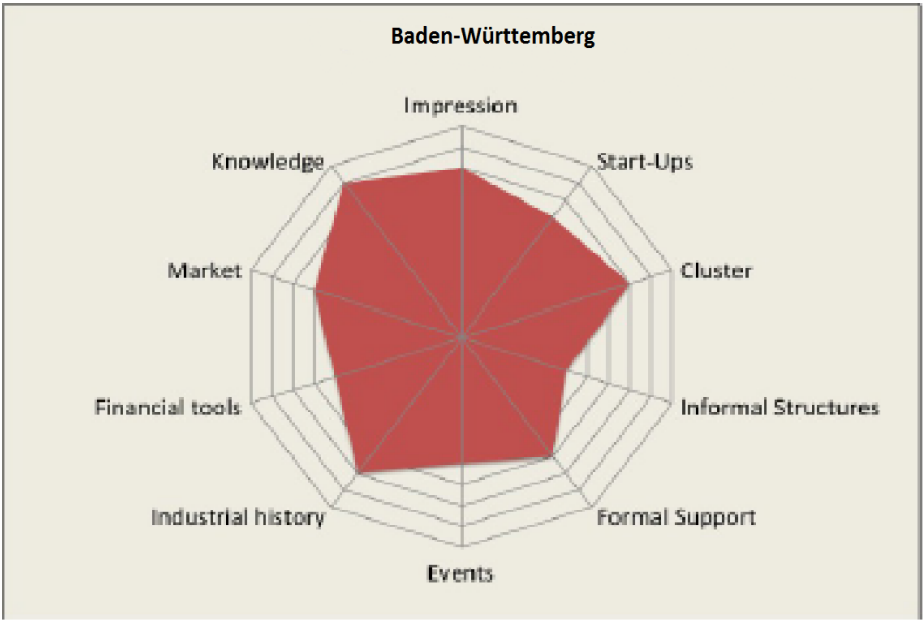
Fast growing SME community
Strong regional involvement
Clear cluster organisations

Minus

Low smartphone penetration
Low access to finance
No mobile industry tradition

Baden-Württemberg (Karlsruhe, Stuttgart)

With the Karlsruhe Institute of Technology – KIT – the region has the soil for advanced mobile technology solutions and start-ups connected to this. There is also a tradition in building collaborations between large industry actors like Mercedes and young companies emanating from research at the university.



Plus

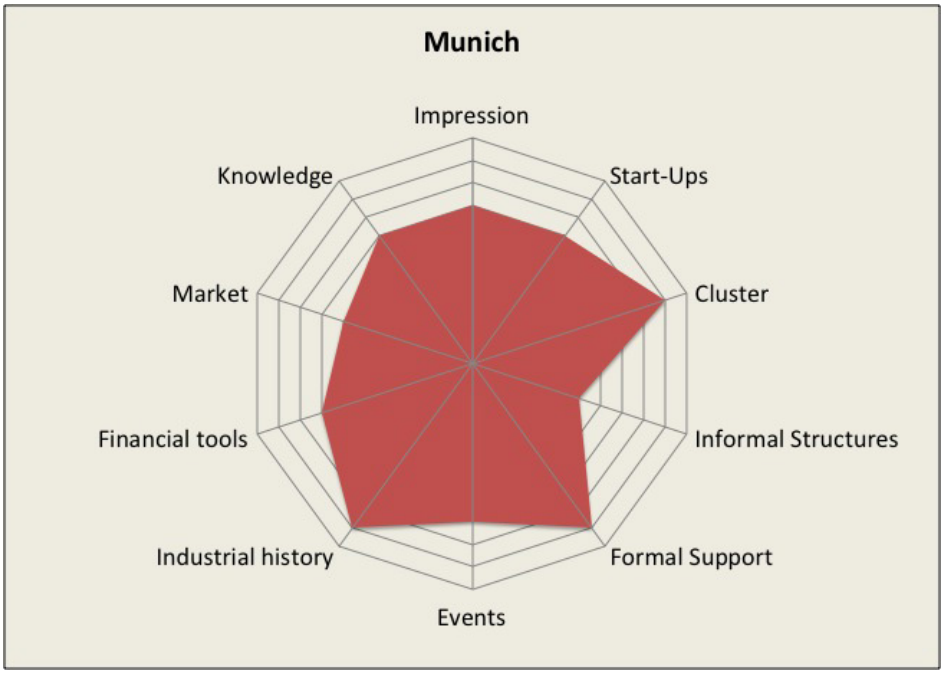
Strong tradition within mobile
Very high ranked university (KIT)
Growing start up community
Well organised clusters and cluster policy

Minus

Low access to finance
Weakly positioned within the mobile community
No early adaptor tradition

Munich

With the strong economy and concentration of large multinational companies (like BMW and Siemens), the city of Munich and the region of Bavaria also has developed a growing start-up community within mobile and mobile services. Very well defined cluster policies have created a fertile soil for the emerging industry in the region.



Plus

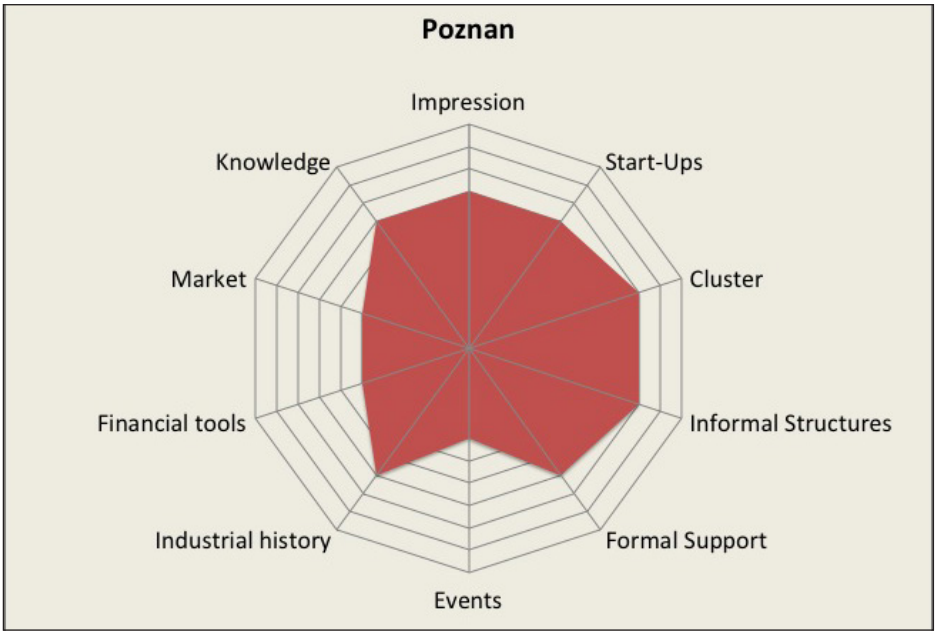
Well defined cluster policies and organisations
Good industry structure
Good access to finance
Growing start-up community

Minus

No early adopter tradition
No traditional service economy
Strong traditional industry focus

Poznan

With one of the most prestigious technological universities in Poland and also a young population with ambitions to start companies, Poznan has an interesting emerging environment within mobile technology and mobile services. The cluster organisations have regional support and there are very well defined policies on how to grow the number of start-ups within mobile and mobile services.



Plus

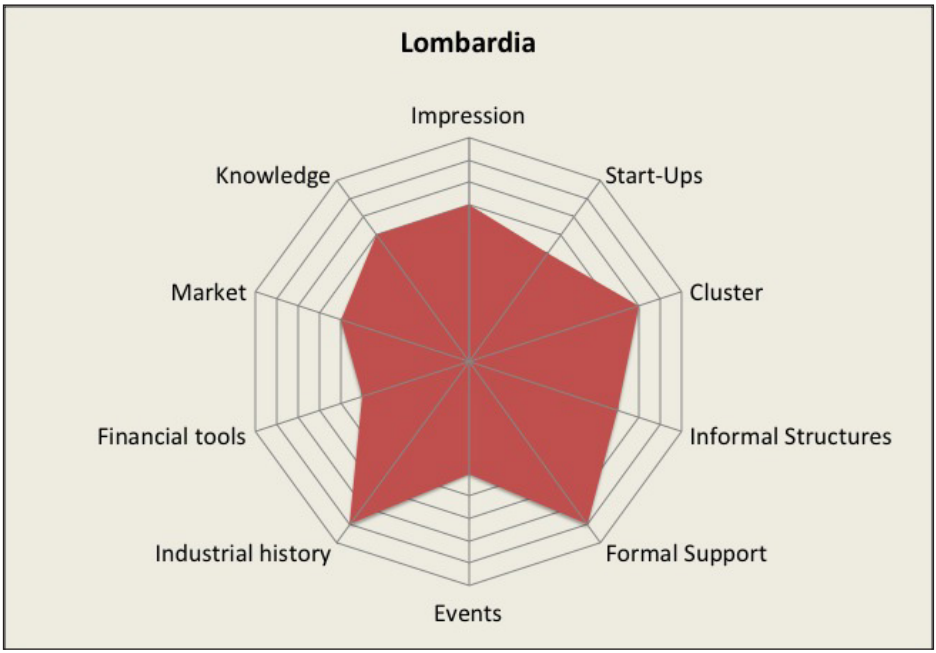
Well defined cluster policies and organizations
Fast growing start up community
Very active SMEs with international focus Mobile services part of university classes

Minus

Low smartphone penetration
Low access to finance
Growing lack of developers
Infrastructure is still not the best

Lombardia

The region of Lombardia in Italy has a strong industrial background and also some of the largest companies within the mobile industry. The city of Milan has also been able to start combining strong sectors, for instance fashion, with new mobile technology; this has created an emerging start-up community in and around the city.



