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:

Making the case for investing in young 'creative-tech' talent in cities

The Gen-Y City Network has been co-financed by ERDF through the URBACT III Operational Programme

Why GEN-Y 'creative-tech' talent is important to the future of the European Economy

All over Europe, there is a growing interest in better understanding how cities can create the global tech businesses of tomorrow. At the same time, the availability of tech skills in tightening, with many businesses finding it difficult to access the tech talent they need to grow.

With tightening labour markets and 'creative-tech' skills increasingly in demand, businesses and cities are having to be increasingly creative about how they develop, retain and attract young knowledge based workers.

Nowhere is this challenge more acute than in the smaller, more peripheral, more 'conservative', less prosperous cities of Europe. The situation is particularly acute for post-industrial cities of Europe, which will require a concerted programme of investment to address numerous structural deficit's in their cities.

The first step for many cities in being able to successfully address these issues, in tight financial environments, is to make the case for investment to address the issue.

This thematic report from the Urbact Funded GEN-Y City Network looks at some of the basic underpinning arguments for investing in GEN-Y 'creative-tech' talent. It has largely been built from different cities and various specialist research organisations stories and arguments for investing in 'creative-tech' talent, as presented at a transnational exchange event in Wolverhampton, on 27th– 28th September 2016.

The Shrinking Supply of Tech Talent

According to Andrus Ansip, EC Digital Single Market chief, *"there could be up to 825,000 unfilled vacancies for ICT professionals by 2020."* In Plugging the Skills Gap: The clock is ticking, Business Europe suggests *"the lack of STEM skilled labour will be one of the main obstacles to economic growth in the coming years."*

Similarly, in Encouraging STEM: Comparison of Practices Targeted at Young People in Different Member States, the DG for Internal Policies stated in March 2015 that *"demand for people with STEM skills is increasing across the Globe. Many STEM workers are approaching retirement age. Some forecasts suggest around 7m technical job openings will emerge between 2016 and 2025 .Whilst demand for tech people continues to increase, the number of people choosing to pursue tech careers continues to fall. Whilst the share of STEM University graduates has increased in 15 Member States and at European level since the mid-2000s, the number of STEM Technicians has decreased over the same period. Skills shortages are particularly acute in Engineering and IT sectors and for professionals. Because of these issues, the unemployment rate for STEM skilled labour across Europe has been very low and well below the total unemployment rate since the beginning of the 2000s, even in countries hit particularly badly by the crisis"*

Research from the Indeed Hiring Lab, a global research institute committed to advancing the knowledge of human resource and talent management professionals worldwide, has taken an in-depth look at what's happening in the tech jobs market. The resulting report, entitled Opportunities and Challenges for European Tech Employers, provides insights on where and how tech candidates are searching for their next opportunity. Among the key findings, is that the UK, Ireland and the Netherlands are shown to have somewhat of a competitive advantage in attracting international jobseekers interested in tech; jobseekers from abroad are significantly more interested in those three markets than others in Europe; and tech jobseekers are disproportionately attracted to London.

Global population shifts

These developments are playing out in the context of an increasingly global tech-talent marketplace, which is characterized by an increasingly mobile population of skilled workers and young people.

Data coming from Indeed shows that Computer and Mathematical web based job postings are between two and three times more likely to be clicked by international jobseekers than the average job in the US and UK. As they recognise, *"Europe faces fierce competition from US tech hubs: San Francisco, San Jose and other US tech hubs such as Seattle, WA and Austin, TX have international pull".*

According to Indeed salary data, the typical Java developer is paid 47% more on average in the US than in the UK, a fact they attribute to 'thicker' tech labour markets, the higher density of tech firms, higher levels of competition

for talent and better job-to-person matches. To a lesser extent, Europe also faces competition from emerging tech hubs in Asia and the Pacific region which are becoming more aggressive in trying to attract top tech talent.

According to Indeed research, *"Jobseekers who search for tech jobs in Europe are attracted to a few centres of tech employment, and that interest is becoming more concentrated over time. In 2013, interest in those centres was 1.9 times greater than interest for other cities in the countries considered. By 2015, it was 2.2 times greater"*.

Indeed also analysed employer demand and jobseeker interest for tech jobs in the main centres of tech employment in each country. Munich and Berlin were found to have the highest level of tech jobs concentration, followed by London and Dublin. However, London and Dublin have higher levels of jobseeker interest for tech roles compared to the two German cities - something that Indeed attribute to the fact that Munich and Berlin do not enjoy the "competitive advantage" in attracting foreign jobseekers interested in high-skill tech roles that the UK, Ireland and the Netherlands enjoy.

Looking further forward, Oxford Econometrics has found that the situation is forecast to worsen for many cities across Europe, with many suffering from a talent deficit by 2021, meaning they will increasingly need to recruit from countries such as India, Indonesia, Colombia, South Africa and Brazil – all of whom were likely to be experiencing a talent surplus.

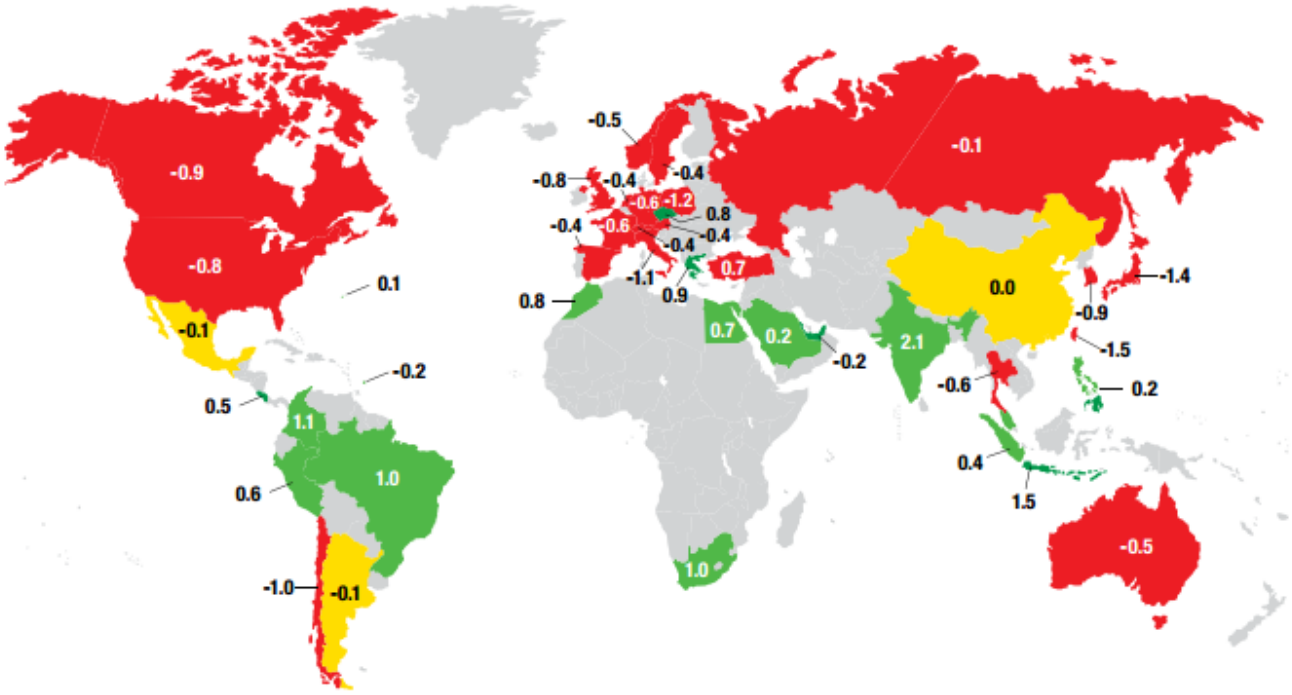
This same study also forecasts that the most dramatic jump in future demand for workers will be in emerging Asia, where the need for new employees will rise by 22%; closely followed by Latin America (13%); the Middle East/Africa (13%); and Eastern Europe (10%). By contrast, demand for talent in North America, is forecast to rise by 6.1% over the next 10 years and Western Europe is only projected to grow by a much more modest 3.5%.

