

Town and gown: a digital update

Linking connected universities and smart cities for growth, inclusion and sustainability

[This paper was prepared by Martin Stewart-Weeks, an advisor to the Cisco higher education and smart cities programs in Australia. The paper is a background document for the "smart cities" roundtable hosted by the Business Higher Education Roundtable and Cisco in June 2015. The views and opinions in this paper do not necessarily reflect the views of Cisco or any of its partners.]

Town and gown: an introduction

Universities and their surrounding communities have been locked in a more or less symbiotic relationship almost as long as universities have been around. Sometimes fraught, often boisterous and veering between mutual respect and suspicious antipathy, the links between universities and the cities and towns in which they live and work have become integral to their ability to thrive, both individually and together.

Over the past few years, the rich and complex "town and gown" story has gone decidedly, and irrevocably, digital.

Successive waves of technology innovation, not the least in the form and reach of the Internet itself, have rewritten the book of connection, collaboration and common purpose. It has called forth investment in new shared infrastructure and capabilities that pose demanding questions about the way universities and their wider communities might impact the other into the future.

Now that digital dominates and the "internet of everything" is connecting pretty much everyone and everything, new opportunities are emerging (and, it must be said, some risks too) in the next chapter in the story of universities and their surrounding social and economic context.

What is at stake is substantial. As universities rethink their teaching and learning models around a new digitally-infused experience for students and staff, the cities and communities around them are doing pretty much the same in pursuit of new ambitions for growth, inclusion and sustainability. It turns out that there is much in common in the twin, and increasingly interdependent ambitions of "town" and "gown" as they seek new sources of advantage and resilience. Increasingly, smart cities and connected universities are trying to do the same things. It makes sense to explore the extent to which, through their shared investments in new digital infrastructure, capabilities and platforms, they might be more successful together than apart.

An ambiguous relationship

Conflict was inevitable in the medieval university towns, where two separately governed bodies with different priorities and loyalties shared the same restricted space. Moreover, violence was commonplace in medieval life, not only between scholars and townsmen, but also among ordinary citizens, as well as between scholars from different regions of Europe who attended the universities.

Violent confrontations between town and gown erupted on a recurring basis. One of the most famous was the Battle of St. Scholastica Day, which occurred on February 10, 1355, at the University of Oxford. An argument in a tavern – a familiar scenario – escalated into a protracted two-day battle in which local citizens armed with bows attacked the academic village, killing and maiming scores of scholars. The rioters were severely punished, and thenceforth, the Mayor and Bailiffs had to attend a Mass for the souls of the dead every St. Scholastica's Day thereafter and to swear an annual oath to observe the university's privileges. For 500 years, Oxford observed a day of mourning for that tragedy.

The University of Cambridge was originally set up after a fight between the townspeople of Oxford and scholars from the University of Oxford forced many scholars to flee to a new location in 1209. Later, the tension between the scholars at Cambridge and the townspeople forced the king to grant special privileges and protection to Cambridge University, which helped enormously in the survival and future success of the university.

By the mid-15th century, kings were putting an end to student power within the universities. They ordered papal legates to reform the universities and restricted student boycotts and strikes. From then on, whether under king or revolutionary government, dictator or Parliament, European universities would customarily be ruled by the central authority – although the degree of control varied widely over time and place.

Following the upheavals of the High Middle Ages, relations between the European universities and the host towns evolved toward a pattern of mutual support. Cities, on some occasions, took over payment of salaries and provided loans, while regulating the book trade, lodgings, and the various other services students required. Eventually, cities began to take pride in their universities rather than look upon them as adversaries.

http://en.wikipedia.org/wiki/Town_and_gown

That is what this short paper is about.

Some big changes

There's an inescapable sense that some very big changes are underway – in politics, in social values, in economics, in demography and, for sure, in technology. Together, they are rewriting many of the rules for work, learning, productivity, growth and sustainability as well as for the way we interact and collaborate as people, institutions and communities.

There are now plenty of studies, research and predictions drawing attention not so much to the individual shifts that are now underway but to their combined impact.

