How to build Smart Cities "mindfully"

Matthew James Bailey

"The purpose of a Smart City is to build a sustainable thriving innovation ecosystem meeting the challenges of today, and, continually adapting for challenges in the future"

contact me: matthew@matthewjamesbailey.com

Acknowledgements

Introduction

IHS predicts that there will be 88 Smart Cities by 2023. It could be many more. So why are Smart Cities an imperative innovation? How can locales create the right version for their Smart City? How can locales thrive and meet the challenges of today and tomorrow? These are the questions this advisory paper seeks to answer by proposing four simple principles - some of which are already in deployment.

Why are Smart Cities so important?

According to the United Nations, over the next 30 years, population centers across the world will increase by an additional 3 Billion persons. Clearly, this is going to put an enormous strain on city and suburbia locales to cater for this growth as they seek to effectively deliver public services whilst striving to create a sustainable balance with available resources - both natural and economic.

The Smart City phenomenon is the first courageous step to resolve these mind-boggling challenges. It's about building for the future. Their purpose is to help locales transform into their next natural stage of evolution with the goal that population centers become sustainable thriving places to innovate, participate, live, work and play. Success requires a new form of inclusivity across all stakeholders - government, private sector, academia and citizens.

Smart Cities - Opportunity to create a new "social fabric"?

Before diving into the four principles for building a Smart City, I wanted to briefly raise a topic that is worth considering as part of your mindset. Smart Cities can be a platform to create a new social fabric, one that is a community driven democracy - one where stakeholders of a locale come together and collectively innovate the public and private sector services meeting the challenges of today and co-creating a sustainable future. A collective democracy that empowers a locale with the freedom to shape its future by re-stitching communities together into a governance that is innovation and multi-stakeholder centered.

Global challenges affect locales and we are seeing city mayors uniting to share challenges and discuss solutions to common problems. Some great examples are the US Conference of Mayors (https://www.usmayors.org/) and the Global Parliament of Mayors (https://globalparliamentofmayors.org/). Furthermore, in the UK we have seen increased delegation of governance from Whitehall to parliaments of member countries - Wales, Scotland and Northern Ireland. Democracy and decision making is moving to locales. Quite frankly, it has to.

Individual stakeholders within a locale must be empowered for their community to self determine choices for today and with an adaptive framework in place to provision continuous renewal. IoT and Smart Cities can be be part of the enabling blueprint to create a community centric, inclusive, social fabric.

I heard recently from someone "in the know" that 90% of cities were not planned but grew in a chaotic and organic fashion. That worked for a time but now that locales are facing increased pressures such as transport congestion, affordable housing and healthcare and with a predicted increase of citizens living in and around cities, it maybe time to think again. This paper offers four principles to equip stakeholders to transform their locale, define on their terms, and develop their version of a Smart City offering the potential to build a thriving and inclusive social fabric for their community.

There isn't a global nor national blueprint agreed upon – citizens in communities throughout the world must be empowered with choice to invent their future. It is a precarious time, but also an opportunity for communities to lead the future. The subject of creating a new social fabric deserves a whitepaper on its own.

Smart Cities - New Technology Clusters?

Where do we start with creating a Smart City? Is it simply a suite of hard coded and "one-off" solutions to relieve immediate economic and experience pressures faced by government and it's citizens?

Or is a Smart City a unique territorial framework upon which an adaptive and inclusive innovation ecosystem continually identifies, trials and delivers purpose driven citizen services catering for the needs of today and the future?

I would argue it's both. Maybe even go further and state the obvious, the majority of Smart Cities have an opportunity to potentially become a new model for "technology clusters". Smart Cities present an opportunity to build on a historical legacy from which a future vision can be realized for their locale. This requires committed, participative, collaborated partnership amongst the public and private sectors, academia and citizens.

A Smart City can become an economic development phenomenon for a locale and it is worth reading "Rainforests - the secrets to creating the next Silicon Valley" by Victor Hwang and Greg Horrowit. I would also recommend reading the story of the Cambridge Phenomenon by Charles Cotton. There are some great principles and lessons in these books which might be useful for building your Smart City story. I find them useful when helping governments and organizations develop innovation ecosystems whether for Smart Cities or Smart Ag or Smart Regions or Provinces.

Build a thriving Smart City upon your legacy

Let me be clear. You cannot force development of a thriving technology cluster (or Smart City) - many locales have failed trying to hard code success stories from other locales, instead of leveraging their own legacy and mindfully building from there. There is no magic bullet. Culture plays an important part, which always seems to be over looked for some reason.

