

PATRIZIA **estatements**
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future
opportunities

present

past

SMARTENING UP CITIES

HOW AI USES TIME SNAPSHOTS TO IDENTIFY
INVESTMENT OPPORTUNITIES IN CITIES

CONTENTS



4 Smartening up cities

Smart cities promise answers to the complex challenges of urbanisation. But many projects are failing to live up to their lofty ambitions.

10 Identifying future value

The Amenities Magnet Dynamic assesses whether amenities have changed over time, allowing PATRIZIA to compare data across years and identify improving areas.

12 Smart cities could be cleverer

One problem with tech e-topias is that they often fail to capture what makes a city successful in the first place: people.

19 Will there be cities in 100 years?

If we get cities right, we may just survive the 21st century.

24 When sensors come of age

Graham Matthews, Head of Infrastructure at PATRIZIA, discusses the growing need for infrastructure – particularly 'smart' infrastructure.

27 The building blocks of cities

Philippe Le Fort writes about implementing smart technologies in buildings as a first step to recreate our cities.

30 22@

Barcelona is a testing ground for the digital world.

34 Building communities, realising value

PATRIZIA invested in 22@ with five assets but is now realising the values and moving on to the next opportunities.

40 Embracing urban art

Thomas Wels, co-CEO of PATRIZIA, discusses graffiti and street art with **Tania di Brita**, curator of the PAT Art Lab.

48 Thinking about tomorrow, today

The PATRIZIA Foundation is working with children from Ukraine to ensure their education continues, despite the tribulations of war.

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EDITORIAL

SMARTENING UP CITIES

Cities are people magnets! And – given ongoing urbanisation – evidence shows their power to attract is ever increasing. Some 56% of the world's 7.9 billion people already live in cities, and the number of urban dwellers will swell dramatically in the coming decades.

It is no surprise that cities are so attractive. Many are economic powerhouses that dwarf most nation-states in terms of their gross domestic product, productivity and population. And with economic strength comes more employment, better education and more cultural and social opportunities that attract the young, bright and ambitious.

But growing urban migration means cities will be continuously challenged to maintain and improve upon the conditions that made them attractive in the first place. We at PATRIZIA are convinced that this is the decade for infrastructure investments because global trends will place ever greater demands on our cities in the coming decades.

In particular, investments in 'smart' technologies will ensure infrastructure, transport and utilities are fit for the future. Smart technologies will also be critical in the transition to renewable energies and the decarbonisation of our economies.

Similarly, building digital and social infrastructure is essential to smarten up our cities and make them liveable, affordable, and attractive for young people and our ageing population. In an interview in this edition, Graham Matthews, our Head of Infrastructure, tackles the interconnectedness between smart technologies and social infrastructure and why there will be increasing demand for these types of assets (see page 24).

Acquiring Whitehelm Capital was a strategic move for us into infrastructure. After the merger, PATRIZIA is perfectly positioned to leverage the growing synergies between real estate and infrastructure, which is key to building tomorrow's smart communities and sustainable futures.

This edition of estatements is dedicated to smart cities or, as we prefer to think about the task, smartening up cities. For the challenge is not to create sparkling new e-topias on green fields but rather intelligently retrofit our existing cities so they remain secure, resilient and, above all, liveable and attractive environments for generations to come.

I am sure you will enjoy reading this edition,

Wolfgang Egger
CEO
PATRIZIA SE



CLEVER WAYS TO SMARTEN UP CITIES

Smart cities promise answers to the complex challenges of urbanisation. But many projects are failing to live up to their lofty ambitions. Perhaps there are cleverer ways to apply smart technologies to shape sustainable and liveable cities.

Greg Langley

Sidewalk Labs promised to bring some Silicon Valley dazzle to Toronto's waterfront with the creation of a smart city area. After several years of controversy, Sidewalk Labs walked away from the project in 2020. The site remains undeveloped.

For the past two decades, local, regional and central governments have invested vast sums to create smart cities. Smart cities are those that leverage information and communications technology to manage a city's assets and processes efficiently and provide connectivity and mobility to an ever-growing urban population.

The vision of a sleek, master-planned metropolis providing data-driven efficiencies, conveniences and new development opportunities is powerful. According to one count, the number of smart city projects announced annually worldwide rose from three in 2011 to 78 in 2019.

However, enthusiasm is waning for grand smart city visions. Part of this is due to COVID-19. The pandemic caused many initiatives to be pushed back or cancelled. But there is also a growing list of smart cities across the globe falling well short of the lofty aims trumpeted by developers and entrepreneurial city leaders.

Although each smart city project faces its own challenges, one common feature is that they seek to create 'smart' districts from the ground up. Dan Doctoroff head of Sidewalk Labs in 2017 summed up the motivation back then: "What would a city look like if you started from scratch in the internet era – built a city 'from the internet up'?" The answer seems increasingly to be, "Not that great!"

Sidewalk Labs, a subsidiary of Google (now Alphabet), was involved in redeveloping the Toronto waterfront to create a "more sustainable and affordable community" using innovative technology and urban design. The company walked away from Sidewalk Toronto in 2020 after challenges related to data privacy and costs (see article pp 12).

Shannon Mattern is a critic of smart cities. A professor of anthropology at The New School for Social Research and author of *A City is Not a Computer*, Mattern argues that 'smart' computational models of urbanism advance an impoverished understanding of what we can know about a city.

"Many good things can come from smart city concepts, such as better resource management, traffic efficiency,

healthcare and environmental applications," says Mattern. "But a lot of urban life simply 'does not compute'. The processes of city-making are more complicated than writing parameters for rapid spatial optimisation."

Grafting technologies

The alternative to constructing gleaming, data-driven cybercities on greenfield sites is to graft innovative technologies so existing cities can reinvent themselves. It is what successful cities, whose existence has spanned centuries or even millennia, have always done: incorporate the best innovations of the time – electricity, lifts, trains, sewerage systems, viaducts – to enhance urban life.

The building components of smart city concepts are sensors, cameras, communication networks, cloud infrastructure and AI programs needed to process the ever-growing volume of data. Such solutions have been successfully grafted onto places like Barcelona (see article pp. 30-33), London, New York and Singapore – four cities that regularly feature on smart city lists. These are places where smart projects are embedded in the needs of the existing community.

"Given the challenges our cities face in the 21st century," says Mahdi Mokrane, Head of Investment Strategy & Research, "we should be less focused on creating smart cities from scratch and more on 'smartening up' our existing cities."

Mokrane points out that 56% of the world's 7.9 billion people live in existing cities, and the number of urban dwellers will only continue to swell in the coming decades. By 2050, when the global population is expected to be 9.9 billion, more than 70% of humanity is projected to live in cities.

"Our legacy cities face immense challenges – overcrowding, traffic congestion, decarbonisation, environmental degradation, resource scarcity and environmental threats," says Mokrane. "The best benefit we can provide is retrofitting these cities – the infrastructure, buildings and services – in an intelligent way, so they remain secure, resilient and, above all, liveable in the future."

Artist impression
of Sidewalk Toronto



People vote with their feet

First among the challenges is urbanisation (see pp 19-23). "People vote with their feet," explains Marcus Cieleback, Chief Urban Economist at PATRIZIA. "All around the world, people continue to move from the countryside to cities."

Even in Europe, which is far more urbanised than other regions, the shift into town remains an ongoing trend. In 1950, the share of people living in urban areas was 51.5%. Today, it is 75% and projected to rise to 84% by 2050.

Urbanisation has significant negative impacts. Traffic increases and becomes more concentrated, energy usage skyrockets, demand for infrastructure increases, green spaces shrink, and pollution and waste increase. The consequences are seen in rising carbon emissions, increased land sealing and pollution, and decreasing health, air and living quality.

As Mattern notes, smart technologies can address many problems. For example, smart technologies applied to buildings – both new constructions and renovations – can introduce practical, effective solutions that drive cost savings, efficiencies and carbon reductions.

If a building knows when a room is empty, it can infer that room doesn't need to be heated in winter or cooled in summer. If it knows when electricity is cheapest, it can use that window to recharge batteries. Predictive maintenance can indicate when components may fail, allowing for efficient recycling of components, and minimising downtime and unplanned costly maintenance (see Philippe Le Fort on pp. 27-29).

Yet, no amount of digital stardust will solve critical problems related to social inclusion and inequality that plague cities, such as affordability,



Sidewalk Toronto promised to deliver new urban efficiencies and conveniences wrapped around pedestrian- and bike-friendly streets where housing was affordable and sustainably constructed. The wonders of fibre optics would enhance life even further.

rental market squeezes or growing urban poverty. Another scourge of social city life is a pandemic developing for decades: loneliness.

Walking alone

One problem Jan-Hendrik Jessen has with the term smart city is that it is defined by technology. “Smart inevitably refers to the 0s and 1s, the underlying hardware,” he says.

As Head of Fund Management Operated Properties at PATRIZIA, Jessen focuses on providing care places for the elderly. He rightly points out that cities, at least in the West, face a challenge never before confronted: mass ageing.

The long-term consequences of demographic drivers – increasing life spans and fewer babies – are becoming a reality this decade. For example, the number of employed people in the EU 27 peaked in 2020, and companies will increasingly find themselves competing for an ever-shrinking pool of young talents.

Importantly, by the end of the 2020s, the last Baby Boomers will be entering retirement, which will reshape society. For example, single-person households already comprise a third of all households, a factor behind growing social isolation and loneliness (see Eleanor Rigby syndrome on page 22).

Loneliness is a complex issue bound up with the way people live, work and interact. “Smart cities need to care about social care – otherwise they are not smart,” says Jessen. “The use of smart technologies must improve social services and strengthen social inclusion.”

Success breeds challenges

Cities are engines of economic growth. In fact, megacities like Dubai, New York, Seoul, Shanghai and Tokyo have annual GDPs that dwarf more than 170 nation-states.

This means large European cities should see growth continue, particularly the capitals. Such cities routinely outperform their national economies, sometimes to a quite staggering extent. Between 2005 and 2019, for instance, Oslo saw more than twice the GDP growth as Norway as a whole.

The economic strength of London and Paris is quite extraordinary. For example, London has a GDP of €801 billion, which, if it were a country, would see it ranked eighth in Europe above Switzerland, Sweden and Ireland. Paris, with a GDP of €685 billion, would place tenth. Success attracts more people to cities, which continuously challenges cities to maintain and improve the conditions that made them attractive in the first place. In recent years, ‘smart technology’ has been hyped as a solution.

However, technology cannot solve all problems arising from increasing urbanisation. Indeed, it can create new issues, for example, around privacy or excluding city residents who cannot afford the technology or lack the capability required for its adoption. This could create a new form of social divide rooted in the technological.

Cities keen to use modern technologies need to be aware of the potential pitfalls, says Graham Matthews, Head of Infrastructure at PATRIZIA. “It is not easy becoming smart, a lot can go wrong to the detriment of investors, public officials and inhabitants.”

Matthews says smart technologies are transforming many areas of infrastructure, including the critical sectors of transport, utilities and energy transition and digital infrastructure (see article pp. 24-26)

“There are critical areas where smart technology is playing a role. One is infrastructure that addresses sustainability and decarbonisation, which has great potential in the energy sector. The second is in terms of digitalisation and connectivity. The third is in terms

of social care – childcare, education, the health sector and other services important for communities and vital to daily life,” he says.

SMART is not an end in itself

In the end, being ‘smart,’ well engineered or cleverly designed is not an end in itself. It has to serve a purpose: smart cities need to be fair, green, inclusive, sustainable, safe, healthy, affordable and resilient. The internet, the mobile cloud and paste-on gadgetry can contribute. But so can traditional, low-tech solutions.

For example, air conditioning is one of the most significant urban energy guzzlers. A study in Madison, Wisconsin, found urban temperatures can be 5% cooler with 40% tree cover. Green roofs with high vegetation density can cool buildings by up to 60%. This is worth remembering as cities account for 75% of energy consumption and 80% of greenhouse gas emissions.

“Smartness should not be the goal itself,” comments Mahdi Mokrane. “It is about creating liveable communities that are humane environments that engage citizens and that work.”

DATA INTELLIGENCE

OFFERS DYNAMIC INSIGHTS
THAT GUIDE INVESTMENT STRATEGY

Lois Hoyal

It was a puzzle that only a combination of local knowledge and technology could solve. A local PATRIZIA expert reassured the Investment Strategy & Research team that a residential location in Tokyo was a prime location. Yet somehow, the location was failing to score highly on the PATRIZIA Amenities Magnet tool.

The reason was the view: the property overlooked a park where flowers bloomed spectacularly in the summer. This attracted tenants who were more than willing to pay steep rental prices. The PATRIZIA Amenities Magnet Report had noted the park's location but not the type of flowers inside.