The same report suggests the greatest mismatches between supply and demand for talent in Europe in 2021 are likely to be found in various countries (including Spain, Switzerland, Austria, Netherlands, Sweden, Norway, Germany, France, the UK, Greece, Italy and Poland).

Global Heat Map

The gap between the growth in demand and the growth in supply of talent, 2011 to 2021

(Red indicates a trend deficit, green a trend surplus, yellow a broad balance. Numbers show trend growth as annual percentages.)



OXFORD ECONOMICS

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The increasingly mobility of young knowledge workers

According to Oxford Economics, talent mobility has increased 25% relative to the previous decade, and is predicted to increase by 50% by 2020.

The current economic crisis has increased intra-European talent mobility from southern Europe to northern Europe. Spain lost 480,000 inhabitants from 2010 to 2013 due to migration deficits. Conversely, the UK and Germany have benefited most from new migration trends. While net migration in Germany in the 2000s was small (at 96,000 p.a. on average and even negative in 2008 and 2009), it jumped to 437,000 in 2013.

The increase in migration flows in the EU has been accompanied by an increase in migrants' education level. The percentage of intra-EU migrants that were highly educated increased 7 per cent between 2005-6 and 2011-12, from 34% to 41%. Similarly, the share of highly educated migrants moving from the GIPS countries to other EU member states jumped from 24% to 41%.

Increases in unemployment rates (particularly youth unemployment in the Southern Europe) have further contributed to out-migration as young people leave their home country to seek out better employment opportunities. In a number of Europe's larger cities (such as London) foreign-born residents make up more than 40% of the population. By contrast, in many Eastern European cities, the foreign born population often doesn't exceed 5%.

Why are 'creative-tech' skills so important to the future prosperity of Europe?

Many parts of Europe continue to suffer from low basic skills (numeracy, literacy, ICT) and difficulties in developing, retaining and attracting sufficient STEM (Science, Technology, Engineering and Mathematics) talent. Collectively, these issues are combining to suppress productivity and inhibit firm's ability to exploit potential innovations.

The value of STEM jobs is supported by numerous evidence that reinforces that STEM skills can enhance growth[i], and create high productivity jobs. Consistent with this, there is a high wage premium for STE (Science, Technology and Engineering) jobs in particular. Workers in these occupations tend to earn around 19 per cent more than their non-STE counterparts[ii]. STEM jobs therefore have an important role to play in addressing the productivity problem, since they make a disproportionate contribution to GVA.

In addition, a recent report for Nesta produced by researchers at Sussex University entitled 'The Fusion Effect: how firms gain from combining arts and science skills[iii]' finds that firms that deploy STEM *and* art and design skills (STEAM) experience faster employment and sales growth than STEM firms and - all other things being equal – are more innovative.

This supports findings from the OECD[iv], World Bank and The Council of Canadian Academies[v], who suggest that STEM skills are necessary for many types of innovation, as well as productivity and growth, but they are not sufficient on their own. Importantly, other skills such as leadership, creativity, adaptability, and entrepreneurial ability are required to maximise the positive impact of STEM skills on economic performance.

Rather encouragingly, while these firms are widely perceived to be present in 'high-tech' and creative industries, the report finds them to also exist in 'low-tech' and 'mid-tech' industries too.

What are the future skills needs of business?

These findings are also consistent with The World Economic Forum's *Future of Jobs*[vi] study which predicts that 5 million jobs will be lost before 2020 as artificial intelligence, robotics, nanotechnology and other socio-economic factors replace the need for human workers as the Fourth Industrial Revolution[vii] gathers pace.

Whilst the good news is that those same technological advances will also create 2.1 million new jobs, the kills people will need to thrive in the workplace of the future will be very different.

The ability to solve complex problems is seen as the most important skill to have by 2020, following by critical thinking. While both of these skills ranked highly in the WEF's top ten for 2015, creativity has jumped from last place in the table to number three.

Creativity is set to overtake negotiation as a key workplace skill by 2020.

"With the avalanche of new products, new technologies and new ways of working, workers are going to have to become more creative in order to benefit from these changes," the WEF said. *"Robots may help us get to where we want to be faster, but they can't be as creative as humans (yet)."*

While negotiation and flexibility were high on the list of skills for 2015, they will begin to drop from the top ten in 2020 as the rise of "big data" is predicted to herald in an era where machines and computers begin to make more decisions for us.

The WEF added: *"Active listening, considered a core skill today, will disappear completely from the top ten. Emotional intelligence, which doesn't feature in the top ten today, will become one of the top skills needed by all."*

The WEF's top ten workplace skills for 2020

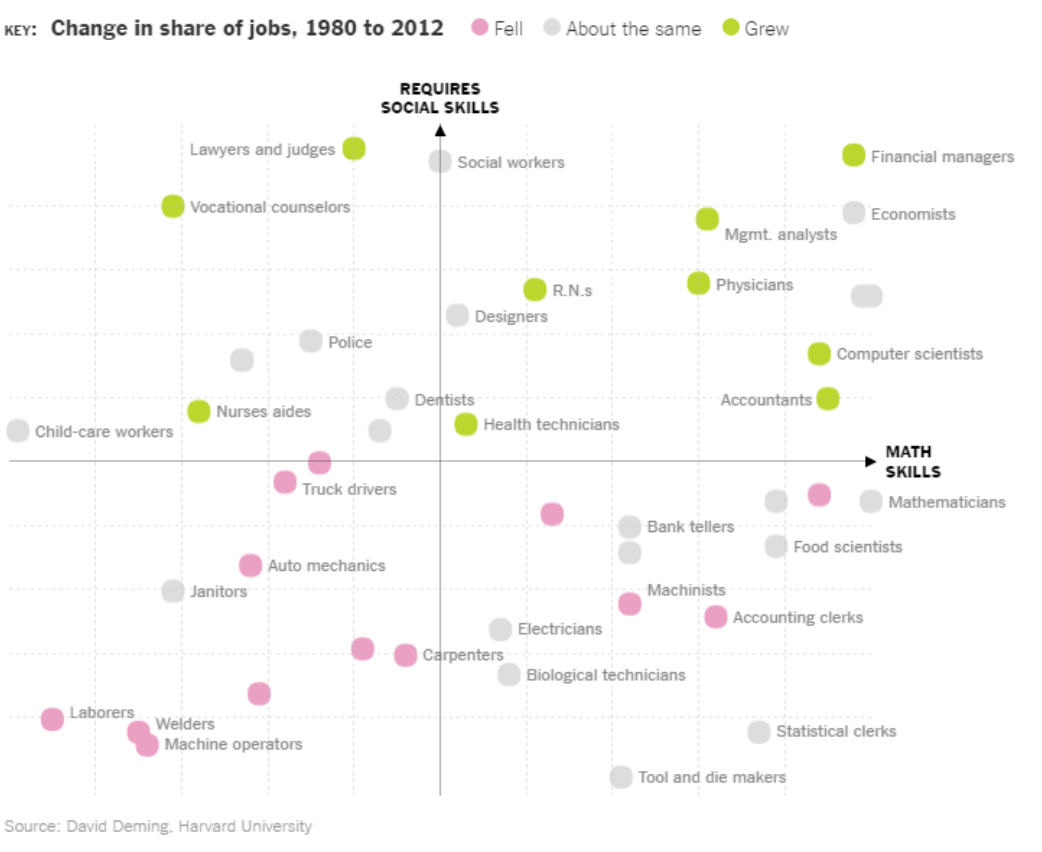
1: Complex problem solving
2: Critical thinking
3: Creativity
4: People management
5: Co-ordinating with others
6: Emotional intelligence
7: Judgement and decision making
8: Service orientation
9: Negotiation
10: Cognitive flexibility