In most parts of the world, societies are ageing. In some, especially India and the Middle East, there are massive 'bulges' of young people working their way through the education and economic systems. In both cases and for different reasons, pressures are mounting on the capacity of existing systems and institutions to respond. New demands for learning, skills, investment, growth and jobs are testing the limits of many countries to respond quickly enough and with solutions that work and endure,

Technology's ability to connect everything and everyone is shifting the way we learn, work, do business, innovate, entertain ourselves and hold each other, and the big systems of governance and commerce, accountable. These are shifts that can as easily be underestimated as they can be overhyped and simplified. But somewhere in the space between assuming everything is changing and nothing is changing, things are changing.

This is, as a recent McKinsey study describes it, no ordinary disruption [Referencel. It is an era of the "big shift", as another analysis puts it [Hagel Referencel. What is common to all of these attempts to understand the nature and significance of these changes?.

In a recent speech, Telstra and Business Council of Australia Chair Catherine Livingstone put her finger on the culprit – mass connectivity. And the reason connectivity is to blame is simple. It fuels the exponential growth in the number and, often, quality of interfaces between people, ideas and institutions. And if "innovation happens at the interface" – now not only human to human and human to machine, but increasingly machine to machine – the radical connectedness of everything and everyone is cracking open a virtual universe of possibilities for innovation and change.

Catherine Livingstone's analysis picked up several dimensions of these implacable, and perhaps necessary disruptions. For example, they are changing the nature of work and work places, and the shape of cities and urban environments. She noted that, equally, they are opening up new possibilities and new frontiers of discovery.

Productivity now demands innovation. Innovation, in turn, requires the mobilisation of an entire ecosystem: "the building of knowledge infrastructure, a skilled work force, creative workplaces, business models built around the customer and competition, engagement in global supply chains, a culture of experimentation and entrepreneurship, contestability of government services, and government acting as a demanding customer in its procurement activities."

Similarly, she noted that if 47% of total US employment is at risk of being automated using artificial intelligence, how quickly do we need to move the discussion from protecting the jobs of today to creating the jobs of the future? "Precision welders and robotics mechanics," she suggested, "will be more useful in the growing advanced manufacturing sector than yet more law graduates for whom there are no jobs."

If Australia's population has grown by almost 25% since 2000, the response has to include the planning and prioritization of infrastructure, the design and liveability of our cities and regions, the affordability of our housing, and the preservation of our environment.

Another big philosophical shift from these disruptions includes the need to break the rigid discontinuity between education and work. Those distinctions were only relevant when, for most, formal education ended at age 15, only 10% of students went on to university and degrees were three years in duration.

And bringing the work and skills discussion to a very pointy conclusion, Catherine Livingstone drew on recent work by Ian Chubb, Australia's Chief Scientist to recall that an estimated 75% of the fastest growing occupations, including those in the creative industries and humanities, will require STEM related skills and knowledge (science, technology, engineering and maths). Introducing these foundational skills - computer coding, computational thinking, problem solving and design thinking for example - into the primary and pre-primary curricula can't be avoided.

These shifts, and their unforgiving dilemmas of policy and practice, impact few institutions as deeply as universities and cities. The learning, knowledge and teaching role of universities and the enduring role of cities as spaces and places for commerce, creativity and community are both being challenged.

It turns out that many of those challenges, as well as many of the responses to the risks and opportunities they imply, are shared. More importantly, some of the big changes are likely to be navigated more successfully through new forms of collaboration.

University as city, university in the city

It's hardly news that technology is changing pretty much every aspect of the way universities work. From the websites where students encounter the university to the back-end administration systems, from the lecture halls, physical and virtual, where new models of teaching and learning are being tried and tested to the new investments in the infrastructure of networks, data and communication and across the physical campuses which are more connected than ever, universities could hardly exist without the pervasive digital and technology capabilities which have become critical to their survival and success.

These are important shifts as universities embrace the concept of a "smart campus", which includes three ideas.

One is the concept of the university as a city in its own right, a collection of people, amenities and assets which respond to, and are shaped by, the values, expectations and shifting demands of its "citizens".

The second speaks to the connectedness which the term "smart" connotes.

And that, in turn, means a lot more than – though definitely includes – some of the more operational and transactional capabilities that come with the idea of a smart campus. So it is, for sure, all about sensor-based smart parking and new ways to use digital lighting to make campus facilities more accessible, safer and more energy efficient.

