



Manifeste

The Smart Cities We Need La Smart City que nous voulons

« Le vrai savoir-faire aujourd'hui ne réside pas tant dans les technologies elles-mêmes que dans la capacité à proposer des services avec leur mode d'emploi »

Michèle PAPPALARDO, VIVAPOLIS

« While it is already a challenge to integrate individual innovations, true systemic innovation still rarely happens, especially at district and city levels »

Brian KILKELLY, Climate KIC

« Civic leaders of metropolitan regions can sometimes feel like they are being tossed around in very rough economic seas, with little control of their futures »

Steve WRAY, Economy League of Greater Philadelphia

« Many emblematic illustrations of "smart cities" have turned into a collage of samples of smart technologies, where citizens have been replaced by users and consumers »

Alexey KOZMIN, Siberian Urban Lab / TSU Center for Urban Research

« Des approches agiles, résilientes ou encore frugales associées aux nouvelles technologies montrent que celles-ci peuvent constituer un outil innovant pour résoudre des problèmes urbains »

François-Laurent TOUZAIN et Nazaire DIATTA, Urbanistes du Monde - École des Affaires Urbaines de Sciences Po

« The current Tech vertigo is being fueled by a global competition to invest in start-ups. But smart cities are not just about investing. They are about involving »

Dr Lan-Phuong PHAN, Renaissance Urbaine



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La Smart City que nous voulons. À quoi sert ce manifeste ?

**Nicolas BUCHOUD, Co-fondateur et dirigeant
de Renaissance Urbaine, Président du think tank
Cercle Grand Paris de l'Investissement Durable**



Nous vivons dans un monde nouveau. En dix ans depuis 2006, la population urbaine mondiale est passée de 3 milliards à près de 4 milliards d'habitants. Sur la même période, le nombre d'internautes est passé de 1,2 milliard à plus de 3,4 milliards. Plus de 2 milliards de personnes utilisent les réseaux sociaux. Nous sommes immergés dans un optimisme technologique paradoxal : les espérances de l'économie digitale sont bien souvent contredites par les inquiétudes sur notre capacité collective ou individuelle à contrôler notre avenir.

Voici une dizaine d'années, une poignée d'ingénieurs et de grandes entreprises se sont saisis des technologies digitales comme fer-de-lance d'une réponse interconnectée aux défis globalisés. La smart city, joyau marketing d'inspiration pragmatique, était née. Dix ans plus tard, alors que nombre de sociétés, d'experts, de gouvernements et de collectivités ont fait de la smart city une priorité stratégique, le paysage a radicalement changé. La smart city recouvre des réalités bien différentes, impossibles à ranger sous une définition unique.

Nous vivons dans un monde instable, où les ruptures économiques, sociales et environnementales se multiplient. Nous avons besoin d'approches plus intelligentes et plus agiles du management et du développement des villes pour tirer le meilleur parti des opportunités de changement qui s'offrent à nous. C'est l'objet de ce Manifeste.

Ce Manifeste est votre Manifeste. Nous avons identifié 10 urgences et 10 clés pour agir, pour innover plus efficacement, pour financer et entrer de plain-pied dans la ville durable et connectée de demain.

Pour nous accompagner dans cette démarche originale, nous nous sommes appuyés sur les résultats des précédentes éditions d'Innovative City. Sur les travaux, rapports et forums du think tank collaboratif Cercle Grand Paris de l'Investissement Durable/Grand Paris Alliance qui analyse les mutations des métropoles. Sur les baromètres et les observatoires les plus récents dans le domaine de la transformation digitale des villes, et présentés lors de la 5^e édition d'Innovative City Delivering Urban Innovation. Sur la Stratégie Smart City de la Métropole de Nice Côte d'Azur, pionnière en la matière et sur la Charte Smart Grid Côte d'Azur. Sur le Manifeste BIM World Conduire la transformation digitale...

Nous avons aussi convié les leaders d'une vingtaine d'organisations à travers le monde à partager leur expérience. Ils ont répondu présents et vous trouverez leurs témoignages inédits dans les pages qui suivent.