Most new jobs will be in more specialized areas such as computing, mathematics, architecture and engineering. Governments and employers in every sector are being urged to retrain and re-skill workers to avoid a crisis.

Similarly, David Deming, associate professor of education and economics at Harvard University[viii], argues that soft skills like sharing and negotiating will be crucial for many jobs in the future. He says the modern workplace, where people move between different roles and projects, closely resembles pre-school classrooms, where we learn social skills such as empathy and cooperation.

Deming has mapped the changing needs of employers and identified key skills that will be required to thrive in the job market of the near future. Along with soft skills, he also stresses the importance of mathematical ability.

Deming shows that in recent years, many jobs requiring only mathematical skills have been automated. Bank tellers and statistical clerks have suffered. Roles which require predominantly social skills (childcare workers, for example) tend to be poorly paid as the supply of potential workers is very large.



Source: David Deming, Harvard University

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The study shows that workers who successfully combine mathematical and interpersonal skills in the knowledge-based economies of the future should find many rewarding and lucrative opportunities.

The challenge now, says Deming, is for educators to complement their teaching of technical skills like mathematics and computer science, with a focus on making sure the workers of the future have the soft skills to compete in the new jobs market.

What attributes do cities need to develop to attract young creative-tech talent?

According to Youthful Cities[ix], the cost of living, limited employment opportunities and safety concerns will force millions of young people living in urban areas to consider a move to alternative cities over the next ten years.

It found that 58% of Millennials surveyed said they plan to leave their city within the next 10 years, citing affordability, employment and safety as key drivers.

Only 17% of Millennials feel that their city governments are listening to them, whilst 55% of respondents wanted to participate in meetings about the future of their city. Millennials want to be engaged, they recognise the economic importance of living in a youthful city and they want to help create it.

In Youthful Cities' 2016 Millennium Survey, respondents confirmed their belief that a youthful city is one that is connected, dynamic, open, curious, inventive and playful. Millennials believe a youthful city delivers more jobs, a better economy and a happier population.

Case Study: Involving young people in shaping the City

The city of Boston lets teenagers set its budget. The teens are part of Boston's Youth Lead the Change initiative, a participatory budgeting programme that draws young people firmly into annual cycles of municipal decision-making.

Earlier this year, a two-month phase of public crowdsourcing has generated more than 700 ideas.

Now committees of "change agents" are working to distil those ideas to a few feasible proposals. In May, there will be a public vote, open only to Bostonians from 12-25, to choose which proposals get the green light.

Participatory budgeting has been used in one form or another in an estimated 1,500 cities worldwide since it first started in Porto Alegre, Brazil in 1989.

But Boston's is the first for youth only. The programme began under former mayor Thomas Menino and came to fruition after Martin Walsh assumed the office in 2014.

According to the 2016 survey, the most important features of a Youthful City are ranked as Transit; Health; Safety; Affordability; Education; Environment; Employment; Good Jobs; and Digital Access.

That said, the reality is that cities that appear to be really good at attracting and retaining 'creative-tech' talent are those cities that possess dynamic 'opportunity eco-systems' and that have also worked hard to keep the cost of living down. The next few sections of this study look at the specific issues that make cities more attractive to GEN-Y 'creative-tech' talent, from a single perspective.

Who are considered the best tech-cities?

As far as tech cities are concerned, the fact company[x] reported earlier this year that analysts at Expert Market, a U.S.-based B2B marketplace, suggested that Silicon Valley is not the most desirable place for tech employees to live, but that "the world is full of people who aren't realizing their potential, in large part because their cities don't provide the opportunities and living conditions necessary for success."

It reported that when apartment search start-up RadPad mined its rental data and combined it with salary reports from Anthology's tech jobs platform, they found that the current median price for a one-bedroom apartment

within a half-mile radius of companies like Uber, Twitter, Google, and Airbnb in San Francisco is chewing up between 42% and 54% of software engineers' salaries. This is despite research from the Census Bureau which suggested that only 30% of income should be spent on housing in order for it to be considered affordable.

The analysts at Expert Market then looked at the most recent ranking of cities in the global start-up ecosystem as determined by Compass, a management reporting Software Company which regularly surveys 11,000 start-ups, investors, and other stakeholders. Expert Market analysts pulled the top 20 global cities on the list and scored them according to eight factors:

- Time to start business
- Seed funding
- Start-up output
- Average salary
- Cost of living
- Average rent
- Paid vacation
- Average commute

Scoring was on a scale from 1-20 (1 being best, 20 being worst) and all factors were weighted equally. Additional data was provided by World Bank and Numbeo's cost of living index.

Compass rankings (based purely on start-ups' performance, funding, market reach, and talent) showed that Silicon Valley was the number one ecosystem in the world, followed by New York City (Silicon Alley), Los Angeles (Silicon Beach), Boston, and Tel Aviv. In sharp contrast, Expert Market's analysis put Berlin, Austin, and Toronto in the top three, respectively, thanks to their balance of business growth, affordable rent, and salary.

Expert Market found that Berlin offers the best tech hub relocation spot due to "massive start-up opportunity combined with low living costs." But Berlin's best asset is its average commute time. At just 34 minutes, it beats the rising tide of time spent to and fro from less pricey outposts surrounding the San Francisco Bay area. Some commuters spend as much as three hours heading to work in San Francisco, which topped the list of metro areas with the worst commutes.

Ranking Austin's "Silicon Hills" in second place shouldn't come as too much of a surprise. SxSW's tech conference has played a part in putting the Texas capital on the tech map. Brant cites Austin as the top American tech hub to live and work due to its "huge funding availability and lower living costs than its West Coast rival."

That squares with Glassdoor findings that indicate Austin is one of the top U.S. cities for jobs this year and one of the friendliest to small businesses started by millennial entrepreneurs. Expert Market found that the average seed funding available to start-ups in Austin is between $900,000-$950,000.

Canada boasts "Silicon Valley North," but depending on who you ask, that place could be either Vancouver, Montreal, or Toronto. The designation of the number

Expert Market's top 20 tech-cities to live and work in;

- **Berlin**
- **Austin**
- **Toronto**
- **San Francisco**
- **Boston**
- **Tel Aviv**
- **Los Angeles**
- **Amsterdam**
- **Montreal**
- **Paris**
- **Bangalore**
- **Seattle**
- **Vancouver**
- **Moscow**
- **Chicago**
- **London**
- **New York City**
- **Sydney**
- **São Paolo**
- **Singapore**

three spot went to Toronto in this report, in part because of the quick turn to start a business. The city also earned high marks for the average paid vacation tech workers receive as well as average rental prices.

