Meeting of the Minds BLOG

Selected blog posts CityMinded.org Volume 1.2

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Letter from the Editor

In 1991, the World Bank published the first copy of *Urban Age Magazine*, a publication that became popular enough by 1999 to spin it off as its own, independent 501-c3 non-profit. The founders called the new organization, appropriately, Urban Age Institute. Eight years later, in the fall of 2007, Urban Age Institute convened the first Meeting of the Minds in Oakland, California. And now, as Urban Age Institute convenes our seventh Meeting of the Minds here in Toronto, we present you with a new publication—one that we hope lives up to its pedigree.

*Meeting of the Minds Magazine* contains some of the very best blog posts written for CityMinded.org in the past year. It features the writings of a dozen different thought leaders—many of whom are here with us in Toronto this week.

Certainly, though, when it comes to the many different kinds of knowledge that contribute to smarter, more sustainable cities, a volume this small cannot exhaust the source. More can be found at CityMinded.org/blog, through our monthly webinars, and onstage this week.

I encourage you to contribute to our blog. My email address is below.

Contact me, let me what you'd like to write about, and I'll work with you to get it published.

I look forward to hearing from you,

Dave Hahn
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Most world-class cities have iconic features that set them apart. Often it’s expressed in stunning architecture, such as Sydney’s Opera House or Mumbai’s Taj Mahal Hotel.

A city’s natural spaces can be just as distinguishing. There is plenty to see in New York City, for example, but a stroll through Central Park is a must for any tourist, not to mention a cherished retreat for those who make their home in busy Manhattan.

Toronto’s claim to fame is surely its ravine system—the largest of any urban centre in the world. Weaving together multiple neighbourhoods, these ravine landscapes connect both rich and poor, urban and suburban. “The ravines are to Toronto like what the canals are to Venice, hills are to San Francisco and the Thames River is to London,” wrote Robert Fulford in the Accidental City. “They are the heart of the City’s emotional geography, and understanding Toronto requires an understanding of the ravines.”

Strategically located near the city’s port lands, the Don River Valley features approximately 36,000 hectares of green space, and is an essential artery in Toronto’s ravine system. But more than a century of heavy industrialization left the valley’s landscape degraded and polluted. Although rail lines and expressways bring thousands of Torontonians through the valley every day, public...
An urban planner, David Stonehouse was instrumental in Toronto’s early efforts to revitalize the Don Valley—coordinating the Task Force to Bring Back the Don in the 1990s, and then supervising the sustainable design, planning and construction of Evergreen Brick Works. He has been an advisor on many other urban restoration projects around the world, including Cuba, Bolivia, the United Kingdom and the United States.

Access remains limited, and the region’s natural features have often gone underappreciated. This is particularly true for the Lower Don—the last six kilometres of the watershed that bisects Toronto East from Toronto West, and empties into Lake Ontario.

Over the last two decades, efforts to re-naturalize the Lower Don and revitalize it to its full potential have been gaining steam. The Task Force to Bring Back the Don, a citizens’ group sponsored by the City of Toronto, spearheaded the original campaign to clean up the Lower Don watershed, and since then a much larger collection of government agencies, citizen groups and non-profits have pitched in to expand the effort.

In 2010, Evergreen Brick Works opened to the public after a ten-year project to reclaim the Don Valley Brick Works, an industrial heritage site located at the heart of the valley. The century-old factory had produced the bricks that built Toronto, but when it closed down in the late 1980s, all that was left was a damaged ecosystem, crumbling buildings and contaminated soil.

Evergreen, a charity based in Toronto, worked collaboratively with a long list of partners to bring this adaptive-reuse project to life—especially the City of Toronto and the Toronto and Region Conservation Authority (TRCA), who had earlier converted the site’s quarry into a natural area and park. Today, Evergreen Brick Works is a dynamic venue for exploring ideas and leading-edge green technologies, and a vibrant public space where visitors can engage in a broad suite of hands-on environmental programming. It is also an international showcase for green design and urban innovation.

Spurred by the momentum of Evergreen Brick Works, and also driven by forces behind waterfront development plans and planning for the 2015 Pan Am Games, the Lower Don is emerging as a strategic asset for Toronto.

The surrounding area has attracted thousands of new residents in the last five years—part of a high-rise construction boom fueled by rapid population growth across the city. This trend toward higher density is sure to continue, with more than 70,000 people expected to arrive to new waterfront neighbourhoods surrounding the Lower Don.

There has never been a better time to make the Don a natural destination for residents and visitors.

As part of its CityWorks initiative, Evergreen is looking to seize this historic opportunity to improve the area even further. With its key partners, the City of Toronto and the TRCA, Evergreen is engaging other stakeholders and communities in the Lower Don in an effort to enhance access and connections throughout the region. The project will involve an extensive public-engagement process, and will complement the City’s master plan for development throughout the Lower Don region.

By linking sites along the corridor with the waterfront and adding iconic art installations, the Lower Don Greenway will connect Evergreen Brick Works with other heritage hot-spots, such as the Distillery District and the recently revitalized Regent Park and Riverdale Farm. The greenway project will transform the Lower Don into a prime destination in the city; a place to celebrate, admire and appreciate the ecological significance of Toronto’s ravine network.

In other cities around the world similar projects are underway and proving to be a great success. From the High Line in Manhattan’s West Side to Vancouver’s extensive Greenway Network, cities are revitalizing previously underappreciated spaces and reconnecting the natural and the built environment—all while driving tourism dollars, neighbourhood gentrification and tax revenues.

Expanding and enhancing the Lower Don Greenway would act as a catalyst—driving awareness of Toronto’s ravine network, while engaging people and communities within the natural landscapes of their city. ■
In his insightful meditation on the emergent nature of technology, What Technology Wants, the author Kevin Kelly makes the provocative assertion that our conventional ways of understanding and talking about technology are much too limited. Instead, he coins a new term the technium, to refer to “the greater, global, massively connected system of technology vibrating around us,” as opposed to specific “gear and gadgets.” The technium, he argues, “behaves more like a very complex organism that often follows its own urges” and “is now as great a force in the world as nature.”

Urbanists have long thought of cities as kinds of organisms bestowed with a kind of sentience or even personality. They have also described global urbanization as an inexorable, almost natural force. Since the dawn of the urban age, cities have been dependent on clusters of technologies to build and sustain them. Cities stand as perhaps the most readily visible monuments of our ability to create or drastically modify, if not predict and control, our immediate environment. As the rates and extents of urban growth have increased, cities have become increasingly dependent on more, better and faster technological fixes. The multiple relationships and interdependencies between technology and urbanization make it alluring to think that the answers to all the problems of the latter are to be found in the former. While this vision is tempting, it reflects at best only a more partial and limited truth.

Reading and listening to various experts and visionaries talk about how new technologies are driving profound changes in the ways in which we build, organize, govern, and live in cities, one can come away with the impression that there is almost no problem that the
Charles Rutheiser is a Senior Associate in Center for Community and Economic Opportunity at the Annie E. Casey Foundation in Baltimore, Maryland. He manages the Center’s grant portfolios relating to Anchor Institutions and Knowledge Development, and is part of the team that is developing the Casey Foundation’s next generation investment strategy in community change.
application of science and technology cannot solve. The vision of the city they offer is of a sleek, toned and genetically modified cybernetic organism. What they often fail to notice is that this bright and shiny thing is to be built upon a living and profoundly uneven social foundation that, in the case of many of our coastal cities, is likely to be partially underwater by the end of the century.

Forty years ago, the designer Horst Rittel and the planner Melvin Webber observed that: “The professionalized cognitive and operational styles that were refined in the first half of the [20th] century based in Newtonian mechanistic physics are not readily adapted to contemporary conceptions of interacting open systems and to contemporary concerns with equity.”