PATRIZIA relies increasingly on artificial intelligence (AI) to help inform its investment decisions. It also boasts one of the largest operating platforms in Europe, with more than 900 experts on the ground, 200 of them in residential. This unique combination of data obtained by artificial intelligence and local market knowledge provided by human fund managers enables PATRIZIA to develop a knowledge-based investment strategy and identify anomalies.

"A data-driven strategy is an embedded part of our investment strategy – we believe that technology is here to help us and provide us with recommendations," says Dr Marcelo Cajias, PATRIZIA's Head of Data Intelligence. "But we also need local knowledge to understand what is happening on the streets to corroborate our strategy. It's a combination – there are always peculiarities in the market that we're not aware of from the data perspective."

Amenities make a location

For the last couple of years, PATRIZIA has benefited from the use of the Amenities Magnet Report to evaluate the attractiveness of locations based on the access to nearby amenities, or so-called Points of Interest (POI) across Europe and Japan. The Amenities

Magnet Report accesses a database of more than 25 million POIs, categorised to allow the attractiveness of a location to be measured, based on residential, modern urban living, senior housing and office requirements.

When given a geo-location – a street name or address – the digital tool provides a score ranging from 0 to 100 according to the quality of amenities in and around that location. The higher the score, the greater the supply of positive amenities and, therefore, the more attractive the location. Good amenities might include a school, green space or transport links. Negative amenities could include a prison, motorway or wastewater plant.

After producing a score, the next step is to analyse the results geographically with a heat map. The brighter the yellow scores at the grid locations displayed in the heat map, the higher the score. The darker the green patches, the lower the score.

The Amenities Magnet allows PATRIZIA to acquire a transparent opinion of the market and effectively rank locations, says Cajias. "We now know the difference between yellow, green and dark locations. This is like going to the bank and asking for different interest rates, depending on your default risk. The best locations in Germany, for example, tend to be near a city's central main station because you have lots of good amenities there."

Dynamic data development

PATRIZIA has now taken the Amenities Magnet Report to the next level by introducing the Amenities Magnet Dynamic. This tool assesses whether amenities have changed over time, allowing

PATRIZIA to compare relevant data across different years and then calculate the changes. With an overview of changes in locations' scores, PATRIZIA can then identify those areas that have improved their supply of amenities and those that have decreased what is on offer.

"The Amenities Magnet Dynamic genuinely reflects how cities have evolved based on this algorithm and how they will evolve in future," says Cajias. "This enables us to understand if we're in the right location and if the location has evolved in the way we expected."

This updated knowledge is then amalgamated with local knowledge from experts on the ground. "They may say, 'Yes, I agree that's a good location.' For example, they've seen a new shopping centre opening nearby. Or they may disagree about what is happening in that location," adds Cajias.

Data knowledge steers strategy

Machine learning creates knowledge at speed, scale and depth. Thanks to cloud computing, the Amenities Magnet's calculation power is 70% faster: it now only takes seven minutes, not 20 minutes, to generate a report about any given location.

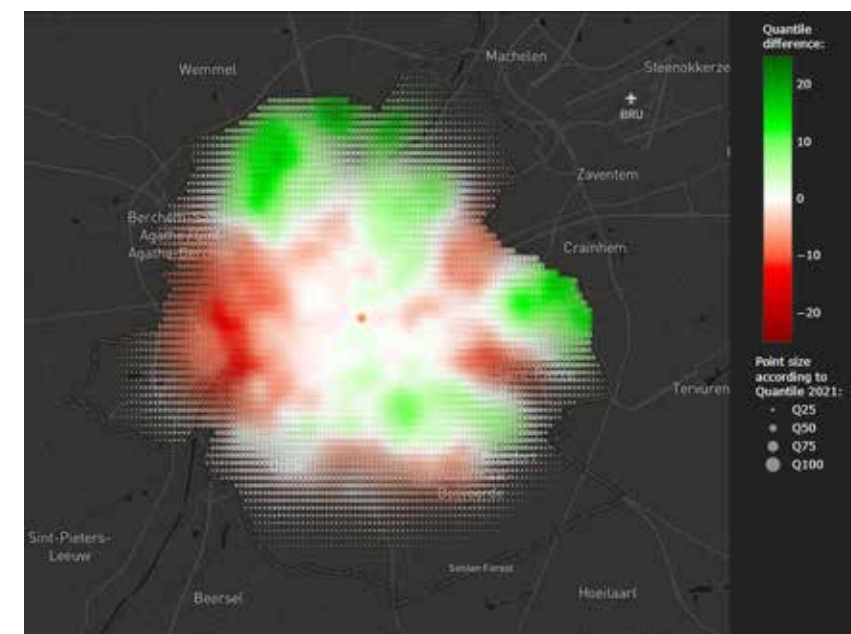
The amount of information is also increasing exponentially. For example, a few years ago, Vienna had 40,000 different amenities. This has now grown to 65,000 POIs.

Overall, values generated by the tool help PATRIZIA to identify opportunities that can change the conversation with a tenant or investor. For existing assets, the tool can confirm that PATRIZIA is in the right location with the right strategy. It can also identify the level of amenities in a potential investment location.

Is there an oversupply or undersupply of amenities, and if amenities are low, which are missing? After entering a new city area, the concentration of amenities should increase over time. Areas with lower ratings can also be attractive as an investment location in the case of the development of new housing and associated amenities.

In future, data intelligence will play a critical role in identifying streets and districts with the best potential and in

understanding how a city is evolving so we can further optimise the portfolios of clients. "This kind of technological advantage is unique to PATRIZIA," concludes Cajias. "It is something we are doing for our investment processes and offering to our clients to rebalance portfolios and to continue to recreate balance."



Understanding the urban footprint over time: the PATRIZIA Amenities Magnet Dynamic produces green patches in locations that have increased their attractiveness as measured by the supply of amenities. White means consolidation and red means slower development and a weaker position. The city depicted is Brussels.

ARE SMART CITIES THAT CLEVER AFTER ALL?



From Songdo in South Korea to Masdar City in the United Arab Emirates (UAE), proposed projects for smart cities are failing to live up to their promise or falling by the wayside, prompting some to query if smart cities are such a smart idea after all.

Lois Hoyal
Greg Langley

Is the term 'smart city' losing its lustre? Could it, in fact, be a misnomer? And how relevant is the concept anyway, in a world where climate chaos, the COVID-19 pandemic and geopolitical crises are overhauling social priorities?

Many reasons have caused the figurative walls of some smart cities to crumble before they were even built. Inadequate funding, for one. Santander was once famous for having the highest number of sensors globally. But sensors bring no benefits if they are not maintained, a problem that hampered the smart ambitions of the northern Spanish city.

Building a city from scratch

The governance of data is another significant public concern. People are rightfully asking who will access, store and use the data gathered about them. While keen on connectivity, people simply aren't so willing to give up their privacy.

In 2017, Dan Doctoroff wondered, "What would a city look like if you started from scratch in the internet era – if you built a city 'from the internet up'?" At the time, Doctoroff was head of Sidewalk Labs, an 'urban innovation' division of Alphabet (then Google). The company was becoming involved in developing the Quayside area of Toronto's waterfront.

The proffered vision promised to deliver new urban efficiencies and conveniences wrapped around pedestrian- and bike-friendly streets where housing was affordable and sustainably constructed. The wonders of fibre optics would enhance life even further.

In 2020, the company pulled the plug because of the 'unprecedented economic uncertainty' stemming from the COVID-19 pandemic. However, the project had been plagued by other concerns, including financing, governance and, particularly, community concerns over 'surveillance capitalism' relating to data privacy.

Essentially though, the problem with smart cities starts with the name itself. What does the phrase smart city actually mean? Which technologies should this umbrella term encompass? Simple sensors or full-blown operations centres?

Shannon Mattern, a professor of anthropology at New York's New School for Social Research and author of *A city is not a computer: Other urban intelligences*, dislikes the terms

ubiquity. "The label is applied to spaces, people, objects, toothbrushes. It means so many different things in so many different contexts. It's a marketing term. It's so widely applied that it now means everything and nothing."

Look through a different lens

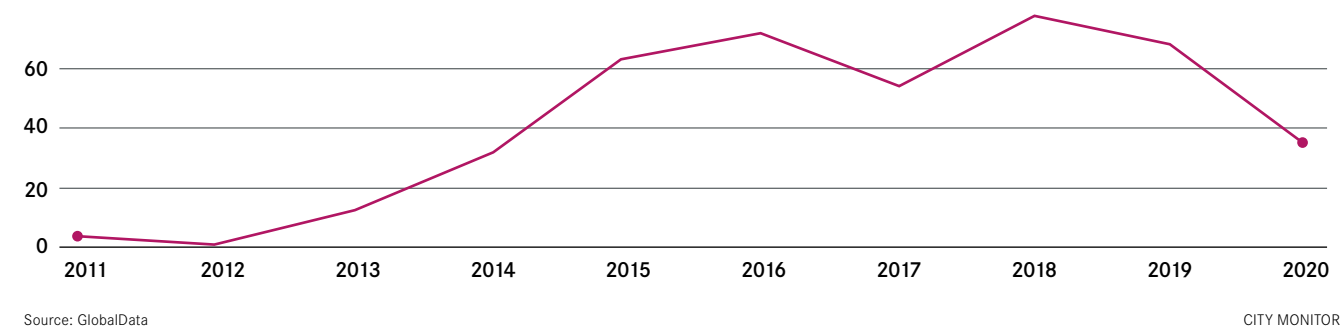
When thinking of a smart city, most people visualise a city brimming with sensors, monitoring the minutiae of our everyday existence, from traffic flows to energy consumption. The Internet of Things (IoT) collects the data from the sensors inserted in everyday objects, while artificial intelligence works to make cities more sustainable and liveable.

In themselves, those can be noble aims. However, by focusing on the technologies to make smartness happen, we limit our understanding of urban spaces and can lose sight of those things that can't be captured or measured by sensors and cameras.

A city can offer so much more than data-driven efficiency and algorithmic administration. Take, for instance, values such as equity, justice, inclusion or care work, says Mattern. "Smartness isn't necessarily a fully encompassing way of thinking about what matters in a city. There are other types of wisdom, other types of knowledge, other ways of knowing, that don't lend themselves to the methodologies inherent in smartness."

Smart-city project deployments lost speed since COVID-19

Annual, worldwide government-deployed smart-city projects



In her book, she argues that ‘smart’ computational models of urbanism advance an impoverished understanding of what we know about a city, and of what’s worth knowing. Instead, she argues, we should think beyond smartness to the other types of intelligence inherent in a city, such as the knowledge embodied in a library or the experience gained through care work.

Putting in the hard graft

Mattern is fond of the term ‘grafting’ as a more considered way to apply new technologies to an existing system. “If we think about applying new technologies through this artisanal craft-oriented method of suturing, we can imagine a more thoughtful way of integrating new technologies into an urban environment where people are already living, where there are forms of intelligence circulating among those populations, and where existing technologies are already working quite well for them.”

Overall, rather than seeing a city merely as a computer, she encourages us to view its many facets. We should open our eyes to the multitude of metaphors it embodies, whether a tree, a computer, or a graft, when considering how to develop more robust approaches to urban development in future.

Steering clear of bias

Data concerns are one of the major criticisms directed at smart cities. In addition, there has been considerable criticism of the racial and gender biases that can be inherent in technology, such as surveillance cameras or criminal justice algorithms.

For example, an algorithm widely used in US hospitals to allocate health care to patients had been systematically discriminating against black people, according to an article in *Science* (October 2019). Similarly, predictive policing algorithms have been accused of racism. Artificial intelligence has proved to be gender-biased in instances, including setting credit limits significantly lower for women on similar incomes and expenses to their husbands for no explainable reason.

It’s especially important to be careful when handling the data of historically vulnerable communities, says Mattern. “When dealing with those who have been historically mistreated through

the collection of data, special attention has to be paid to equity – to the particular needs and desires and values of those communities.”

Have we reached peak smartness?

While the modern concept of smart cities has gradually emerged over the last twenty years, we’ve been using technologies to make cities more efficient, communicative and responsive environments throughout the entire history of humanity. For thousands of years, we’ve been using a basic form of encoding or geotagging by addressing each other by something as seemingly primitive as writing on walls, making public the codes of behaviour we interact with one another in society.

Moving forward to the present day, the goal to make cities smarter is starting to seem somewhat outdated. After facing disasters such as COVID-19 and the ongoing war in Ukraine, people are more interested in tackling bigger social issues such as racism, inequality, climate change and food shortages.

A *City Monitor* analysis in 2021 tracked the use of the term. Between 2011 and 2019, the number of smart-city deployments worldwide increased significantly. By 2019, there were 379 fully deployed smart-city projects in 61 countries. In 2020, just 16 countries set in motion a total of 34.

While COVID-19 impacted deployments, the writing may have been on the wall before the pandemic when a backlash against the tech practices of companies like Amazon and Facebook became evident. One of the most prominent players, Cisco, pulled the plug on its flagship smart-city software.