Case Study: Creating a Tech-City Ecosystem, which is capable of generating the next Facebook

"The number of companies in London's digital technology sector has grown by 46% since 2010, while the sector now employs close to 200,000 people, a 17% increase on five years ago, according to Oxford Economics.
According to data compiled since 2000 by GP Bullhound, the British investment bank, the UK has produced most of Europe's "unicorns"—companies valued at over $1bn—with 17 firms achieving this distinction. British tech companies to join the elite club in the past 12 months are in sectors like fintech and fashion, where the UK has been the most competitive. Notable examples include Skrill, the web payments company recently acquired for €1.1bn, and Farfetch, the online luxury fashion store, valued by investors at $1bn in March.
Figures from Dow Jones VentureSource, the research group, show the UK tech and digital groups receiving $1.9bn in funding in 2014, up from $1.1bn three years earlier.
As more employers are attracted to a city, competition for talent drives up wages over time. The culture and amenities that these companies foster often attracts more tech and knowledge workers to the location as well".

Quoted from London steams ahead as most important tech hub in Europe, http://www.computerweekly.com/

What are the cities with the best graduate employment prospects?

Cities such as New York, London and San Francisco are frequently cited[xi] as the most desirable places for recent graduates, as they offer exciting job prospects and a chance to work for some of the world's biggest companies.

However, a study the Citi Foundation, entitled 'Accelerating Pathways: Youth Economic Strategy Index 2015, A Decision Maker's Tool for Advancing Young People's Opportunities in Cities'[xii] ranks 35 cities on their available employment opportunities, considering factors such as employment growth, quality of jobs available and the ease of starting a new business, and ranks Singapore as the highest.

According to the study, Millennials studying there have the added benefits of public healthcare, scholarships and educational loans. However, the high cost of living – the Economist[xiii] ranks Singapore as the world's most expensive city – means more than 60% of young people surveyed there have considered moving abroad for employment or education.

Toronto is second in the report, thanks to a number of city-led programmes aimed at improving employment opportunities, with Hong Kong third.

A separate report by the Swiss Bank, UBS[xiv], suggests Europe boasts seven of the 12 cities with the world's highest wages. In Zurich, for example, the average resident takes home more than $41 an hour before tax, with Geneva close behind. But high wages don't come cheap: the Swiss cities are also among the most expensive to live in.

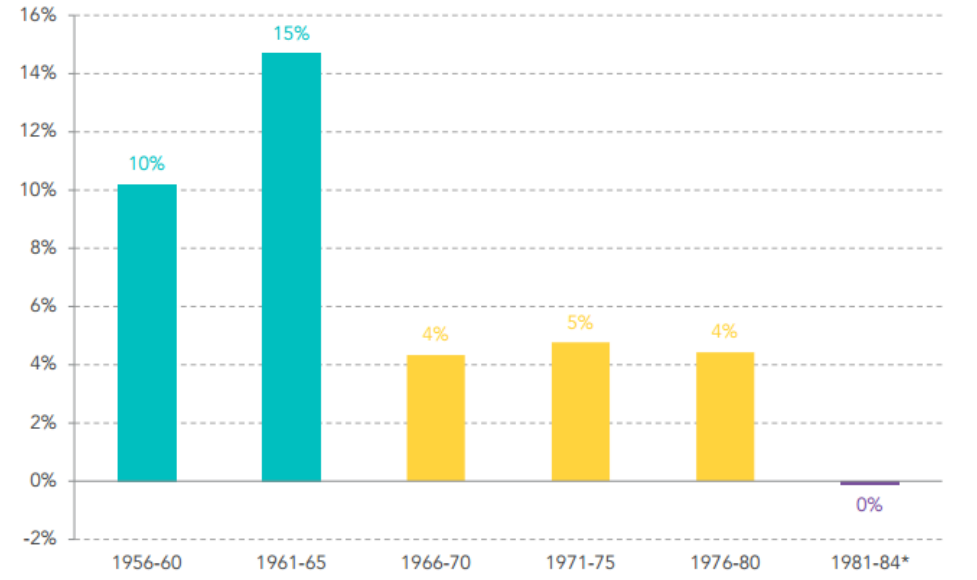
The importance of Affordability to Gen-Y

Numerous authors have written about the challenges many young people face living in many cities, with rental values and the cost of living having outstripped the growth in wage levels.

In the UK for example, the number of 20 to 34 year-olds living at home with their parents increased by 25%[xv] between 1996 and 2013. Last year, 58% of 20- to 24-year-olds, 21% of 25- to 29-year-olds, and 8% of 30- to 34-year-olds in the UK lived with parents. It's a similar story in the United States, where one in five people in their 20s and early 30s live with their parents[xvi].

Figure 9: Median earnings at age 25 compared to the previous five-year cohort: UK, 1981-2009

Growth in median real weekly pay for all employees between cohorts (RPIJ-adjusted)



Notes: Figures for each generation are derived from a weighted average of estimates by single year of age for each single-year birth cohort within that generation; generations are included if at least five birth years are present in the data; for the years in which it is available, published *Annual Survey of Hours and Earnings* pay estimates (which cover the UK as a whole, as opposed to the microdata which only covers Great Britain) are used as control totals, and the results from each individual dataset are indexed to those from the *Annual Survey of Hours and Earnings* to create a consistent series over time; (*) the first millennial cohort spans only four birth years, in order to avoid the impact of the post-crisis downturn.

Source: RF analysis of ONS, *Quarterly Labour Force Survey*; ONS, *Annual Survey of Hours and Earnings*; ONS, *New Earnings Survey Panel Dataset*

YouthfulCities, ranked 55 cities on their affordability, using a range of statistics including, memorably, the number of hours needed to work at the local minimum wage to buy a dozen eggs (Detroit is top for egg affordability[xvii]).

When it comes to rent, Berlin ranks no 1 among the 55 cities despite a 28% rise between 2007 and 2014, and the efforts of some landlords[xviii] to beat recent rent cap legislation.

