GEN-Y CITY

Developing, attracting & retaining Gen-Y 'creative-tech' talent in European cities
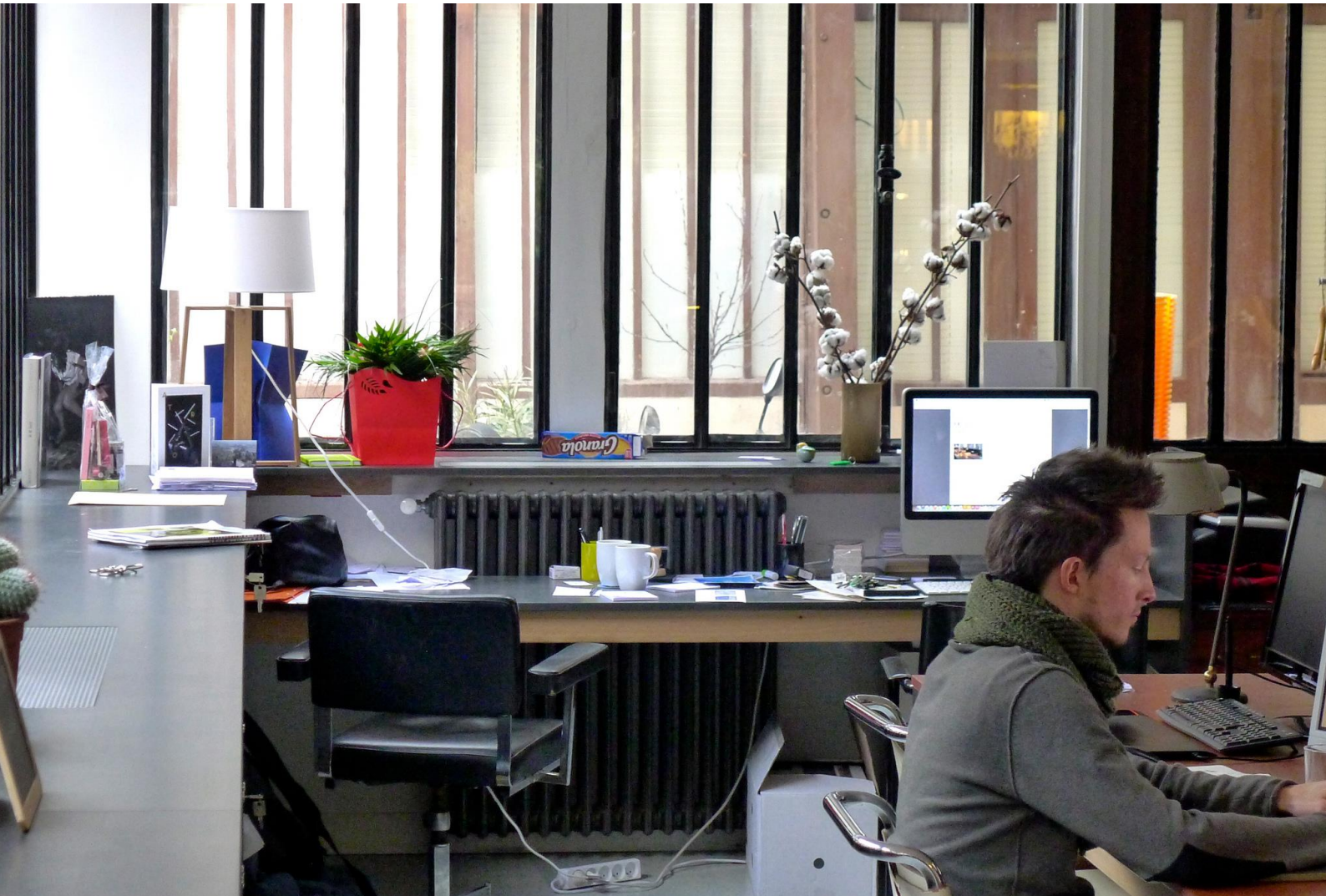
2nd Network Meeting, Wolverhampton (UK), 27th– 28th September 2016

Thematic Report:

Using research and labour market information (LMI) to better understand, influence and measure the effectiveness of GEN-Y 'creative-tech' talent interventions

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Some important issues to consider

Introduction

According to Business Europe[i], the lack of Science, Technology, Engineering and Maths (STEM) skilled labour will be one of the main obstacles to economic growth in the coming years. Whilst demand for people with STEM skills is increasing across the World, many STEM workers are approaching retirement age and some forecasts suggest around 7m new 'tech' job openings will emerge in the period between 2016 and 2025.

According to the OECD[ii], the distribution of graduates by field has not changed much since 2005. Humanities, social sciences, law and education still represent a greater share than science, technology, engineering and mathematics in the OECD and G20 countries. In France, Germany, the UK and the US, graduates with STEM qualifications (including international students studying in these countries) represent less than one-third of the talent pool.

In comparison, in 2012, China had 40% STEM graduates and 45% humanities, social sciences, law and education graduates, while the figures for India were 35% and 53% respectively. The OECD forecasts that if the proportions of STEM graduates continue at these levels, by 2030, China and India will account for more than 60% of the OECD and G20 STEM graduates and the BRIICS countries[iii] will produce three-quarters of the global STEM graduates. Europe and the United States will be lagging well behind with 8% and 4% of STEM graduates by 2030 respectively.

In response to these issues, many cities across Europe trying to address the declining levels of 'creative-tech' talent they have in their cities by trying to establish dynamic urban 'creative-tech' enrichment marketplaces – populated with Fab Labs Coding Clubs, Maker Spaces, Science Centres and Festivals - to stimulate more young people into 'creative-tech' careers.

But how do you build an effective 'creative-tech' youth enrichment environment? What policy interventions actually work? How can cities use research and labour market information (LMI) to;

- Understand their starting point as a city;
- Identify and develop effective policies and strategies to increase their creative-tech labour pool;
- Measure the effectiveness of GEN-Y 'creative-tech' talent interventions

One of the most interesting, but potentially also quite challenging, areas of skills policy making is how to make best use of data and labour market information (LMI) to target and measure the effectiveness of the skills interventions in local economies.

This report is essentially concerned with trying to better understanding what research and labour market information cities can use to answer these key questions.

Why is it often so difficult to deliver effective skills interventions and measure the success of policies?

While there is a lot of discussion around the need to strengthen skills, reduce skills mismatch and promote the creation of the right skill set to boost economic growth, defining what 'skills' truly are remains an extremely difficult task. Translating the whole concept of 'skills' into a clear set of indicators and effective policy interventions is a very real challenge. This is because;

- **The term 'skills' encompasses a whole range of issues:** It can refer to generic skills(e.g. numeracy, literacy and problem-solving); job/occupation skills; and/or sector specific skills;
- **Skills issues are often 'soft', making them difficult to measure:** In many instances, economists and analysts are forced to use proxies to describe or measure skills, including qualification titles/levels or other common variables which are capable of being used to monitor the skills of the workforce across a countries. While these variables have the advantage of being readily available from National Statistical Offices, they generally don't map well to the true skills required on the job and, similarly, to variables that can be used to design meaningful skills policy;

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- **Labour markets fluctuate quite significantly:** They are dynamic and the overall picture never really maintains a constant. An analysis could consider current skills of the labour market; the current and future skills needs of business; employment/unemployment projections; in/out migration; sector fluctuations; replacement demand; expansion demand; skills gaps; skills shortages; vacancies; hard-to-fill vacancies; job openings etc.;
- **Data reporting is often lagged:** Many international and national data-sets tend to be lagged, describing historical situations. This makes it difficult for policymakers to evaluate the effect of policy interventions as there is no immediacy to the feedback process; and

In response to these issues, some countries, regions and cities have tried to develop large datasets of statistical information, which aim to categorise and measure occupations' skills requirements to help employment services to match job-seekers skills to those required by the labour market in a more effective manner. The exploitation of Big Data in the skills arena is still very much in its infancy, but it could help deliver more effective policies in the future.