City Monitor quotes Story Bellows, a partner at the urban-change management consultancy Cityfi. “Part of it is that people are sick of talking about this term, ‘smart cities’.” He argues people are more focused on creating outcomes in their communities,

whether using technology or reinventing processes to make meaningful change on key indicators, such as health or equity.

“I think there are still a lot of potential technology drivers and contributors in that, but creating a business model of smart cities just on its own, especially within some of these really big companies, it’s hard to really operationalise and execute.”

Looking ahead, smart technologies are not going away and offer numerous advantages, especially when applied to aspects such as resource management, traffic efficiency and healthcare, points out Mattern. “However,” she says, “I think we can supplement data-centric modes of planning, design and administration with qualitative methods, with ways of knowing that come through embeddedness in a community.”

That said, maybe we need to consider the limited ways of knowing implied by ‘smartness’?

Either that, or it may be time to retire the term smart cities.

Gig City, USA

Mattern nominates Chattanooga in Tennessee as a city getting many aspects right about smart technologies. The city bills itself as ‘Gig’ city for its citywide high-speed broadband, first installed in 2010, owned by the community and providing connectivity to all residents.

The city has deployed an advanced traffic signal system and it is working with the Oak Ridge National Laboratory on micro-grid programmes, smart building energy mandates and solar field development. The public library has historically played a key role by being early to integrate makerspaces and host incubator programmes, and they led critical digital literacy initiatives and public discussions about how best to deploy digital infrastructure for the public good.

Last year, the University of Tennessee at Chattanooga’s Center for Urban Informatics and Progress won a \$1.37 million grant from the National Science Foundation to create Smart Corridor+. This testbed along a central roadway will study traffic flow, public safety and transportation, environmental impacts and other quality-of-life issues using real-time data.

Mattern uses the term ‘grafting’ to describe a more considered way to apply new technologies to an existing system.





“SOCIETY IS INVESTING IN ZOMBIE TECHNOLOGIES, WHAT WE THINK MAY BE PART OF THE SOLUTION BUT THEY DELIVER FEW BENEFITS WHEN YOU LOOK AT THE FACTS. THAT IS A WASTE OF RESOURCES AND TIME THAT WE DO NOT HAVE.”

David Bothe

higher energy content sources like oil, which stimulated the development of internal combustion engines that could produce around 100hp.

Since then, we have improved the energy generators, but the basis of our economy still rests on leveraging fossil fuels to create value. An economy can be seen as a vast wealth generation machine. For example, in Germany, this machine is powered by 2,500 terawatt-hours (TWh) annually. This means each German every year has around 30,000 kWh (the equivalent of seven horsepower) permanently at their disposal, which is the basis of the prosperity we enjoy today.

Diagram 1 reveals how much our prosperity is dependent on coal, gas and oil. This is the challenge we – and all countries – face in the coming years: to transition to renewable ‘green’ sources to avoid catastrophic climate disaster while ensuring we retain the power to ‘keep the lights on.’

Failing to bend the curve

The UN Intergovernmental Panel on Climate Change (IPCC) released its latest report in early April. The nearly 3,000 pages make it clear that the window for limiting global warming to 1.5°C above pre-industrial levels – and failing that, to below 2°C – will take immediate and unprecedented action from every country.

To have a 50% chance of avoiding more than 1.5°C of warming throughout the 21st century, global emissions must reach net zero (where less carbon is released into the atmosphere than is removed) in the early 2050s. To achieve this, the emission of all greenhouse gases must peak by 2025.

Given the realities, that is an incredibly ambitious – even if existentially necessary – goal. On the positive side, more has already been done, at least in Germany, than is realised. Between 1990 and 2020, Germany reduced the amount of carbon dioxide (CO₂) by 35%. However, the tempo demanded by the government requires CO₂ emissions to sink by the same amount in the ten years of this decade as it did over the previous 30.

This is possible, but, in my opinion, we are making a second fundamental mistake in the way we implement climate policies. Even worse, the policies we implement prevent effective solutions being rolled out. Instead, we are investing resources in what could be called ‘zombie technologies’. We think these may be part of the solution, but they deliver little benefit when you look at the facts. That is a waste of resources and time that we do not have.

The electric car fallacy

One example is electric cars, which give us cleaner, quieter streets, making our towns and cities better places for cyclists and pedestrians. But even if there is mass adoption of e-autos, they will deliver little benefit in reducing CO₂.

The Institute for the World Economy in Kiel, Germany and Frontier Economics have delved into the numbers. The German government aims to have 10.5 million electric vehicles on the road by 2030, saving 65 million tons of CO₂. There would also be further savings of 8.8 million tons due to less demand on oil refineries. All this amounts to substantial CO₂ savings.

LET THERE CONTINUE

TO BE LIGHT

The latest UN climate report warns that fossil fuels must be phased out by 2050 to avoid creating an unliveable world. Is such a transition in energy infrastructure possible?

The first and fundamental mistake we are making in tackling the energy transition is treating energy as a standalone economic sector. It is not. It is far more critical. Energy is the basis of our entire economy.

In prehistory, our ancestors generated the equivalent of about one kilowatt-hour per day (kWh/d) of energy through sweat and muscle. Today, that energy costs around 30 cents. Later, when agricultural societies emerged and leveraged the power of domesticated animals, water and wind, up to 120 kWh/d could be generated, the equivalent of 16 horsepower (hp).

The Industrial Revolution saw the development of the steam engine, which, powered by coal, could do the work of around 20 horses. In the 20th century, there was a shift towards

But this does not consider the cost. E-mobility requires electricity, that is, power. However, electricity generation in Germany is not carbon-neutral. This extra energy will add 54.4 million tons of CO₂ to the equation. Producing electric cars is also more energy-intensive. Emissions can be as high as double that of cars with internal combustion engines, adding another 15 million tons of CO₂. Building the infrastructure, the charging stations, the electric lines and so on adds another conservatively estimated 3.6 million tons.

If you compare the costs to projected savings, the difference is around 0.4 million tons worth of CO₂ savings by 2030. This is precisely the problem with the current top-down, micro-managed, sector-goal approach to climate change policy. It is like a puzzle where each person works on their piece, but no one has the overall picture. Even worse, there is an incentive to push the problem onto other sectors rather than working together to find a real cooperative solution.

Should we electrify everything?

We need to zoom out, understand the overall picture and then make smart decisions. For example, one big discussion is how to get renewable energy into the heating sector. About half of the 2,500 TWh used by the German economy is for heating, and if renewable energy could be implemented significantly, carbon emissions would be dramatically slashed.

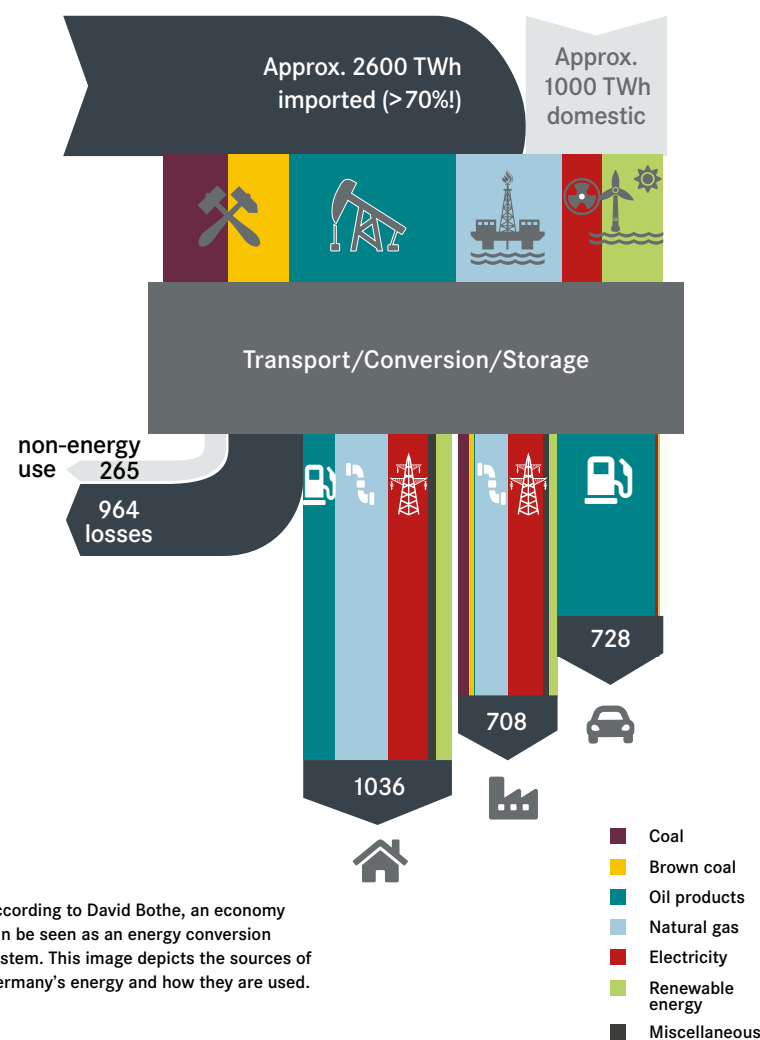
One approach is to electrify everything – including heating – to create the electric city. This means using heat pumps in the residential sector and large-scale heat pumps, hydrogen-based industrial boilers and similar technologies in industry. An alternative is hydrogen boilers. Burning hydrogen does not release carbon into the atmosphere, provides instant heat and it can be considered ‘unlimited’ because it comes from water.

When you look at the two solutions, heat pumps running under 100% renewable energy have an efficiency of 285%. With hydrogen, you lose about 50% of the energy in the electrolysis and transportation process. Anyone looking at these facts would conclude that we are better off electrifying everything by a factor of five or more.

But what is forgotten is that electricity does not simply come out of a plug. There is an entire infrastructure needed for storing and transporting electricity. Today, in Germany, we have storage for more than 500 TWh for oil and 260 TWh for gas but only 0.04 TWh for electricity.

If we eventually electrify all 50 million German automobiles, the electricity storage capacity will be inadequate just for this need. To meet the demand,

The German economy



According to David Bothe, an economy can be seen as an energy conversion system. This image depicts the sources of Germany's energy and how they are used.

Germany will need to rely on molecules, which brings us back to hydrogen. At first glance, hydrogen appeared inefficient. Still, when you examine the entire system, it is superior because it can use existing storage and transport infrastructure for distribution.

What is becoming evident in many studies and increasingly realised in the political sphere is that if we convert to renewable energy, we need the existing electricity network to provide power. But we will also need to use hydrogen as an important part of the energy mix even though it may be less efficient. First, because the energy transition is not possible otherwise, and second, it will be less expensive in the long term because existing infrastructure can be used and not built from scratch.



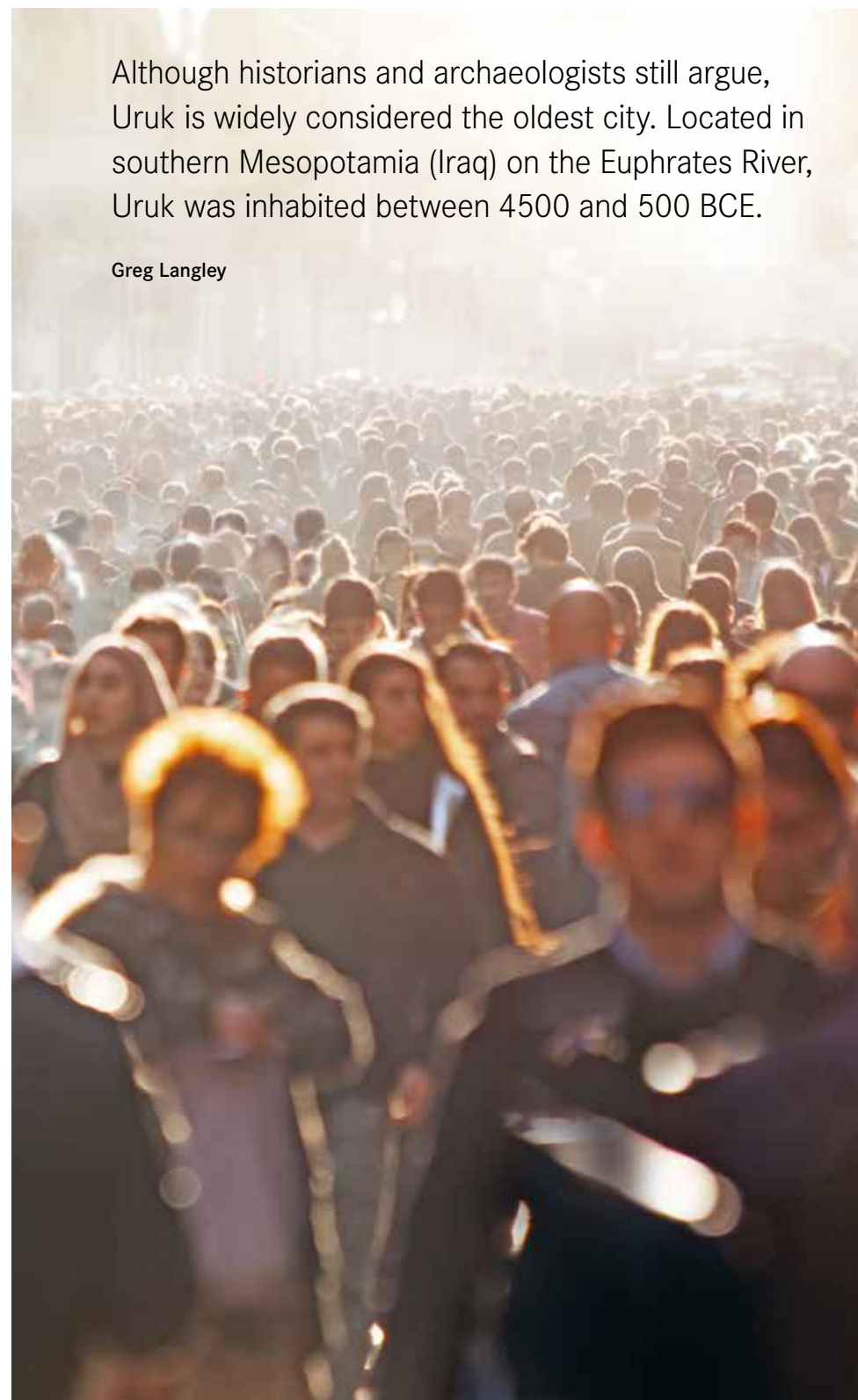
DR. DAVID BOTHE is a director at Frontier Economics, an economic consultancy, and an expert in energy and environmental economics.