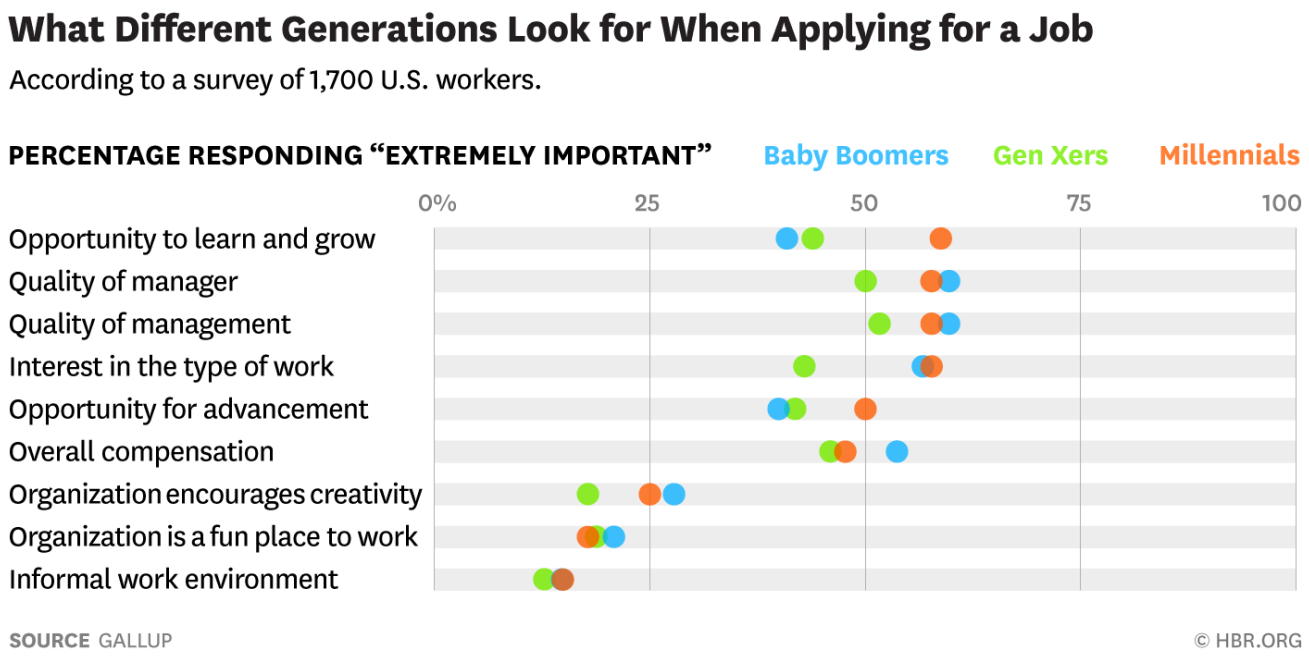
Young People's work aspirations

The importance of a cities affordability is also reiterated by a variety of research into the type of job Millennials want. There is a significant amount of research which suggests what Millennials want from the world of work is actually somewhat different from previous generations.

For example, the Manpower Group[xix] surveyed 19,000 Millennials across 25 different countries and identified that by 2020, Millennials will make up over a third of the global workforce. They also found that their top 5 job priorities were;

- 79% wanted flexible working;
- 80% wanted great people;
- 86% wanted holidays/time off;
- 87% wanted security; and
- 92% wanted money

Similarly, Harvard Business Review[xx] also asked workers how important particular attributes were to them when applying for new jobs. The diagram below illustrates how they break down by generation.



Opportunities to learn and grow are far more important to Millennials than previous generations. Millennials also want to feel deeply committed to their role and to work for a manager who will invest in their development, which isn't entirely different from what other generation's value. However, Millennials place a greater emphasis on opportunities to learn and grow and opportunities for advancement.

Perhaps somewhat paradoxically, the research also clearly indicates Millennials fundamentally think about their current role as merely being a stepping stone to the next job and a growth opportunity. Indeed, HBR found that 21% of American Millennial workers had left their job in the last year to do something else, a number that is more than three times higher than non-Millennials. They also found that Millennials aren't particularly engaged at work as a whole, with 71% saying they are either not engaged or actively disengaged at work, making them the least engaged generation in the U.S.

Whilst this HBR Research found that income was not among Millennials' top five factors when applying for jobs, it still mattered to them when looking for a job, predominantly because of slow wage growth in the wider economy and high levels of student debt. Given this situation, it's perhaps understandable that they would seek roles that make better use of their qualifications and increase their income, but cities need to recognise that Millennials sometimes value other job attributes, including learning and advancement, even more.

Lastly, according to research conducted by the World Economic Forum's Global Shapers community[xxi], Millennials are also shifting prioritization from career advancement to making a difference in their society.

With responses from over 1000 young people, based in 125 countries worldwide and 285 cities, the Global Shapers Annual Survey 2015 is one of the most geographically diverse surveys of millennials, the 2015 survey identified three important things about what millennials had to say about work:

- **Preferred Location:** If Millennials could choose – which country would they work in? The survey found that the U.S. topped the list, followed by the UK and Germany. Respondents chose the United Arab Emirates as the number one emerging market destination for career advancement, over China, Brazil, South Africa and India, despite the massive scale of the powerhouse BRICS economies.
- **Preferred Sector:** Millennials identified Information technology, tourism and government as the top three choices for driving growth. Government was also listed as the top sector in need of a change, followed by education and agriculture.
- **Employee preferences:** Millennials prioritized the opportunity to make a difference in their society and the ability to learn over straightforward career advancement. Although career advancement was the top attribute Global Shapers looked for in an employer, with 48% choosing it among their top three attributes, company culture came second (38%), followed by training and development opportunities (32%).

The best cities for GEN-Y self-employment

As far is as self-employment is concerned, the Manpower Group Research quoted above also found that that nearly three-quarters of Millennials currently have a full-time job; more than half are willing to consider alternative employment options in the future; and 34 per cent are seriously contemplating self-employment.

In addition, almost all (93 per cent) of 18 to 35-year-olds are willing to spend their own time and money furthering their own career, whether that's paying for a training course or investing in a new start-up.

CrunchBase[xxii] has also ranked the development of start-up culture in global cities through the 2015 Global Start-up Ecosystem Ranking. San Francisco remains the top pick in a US-dominated list – but it is diversifying. The start-up ecosystems which made the biggest leaps between 2012 and 2015 are New York, Austin, Bangalore, Singapore, Berlin and Chicago. New York City made a significant leap among the established players, moving from position number 5 to number 2 to take the silver medal. Austin, Texas, meanwhile leapt all the way into 14th place, whereas three years ago they didn't even make the top 20. Bangalore moved from 19 to 15, Singapore from 17 to 10, Berlin from 15 to 9, and Chicago from 10 to 7. Tel Aviv comes in at fifth place, thanks to innovative ideas such as The Library[xxiii].

The start-up ecosystems which made the biggest falls were Vancouver, Toronto, Sydney, and Seattle. Vancouver slipped out of the top 10 from position 9 to 18, Toronto slid from 8 down to 17, Sydney dropped from 12 to 16, and Seattle fell from 4 to 8. Again, all of these ecosystems did grow in the past three years, but not as fast as other environments, which puts them at risk of eventually being left behind.

Case Study: Youthful cities enable GEN-Y to fulfil their goals

Two brothers from Stockport have received government praise for their efforts to help rejuvenate markets.
Joe and Tom Barratt, from Woodley, are creators of the Teenage Market - which gives youngsters the chance to showcase and sell the results of their creative talents.
The concept, which began in Stockport, has now been franchised across the country and this week High Streets Minister Marcus Jones handed them a special recognition award. It is part of the Great British High Street Awards and only 13 were given out.
Now the brothers are working with other local authorities to help set up Teenage Market franchises elsewhere.
https://theteenagemarket.co.uk/

Thanks to the Internet and increasing opportunities for remote working, more and more young people are becoming "digital nomads" - people who telecommute and live nomadic lifestyles -- spending as much time as they'd like in cities of their choosing. Many digital nomads earn a living in the tech industry, supported by social media networks and annual conferences, held in Asia and Europe.

Nomad List, a website that trawls information to share with fellow nomads, is a particularly useful resource for digital nomads. Based on real-time check-ins on Nomad List, the 10 most popular cities for digital nomads are;

1. Chiang Mai, Thailand
2. Bangkok, Thailand
3. London, UK
4. Berlin, Germany
5. San Francisco, USA
6. Amsterdam, Netherlands
7. Prague, Czech Republic
8. Hong Kong
9. Ho Chi Minh City, Vietnam
10. Tokyo, Japan

Education hubs as magnets for GEN-Y 'creative-tech' talent

Transnational, or cross-border, education is attracting increasing interest, as many universities try and extend their reach across borders to open up new markets. The expansion in transnational education is also being fuelled by the rise in e-learning and specialist exchange programmes like Erasmus.