Plus

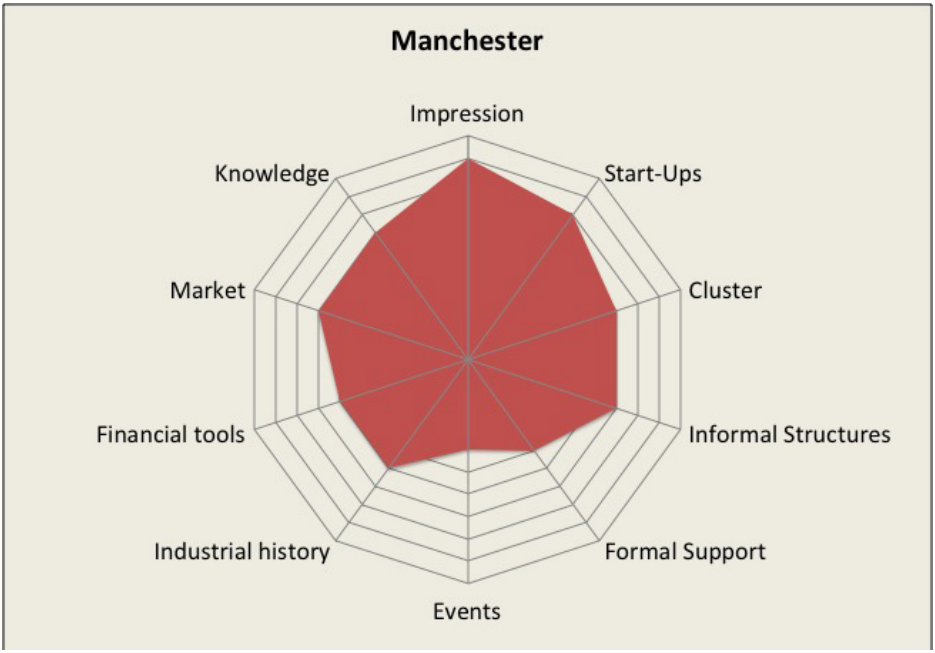
Well defined cluster organisations
Connection to mobile industry companies
Tradition of mobile companies
Growing SME community within Mobile Europe

Minus

Low smartphone penetration
Low access to finance
No tradition in using mobile services
Challenges with infrastructure

City of Manchester

The old industrial city of Manchester has achieved a turn around and is now one of Europe's most interesting places for the creative industry, media and mobile services. The combination of different sectors, such as creative industry and mobile has created a strong start-up community in spite of the city's history which has been focused on traditional heavy industry.



Plus

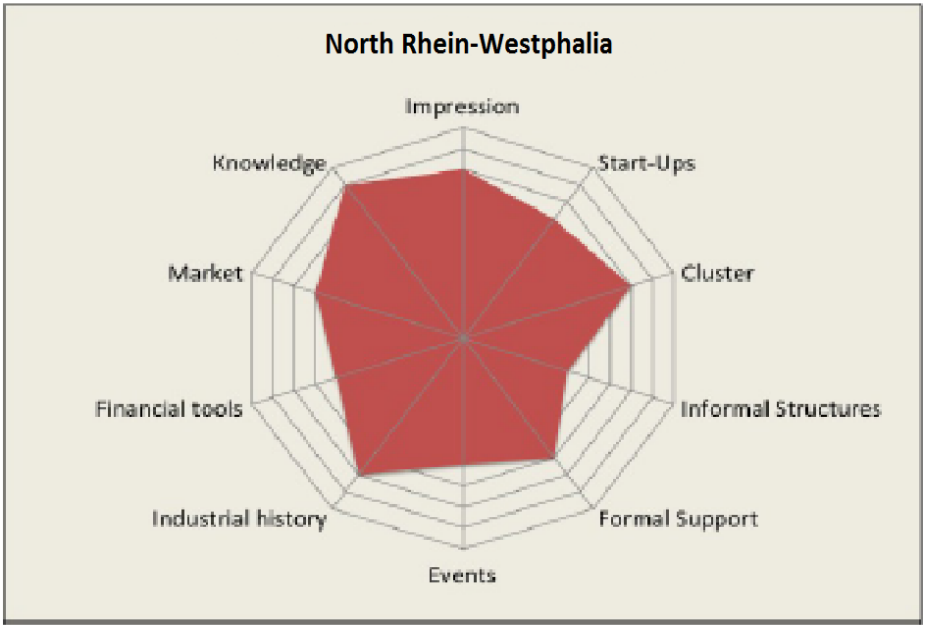
High ranking on innovation scoreboards
Growing SME community
High smartphone penetration
Good connections with creative industries

Minus

Fragmented community
No service tradition
Lack of national interest (concentrated to London)
No early adopter mentality

North Rhine-Westphalia (Düsseldorf)

Being a region with a history of traditional industry, the city of Düsseldorf has emerged into a city with a vibrant creative industry and a mobile service industry connected to that. Since the access to capital and smartphone penetration in the region is high, the soil for start-ups is favourable.



Plus

Highest concentration of SMEs within mobile services in Germany
High smartphone penetration
Tradition within the field of mobile
Regional policies and cluster organisations within mobile

Minus

Low access to finance
Weak industry structure
Low tradition in supporting SMEs

International Context

To assess Europe's real position in the global context concerning start-up communities and the environment is not easy. Additionally, we focus on the emerging sector of mobile services and this is often hard to separate from the general IT industry or even from the traditional industries in particular cases.

On top of that, the quality of available information and the comparability of datasets from different sources is limited and do not give a consistent picture.

The following analysis is an experiment to make comparisons based on open data archives.

Mobile and mobile start-ups: a quantitative analysis using data mining of open access database archives

This annex is a quantitative analysis of the landscape of European mobile and mobility start-ups using data available in open access databases. The CrunchBase database was used both to research the number of start-ups and to study data relating to funding of start-ups. Data from personal profiles on LinkedIn.com were used to determine the relative order of magnitude of the human resources available in the regions studied. Data from the start-up competition The Europas (Berlin, 22 January 2013) were also analysed.

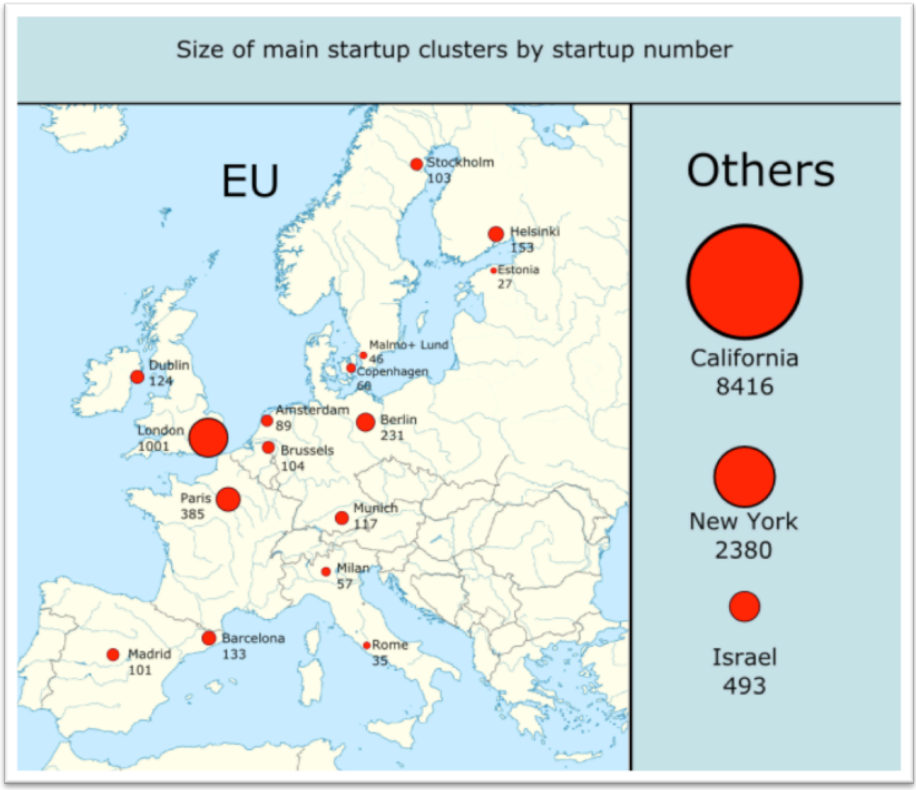


Fig. 1 Number of startups. Source: CrunchBase.

For the first approximation, it was decided to use the simplest possible parameters for a relatively objective view of the situation. There are more than 100 start-up accelerators in the EU alone, and every European region would like to be seen as the new Silicon Valley. To verify these claims it is helpful to begin with an examination of the reality based on the use of simple parameters that are difficult to manipulate.

In addition to the European regions, this analysis includes, for comparison, data for two of the main regions in the U.S. and for Israel.

The data presented in Figure 1 are related to all start-ups and not just those in the mobile industry; this choice is justified by the correlation between mobile start-ups and overall start-ups. Almost all the regions analysed have a very similar percentage of mobile start-ups (7–10 percent of the total); some apparent discrepancies, such as those related to Malmo and Rome (13 percent), are not statistically significant (they correspond to a single start-up).

It seems, therefore, that the specific local factors that can encourage the creation of Mobile start-ups, if they even exist, have a relatively minor impact. For this reason, the use of data relating to all the start-ups appears to be justifiable. The main advantage is the reduction of statistical noise.