Rittel and Webber called such problems “wicked” as opposed to “tame” problems that could be solved through the application of the paradigms of science and engineering. By calling them wicked, they were not making any judgment about the moral or ethical dilemmas the problems posed but the impossibility of defining and solving them because of their interconnectedness to other problems, as well as their recurrent nature, extreme context dependence, and the lack of shared interests, values, and goals among stakeholders. The latter is a crucial point, for the true wildness of wicked problems lies not with the difficulty of figuring ways of achieving a goal, but in sorting out which goals should be prioritized.

The notion of wicked problems experienced a brief vogue in the 1970s and generated a host of related concepts—social messes, super wicked problems, adaptive challenges—before receding into the maelstrom of ideas and concepts. Outside of software design and the evolving discourse on resilience, relatively few people talk explicitly about the wickedness of problems anymore. The implicit assumption appears to be that advances in science and technology have made the notion of wicked problems obsolete, a quaint exhibit in a museum of dead ideas. While it is undeniable that we have made much progress in identifying, forecasting and influencing, if not controlling, various kinds of open systems of near ridiculous levels of complexity, our willingness, not only continue to exist but expand in extent and deepen in intensity. In fact, in the United States, disparities in opportunity and virtually every life outcome measure have increased dramatically over the last forty years. This inequality is most apparent in our cities and metropolitan regions, which have become increasing fractured and socially isolated places along the lines of race, ethnicity, class, gender, generation and...
hinterlands, and the world beyond.

Some of these systems, especially those that drive the essential infrastructures of urban metabolism, like water, power, sanitation and provisioning, that make such large and dense agglomerations of people possible, are relatively straightforward to identify, if extremely challenging to improve or integrate. These are systems that can be designed, planned, and optimized to be more productive, efficient, or resilient—although only up to a point and usually not all three. And it is good they can be tinkered with in some reliable fashion, to be made smarter, for if these systems fail, the results will be widespread, catastrophic and immediate.

Other kinds of urban systems, public safety, education, criminal justice, and other institutional systems, can also be subjected to rational planning and implementation, but have proven to be much more resistant to merely technical fixes. When these systems crash, as they have in far too many US cities, the results can be just as catastrophic as the failure of physical infrastructure, but the effects are often so spread out over time and so unevenly concentrated in space that they can be practically invisible to those who are not directly affected.

But the city is home to a far more diverse array of social institutions and systems that are not formally designed—those formed by the networks of networks that link and divide people by family, friendship, occupation, and shared geography and experience, as well as more invidious systems of patronage, corruption, and criminal enterprise, to name only a few. These systems are even less visible to those who are not part of them, but this does not make them any less there.

New technologies to capture, aggregate, and analyze the digital traces of formal and informal social systems—Big Data—have amazing potential to allow us to visualize and understand the complex interactions, patterns, and leverage points of the many systems within cities. I, for one, look forward to the day when I am no longer constrained by the limitations of Census and American Community Survey data and the disconnects between data organized by census tract, zip code, and other incommensurate geographies.

The amount of data that is available today is simply mind-blowing, even before we move to a full-fledged “internet of things.” We, or at least data miners and refiners, will know more about some people than they know themselves—where they are, everything they purchase, say, and do online. But the issue is that, while a lot more will be known about some people, less will be known about those who do not participate in our increasingly cyber-mediated world. In fact, we may not even know that they are there and we are likely to not even recognize that we don’t know this.

We are used to thinking about the digital divide as an issue of access, but there is the potential that it can become a matter of existence. If we are not conscious and intentional about it, Big Data has the potential to create whole new categories of administrative invisibility for those who are already excluded from opportunity. As Emily Badger asks in a recent article in Atlantic Cities, “How do we avert a world where beneficial new digital tools perversely wind-up reinforcing real-world inequality, obscuring some communities while portraying others in-depth?” I’m not sure what the answer is, but it seems that a good place to begin is by recognizing that this is not just a potential, but a very present and wicked problem.
Using Smart Technology to Combat Power Failure

By Dan Probst

The importance of replacing the outdated U.S. electrical grid with smart grid infrastructure can’t be overstated. The benefits include energy efficiency gains, reduced greenhouse gas emissions and increased opportunities to bring innovations to homes and businesses alike. Those motivations are more than sufficient to warrant rapid deployment of proven technologies, but the most compelling reason for upgrading to smart technology is defensive: The existing grid is breaking down.

This can be seen in the skyrocketing cost of power outages. The Department of Energy calculates that outages cost Americans $150 billion annually -- nearly $500 per person every year. Other estimates in recent years have put the cost at $50 billion to $180 billion, depending on what impacts are included in the equation. But everyone agrees that the cost is mounting rapidly.

• The annual number of blackouts affecting more than 50,000 U.S. customers increased from 140 during 2000-2004 to 303 during 2005-2009, and the trend has continued with 52 such blackouts in 2010 and 109 in 2011, according to Massoud Amin, an electrical engineering professor at the University of Minnesota.

• Electric customers spent 43 percent more to maintain and repair existing infrastructure in 2011 than in 2002, but the average customer still spent 112 minutes without power in 2011, a recent Associated Press study of utilities found.

• When outages due to weather events are removed from the equation, the number of grid related failures has decreased slightly over the past decade, but the average recovery time is longer, the Associated Press reported.

How does reliability-oriented power loss cost cities and businesses? Consider the largest outage of 2011, which affected nearly 7 million people. Originating from a technician’s error in repairing a capacitor bank, the system failure knocked out switching stations like dominos across five utilities in Southern California, Arizona and Sonora, Mexico. Economic damage included four-hour commuter delays and numerous car accidents from failed traffic signals; contamination of beaches and unsafe water supply as sewage treatment plants failed; and a host of problems for hospitals, grocery stores, restaurants and other businesses—not to mention lost productivity for millions of workers.

A functioning smart grid would reduce the cost of power failure in several ways. First, outages caused by faulty equipment would be greatly reduced, as smart systems are able to identify weakening components before they fail. Also, local failures would not have the opportunity to spread across multiple grids, limiting the scope of problems when they occur. Finally, smart grids have the capacity to repair themselves, reducing the period of time people are left without power.

Massoud Amin of the University of Minnesota calculates that smart grid technology would save businesses and families $49 billion annually by avoiding power loss, plus another $20 billion due to energy efficiency. The $20 billion in energy efficiency would be saved mainly by utilities, which pass through most of the savings to (commercial and residential) electrical customers. Other sources note that annual investment of $20 billion to $30 billion would bring about a fully functioning grid within two decades, and would pay for itself many times over during that time. This argument leaves aside an achievable 20 percent reduction in carbon emissions from smart grid efficiencies.

Everywhere you look, the societal value that a universal smart grid can unlock is increasing rapidly:

• As data centers and other mission-critical facilities use an increasing share of electricity, the cost of power failure and the value of reliability and resiliency are increasing geometrically. Data center capacity is increasing by about 10 percent per year.

• As more utilities and companies turn to strategies such as demand response and distributed generation, the smart grid makes these strategies more effective.

• Large companies are turning to smart-building systems to improve energy efficiency and prevent power failures across their portfolios. The best of these systems duplicate many of the benefits of a smart grid on a smaller scale: 18 to 24 percent energy savings, the ability to manage energy portfolio-wide from a centralized location, automated diagnostic and adjustment capabilities, and short payback periods on implementation costs. The availability of a smart grid would expand these benefits significantly.

Businesses are starting to outpace cities and utilities in capturing the benefits that smart systems offer. Smart portfolio monitoring and control systems such as Jones Lang LaSalle’s IntelliCommandSM use cloud computing and algorithmic calculations to help corporate facility portfolios run at peak efficiency while minimizing downtime risk. These systems don’t need smart infrastructure to work, but a smart grid would supercharge the value of current technology and would open the door to a new world of innovation.