Even if analysts and economists could accurately assess what particular skills industry needed, delivering relevant, up-to-date skills programmes in some 'high-technology' markets can be challenging for some intermediary organisations to deliver because they find it difficult to access trainers with the relevant skills and secure the funding needed to invest in – and maintain – the capital machinery needed to keep skills up to date. In these situations, only workplace based programmes work.

The issue in relation to GEN-Y 'creative-tech' talent policies are even more complex, as the issue extends beyond a simplistic analysis of skills policy and labour markets, to also encompass a range of other issues, such as the particular industrial structure of a city, its innovation policies, the physical attributes of place etc.

That said, there are numerous examples of good practice across Europe about how cities are using data to inform their GEN-Y 'creative-tech' talent policies. This report is a summary of just some of the approaches being used to inform policy.

Why it's important to understand a cities <u>unique</u> starting point when designing policy interventions

In the last (2007-2014) programming period, evidence suggests that many cities and regions tried to implement many 'me too' initiatives, which sought to copy 'fashionable' policies from other places around the world/within Europe, and these generally failed to take hold when they were transposed to different cities/regions.

In response to this issue, the European Commission came up with the concept of Smart Specialisation (or RIS3) - a strategic approach to economic development which emphasises the need for targeted support for research and innovation, which goes with the grain of the local economy.

Smart Specialisation therefore involves a process of developing a vision, identifying the place-based areas of greatest strategic potential, developing multi-stakeholder governance mechanisms, setting strategic priorities and using smart policies to maximize the knowledge-based development potential of a region, regardless of whether it is strong or weak, high-tech or low-tech.

It involves supporting structural change and enabling the emergence of new activity sectors or industries by investing in Research & Innovation in areas of strategic potential in each of Europe's regions, acknowledging that these differ with respect to areas of strength and potential.

Because of the subject of Smart Specialisation deals with the subject of how to support existing and emerging industries and technologies, the concept has strong linkages to developing, retaining and attracting GEN-Y 'creative-tech' talent, insofar as both concepts link to the ways cities develop their innovation and research policies. Because of this, this is a subject we will return to in the next section of this report.

A note about research methods

Formal classifications

In simple terms, traditional market research exercises are generally structured around three core research methodologies;

- **Background Research** – Background research is important to help you understand some of the theories or concepts that underpin your research study;
- **Secondary Research** - Secondary research (also known as desk research) involves the summary, collation and/or synthesis of existing research;
- **Primary Research** – is a research process in which data is collected from, for example, research subjects or experiments.

However, recognising many of the data challenges set out in the previous section of this report, in more recent times the research processes that many cities have relied upon to develop economic development plans, spatial plans and regional innovation strategies have adopted highly participative, consultative primary research processes, which involve a whole range of citizens in helping to shape and develop such plans.

In adopting this approach, cities hope to capture more direct feedback from key stakeholders, rather than relying on 'historical' skills data.

In addition, because of the problems associated with traditional research processes, the Smart Specialisation process has sought to promote a more innovative research methodology, which they describe as an 'Entrepreneurial Discovery Process' (EDP)[iv]. The EDP is described as *'an inclusive and interactive bottom-up process in which participants from different environments (policy, business, academia, etc.) are discovering and producing information about potential new activities, identifying potential opportunities that emerge through this interaction, while policymakers assess outcomes and ways to facilitate the realisation of this potential'*.

As this is a form of primary research, these processes will be covered in more detail in this section of this transnational exchange report. Let us now go on and look at each of the research methodologies, as they relate to the GEN-Y Network.

Background Research

Background Research is generally conducted at the outset of a larger research study, to explore some of the 'main areas of study' that the research programme will examine. Generally speaking, being quite exploratory in nature, its primary goal is to define the research problem.

It often occurs before the researchers know enough to make conceptual distinctions or to put forward an explanatory relationship. Background research helps determine the best research design, data-collection method and selection of subjects. The results of background research are not usually useful for decision-making by themselves, but they can provide significant insight into a given situation.

In the specific case of development, retention and attraction of GEN-Y 'creative-tech' talent, background research might involve reading more around the subject to understanding more about the issues your city is facing, talking to specialists in different departments to understand their particular perspectives on the issues, or undertaking some background research . Generally, exploratory research is a precursor stage to a programme of secondary research.

Secondary Research sources which could be useful in shaping GEN-Y talent policies

Having understood some of the core issues impacting on the development, retention and attraction of GEN-Y 'creative-tech' talent, it would be normal for cities to try and understand something about their own particular situation, using a variety of Secondary Research.

Secondary research (also known as desk research) involves the summary, collation and/or synthesis of existing research/ the benefits of Secondary Research is that it can help to further build knowledge and understanding into a particular issue, without incurring the costs of primary research.

Through the GEN-Y City Network, we have identified a number of potential datasets that can help identify the youth development, retention and attraction issues that particular cities are suffering from. This next section of the report, goes on to highlight some of these different sources of data that partners have used **to assess their particular situation** and that could be used to set targets to **measure any improvement resulting from their action plans**.

Net Migration

One of major reasons many cities have chosen to develop an action plan to address the development, retention and attraction of GEN-Y talent is because some of them are experiencing 'brain drains', with many of their young people choosing to migrate to larger, more prosperous and cosmopolitan cities.

This is particularly true of Eastern European and Southern European Cities that are presently experiencing outflows of young people to North West Europe.
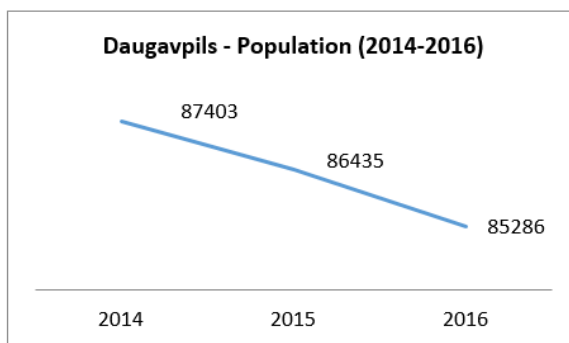
In addition to understanding the impact of out migration on the overall population levels (as Daugavpils, in Latvia. has

Fig 1. Overall population decline in Daugavpils, Latvia

done in Figure 1. above), valuable data to understand about potential migration levels and flows could also include age and skills profiles of those out migrating. Loss of young and higher skilled individuals from a city should give some cause for concern, as this could ultimate result in a hollowing out of higher value businesses and result in a decline in the prosperity of the city.

For example, in Kristiansand, in Norway, whilst the overall population in the metropolitan area is growing, the number of young people in the city is falling and the issue of the decline of the higher skilled youth is particularly acute in the city centre. This is largely because Kristiansand has a campus University, whose main premises are located outside the city centre.

Whilst their population is growing, as illustrated by Fig.2, below, unless Kristiansand improve the attractiveness of the city centre to young people, they run the risk of the city centre becoming increasingly less vibrant and/or falling into decline.