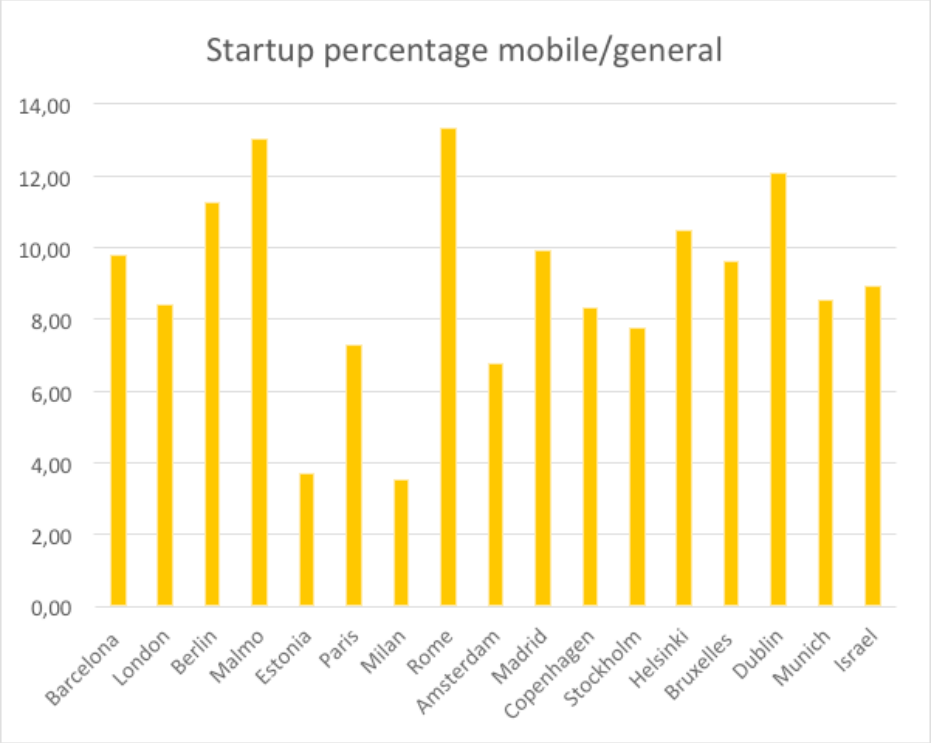


Fig. 2 Mobile vs General startup ratio. Source: CrunchBase.

An additional advantage is the inclusion of those companies that are not formally in the Mobile category but on mobile platforms and generate much of the revenue, for example producers of video games or social networking applications.

Looking at the data in Figure 1, we see at once how the European start-up scene is characterised by a strong polarisation around the cluster of London, the only one with comparable in size to the U.S. and Israeli clusters.
The other two major clusters in Europe are Paris and Berlin, and if we consider the total number of start-ups, Paris would seem to be the most promising cluster in continental Europe. However, we shall see, by analysing other data, that the situation is more complex. Berlin has experienced significant growth in recent years and there are great expectations for the future, but it has a long way to go to reach London.

Temporal analysis

Figure 1 gives the sum total of the number of high-tech start-ups that have registered on the Techcrunch site over a number of years. These figures are a reasonable indicator of regional performance in the medium term, but may not accurately represent the recent trends. Accordingly, we analysed in detail the data in the database, studying the evolution of regional performance as a function of time. The full results of this analysis are given in Table 1, and some of the most significant data in Figure 3 and Figure 5.

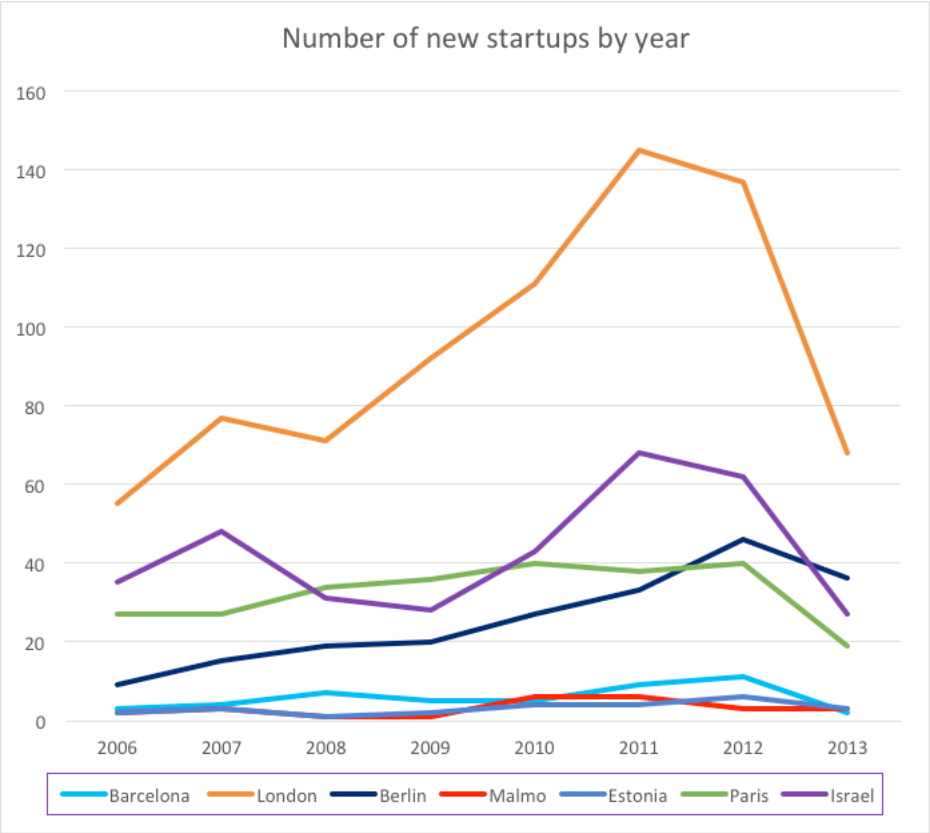


Fig. 3 *Number of startups by year. Source: CrunchBase.*

We can see that, with the exception of the data of 2013, heavily influenced by macroeconomic factors, the region of London has not only the largest number of start-ups but also the highest growth trend in absolute terms. The growth of Berlin is just as fast as a percentage, but as absolute values is slower, although stable and less affected by cyclical factors, probably also because of Germany's good economic performance during the period. The performance of the Paris region, on the other hand, does not appear very bright, with a flat trend even during periods of high economic growth. Rome and Madrid in this period show a steady upward trend, but in the case of Rome, the values still appear extremely low.

	2006	2007	2008	2009	2010	2011	2012	2013
Barcelona	3	4	7	5	5	9	11	2
London	55	77	71	92	111	145	137	68
Berlin	9	15	19	20	27	33	46	36
Malmo	2	3	1	1	6	6	3	3
Estonia	2	3	1	2	4	4	6	3
Paris	27	27	34	36	40	38	40	19
Milan	4	7	1	1	8	4	6	2
Rome	1	2	2	3	2	5	4	9
Amsterdam	15	20	34	10	7	5	7	2
Madrid	6	3	8	12	12	12	29	3
Copenhagen	5	1	1	3	2	1	5	2
Stockholm	5	13	14	6	3	6	4	1
Helsinki	10	8	5	16	14	15	14	8
Brussels	5	20	18	8	11	3	5	2
Dublin	5	6	8	14	14	14	18	10
Munich	5	9	13	5	12	12	7	3
Israel	35	48	31	28	43	68	62	27

Table 1 Number of start-ups by year. Source: CrunchBase.

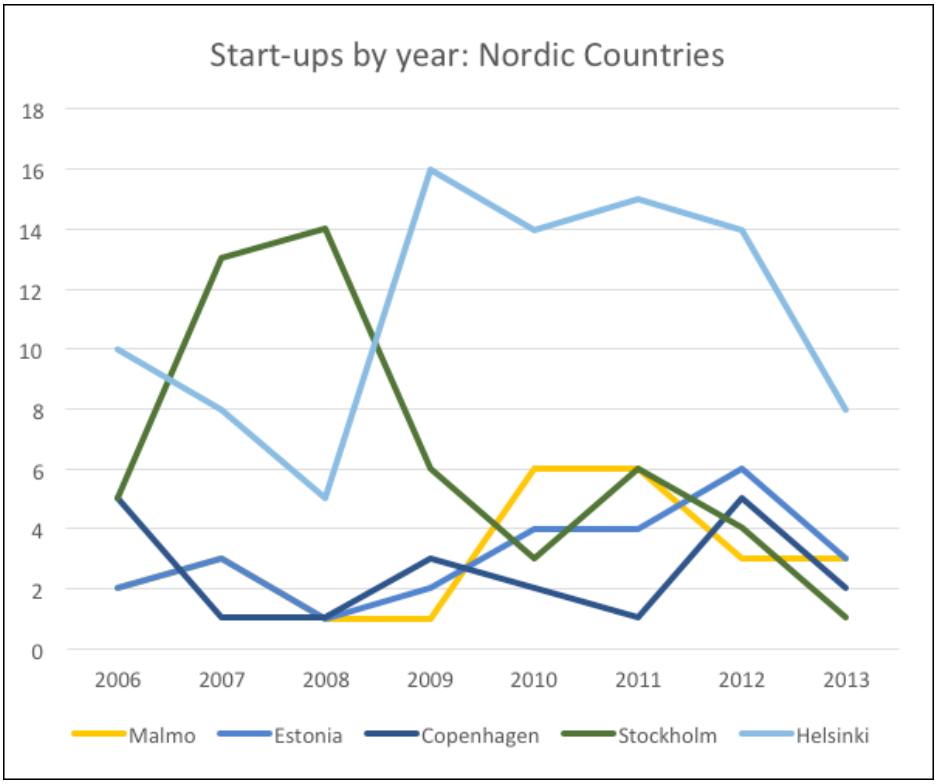


Fig. 4 Start-ups by year: Nordic countries. Source: CrunchBase.