As far as global leaders in education is concerned, the Times Higher Education (THE) world university rankings recently ranked Oxford as the best university in the world, knocking the California Institute of Technology, the five-times best, into second place. Stanford, Harvard and Princeton universities and Massachusetts Institute of Technology, continue to score well.

Whilst Cambridge and Imperial College London join Oxford in the top 10 for 2016/17, named fourth and eighth respectively, there are concerns that the vote to leave the EU could pose a threat to higher education in the UK, destabilising it and hindering academics from working with colleagues on the continent.

Asia is continuing to grow as a higher education "superpower", with China's leading universities, Peking and Tsinghua, in the top 40 and the National University of Singapore at 24.

A separate report[xxiv] by the Economist Intelligence Unit ranked 35 cities on their education and training prospects. Hong Kong took the top spot as a result of the abundance of financial assistance offered to higher education students, and prevalence of world-class educational institutions.

Chicago, LA, Miami, New York and Washington DC ranked joint second, thanks to a number of city-led youth programmes aimed at providing on-the-job training, internship opportunities and networks for additional educational development.

Throughout Denmark, Finland, Norway and Sweden, students from the EU may enrol in a degree without paying a penny, at undergraduate, master's and PhD level, provided they can deal with the language challenge as many undergraduate courses are taught in the native tongue. In Denmark, non-Danish EU students are also eligible for study grants if they work 10 to 12 hours a week alongside their studies. There is a slight catch, however. The cost of living in these Nordic cities is among the highest in the world and international students often struggle to find affordable accommodation.

The importance of affordable & accessible transportation

As we have seen previously, particularly in the work of YouthfulCities, mobility is an important consideration of many young people when considering where to locate. Once again, affordability is an important component of local transportation solutions.

According to the Atlantic[xxv], In the US, the number of 21- to 34-year-olds buying cars has dropped by 11% since its peak in the mid-1980s, while the UK has seen a 12% decline in the proportion of 17- to 20-year-olds trying for a driving licence since the mid-1990[xxvi]s.

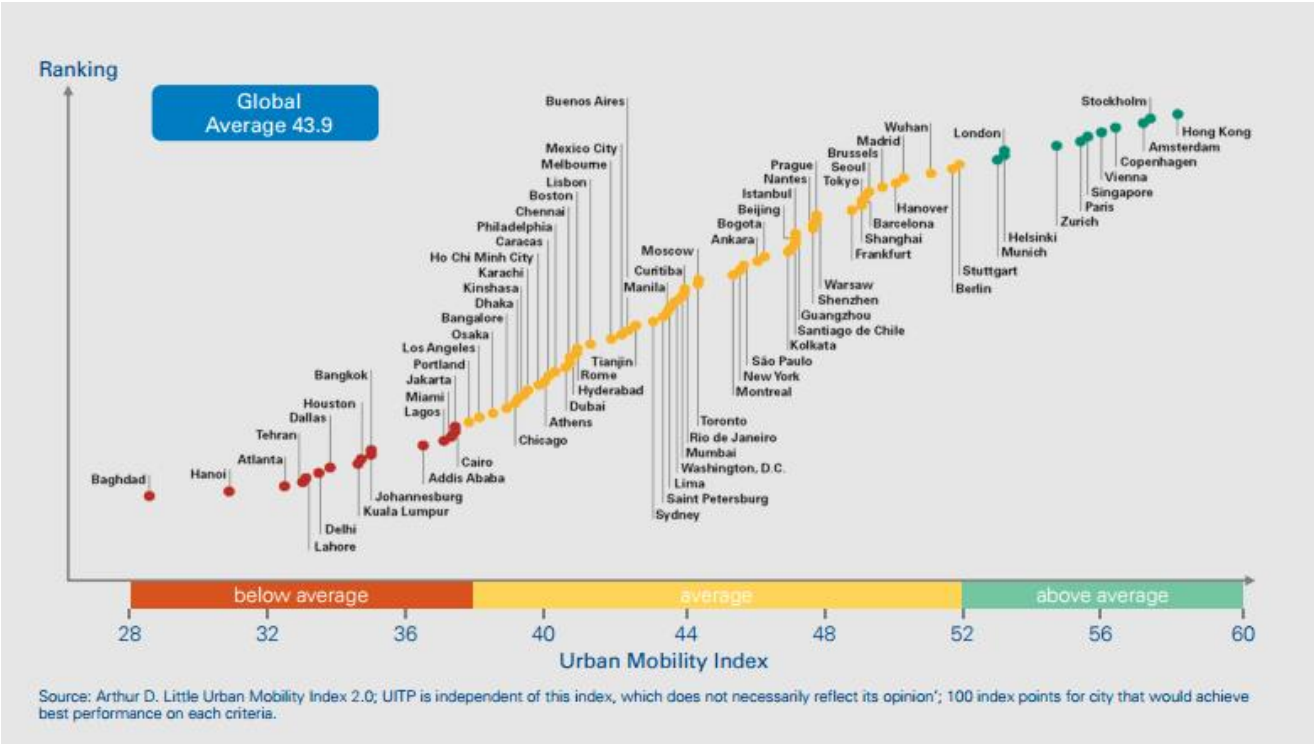
Arthur D. Little, the Global Management Consultancy, produces the Urban Mobility Index[xxvii] a study which compares urban transportation systems in 84 cities worldwide and finds most cities are still badly equipped to cope with the challenges ahead. Arthur D. Little highlights what is holding cities back and identifies three strategic directions for cities to better shape the future of urban mobility and twenty-five imperatives to consider when defining sustainable urban mobility policies.

When it comes to public transport, Hong Kong tops the index, largely thanks to its efficient transit network, which is used for 55% of all journeys. Stockholm is in second place because of its extensive metro system. Students in Stockholm receive discounts on travel cards, but the Swedish capital still has the most expensive public transport system in the world, based on the price of a ticket for a single 10km journey[xxviii].

Picking up on the importance of affordability, the Index identifies that in 2013, Tallinn, became the first city of its size to make public transport free for all residents, while in Boston students have been riding free of charge since the 1970s.

Amsterdam and Copenhagen score well for cycling provision and performance, with around half of journeys in both cities made by bike. At 29.7 minutes, the dense Danish capital also has one of the shortest commute times of the top 10 cities – a breeze compared with the average 44.1 minute slog made by Londoners every weekday.

Helsinki scores well for car sharing. The city has ambitious plans to transform transportation by 2025 through a system of "mobility on demand" that pools access to buses, bikes, car-shares and taxis through a smartphone app.



Source: Arthur D. Little Urban Mobility Index 2.0; UITP is independent of this index, which does not necessarily reflect its opinion'; 100 index points for city that would achieve best performance on each criteria.

The importance of culture in creating GEN-Y sticky cities

Known as the social generation, global population data suggests Millennials are staying in cities, rather than rural areas, largely because they crave social environments.

Culture continues to be disproportionately important to Millennials. According to the latest World Cities Culture Forum report prepared by the World Cities Cultural Forum (WCCF)[xxix], *"in a global marketplace, having a good job is not always enough. Talented people want a vibrant urban experience, they want festivals, clubs, art galleries, they want to eat great food and meet interesting people. The energy and character of a city is as important in attracting investment as it is in attracting theatre-goers, and in developing and keeping a skilled workforce. This is particularly fundamental within the creative industries–a critical component of world cities' economies".*

According to the World Council on City Data[xxx], Melbourne has 81 theatres, 256 festivals a year, and 1,448 heritage and historical sites – behind only Istanbul and Moscow. The music scene in Montreal is also cited as a major hub of creativity, with the second highest proportion of people employed in the creative industries and the third highest proportion of bars, behind Buenos Aires and Madrid.