WILL THERE STILL BE CITIES

AT THE END OF THE 21ST CENTURY?

Although historians and archaeologists still argue, Uruk is widely considered the oldest city. Located in southern Mesopotamia (Iraq) on the Euphrates River, Uruk was inhabited between 4500 and 500 BCE.

Greg Langley



With its rivers, abundant wildlife and grains, the surrounding plains gave rise to a city-state with a complex stratified society and full-time bureaucracy and military. Traders and colonists exported this culture throughout the region, and the arts thrived. Cuneiform writing developed and was used to record the *Epic of Gilgamesh*, a poem regarded as the earliest surviving notable literature.

It is a long way – both in distance and time – from the mudbricks of prosperous Uruk to the skyscrapers of London, the first modern city to have more than a million inhabitants, or Tokyo, which is now the largest with 37 million. But, in a sense, you can trace a straight line to these metropolises because ever since, cities have been central to humankind's most significant innovations, theories and greatest triumphs.

Today, 56% of the world's 7.9 billion people live in cities. Three million more migrate every week, attracted by the employment, educational and social interaction opportunities cities offer. By 2050, when the global population is expected to be 9.9 billion, more than 70% of humanity is likely to live in cities.

There are more than 2100 cities worldwide with more than 250,000 residents. Many, particularly in Africa and Asia, are experiencing hyper-urbanisation that is stretching existing infrastructure. This creates fragile environments where the imbalance between expectations and reality created by social inequality, pollution, crime and violence is causing the social contract to break down.

Although Uruk only reached around 60,000 residents at its peak, many of the problems that would have confronted its officials – overcrowding, environmental degradation, crime, resource scarcity – still plague cities today.

However, one significant difference is that megacities like Dubai, New York, Hong Kong, Paris and Shanghai are now part of a global economic network. Their size means they have more economic power than many nation-states, and the way these cities confront their challenges can have impacts felt around the world. The success of modern cities in addressing their challenges has far-reaching implications for the future of this small planet.

“If we get our cities right,” Robert Muggah of the Igarapé Institute, a Rio-based think tank, and a leading theorist on cities, says, “we might just survive the 21st century. If we get cities wrong, then we are doomed.”

CHALLENGES FACING EUROPEAN CITIES

No two cities are the same, so each city has its own unique set of problems stemming from history, geography and social construction. Yet, there are challenges common to all. Here are some of the most significant confronting European cities:

1. Environmental threats

Uruk is a testament to the impact cities have on their environment. The ruins of the first city are found in a desert once known as the Fertile Crescent. According to a recent study, exposure to a combination of climate change and overpopulation destroyed many cities in the region 4000 years ago. Dan Lawrence from Durham University, says, “Climate might have pushed them over the cliff, but they were already teetering on the edge ... they were unsustainable in their own right.”

Today, the IPCC continually warns about the existential threat of climate change. Cities only take up 3% of the global surface area but account for 75% of the energy consumption and 80% of greenhouse gas (GHG) emissions. GHGs drive the climate chaos causing more frequent and extreme weather events that devastate cities, leaving financial losses and deaths.

Europe is not immune to extreme weather, as the catastrophic floods of 2021 highlight. Making cities more resilient to environmental threats is one of the biggest challenges. The other is reducing the emission of GHGs causing climate disaster.

2. Demography and ageing

While city populations are projected to grow across the globe, Europe faces a different challenge. Successful, larger European cities will continue to prosper, but the European Union has estimated populations in over half of European cities will decline.

This is caused by population ageing. Life expectancy in the EU is projected to be 88.2 years in 2070, while the old-age dependency ratio (those aged 65+ compared to those of working age) will rise from 19% to 29%, and people aged 80+ will increase from 5% to 13%.

This means European cities will have to adjust their health care, and public infrastructure, housing, and social policy. The challenge will be exacerbated in countries where the overall

“IF WE GET OUR CITIES RIGHT, WE MIGHT JUST SURVIVE THE 21ST CENTURY. IF WE GET CITIES WRONG, THEN WE ARE DOOMED.”

ROBERT MUGGAH, IGARAPÉ INSTITUTE

population is in decline: Greece, Italy and Portugal, and almost all eastern European countries. This will further strain welfare systems as costs for health care, pensions and social benefits will be shouldered by an ever-decreasing number of younger workers.

3. Affordability

Several of Europe’s most iconic cities have introduced controls to curb spiralling rents. London is considering controls, while Amsterdam now has laws restricting investors from buying new-builds to rent them out expensively or legislation on short-term rental platforms, like Airbnb.

Housing affordability is a hot-button issue because it hits people where it hurts most – their wallets. Politicians are responding to voter pressure with policies aimed at dampening rental and price increases. Marcus Cieleback, Chief Urban Economist at PATRIZIA, says, “There is no denying there is an affordability problem, but these policies will be self-defeating in the longer term even if they provide relief to today’s tenants.”

In *Priced Out: Europe’s affordability challenge*, Cieleback explains that rising rents and prices result from urbanisation, a decades-long trend. Given the impact of COVID-19, this will continue. Wages are likely to stagnate, rural migration continue and housing costs climb.

Affordability is causing growing polarisation in European cities, which inclusive and equitable policies can address. Solutions will not be easy. Impact investing, the idea of combining the long-term sustainability of financial performance with greater emphasis on society, and environmental and social values, is gaining traction. It could contribute to addressing affordability along with social housing and upzoning single-family areas to allow a greater density of units.

4. Mobility

“Twentieth-century urban America didn’t belong to the skyscraper; it belonged to the car,” Edward L. Glaeser wrote in *Triumph of the City*. The same can be said of Europe. The fixation with private vehicles powered by internal combustion engines has resulted in environmental pollution, traffic congestion, long commuting times, reduced liveability and issues around human health and personal safety.



Decreasing ownership of private vehicles in favour of efficient and connected public transport and active mobility modes could ease these problems. For example, Copenhagen and Vienna have banned cars on many streets. Barcelona and Paris have replaced car lanes with bicycle lanes. London and Stockholm require drivers entering their city centres to pay a heavy toll charge. Such measures can tilt drivers to environmentally friendly modes of transport, but adequate public transport alternatives need to exist.

The EU notes such policies also need to be backed by legislation and governance measures to ensure new transport modes, such as autonomous electric vehicles, complement rather than compete with public transport.

5. Liveability

Liveability describes the conditions of a decent life for residents of cities. It embraces the health, education, culture, entertainment and security, infrastructure and many other aspects that make cities so attractive. The tension for cities is maintaining and even improving the liveability of their environs to ensure they remain attractive centres of creativity and innovation.

As noted, the challenges city administrators face today do not differ in nature from eras gone by. What has changed is their scale and complexity. If humankind is to surmount the challenges of the 21st century, then the focus will need to be on developing thriving, healthy, liveable cities with low pollution, integrated transport systems and low emissions.

This costs money. Many European cities with a shrinking number of residents and declining revenues from local taxation (especially after COVID-19) will struggle to meet the increased demand for social services and income support, let alone more ambitious regeneration plans.

6. Infrastructure

Cities need resources such as water and energy to be viable. Delivering these requires infrastructure, along with the airports, harbours, roads and transport systems that are essential for a modern city to function and be integrated into the world. Cities face the dual challenge of maintaining existing infrastructure, some of which can be more than a century old, while grafting on new infrastructure.

In recent years, ‘smart technology’ has been hyped as a solution to many of the infrastructure problems that beset cities. Such technology will be increasingly used in the development and running of cities of the future. However, it can create new problems, for example, around privacy or excluding city residents who cannot afford the technology or lack the capability required for its adoption. This could create a new form of social divide rooted in the technological.

Norbert Streitz, a noted German scientist and strategic advisor, has commented that, “Smartness is not a goal in itself, but rather the creation of a humane city, a sociable city and cooperative city that engages citizens in an urban community.”

COMING TO TERMS
WITH THE

ELEANOR RIGBY SYNDROME

Cities will need to create new housing models if they are to handle demographic change, writes Greg Langley.

Demographics is the first draft of the future,” says Dr Marcus Cieleback, Chief Urban Economist of PATRIZIA. “You can’t escape the effects, but because they are only felt decades later, there is a tendency to ignore the warnings.”

This is a mistake, he argues, because the long-heralded impact of demographic change will be strongly felt in the next eight years of this decade and reshape the economies of developed nations.

“The impact of long-term drivers – increasing life spans and fewer babies – will become a reality,” he explains. “Importantly, by the end of the 2020s the last of the Baby Boomers will be entering retirement.”

Baby Boomers (those born between 1946 and 1964) were the largest generation in history, at least in the West,

and their exit from employment will have a dramatic impact. The number of employed people in the EU 27 peaked in 2020, and companies will increasingly find themselves competing for an ever-shrinking pool of young talents.

Even under the best scenarios of the Ministry of Labour and Social Affairs, by 2030, Germany will have 2.9 million fewer than today. “And that is assuming that politicians and organisations do everything possible to expand labour supply,” cautions Cieleback. “Many European countries – Greece, Italy, Poland, Portugal and Spain, to name a few – will have similar problems.”

The loneliness of old age

Demographic change will reshape many aspects of society apart from workforce composition. For example, the European Union notes that as the number of households in Europe increases, their average size decreases. In 2019, there were 195 million households, an increase of 13 million since 2010. But those households are, on average, getting smaller. Significantly, about a third of all households consist of single people, many of them older.

The EU says that as the continent ages, a growing number of people aged 65 and above will live alone. This applies especially to women. In 2019, the share of older women living alone was 40%, more than double the figure for men.

The World Health Organization says social isolation and loneliness among older people are growing public health and public policy concerns made more salient by the COVID-19 pandemic. In some countries, up to one in three older people feel lonely. A large body of research shows that social isolation and loneliness severely impact older people’s physical and mental health, quality of life, and longevity.

Answering Eleanor Rigby

The Beatles released *Eleanor Rigby* in 1966 as a single, its lyrics capturing a deep sense of loneliness and melancholy. The song is said to express the void left in society post World War II, although with the numbers of Eleanor Rigbys rising it seems more applicable now than ever.

So, the answer to the first question posed in the chorus of *Eleanor Rigby* is, to a large extent, demography. The answer to the second question in the chorus, says Jan-Hendrik Jessen, could lie in developing new housing types.

As Head of Fund Management, Operated Properties at PATRIZIA, he oversees a portfolio of more than 50 healthcare properties encompassing more than 4800 care places. Jessen says there is a market gap with baby boomers retiring in substantial numbers but with many active years ahead of them before needing accommodation in elderly homes with serviced healthcare.

“We believe there will be a growing demand for independent living services,” he explains. “These would be barrier-free apartments with shared living spaces and facilities, including green spaces for activities like gardening or farming.”

Jessen summarises the idea under ‘best-age living’. Notably, he adds that it is not co-living, a residential model where three or more biologically unrelated people live in the same unit. Instead, residents remain independent and can choose how deeply they

want to integrate into the community lifestyle. He also notes that such projects should be embedded in the broader community by offering cultural and sporting activities, such as yoga, to attract people from outside into the community.