In order to address this issue, they are interested in exploring how they might improve the connectivity between the city centre and the Campus University. This is an issue a number of other cities in the GEN-Y City Network are also interested in exploring.
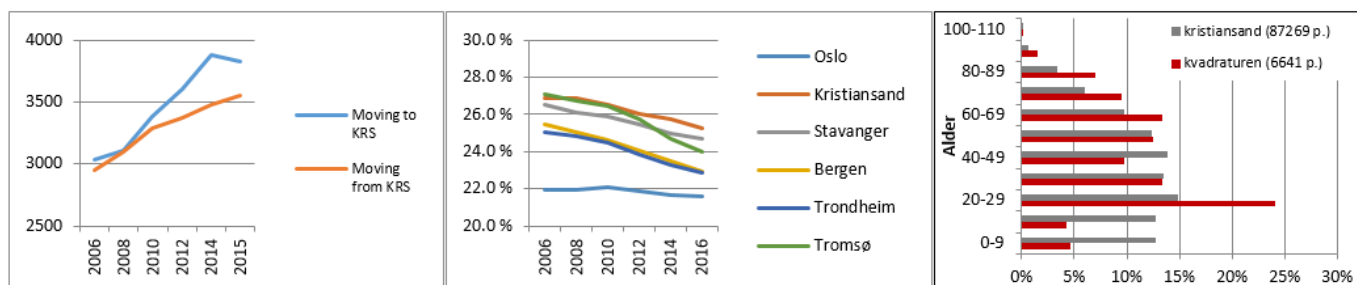

Fig 2. Decline of youth population in Kristiansand City Centre

Population Structures

In addition to looking at net migration levels, cities that want to understand more about their talent development, retention and attraction eco-systems may also benefit from analysing their overall population structure.

Analysis of this kind of data can show up where cities or regions have deficits and surpluses of residents in particular age brackets and might point towards 'broken pathways' in their educational pipelines.

Fig.3. the population profile of a city suffering from an undergraduate 'brain drain'

For example, Fig.3, opposite, is illustrative of a population profile of a city region in the UK that loses 19 out of 20 young people at the age of 18, because it has one of the best secondary education systems in the country, but a comparatively weak Higher Education sector. For them, one initiative that would tackle their undergraduate 'brain drain' would be to improve the quality of their Higher Education system.
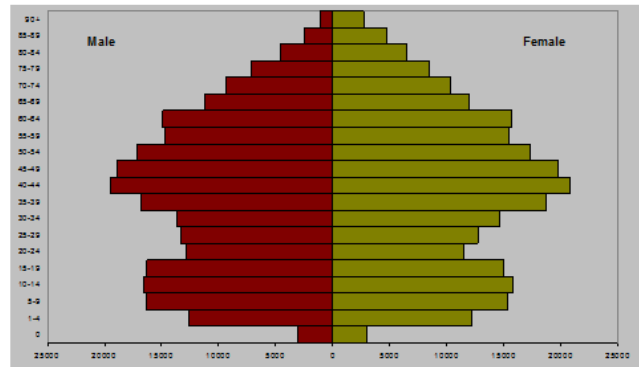
Levels of Unemployment

Employment and Unemployment levels are also particularly useful datasets to analyse in relation to GEN-Y 'creative-tech' talent development, retention and attraction in cities.

At the simplest level, employment/unemployment data provides a useful insight into the overall functional effectiveness of local labour markets, thereby giving a useful insight into how many employment opportunities exist locally and/or how the local labour market is performing.

However, more targeted labour market information can also provide a valuable insight into more specific 'market failures' or labour market issues. For example;

- **Levels of youth unemployment** – can be particularly useful to compare to general levels of unemployment to see if young people in particular struggle to access suitable employment opportunities; and
- **Long term unemployed** – can be useful in understanding how structural the unemployment situation is;
- **Economic inactivity** – can be useful in understanding whether there is additional capacity in the labour market which could be harnessed;
- **Skills profile of unemployed people** – can be useful in understanding what particular skills training providers are equipping people with and whether these are well or poorly matched to the local needs of business (for example, are there more people with elementary, managerial or professional/scientific skills who are unemployed).

This latter point, about the skills characteristics of the unemployment register is useful to compare to the labour needs of business to identify where there are mismatches between supply of, and demand for, particular skills.

The Skills Needs of Business

Trying to understand more about the local labour market and the skills needs of business is also particularly useful in understanding what the local demand for labour looks like and how it compares to the available labour pool.

In this regard, researchers will likely be interested in understanding more about skills gaps; skills shortages; vacancies and hard-to-fill vacancies, to understand more about inefficiencies in the labour market.

However, as stated previously, accurately assessing the real time skills needs of business can be a little challenging, both because the market can be very dynamic (when you have to factor in replacement demand, expansion demand etc.), but also because many businesses struggle to articulate their skills problems.

In response to this issue, a number of commercial firms have developed 'big data' tools for scraping vacancies off the web, to identify what the highest number of advertised jobs are in a particular city, or region.

One such company is Burning Glass Technologies (http://burning-glass.com/) who describe their capability as *'delivering job market analytics that empower employers, workers, and educators to make data-driven decisions. Burning Glass identify the skill gaps that keep job seekers and employers apart and tools that enable both sides to bridge that gap and connect more easily. The company's artificial intelligence technology analyzes hundreds of millions of job postings and real-life career transitions to provide insight into labor market patterns. This real-time strategic intelligence offers crucial insights, such as which jobs are most in demand, the specific skills employers need, and the career directions that offer the highest potential for workers. Burning Glass' applications drive practical solutions and are used across the job market: by educators in aligning programs with the market, by employers and recruiters in filling positions more effectively, and by policy makers in shaping strategic workforce decisions. At the same time, Burning Glass' data-driven applications for workers and students help them choose career goals and build the skills they need to get ahead'.*

At a national level, this same tool has been used by researchers from Nesta to try and better understand what the most 'in demand' skills are in the UK.
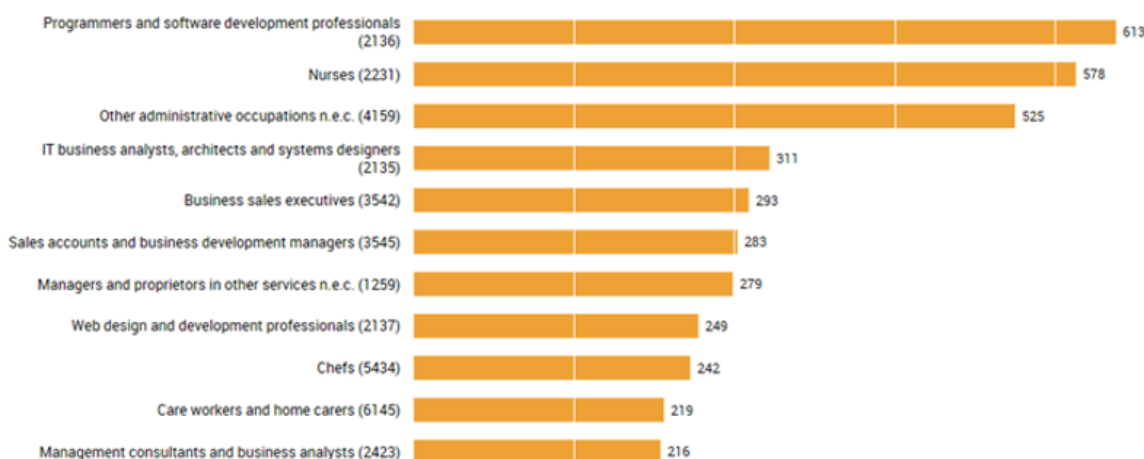

Fig. 4. An example of the Analytical data provided by burning glass, showing the highest number of jobs advertised in a particular city

At **http://www.nesta.org.uk/blog/top-30-skills-chart**, Nesta present the findings of their research work, which concludes *'the scraped data has a number of benefits over existing survey data. First and foremost, it can provide a timelier indicator of skills demanded by UK employers. The Skills Chart is based on data from early 2015. However, the chart could be based on the very latest data and updated regularly. The official statistics relating to skills come from the UK Commission's Employer Skills Survey (ESS) but the survey is only conducted every two years.*

The skills extracted from job adverts also provide a much richer picture of skill demands. The Employer Skills Survey only asks employers about a small number of broad skill groups. By contrast, the data from job postings can be used to measure the demand for thousands of different skills. Moreover, the skills are extracted directly from adverts, rather than being classified into pre-defined and potentially ill-suited categories. The sheer number of adverts also allows us to identify the typical skills demanded for single occupation group or a single industry.

The top 30 chart also sheds new light on the relative popularity of various software programs. Understanding which programs are rising or falling in popularity may be helpful to both businesses (who are considering which programs to purchase) and workers (who are looking to upskill)'.