The Nordic region that shows the most stable growth over time is Estonia, but, as in the case of Rome, the absolute numbers are very small. In the case of Helsinki, the effect of the Nokia crisis can be seen. Since 2008 a series of layoffs has brought a consistent flow of software developers into the labour market, and Nokia has offered strong economic support to former employees who have tried to become entrepreneurs. This led, between 2008 and 2009, to a sharp rise in new firms, which did not always succeed. The evolution in the following years was not as bright, and between 2009 and 2012 it was substantially stationary, though the layoffs continued. The Stockholm area in this period shows a substantially negative trend, while for Malmo–Lund the trend is fluctuating.

The Europas, European Tech Start-up Awards (Berlin, 22 January 2013)

As further confirmation of the CrunchBase data, data on the geographical origin of start-ups that participated in the competition The Europas, held in Berlin on 22 January 2013, were also analysed. One advantage of these data is that they pertain to a specific period very close to us and permit us to identify trends.

Data from The Europas may be less representative than what CrunchBase provides, since participants in the contest are a self-selecting group. A process of self-selection affects even the CrunchBase data, but the reasons why a company registers with Techcrunch are probably more general and shared than those that lead to participation in a contest.

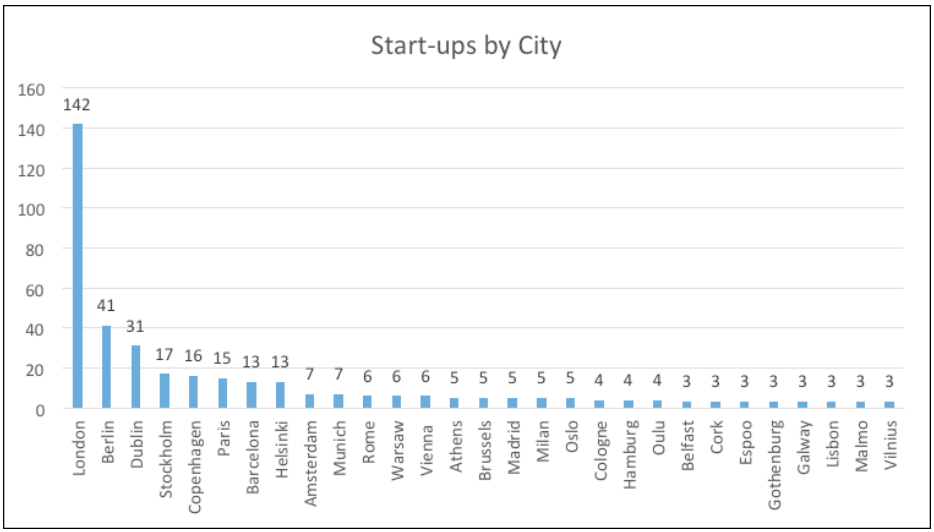


Fig. 5 Start-ups by city. Source: The Europas Awards (Berlin, 22 January 2013).

The data in each case confirms the trends obtained from the CrunchBase data. Berlin as a host city is probably slightly overrepresented. It can also be seen (Figure 6) that the geographic distribution of start-up applications in the mobile industry is very similar to the geographical distribution of all the other start-ups.

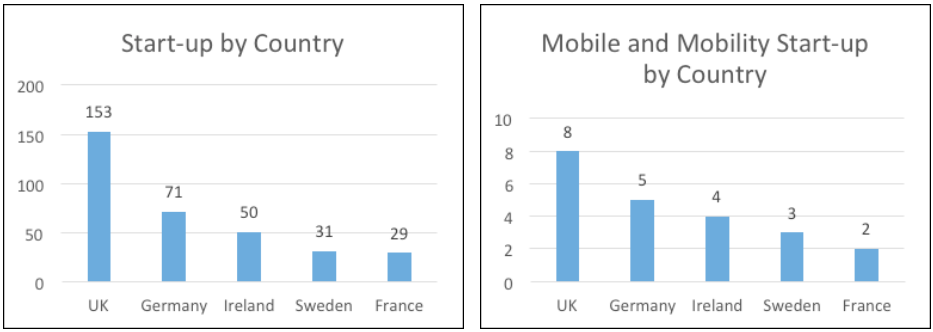


Fig. 6 Start-ups by country. Source: The Europas Awards (Berlin, 22 January 2013).

1. Financial Analysis

The number of start-ups in the region is an interesting parameter but, by itself, can lead to inaccurate conclusions. In fact it tells us nothing about the economic success of these start-ups, nor whether a start-up fails to survive as a small business or whether it is unable to raise the necessary funds to expand and become a major company. For this reason, we also analysed the value of the funds raised by the start-up of each region, and the origin of investments.

The first thing one might notice is that, considering the market for hi-tech start-ups based on the volume of investment, the importance of European clusters of start-ups is further reduced. The amount of capital invested in the start-ups of continental Europe is only twice that invested in the state of Israel alone and little more than a third of that invested in the region of New York.

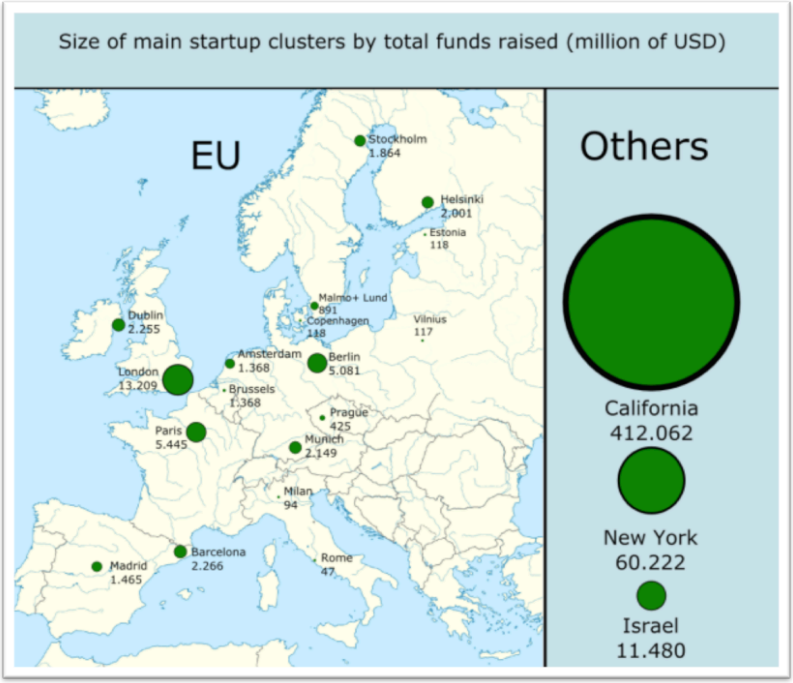


Fig.7 Funds raised (million USD). Source: CrunchBase.

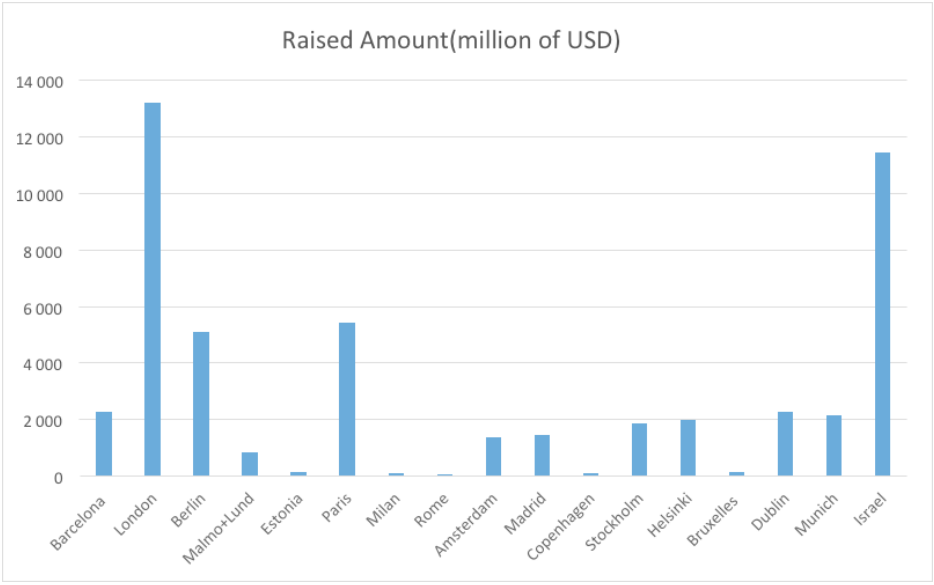


Fig. 8 Funds raised (million USD). Source: CrunchBase.

In addition, we note that in some European regions access to finance is particularly critical; regions that appeared in the rankings of the number of start-ups with a small but non-negligible number of start-ups, virtually disappear from the funding map: Brussels, Copenhagen, Rome, Milan, Estonia.

In some cases this may be due, in the absence of an adequate local market, to the choice to transfer the head office to a country that offers lower taxes and more opportunities to raise capital. This can lead to a bias in the data analysis because all funds collected are allocated to the new company based in Dublin, London, or San Francisco, even if the activity is still developing in the country of origin.