“There has been a tendency in the past to cut off older people from involvement in the wider world, which is a shame,” Jessen says. “It makes society poorer because all the knowledge and experience of lifetimes are locked away and isolated. We can make more vibrant communities by better integrating all ages.”

Extensive research by Jessen and his team indicates there is a significant niche for such housing, and he is currently negotiating with partners to create and manage such assets. The point, he explains, is to keep people as healthy and as independent as long as possible before they move into a care home.

“Increasing longevity should be a cause for celebration, especially as Europeans are generally living longer, healthier and safer lives,” he says. “High-quality social connections are essential to mental and physical health and well-being. Such community housing can provide that and help combat loneliness.”

All the lonely people
Where do they all come from?
All the lonely people
Where do they all belong?

Chorus to *Eleanor Rigby*

Downsizing

Cieleback notes one driver could be ‘downsizing’. In Australia, the United Kingdom and the United States, there is a well-observed phenomenon where retirees sell their family home because it has become too large to maintain and move into smaller housing.

“Others find that they are ‘asset-rich but income-poor’, as retirement progresses,” says Cieleback. “Having paid off their home, they may be sitting on a sizable asset but struggle on their monthly retirement incomes, so downsizing to unlock the housing wealth and live more comfortably in their Golden Years.” The trend has not been observed in Europe to the same extent. Europeans tend to move less than Americans, and there is a stronger tendency for family homes to be passed down through generations. Different countries also have different attitudes to renting. In Germany and the Netherlands, renting is more common than in the US or the United Kingdom, so people are less likely to shift.

But Cieleback notes that people have never lived longer throughout entire human history nor in such numbers: “This greying of societies is a completely new experience and cities will need to find ways to address the changes this is bringing.”



SMART INFRASTRUCTURE:

WHEN SENSORS COME OF AGE

If the visions of the smart city prophets are to be realised – of long-term gains in productivity and efficiency, supply-side miracles and smooth and seamless functioning urban environments – it will depend on intelligent infrastructure.

Graham Matthews, Head of Infrastructure at PATRIZIA, who has more than 24 years of experience in the sector, discusses the potential of the technology.

estatements: Hello Graham. Let's start with basics: What is smart infrastructure?

Graham Matthews: Over the past 250 years, the world has undergone a series of technological revolutions. The first was the steam engine, then mass industrialisation followed, typified by Henry Ford mastering the moving assembly line. The digital revolution began in the late 20th century and introduced sweeping changes through digital computing and communications technology.

Now people talk about us being in a Fourth Industrial Revolution, which is the trend toward automation and data exchange between technologies and processes. This is driven by IoT – the Internet of Things, which is based upon smart sensors and actuators.

These sensors can be attached to physical structures and collect data on anything – amount, composition, frequency counts, images, movement, indeed, any measurable thing that can be imagined. The collected data is converted to structured datasets, stored in the cloud and machine learning applies artificial intelligence (AI) to the datasets to analyse and spot patterns. When the system uses this data and technology to communicate and act, it can be said to be 'smart'.

estatements: So, where does the smart bit in infrastructure actually come in?

Matthews: Let me first outline what a smart building is. Smart buildings integrate physical systems – Wi-Fi connections, lighting,

electricity, heat, ventilation and air conditioning – to optimise their environment based on the number of people inside or expected inside. Buildings have had crude abilities to do this, for instance, turning the air conditioning off over the weekend. However, an intelligent building iteratively adjusts conditions in real time based on predictions made using reams of sensor data.

Similarly, smart infrastructure uses data to adjust operations iteratively. The type of infrastructure I am referring to includes airports, electricity grids, railways, roads, ports and utilities, like sewerage and water. However, infrastructure is not a homogenous asset class. Different assets require different data, so it is difficult to generalise about infrastructure in the same way you can about buildings.

For instance, for a port, datasets could include information on ship trajectories, time spent docked, vacancy rates at docks and ship size and weight. A smart airport would be set up to collect data, including facial recognition for passenger identification, health monitoring systems and automated luggage information.

What is common across all infrastructure is the potential of data-driven maintenance programs. For instance, image technology can accurately monitor the change in the physical state of assets in real time and detect structural weakness. That is a game-changer for asset management for both operational efficiency and cost savings.

estatements: What is the size of the smart infrastructure market?

Matthews: Oxford Economics estimates that \$94 trillion needs to be invested in infrastructure between 2016 and 2040 to fuel worldwide demand. This is an enormous figure to comprehend, but it illustrates the scope of the opportunity – especially as this figure is 19% higher than what will be delivered under current trends. So, there is a definite gap.

While 'smart' can play into all sectors, not all needed infrastructure investment relates to smart infrastructure. According to one recent study, the global market of smart infrastructure was worth \$78 billion in 2020 and is projected to rise to \$434.16

billion by 2028. I think this latter study underestimates the size of the market, but both studies indicate the potential.

estatements: What does PATRIZIA bring to the party? What can the company offer in terms of smart infrastructure?

Matthews: Experience. We have successfully been involved in infrastructure for over 24 years, investing nearly €7 billion and delivered exceptional returns to our investors. We have made 110 direct investments, 74 realised investments and more than 35 current investments. Our key sectors include transport, utilities and energy transition, social infrastructure and digital infrastructure.

With Smart City Infrastructure, we raised one of the first, maybe even the very first, smart city infrastructure funds globally. Our investee companies are delivering smart city-enabled fibre networks, reading smart water meters, putting sensors on rubbish bins to optimise collections and enabling smart transport networks – to name just a few of the use cases.

estatements: In your view, which areas of infrastructure offer significant smart potential in the short to medium term?

Matthews: There are exciting opportunities across infrastructure equity, infrastructure debt and listed infrastructure. We have made investments in some exciting projects, including district heating in northern Italy, a fibre developer and operator in the north of the UK, and an energy-from-waste platform business in Norway.

Undoubtedly infrastructure that addresses sustainability and decarbonisation has great potential in the energy sector. Traditional wind and solar are part of this equation, although we see more exciting opportunities in biofuels, district heating, energy-from-waste and hydrogen storage.

Further opportunities abound in the digital infrastructure space. COVID-19 highlighted the need for significant investment in digital infrastructure, and not only is it critical to our post-COVID flexible work lives, but it also underpins smart cities strategies. The final area is social infrastructure – childcare, education, the health sector and other services important for communities and vital to daily life.

estatements: Social infrastructure!

Matthews: Yes, in modern Western society, we just can't do without these sorts of assets. Take daycare, for example: we are seeing increasing technical requirements to ensure that the needs of users are well taken care of. We also see it within the care sector, which will see rapidly growing demand because of population ageing. Technology is playing an even more critical role in improving wellbeing within the last stages of a person's life.

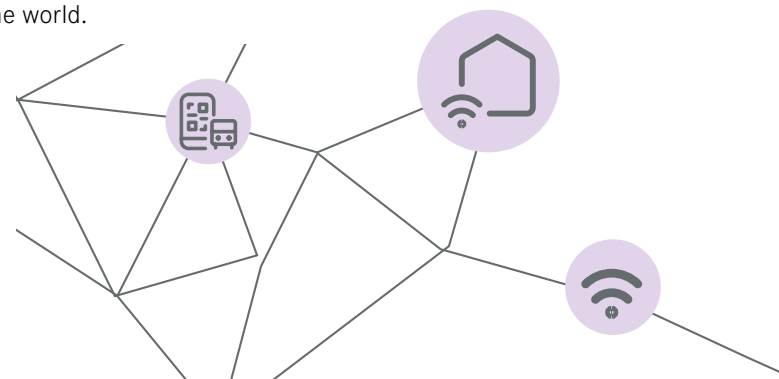
There's an interconnectedness between smart technologies and social infrastructure. For example, the ability to provide healthcare services between locations and to make the existing

use of hospital facilities more efficient. This includes supplementing on-the-ground resources with virtual resources using smart infrastructure. There's also the ability to diagnose conditions remotely. We can also use technology and smart infrastructure to deliver educational services remotely, to leverage the capacity of existing physical facilities.

So, there's an interrelationship. Social infrastructure forms the backbone of any sustainable community, yet investment opportunities in the sector have often been overlooked. But they will be increasingly in demand as governments don't have the financial ability to deliver such assets as they had in the past. In an environment where budgets will be more constrained because of levels of debt built up during the COVID period, there will be a need for greater private investment in social infrastructure.

estatements: So, there are investment benefits for investors in smart infrastructure, but what is the payoff for society?

Matthews: In terms of society, each of the three waves of technological change I mentioned earlier profoundly changed the way humans lived, and this wave will as well. For the last decade, the world has been busy integrating sensors into everything possible. We are now at a point when we begin to tap the potential of these sensors fully. Smart technologies can optimise resource efficiency, inform capital expenditure programs, reduce costs and create healthy and comfortable spaces. Beyond that, the Fourth Industrial Revolution, like those that preceded it, has the potential to raise global income levels and improve the quality of life for people around the world.



GRAHAM MATTHEWS is Head of Infrastructure at PATRIZIA. He was formerly the founding shareholder and Chief Executive of Whitehelm Capital before the business merged with PATRIZIA in 2022. Graham joined the Whitehelm team in 1998 and started the firm's infrastructure business at the time when private ownership of public infrastructure originated globally. Graham previously held senior roles in the Australian Federal Treasury and represented Australia at the International Monetary Fund in Washington DC.

BUILDING BLOCKS OF A SMARTER CITY

The ambition to build a smart city has been around for many years. Whether backed by central government, city authorities or private enterprise, the vision of a new city or urban neighbourhood rendered idyllic by the intelligent deployment of cutting-edge digital technologies is undoubtedly seductive, writes Philippe Le Fort.

“THE IDEA OF AN ALL-SINGING, ALL-DANCING SMART CITY HAS FAILED TO MATERIALISE. THIS SHOULD COME AS NO SURPRISE. ATTEMPTING TO DO SOMETHING SO COMPLEX ALL IN ONE GO REALLY IS A CASE OF RUNNING BEFORE YOU CAN WALK.”

PHILIPPE LE FORT



PHILIPPE LE FORT leads the Smart Building Team at PATRIZIA. His team is building a business that advances how buildings perform, including running health checks on buildings to uncover ‘smart opportunities’ for digitalisation and decarbonisation to dial-up value while mitigating cost. Harnessing the power of this data, the team select and integrate the best combination of technologies into a high-calibre stack, unique to each building for maximum impact.

From deliveries made by drones to commuting in autonomous vehicles on gloriously congestion-free roads and paving slabs that turn pedestrians’ footsteps into clean energy, there is no lack of bright ideas for how the sustainable cities of the apparently not-too-distant future will function. The problem is that where it has been tried, disappointment is to be found.

The examples of smart cities that have failed to live up to expectations are many and varied, including the Ordos and Lanzhou urban areas in China, Lavasa in India, Masdar City in Abu Dhabi and Songdo in South Korea.

Thus far, the idea of an all-singing, all-dancing smart city has failed to materialise. This should come as no surprise. Attempting to do something so complex all in one go really is a case of running before you can walk.

The fact is that, however rapidly the world urbanises, the vast majority of people will continue to live in existing cities for the foreseeable future. This would remain true even if there were some Platonic ideal of a smart city waiting to be plucked from the ether and made corporeal. Our energies are far better directed at smartening up the urban environments we already have.

This is the view at PATRIZIA. Indeed, we have flipped the concept of a smart city on its head. Rather than coming up with vast, undefined masterplans, with a laundry list of supporting technologies, we asked ourselves what constitutes the basic building blocks that make up a city. The philosophical answer is people – and that certainly informs our thinking – but the practical and actionable answer is buildings.

Start with the cornerstones

For that reason, we have spent time and resources developing a smart buildings team. Currently, the team is busy supporting PATRIZIA’s funds by going into individual assets – no two buildings are the same. We aim to understand how they operate, how they could be managed more efficiently, thereby driving down costs, and how an improved level of service could benefit occupiers, ultimately increasing value.

To do all this, it would have been simplest to engage a third-party supplier and use their technology. However, it rapidly became apparent that this wouldn’t be possible. The proptech market is currently too fragmented, with numerous companies offering innovative products. These may be efficient and do one thing well but that cannot meet our aspirations. As a result, we decided to create our own technology solution.

We may soon take it to market, but we want to learn as much as possible from our large portfolio first. If and when we do so, it could provide a valuable additional revenue stream to the overall business. In

the meantime, we are already confident that it will drive significant cost savings, efficiencies and carbon reductions within PATRIZIA’s global portfolio. Again, walking before we can run seems like the sensible thing to do.

Uplifting lift management

To take just one example, let’s look at the costs and inconveniences involved in lift management. I do not doubt that lift manufacturing companies are dedicated to designing and manufacturing products that are as robust as possible. But the fact remains that these companies bolster their profits by selling lucrative maintenance and repair contracts, which typically account for 50% or more of profits.