Nesta also identify some of the potential limitations of such a tool; *'As with any novel approach, the data is not without limitations and these should be borne in mind when viewing the Top 30 Skills Chart. The chart shows the skills demanded by employers, but does not show skill shortages. The latter may be arguably of greater use to policymakers but would require gathering information on the skills of applicants.*

Also, the dataset includes thousands of skills, and as a result, some skills are not independent of others. This means that apparent changes in a skill's demand may simply be due to changes in specificity. For example, the set of skills includes both management and several specific types of management, such as project management and sales management. A decline in management may not mean that employers have reduced their demand for this skill, but rather that employers now prefer to request specific forms of management. This limitation could be overcome by aggregating certain skills together.

Finally, the Skills Chart and underlying dataset only capture skills for jobs that are advertised online. Some jobs be advertised through other channels or not advertised at all. For example, in creative occupations a piece of work may be commissioned directly from an artist. That said, Burning Glass estimate that the adverts they collected in 2014 equated to approximately 85% of all vacancies measured by the ONS in the same year, where the latter was based on a survey'.
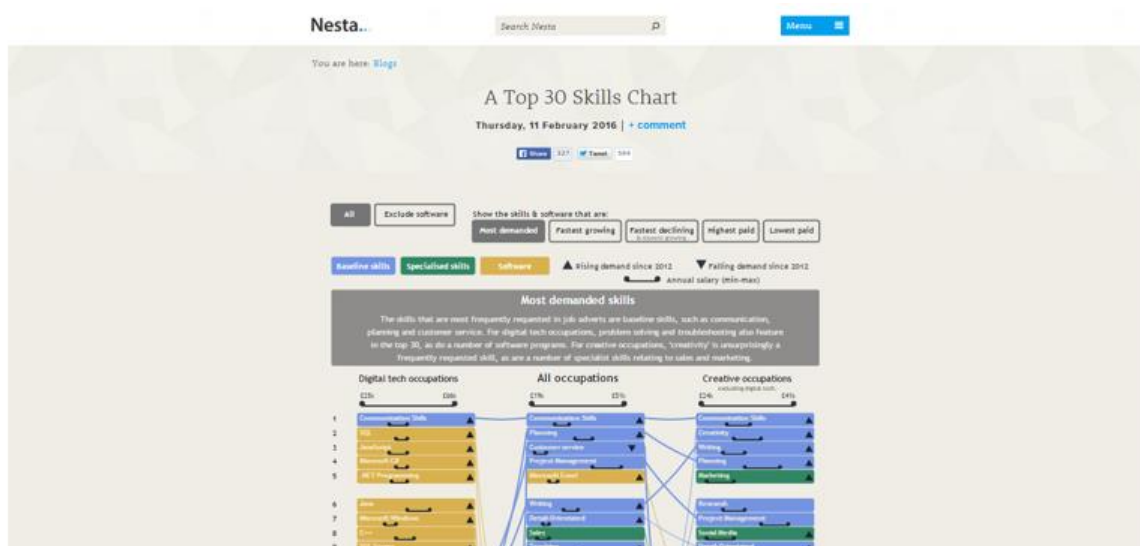

Fig 5. Nesta's work on using web scraping technologies to identify 'in-demand' skills.

They conclude their blog, by identifying some of the potential opportunities for such a tool, remarking that *'the Skills Chart and underlying dataset could act as a useful complement to the Employer Skills Survey. They could provide a more detailed and timely picture of skills demanded by UK employers. There are several other applications of the dataset that could be useful for UK policymakers. For example, the skills and salary data could be combined to derive the marginal value of each skill. These values could be tracked overtime, in the same way that prices of goods are tracked in the Consumer Price Index. The values could provide an alternative measure of skill shortages. The data could also be used to identify new occupations types and industries by tracking the emergence of new skills, or new combinations of skills. Finally, the data on software programs could be used to measure the tech intensity of both specific industries and the UK economy as a whole'.*

Qualification Structure

The qualification structure in a particular city could also provide a guide for the likely skills structure of that city's economy - although skills and qualifications are not directly interchangeable and in many cases, experience

suggests that qualification analysis really only gives you a flavour for the broad mix of qualification 'levels' that exists in a city. Invariably, all this information can do is provide you with a feel for whether a city has an economy which is structured towards a higher or lower skill economy.

For example, the graphs below illustrates that Kristiansand has a lower number of postdoc and masters students than other Norwegian cities and the take up of Apprenticeships amongst 16 and 17 year olds in Wolverhampton is less than some neighbouring cities.
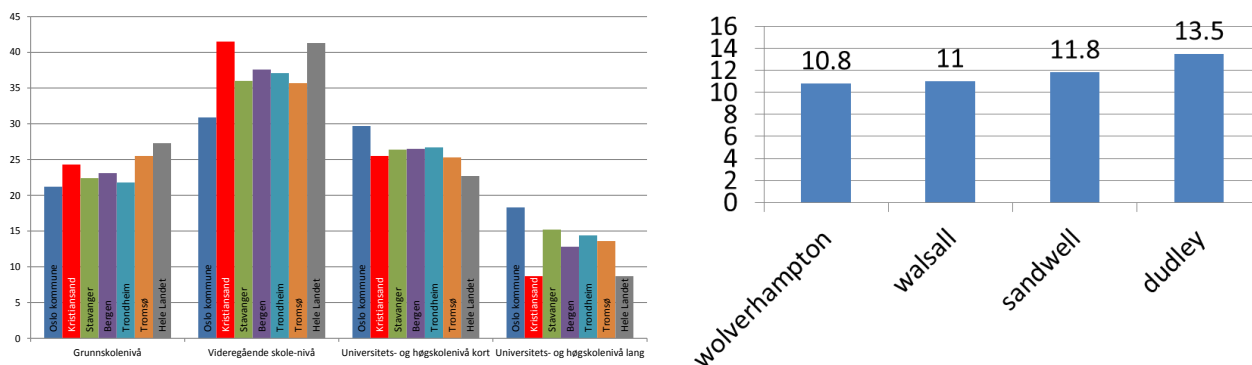

Fig. 6: Comparative qualification structures of 'near neighbour' cities (Kristiansand and Wolverhampton)

Potentially useful datasets here could include the number of undergraduates (STEM & non-STEM), the number of doctorates (STEM & non-STEM), the number of FT postgraduates students and graduate retention rates.

Industrial Structure

In addition to using secondary data pulled from job vacancy websites to try and understand, and shape, the training and development of young people to better meet the needs of the labour market, understanding more about the industrial structure of a city, and the kind of skills the future industries might need is another way of trying to look at the future skills needs of a local economy. In this regard, many economists use Location Quotients (LQ) to identify key concentrations of industries in particular localities.

If economists can understand what future industries are likely to emerge from their current ones, they might be able to accelerate sector concentrations the city might have that might be important to the future of the local economy.

This might not necessarily be about solving volume skills issues (which is why they won't show up in web scraping searches), but might be about supporting the growth of particular 'niche' skills that a particular economy might have and/or emerging skills needs.
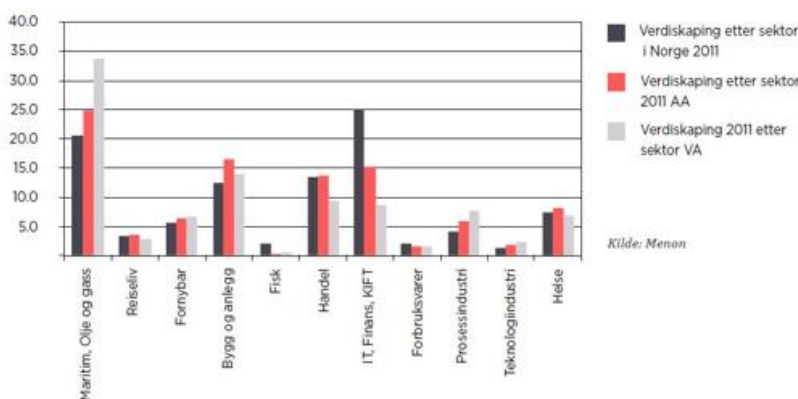

Fig 7. The industrial structure of Kristiansand and the contribution of various sectors to the regions productivity

A heavily industrial structure can point towards a somewhat traditional industrial mix. In itself, this could point towards a more elementary, or 'production' focussed business base, rather than a higher value, design and innovation based economy. Clearly economies of this nature can struggle to excite young Millennial to work for

them, as they might be looking for more glamour and excitement. However, there is similarly no point in cities with this type of industrial structure just trying to 'parachute' in skills solutions or facilities to try and stimulate the growth of these sectors, if there is simply no demand for it.