I would argue that Smart Cities can be hubs for innovation leveraging IoT and the strengths of a locale to deliver meaningful services - whether for government, private sector or it's citizens. A Living Labs can catalyze success, where new technologies, pilots developed and trialled. Data-driven use cases help formalize roll out of appropriate Smart City services.

"As humanity pushes the button on IoT, what will the future look like?"

We continually hear the date of 2050 used by analyst organizations who provide useful guidance into how the future is likely to evolve over the next 30-40 years as the IoT phenomenon becomes seamlessly integrated into society

The underpinning assumption by analysts is that we build towards the vision, stating enabling technologies and global challenges that will open up market opportunities and drive economic growth. Useful indeed for any CEO trying to find their way into IoT. The problem is that guidance on how to embrace IoT and build a Smart City seems to follow the mindset from the industrial revolution of "process, process, process".

This mindset could be sensible guidance when developing Smart City Proof of Concepts (PoCs) or rolling out and serving Smart City solutions and of course this "process driven" mindset has made quite an impact on mankind's evolution. However, maybe IoT and Smart Cities require a different mindset in order to realize a future vision for a locale. If you read "Rainforests - the secrets to creating the next Silicon Valley" it suggests less control, less process to successfully create a thriving economic ecosystem. Fascinating idea.

I don't endorse a Utopian society, but I do believe we can create adaptive ecosystems upon which all Smart City stakeholders can participate and thrive in an empowered democracy. Isn't that what we all want? As the famous English poet and writer George Bernard Shaw invites us to consider when trying to achieve the seemingly impossible - "Why not?".
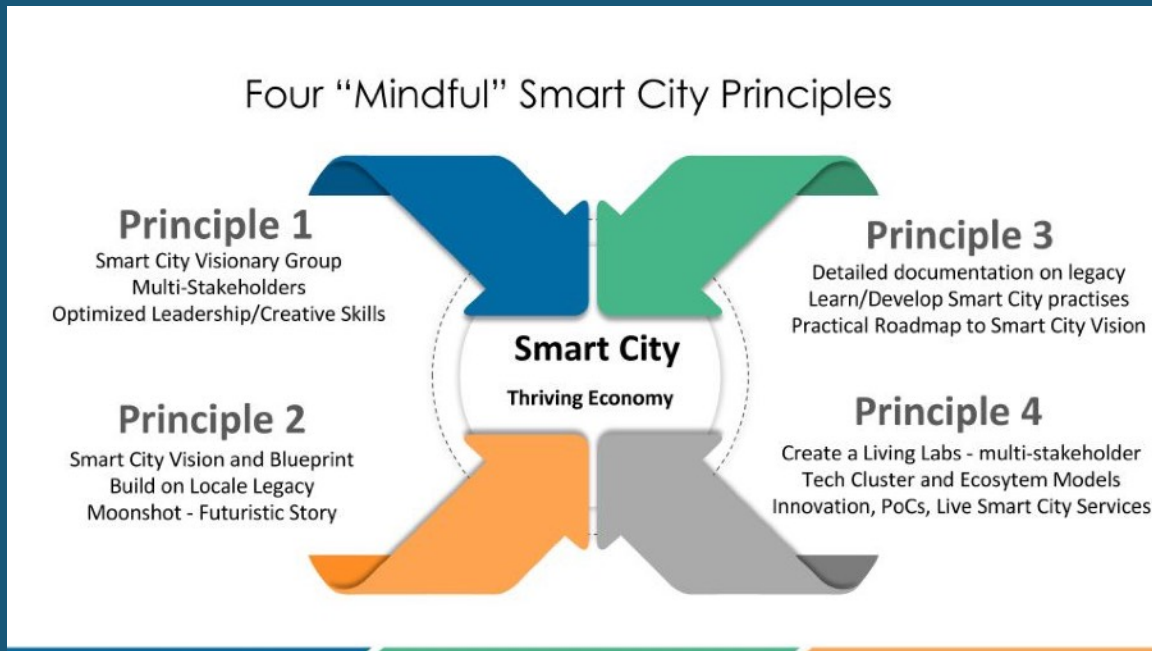
This advisory paper shares a few ideas as to how you might build a success story and citizen centered legacy for your Smart City initiative. These are principles for strategy and by no means exhaustive but hopefully useful to get the ball rolling.