The problem is that, in most cases, the lifts do not come with any predictive intelligence. As a result, when something goes wrong, it tends to come as a surprise and resolving the situation becomes urgent, which is expensive. Add to that the well-documented supply chain issues, and it may well be that the part required is not instantly available, or if it is, it comes at a ludicrously inflated price.

However, most of these issues are eliminated by applying predictive maintenance technology. The idea is to use big data and AI to predict when components may be about to fail, allowing for efficient recycling of components such that an asset can stay running almost indefinitely, minimising downtime, unplanned costly maintenance and costs relating to misdiagnosed repairs.

This is typically done by integrating IoT sensors directly into the asset infrastructure. The sensors transmit terabytes of data regarding vibration, speed and similar/relevant metrics to a cloud-based data platform. This data is then fed into AI-driven software, which uses methods such as neural networks to train itself to detect failures before they occur.

Smartening up entire buildings

If it were just about lifts, that would be one thing. But the fact is that the same arguments hold true for every bit of kit that makes a building work, from heating and cooling systems to plumbing. If a building knows when a room is empty, it can infer that it doesn’t need to be heated in the winter or cooled in the summer. If it knows when electricity is cheapest, it can use that window to recharge batteries.

This latter point is indicative of the next step in the evolution from smart buildings to smart cities. Once a city is largely made up of individual smart buildings, those innovative buildings can start talking to each other and, crucially, to urban infrastructure, including utilities. When this happens, the city as a whole and single office and apartment blocks can function far more efficiently, both from an economic and environmental standpoint.

The point is that by using technology such as that developed by PATRIZIA, we can put in place the building blocks to deliver the smart cities of the future. It will be a step-by-step process, but each step will yield tangible gains. Such a solution may not be as headline-grabbing as trying to build a smart city from scratch, but it would certainly be more practical and effective for our cities today.

Torre Glòries, a 38-storey skyscraper located between Avenida Diagonal and Calle Badajoz, marks the gateway to the 22@ technology district.



22@ A TEST GROUND FOR THE DIGITAL WORLD

Greg Langley

If you were a graffiti fan and found yourself in Barcelona in the 1990s, then the place to head was Poblenu. Once a thriving industrial district in the 19th century, Poblenu was the ideal canvas for spray-can artists. Between 1970 and 1990, some 1300 firms closed, leaving the area littered with abandoned buildings.

Poblenu reflected the wider malaise of Barcelona. Long a cultural centre famed for imagination and innovation – think architect Antoni Gaudí, and painters Joan Miró and Pablo Picasso – the capital of Catalonia had fallen on tough times. Its economy was stagnant, unemployment rife, the harbour run down, and its beach a rubbish-filled strip lapped by dirty water.

But Barcelona seized the opportunity of the 1992 Olympics to reinvent itself. New infrastructure, revamped neighbourhoods, greener parks and a new two-kilometre sand beach opened the city to the Mediterranean Sea. The revitalisation made Barcelona a tourist must-visit destination again.

And Poblenu? It is home to 22@Barcelona, a neighbourhood buzzing with innovative startups, research centres and international businesses, and regularly touted as a textbook example of urban, economic and social renewal.

Regeneration through technology

Much of Barcelona's renaissance has been built on IoT (internet of things) systems. Hard hit by the 2008 recession, Barcelona turned to technology to spark an economic recovery. Starting in 2012, the city deployed responsive technologies across public transport, parking, street lighting and waste management systems as part of a Smart City Barcelona plan.

For example, transitioning to a more energy-efficient LED lighting system led to cost savings. Sensors in the lampposts also identify when pedestrians are near and dim automatically if streets are empty to save energy further. More, the lampposts form part of a Wi-Fi network providing consistent, city-wide free internet access and are integrated into Sentilo, a system of 19,500 smart meter sensors that receive data on weather, pollution and noise.

IoT devices also monitor rain, humidity and soil moisture in city gardens. Using the data, gardeners remotely program the irrigation needed and deliver it via electro-valves. This has resulted in savings of approximately \$555,000 per year.

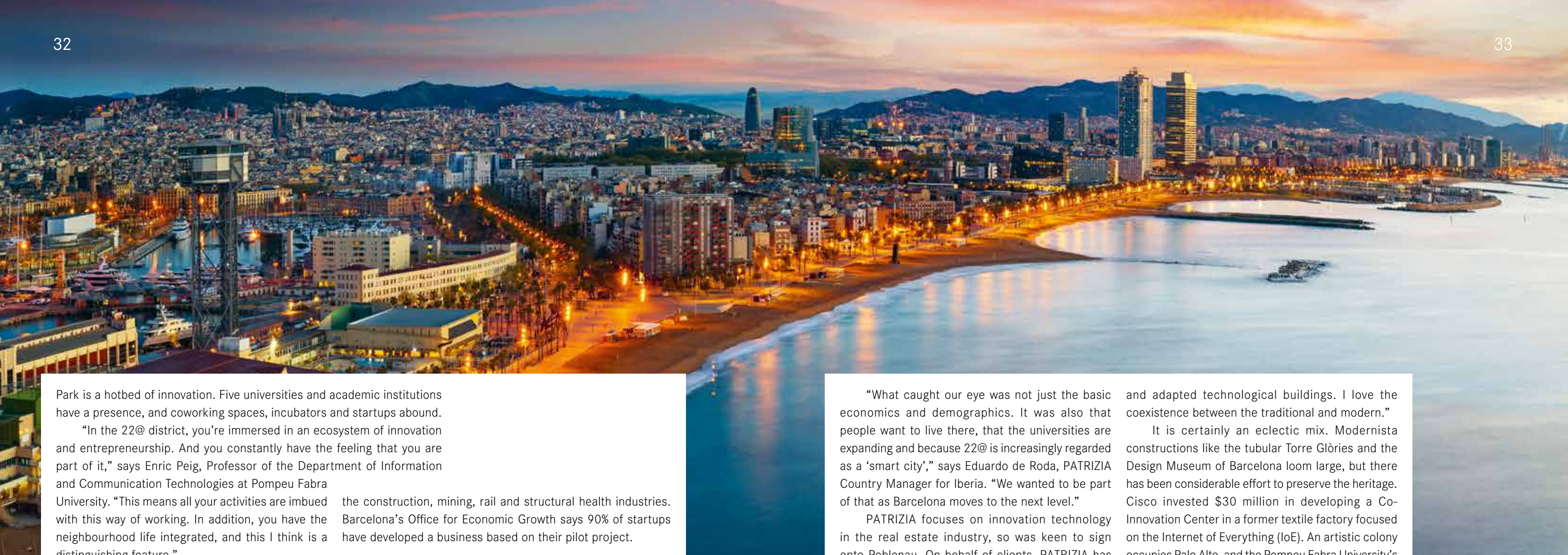
For cars, Barcelona embedded sensors in the asphalt that identify whether a parking bay is occupied. Drivers are guided to spaces via ApparkB, an app that allows online payment for parking. This has reduced congestion and emissions.

But the innovations continue. Smart pneumatic waste bins reduce odours. Powered by solar panels, interactive bus stops connect to the Wi-Fi network, offer USB charging stations and updates on bus locations ... and there is much, much more.

Knowledge neighbourhood

In 2000, \$230 million was earmarked to foster the Barcelona technology industry. Twenty-two acres of Poblenu were to be recast as an innovation district. The new name said it all. Whereas the previous zoning was 22a (industrial), the new vision was 22@ – a testing ground for the digital world.

Visit the district today and any fresh graffiti you see is probably commissioned from a renowned local artist such as El Pez or Sixeart by one of the design, energy, media and scientific research companies that now call 22@ home. The triangle formed between the oceanfront, Diagonal Street and Ciutadella



Park is a hotbed of innovation. Five universities and academic institutions have a presence, and coworking spaces, incubators and startups abound.

“In the 22@ district, you’re immersed in an ecosystem of innovation and entrepreneurship. And you constantly have the feeling that you are part of it,” says Enric Peig, Professor of the Department of Information and Communication Technologies at Pompeu Fabra University. “This means all your activities are imbued with this way of working. In addition, you have the neighbourhood life integrated, and this I think is a distinguishing feature.”

Famous firms present include Amazon, HP, T-Systems, Ricoh, Schneider Electric, and VICE Media. Sergio Ruiz, CEO of the Signaturit Group, an electronic signature company, says the decision to open in Poblenau was easy.

“You can really breathe innovation and technology here,” he explains. “22@ is a hub that allows us to connect with other technology companies and promote innovation. This allows the development of new opportunities in our business. It is the ideal ecosystem for synergies.”

Other companies have grown up in the area. Typeform, a Spanish online form-building company, was founded in 2012. Typeform now employs 300 people and has a worldwide client base.

One key to the success of 22@ has been the Barcelona Urban Lab, a government department that fast-tracks the use of public space for companies to test pilot products and services. The lab was one of the first of its kind, and many innovations rolled out throughout Barcelona were first tried in Poblenau.

One successful company is Urbiotica, which first experimented with sensors for waste management, installing them in bins along 22@ streets to measure levels in public bins and make waste collection more efficient.

Worldsensing is another that has gone on to conquer the world. It piloted Fastprk, a parking system. Barcelona ultimately opted for its own ApparkB app, but Worldsensing IoT technology is now used across

the construction, mining, rail and structural health industries. Barcelona’s Office for Economic Growth says 90% of startups have developed a business based on their pilot project.

Old world, new tech

It is estimated that 4500 new companies have come to Poblenau since 2000. Of these, 47% are startups, and 31% are technology or knowledge-based companies. Before COVID-19 struck, some 56,000 tech talents had been attracted to the area and an estimated 150,000 jobs were created.

But Poblenau is far from a business district where lights go out at night. Redevelopment was not to run slipshod over existing residents. Instead, the intention was to make 22@ appealing to live in. This included developing 4000 units of subsidised housing, creating new green areas, remaking streets and providing facilities for the public, such as schools and community centres.

For this, the support of the real estate sector was critical. If educated professionals, tech-savvy workers and other creatives were to be attracted, they needed office and living space. By 2011, there were 139 plans submitted for urban redevelopment, 84 from the private sector.

“What caught our eye was not just the basic economics and demographics. It was also that people want to live there, that the universities are expanding and because 22@ is increasingly regarded as a ‘smart city’,” says Eduardo de Roda, PATRIZIA Country Manager for Iberia. “We wanted to be part of that as Barcelona moves to the next level.”

PATRIZIA focuses on innovation technology in the real estate industry, so was keen to sign onto Poblenau. On behalf of clients, PATRIZIA has invested in five office and residential buildings. Two are redevelopments of old industrial space, and the goal is to create sustainable buildings reflecting the changing local environment.

“Although 22@ is one of the largest urban regeneration areas in Europe, there is still a major shortage of Grade A office stock. We aim to address that demand,” says de Roda.

Walk the streets of Poblenau and you find a lively area half bohemian and half cybernetic in character. The La Rambla del Poblenou, the promenade that cuts through the district to the sea, has been revitalised with restaurants, microbreweries and shops. In the backstreets, alternative art galleries, advertising agencies, architect firms, dance companies and designer showrooms burnish the reputation of Poblenau as Barcelona’s cool new barrio.

Leyre Soto moved to 22@ after an offer from a software development company. “Every day, I discover a change. It’s a very dynamic and emerging neighbourhood. I often feel like taking out my camera to snap pictures of its evolution.”

She loves the location by the sea, that she can ride everywhere by bike, enjoy the after-work get-togethers – where employees from different companies intermingle – and savour the architecture.

“There’s no neighbourhood in all of Barcelona that blends classic architecture with contemporary

and adapted technological buildings. I love the coexistence between the traditional and modern.”

It is certainly an eclectic mix. Modernista constructions like the tubular Torre Glòries and the Design Museum of Barcelona loom large, but there has been considerable effort to preserve the heritage. Cisco invested \$30 million in developing a Co-Innovation Center in a former textile factory focused on the Internet of Everything (IoE). An artistic colony occupies Palo Alto, and the Pompeu Fabra University’s Communication Campus and the Fundació Vila Casa Museum are housed in renovated textile factories.

Ruiz says Signaturit is considering moving offices but will remain within 22@. “I have had offers closer to Barcelona centre at lower rents but have discarded them,” he says. “Our presence here helps attract talent. Employees look forward to living here. The weather, the comfort and the proximity to the sea all make 22@ a great place to work.”

Constant disruption

Few cities wear the Smart City label as proudly as Barcelona. But Barcelona is not resting on its success. November 2020 marked the 20th anniversary of the 22@ project and provided an opportunity to reassess its direction. The council is looking to opening the district to green companies. More space is earmarked for rental housing. In the original plan, the number foreseen was 9300. After the latest plans are finished, there should be around 15,800 residential apartments.