These cities need to build on innovation and research capabilities that exist somewhere in the locality and may need to create collaborative partnerships between these 'old' industries and research facilities (universities, institutes etc.) to create new firms and capabilities which build on the strengths of the past.

Particularly useful datasets here could include the % of private sector employment; % public sector employment; change in share of employment; active enterprises per 1,000 residents; active enterprises; business births, deaths, and churn rates; active enterprises; employment in the knowledge economy and high- and medium technology manufacturing; share of employment etc.

Age profiles in particularly important sectors

In addition, looking at the age structure in particular sectors can indicate whether there are replacement skills needs in particular economies.

Indeed, across large parts of Europe, the ageing population in the engineering sector poses a very real threat for these industries going forward, and the prosperity and productivity of cities which are heavily reliant on them. In order to retain Europe's strength in some of these key industries an urgent plan of action is needed to replace technical staff who will soon be retiring.

Occupational Structure

A cities industrial structure will also give some pointers towards what particular 'tech' strengths a city might have and what they might do to stimulate growth and renewal.

Figure 8. The Occupational Structure of Wolverhampton

However, if the city has a high degree of professional and managerial technical specialists, this probably points towards them being quite strongly endowed with high 'value adding' tech jobs in the area. Stimulating 'creative-tech' start-ups and promoting tech careers to young people in these kind of economies will not be difficult,
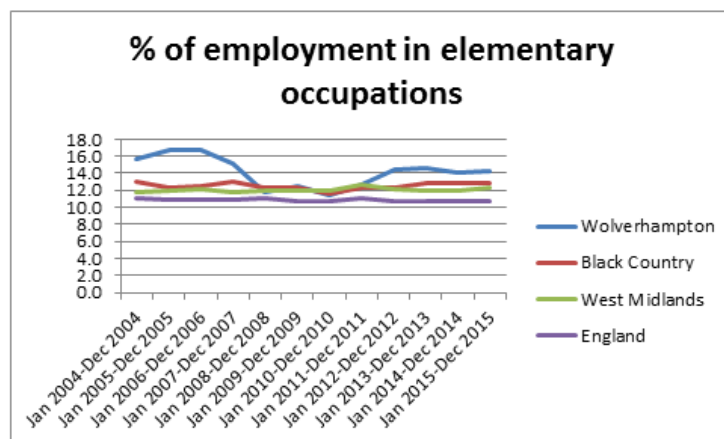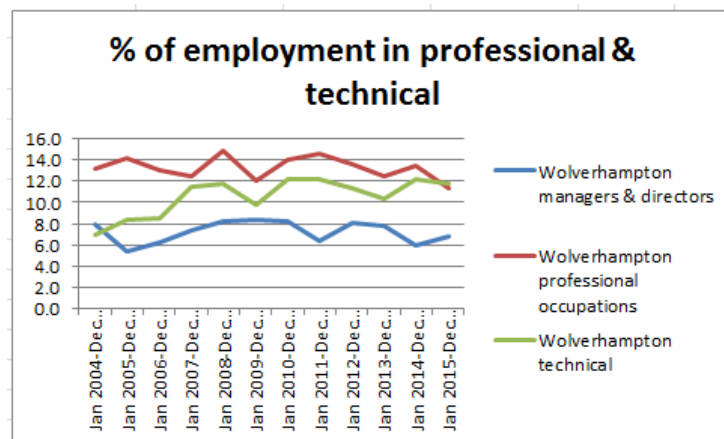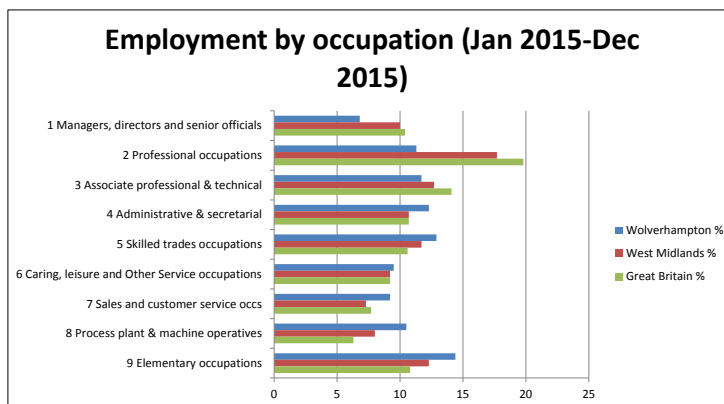
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because of the 'depth' of the tech eco-system and the positive image that 'tech' professions will have in the local economy.

However, if a city has a high proportion of elementary 'tech' jobs, this will likely point to the fact they are fairly low down the 'tech' value chain, probably with particular strengths in production or manufacturing capabilities. In these scenarios, stimulating 'tech' start-ups and encouraging young people to enter the profession can be more of a challenge. That said, the promotion and strengthening of innovation and design capabilities across the whole of society could potentially help improve the level of 'value added' in the local economy and raise the overall productivity / prosperity of place.

This is ably illustrated by the case of Wolverhampton (Fig.7, opposite), which illustrates its occupational mix is slightly more production orientated, than some of its near neighbours – something it is working hard to address through an active programme of STEM career promotion amongst its young people and by up skilling its indigenous workers.

Useful data sets here include residents employed as science, research, engineering and technology professionals; science research, engineering and technology professionals; and residents employed as science, research, engineering & technology professionals & associate professionals.

Salary levels and the cost of living

Salary levels are an important measure of the general affluence and prosperity of a location and will give you some feel for the attractiveness of your city to young people. Given the increasing challenges many Millennials face maintaining a reasonable standard of living, taken together with affordability, this indicator is an important measure of how easy 'creative tech' talent will find it to afford to live in a particular city.

2016 data for European salary levels can be found at Reinis Fischer's website[v]. Similarly, Glassdoor Economic Research has recently published a report into 'Which Countries in Europe Offer the Best

Fig 9. The Standard of Living in different European cities (Glassdoor Economic Research)

Standard of Living'[vi] which identifies where in Europe you can earn the highest wages and in which countries your money stretches the furthest. The analysis covers 18 countries and tracks how these European markets compare to the United States, which is used as a benchmark. When ranked in order, the countries offering the highest standard of living are Switzerland, Denmark and Germany.

Useful datasets here include median resident annual salaries; median workplace annual salaries; average weekly workplace earnings; Households in Social Rentership; Households Renting Privately or Living Rent-Free; Households that Own or Part-Own Their Home; Housing Affordability Ratios; and Mean house prices.