If you do require more detail on how to develop a thriving Smart City ecosystem then drop me a line, I have a Smart City toolbox available used by organizations from both the public and private sectors. I also run "innovation" and "realizing the future" workshops.

Four Principles to building a Smart City

The diagram below proposes four principles that provide guidelines which, if applied, catalyze successful realization of the right Smart City blueprint for your locale to create a thriving, participative economy for all it's stakeholders.

Smart Cities are in the early stage of development but these principles have been successfully deployed in national and state-wide initiatives that I have the pleasure to serve.

There is no magic bullet but these principles act as a guide, equipping you to take leadership steps to build the right Smart City for your locale.

These principles can also be leveraged into other IoT markets such as Smart Agriculture. You may want to consider this. In fact this is the case. Some IoT projects concurrently bridge these principles across concurrent IoT markets (Smart City and Smart Ag) thus creating a comprehensive and holistic approach to territorial economic development.

The four "mindful" principles are strategic. Don't be shy to ask for expert support as you develop and apply these principles. Use individuals who help you get ahead, ones that are cutting edge, with a proven track record. If you get stuck, feel free to get in touch, I have a vast network of incredible global leaders knowledgeable in areas outlined in the principles above and you can leverage a Smart City toolbox that will help fast track progress.

Principle 1 - Activate a Smart City Visionary Group

Create a Smart City visionary group.

This is a group comprised of committed stakeholders from government, private sector, academia and citizens. These are the individuals who have real skin in the game. If an elected official or CEO of a company or Dean are really committed to co-developing a thriving future for a locale they will make time. I normally find this is the case. Diversity is useful as that brings breadth and depth in experience, imagination and thought. Might be useful including one or two external Smart City experts. Add a few recognized citizens too - mixture of demographics, age and target growth.

Smart Cities are very complex and in order to be successful they must be collaborative in nature. The purpose of this group is to "imagine" and it might prove useful to activate their "capacity to imagine and create" by utilizing a couple of cutting edge leadership techniques.

"Smart Cities are incredibly complex, creative leadership can develop the right vision"

The managerial principle of "mindfulness" is becoming more common within leadership empowering them to adapt their culture and economic remit in a continually changing society. This review in the Harvard Business Review ran a mindfulness training course with 57 business leaders which showed that skillsets were enhanced in three areas: resilience; the capacity for collaboration; and the ability to lead in complex conditions. These are useful for the group, which after all, must maximize these skillsets going forward into the future together.

Alternately you could take the group on a retreat away from the locale and into a delightful location in nature. Getting away from a locale you are trying to shape seems backward logic, but I find getting away from the hustle and bustle of a familiar locale and into the quietness of nature stimulates imagination and creativity like nothing else. Run Principle 2 on the retreat.

Hopefully you get the picture. Do whatever is acceptable to the group to get the old grey cells working! Smart Cities require vision and Einstein continually reminds us from beyond the grave - "Imagination makes the world go round". Equip this team to create something fantastic!.

Principle 2 - Develop your Smart City vision - mindfully

Ideally, Smart Cities are about every stakeholder thriving in partnership, whether that be the private sector, government, public services, citizens or academia. Sustainability both economically and environmentally as well as being entrepreneurial and innovation-centric are lofty goals we should aspire to. Education, investment and collaboration will be important stimulants. Coping with the anticipated challenges of population growth and movement requiring a resilient and adaptive framework for your locale to grow and thrive are likely to be important influencers. How important is Climate Change in your values? Have you included Resilience as a key theme?

Use the group from Principle 1 to develop a vision for your locale. How you do this is entirely your call and there are plenty of "visionary" techniques at your disposal. Try the following guidelines.

Firstly, there is no magic bullet, no magic technology or one solution that will fast track realization of a Smart City. Period. Full Stop. Let go of anything influencing how you can build your vision. If your group is brave then use techniques such as "Suspension". If the group is even braver, imagine the "moonshot" with every kind of resource available enabling you to build the ideal Smart City. If that was the case, what would your Smart City look like? In 5 years' time? In 20 years' time? Further into the future?

"Develop your vision mindfully, collectively integrating shared purpose and mission"

Secondly, creating a Smart City is not the for the faint-hearted, it can be a long journey of resilience and learning, patience, adaptability and risk and one that has to continually cater for the challenges of today and the forthcoming years. But I would encourage you to "dream the dream" and believe that this can be achieved. The reality kicks in later! if it was easy everyone would have done it by now.