The region of Berlin improves its financial position in the standings, approaching the location in Paris. Dublin also has a positive performance, while in other regions there are not very significant changes relative to the ranking obtained from the number of start-ups.

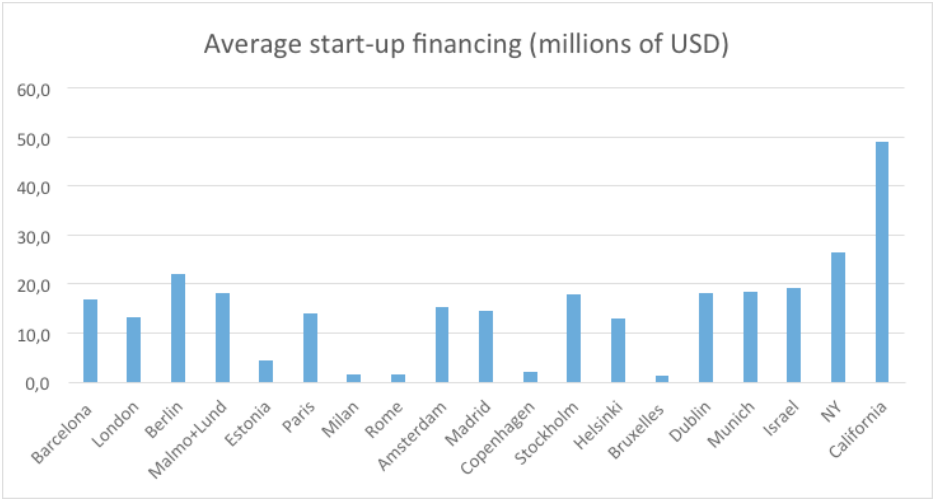


Fig. 9 Average start-up financing (million USD). Source: CrunchBase.

As can be seen from the data in Figure 9, excluding the regions mentioned above, where access to finance is extremely difficult, for the other regions the average value the financing to a start-up appears to be fairly homogeneous. The average value is between USD 15 million and 20 million, a value not too far from the average value of the financing of a start-up in New York (although significantly lower than that of a start-up in Silicon Valley).

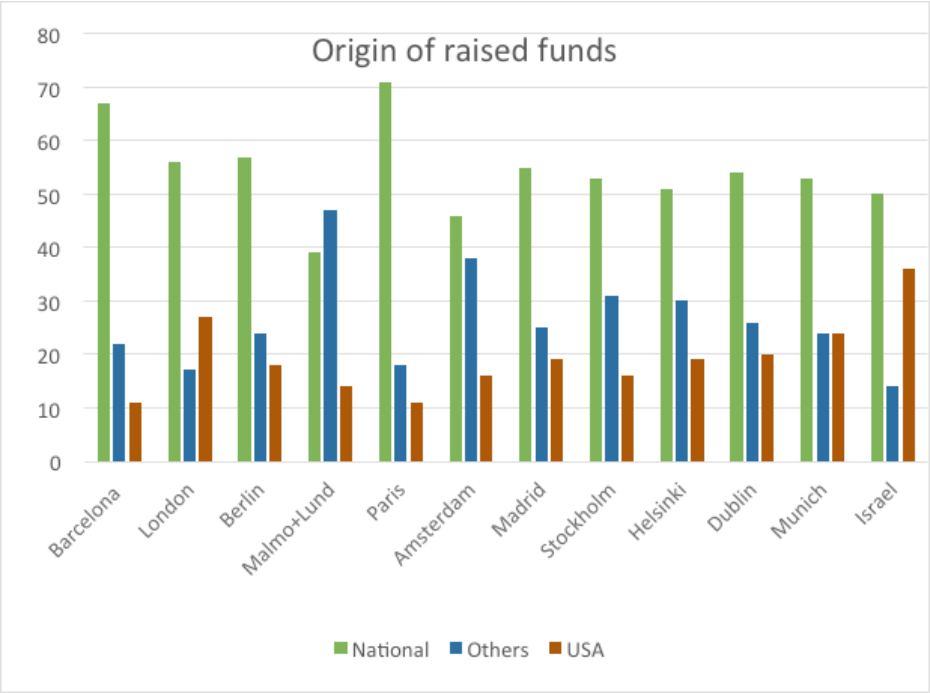


Fig 10 Geographic origin of funds raised by start-ups. Source: CrunchBase.

CrunchBase data were also analysed to research how sources of funding are distributed for start-ups in the regions studied.

The presence of a high percentage of capital from abroad is an important indicator of the ability of the economy of the region to attract capital on the international market and be competitive. From this point of view, the percentage of capital from the U.S. market is important.

In the case of Paris and Barcelona, dependence on local funding seems to be particularly significant. In the Nordic regions local funding cover a slightly smaller percentage, but a significant portion of other loans seems to come from the other Nordic countries.

London seems to have by far the best ability among European clusters to attract U.S. capital, followed by Munich, Dublin, Madrid, Berlin, and Helsinki.

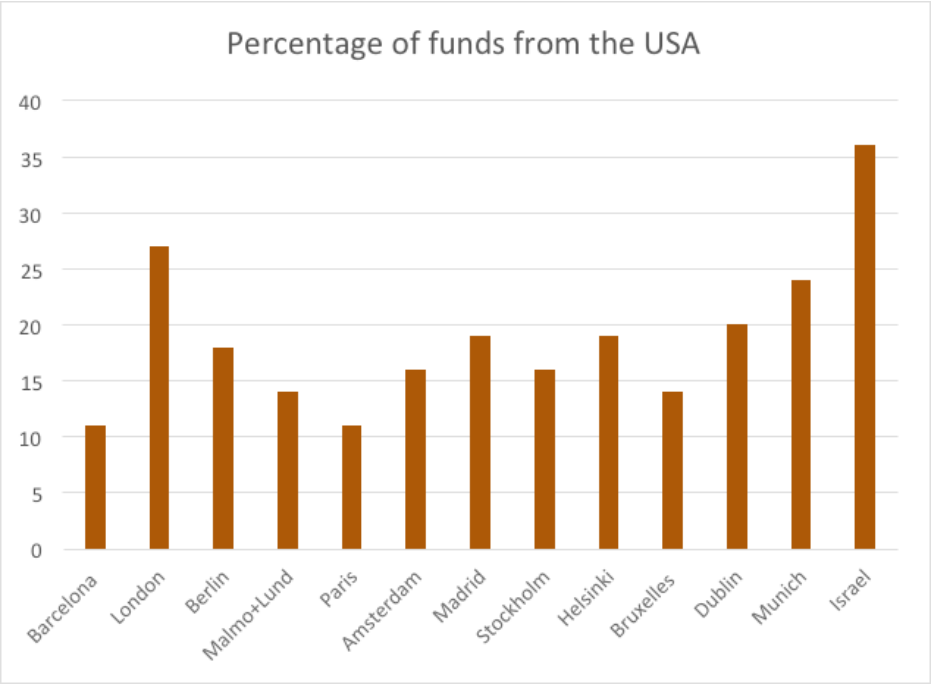


Fig. 11 Percentage of funds from the U.S. Source: CrunchBase.

Human resources

The personal profiles on LinkedIn were used to estimate the order of magnitude of technical resources in the regions analysed. The profiles were identified through five keywords for skills in great demand in the field of software development: Java, Android, Python, C + +, iOS. Due to some limitations of the interface of the LinkedIn website, research related to the region of Dublin was not possible.

The goal was not to find the absolute values, both because the keywords do not cover all possible skills and because registration on the site is voluntary, meaning that it cannot be assumed that all professionals will be recorded.

However, given the widespread use of the service among computer profes-

sionals, it seems reasonable to assume that the numbers obtained can be trusted to give an indication of the relative availability of technical resources in each market.

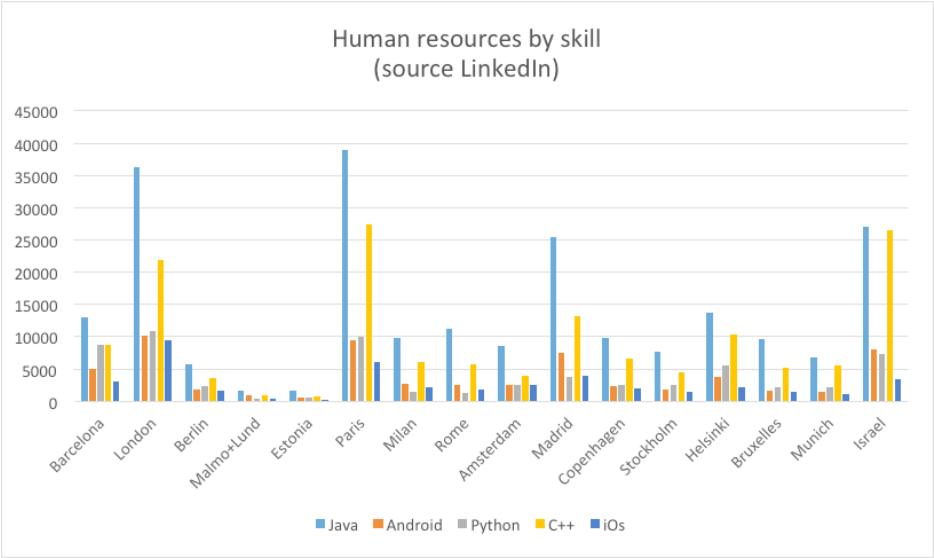


Fig. 12 Skilled people by region. Source: LinkedIn.