The effectiveness of the 'tech' inspiration marketplace

As far as assessing the effectiveness of the partner's effectiveness in inspiring young people into tech careers is concerned, little data exists on the effectiveness of different countries, let alone cities. In reality this is where city administrations really need to try and find a suitable proxies.
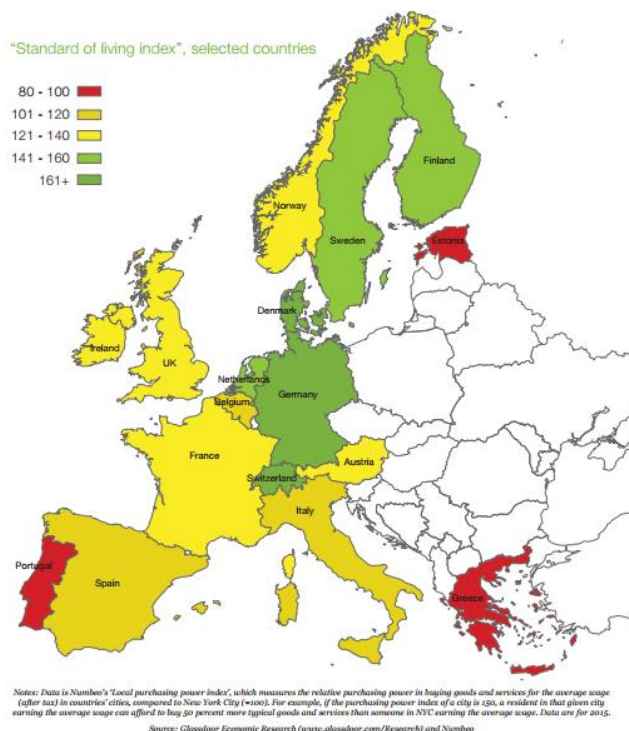
At a member state level, some data exists on the comparative demand for STEM skills by employers in different countries across the EU and the progress of young people into STEM studies at various stages of the education system. This data could provide a rough guide to the effectiveness of national STEM inspiration activities, although it would be great to see this for different cities.

Figure 10, overleaf[vii], shows the EU countries which are good at providing a low level STEM education across their education systems; those that have a higher proportion of STEM Graduates that the EU average; and the change in STEM employment by country. This last graph shows that;

- Across the EU-28, there was strong growth in STEM employment between 2003-2008 and 2008-2013 of at least 19%.
- From 2003 to 2008, there was only one country (Denmark) where percentage growth was less than 10%.
- From 2008 to 2013, despite the recession, all but three EU-28 countries (Belgium, Greece and Spain) had employment increases. Of those countries where the number of those working in science and technology with a tertiary (ISCED) education grew, only four had growth below 10%.

Collectively, this data would seem to suggest that;

- Cyprus, Romania, Bulgaria, Slovakia, Greece, Luxembourg, Sweden, Portugal, Italy, France and Hungary are good at providing a general low level STEM education across their entire population;
- Of these, only Sweden, Portugal, Romania, and Italy are also good at inspiring young people into higher level STEM careers (although Finland, Germany, Austria, Slovenia, Croatia, Ireland and Spain are all good at this, but not so good at early years inspiration)
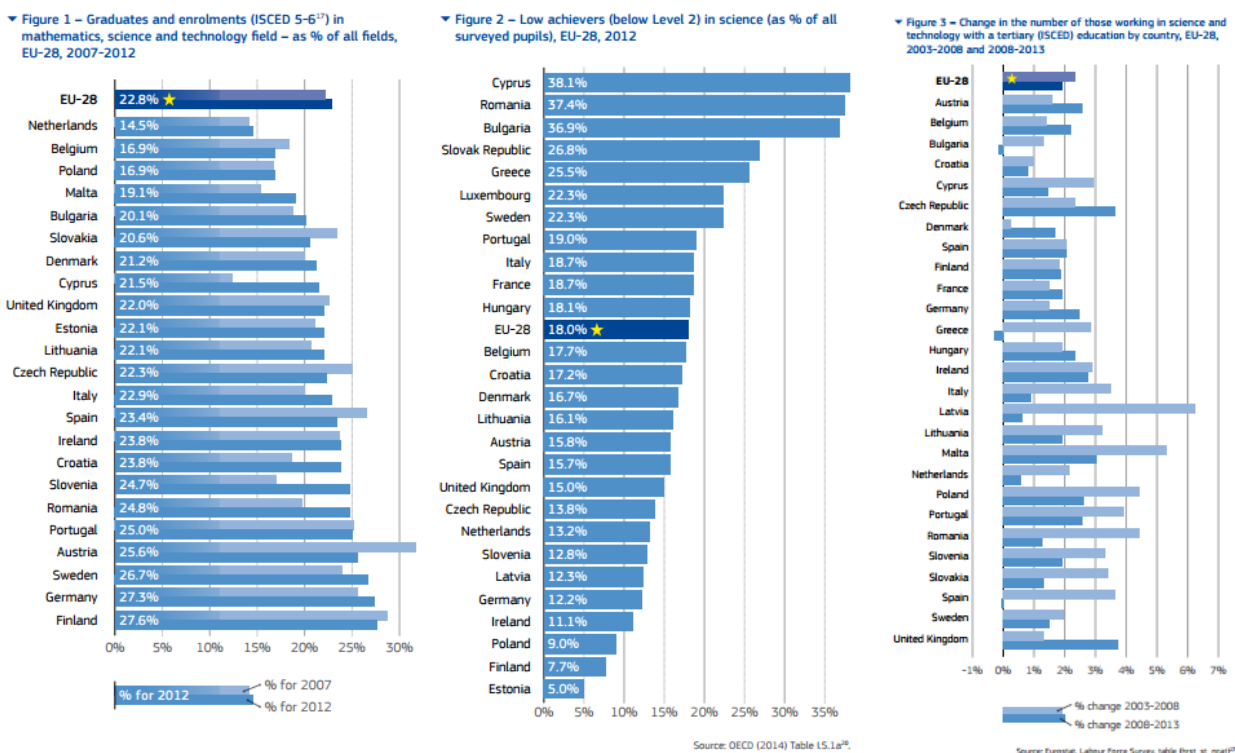

Fig. 10: STEM Graduates, Low Level (L2) STEM Skills and change in STEM Employment 2003-2013

Understanding the effectiveness of skills pipelines in cities is really important, as a measure of how effective a system is in delivering the skills needs of the local labour market. They also provide a useful measure of whether there are any abnormal or 'broken' pathways in the local economy.

At the local level, different cities and regions might be able to compare comparative data on progression of young people into;

School level qualifications, or grades in certain STEM subjects at school.

Progression into Apprenticeships (by volume and value – including digital apprenceships; STEM apprenticeships; STEM subjects at graduate and postgraduate level. Collectively, this should give cities a sense of the effectiveness of their skills pipelines and help them identify where there any significant gaps.

Careers Guidance & Mentoring

Again, this is a measure where there is no high quality standard European dataset which is capable of being used to measure the quality of careers guidance outcomes. There may be member state data about the number of advice sessions delivered to certain cohorts of beneficiaries.

Having some kind of data for this domain, even if only highly localised, is still very useful, for assessing young people's exposure to careers information, advice and guidance.

Ease of Transit

As we know from the work of Youthful Cities, young people also want to live in cities that are easy to navigate. If cities wanted to develop programmes and policies to address the ease of transit in their city to make themselves more attractive to young people, they could consider targeting improvements in average commute; commuting by bicycle; commuting by bus, train or metro; and/or commuting on foot.

Cultural Facilities

As we have seen from the analysis in the 'Making the case for investing in young 'creative-tech' talent in cities' Thematic Report, a city could chose to make itself more attractive to the 'creative classes' by developing an active policy to increase the number of cultural facilities and networks it has.

If this is the approach the city chose to adopt to retain and attract more 'creative-tech' GEN-Y, they could undertake an audit of theatres, festivals and heritage and historical sites, to try and stimulate more support for the Creative and Cultural Industries.

Commercial Property

Understanding more about the supply and demand for commercial property, and the relative rental levels of commercial property, might help policy makers identify third spaces that could be utilised by young people to create new enterprises, the need to adopt more innovative approaches to stimulating demand etc.

In order to assess whether this is a particular policy problem for a city, policy makers should be looking at property supply and values, vacant floorspace, rateable value per m2 etc. Whilst, in isolation, intervening in commercial property is unlikely to have a massive impact on the development, retention and attraction of GEN-Y 'creative-tech' individuals, taken with other issues, commercial property may have a part to play.