But it is also about using pervasive and increasingly social and visual technologies to totally reshape the spaces for learning and interaction and to broker new and more nuanced relationships between students, teachers, and administration staff.

Those relationships extend to the wider, often virtual communities of alumni and business and community partners in which a university is embedded.

It is also about having the skills and capability to forge and sustain more complex co-design and co-production relationships across the campus (or multiple campuses, in many cases) and outside the campus with business, government and start-up or innovation communities for projects of joint research and commercialization.

And the third concept deals with the enabling investments of infrastructure and services on which the first two concepts rely. A smart campus, in that sense, is one that aligns the aspirations of “university as city” and stronger connections across and outside the campus with the necessary investments in requisite technology assets and capability. The obvious point, as universities increasingly seek to exploit the combined physical and digital assets, services and platforms in which they are investing to improve the total university experience, is that none of these concepts makes sense on its own.

Some of those assets and capabilities are now becoming clearer.

Table stakes include core capabilities like strong and secure cloud computing facilities, growing skills in big data and analytics and the ability to keep these new critical digital assets, and the traffic of data, innovation and collaboration which they support, safe and secure.

Universities are becoming powerful “internet of everything” hubs in their own right, conglomerating computing and network assets, skills and culture and the ability to apply the possibly of “everything and everyone connected” to innovation in areas like health, transport, finance, agriculture and resources and education itself.

The range of functions to which a smart campus can now apply an integrated digital capability is growing all the time. More connected and remotely accessible labs, teaching spaces in which connectivity allows (and even demands) new patterns and styles of teaching and learning, more mundane but equally important functions like parking, lighting, security, ubiquitous wifi and better energy management in smarter, more efficient and greener buildings are all part of the mix.

As those assets and capabilities are deployed, universities and the cities and regions in which they live and work can increasingly invest in, and benefit from, the ability to share their capabilities. As universities become, for example, hubs of “internet of everything” expertise and capability, there is little point keeping those skills to themselves. Those same capabilities in computing, data, analytics and collaboration will be just as valuable to the businesses in their cities and regions. Similarly, the product, service and process innovations in which business, and often city and regional governments too are engaging, and which they are sometimes pioneering are valuable assets for universities.

Joint development of the infrastructure, skills and culture of the digital economy makes it more likely that not only will each player do better – universities attract more students and top researchers and teachers, cities attract new investment and jobs and can invest in improved social and cultural amenity (which also attract investment and jobs in their own right), businesses get access to skills and infrastructure whose costs will be lower and whose value will be higher if they are co-designed and shared - but that, as each gets better, the common purpose of stronger and more resilient cities and regions is much more effectively served.

The nexus between universities and “smart” cities goes well beyond the direct impact that each might have on the other. What is beginning to emerge is a larger story that has major implications for the way cities themselves compete for people, investment and jobs and provide services and opportunities for their citizens.

The Westmead Health Precinct in western Sydney is a good example.

Concentrated on a major plan to create a globally recognized precinct that brings together a new hospital with major research and teaching capabilities, the project engages well beyond the precinct itself. Big investments in people and capability are being made by the University of Sydney as Westmead becomes a new platform for its teaching and research. Further than that, the precinct’s real impact is likely to be not only what it can achieve within the physical spaces of the precinct itself, but in its role as the hub of a new model of health and care across western Sydney.

What that implies is a new approach to providing information, services and support to people and their families who will become

both more informed and more active in their own health and care. It demands new models of integration between the resources and expertise of the university, the research institutions and the community. It will likely also see new forms of joint investment and co-design between all of those stakeholders in the infrastructure and services for health and care that recognize the shared value that will emerge from a healthier and more engaged community.

Another example is the persistent focus on investment and jobs.

In the digital economy, the big economic development outcomes will rely on some common capabilities. They include innovation fuelled by information and knowledge, a strong and growing base of learning and skills and the ability to predict and often preempt demand for provide and services. These, in turn, demand infrastructure and assets that, in many cases, can be both shared and connected. In this scenario, universities become both providers of skills and other capabilities in their own right – training data scientists, providing computing, storage and collaboration capability, investing in innovation and new thinking about products and services for example – as well as being major economic players in the city and region.