Ce n'est qu'un début.

Nous avons rendez-vous à Washington dès le mois de septembre 2016 à l'occasion de la 2^e édition de la Smart Cities Week, pour une restitution du présent Manifeste. Ensemble, il nous appartient de faire vivre et prospérer un esprit de dialogue, d'intelligence des enjeux et d'interopérabilité des solutions technologiques. C'est aussi cela, la smart city de demain.

Après la COP21 et son agenda des solutions, à l'heure du sommet Habitat III, ce Manifeste est une plate-forme de propositions et une plate-forme pour l'action. C'est une invitation à créer les villes que nous voulons.



Achieving the Smart Cities We Need. What This Manifesto is Meant For

Nicolas BUCHOUD, Founding principal, Renaissance Urbaine, President of the Grand Paris Alliance



We live in a new era. In the last ten years, the world urban population has grown from 3 billion to 4 billion inhabitants. Meanwhile, the number of Internet users has grown up from 1,2 billion to 3,4 billion users. The world counts over 2 billion users of digital social networks. We are literally surrounded by technologies but in a paradoxical way. The more new solutions and innovations come to the market, the more we feel our future might no longer be in our own hands at all.

The concept of smart cities has come up 10 years ago as a pragmatic attempt from corporate IT to address rising urbanization challenges and create new growth opportunities. It was a real clever move and a smart marketing tool, based upon empirical assumptions. It has met a global success, engulfing companies, experts or governments into the development of smart cities, districts and projects.

Meanwhile, the disruptions caused by the digital age in cities have fuelled tech-optimism and tech-anxiety altogether, making it urgent to move beyond marketing, to assess how smart urbanization can really help drive the change and how to find more adequate financial leverage.

Together, we call upon taking smarter action. We have identified 10 priorities and issued 10 proposals to draw the lines of a better, of a smarter urban agenda.

This manifesto is yours. We have included the latest sources of information available. Issued from the consolidated results of the previous editions of Innovative City. Issued from the original reports and annual forums of the metropolitan think-tank Grand Paris Alliance. Issued from the latest observatories and benchmarks on digital transformations and cities, showcased at Innovative City 5th edition Delivering urban Innovation, analyzing several hundred of projects in several dozens of cities. Issued from the pioneering smart cities and smart grid initiatives metropolitan area and greater region of Nice. This manifesto also echoes the successful BIM World Manifesto on managing digital transformations in the built environments.

We have convened leaders from over 20 think tanks, labs, and professional networks from across Europe, BRICS, the US, Japan and Africa, to share their insights and comments and illustrate the Manifesto.

It is only the beginning of a cooperative learning process, towards new sources of inspiration and more efficient action. In order to promote a smarter dialogue and a better connectivity between existing and future technologies, we will carry out the Manifesto and Innovative City results to Washington DC's 2nd Smart City Week in September 2016.

This brochure is as a stepping-stone and a guide to navigate the path towards Habitat III and beyond, towards the smart cities we need. It is up to you to join the momentum.



Les Smart Cities que nous voulons : 10 constats et 10 clés pour agir

1. « My » Smart City

Situation : Comment combler l'écart qui se creuse entre les grands investissements urbains, les projets à grande échelle, et les citoyens qui ont l'impression de les subir et non d'en bénéficier ?

Action : Évaluer comment la gestion des villes assistée par les technologies numériques peut permettre d'améliorer l'engagement citoyen, renforcer la confiance entre autorités/administrations locales et citoyens, et accompagner les plus modestes.

2. Passer de projets-pilotes à des projets systémiques

Situation : Comment faire face aux conditions de vie plus précaires auxquelles nous exposent, dans un futur proche, les transformations démographiques et urbaines, ainsi que les risques climatiques toujours plus importants ?

Action : Identifier et lever les blocages à l'innovation pour passer de projets-pilotes à l'échelle locale à des transformations systémiques aux échelles métropolitaines et régionales, à l'image des mutations déjà à l'œuvre dans le domaine de l'énergie.