Self-Employment

One of the major reason many cities are trying to chase 'tech' talent is to try and increase the number of high tech start-ups they have in their city. High-tech start-ups add to the prosperity of cities. Indeed, there is numerous evidence to suggest that tech-talent is an important factor in what drives tech start-up communities.

Indeed, the Learning Incrementally from Failed Entrepreneurship (LIFE) project[viii] has put together a white paper that chronicles the challenges and failures that European start-ups face across various stages of their development. The report splits the lifespan of a start-up into four different phases – Discovery, Validation, Efficiency, and Growth.

Start-ups that were interviewed for the report were asked to identify the kinds of problems they have experienced in each of these phases and how, or if, they solved them. Building a team and hiring was cited by interviewees as a significant problem in each of the four phases.

According to research by the Technology Investment Bank, GP Bullhound - there are now 47 European 'unicorns', start-up businesses with a turnover of over $1bn.

In addition to understanding the prevalence of 'unicorns' in the local economy, city managers should also review their business birth and death rates; business survival rates; tech start-up rates; high growth start-up rates; start-up output; the time taken to start business; and attitudes to entrepreneurship (possibly via the Global Entrepreneurship Monitor).

They also might want to review how many business accelerators there are in their city. For example, London has over 36 (e.g. Seedcamp, Wayra, Techstars, Microsoft Ventures, Future Fifty and London Stock Exchange's Elite) as well as over 70 co-working spaces (e.g. Runway East, Central Working, Level39, Trampery, Second Home, TechHub, White Bear Yard, HearEast, We Work). Level39 is Europe's largest accelerator space for financial technology, which contains some over 100 companies.

Access to Finance

LIFE's white paper into the challenges and failures experienced by European start-ups also identifies that money and access to funds are major problems at both the 'Discovery' and 'Validation' phase of start-up for many tech businesses.

A buoyant tech start-up market needs a buoyant finance market. In order to assess how effective their risk finance markets are, whether this is an issue to address and evaluate the effectiveness of public policy interventions, city managers should benchmark their local risk finance markets made. Little pan-European data exists on risk finance, although many individual member states and regions will have had to carry out ex-ante evaluations, which will help policy makers form an opinion as to whether or not this is an issue.

Innovation Performance

Many of the really great Tech Hubs are based in city regions that score well in terms of regional innovation.

The regional innovation union scoreboard is a tool for assessing innovation performance in EU regions and highlighting the relative strengths and weaknesses of their research and innovation systems; it also helps in monitoring the Innovation Union's implementation.

For cities looking to improve their performance as a tech hub, they could look at the indicators in the innovation scoreboard and identify some of the key measures which they underperform on, and develop measures/policies to improve. The innovation union scoreboard is based on three types of indicators and eight innovation dimensions. These include;

- Population aged 30-34 having completed tertiary education (%)
- R&D expenditures in the public sector (%)
- R&D expenditures in the business sector (%)
- Non-R&D innovation expenditures (%)
- SMEs innovating in-house (%)
- Innovative SMEs collaborating with others (%)
- EPO patent applications (per billion GDP)
- Product or process innovators (%)
- Marketing or organisational innovators (%)
- Employment in medium-high and high-tech manufacturing and knowledge-intensive services (%)
- Exports of medium-high and high-tech manufacturing industries (%)
- Sales of new-to-market and new-to-firm innovations (%)

Many of these measures have been covered elsewhere in this report, and can be targeted individually or as a basket of measures.

The Knowledge Base

Understanding more about the Knowledge Base in a city is a useful starting point in understanding what capacity and capabilities the city has, and how it can be further developed. Understanding whether the Knowledge Base of a city is Analytical (scientific based), Synthetic (engineering based) or Symbolic (arts based) based, or all three, should give a city a good understanding of what strategic research assets it has to build on.

The best way to understand this is to undertake an audit of the research organisations that exist in a city, by understanding in more depth;

- Universities and further education centres;
- The Student population;
- Scientific production - Data about researchers, doctorates, citations, publications;
- Research Strengths and competitiveness (national and international)
- Research Income generated;
- European Commission eCorda dataset, focusing on collaboration in European Research projects
- Knowledge exchange/ collaboration – interactions between HE Institutions and business & the wider community: collaborative research, consultancy, and contract research income;
- Science and technology intermediary institutions

This should give policy makers opportunities to better understand how cities can intervene in the research marketplace to encourage greater collaboration, or link research institutions and business to develop new technologies.

Economic performance

Lastly, although there are problems with the measurement of economic performance – largely because of the lagged nature of the data – it could help policy makers understand the relative performance of the economy against its competitors. In this regard, GVA per head and GVA per worker may be useful measures, although policy makers should be careful not to treat this measure as a standalone performance metric, as there are certain anomalies with its measurement (insofar as some more competitive places might actually want to push for the achievement of lower GVA per worker, if they are looking to attract younger people).

Primary Research sources which could be useful in shaping GEN-Y talent policies

In addition to utilising background and secondary research to understand local economies, target policy interventions and evaluate the effectiveness of those policy interventions, city managers can also undertake primary research to better understand their city.

Types of primary research

Primary research is new research, carried out to answer specific issues or questions. It can involve questionnaires, surveys or interviews with individuals or small focus groups. Secondary research makes use of information previously researched for other purposes and is generally publicly available.

Primary Research can take a variety of forms, but will invariably involve bespoke surveys, focus groups, 1:1 interviews etc. to understand direct from the 'coal-face' at a particular moment in time, over time intervals, or continuously what respondents views are about a particular issue.

In addition to the three formal research methodologies discussed (like background, secondary and primary research), a number of other techniques are also worthy of mention.
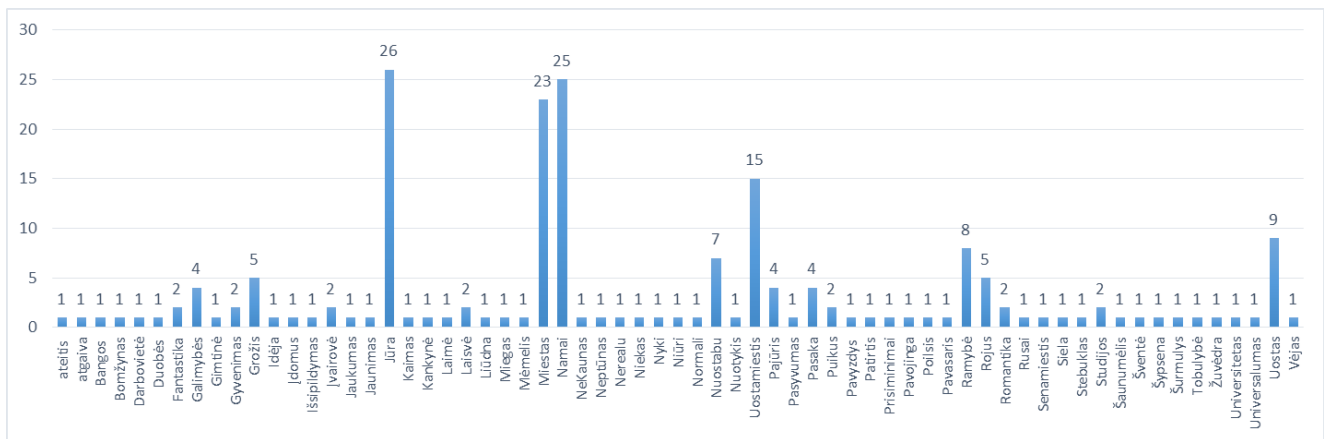
Figure 11. Klaipeda's Primary Research in understanding what young people associate the city with

Road mapping, Forecasting and Foresighting

Whilst secondary data sometimes deals with historic data (as it has been collected by someone in the past) and primary research is generally in the moment, road mapping, forecasting and foresighting van be useful in providing a picture about how the future might look.