To understand how today’s smart
building automation is ready for smart grid implementation, look at onsite power generation. Many facilities with heat-intensive uses, such as manufacturing plants, are already investing in co-generation, while facilities such as data centers are exploring combined heat and power (CHP) strategies. With the focus on energy efficiency and carbon reduction, distributed power strategies are expanding to other types of facilities.

Smart grid infrastructure would provide a market for excess energy generated at the site level, and would reduce the amount of energy lost in transmission. It is estimated that about 10 percent of energy from power plants is lost on the way to its destination, but the loss factor increases as the distance between the source and the end-use increases.

The U.S. Environmental Protection Agency, via its ENERGY STAR program, estimates that the country’s 4.8 million commercial buildings spend about $108 billion on energy, and 350,000 industrial plants use another $85 billion. ENERGY STAR also notes that about 30 percent of that energy is wasted. That’s potentially $65 billion a year that could be saved from better monitoring and management of energy in commercial buildings.

The reduction in greenhouse gas emissions is a bonus for cities, where governments are concerned about the effects of climate change. Cities also care about efficiency. But more than any other issue, city leaders are continually focused on competitiveness for business attraction and expansion. Cities that work with their utilities and business communities to accelerate installation of smart grids stand a good chance of winning in the future.

As Chairman of Energy and Sustainability Services at Jones Lang LaSalle, Dan Probst is responsible for developing and delivering products and services that help clients reduce energy costs and their real estate related environmental footprint through innovative portfolio and occupancy strategies, workplace standards, and operating practices.
Google is the most conspicuous developer of autonomous vehicles, but it is hardly alone in pursuing this venture. Most automakers are competing to introduce their own driverless cars to the public, and are doing so piecemeal, system by system. The components of the upcoming driverless car are being introduced into current models as ever more elaborate mechanisms to aid the driver, such as self-parking features and automated collision avoidance systems. Recently, a group of researchers at Oxford University developed a self-driving system which can be installed in existing manually driven vehicles, and whose cost is forecast to fall as low as 150 dollars within a matter of years.

By Issi Romem

Issi Romem has a PhD in economics from the University of California, Berkeley, with a focus on urban and real estate economics. He has consulted for the Bay Area Council Economic Institute on matters involving transportation, real estate and the regional economy. Soon he will be joining the team at OnPoint Analytics.

Driverless cars will dramatically affect urban form, in two ways

Many anticipated consequences of driverless cars have already received attention at Meeting of the Minds and elsewhere, such as their impact on the mobility of the elderly, on taxis and car sharing services and on the future of the car industry. A crucial aspect which has escaped attention is the impact of driverless cars on urban form, which I anticipate will follow two broad predictions:

- Cities will greatly expand, again: Faster and more efficient transportation will convert locations that are currently too remote for most users into feasible alternatives, abundant with space. Like
Driverless cars will make it less “costly” for people to travel a given geographic distance, partly because they will be free to engage in other activities while travelling, but primarily because of reductions in travel time. Unlike human drivers, autonomous vehicles will follow optimal routes given real-time traffic conditions without fail. More crucially, as soon as suitable roads such as freeways (or lanes thereof) are declared off limits to manual driving, driverless cars will travel—safely—at much higher speeds than we do today. Gains in efficiency will follow from coordinated traffic management protocols, too. Once vehicles communicate with each other traffic through intersections and merges will flow much more smoothly than permitted by today’s traffic signals, stop signs and merging lanes, leading to substantial gains in travel time (a partial, human-mediated step in this direction is explored in this article).

If people currently forego affordable, spacious dream homes because the associated commute is too long, a technology that condenses the time needed for commuting along the same route—and allows doing so in the back seat—will make those homes more agreeable. Similarly, businesses whose location depends chiefly on access to appropriate labor or clientele will find that potential locations which are currently too remote will become feasible. It will still be crucial for them to sit “close” enough to their talent pools or their customer base, but because what matters for “closeness” is travel time rather than geographic distance, these firms will be able to reap the benefits of more remote locations without giving up “closeness.”

Why will cities expand?

Driverless cars will generate a gradual, but dramatic expansion of cities.

Buildings and parking will be uncoupled, freeing up valuable land: After dropping off passengers, driverless cars will independently seek parking (or their next car-share customers) and they will show up for the return ride at the tap of an app. As soon as driverless cars are common enough, the demand for adjacent parking will dwindle and parking lots in areas where land is sufficiently valuable will be ripe for conversion to other land use. As parking in high-value areas is thinned out or altogether purged, the micro-structure of suburban rail in the early twentieth century and the mass consumer automobile that followed, driverless cars will generate a gradual, but dramatic expansion of cities.

How far will cities expand?

The extent to which cities expand will be determined by the extent to which travel times are reduced. The more efficient traffic flow becomes the broader the geographic range in which living cities will significantly change.
and working becomes feasible. Will we ever hit a point at which people are no longer interested in the extra space offered by more distant locations? This is unlikely. Today swimming pools and three car garages are common in suburban homes, but who would have imagined that possible before the advent of the mass consumer automobile? Perhaps the current equivalent is the wish voiced by some home buyers—typically just beyond the urban fringe—that neighbors’ homes be out of sight. That seems like a lot to ask in today’s suburbs, but it could well become the norm looking forward.

When will this happen?

Most estimates suggest that the arrival of the fully self-driving car on the consumer market will occur within a decade. Provided that it will be possible to install these systems in existing manually driven cars—much as hands-free cellphone devices can be installed today—then there will be no need to wait for the entire stock of cars to gradually be replaced, and a much faster process of adoption will ensue. The speed of the process will be determined by people’s willingness to give up the driver’s seat, and by the adaption of the legal environment, first to permit driverless cars and then to secure them an exclusive right of way (a separate lane on the freeway). Google and the automakers will go to great lengths to ensure that legal barriers are removed and that the driverless car is adopted quickly. The devotion of a separate right of way may be a more challenging feat, but it will be difficult to reject in light of the gains it will offer.

Following these developments, the gradual process of city expansion will take place over many decades, much as the ramifications of the mass consumer automobile continue to play out almost a century after its arrival.

Is this good news or bad?

Ultimately, the accelerated drift of the city past the current metropolitan fringe implies sprawl on an unprecedented scale. This is unwelcome news for those readers who, like this author, share a romantic view of dense urban life. But there is good news as well.

In his 1991 classic, Edge City, Joel Garreau wrote that it is “the suburban home with grass all around that made America the best-housed civilization the world has ever known.” If the widely spaced mansions of the future are to today’s suburban home what today’s suburban home is to yesterday’s urban tenement, then we are in for a glorious improvement in our material welfare. But if this grates the city lover’s ear, there is good news for city lovers, too.

The uncoupling of buildings and parking

Once most people stop driving manually, there will be a far less compelling need for buildings and parking to be adjacent. This does not mean that all parking lots will be converted to other land use—the total need for parking will only be reduced if other developments like increased car-sharing take off. But it does mean that parking lots on the most valuable land will be available for infill development. Driverless cars will gladly navigate to abundant off-site parking that will substitute for the lost parking on less valuable land.

The places in which infill development takes place will become denser and more walkable. The busiest suburban shopping districts will probably be among the first to see their parking built upon, as will clusters of suburban office towers which often spread out over vast areas. In so doing these areas will attain a more urban feel.

Of course the broader environment will remain suburban, but the local clusters of walkable density we have today—primarily old town centers engulfed by sprawling metro areas—will be joined by a new breed born of formerly pedestrian-free suburban centers and infill development upon parking. Given that the overwhelming majority of dense walkable areas in this country were built before World War II, a new generation and breed of walkable locations is rather exciting.