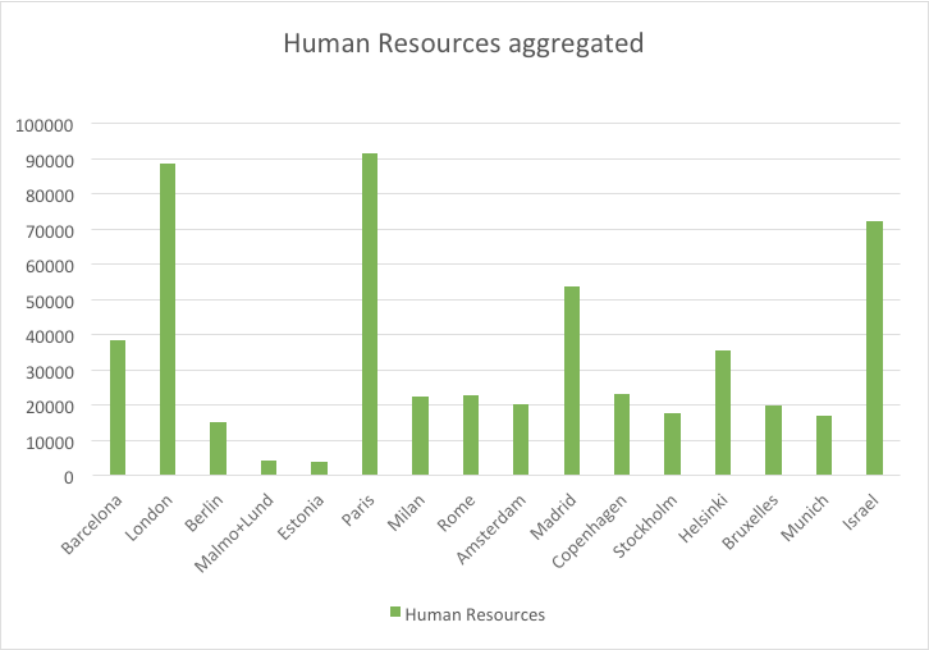


Fig.13 Human resources (Fig.12) aggregated by city. Source: LinkedIn.

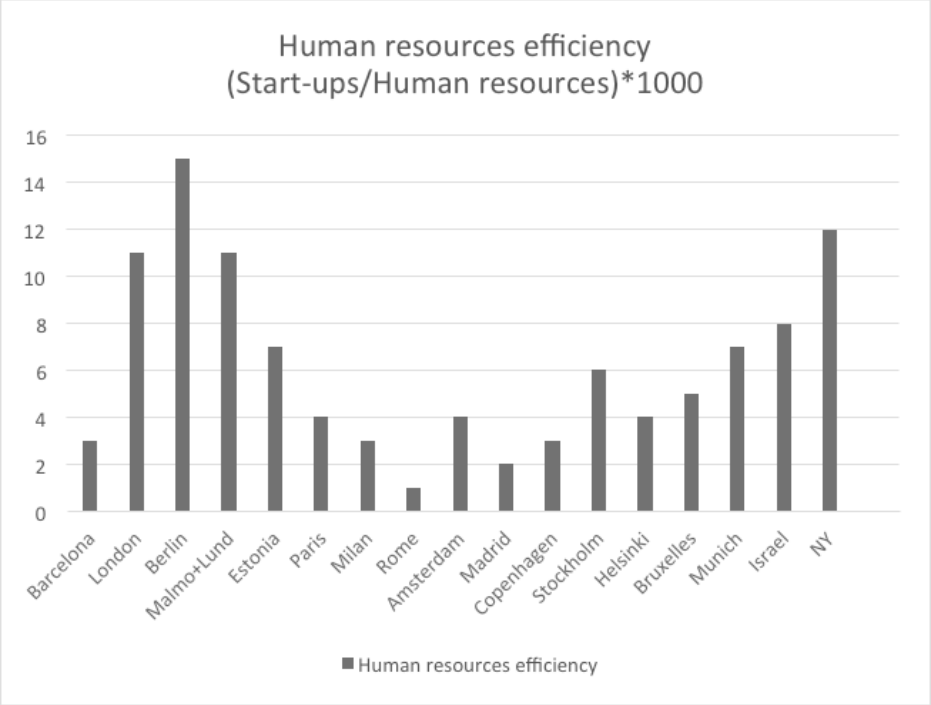


Fig. 14 Human Resource efficiency. Source: LinkedIn.

The results seem interesting: all regions that in recent years have been at the centre of important processes of development in the field of start-ups have a high and quite similar index of efficiency in the use of human resources.
London, Israel, New York, and Malmo have an index between 8 and 12.
Berlin has a slightly higher rate (15), which may be a symptom of the actual beginning of a lack of human resources or an artefact due to a slightly lower penetration of LinkedIn among professionals in the region.

A fragmented system

As we have seen in the course of the preliminary analysis of the data, the continental European cluster of start-ups in the software industry and digital technologies, and therefore those related to mobile platforms, are very marginal in size in comparison with those in the U.S.

With the exception of the London region, none of the clusters in the EU seem able to reach a critical mass sufficient to create a Continental aggregator that could achieve competitive advantages comparable to those enjoyed by U.S. clusters.

Considering the dynamics of development in recent years and the financial strength of Germany, Berlin would seem at first sight to be the best candidate for this role. But if we look at the limited availability of human resources (Figure 13), we see that this can hardly be done without hypothesising an enormous migration of skilled personnel, perhaps requiring many years.

Similar demographic considerations seem to apply to the Nordic economies.

In the Paris region, however, the relatively widespread availability of professional resources, comparable to that in the London area, does not translate into a corresponding number of new businesses.

In general, in all regions of southern Europe, the availability of professional resources does not correspond to a rate of creation of new start-ups equivalent to that of London, Berlin, or some northern regions.

In the near future, we can expect the continuation of a situation of high fragmentation of European clusters dedicated to the development of software applications in general and those specializing in applications for mobile and mobility in particular. Indeed, the presence of language and cultural barriers among the countries of the European community make the transfer of qualified staff much less efficient and rapid than in the United States, where a transfer from one state to another for work is considered perfectly normal. If we want to promote growth in Europe, we cannot limit ourselves to going along with the spontaneous growth of the larger clusters; we must also pro-

mote a decentralized growth that allows us to use human resources where they are available.

To do this we need to build closer working relationships among European regions in order to exploit, at European level, the same efficiencies of scale that occur in single, larger clusters. This is a necessity for all regions, both the less advanced and the more advanced, since the alternative is to remain dwarves in a world of giants.

Many start-ups have begun to use a mini-multinational model that was once reserved to much larger companies, whether the administration is in London (or San Francisco or, one day, Berlin) and the R&D and production in the country of origin. In this context, the concept of nationality of a company is going to be of limited practical utility, while the ability to develop the human capital of a nation and know how to exploit it will become increasingly important.

North and South success stories

Looking at the data presented in the annex "Start-ups Data Mining", we can see that with respect to high-tech start-ups, including those for mobile and the mobility, only London and Israel have been able to expand at a rapid pace and form clusters at least comparable in size to those of the United States. In recent years, Berlin has emerged as the most dynamic region for start-ups in continental Europe, but in absolute terms, Berlin is still far behind London and Israel and it is probably too soon to think of it as comparable to them.

Our purpose here is to identify and compare the key elements of the success of the two regions. There are two other important contribution in this guidebook related to London. To avoid repetition, the perspective here will be different. The definition of the London region used here is that used by the CrunchBase database of start-ups, an economic cluster much wider than the London Metropolitan Area that includes the Cambridge region. The London Tech City and the Shoreditch roundabout have been extensively covered in the two chapters devoted to London of the guidebook and will not be mentioned here except in passing.

Integration with the U.S. economy

Both London and Israel have managed to exploit skilfully the special relationships that exist between these countries and the United States. In addition to institutional contacts, a key role is played by the mobility of individuals between the two sides of the Atlantic.

For Israel, the Binational Industrial Research and Development Foundation (BIRD) that operated under supervision of the Office of the Chief Scientist (OCS) has played a crucial role since its approval in 1975 until the end of the 1990s [13], enticing American Multinational Corporation to R&D subsidiaries in Israel. The combined effect of BIRD and OCS policies in those years was instrumental in shaping the development of hi-tech industry also opening the U.S. market and using the limited available resources of OCS to finance R&D projects targeting the American market.

Looking at Figure 11 in the annex "Startups Data Mining, we see how, in start-ups based in London or Israel, the proportion of funds from the U.S. of the total funds collected is higher than those of continental European countries. This fact has an importance that goes beyond the mere economic value of the investment, because it is a sign of confidence in these economies, and has significant effects on their ability to exploit the increase in value of the start-up through IPO or acquisition by another company.

Consistent flow of skilled immigration

Both regions have taken advantage of a stream of highly skilled immigration.
Israel probably had the most significant flow of immigration with high technical and scientific education in history. In the years following the dissolution of the Soviet Union, from 1990 to 2000, 800, 000 citizens of the former Soviet bloc immigrated to Israel. A very high percentage of these immigrants had higher scientific and technical education; many of them initially did not find a job matching their qualifications. This created a political request to improve the integration of Russian immigrants into the Israeli economy and to use the opportunity to develop a stronger high-tech industry.

London did not have such dramatic waves of immigration, but for many years the constant demand for IT staff by the city's financial services and clusters around London favoured a slower but still continuous flow of immigrants from Europe and elsewhere.

R&D tax incentives

Both the UK and Israel offer tax reliefs on the money that companies invest for R&D, as do many other governments around the world [11]. In recent years, the utility of tax relief for R&D has been questioned [6]. Most large corporations that have large incomes and that may distribute the profits between branches in order to maximize the benefits can exploit R&D tax reliefs; for small emerging companies that often have a budget deficit the tool is less useful.