3. Au-delà du marketing, que sait-on des smart cities ?

Situation : Les études récentes ont montré que les connaissances scientifiques solides au sujet de la smart city sont insuffisantes.

Action : Créer et connecter des instituts indépendants de formation à la smart city, approfondir l'évaluation des living-labs (expérimentations in situ) pour nourrir l'élaboration de normes et de standards pour les smart cities à l'échelle nationale et à l'échelle internationale.

4. La convergence des infrastructures et des services

Situation : La gestion urbaine assistée par les technologies numériques cherche à rationaliser les risques et à optimiser l'utilisation des ressources. Or dans la pratique, les flux de l'économie régulée et de l'économie informelle se mêlent de manière de plus en plus complexe.

Action : Accélérer la convergence entre les infrastructures intelligentes (énergie, transports, bâtiment et construction, eau, déchets, IT...) et les services (éducation, santé...), dans une logique de développement du capital humain.

5. Créer des villes plus abordables

Situation : À l'horizon 2050, 3 milliards de nouveaux citoyens vivront dans des zones urbaines. Une grande majorité d'entre eux vivront dans des pays où les revenus moyens sont aujourd'hui inférieurs à 2000 dollars par an et par personne.

Action : Mobiliser les fonds publics et les moyens privés pour un urbanisme de qualité et abordable, dans les pays émergents comme dans les économies matures.

6. Répondre aux défis de l'interopérabilité des bases de données

Situation : Les cadres de référence des smart cities sont nombreux et différent selon les régions (Chine, Inde, Japon, États-Unis, Europe...). Deux grandes démarches de normalisation concurrentes sont à l'œuvre au sein de l'ISO (International Organization for Standardization) et de l'IEC (International Electrotechnical Commission).

Action : Penser l'interopérabilité des bases de données et des systèmes de smart cities au lieu de chercher à imposer un modèle au détriment d'autres et inclure cette démarche comme une priorité dans les accords et les traités commerciaux.

7. Rapprocher le Nord et le Sud

Situation : On estime le potentiel du marché des technologies liées à la smart city à 1,5 trillion de dollars (énergies, transports, santé, construction, infrastructures, gouvernance...) pour les deux à trois prochaines décennies.

Action : Soutenir des approches et des projets de smart city dans les pays du sud en soutenant les innovations urbaines co-développées par l'Asie et l'Afrique et en analysant les retombées positives pour répondre aux besoins de renouvellement urbain et social dans les pays de l'OCDE.

8. Cybersécurité et risques lowtech

Situation : On constate un déséquilibre croissant entre les villes et au sein des villes et des métropoles, entre ceux qui financent et déploient des solutions high-tech et ceux qui doivent s'accommoder d'un mode de vie frugal.

Action : Équilibrer les politiques d'innovation par une évaluation sérieuse de leur adhésion au sein de la société civile afin d'entrer dans une ère numérique bénéfique pour tous.

9. Créer des référentiels d'analyse des risques qui encouragent l'innovation

Situation : La réponse aux grands défis mondiaux passera par les villes et pas seulement par les États. Aux côtés de grands groupes pourvoyeurs d'infrastructures numériques et d'applications, les villes constituent des écosystèmes privilégiés pour nourrir et partager l'innovation.

Action : Faire évoluer les modèles économiques et particulièrement les outils et systèmes d'analyse des risques pour mieux financer les systèmes d'innovation collaboratifs et participatifs et mieux les promouvoir dans le cadre des émissions d'obligations vertes (green bonds).

10. Développer des qualifications plus intelligentes

Situation : Le succès durable de la mise en œuvre de la smart city repose sur une meilleure compréhension de nouveaux cycles de vie des services et de l'industrie et des qualifications professionnelles adaptées.

Action : Il faut créer et généraliser les instruments de formation initiale et continue aux enjeux et aux technologies de la smart city.

Achieving the Smart Cities We Need.

10 Ways to Take Action Now

1. « My » Smart City

Where we are standing now: bridging the gap between urban investments (large scale projects...) and citizens is a growing concern in cities.