And what about the carbon footprint, you ask?

Traveling greater distances at greater speeds will require more energy. Full stop. Car sharing will not undo this in spite of reducing the total number of cars, because car sharing essentially only does away with the time cars spend parked.

Under the pessimistic premise that each car continues to emit greenhouse gases at current rates, the effect of driverless cars on urban form spells out a magnified carbon footprint. But technology is not stagnant. Today’s gasoline powered cars are already far more efficient than they were even a decade ago, and the ongoing transition to electric vehicles means that the energy needed for traveling greater distances at greater speeds will no longer need to come from fossil fuels. Instead, cars can be powered by any source of energy used to produce electricity, including more sustainable alternatives.

Contrary to the intuition that associates rapidly advancing sprawl with environmental disaster, persistent progress in sustainable energy could ultimately dissociate the suburban lifestyle from the greenhouse gas emissions it implies today, severing an important link between sprawl and climate change. The crucial question in this respect is whether the greening of our energy will precede the brunt of our cities’ future spatial expansion or not.
We’ve all seen the headlines: Uber’s Taxi Services Shutting Down In NYC. Should Airbnb Be Regulated Out of Existence?

With the rise of urban impact entrepreneurs—early stage companies developing consumer products and services that make urban living better—there has also come an increase in tension between those entrepreneurs and existing regulations. Government policy, dating back decades, could not have anticipated the emergence of collaborative consumption, crowdsourcing, or alternative resource management. It’s tempting to hope that the conflicts between innovative urban companies and regulators are circumstantial and fleeting. But trends point us in a different direction.

The surge of urban impact entrepreneurs

If anything, we anticipate a surge of urban impact entrepreneurs. 81 percent of Americans now live in cities—and this urbanization is dramatically influencing the way most people live and work. At the same time, we are experiencing reductions in municipal revenues nationwide. So there is a compelling market opportunity for entrepreneurs to step in and tackle some of the most pressing challenges facing the swelling ranks of city dwellers.

Furthermore, success begets success: the achievements of companies like Uber and Airbnb will encourage others to follow in their footsteps. Across the country, we are seeing bicycle sharing companies like Alta Bicycle Share, food truck networks like Off the Grid, and crowdsourced community investment platforms like Fundrise pop up. A new wave of entrepreneurs is rising to solve urban problems.

More urban innovators means more government interaction

Given this rise of urban impact entrepreneurs, we anticipate even more potential interaction with government. They may not be looking to get hired by government or embed themselves within government, but these entrepreneurs are working on issues about which government cares a great deal (think: mobility, waste management, housing, health, and education). Whether entrepreneurs look at these interactions as an opportunity or an annoyance will, in large part, determine their ability to succeed in the marketplace.

Some have argued that these innovative entrepreneurs should not be subject to traditional government oversight, as their very models (peer-to-peer, digital, etc.) encourage self-policing. But, regardless of how you feel about regulation and public oversight, government isn’t likely to relinquish the role of consumer protector any time soon.

So it’s important for urban impact entrepreneurs to learn to work with government. This way, they can avoid antagonizing powerful interests who can stand in their way. It’s not that entrepreneurs can’t fight regulators and win; it’s just a lot harder to be productive moving forward. Consider the case of Uber, which has managed to clash with several municipalities in its expansion process. The popular app is currently facing a wave of competition from companies who are doing a better job collaborating with city leaders.

The value of entrepreneur-government alliances

Both government and urban impact entrepreneurs can take productive steps to minimize friction—the key is communication. Most entrepreneurs have no idea how to navigate the tricky poli-
tical landscapes of cities. And most city officials have no idea how to communicate with entrepreneurs about their priorities and concerns.

Some municipalities are embracing entrepreneurs by creating new offices to accommodate and foster innovation. Examples include the San Francisco Mayor's Office of Civic Innovation and the Boston Mayor's Office of New Urban Mechanics. Hopefully, we will see this trend continue. After all, government officials have incentives to work with entrepreneurs to produce job growth and improve the lives of their constituents.

The harder question is: how will urban impact entrepreneurs approach their relationship with municipalities moving forward?

Most entrepreneurs don't think about government. After all, early stage companies are busy worrying about product design, customer acquisition, and investors. However, for urban impact entrepreneurs, learning how to interact with government should be as important as learning how to pitch a venture capitalist.

We would like to see new urban impact companies develop legislative strategies so that they can more thoughtfully approach municipalities. For example, Luther Lowe, the Director of Government Affairs & Business Outreach at Yelp, has devised a playbook for expanding into new cities in a "less painful" way. In it, he outlines a strategy of cultivation—both of the general public and of regulators. Collaborating with government to develop mutually agreeable solutions isn't always easy, but dealing with hostile regulators is worse.

Moving forward

Government isn't going anywhere in the near term. So it's important for urban impact entrepreneurs to embrace government as an important stakeholder during their growth. City officials have access to data, resources, and networks of individuals who can help entrepreneurs effectively address the needs of consumers. But they can also obstruct entrepreneurs and keep them from securing the resources they might need to succeed. Both government and urban impact entrepreneurs stand to benefit from innovation, leading to better solutions for all city dwellers. The question remains how (or if) they will rise to the challenge.
Leafy, tree-lined streets with rows of houses dating back a century may be pleasant for a stroll or a springtime run.

But in a world where practical economics rule, do these neighborhoods generate enough value to “pay their own way”? Should these low-density, centrally-located areas yield to what might be perceived to be more efficient use of the land, perhaps high-rise residential developments?

Answering the question requires building a full understanding of what heritage neighborhoods have to offer.
Much of the environmental value of heritage neighborhoods results from this simple fact: using existing buildings means that additional resources do not have to be consumed for new construction.

However, these neighborhoods have environmental benefits that go well beyond that. Consider:

- Designed before the age of cars, these are walkable neighborhoods—with easy access to parks, schools and retail.
- These are relatively dense developments compared with much of current suburban design.
- Vertical, multi-story construction reduces geographic impact.
- Mature trees provide cooling shade in summer, soak up carbon in the atmosphere and reduce the heat island effect.

These advantages help improve the environmental performance of the city as a whole. Walkability, for example, has obvious health benefits while also reducing driving—which improves air quality.

One of the values of old, picturesque streets lined with trees is that they are so enjoyable to walk along. This is value that can be tapped.

For example, tourists and other visitors who come to wander through Toronto’s 19th-century Annex might also want to take a stroll into nearby Yorkville, which has some of the most productive retail space in Canada—and is itself made up largely of repurposed heritage houses.

Heritage neighborhoods can also generate above-average tax revenue. Solidly-built older homes in established areas are popular real estate. Their residents often upgrade their properties through renovations and other improvements that increase the value of the properties—and the associated tax rates.

Some of the biggest benefits of heritage neighborhoods come in their value as a technological resource, showcasing building techniques that will become more valuable as time goes on.

Most of the housing stock from the 1800s and early 1900s was designed for a resource-constrained environment—heating with coal and wood was costly and labor-intensive, so houses were designed to take advantage of natural heat and cooling. In our carbon-constrained present and future, the techniques used by builders of yesteryear may see increasing application. For example:

- Houses were oriented, where possible, to face the sun to achieve maximum light through the windows—today called “daylighting”.
- Deciduous trees were planted on the south side of a house, to provide cooling shade in the summer, and their bare branches allowed the sun through to provide heat and light in winter.
- Vines were planted on the south side of buildings, again to provide cooling shade against the summer sun.
- Awnings were angled so that the low-angle winter sun would enter to provide warmth, but inhabitants would be shaded from the heat of the sun—at a higher angle—in summer.