Government military and civilian investments and research contracts

The need to develop a domestic military industry in Israel created the conditions for the growth of a national hi-tech military industry. Because of the particular geopolitical context, the expenditure of Israel for defence has been very high, reaching 32% of GDP in 1975. It was estimated that during the 1980s, 65% of the national expenditure on R&D was defence related, while only 13% went towards civilian industries [3].
Considering the order of magnitude of investment relative to the size of the country's economy, clearly investments in the military have in fact created the Israeli high-tech industry.

In the 1970s the fallout of R&D military research in civilian applications led to the birth of many civilian start-ups. Many of these civilian spin-offs initially struggled to survive, but in the long term, this first generation of start-ups prepared the field for the subsequent expansion of the start-up economy.
The Office of the Chief Scientist (OCS) was created in 1969 within the Ministry of Industry, Trade, and Labour, and eventually became an impor-

tant player during the high-tech boom. The first Chief Scientist was Yitzchak Yaakov, a Brigadier General of Israel Defense Force (IDF) and former chief of Military R&D [13]. The personal network developed in his previous job helped him to shape the future of the high-tech Israeli industry despite having a very limited budget.

The first program, which continues to this day, provided conditionally repayable loans of 50% of the cost for any approved industrial R&D project originating from private industry and aimed at developing a new exportable product.

After these early pioneering years, the activities of the OCS began to develop in 1984 and especially in 1991–1992 with the establishment of three programmes: Technological Incubator Programme, MAGNET, and Yozma. Technological Incubator Programme aimed to provide technically oriented entrepreneurs with commercial knowledge and to help integration of skilled Russian immigrants.

MAGNET's goal was to allow Israeli companies operating in the same field, too small to be competitive against multinational companies, to develop cutting-edge infrastructure research. The instrument was the creation of consortiums of small companies and Universities to develop technologies that could be patented. It is interesting to note two aspects, the role of Universities in this project and the persistent networking effect also after the end of consortium.

Yozma program, related to VC incentives, will be discussed in the next section.
The policy of the OCS, on the whole, was described as a Horizontal Technology Policy [17], that is, a policy that promotes technological development and associated R&D irrespective of industrial branch and technology. The development of software and mobile industry was thus not a choice but the consequence of the needs of the electronic hardware industry and military industry.

Unlike Israel, the UK probably has the longest history of technology R&D in the modern world. In the 1960s its research industry was fully developed

and the problem of how to support innovation to improve the competitiveness of the national economy has been at the centre of political debate since the war to the present day.

It is outside of the purposes of this document to reconstruct the complex history of R&D policies in UK in the last 50 years, but it is interesting to note that, also in UK, military research played in the past a significant role. Military expenditure [16] was extremely high in the 1950s, around 10% of GDP, and much public R&D was military. Also, although it later declined slowly, it was around 5% of GDP until 1987 [18], still higher than that of other European countries.

An interesting feature of UK policies is the attention to SMEs, in public procurement as in research contract and grants, even from Ministry of Defence (MOD). An example of this approach is an eBook from the Ministry of Defence (MOD), SMEs: How To Grow Your Business With The MOD (22).
The model of public intervention in R&D studied most in the last several years has been the U.S. with the pervasive action of Defense Advanced Research Projects Agency (DARPA) [6] to fund research, even on subjects that do not have an immediate military use.

A major U.S. program, which involves not only the DARPA, but also other Federal Agencies, is the Small Business Innovation Research program (SBIR). It requires that all main Federal agencies reserve a certain percentage of the total extramural research budgets for contracts or grants to small businesses.

To support R&D in SMEs the UK government created the SBRI, a UK version of the SBIR program [8]. The first version of this program, established in 2001, had several important changes in the years 2005 and 2008. Unlike the U.S. program, there was no obligation for the public agencies to reserve a fixed minimum percentage amount to SBRI contracts. This was emended in the subsequent version, and the responsibility for the program was assigned to the Technology Strategy Board (now known as InnovateUK), improving the overall efficacy of the program [5]. The SBRI program is somewhat similar to the Pre-commercial Procurement of EU Commission, but there are also many differences [21].

The Catapult program is another recent interesting initiative of UK government that was already mentioned in other contributions of this guidebook.

Incentives to VC investment

The governments of Israel and the United Kingdom have created legal and fiscal instruments to encourage investment in venture capital
The Yozma program created by the Israeli government and active from 1993 to 1998 was the key stimulus for the birth of the VC market in Israel. It was based on a fund whose mission was to invest in others private funds with a ceiling of 40% of capital. The advantage for private investors was a call option on government shares at cost (plus interest) for a period of five years.

It was not a simple risk-sharing program, but it allowed a multiplication of potential gains for private investors if the investment succeeded.
The program has been extensively studied and has become a model for many policies in other countries, but most of the attempts have not had the same success [4]. Many factors contributed to the success of the program, such as timing, the existence of many hi-tech companies that struggled to access finance, favourable conditions in the NASDAQ market, and the concurrent rise of the IT economy.

After the end of the Yozma program, the Israeli government launched the Heznek project, which also offered the opportunity for investors to use public funding to multiply potential gain.
In general, access to finance is easier for the London start-ups than for corresponding start-ups in other European regions, probably for London's role in the world finance and its links with the U.S. financial centres. If a comparison is made with the Silicon Valley can be seen, however, that U.S. companies are still in the lead, the London start-ups in fact can raise 81% less capital in the period preceding the final scaling phase [10].

The UK government launched the Enterprise Investment Scheme (EIS) and the Seed Enterprise Investment Scheme (SEIS), which offer investors Income Tax Relief and Capital Gain Tax Relief. The SEIS program is particularly

interesting because it is specifically targeted to the small and early stage start-up businesses and to small investors [19].

Both these programmes are mentioned in the European Commission "StartupEurope Manifesto" [2] as positive examples.

Soft Companies and Service Companies

Many small hi-tech companies in the London Region and in Israel do not fit into the standard start-up model. They work as research and consulting companies and their business model is intrinsically less capital intensive so that the cash flow generated by these activities can ensure self-financing without requiring equity financing [7].

Sometimes these companies can create spin-offs that attempt to develop a product or a service and try to sell it globally like traditional start-ups. When this happens, they may need to use VC financing for the last scaling phase. Compared with Silicon Valley, the entrepreneurs of the London region focus 81% more on consulting for financing their start-up equivalent of Silicon Valley [10].

For many years Israel has been one of the first destinations for offshoring software projects by U.S. companies. This has led to the growth of a network of small consulting companies that eventually may give rise to start-ups.

Dynamic and fluid work market

The London area has traditionally had a very active dynamic IT job market both for contractor position and for permanent positions.
This has had a series of positive effects on the start-up clusters:

- There is increased circulation of information and best practices, transferred by the people moving from a job to another.
- The potential risk for would-be entrepreneurs who leave a job as employees is reduced because if the start-up fails, it is easier find a

new job.
- It is easier to find skilled workers (although the cost will probably be higher than in other regions).

It has been shown [15] that inter-firm mobility is an important factor in the emergence of new technology clusters and one of the main channels for transmission of knowledge within the cluster; it can therefore be assumed that the high mobility characteristic of the London job market helped the rise of London's ICT cluster.

A widespread popularity of entrepreneurship value

The role of the entrepreneur is socially recognised both in England and in Israel to a much higher degree than in other countries. This creates the conditions for a larger number of young talents to attempt to create new innovative companies.

Training and education

In the area of London and in the confining regions, in a circle of less than 100 km, there are six of the top 50 universities for computer science and information system in the world. Although some universities in the U.S. are ranked higher, there is no place in the world with a higher density of knowledge.
The prestige of Higher Education Institutions in the area surely played an important role in the choice of Microsoft in 1997 to open the Microsoft Research centre in Cambridge, 15 years before the opening of Google campus in 2012.

Higher Education Institutions have played an increasingly significant role in undertaking R&D within the UK, with activity in the sector increasing in value by £3.3 billion (86%) in real terms between 1995 and 2011. OECD data show that in 2011, Higher Education contributed around 27% of the total

R&D undertaken in the UK, compared to an average of 19% across the OECD area [19].

After some initial resistance on the part of scientific faculties, computer science found an important place in the curriculum of the Israeli universities. The Israeli researchers initially had given strong theoretical contributions to Computer Science and algorithms, but it was only after 1973, with the transfer of U.S. military equipment and U.S. aid, that the Computer Science Technology in Israel came into its own development [20].

The Israeli Army established its own central computer unit (MAMRAM) and a sub-unit, the School for Computer Related Professions (CRP School). The role of the CRP School [14] was crucial in the creation of the Israeli computer industry cluster, not only for the level of training but also for the personal relationships developed during military service, so helpful to young people when starting a business.

Cybersecurity start-ups exploited the training and the work of their founders in the Israeli Defence Force Information and Communications Technology (ICT) Branch [1].

Start-up accelerators and shared working spaces

In the London area, there is a very wide choice of Seed Accelerators and Start-up Accelerators, going from branches of such international chains as Seedcamp, TechStars, and Microsoft Ventures to more specialised initiatives, such as Bethnal Green Ventures, using technology to solve social or environmental problems. All these accelerators offer seed financing, tutoring, and office space to a selected number of start-ups for a limited period, usually in exchange for a share of the company. Shared spaces are a different solution: Hoxton Mix, Google Campus, Co-work, TechSpace, and others offer desk spaces and services for an affordable price. Google Campus also offers events and opportunities to meet financers.