Businesses large and small can take advantage of the skills and knowledge curated by universities and, in new forms of co-production, can join up with universities and the city or region itself to forge new assets. They can cover areas like data and analytics, communication and collaboration and customer service that build deep strength and resilience into the economy of the city and its surrounding region.

The common theme here is collaboration and interdependence.

Cities and universities, and the people, organisations and institutions which they each represent and engage, are discovering new ways in which their ambitions for social and economic development are mutual and reinforcing.

“...the radical connectedness of everything and everyone is cracking open a virtual universe of possibilities for innovation and change.”

Universities teach, learn, research and incubate innovation and experimentation. Cities and regions search for new sources of competitive advantage and resilience for investment, jobs, amenity and appeal. Businesses wrangle the new digital rules of growth and performance that combine data, connectivity and new forms of engagement with their staff and customers.

These are separate, but interdependent ventures, each with its own dynamic and logic but each reliant on the success of the others as well. And the underlying assets of communication and collaboration are increasingly strategic to the ambitions of each and, as it turns out, can effectively be designed and built more effectively together to the considerable advantage of all.

We have moved a long way since technology was largely confined to the computer labs of a few select science and engineering departments and the university's main administration systems.

More recent developments suggest that, in some ways, the impact on universities of technology and, more broadly, the digital revolution, has only just started.

One of those developments is the advent of the "Internet of everything", a convenient shorthand for the rapidly emerging world in which, pretty much literally, everything and everybody is connected as an intelligent node in the network. This is a world in which people and things and data are being woven together in new fabrics of intelligence and capability that are releasing new waves of innovation.

As universities adapt to, and increasingly seek to influence and take advantage of, the internet of everything and the new rhythms of risk and opportunity in the digital economy (or, as we all ought to start describing it, the economy), a second big shift is taking place in the impact of technology on universities.

The university as a city is not really a new concept. The idea of universities as a kind of 'mini city' or community within a community is familiar. The idea has taken on a new salience as universities have increasingly taken up a separate and distinct physical space as a campus or linked campuses.

In a very obvious physical sense, the university campus is a city, writ small, catering not just to the learning and teaching demands of its 'citizens', but offering them a full array of amenity and services from mundane commodities (power, heat, security, communication) through to more nuanced services including retail, arts and culture and leisure.

What it means to be a city-in-a-city has shifted with the advent of successive waves of technology and digital capability. Now, the need to change the overall experience of campus life and of belonging to the university community into something that is distinctive and appealing has driven a more sophisticated engagement with new digital tools and platforms.

Case Western and OneCommunity

A good example is the way in which Case Western University's investment in broadband capacity spilled over its borders into the neighbouring communities in north east Ohio to morph into OneCommunity, a multi-million dollar broadband network

The HTC was established in 2010 as a public-nonprofit collaboration between BioEnterprise, The Cleveland Foundation, the City of Cleveland, and MidTown Cleveland. Recognizing there was a lack of suitable space to house the growing number of health-tech and high-tech businesses spinning out of the City's anchor institutions, the Health Technology Corridor partners came together behind this unique effort to develop, brand, and market a health-tech and high-tech business corridor on the east side of Cleveland. <http://www.healthtechcorridor.com/about-htc/>

The example shows what can happen as a university takes up its role as an institutional and technology hub for its region. From the initial investment in high capacity broadband networks around the university's Cleveland campus, which became a community asset that could be used by individuals and businesses outside the university, the project has morphed into standalone non-profit venture.

The collaboration skills and significant investments in one of the best broadband networks in the US has spawned a series of ventures that epitomize what is possible as a university builds its connections, in every sense, to the surrounding region.

One example is the Cleveland Health-Tech Corridor. HTC feeds off the OneCommunity 100 Gigabit broadband network to create a physical location for biomedical, healthcare and technology companies. They want to be close to four world-class healthcare institutions including the Cleveland Clinic and University Hospitals, six business incubators, four academic centers, and more than 130 high-tech and health-tech companies engaged in the business of innovation.