Some of the lessons learned from the past can be applied to current developments. For example, studies have shown that mature trees help reduce crime. How? A pleasant, shaded environment draws more people out of their houses, to sit on their front lawns, to walk, and to do yard-work. Neighbors get to know each other better.

This increases the level of informal community “surveillance”—eyes on the street—and as a result, people feel more secure. Children feel safer playing out of doors, and parents feel safe enough to allow them to play. More public surveillance can help reduce the rate of burglaries and other crimes.

Many of these lessons learned from heritage neighborhoods can be modified and applied in conventional greenfield suburban developments, infill brownfield projects and other situations.

While tree-lined streets might seem a nice idea, what’s in the way? In some cases, it’s an economic issue.

To keep costs to a minimum, there may be resistance to the idea of devoting land to include boulevards between sidewalk and street. If zoning and other regulations do require boulevards, it may happen that only a few centimetres of topsoil is put down—enough to support grass, but not to allow trees to flourish to mature stages. Could legislation assist here? Perhaps legislation requiring enough topsoil to support trees would level the playing field—so to speak.

It may be possible to learn from other parts of the world. Many European streets are lined with trees, even without much soil available—learning best practices might include consultation with municipal planners and getting involved in organizations with wide geographic reach, to learn from best practice elsewhere.

Municipalities may be able to orient new developments so that houses can be situated in a way that takes advantage of sunshine’s benefits, while avoiding its downsides.

While manicured public spaces and lawns might have been considered appropriate in years gone by, we need to re-think this in an age when such features increasingly come at an unacceptable environmental and economic cost.
Of all the themes explored in Meeting of the Minds related to urban development and infrastructure, the elephant in the room remains the question of financing. The fiscal situation is dire at the local, state, and federal level, just at the time when new investments are needed for the support of the 21st-century city.

So it is that a hitherto obscure policy—value capture—is getting more attention in the broader context of public-private partnerships. Value capture is based in the recognition that public investments and government actions—a new light rail line, for example, or a zoning change—result in increases in property value for private landowners. Governments are increasingly identifying these specific increases in value, known as the land value increment, and are working with private landowners and developers to seek a commensurate contribution.

The approach is being tested in the U.S. in cities such as San Francisco and Chicago, and in the construction of the Cotton Belt rail system in the Dallas-Fort Worth region. An article last year in The Next City (Money Grab, August 12, 2013) provides a comprehensive overview of these efforts. One tale cited in that article is a particularly vivid illustration of how taxpayer investments
are essentially privatized: the case of Frank McCourt, who owned more than 25 acres of prime waterfront property in Boston’s emerging Seaport district. The parcel, just across the Fort Point Channel from downtown Boston, was the site of two major projects: the I-90/Ted Williams Tunnel connector and interchange that was part of the $16 billion Big Dig, and the $1 billion bus rapid transit corridor, the Silver Line, snaking its way underground from South Station through the Seaport and on to Logan Airport. Both a major highway interchange and a Silver Line station were positioned right at McCourt’s property, which became so valuable for residential and commercial development, McCourt was able to sell the land to help him buy the LA Dodgers.

McCourt contributed funds for the Silver Line station, but in retrospect, local and state leaders questioned why he wasn’t asked to pay more, based on the identifiable increase in the value of his property that these major infrastructure projects prompted.

The rest of the world, it turns out, isn’t waiting to pose that question in hindsight. Many countries in Latin America, notably Brazil and Colombia, have passed legislation that supports value capture principles, says Martim O. Smolka, director of the Lincoln Institute’s Program on Latin America and the Caribbean, and author of the newly published *Policy Focus Report Implementing Value Capture in Latin America: Policies and Tools for Urban Development*.

The policy is manifesting in several key areas of both voluntary and compulsory methods: property taxation and betterment contributions; exactions and broader charges for building rights or for the transfer of development rights; and large-scale approaches such as development of public land through privatization or acquisition, land readjustment, and public auctions of entitlements for additional building rights.

Value capture has long been part of the worldwide urban planning agenda. Its increasing popularity in Latin America, Smolka says, is attributed to urbanization putting pressure on serviced land and concerns about equity and affordable housing. Although in most places revenues are still low, the applications of betterment contributions in Bogotá and of building right entitlements (CEPACs) in São Paulo have generated revenues in excess of a billion dollars for those cities.

Yet value capture is often resisted by powerful stakeholders, notably landowners, opinion leaders, and academics all along the ideological spectrum, Smolka says. He advocates a better dialogue about how value capture actually works in practice, careful management, and public participation. Value capture tools, he adds, are more likely to succeed when used to solve a locally recognized problem.

Cities in North America might do well to look south for some valuable lessons in changing the paradigm for urban development and financing key infrastructure.
Cities are not about technology—yet technology can clearly help cities become better places to live, work and play. Technology improves urban efficiency, quality of urban life, as well as the economic, social and environmental attractiveness that makes cities prosper.

Citizens may not care about technology—but they do care about the reliability of the infrastructures they use every day; about the savings they can make by being more resource-efficient in how they use them; about the quality and availability of the public services that are provided to them by the city—all of which can be improved by technology.

This is why we believe that technology is a key enabler of a smart city—but it is by no means the only one. Collaboration is also critical—business, working closely with city leaders and communities, collaborating across domains of expertise, can help deliver the most value to people in cities. Collaboration fosters genuine interaction among society, accelerates exchange and transfer of knowledge and delivers higher return on investment for all stakeholders.

Schneider Electric has implemented more than 200 smart city projects around the globe and brings world-class expertise and many years of experience in helping cities move toward long-term sustainability goals by improving the efficiency of their existing infrastructure.

The Schneider Electric bottom-up, system-oriented approach encompasses five steps to a smart city:

1. Setting the vision and roadmap for an efficient, livable, and sustainable city.
2. Combining best-in-class hardware and software to improve operating systems.
3. Bringing in integration for wider city operational and informational efficiency.
4. Adding innovation to make a holistic and sustainable future a reality.
5. Driving collaboration between the most well-suited global and local players, as well as across the entire smart city value chain.

Using this approach, cities can realize a host of benefits. They can see up to 30 per cent energy savings, up to 20 per cent reduction in water losses, and up to 30 per cent reduction in street crime from CCTV security cameras. Travel time and traffic delays can be reduced by up to 20 per cent. Other major non-environmental benefits include improved safety and higher quality of life, which in turn drives job creation and increases the talent pool, leading to higher tax revenue.

Cities have dramatically varying geographies, populations, natural resources, and individually unique pain points. So a smart city vision must be tailored to the unique needs, challenges, opportunities and resources of each city.

There are several triggers that can set cities on the path to becoming smart. A city may become host to a demonstration project, in which one or more companies test their most innovative solutions. An example of this is the implementation of smart grid-ready district in Issy-les-Moulineaux, near Paris, France.
Or, a city could host a major international event, such as the Olympics or the World Cup. When a city is selected as the host for such an event, it often does so with the intent to use the event as a trigger for investment in new infrastructure, to regenerate some of its aging and/or underserved districts, as well as improve its aesthetic appeal and attract the eyes of the world—all at the same time.

The most available path to a smart city, however, is when a community takes it upon itself to define its sustainability vision and then lays out the roadmap needed to get there. Making sure this vision and path are well thought-out is one of the most critical tasks in the process, and most cities need support to develop their roadmap to becoming smart.

With a vision in place, city officials should start by improving existing operating systems, such as electricity, water, transportation, and gas. A combination of connected hardware, software, and metering then facilitates integration and collaboration between systems and networks. This allows a city to create a critical mass of relevant, meaningful data that enables the continuous improvement of the systems themselves.