Amsterdam's latest Plan for the Arts allocates a budget of €90.2 million annually for arts and culture from 2017–2020, through which the City will directly fund a number of high-profile organisations, including four community cultural centres, which "make sure that every resident has an opportunity to experience arts and culture, throughout the city." The Amsterdam Fund for the Arts (AFK) will support a wide range of organisations, with a focus on audience development, new finance models, and local cultural identity. In addition, cultural organisations will be able to apply for innovation funding, based on their track record in developing international, national and local partnerships, talent development and cultural education.

Bogotá, the Colombian capital has at least 243 cinema screens (generating more than 17.5m cinema admissions to the city's film screens every year), three major concert halls and 77 museums. The music scene in Bogotá also has much to offer: DJs such as Alex Jockey have helped create a hip underground hard-core techno scene[xxxi].

Shenzhen city in south-eastern China is another little known cultural hub, having scored highly in a number of categories in the WCCF's report. Just under half of the city is green space, second only to Sydney and Vienna. It also has a vibrant nightlife scene that includes the famous Pepper Club, Brown Sugar Jar rock club and lesbian-friendly Xuan Cafe Bar. It also boasts the most public libraries of all the cities mentioned in the report.

Diversity as a fuel for stimulating the creative milieu

As we know from the work of Florida, encouraging and stimulating diversity is also very important for fostering the creative milieu

Sweden has long been known as a champion of female equality. According to the Guardian newspaper[xxxii]every 16-year-old in the country is given a copy of We Should All Be Feminists. In 2014 Gothenburg received the European commission's Access City award for its provision, including providing audio buses, travel guides for all disabled residents, and a transport service for people with severe disabilities.

The 2015 Social Progress Index[xxxiii] measures a nation's progressive attitudes. It ranked Sweden second behind only Norway in terms of personal freedom, choice, tolerance and inclusion. Sweden was also rated best on discrimination and violence against minorities.

According to the Guardian, *"San Francisco has been home to a bustling gay scene since the end of the second world war, when many homosexual soldiers chose to stay in the city rather than go home after their discharge from military service. Last year, data-driven consultancy firm Gallup reported that the San Francisco, Oakland and Hayward area in California had the highest proportion (6.2%) of LGBT residents out of all of the metro areas in the US"*.

Putting it all together into an bespoke, Integrated Action Plan (IAP) for your city

Developing an Integrated Action Plan to improve the attractiveness of a city to GEN-Y 'creative-tech' talent could focus on one or more of the policy areas highlighted in this report. It could also focus on other GEN-Y 'creative-tech' related issues. Clearly, the strategies cities chose to implement should depend heavily on the city's starting point, in terms of their current assets.

More peripheral or smaller cities which are suffering from post-industrialization will obviously have much more work to do improving their particular situation. In many cases, they have a harder job to do because they need to build the capacity of their local 'creative-tech' eco-system and may have less tools to work with in the first place.

In order to help cities and regions develop their plans for improving their innovation systems, three particular academics, Trippl, Asheim & Miörner (2015), have developed a model and an approach for developing regional innovation systems, which is built on a three stage piece of analysis, covering;

- **The organizational and institutional capacity of the city**;
- **The knowledge base of a city**; and
- **The selection of the appropriate industrial path for the city to invest in**

As far as organizational and institutional capacity of a place is concerned, this approach relies on cities and regions being able to critically analyse system failures or deficiencies (as characterized by low levels of innovation activity) in their own innovation systems. This approach is applicable to system and market failures that can be found in 'creative-tech' GEN-Y development, retention and attraction systems.

Tödtling and Trippl (2005) suggest they have identified three forms of system deficiencies in innovation eco-systems, namely;

- **Organisationally thin innovation eco-systems** are those that lack of a critical mass of innovative firms, a lack of other key organisations and institutions and low levels of clustering. Organizationally thin innovation systems are often present in more peripheral cities and regions. These regions are characterised by insufficient levels of R&D and innovation due to the dominance of SMEs in traditional sectors, the lack of

assets to nurture new industries, a weak capacity to absorb knowledge from outside the region, and a thin structure of supporting organisations (Doloreux and Dionne, 2008; Karlsen et al., 2011).

- **Locked-in innovation systems** are characterized by an over-embeddedness and over-specialization in mature sectors and outdated technologies. Locked-in innovation systems often prevail in old industrialised areas. The capacity of firms in these areas to generate radical innovation is limited and the supporting organisations tend to be too strongly oriented on traditional industries and technologies. Various forms of negative lock-in (functional, cognitive and political ones) can tend to lock these regions into traditional development paths (Grabher, 1993;Trippl and Otto 2009; Hassink, 2010); and
- **Fragmented innovation systems** suffer from a lack of connectivity due to a suboptimal level of networking and knowledge exchange between actors in the system, leading to insufficient levels of collective learning and systemic innovation activities. Fragmented innovation systems can frequently be found in metropolitan areas (Blazek and Zizalova, 2010; OECD, 2010). In this type of region fragmentation is often the outcome of too much diversity and a lack of related variety, resulting in levels of regional knowledge exchange and innovation below what could be expected given the often rich endowments of knowledge exploration as well as exploitation organisations found in metropolitan regions.

In addition, Zukauskaite et al. (2014) characterises a clear distinction between organisational and institutional thinness. They suggest that **organisational thickness** refers to the presence of a critical mass of firms, universities, research bodies, support organizations, unions, associations, and so on. **Institutional thickness** is defined as the presence of both formal institutions (laws, rules, regulations) and informal institutions (such as an innovation and cooperation culture, norms and values) that promote collective learning and knowledge exchange.

Trippl, Asheim and Miörner[xxxiv] further advance the argument by suggesting that innovation systems may suffer from institutional thinness, organisational thinness or a combination of both dimensions of thinness. This led them to distinguish between three types of less-developed innovation system.

	Organisational thickness	**Organisational thinness**
Institutional thickness	Metropolitan / city regions in Northern & Western Europe	Industrial districts in the Third Italy, Nordic peripheral regions
Institutional thinness	Larger cities in Southern & Eastern Europe	Southern and Eastern peripheral regions

In this model;

- **Institutionally thick but organisationally thin innovation systems** (for example industrial districts in the Third Italy and regions in the North of Europe. Italian districts are well known for a pronounced culture of cooperation (institutional thickness) but they lack specific RIS elements such strong research organizations or science-based firms (organisational thinness) that are essential for the generation of more radical forms of innovation. Nordic peripheral regions benefit from a high quality of government institutions (institutional thickness) but are only poorly endowed with innovation relevant organizations (organisational thinness).
- **Organisationally thick but institutionally thin innovation systems** (like those found in larger cities in Southern and Eastern Europe but also some old industrial areas in Western Europe) are characterized by the existence of a critical mass of firms as well as research, educational and other supporting organizations (organizational thickness). However, innovation activities are seriously curtailed by the absence of an innovation and cooperation culture as well as a low quality of government institutions (institutional thinness).
- **Institutionally thin and organisationally thin innovation systems** (like those in peripheral regions located in the South and East of Europe) are poorly endowed with innovation-relevant organisations (organizational thinness) and suffer from an institutional set-up that is not conducive to innovation (institutional thinness).