HTC's 1,600 acre site spans the heart of Cleveland's east side, connecting Cleveland's downtown to the cultural hub of University Circle. Feeding off the health, technology, and educational capital that Cleveland's hospitals and universities provide, the HTC has become the best place to develop business connections and partnerships in the health and technology sector. According to OneCommunity, that opportunity has created over 1,800 new jobs, 500,000 square feet of new or renovated office and lab space, and over \$4 billion of investment since 2008.

The idea is that the Corridor offers companies access to everything they need to grow and thrive – entrepreneurial support services, venture capital funding, a community of like-minded innovators, thought leaders at the academic and health-care institutions, local manufacturing capacity and expertise, a highly skilled workforce, and a commitment from the public sector to help small businesses expand.

This month (May 2015), OneCommunity is running a challenge competition to find people and organisations with great ideas, in areas that include smart cities, economic development and innovation, to exploit its broadband network.

http://www.cleveland.com/business/index.ssf/2015/04/big_gig_challenge_what_if_even.html

It would be hard to describe a more apt example of the ethic and impact of "university in the city".

Philadelphia University City

Another example from the US is University City in Philadelphia. Billed as “more than just a neighbourhood,” the City has become a livable and workable place by virtue of its integration of the university itself, science and research capabilities and a stack of amenities including food, culture, museums and galleries.

There is a big focus on parks and open public space, on keeping the physical environment clean and safe. There are programs to connect investors and entrepreneurs to people looking for jobs and skills. The University City district assumes, as a conscious act of strategy and investment, that its success is tied in to the wider economic and social development of the city and its region.

This is how the website puts the story:

This unique and diverse neighborhood in West Philadelphia was named for the six colleges and universities that sit between 50th street and the Schuylkill River, but it is

“Cities and universities, and the people, organisations and institutions which they each represent and engage, are discovering new ways in which their ambitions for social and economic development are mutual and reinforcing.”

much more than a college town. University City grows each year, adding occupants, restaurants, world-class institutions, and programming, making it one of the most livable, well-kept, and friendly

neighborhoods in Philadelphia - See more at: <http://www.universitycity.org/university-city#sthash.GEWyL22G.dpuf>

But the digital connection between university and city or region goes beyond the shared investment in underlying broadband infrastructure, important though that is.

What it opens up is a whole world of connectedness between campus and city and between the people and communities of ‘town’ and ‘gown’ that play out on several important dimensions.

For example, pervasive digital networks that allow people to connect and to study on an “anywhere, anytime” basis forge new connections between people and place that render the boundaries of city and university more porous.

Victoria University

An example is the investments that Victoria University (VU) in Melbourne is making to create a single digital platform for communication and connection that flows across its campuses and into the surrounding spaces in and around Footscray. The digital mantle which lies across these shared spaces effectively turns pretty much any space in which a student or a researcher or a teacher either wants or needs to work into the “university”, without necessarily being physically within its defined physical borders.

That, in turn, sets down some new parameters, and certainly raises a whole lot of new opportunities and risks, as the concept of the “campus experience” or, even more broadly in this case, the “VU experience”, slips the bounds of traditional physical definition of where that experience is forged and enjoyed.

The latest manifestation of another powerful dimension of the “university in the city” is captured in the MOOC, or Massively Open Online Courses, phenomenon. More powerful networks, better and cheaper storage capacity and new platforms of collaboration,

including the growing suite of social media tools and applications, are breaking open the knowledge assets of universities.

From the basic provision of increasingly large amounts of core curriculum materials on the web to the more sophisticated experiments with virtual teaching, student support and learning, technology has enabled new forms of connection between universities and people outside the university's walls and boundaries. And those connections are being forged, of course, not just across the city but around the world.

A third example of the "university in the city" is the growing opportunities for large-scale, research-based collaboration around big projects.

Square Kilometre Array (SKA)

A good example is the Square Kilometre Array (SKA) project based in Western Australia, pulling together a partnership of university, government and business partners whose capacity to work together is increasingly hostage to robust platforms, and the new cultures, of virtual communication and collaboration.

The Square Kilometre Array will be the biggest radio telescope ever built. It links installations in Australia and South Africa and supported by an organisation of 10 countries and headquartered at Jodrell Bank observatory in the UK.