But integration does more than just improve operations. Connecting systems, when relevant to the city’s people, delivers a tremendous volume of information which can be analyzed by intelligent software systems. This data analysis will allow cities to develop actionable information that can be used to deliver better, more effective and efficient public services.

Finally, communities must involve all of their key stakeholders, government officials, citizens, and the private sector, in the process—or face tremendously difficult obstacles in turning their vision into reality.

No single company or organization can build a smart city alone. Each city deserves the best in class players on both a local and global level—from the technologies installed, to the operation and maintenance.
Brian Young is the Sustainable Infrastructure Program Manager and Emma Stewart is the Head of Sustainability Solutions at Autodesk.
Many of us have experienced the growth of the “buy local food” movement in recent years. We’d like to propose an even more effective movement: “drink local” (for you barflies out there, we’re referring to water, not beer). Many municipalities today have put themselves “in deep water” by simultaneously centralizing water systems while underinvesting in water infrastructure. We’re then surprised when the inevitable rationing, flooding, or sewage overflows occur (these should really be no surprise in the US, where a water line bursts every two minutes and pipes typically leak 16% of the water they transport). To reverse this trend, we need to focus on localizing urban water systems and restoring water infrastructure—both of which can be accomplished with today’s technologies.

Why are local water systems more economically and financially sustainable? Due to the high cost—economically and environmentally—of transporting and treating water, municipal governments and water utilities should “seek out every drop on hand before looking afield”—reusing and recycling water to the greatest extent possible. Before transporting water from one state to the next, they could consider conservation policies, leak repairs, and water recycling. In lieu of dams or desalination plants, they could evaluate alternatives to water for cooling or fracking. Instead of discharging stormwater or blackwater from a site for treatment by utilities—requiring huge networks of expensive sewer and sanitary pipes and pump stations—real estate owners could reuse it onsite for irrigation and other non-potable water needs. In all of these cases, localizing the water system allows for better service and reliability with lower infrastructure cost.

Why are we underinvesting in water infrastructure? In part, government austerity measures view water infrastructure as a painless place to cut. The US government’s proposed 37% cut to the Clean Water and Drinking Water State Revolving Funds for 2013 punctuates a steady decline of federal support for water infrastructure projects since the Clean Water Act of 1972. This year, these low-interest loan programs will cover only 2% of the estimated $98 billion need. Meanwhile, private investors hesitate to back centralized water supply and sewer projects because of their high costs and vulnerability to droughts and energy security risks. And ratepayers who enjoy cheap water and rarely consider the pipes behind their bathroom wall see no reason to pay more.

To localize an urban water system, one must first gain a comprehensive understanding of the watershed surrounding the city and the ability to design and analyze new possibilities in context. That involves unifying data on existing conditions and analyzing designs, as these groups have done:

- To preserve Fairfax County’s freshwater supplies, Dewberry installed 5 miles of purple pipe to deliver treated wastewater to nearby parks for irrigation and a local waste-to-energy facility for cooling purposes.
- To protect local stream ecosystems, Clark County Public Works added 15 rain gardens in a subdivision with undersized stormwater facilities. These biomimetic design features absorbed and filtered polluted runoff that would have otherwise discharged into the surface waters.

To restore water infrastructure, one needs to attract long-term capital at good rates, which requires confidence on the part of government, willingness-to-pay by ratepayers, and a return on investment for private investors.

- To complete the environmental permitting process for a client’s new development in Virginia, Timmons Group restored the affected waterways and habitats for local flora and fauna. In addition to the environmental benefits, the client’s decision to invest in natural infrastructure reduced costs by over 50 percent by eliminating the need to purchase mitigation bank credits.
- To attract private capital, the City of Buffalo offered American Water a contract to upgrade, operate, and maintain its underperforming water system. American Water easily surpassed expectations and saved the City $21 million with cost-effective efficiency improvements such as online management systems for customer records and work orders.
- To win stakeholder buy-in for a new water reclamation facility, AECOM shared 3D visuals of its design at public hearings in the Town of Davie, Florida. Ratepayers and government officials concerned with the plant’s impacts on the local character could see how the facility preserved the rural atmosphere while protecting their water supply. The $101M project was approved much earlier than expected.

As these projects exemplify, while many cities have been heading in the wrong direction when it comes to their water infrastructure, the creative application of today’s technology—and don’t forget a healthy dose of political will—can reverse that trend, with lasting positive impacts on the local environment and economy.
Megaprojects are invariably controversial. And they attract massive interest and, consequently, publicity, which means they are under constant scrutiny. Failures inevitably generate more attention than successes, and therefore schemes face an uphill task in gaining public acceptance and support. On the other hand, they are loved by politicians. While, because of the long time frame, those giving the go ahead are unlikely to be the same as those who will ultimately cut the ribbon, megaprojects provide a lasting legacy, a genuine achievement for which politicians can claim the credit. The politicians can lay claim to having ‘achieved something’.

The UK is in the throes of controversy over what would be its biggest ever transport infrastructure project, the construction of a high speed railway line linking London with, first, Birmingham by 2026 and then Manchester and Leeds about seven years later. The cost for the near 300 miles of line, including rolling stock and contingencies, is estimated at £50bn. Supporters argue that the line is necessary in order to provide sufficient rail capacity in the face of growing demand and that it would help regenerate the Midlands and the North, helping to break down the North South divide. Opponents say that it is unnecessary given that extra rail capacity could be provided on conventional lines, and given that it is environmentally damaging and, crucially, far too expensive, which means it will sap money away from existing rail investment.

It is the way that the HS2 scheme was conceived that has stoked the controversy. It did not emerge from a wide ranging debate around the nation’s infrastructure needs but rather emerged as a political project supported by all three main parties without any debate about alternatives or Britain’s infrastructure needs. Moreover, its very name has stimulated confusion. While the line will, indeed, be high speed, its main stated purpose is to relieve capacity and this is the most important factor in garnering support for the scheme (rather than the fact that it will cut journey times on conventional rail lines by up to half). The debate has, therefore, been skewed with opponents focusing on the fact that speeding up journeys at such a high cost is unnecessary.

Moreover, the proponents of the scheme have scored something of an own goal by basing the value of the line on the time savings of those travelling on it. Opponents argue that these shorter journeys do not represent a benefit since most people, especially those travelling on business, now work on their laptops and other mobile devices while travelling on trains. It is only now, three years after the scheme was first announced by the Labour government, that any kind of serious assessment of the pros and cons is taking place in public and this has resulted in several leading politicians emerging as opponents.

These failings in assessing schemes are typical of megaprojects and were highlighted by the work of the OMEGA project of the Bartlett School of Planning at University College London, funded by the Volvo Research and Educational Foundations (VREF), into megaprojects. Professor Harry Dimitriou and his team focussed on ‘what constitutes a successful Mega Urban Transport Project?’, seemingly simple but ultimately complex question.

Much analysis of the success or otherwise of projects focuses on rather short term considerations, especially on whether the scheme is likely to be ‘on time and on budget’. However, the research suggests that there should be a more holistic and systematic evaluation, both before the decision is made and after the scheme is completed. Megaprojects are major ‘agents of change’ leading to all kinds of effects, many of which cannot be predicted. An obvious example is the decision to allocate the 2012 Olympic Games to London.

This would never have happened had it not been for the construction of what was then called the Channel Tunnel Rail Link (now HS1) between the Channel Tunnel and St Pancras station in north London. Indeed, the Games
Judging the Success of Megaprojects

By Christian Wolmar

would not have been won had it not been for a late change in the route of the line which originally would have gone under London in a tunnel from the south. Instead, following the intervention of Ove Arup and the support of the then environment secretary Michael (now Lord) Heseltine, the route was shifted to the north to go through Stratford in East London, an area ripe for redevelopment. The site then became the obvious choice for an Olympic bid as it was relatively centrally located and fantastically well served by rail, including domestic services on the high speed line.