It is important for cities to understand the distinction between these various classifications and in which bracket they fit, if they are to move forward.

In addition, cities need to understand what the indigenous knowledge base of their city is. Again, Asheim and Gertler (2005) and Asheim et al. (2011) have developed a classification of knowledge bases that will help a city understand what it has to work with.

	Analytical (science based): genetics, biotech, IT, nanotech.	**Synthetic (engineering based): industrial machinery, shipbuild.)**	**Symbolic (arts based): film, TV, design, fashion**
Rationale for knowledge creation	Developing new knowledge about natural systems by applying scientific laws	Applying or combining existing knowledge in new ways	Creating meaning, desire, aesthetic qualities, affect, symbols, images
Development and use of knowledge	Scientific knowledge, models	Problem solving, custom production	Creative process
Actors involved	Collaboration within and between research units	Interactive learning with customers & suppliers	Experimentations in studios, project teams
Knowledge types	Strong codified knowledge content, highly abstract, universal	Partially codified knowledge, strong tacit component, more context specific	Creativity, cultural knowledge, sign values; strong context specificity
Importance of spatial proximity	Meaning relatively constant between places	Meaning varies substantially between places	Meaning highly variable between place, class and gender

In this model;

- **An analytical knowledge base** prevails in research-intensive industries such as biotechnology or nanotechnology where innovation is driven by scientific progress. Radically new products and processes are developed in a systematic manner involving mainly basic but also applied research. Firms usually invest heavily in intramural R&D, but rely also on knowledge generated at universities and other research organisations. Linkages between firms and public research organisations are thus pivotal and occur more frequently than in other industries.
- **A synthetic knowledge base** is dominant in mature industries operating in fields such as industrial machinery or food processing. Innovation is often more incremental in nature, based on the use and new combination of existing knowledge and learning by doing, using and interacting (mainly along the value chain, that is, with customers and suppliers). Linkages between university and industry are relevant, but occur more in applied research and education, and less in basic research.
- **The symbolic knowledge base** is present in creative and cultural industries (advertisement, fashion, new media and design). Innovation is devoted to the creation of intangible dimensions such as aesthetic value and images. Symbolic knowledge is highly context specific; the meaning and the value associated with it can vary considerably across places.

In heavily analytical industries, the “science-technology-innovation” (STI) mode of innovation clearly dominates, whilst the synthetic and symbolic sectors rely more on the “doing-using-interacting” (DUI) mode of innovation (for a detailed discussion of the STI and DUI modes of innovation, see Lorenz and Lundvall, 2006; Jensen et al., 2007; Asheim, 2012).

A key question that follows from the discussion about different knowledge bases concerns the relation between different regional characteristics and different types of knowledge base. Arguably, different types of knowledge base require different types of regional innovation systems.

- **A narrowly defined Innovation System** is constituted by two subsystems and the systemic interaction between them to support a Science, Technology and Innovation (STI) mode of innovation: the knowledge exploration and diffusion subsystem (universities, technical colleges, R&D organizations, technology transfer agencies, business associations and finance organisations) and the knowledge exploitation subsystem (firms in regional clusters and their support industries).
- **A broadly defined Innovation System**, in contrast, also benefits the doing-using-interacting (DUI) mode of innovation. This system includes the wider setting of organisations and institutions (like a specialized labour market that provides experienced workers, applied research centres, non-R&D-based business services, local technical culture, and so on) that support knowledge creation, learning and innovation and their interactions with firms located in the region.

A narrowly defined innovation system provides an adequate setting for analytical industries and the STI mode of innovation. However, synthetic and symbolic sectors need a broader defined innovation system (a wider set of organisations and institutions) that supports the DUI mode of innovation to prosper and innovate. As such, an innovation system can be considered as "less-developed", if one or more of the above mentioned elements are missing or if the existing ones are not "fine-tuned" to the knowledge bases that dominate in that city/region.

In addition, recent work on industrial path development provides important insights into the ways cities and regions change over time. Much of this work is primarily concerned with trying to explain, understand and inform economic renewal and the development of new industrial paths in cities and regions.

Asheim et al., 2013; Tödtling and Trippl, 2013; Isaksen, 2014; Isaksen and Trippl, 2014a have developed a distinction between three main forms of industrial path development;

- **Path extension** occurs through mainly incremental innovations in existing firms and industries. However, such intra-path changes may in the long run lead to stagnation and decline due to a lack of renewal. Ultimately, this erodes regional competitiveness and can lead to path exhaustion.
- **Path renewal** takes place when existing firms and industries located in a city or region switch to different but possibly related activities and sectors. This can result in diversification as well as through the integration of STI and DUI modes of innovation;
- **New path creation** corresponds to unrelated diversification through the establishment of firms in entirely new sectors or to the introduction of products new to the market (i.e. radical innovations). New path creation is often research-driven and requires active policy interventions and the creation of supportive institutional structures.

Thick and diversified innovation systems offer excellent conditions for path renewal and new path creation due largely to the diverse actors in the system. In contrast, organisational thick and specialized innovation systems tend to support path extension but face the risk of industrial stagnation. However, some innovation systems belonging to this group benefit from a sufficiently large generic competence in their field of specialisation, which may form the basis for path renewal processes.

According to Asheim and Grillitsch (2014), investment into the region's research infrastructure to strengthen and widen the exploration capacity of the innovation system can essentially enhance such processes. Similarly, industrial renewal may also be triggered by the inflow of non-local knowledge and its combination with the highly specialized assets available within the region.

Both organisationally thick specialised regions and organisationally thin regions have weak structures for supporting the development of new industrial paths. Organisationally thick and diversified regions, may suffer from weak structures for path extension because of their inability to exploit industrial production. A too strong focus on and use of assets and resources for knowledge exploration and new path development can lead to a too rapid decrease in knowledge exploitation capacity, causing fragmentation problems.

Broadly speaking, these are the principles that underpin Smart Specialisation and this is why it is so important for cities to understand what they have got in their innovation system, before investing in creating something new.

A Case Study in tailored and integrated policy making

Graduate Mobility & Productivity: experiment in place-based open policy-making

In an attempt to address graduate retention issues, a number of universities in the UK worked with their local city partners to develop five practical initiatives to try and address the graduate mobility question:

- Synchronising learning, employers and work. The Skills Engine being developed in **Birmingham** brings together a network of key players from the local area in order to improve the matching of demand for and supply of talent in the local economy.
- Building long term engagement between SMEs and graduates. FASTTRACK is an initiative being tested by **Leeds University** to attract and assist graduate integration into small and medium-sized businesses in the region through placements and specially designed induction and training programmes.
- Developing the ecosystem for knowledge-rich enterprise. The Graduate Business Lounge builds on **Bristol**'s existing engagement in student enterprise to integrate existing graduate enterprise service providers and platforms to foster greater student entrepreneurship.
- Establishing knowledge-economy strategies in cities. New Economy Hubs in **Birmingham, Liverpool and Manchester** will take a multi-sector approach to understanding key economic growth areas at the city regional level.
- Gathering better data to support graduate careers: The GRAData Project, working with **Leeds City Council and Leeds Institute for Data Analytics**, aims to improve university and council use of national graduate data. The hope is that this will improve local careers support for students, and illuminate graduate mobility to enable the development of regional talent strategies.

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