The action we need: it is time for us to assess how ICT-assisted city management can improve citizenship engagement, reinforce trust between governments and citizens, support social care of the ones in needs.

2. Scaling up the vision for scaling up action

Where we are standing now: in the near future, it is expected that demographic and climate change will bring out significant urban challenges and opportunities. Technologies alone cannot account for the level of systemic changes we need.

The action we need: we should urgently learn how to deploy smart city policies and practical projects from neighbourhood scale to metropolitan-regional scale. Current transformations in the energy sector offer many relevant practical illustrations.

3. Time to privilege knowledge over marketing

Where we are standing now: several recent studies have shown that there is a lack of consolidated scientific knowledge about smart cities.

The action we need: let's establish neutral smart city higher education centres, support living-labs in campuses, connect advanced experiences with the establishment of smart city norms and standards at national and international levels.

4. Encouraging better convergence between infrastructures and services

Where we are standing now: smart city is usually about developing ICT-assisted city management and infrastructures to improve sustainability and liveability. Yet, the boundaries between the formal and the informal economy and sectors are blurred.

The action we need: we need to improve the connection between hard infrastructures (energy, transportation, building and construction, water and waste, IT...) and soft infrastructures (education, health...) and support the long-term development of human capital.

5. Caring more about the affordability of urban development

Where we are standing now: there will be 3 billion new urban dwellers in urban areas by 2050. A vast majority of them will live in countries where the annual average revenue is less than 2000 USD/capita/year.

The action we need: it is our goal to prioritise the affordability of good urbanisation, be it in emerging or developed economic contexts, and mobilise public funding and private equity accordingly.

6. Raising awareness about interoperability of databases

Where we are standing now: there are many different perspectives on smart cities now competing globally (in China, India, the US, Japan, Europe...) but the greater competition is coming up now, between ISO (the International organization for Standardization) and IEC (the International Electrotechnical Commission).

The action we need: it is our duty to build interconnection and interoperability of smart city systems and databases, instead of imposing one model over the others. Though this will be complex, finding common grounds between ISO and IEC is a priority in future global trade agreements and negotiations.

7. Connecting the South and the North

Where we are standing now: the estimated market potential of smart city technologies is about 1,5 trillion USD globally (energy, transportation, healthcare, building, infrastructure, governance...).

The action we need: it is our responsibility to support smart city development from the global South, support Asia-Africa joint urban innovation and creativity and connect the results with urban and social regeneration needs in OECD countries.

8. Hightech, lowtech and cybersecurity: a new balance

Where we are standing now: there is a growing imbalance between and in cities, between those who finance and deploy high tech solutions and those who rely on low-tech living.

The action we need: we urge all parties to balance innovations with a proper evaluation of their impacts in terms of cyber security and to ensure that innovation can be debated and discussed with the civil society to create a prosperous digital age.

9. Renewing risk assessment systems

Where we are standing now: it is widely acknowledged that global challenges will be dealt with at the local level. Yet, as we collectively move further into the digital era, cities, which are hotbeds for innovation and creativity, cannot rely only on the current global champions providing digital infrastructures and apps.

The action we need: it is urgent to change business and risk-assessment models to promote community management systems and more efficient and scalable collaborative processes and include those priorities in green bonds frameworks.

10. Smarter skills. Even the smartest kids and professionals need an education!

Where we are standing now: the successful implementation of smart city solutions depends on a better understanding of new industry and services lifecycles and improved professional skills at all levels of proficiency.

The action we need: we can make a difference and upgrade the education of students and professionals to develop relevant and adaptable sets of smart city skills, including new competences in transition thinking.

Ville intelligente, ville durable. Et maintenant ?

Michèle PAPPALARDO, Animatrice du réseau VIVAPOLIS



Depuis une dizaine d'années, les technologies numériques ont profondément fait évoluer la manière de concevoir la ville et les services urbains. Elles ont permis de faire apparaître de nouvelles solutions ou de démultiplier l'efficacité de solutions existantes pour répondre aux besoins des villes et de leurs habitants. On a toutefois eu tendance à privilégier l'outil et la technologie plutôt que le résultat à obtenir.