Obviously the SKA project is an enormous radio astronomy project, but in many ways its real significance is that it will create the world's largest 'big data' platform.

In the SKA-Low alone, which will be located in Australia, by 2020 there will be 260,000 sensors across over 900 stations in a network the size of our continent, not including the global network required for collaboration amongst the world's radio astronomers. This will create the world's first Exabyte Scale data network or 'astronomy' cloud.

The SKA project is creating capacities for linking data, analytics, networks and innovation which will be at the heart of Australia's future success in a more open, connected digital economy.

The SKA project, and the Exascale Data Alliance which is being formed between the universities, businesses and governments involved, is one way Australia can make some of the necessary investments. As well as building up those capabilities, Australia needs to invest in better institutional alignment between the various players involved and in underlying skills in science, technology, engineering, arts and creativity and maths (the so-called STEAM set of skills, attitudes and capabilities).

What projects like SKA demonstrate is the power of technology to forge new models of action, in pursuit of big social and economic development goals, which could not be achieved by any of the partners alone. It's where the combined power of "university" and "city" shows their potential and value.

Smart cities or connected communities?

The discussion about smart cities has become more pervasive and intense over recent years. It seems impossible for cities to engage pretty much any aspect of their work and life from a digital or technology perspective without attaching the "smart" label to its activities. Smart transport, smart energy, smart buildings, smart roads (and bridges), smart lighting, smart parking, even smart waste are becoming commonplace monikers for a new

kind of urbanism. Pretty much smart everything, it sometimes seems (except, funnily enough, smart people, but more of that later on).

In one sense, that is both inevitable.

“Smart” is a convenient and reasonably widely accepted shorthand for a bunch of sometimes truly transformative attributes. These include being connected digitally, being able to transmit data that, even if it is at a basic level, tells the world something about the condition of the thing that is being digital enabled, the ability to apply the new tools and tricks of big data and (often predictive) analytics and the ability for the smart thing or process increasingly to be capable of a measure of self-knowledge and governance.

The instinct that is driving the desire to make things “smart” is both good and necessary. There are potentially very large efficiencies and productivity improvements to be earned from the design and execution of these new capabilities, each of which calls forth

significant investments, complex execution strategies and, inevitably, major shifts in culture and leadership.

Perhaps the best way to characterize the smart city debate is to see it as a necessary, but not sufficient condition for making cities and towns not just more efficient and productive, but more human at the same time. These are lessons which are as important for universities and which should increasingly guide the development of both “university as city” and “university in the city” strategies.

To some extent, the smart cities discussion has been overwhelmed by the pace and scale of technology change. We talked earlier about the Internet of Everything phenomenon, to which we could add the rapid rise of technologies that make pretty much every aspect of the way people live and work and learn pervasively virtual, visual, social and mobile. In many ways, we are witnessing the consequences for institutions, people and communities alike of the pivot from “doing digital” to “being digital.”

In the context of cities, “doing digital” is accepting email submissions to a city planning project. Being digital is opening up a wiki and writing a city strategy in the open so to speak **Melbourne city strategy/Collabforge referenel.**

Or is might be exemplified in a city like Busan, in South Korea, which is turning itself into a development platform for innovators by making data open and accessible and encouraging innovators and investors to come and use the city as a big, open ‘lab’ for city innovation.

British cultural planner Charles Landry has noted that the central challenge facing us, and the shredded fabric that is too much of our urban life, is not to strive to be the most creative city *in* the world.

Rather, if we are to recapture some of the idealism, reframe the opportunity, and reinvigorate our common hope in finding and defining a sustainable urbanity in the 21 century, we would do well to become the best and most imaginative city *for* the world. In the search for a divining rod to guide us in the pursuit of 21st century urbanity the answer is not a technical fix, even one with as much promise as the Internet of Things.