Thirdly, the legacy, strengths, challenges, citizens, existing ICT infrastructure, private and public sectors plus academia of the locale will be the pillars upon which the Smart City can be built. Integrate these into the vision. Build upon them. Create a thriving vision.

Fourthly, consider how you would like your locale to change and develop? What brand do you want to build? What is the story and legacy you want to create for 10 or 30 years' time? In the future, what do want people to say about your locale? What will the private sector say? What will the elderly say? What will the middle-aged or the entrepreneurial say? This is an invitation to define the future with no limits.

Fifthly, what are the culture and the values of your locale, now and in the future?. How do you want your locale to participate in the state, surrounding territories, or nation or even internationally? Storyboard these ideas.

There may be additional questions the visionary group decide to reflect upon building a Smart City vision, but I hope that you "go for it" and create something fantastic!

This Smart City Master Plan from the City of St Albert might be a good starting point.

Principle 3 - Research and Document Locale Legacy

So, you have a Smart City vision. Now for the reality check and hard work practically working towards realizing that vision. Be mindful that this step may change parts of the Smart City vision and take it into a different direction. Be open to this. Keep everyone engaged.

Firstly, document in detail your locale's history and legacy. Document the strengths of your locale today. Document it's ICT infrastructure. Document the private sector and academia. Use these pillars to revisit the vision created in Principle 2 and work a roadmap towards realizing the Smart City. This may require a wider group of stakeholders to help modify the Smart City vision and commit to it's co-creation. Don't forget the citizens and entrepreneurs. Education is changing to be more entrepreneurial. Can this be integrated into your Smart City design?

Secondly, do your research on other Smart City initiatives across the world. Visit those with similar challenges, similar visions, similar demographics and economics. Much can be learned. Proven best practices, ideas, solutions can be integrated into a strategy to mitigate upfront risk when creating your Smart City.

"Take time to document, research and develop a roadmap to creating your Smart City"

For one client project, we spent nigh on 12 months creating a vision, looking at Smart City initiatives around the world, chatting with their stakeholders, learning from them and documenting best practices and methodologies relevant to the target locale. Then we talked to our target locale stakeholders and sought their input from which the Smart City project started.

Thirdly, if there is a Smart City alliance within your territory, join it. Get involved. Contribute, share, learn and leverage for your initiative. If there is not one, then create one. The Albertan Province forged a <u>Smart City Alliance</u>, Australia has a nationwide <u>IoT Alliance</u> and Denver South recently launched the <u>Colorado Smart City Alliance</u>.

You should now have a comprehensive understanding of the history and strengths of your locale with a realistic roadmap and plan working towards realizing your Smart City vision. You should have a list of challenges and values that your city wishes to address backed by a group of committed stakeholders across sectors.

There are multitude of ways to work this principle but the key is leveraging the strengths of your locale to build the vision for your Smart City.

Principle 4 - Create an Adaptive Innovation Ecosystem - Living Labs

Try not to rush building your Smart City and great advice from the "Hitch Hikers Guide to the Galaxy" - "Don't Panic!"

As I stated earlier, there is no magic bullet for creating a Smart City - which vary in population size to building topographies, legacies, ICT investment, governance, economies, citizen and culture, demographics and prejudice.

The good news is that some large tech companies recognize that providing an agile, inclusive, resilient and open ICT infrastructure enables participation from multitudes of tech companies within a locale to build-in their Smart City innovations and services. These tech giants understand sharing risk and that being collaborative with SMBs and Start-ups is key to success. Seems like a win-win scenario. Money is made collectively providing impactful services for citizens and other organizations within a locale.

"Public and Private sector partnership is key to success"

Some of these tech giants even provide resources for smaller companies to prove their model and market supporting development of their business to increase deployed IoT sensor volumes towards all of those billions of IoT sensors we keep hearing about. Chose the right big players. The forward thinking ones. The ones with a collaborative and purpose driven mindset and share some risk.

The private sector is under severe pressure to embrace IoT and find it's market position. Board and "C" suites are under immense pressure to build revenue generation in the IoT and Smart City business channels. However there are few quick wins and those on the table are mostly "siloed" or "hard coded" solutions such as Smart Street Lighting. The majority of cities start with PoCs to develop use cases, from which they build business cases followed by procurement of solutions. Chose partners that understand and are committed to this lengthy process.

If there is one principle I would recommend you to seriously consider, it is this one. Build a Living Labs. This is a sandbox for your Smart City. It is a testbed for continual innovation and building your Smart City pieces before they are deployed live into the City. It is for experimentation.