The trend towards shared working spaces is a necessity in a city of sky-rocketing rents. The Tech City project worsened the situation in this regard, but it is also an opportunity to meet new co-workers and broaden contact networks.

Israel has a good number of start-up accelerators and shared spaces, even if the supply is not as rich as London's. Some accelerators, such as IDC Elevator, Dreamit Israel, or Up West Lab, provide for a stay of one to three months in New York or Silicon Valley.

Brand construction

Israel and London have placed a great deal of attention on creating a "brand" to sell their regions as the best places for innovation. Certainly some of this is hype, but it is part of a sensible marketing strategy that amplifies the competitive advantage for the regions.

The lessons from the London region and Israel

Many features of the regions of London and Israel are so linked to the history of those regions that they cannot be translated into instructions mechanically applicable elsewhere. For example, within the European regions, there is no other financial centre comparable to the City of London, and fortunately European regions do not have the national security problems of Israel, with the corresponding need to invest heavily in military technology.

Despite their completely different histories, some common patterns are recognizable in the two regions: integration with the centres of ICT economy in the U.S., a strong state expenditure (military) in the initial development of high tech industry, direct support to private R&D to correct "market failures" not only with "neutral" fiscal actions but with active policies, an attention to SMEs and their role in innovation, a central role for Higher Education Institutions, and a consistent flux of qualified immigration.
Those patterns have value also for the other European regions that are trying to create or improve clusters of companies in ICT and in particular mobile and mobility.

References

1. Senor, D., and Singer, S. (2009) Startup Nation: The Story of Israel's Economic Miracle. Hachette.
2. EU Commission. (2013) StartupEurope Manifesto. http://ec.europa.eu/digital-agenda/en/news/manifesto-entrepreneurship-and-innovation-power-growth-eu
3. Peled, D. (2001) Defense R&D and Economic Growth in Israel: A Research Agenda. Science, Technology and the Economy workshop, Samuel Neuman Institute. http://www.academia.edu/attachments/32602375/download_file?st=MTM5OTU2MzY2OSw5NC4zNy4x-ODQuODU%3D&ct=MTM5OTU2MzY3Mw%3D%3D
4. Avnimelech, G. (2009) VC policy: YOZMA PROGRAM 15-years perspective. Copenhagen Business School. http://www2.druid.dk/conferences/viewpaper.php?id=5606&cf=32
5. Connell, D. (2009) Creating an EU SBIR Programme: Lessons From the UK and Proposals for EC Action. http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/files/connell_en.pdf
6. Mazzuccato, M. (2013) The Entrepreneurial State: Debunking Public vs. Private Myths in Risk and Innovation. Anthem press.
7. Connell, D. and Probert, J. (2010) Exploding the Myths of UK Innovation Policy: How 'Soft Companies' and R&D Contracts for Customers Drive the Growth of the Hi-Tech Economy. Centre for Business Research, University of Cambridge. http://www.cbr.cam.ac.uk/pdf/MYTHS_Report .pdf
8. Connell, D. (2006) SECRETS of the world's largest seed capital fund: How the United States Government Uses its Small Business Innovation Research (SBIR). Centre for Business Research, University of Cambridge http://www.cbr.cam.ac.uk/pdf/SBIR%20Full%20Report.pdf
9. Duruflé, G. (2010) Government involvement in the venture capital industry International comparisons. CVCA https://www.cvca.ca/files/Downloads/Government_Involvement_in_the_VC_Industry_Intl_Comparisons_May_2010.pdf

10. Startup Genome.(2012) Startup Ecosystem Report Part 1. Startup Genome –Telefonica http://multisite-blog.digital.telefonica.com.s3.amazonaws.com/wp-content/uploads/2013/01/Startup-Eco_14012013.pdf
11. Deloitte. (2012) 2012 Global Survey of R&D Tax Incentives. http://www.investinamericasfuture.org/PDFs/Global_RD_Survey_September_2012_FINAL.pdf
12. OECD (2013) Maximising the benefits of R&D tax incentives for innovation. Directorate for Science Technology and Industry. http://www.oecd.org/sti/rd-tax-incentives-for-innovation.pdf
13. Breznitz, D. (2014) Making Innovation Policy Work: Learning from Experimentation. Chapter 9. OECD.
14. Breznitz, D. (2010) Collaborative Public Space in a National Innovation System: A Case Study of the Israeli Military's Impact on the Software Industry. Industry and Innovation, Taylor & Francis.
15. Casper, S. (2007) How do technology clusters emerge and become sustainable? Social network formation and inter-firm mobility within the San Diego biotechnology cluster. Research Policy 36 438–455 http://www.ti.gatech.edu/basole/seminar/networks/readings/Session8.pdf
16. Edgerton, D. (2005) Warfare State: Britain 1920–1970. Cambridge University Press.
17. Teubal, M. (1997) A Catalytic and Evolutionary Approach to Horizontal Technology Policies (HTPs). Research Policy, 25, 1161–1188.
18. UK Public Spending (online database) http://www.ukpublicspending.co.uk/spending_chart_1953_2015UKp_13c1li011lcn_30t#view
19. National Audit Office,(2013) Research and Development funding for science and technology in the UK. http://www.nao.org.uk/wp-content/uploads/2013/07/Research-and-development-funding-for-science-and-technology-in-the-UK1.pdf
20. Shamir, E. (2010) Computer Science and Technology in Israel, 1950–1980. The Rutherford Journal, vol. 3 http://www.rutherfordjournal.org/article030111.html

Thank you

This book has been made possible thanks to the contribution by the following people and organisations:

Federico Pirzio-Birolli, Playfair Capital

Simon Devonshire, European Director of Wayra

Christian Ahlert, Founder of the Tech Community Minibar

Jon Bradford, Managing Director, Techstars U.K.

Trevor Dorling, Assistant Director Employment & Skills, Greenwich Council

Russell Buckley, Governmental Advisor for the UKTI and Active Angel

Carsten Kølbek, Founder, Rainmaking Foundation

Mike Bradley, Business Innovation, Implementation and Optimization Consultant

David Cobb, Partner, Deloitte

Karen Drake, Finance Manager at Spike Island Artspace

Tom Tomkinson, Creative and Business Mentoring Consultant at Keywork design

Richard Adams, Senior Academic Programme Manager at Microsoft Studios

Joseph Charlesworth, Playfair Capital

Michele Davidson-Jones, UKTI

Juliette Rogan, Barclays Bank

Magnus Almén, UKTI

Maria Palgaard, London & Partners

Karolina Staniak, European Business Solutions

James Governor, Redmonk

Konrad Eriksson, Infrasight Labs

Joe Scarboro, 3Beards

Jonas Borgh – Lechill

Albert Martinez – ACC10

Miquel Vidal Villoria - Mobile World Capital

Maria de Olano Mata, Ariane Van De Ven – Telefonica

Mathilde Wilkes – Secartys

Magnus Jern – Golden Gekko

Gemma Battle, Maurici Garcia – Bdigital

Holger Dietrich – You Is Now - Kieback & Peter

Till Meyer - ZAB Brandenburg

Cem Ergün-Müller – Deutsche Telecom

Nicolas Wittenborn – Point Nine Capital

Michael Stamm – TSB Berlin

David Hanf – Deutsche Startups

Marianne Larsson – Teknopol

Daniel Kipowski – Invest in Skåne

Lennarth Svensson – Region Skåne

Bogdan Tudosoiu – Mobile Heights

Björn Ekelund – Ericsson

Alex Esser – Tunaspot

Carl Silbersky – Settlebox

Stratus Transport Connections

Placr Ltd

Transport API

Technology Strategy Board (TSB) UK government Innovation Agency – part of the Department for Business Innovation and Skills (BIS)

Connected Digital Economy Catapult

Intellect

UK Space Agency

Open Data Institute

Satellite Applications Catapult.

References

Reports:

PWC report “Emerging Industries” 2012

The M-cluster report by Living Labs Europe 2005

Ertico “Annual Mobility report” 2012

Mobicap MMSI Atlas 2012

European Mobile Industry Observatory 2011

European Cluster Collaboration Platform

European Cluster Observatory

Your Eur 256 789 611 907 opportunity (Living Labs Global 2009)

Soumitra Dutta, Irene Mia; Global Information Technology Report, Estonia: A Sustainable Success in Networked Readiness? (Oxford University Press, 2006)

Estonian Information Society Strategy 2013, Ministry of Economic Affairs and Communications 2006

KNOWLEDGE-BASED ESTONIA, Estonian Research and Development and Innovation Strategy 2007-2013

Drivers, degree and patterns of the integration of the Estonian ICT sector into the global innovation networks, Dr. Tarmo Kalvet, Dr. Marek Tiits

Weblinks:

http://lsecities.net/media/objects/articles/londons-tech-city

http://techcitynews.com/

http://www.ukti.gov.uk/uktihome/item/124866.html

http://webarchive.nationalarchives.gov.uk/20130109092234/http://number10.gov.uk/news/east-end-tech-city-speech/

http://www.wired.co.uk/news/archive/2012-12/06/old-street-roundabout-facelift

https://www.innovateuk.org/

https://www.catapult.org.uk/connected-digital-economy

http://www.intellectuk.org/

http://www.theodi.org/

The European Mobile & Mobility Industries Alliance – Policy Learning Platform
Founding Members:

bavAIRia
Europe's heart of aerospace and navigation

CLUSTER 55°
ICT ØRESUND

BIC R&D

PROVINCIA DI ROMA

GRACE
GNSS Research & Applications Centre of Excellence

ENCADRE