...the move from *in* to *for* gives us, as Landry points out, an ethical foundation for making the city a place of solidarity, where our relations with each other in the broadest sense are informed by common social priorities. Setting aside those who will immediately dismiss the notion of the very existence of common social priorities, the price for failing to respond to the growing gaps, sense of alienation, surplus hopelessness, and escalating environmental crises comes with substantial and ever increasing consequence

Beyond the Tower of Babel: (Re)framing The Value Of The Internet of Things

<http://www.linkedin.com/today/post/article/20140619142701-82100-beyond-the-tower-of-babel-re-framing-the-value-of-the-internet-of-things>

Or perhaps it's the story from New York where there is a shift from inspecting models for things like building quality and standards (inspectors turning u, usually too late, to identify violations and breaches of the building codes) to a big data approach that takes data about age of the building, previous incidents, fires and complaints and uses analytics to predict and prevent the breaches in the first place [\[ADD REFERENCE AND LINK\]](#)

The risk still remains, though, that cities and universities think they are smart when they have installed a sensor based parking scheme or automated their campus lighting or can give you real time updates on traffic congestion. These are all important parts of the story but, in and of themselves, they don't make a city or a university smart. They just make it automated.

Basically, if a city isn't rethinking and retooling every aspect of its life and work using a combination of technology, design, deliberation and a close and authentic connection to and with their citizens, it's possible it may end up being "smart" in a narrow, technology sense, but perhaps not in a deeper, human sense.

For sure, it will become more automated and sensed, but that doesn't shift the whole story, which is how the city relates to its citizens and its communities. That is a political, ethical, organisational, social and leadership issue, as well as a technological challenge. And for sure, it is about issues of power, control and authority which can't be answered simply by investing in additional layers of digital.

At the heart of the smart city and, by the argument in this paper at least, the smart or connected university story, is a paradox. The more important technology has become as part of the equation, the less important technology becomes. At this point, the trick is to work out the human, institutional and governance pieces because getting them right is what will make communities and cities connected in ways that boost growth, inclusion and sustainability

As one urban thinker puts it, the focus must now be on the way citizens and communities create culture, successful urban living and opportunity with and through technology: "technology is culture; it is not something separate... we cannot choose to have it or not. It just is, like air" [{Dan Hill reference}](#)

The point is to neither downplay nor demonise the impact of technology but rather to "urbanise" its impact, making sure that its power and potential intersects with the essential humanity of cities and their communities. Sociologist Saskia Sassen suggests that

...the real power of technology is unleashed only if it fits the contours of the way people and cities actually work, rather than simply providing "dumb" infrastructure. The point is that users bring their own logics to these technologies. In the case of a city with its vast diversities of people and what makes them tick, the outcome can be quite different from what the designers expected." [{ADD REFERENCE AND LINK}](#)

A shared agenda: growth, inclusion and sustainability

It's clear the story about cities and universities, and their impact on each other, is a long, complex and sometimes difficult one, but always with a powerful sub-text of engagement and mutual dependence.

That raises the central question about what exactly is the value to each, and to both, of developing the relationship further. What does each contribute, and stand to gain, from this new digital twist to the story of "town and gown"? And, more importantly, what are some of the practical ways in which this new phase might more effectively be advanced?

In this final section of the paper, some answers to those questions emerge around three ideas – a shared agenda and an emerging set of principles to guide the design and development of the next phase of the relationship.

Shared agenda

The sources of competitive advantage and resilience for cities and regions include their ability to

- Attract investment and jobs
- Provide the cultural, social and environmental amenities that make great places to live,
- Harness the spreading power and influence of successive waves of digital innovation
- Bring learning and skills to the challenge of creating new knowledge for economic and social development and
- Forge much higher levels of engagement and participation by people and businesses in all aspects of civic governance and leadership.

One of the things that you've seen in the last 12 to 18 months is a huge surge in the formation of urban science research groups at universities all around the world. There are three just in New York City that have launched at Columbia and NYU and the new Cornell campus. There are a couple in London, one at the University of Chicago. It's kind of a boom. And it's being driven mostly by physical scientists — physicists, computer scientists, mathematicians — getting interested in cities because there's suddenly all this data and this vast complexity that they can really sink their teeth into.

But those groups have not found a way to systematically tie themselves to social science, public administration, planning, or architecture. So they're doing very scientifically interesting research with a really poorly conceived vision of what problems cities face, what the usable outputs will be from the research, and even how to do that research in a way that is more easy to transfer to the marketplace

Anthony Townsend (interview reference)

The foundation for these ambitions is increasingly a sustained investment in the hard and soft infrastructure of the digital economy. That means investing in both traditional assets for transport, housing and communication as well as new assets for digital success, including broadband, sensors, new capabilities for "big data" and analytics. It also means nurturing skills and capabilities in design, creativity and innovation that represent an increasingly important part of the new "capital" stock from which cities and regions square the circle of growth, inclusion and sustainability.