The Living Labs is an open and collaborative ecosystem for trialling Smart City strategies, business models, data strategies, technologies and solutions. It can be a powerful economic development play stimulating partnerships and collaboration locally and nationally. A Living Labs is great for showcasing Smart City technologies and solutions. It is also powerful for developing client relationships and revenue generation.

A Living Labs can be the heart of your Smart City technology cluster, as it attracts the key ingredients for creating your own "Rainforest". A powerful economic driving methodology.

*"A Living Labs is an enabler to
develop the right Smart City"*

A flexible, agile and resilient ICT infrastructure is going to underpin this Living Labs. A number of designs are being used by clients and I would be happy to work with you to develop the right one for you leveraging best practices and strategies being used across the world.

I started this article with two points. Hard coded Smart City solutions versus ones that are integrated into a City-Wide ecosystem of services. The Living Labs can be your transitional piece.

Guidelines for building your Living Labs

Here are some ideas that you may find useful building the right Living Labs for your Smart City.

- Chose a locale or a number of locales for your Living Labs. It can be virtual.
- Develop or license a methodology to discover challenges through to solution roll out. Use a data-driven use case methodology for solidifying business cases.
- Create a set of values that drive decision making. For example, energy efficiency might influence every decision thus driving the right procurements and choice of suppliers for a particular Smart City solution.
- Chose technology corporations that put skin in the game, share the same culture and values and are committed to success of your Smart City. Ones that have a presence in your locale.
- Bring together partnership across the public, private sectors and include the citizens. Build a collaborative ecosystem of partners and champions around the Living Labs.
- Create a citizen innovation labs, where residents can share ideas and co-develop solutions
- Create your own hacking team - which continually test the security of PoCs and live Smart City solutions.
- Have a roadmap towards cyber security.
- Have procurement processes that comply with FTC and DHS IoT and data security guidance.
- Have a flexible ecosystem that can easily ingest new technologies like LPWAN, LTE-M, 5G, Blockchain, Fog Computing and others. Kick the tires when it comes to technology marketing hype! Remember there is no magic bullet but some of these technologies can be enabling. You probably will need a mixture. Develop an agile ICT framework.
- Keep data ownership in the hands of the citizens and Smart City users. Explore secure data vaults, city wide data platforms and new monetization models. Local government can help with enabling policy.
- Look at cheap ways to install ICT equipment for PoCs in the Living Labs and within your Smart City locale. You might want to own the ICT infrastructure to generate new revenues or simply outsource to trusted providers. Or a mixture of the two.
- Have a plan to integrate and work towards Open Standards.
- Iterate and learn from everyone and everything.

Living Labs are starting to be built in Smart City and Smart Region initiatives across the world leveraging these guidelines. In my humble opinion, to date, the most advanced version of a Living Labs is IoT Impact Labs led by Chris Rezendes. I often take clients on a visit. Keep an eye on Colorado.

Remember that there is not a "one stop shop" or rigid solution to hard code your Living Labs. Transforming your locale is a unique story building a legacy that serves all of it's stakeholders and participants, both now and for generations to come.

Application of the above guidelines, adding your own, learning from others, and ensuring adaptability, will parametrize and shape the most effective version of a Living Labs to catalyze your locale in its transformation. Be imaginative, be practical, have fun!

In Conclusion

There is no doubt that Smart Cities are incredibly complex and no one knows the right answer because there isn't one. However, my hope is that application of these principles, which are serving clients effectively, should help steer Smart City initiatives towards a successful outcome.

Smart Cities are a turning point for humanity to create a new social fabric generating thriving and sustainable economies that tackle local and global challenges head on, the result of which, and my deepest hope, will be thriving and inclusive societies.

Be mindful and have fun building your Smart City! Future generations will be thankful.

"Smart Cities are purpose driven, serving generations of citizens of today and tomorrow"

About the author

Matthew James Bailey is recognized as one the leading pioneers of the Internet of Things (IoT).

As an IoT Maven he has successfully put the IoT into the agenda of G8 Prime Ministers, governments, global technology giants and many other private and public sector organizations. He has been personally responsible for catalyzing the IoT revolution in many international territories.

With global reach, Matthew helps Fortune 500, governments, economic agencies, cities, regions, investors in their transformation to become a thriving force in the IoT phenomenon.

Thank you for taking time to read this advisory whitepaper. I hope that you found it useful. If you need help in successfully building your Smart City or Smart Region, then it would be great to hear from you - matthew@matthewjamesbailey.com or look me up on LinkedIN.