There are numerous other examples. In Athens, when a new line was built, the operating company Attiko Metro SA transformed itself into a learning organisation, with the addition of highly qualified personnel and frequent interaction with consultants and therefore the project became an opportunity to acquire valuable new skills and knowledge. It does not always work. The use of a technologically-advanced signalling system on London’s Jubilee Line Extension proved impossible to implement in the time available and a more basic system, with a lower potential throughput of trains, had to be adopted temporarily, at great cost.

Judging a megaproject, too, involves timing. During construction, there are often delays and cost overruns which attract opposition on the ground and criticism in the media. Flash forward a few years, and all the hoo-ha is long forgotten, and all that remains is a heavily used social facility. The same Jubilee which endured almost a decade of difficulties with its signalling systems, is now seen as London’s most modern and efficient metro line, with its platform doors and modern trains.

Another stunning example, away from the transport field, is the British Library, the largest public building constructed in the UK during the 20th century. While it was being built, costs soared from £142m to three times that figure, and took 14 years, double the original estimated time. Various factors, such as changes in design, political involvement, and protests about the original scheme, led to these delays. The scheme was constantly in the news during its conception and construction, with much criticism of the design, as well as the delays and the increases in costs. Yet, now, however, the library is widely accepted as an amazing success, a very heavily used treasure trove for students and researchers, who are all, thanks to the foresight of the architects, able to study at tables complete with electricity supply for their laptops which had not been invented when the library was first conceived.

For other megaprojects, however, the term White Elephant is never forgotten. The Humber Bridge, commissioned for naked political purposes in the mid-1960s to help the candidate of a Labour government which had a tiny majority in a crucial election, is a beautiful but greatly underused structure that has never fulfilled predictions of its use.

The lesson of the research, therefore, in a nutshell, is that projects should be examined in as wide a context as possible, attempting to assess effects that may extend very widely. Crude analysis on immediate costs and benefits will not deliver the right outcomes. Then, after the event, the lessons must also encapsulate a very wide analysis so that the lessons can be learnt. The ‘on time, on budget’ calculations to which, actually, both protagonists and opponents resort according to whether it backs their argument, is simplistic and should be discarded in favour of a far more sophisticated approach and a long term perspective.

This article is partly based on an article by Christian Wolmar and Harry Dimitriou in the VREF’s publication, 10 years with the Future of Urban Transport (FUT) programme published in 2012. Mega Projects, executive summary, lessons for decision makers: an analysis of selected international large-scale transport infrastructure projects, published in December 2012, is available from the Bartlett School of Planning, University College London.
Regional Planning for Disaster-Resiliency and Sustainability

By Sarah Slaughter

The impacts of climate change are stealthy. They are often small changes from year to year—slightly increasing summer temperatures, slightly less snow during the winter, slightly higher tides during the spring, slightly stronger winds.

It is only after several years that the cumulative effects are apparent, and the trend can feel unstoppable and ubiquitous. The challenge is to provide people—and their government agencies, companies, and community organizations—with a path to move forward to adapt to the changing climate.

In It for the Long Haul

Resilience is the ability to adapt as needed to constantly changing conditions to maintain life. Willow trees can bend in the high winds as needed, but can lose major branches to maintain the trunk and recover quickly. The energy the willow tree expends growing new branches improves its vitality under both normal and extreme conditions.

Cities can likewise improve their resilience and, at the same time, improve the quality of daily life. The energy and resources invested in improving the capability and capacity of a city to recover quickly and effectively from extreme events can also provide new economic opportunity across all members of the community within robust and vibrant natural systems.

National Report on Disaster-Resilient Infrastructure

The National Research Council report, Sustainable Critical Infrastructure Systems, provides a new framework to allow individuals, organizations, and communities to work together to improve disaster-resilient infrastructure systems. The objectives are to significantly improve the quality of life through encouraging and implementing innovative solutions. The report suggests:

- Focus on providing essential services (such as power, water, sanitary, mobility, and connectivity) rather than on the physical elements (e.g., wires, pipes, and roads);
- Bring together stakeholders at the regional level to work collaboratively across boundaries;
- Recognize and use the interdependencies among critical infrastructure systems to improve robust performance;
- Develop effective performance measures for greater transparency in decision-making.

Regional Planning for Sustainability

The New York State “Cleaner Greener Communities” program is an example of regional planning for sustainability. Governor Cuomo established the program to enable each region across the state to develop far-reaching plans to improve sustainability. The objectives are to reduce greenhouse gas emissions and enhance economic development across all communities. The plans explicitly focus on: energy, water, transportation, waste, land use, agriculture, and forestry systems in the context of economic development, climate change adaptation, and governance.

The team for the Finger Lakes region chose to start the planning process by establishing the unique character of the region as a basis for enhancing its sustainability. The region includes the city of Rochester and nine counties, stretching along Lake Ontario and south to the beginning of the Allegany plateau and containing five of the seven Finger Lakes.

The analysis for climate change adaptation for the Finger Lakes region centered on disaster-resiliency related to extreme weather events. While the region’s deep lakes generally reduce temperature extremes, winter storms can include significant snowfall, ice storms, and ice jams on the Erie Canal, Genesee River and Lake Ontario.

Summer drought and high temperatures can endanger residents’ health, particularly for the vulnerable populations of the very young and old, and threaten livestock, crop, and forestry assets. The extensive natural and man-made waterways are vulnerable to flooding and the steep slopes of the glacier-carved valleys are susceptible to landslides, particularly after soaking rains that saturate the soils.

The critical infrastructure systems are highly interdependent; for example, energy production requires water for cooling, while water treatment and pumping requires energy. These systems often link between communities and counties, so a problem in one town can propagate to become a problem across the region. Communities and counties need to work together across organizational and jurisdictional boundaries to develop and implement new solutions that improve disaster-resiliency and sustainability.

Opportunity Matched with Urgency

Improving the sustainability of the communities within the region can at the same time improve the disaster-resiliency, matching opportunity and urgency. Resilient sustainable systems more effectively use resources during normal conditions, which reduces the amount that need to be recovered after an extreme event.
The Finger Lakes Sustainability Plan provides general and specific strategies to enhance both the sustainability and resiliency of the region. For example, revitalizing existing town centers can both reduce transportation costs and GHG impacts as well as provide effective places of refuge during emergencies. In addition, recovery efforts can be accelerated through the concentration of robust services within these centers.

Specific innovations can provide new venues for community development and enhanced safety. For example, the reduction of greenhouse gas emissions can be paired with the need to ensure critical energy services during emergencies. One potential solution is to establish a network of localized facilities to produce electricity and also capture nutrients. The combination of existing and emerging systems can improve disaster-resiliency as well as provide direct economic, social, and environmental benefits.

- Anaerobic digesters or microbial fuel cells that use manure from the dairy herds and municipal wastewater/sewage to generate electricity. The electricity can be used on-site during emergencies, and sold back into the grid during normal conditions, thereby providing a new revenue source. The Minnesota Project is working with the USDA to develop new approaches for smaller-scale energy production.

- Separation systems that recover nitrogen and phosphorous. Left unchecked, these elements infiltrate waterways and cause algae blooms, harming the health of the waterways and ecosystems, and potentially compromising human health. The separated nitrogen and phosphorous can be sold for fertilizer, providing another new revenue source. The EPA Office of Wastewater Management has just released a report evaluating promising emerging technologies for nutrient recovery.