What has become clear in the past few years is that universities have become an increasingly significant piece in that larger puzzle. They offer not only vital capabilities and investments in the underlying knowledge

and innovation base for the cities, towns and regions they live. They are becoming an important source of economic and social development in their own right. Universities are themselves a major digital economy asset and, at the same time, a critical part of the investment in success for their cities and regions too.

Given that universities and their cities and regions have a shared agenda in growth, inclusion and sustainability, it is worth spelling out in a bit more detail what that means in practical terms.

Growth is pretty self-explanatory.

Cities and regions are increasingly the crucible within which the big forces of economic change and innovation play out. The competition for investment in industries and jobs of the 'old' and digital economy is fierce. Success is a function of pulling together attractive combinations of knowledge, skills, innovation capabilities and a set of social and technology amenities and infrastructure that make the city a great place to live and work.

Universities are an integral part of that ambition, both as institutions whose success hinges on their own strategies to attract the best teachers and facilities to support different communities of learners and as contributors to the economic strength of the communities in which they work.

Inclusion has become steadily more accepted as an essential condition of the appeal of cities and regions in the first place to attract the people and investments they need to fuel growth and development. Making sure people and communities benefit from growth, learning and work is not just a desirable design principle of urban management, but an inescapable condition for wider economic and social success.

And sustainability remains the foundation condition for success, both in the environmental sense that includes increasingly clever and predictive response to climate change and things like air and water quality, but also in the sense of the quality of its amenities and communities.

As cities and universities "hack" their way to a new kind of connected life, they could do as well to learn from the instincts of the spreading communities of entrepreneurs and innovators already at work. According to Anthony Townsend, they tend to eschew efficiency and, instead, "are tinkering their way toward a different kind of utopia."

Their instinct is to "amplify and accelerate the natural sociability of city life", which is not a bad design principle for smart city and connected campus builders in its own right. Instead of stockpiling big data, Townsend claims, they build mechanisms to share it with others. Instead of optimizing government operations behind the scenes, they create "digital interfaces for people to see, touch, and feel the city in completely new ways." Instead of proprietary monopolies, they build collaborative networks.

What's important about these initiatives is not their scale, which almost by definition is small and local. But they hold the potential to spread virally on the Web. What matters is that the bigger players of industry, business and large institutions avoid the risk of imposing "a vision of clean, computed, centrally managed order on the messier, decentralized and democratic alternatives." [ADD REFERENCE AND LINK]

Both "smart" cities and "smart" universities are increasingly locked into a shared venture to engage all three aspects of success – growth, inclusion and sustainability – which, if they are done well, become self-reinforcing elements in a virtuous cycle.

Guiding principles

As the well-worn patterns of “town and gown” shift gear to accommodate, but also to influence the digital economy, it is becoming clearer that success for each is a function of the way they learn to “play nice” with the other.

As this digital update to a very old story unfolds, there are some principles we can derive from what is already happening in Australia and around the world to guide its accelerating momentum.

These are some of those principles we think will be most useful:

- Universities should approach the design and delivery of their “connected campus” strategies with a sense of their role as ‘cities’ in their own right, engaging and enabling the full mix of services that their ‘citizens’ need and expect.
- As digital dominates, and as the “internet of everything” emerges as a frame within which to approach big issues of economic and social development universities should position in their cities and regions as hubs of strategic innovation capability and collaboration.
- Investments in requisite infrastructure, assets and capabilities should be co-designed and co-developed, as far as possible, with the cities and regions in which they live and work. They should be seen as common capabilities which support individual and shared ambitions for learning, research, communication, collaboration and innovation.
- Values of engagement, access and resilience should guide the development of digital capability plans and strategies inside universities and between universities and their communities.
- Cities, regions and universities should be driven in their joint and several investments in technology and digital capability by shared ambitions for economic and social development characterized by growth, inclusion and sustainability.
- Etc...to be completed

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