“It is the mix of uses that we like about 22@,” explains de Roda. “How the office and living spaces are revitalising the quarter to create a new, dynamic and compelling lifestyle. That’s the attraction for the creative classes and will ensure they will continue to be drawn to the area.”

22@ – INNOVATION IN BARCELONA

PATRIZIA invested in 22@ with five assets. Two are refurbishments of industrial space, and the goal is to create sustainable buildings reflecting the changing environment into one of mixed use.

should say 'were' involved, as we have exited two assets," clarifies Paul Hampton, Head of International Fund Management at PATRIZIA. "We were delighted with both investments, which sold at very strong multiples."

PATRIZIA has invested in Spain since the mid-1990s. Hampton says there is an experienced, talented team on the ground who flagged the potential of 22@. The investment teams followed up and researched Poblenau over two years.

"Thorough research endorsed the view that 22@ was everything our investors would want to be part of," explains Hampton. "What caught our eye was not just the economics and demographics – that people want to live there and that the universities are expanding – it was also that 22@ is increasingly regarded as a 'smart city.' We wanted to be part of that as Barcelona moves to the next level."

Hampton says that the thoughtful approach used at 22@ is standard at PATRIZIA.

Mixing old techniques and new technology

One building is Entegra, a collaboration with Urban Input designed to be a near-zero energy building (nZEB). This has been achieved using an ancient technique combined with a powerful building systems manager.

In Spain, the highest cost of an office building during its life is energy for cooling and ventilation. Entegra uses traditional cross-ventilation to achieve the same results. Detectors on the outside measure temperature, humidity, wind, pollution and noise. When conditions are right, the system prioritises fresh air by opening the windows.

The local climate means the system can cool at night and, for much of the year, the day as well. A cooling/ventilation system is available for when conditions are unfavourable.

Entegra, a collaboration with Urban Input, is designed to be a near-zero energy building (nZEB) using an ancient cross-ventilation technique combined with a powerful building systems manager.

Combining old techniques with new technology equips Entegra for the post-pandemic world where companies require offices with windows that can be opened for employees' peace of mind.

This approach of combining old and new also led to an extraordinary façade. Whereas many modern buildings often have dramatic but grim façades, Entegra has one of carbonised wood.

The architect firm of Batlle i Roig developed it using the ancient Japanese technique of *Shou Sugi Ban*, where wood is scorched. Burning protects the wood from the elements, which extends its life. Should the façade need to be changed, it can be recycled for furniture or bioenergy, or left to decompose naturally. Another advantage is that the façade is considered carbon positive.

"Poblenau is an example of what we do best," says Hampton. "Identify potential and, when the time is right, realise it and move on to the next development."



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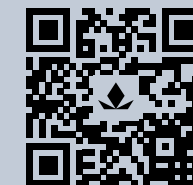
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USING AI

TO FIND THE BEST LOCATIONS FOR

URBAN LOGISTICS HUBS

The ongoing repercussions of COVID-19 have dealt a cruel blow to many market sectors, but some are benefitting. E-commerce is one clear winner.

The ripple effects of COVID-19 and changing consumer habits are accelerating the shift towards e-commerce. This, in turn, is stimulating demand for last-mile logistics to cater for the growing ranks of online consumers demanding overnight or next-day delivery.

PATRIZIA has developed a data intelligence tool to identify precisely the best place in a city for a logistics asset. The Logistics Impact Solution (LIS), the latest addition to PATRIZIA's impACT solutions, evaluates, compares and benchmarks different urban logistics locations across European cities to pinpoint the optimal location for logistics assets. The LIS enables logisticians and retailers to identify the most efficient locations for an urban distribution footprint.

The way and speed at which end-consumer goods are distributed within cities are re-shaping city logistics and the use of real estate assets. Logistics used to mean big ugly warehouses in a supply chain. Now it includes warehouses near large transportation and shipping hubs. It includes cold-storage facilities, self-storage units, data centres, regional distribution centres, last-mile distribution centres, last-minute distribution centres, and other facilities that are part of our diversifying distribution networks.

In the past, logistics facilities were located outside the city because the land was cheaper, which is why shipping hubs were situated there. Today, however, urban logistics is presenting interesting opportunities. Whereas last-mile distribution used to be the innovative way to think about logistics, increasingly, we are looking at last-minute distribution.

Where is best for a logistics hub?

So what is the ideal location for a logistics hub? Essentially, any facility should be near as many affluent consumers as possible. The rationale is that the willingness to pay for a logistics asset is predominantly a function of the expected urban freight turnover, that is, the distribution of goods to consumers.

Thanks to artificial intelligence (AI) and machine learning methods, the LIS computes the exact logistics catchment area that can be reached during a given travel time – for example, how far can be driven in 15, 30, 45 or 60 minutes. By combining these geographical areas with socio-economic data, the LIS determines the number of households within the catchment area (the 'demographic impact') and their total spending power,

that is, their economic impact. Finally, the LIS merges demographic and economic data to benchmark the best logistics locations within European cities.

Spending power counts in Berlin

PATRIZIA used the LIS to examine two European cities in depth: Berlin and London. The studies highlighted substantial differences between the capitals' logistics networks. In Berlin, greater spending power and a denser distribution of households compensate for higher travel costs. In London, the purchasing power captured within shorter distances drives logistics rents the most. This illustrates the importance of understanding logistics in each urban context and how the LIS makes this possible.

With Berlin, the LIS examined the most active locations in terms of institutional transactions over the last two years. According to the Real Capital Analytics (RCA) database, there are three active areas inside Berlin: Berlin Tegel Airport, Treptow to the south of the city, and Neuenhagen to the east. The three most active areas outside the German capital are: Kloster Lehnin in the south-west, Großbeeren in the south and Grünheide in the south-east.

The six locations differ significantly in terms of economic and demographic catchment. On average, 169,000 households can be reached from the three inner-city areas within a 15-minute drive. By comparison, on average, the three outside locations capture less than 31,000 households. At this point, we could conclude that locations within the city centre are the strategic place to be to maximise the number of potential consumers.

Yet, interestingly, driving for longer outside the city appears to be well worth it. Driving 30 minutes from Großbeeren and Grünheide reaches far more homes than a 15-minute drive within the city, namely 4.7 times (795,000) and 2.1 times (354,000) more households respectively.

The data suggests that household economic power increases with distance from inner-city locations. Yet, outside the city, the opposite is true. For example, the average purchasing power per household within the 15-minute catchment area of Tegel Airport is €34,000 and rises by around 15% to €39,000 within the 60-minute catchment area.

Central locations best for London logistics

For London, PATRIZIA used Property Market Analysis (PMA) to identify well-established logistics submarkets to benchmark with the LIS, namely: Croydon, Enfield, Heathrow and Royal Park. Then it compared their historic rental growth for logistics.

Unlike in Berlin, the LIS reveals an inverse relationship between drive time and economic impact. For example, for Royal Park, close to the city centre, purchasing power per household falls as driving time increases.

The LIS proves that rises in demographic and economic impact need to compensate for greater travel times. For example, with Enfield, there is little increase in spending power per household between a driving time of 30 minutes (€65,000) and a 60-minute drive time (€67,000). However, there is a far more significant demographic impact.

Identifying unknown logistics locations

By linking LIS results to real estate performance indicators, PATRIZIA was able to gain significant insights into rental dynamics across the four London submarkets. PATRIZIA merged the CAGR of logistics rents and the economic impact of different travel times for each site. Results show that the most robust rental growth occurred in the locations ranking highest using the LIS tool, confirming its findings.

Across all of the economic impact areas, the 15-minute drive time relates best to logistics rental growth. Moreover, the purchasing power captured within a 15-minute and 30-minute drive time has the biggest influence on growth in rental logistics property.



ANETT WINS is data scientist responsible for building and estimating statistical models to find hidden patterns and indicated trends. To answer predictive and prescriptive research questions, she applies advanced machine learning algorithms.



DR. MARCELO CAJIAS heads the Data Intelligence section, which is part of the Investment Strategy and Research team at PATRIZIA. In his role, he is responsible for the global portfolio of analytical solutions and dashboards that support strategic investment decisions by means of observed and unobserved machine learning forecast models for various asset classes.

Essentially, the LIS algorithm can help investors comprehend the complexity of distribution networks across Europe and how patterns differ between cities. Moreover, the tool could be used to identify untapped urban logistics locations. And it could be further tailored to meet the specific needs of logistics investment management teams.

Logistics is an adaptable sector with several subsectors, each of which can protect investors against demographic and economic changes. Site selection is a crucial component when acquiring outperforming assets. And the new AI tool has proven invaluable in predicting where suitable sites could be located, not only for current demand but also in the future.

We want to ensure the assets we invest in continue to perform, no matter what the future brings. Logistics and its multiple subsets, whether light urban industrial or major transportation hub or cold storage, are positioned to take advantage of long-term secular trends. It is a sector that was made for future-proofing a portfolio and as urban logistics grows in importance, so does the need to identify where precisely to locate a logistics asset.

CREATING LIVEABLE CITIES MEANS EMBRACING URBAN ART



MURAL BY SATONE AND
AXELVOID, SCALE 2017

The PAT Art Lab, the work and research organisation for contemporary and urban art, is expanding its focus. Thomas Wels, co-CEO of PATRIZIA, is a long-time enthusiast of graffiti and street art. Over two decades, he has established a private art collection called The Rainbow Collection. Here he discusses the broadening of the aims of PAT Art Lab and his relationship to art with Tania Di Brita, curator of the PAT Art Lab

Tania Di Brita: First, what is the PAT Art Lab?

THOMAS WELS: The PAT Art Lab is not a new initiative; it started some years ago. The idea was to give artists space to express their creativity on public murals at specific sites. When we started rethinking the PAT Art Lab, the idea arose to expand the spaces to include the interiors of PATRIZIA buildings. This has already happened in some of our main office locations. So, the PAT Art Lab is now an initiator of art projects and an art collection. And we are only at the beginning of this fantastic initiative.

Tania: What is the connection between the PAT Art Lab and street and urban art. Why is the focus on this artistic movement?

THOMAS: The connection is real estate. PATRIZIA is a major pan-European real estate company. The movement started in the US and then spilt over to Europe, and there was always a connection with urban development or gentrification. As a leading company in the real estate industry, PATRIZIA has an opportunity to provide and curate walls that feature amazing murals from interesting and well-known artists. There is a logical



Thomas Wels
co-CEO of PATRIZIA, 2020

connection between real estate and the art we encounter in urban spaces, and PATRIZIA keeps this in mind when we start building new real estate or reshaping existing buildings.

Tania: Can you tell us when you discovered street art?

THOMAS: I discovered urban art through photography some 20 years ago. I was visiting industrial sites in Zurich when I first came across it, and that was when the fascination started – through digital photography. As part of my work in finance, I travelled to larger cities internationally, including New York, where I saw many exciting developments in the movement.

Urban art was initially an urban phenomenon, as the name implies. Now it’s everywhere, but it requires canvasses, that is factories, rundown areas and other places where walls are available.

Mural by Satone and Axelvoid, SCALE 2017



Tania: But what exactly attracts you to street and urban art?

THOMAS: Perhaps it’s a question of education. I’m not an artist, but I was confronted by constructivist art in Switzerland 40 years ago and liked it. Constructivist art aimed to reflect modern industrial society and urban space, and rejected decorative stylisation. So for me, urban art is about pushing boundaries. It is wild and outside my comfort zone and takes me to places I usually would not go.

Tania: Creativity has been part of humanity since we first began drawing on cave walls, but modern cities particularly attract such expressions. Why is this?

THOMAS: I think it’s the availability of spaces. Graffiti artists are always seeking to express themselves wherever they find a spare space on a wall, train, hoarding, billboard or disused factory. For example, in Brick Lane in London, it’s accepted that creativity and colour codes change continuously. Young artists are attracted to rundown or disused areas in cities to express themselves in attractive and colourful ways!

Tania: Besides availability, there is also visibility. In street art, artists want as many people as possible to admire their work. Another task of the PAT Art Lab must be to ensure that murals by artists have excellent visibility.

THOMAS: Yes. Speaking of availability, I would introduce the term ‘managed’ or ‘curated availability’. PATRIZIA contributes spaces temporarily through curated availability. Artists can use these spaces to express themselves and, in addition, this approach helps to avoid graffiti vandalism.

Mural by Jana & JS, SCALE 2017



“THE PAT ART LAB, IT’S MORE THAN AN ORGANISATION OR PLATFORM: IT’S ABOUT BEING A HUB FOR THE WHOLE REAL ESTATE INDUSTRY THAT CAN PROVOKE INNOVATIVE SOLUTIONS THAT ULTIMATELY RESULT IN TRANSFORMATION.”

TANIA DI BRITA

Tania Di Brita, curator of the PAT Art Lab, 2021



Tania: Speaking of graffiti, I assume you wouldn’t be happy if someone randomly started tagging your property. As a respected member of the financial community, how do you approach the issue of art in public spaces?