- Separation and processing systems for fats, oil, and grease (FOG) to produce biodiesel. These waste products clog municipal piping and equipment, and increase wastewater processing costs. Instead, the biodiesel can be used on-site for energy production or transportation, and sold to provide revenue. California is currently field-testing several FOG systems.

- Separation systems that recover nitrogen and phosphorous. Left unchecked, these elements infiltrate waterways and cause algae blooms, harming the health of the waterways and ecosystems, and potentially compromising human health. The separated nitrogen and phosphorous can be sold for fertilizer, providing another new revenue source. The EPA Office of Wastewater Management has just released a report evaluating promising emerging technologies for nutrient recovery.

In the Finger Lakes region, these solutions could engender economic development, drawing on its unique capabilities in manufacturing as well as science and engineering research. The resurgence of the local manufacturing industry can provide new opportunities for all members of the region’s communities, and further bolster the local economy.

Providing additional revenue sources for the region’s farmers can likewise strengthen the strong social systems in the region, and the reduction of contaminants in the Finger Lakes and waterways can preserve and regenerate the abundance in the region’s natural systems.

We Have Everything We Need

Investments for resiliency should improve the safety, health, and well-being of community members under normal as well as extreme conditions. These investments can provide economic opportunity, strong and just communities, and robust natural systems when they build on the existing resources, capabilities, and aspirations of the community.

As communities develop their plans to improve resiliency, they often have difficult choices to make on the allocation of scarce resources. Diverting significant funding towards higher floodwalls or other defensive approaches is often hard to justify when current needs, such as fire, police, and teacher salaries, are facing pressure.

More resilient communities can also be more sustainable—and improvements in the quality of life as well as disaster-resiliency fit the needs of today with prudent planning for the future.

Dr. Sarah Slaughter is the President and founder of the Built Environment Coalition, a research nonprofit focused on advancing practical knowledge to improve the sustainability and disaster-resiliency of the built environment.
Parking Tech

An Accelerator to the Connected City

By Zia Yusuf

After years of imagining, the Internet of Things (IoT) is finally here.

The Internet is no longer limited to your laptop or smartphone. It’s connected to your body, regular household items, car, and so forth. Wish you could turn on your lights remotely? Done. Wouldn’t it be great to warm up your house on your way home? Got it. And devices like FitBit that are aimed at improving health by monitoring key activities are on the rise as well.

But consumers and B2C companies aren’t the only ones to reap the benefits. Many successful large B2B corporations are banking on the IoT. Take GE, which put a $15 trillion price tag on what it calls the Industrial Internet.

The Next Revolution: The Internet of Things for Cities

The biggest impact that the Internet of Things will have on our lives and businesses seems to be remaining quietly in the background, waiting for us to realize its significance until it begins to crawl up on us and become seamless in our daily lives: our cities.

I’d like to refer to the Internet of Things for cities as “the connected city.” What exactly is the connected city? It’s where sensors detect critical information about our environment and pass it on via advanced networks so that cities will automatically know what’s happening and be able to take action. They will see damaged streetlights, air pollution levels, trash capacity (so garbage trucks only go to optimally filled cans), real-time parking availability and trends, and more.

Cities are where the true impact of the Internet of Things is witnessed and benefits can be realized. That’s because a city places a direct impact on consumers and businesses—they set the standards, technology, policies, and so forth to be in place to obtain these goals. But even more so, the way cities are organized and share information plays a critical role in our day-to-day lives.

Smart Parking: The Foundation to the Connected City

Companies like Streetline have a vision to make cities connected so that city leaders make better, informed decisions that minimize economic and societal impacts. We’re starting with parking.

Smart parking tackles some of the largest challenges our society faces: traffic and emissions. Drivers searching for parking cause thirty percent of urban traffic, so you can only begin to think about what the reduction in people circling for parking can do from both a pollution and quality of life standpoint.

If you haven’t heard of it, you’re probably wondering what makes parking smart. Smart parking is about connectivity, real-time data, and analytics. It’s about using technology to take a mundane daily task—parking—that has several ripple effects and must be managed with data behind decisions—for both cities and drivers.

I’m proposing a strong statement: smart parking is both the accelerator—and foundation—to the connected city. I say this for a few reasons:

- Smart parking is one of the only intelligent initiatives that actually results in increased revenue after it’s been implemented. So it’s not just reducing costs—it’s actually generating additional funds for the city. As parking is typically the second highest source of city revenue, these additional funds can be helpful to prevent budget cuts.

- Once the network is in place, other additional sensing pieces can easily be added on to various elements throughout the city to measure critical elements and make the connected city a reality.

- The benefits meet many public transit goals: reduce traffic congestion, air pollution, and improve the local economy, foot traffic to merchants, and quality of life for citizens and visitors.

The Internet of Everything and Parking

Along with Streetline, Cisco seems to agree that the connected city begins with parking. We’ve collaborated with the networking giant to bring smart parking to San Mateo and San Carlos, both located in the heart of the San Francisco Bay Area.

Cisco is taking the Internet of Things a step further: the Internet of Everything (IoE). The IoE connects people, process, data, and things, and, like GE’s $15 trillion estimation, Cisco estimates a number in the same ballpark: $14.4 trillion. The company assigns IoE asset utilization as $2.5 trillion of this pie, which is the place where managing parking via analytics and real-time data falls into.

I was honored to kick off Cisco’s Internet of Things World Forum Steering Committee last month, and showcase what we’re doing together to lay the IoE foundation in these two cities. Our parking sensors, gateways, and repeaters use Cisco’s advanced network to connect and deliver the information to a suite of applications for cities in real-time, as well as the information directly to drivers on the web and smartphones. We’re also in conversations with several car manufacturers to get this real-time parking data into in-car navigation systems."

The connected city may be the next revolution for our world today. And, it may just start with parking."
Zia Yusuf is the CEO of Streetline, the leading global provider of sensor-enabled smart city solutions.
About the Mircom Group of Companies (MGC™)

The Mircom Group of Companies (MGC) was founded in 1991 by Mr. Tony Falbo. Today, MGC stands as one of the fastest growing companies in the building solutions sector and the largest independent fire alarm manufacturer in North America.

At MGC, we’re passionate about creating breakthrough technological innovations — all designed to enable cities and regions and all kinds of properties to better respond to increasingly complex urban planning, design, technology, safety and development challenges.

Our product line spans Fire Alarm and Emergency Audio, Communications and Security and our brands include Mircom™, Secutron™, Mircom Engineered Systems™ (Mircom ES™) and United Export Corporation (U.E.C.™). With a well-earned reputation for excellence, innovation and quality, we’ve consistently achieved double-digit annual growth.

We support the sale and installation of MGC solutions in more than 50 countries, with international offices located in New York, California, Illinois, North Carolina and Florida U.S.A.; Mexico City, Mexico; Buenos Aires, Argentina; Bangalore, India; Dubai, UAE; Saudi Arabia and Singapore. Under our U.E.C. division, we also distribute a broad range of exceptional fire protection equipment to more than 70 international markets.

TX3 Community – Vertical Community Solutions

MGC provides a portfolio of interoperable solutions that satisfy the vision of Smart + Connected communities. Mircom’s TX3 Community, for instance, provides access control, tenant-to-tenant and tenant-to-property manager communications, and a community portal in an integrated package based on our smart home controllers.

Find out more by visiting www.mircom.com/TX3community

Award Winning Building Automation Solutions

Our Open Graphic Navigator™ (Open GN) solution was awarded the Gold Medal at the 2013 Edison Awards™ in the Smart Systems category. This fire detection, mass notification and 3D monitoring solution provides unprecedented visualization of building system activity and emergency alerts.

Our layered approach of technologies enhances the occupant experience integrating video surveillance, wireless peripheral devices, fire annunciation and more.

Find out more by visiting www.mircom.com/openGN