Economic Forecasting is a standard statistical tool which many policy makers use to provide a prediction of how the economy might develop in the future. Roadmapping and Foresighting are more qualitative (rather than quantitative, although they can contain an element of both) to look into how the future might look.

All these methodologies are particularly useful in helping city leaders consider how they might adapt and change their services and approach in light of changing circumstances.

The Entrepreneurial Discovery Process

In contrast to the more formal research processes, since the mid 2000's, policy makers have developed a terminology and process for assessing how to understand a particular place, and drive it forwards, known as the 'Entrepreneurial Discovery Process' or EDP.

The roots of EDP can be traced back to the advent of the principle of Smart Specialisation, where policy makers have been using the process, to develop innovation policies for particular cities/regions.

The EDP is described as *'an inclusive and interactive bottom-up process in which participants from different environments (policy, business, academia, etc.) are discovering and producing information about potential new activities, identifying potential opportunities that emerge through this interaction, while policymakers assess outcomes and ways to facilitate the realisation of this potential[ix]'.*

The EDP goes beyond a dry research methodology, to pursue the integration of entrepreneurial knowledge which might be fragmented and distributed over many sites and organisations, companies, universities, clients and users, specialised suppliers (some of these entities being located outside of the region) through the building of connections and partnerships.

The EDP consists of the exploration and opening up of a new domain of opportunities (technological and market), potentially rich in numerous innovations that emerge as feasible and attractive. In some senses, the EDP combines traditional 'rear view' research methodologies, with more dynamic forecasting processes, like 'fore-sighting' and road-mapping'.

The importance of EDP relates to the idea that governments cannot possess the innate the wisdom or knowledge to define future priorities and that policy makers must guard against the intellectual logic which suggests the government knows which specialisations/domains should be developed in future. The EDP proposes a process of

deep engagement with entrepreneurs, researchers and citizens in order to identify priorities and facilitate the emergence and growth of new activities.

It has been argued that successful smart specialisation dynamics are rooted in an EDP. But the emphasis on the EDP as the main process for generating information to identify the limited set of research and innovation priorities required in a regional innovation strategies means that the public intervention that is required is not about telling Member States and EU regions what to do, but about helping entrepreneurs to discover what to do.

Case Study: The City of Poznan's innovative approach to participative planning

In the development of its latest strategy, the City of Poznan organized a series of workshops for residents, experts, officials and councillors, the result of which is to forge a new development strategy. Nobody in Poland has ever previously adopted such an open, inclusive and participative approach.

All too often strategies are formed in cities by experts from local universities or consultancy firms. The traditional process involves undertaking research, identifying gaps, exploring trends and writing the report. When you analyse the data, all too often consultancy firms end up identifying the same priorities - more greenery, bicycle paths, housing, jobs, better education; less traffic jams and pollution. In many cases, the strategy is rarely taken out of the drawer

Poznan wanted to change that. The city believed that if the development strategy was going to be adopted and 'owned' by the residents of Poznan, and they were going to help deliver it, it was vital to break down the barrier between the official and the residents.

The biggest challenge for Poznan is to stop suburbanisation. Ownership of a house with a garden in the suburbs is an exceptionally attractive option, partly because the rental levels are much less than in the city. Poznan is surrounded by forests and lakes, and the access to the well located offices in the centre is relatively easy.

These issues are causing depopulation in Poznan, which - apart from Lodz - is the fastest shrinking city centre in Poland. In 20 years the population has shrunk by 20 thousand. This is impact on city finances and congestion, with falling tax revenues and increasing car congestion.

The main goal of any development strategy - to make people want to live in Poznań – started life as a blank sheet of paper, with residents playing a very active role in shaping the strategy. The most important conclusion was that Poznanians want to take responsibility for the city.

 The methodology developed for the workshops relied on a team of external experts headed by Anna Wróblewska and Rafal Kolodziej, experts in design thinking. Design thinking is a way of solving problems, which puts the resident at the heart of the process. Poznan focussed on defining the problem, and then asked everyone to come together and solve the issue, using tools like role reversal, metaphor or flipping ideas.

At the workshops, to generate the new development strategy anyone could attend. Invitations went not only through the website of the municipal office, by the local media, social networking, but also traditional mail to non-governmental organizations and institutions. The workshops involved a series of 20 meetings attended by over 600 people divided into small groups.

The final document of the new strategy will be adopted by the end of the year. The current draft is called the most important areas of development: green mobile city; modern enterprise; of community and social dialogue; Global locality; diversity and unique settlements.

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The EDP is a "conceptual pillar" of Smart Specialisation (Capello, 2014). This bottom-up approach in priority-setting is crucial to understand the main feature that distinguishes S3 approaches from innovation strategies of the past. EDP reconciles the idea that policies take things in hand by shaping the regional system through priority-setting and the idea that market processes are central in producing information about the best domains for future priorities. More importantly, it does so in a non-prescriptive, bottom-up fashion, where no individual player is supposed to have a priori preferential access to knowledge about future opportunities/developments, and it is through the interaction of all sides that such identification emerges.

The EDP should involve a wide variety of stakeholders within local societies but also within different tiers of governments. Coffano and Foray (2014) proposed three types or classes of actors that are essential for any EDP:

- **Entrepreneurial agents:** Who assume the most privileged position in process as the sources of the "entrepreneurial knowledge" as the foundation upon which Regional Innovation Strategies are developed. Entrepreneurial agents assume any number of forms (e.g. firms, higher education institutions, public research institutes, independent innovators). Each actor inevitably possesses insights, perspectives and knowledge that are derived from their unique experiences and positioning relative to the market and other actors, all of which may be usefully combined to develop a comprehensive knowledge base used to inform the RIS3.
- **Policy makers and the leaders of the Smart Specialisation Strategy:** Their responsibilities are two-fold. First, the entrepreneurial knowledge embodied in and possessed by the various relevant actors must be integrated. Once this knowledge integration has commenced, the focus then must shift to its synthesis and processing. Policy makers are indeed active in the ED process and hold considerable responsibility, but is not their position to consciously "pick-and-choose" stakeholders, as doing so would undermine the bottom-up, grassroots nature of EP process and the RIS3 more broadly. The emphasis on ED as a decentralised and bottom-up process of producing information about potential priorities should not result in narrowing the scope of policy intervention. However, this role is quite distinct and rather more nuanced than what has been previously adopted in traditional industrial policy approaches.
- **The remainder of society:** The EDP also requires the active involvement of the broader society for two specific reasons. First, no actor is omniscient and the more inclusive the process of knowledge collection, the more comprehensive the knowledge base at the disposal of policy makers. Second, and more importantly, broad societal engagement contributes to the local ownership of the process and the strategy more broadly. This local ownership is critical for the smart specialization strategy as a whole as it provides a sense of involvement and empowerment and contributes to retain the place-based, contextually tailored bottom-up character of EDP.

In some instances, Urban Planners may recognise this process as a participatory planning approach. One city that has place particular emphasis on adopting a highly participatory approach to planning is the City of Poznan.

Conclusions

Understanding some of the core metrics that characterise your city and which ones your city wants to impact on is one of the most important early aspects of the Integrated Action Planning (IAP) Process.

- Research and Data helps you to understand more about your characteristics of place. They define your city. They help teams of people reach a common understanding of some of the key priorities to address;
- They can also help you prioritise policies to intervene on. Research, data and participatory processes like the EDP and/or participatory planning can help stakeholders to prioritise and design the interventions that they believe will be most key in addressing a particular problem or set of problems;
- Perhaps most importantly, being clear about the metrics you want to tackle will also form part of your Evaluation and Monitoring Framework, enabling you to understand how effective your policies and plans have been.

Starting the IAP process with a clear line of sight on the issues you want to address and how you will measure your success is a vital part of successful planning.

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