THOMAS: I’m a little bit schizophrenic on that one. On the one hand, I collect artwork produced by artists who perhaps started as vandals. On the other hand, it can drive me mad when a window or a mailbox gets tagged. First, it’s usually ugly scribbles, and second, it’s expensive to get rid of. This is the part that drives many other people mad too. Anyhow, tags come from writers and not the artists that I like to represent in my collection.

As an asset manager or owner of real estate, you think about graffiti differently than if you’re an observer. For example, graffiti does not make sense if you are the CEO of a railway company and are forced to get your buses and trains cleaned every couple of weeks, which is expensive. As mentioned, I would love to see more of these public spaces offered for managed or curated availability. That would help avoid vandalism.



Mural by Okuda
San Miguel,
details, SCALE
2017



THE PAT ART LAB: "ART TOUCHES, CONNECTS AND ENHANCES."

The PAT Art Lab is an experimental work and research organisation for contemporary and urban art, society and a sustainable future. The PAT Art Lab was founded out of a passion for art since 1984.

The vision of the PAT Art Lab is to unite artists, community engagement and sustainability with art. Points of contact may arise between art, artists, the local community, the PATRIZIA Foundation, education, institutions and other partners dealing with topics related to art or society. The goal is to strengthen social cohesion and aspire to a future worth living.

Mural by Sweetuno & Hombre,
PATRIZIA office in Frankfurt, 2021

Tania: You refer to street art as a global phenomenon – how did this come about?

THOMAS: In the 1970s and 1980s, street art was a local phenomenon. Every city had local pioneers, but at the same time, it was occurring in every metropolis in the world, so it was global. Information was exchanged between artists and their communities through journals, books and re-printed photographs. It took a lot of time for information to spread, but it did spread, so there was a growing feeling of a worldwide movement. This was helped by the artists, many of whom travelled the world to leave artistic traces. You could encounter a Blek Le Rat, originally from Paris, in Berlin, Tokyo and New York at the same time. Isn't that fascinating? Nowadays, there is social media. An artist can instantly present their latest works to a global network.

"ARTWORKS IMPROVE THE LIFE OF A CITY; THEY ADD TO THE QUALITY OF LIFE. WHAT MAKES A CITY LIVEABLE? IT'S NOT CONCRETE WALLS THAT MAKE A CITY LIVEABLE."

THOMAS WELS



Falk 'Akut'
Lehmann and
his wife Sandra,
work in progress,
PATRIZIA office
in Frankfurt,
2021

Tania: How do you think urban creativity contributes to the liveability of a city?

THOMAS: These artworks improve the life of a city; they add to the quality of life. What makes a city liveable? It's not concrete walls that make a city liveable. Yes, you want cities to be clean and to reduce pollution, but in addition, it's about the atmosphere that art, murals and pleasant areas create. People are social beings. We like sitting in coffee shops, meeting other people and exchanging ideas about the artwork before us. You don't get that

with grey concrete slabs surrounding you. People also prefer to visit lively areas. What makes a place lively? It is when it has something different, when something fun is present or maybe a new artwork is installed by an artist. From there on you attract interest and traffic to a specific area in a city.

Tania: I see your point. There is more to a city than the numbers measuring living standards. An atmosphere in a city results from the society and culture. How do you see that?

The London Police,
Thomas Wels,
Tania Di Brita,
Luxembourg office,
2020

THOMAS: That is a difficult question because our business is mostly about managing individual buildings. I would say that the field of urban planning needs some rethinking. What makes a city liveable, in my opinion, is bringing back life and authenticity to various districts, whether it's through coffee shops, retail stores, small restaurants, gardening, arts or culture in general! There should be more places for the local community to encounter each other, exchange ideas and be sociable.

Tania: How do you expect PAT Art Labs to develop?

THOMAS: We have had a good start with interesting internal pilots in Luxembourg and Frankfurt. But we have too few examples, so we could do much more with our clients and our residential developments to enrich our buildings and make them artistically valuable. The PAT Art Lab could and should be that organisation.

It is a win-win-win situation: PATRIZIA provides opportunities to artists with available walls, and our buildings gain more visibility and, at the same time, enrich the city's appearance and make it more liveable.

Tania: As I see the PAT Art Lab, it's more than an organisation or platform: it's about being a hub for the whole real estate industry that offers unusual art, which can provoke innovative solutions that ultimately result in transformation.

THOMAS: We must learn to think in a broader context. Regarding the topic I raised earlier, urban development: we use the terms 'sustainable communities' and 'living cities' very narrowly. But in terms of how we live together in cities in the future, I think art plays a critical role, alongside technology and maybe urban gardening.

Tania: Thomas, thank you very much for your time and valuable insights into art and real estate.



TANIA DI BRITA is the curator of the PAT Art Lab. Tania is a Swiss art historian specialised in graffiti, street and urban art.



THINKING ABOUT TOMORROW,

TODAY

For more than twenty years, Beatrice Rutishauser Ramm has worked in the refugee camps, hospitals and prisons of Kosovo,

Chechnya and Syria. Wherever conflict, natural disaster or poverty ravages an area, she is there working as an emergency educationalist to help train teachers in conflict zones and accompany them in their work with children, in some cases for many years. In this interview, she discusses her work with children from Ukraine.

estatements: What support do refugee children need right now?

Beatrice Rutishauser Ramm: A feeling of security and stability. And depending on the age of the child, that can mean entirely different things. For example, younger children need daily routines and lots of affection more than anything else. Children also need to play in structured ways to feel safe and secure, whether that's because there's an adult present or because they're with a sibling. For the little children, rituals are important, like reading them a bedtime story in the evening. It's an excellent way to finish the day on a positive note.

This compares to children of elementary school age who want to understand what's happening and why. We can offer them a sense of security by explaining how some things depend on other things in ways that match the age group. This allays fears and lets them feel they're able to do something themselves. This is because children at this age want to help, for example, by making sure their mum or siblings are all right. It's essential to ensure you don't overburden children when they're in a supportive role. If they begin behaving differently, for example, they suddenly start wetting their beds, it's an indication that it's becoming too much for them, so you must work on this together.

When children enter their teenage years, they worry about the near future. They wonder if they'll be good enough for a new school, if they'll make new friends or where they'll live. Kids need the right tools to navigate their way through these new situations.

estatements: What is an emergency educationalist?

Rutishauser Ramm: Emergency educationalists build bridges. They come into play whenever there's a sudden and unforeseen situation, and things go wrong. For example, we take care of things if no schoolbooks are available. Or we show teachers how to teach without books, particularly in places like refugee camps, because they don't have 'official' schools. We ensure children continue learning, despite difficult circumstances. Emergency educationalists ensure that emphasis is given to the correct teaching methods and that the teaching content is based on the right processes.

estatements: What's the difference between an everyday situation and an emergency?

Rutishauser Ramm: Even if children find themselves in highly stressful situations or have had traumatic experiences, they still want to learn. But they don't want to learn the same way as they do under normal circumstances. And you still need to achieve something. The problem is that traumatised children don't want to look for answers. They suppress things; they don't want memories to pop up about things they want to forget. This has a fundamental impact on learning. The way to deal with this is to work through things practically rather than think through things. As emergency educationalists, we work alongside teachers to shed light on the situation children find themselves in and share learning techniques that children can actively use.



With the Essence of Learning (EoL) method, which was developed by Beatrice, children are able to solve a maths problem with the help of PET lids.

estatements: How do emergency educationalists work with children?

Rutishauser Ramm: One of the most important things is establishing a secure framework for children. This provides a setting for positive experiences with others and mainly involves physical activity to lighten the load on the nervous system. And activities are organised to allow children to express themselves.

The conversations we have with the children occur so that they don't have to answer questions. They decide what they want to say or whether they want to say anything at all. You must allow children to join the conversation with the educationalists as if they're going on a walk in their thoughts, so they can make new connections. One tried and trusted approach is to use fairy tales, as the images often reflect the situation of loss in a way that's easy to grasp. And an important point is that good always prevails at the end of the story. We also show children how learning aids can be used to get back in touch with the things they lost because of the trauma they experienced – whether that be maths or a foreign language.

estatements: What kind of help do they need after receiving emergency support?

Rutishauser Ramm: During the second phase, children start to process what's happened on a much more conscious level. This will happen sooner or later, depending on how old they are. What's important at this point is that they're accompanied, so they acquire strategies for coping with the new challenges they face. Teachers have to rely on children's inherent curiosity to arouse the innate satisfaction they derive from learning. It can be challenging, more so when – as is so often the case – you must do it in a language they haven't learnt yet.

WHAT HELP DOES PATRIZIA FOUNDATION OFFER THROUGH ITS EDUCARE EUROPE FUND?

1. We're creating child-friendly places
Many Ukrainian children arriving in other countries are traumatised by their experiences in the war. If there's one thing they need above all, it's a place of refuge – to play in, cuddle up to others, learn new things or simply pass the time of day. It is a safe place where they can find peace of mind again, get things off their chests and gradually regain their sense of security. The PATRIZIA Foundation supports the setting up of child-friendly safe places with money from the EduCare Europe Fund. Safe places are planned and designed as a medium-term measure, initially for three to twelve months, depending on demand. Even if the safe place is first and foremost about offering children and teenagers a place where they can feel safe and secure, mothers are also welcome to spend time with their children there, so they can switch off and not have to worry about things. A safe place is also ideal for experts with training in counselling and teaching to support children, their mothers and anyone else accompanying families.



2. We're offering emergency education – first aid for the soul
When the unthinkable happens – like a war – nothing is the way it once was. People are traumatised, their souls wounded. Emergency education begins in the early stages of trauma. The aim is to use educational intervention to help children and adolescents process the trauma they have experienced. The focus lies in creating a sense of security, working on relationships, and using exercise and artistic activities as a means of communication or teaching. The EduCare Europe Fund supports this form of aid in two ways. First, teaching staff receive training and guidance from experts in emergency education based on 'train the trainer' principles. Also, children and adolescents are being helped to settle in, psychologically and in social terms. The aim of this support is that just like wounds to the body, given time, wounds to the soul can also heal. One can also learn to live with any remaining scars. If you receive professional help early, it's possible to make a success of your return to everyday life (and school).



Emergency educationalists like Beatrice build bridges. Here she is supporting a child in Gaza, one of many crisis regions she has worked in.

When you get to the third phase, you start helping children regain their sense of self-esteem and resilience and help them retake control of their lives.

estatements: What's the goal for the EduCare Europe Fund?

Rutishauser Ramm: Lots of the partners we work with are overwhelmed now; they feel they're on their own dealing with children from crisis areas. They can sense that the things the children have experienced need a different answer than 'it's time for you to return to school.' The task now is about integration, which always affects the overall class and the overall school community.

It's not something schools can deal with by themselves. The children need a different place, away from the classroom, a place of retreat, where they can enjoy themselves without worrying about being overwhelmed to become strong. If you connect these places to the schools, that makes it possible to offer language lessons, work with parents or run other programmes related to what is going on at the school.

We have the right know-how to conduct this integration work and train nursery staff and teachers. The PATRIZIA Foundation is working with several partner organisations to do this. One of those organisations is stART international, a charity that offers emergency aid for children. It has a wealth of experience working with safe, child-friendly places,

where they also provide psycho-social activities for children.

I'm more specialised in the pedagogical aspects, but this makes us a good team, and we can make our experience available for training courses. I say this because we mustn't forget that integrating children from crisis areas is a gargantuan task, quite simply because it affects so many children.

Interview conducted by Andreas Menke.



BEATRICE RUTISHAUSER RAMM is a trained educationalist with a master's degree in Global Education. After ten years of teaching in the classroom, she worked as an emergency educationalist for Caritas Switzerland for nearly twenty years. In early 2020, she started working as an independent consultant on emergency education topics. As part of her work for Caritas Switzerland, she developed the Essence of Learning (EoL) method, an adaptable approach that supports children with their learning requirements – in any crisis. EoL is used in various programmes aimed at different age groups, both inside and outside the school environment. In 2017, the EoL method was selected and funded by UNHCR for the Humanitarian Educational Accelerator (HEA) programme. Since September 2020, Ramm has offered her expertise as an educationalist to the PATRIZIA Foundation. Her podcast series, We are in this together, was ranked in the Top 3 for the Education Alliance Awards 2021 in the category of Crisis and Conflict Response.

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BEHIND THE COVER

This cover of estatements magazine was created with special software that transforms raw numeric data into visually appealing clusters using parameterised algorithms. For this issue, the input came from the PATRIZIA Amenities Magnet based on the development of amenities in Brussels. The image is a 3D depiction of the capital of Belgium in the past, present and where development is expected in the future. The Amenities Magnet allows PATRIZIA to acquire a transparent opinion of the market and effectively rank locations.

Artwork/Generative Design: Peter Riedel – www.peterriedel.com
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