« Le vrai savoir-faire aujourd'hui ne réside pas tant dans les technologies elles-mêmes que dans la capacité à proposer des services avec leur mode d'emploi »

L'objectif n'est pas d'avoir une « ville intelligente », qui utilise toutes les ressources du numérique, mais de construire et de faire vivre une ville accueillante pour tous, où il fait bon vivre et travailler, c'est-à-dire une ville durable.

Or la ville intelligente n'est pas forcément durable, parce que l'on peut très mal utiliser les outils numériques et les bases de données, notamment en termes de libertés publiques ; en revanche, aujourd'hui, la ville durable doit être intelligente, pour trois raisons principales :

- les technologies numériques peuvent lui permettre d'offrir à ses habitants de meilleures conditions de vie grâce à des services urbains plus efficaces, notamment en matière de mobilité, d'informations pour la vie quotidienne, la sécurité publique, etc. ;
- les technologies numériques sont des outils efficaces pour rendre la ville plus « verte » et plus sobre en ressources naturelles, en évitant les gaspillages et en réduisant les consommations d'eau ou d'énergie, en facilitant l'économie circulaire et, par conséquent en optimisant les infrastructures ;
- les technologies numériques offrent de nouvelles possibilités pour développer la participation des citoyens à la gouvernance et au fonctionnement de leur ville, et donc à leur implication nécessaire pour la réussite du projet urbain qui leur est destiné.

Pour atteindre les objectifs d'attractivité, de compétitivité et de démocratie participative à travers les technologies numériques, il faut bien les choisir et les mettre en œuvre, qu'elles soient faciles à utiliser par tous les habitants, qu'elles rendent la vie plus agréable, qu'elles ne soient pas agressives pour la vie privée de chacun.

Le vrai savoir-faire aujourd'hui ne réside pas tant dans les technologies elles-mêmes que dans la capacité à proposer des services avec leur mode d'emploi, le plus simple possible, répondant de manière adaptée aux vrais besoins de nos villes, grandes ou petites, nouvelles ou anciennes, riches ou pauvres.

À l'heure d'Habitat III et des Objectifs mondiaux du développement durable, c'est tout l'intérêt du présent manifeste, initiative inédite et qui mérite d'être poursuivie et développée.

Les points de vue originaux rassemblés ici reflètent l'utilité de mieux croiser les expériences et les points de vue pour que tous les acteurs de la ville durable, publics et privés, entrepreneuriaux et issus de la société civile, se dotent des savoir-faire et des compétences indispensables à la transformation d'économie digitale en opportunités pour la ville durable.



Gearing up a new generation of smart cities



Prof. Arjen VAN TIMMEREN, TU Delft ; Scientific Director, Amsterdam Institute for Advanced Metropolitan Solutions

Designing advanced technologies and infrastructures to support urban life is not enough

Today, we are aware that the status quo is untenable and have the technological capacity met the basic needs of all human beings, yet our technological and economic systems are geared toward risk aversion and profit maximization. We must recognize that technology alone will not save us.

The 'smart' city is an ubi(k)quitous city where automation and algorithmic-powered software will make machines smarter while we get stupider. The smart city is not radical innovative per se; it's a corollary to older ideas. It is no doubt a valorous attempt to make sense of the harrowing levels of complexity and ambiguity that define the human condition, but in the end it is a radically simplified and conservative futurism.

True societal transformation can only occur once we realize that innovation is not a matter of rearranging the components (buildings, infrastructures and the way they are managed) of a city, or thinking that we already have all the puzzle pieces on the table. We need to achieve and support the growth of intelligent citizens. Instead of simplifying complexity and using algorithmic truncation to minimize risk and maintain the status quo, we must learn to embrace risk and complexity in all its obscurity and splendor.

Designing advanced technologies and infrastructures to support urban life is not enough. We need equally sophisticated and cogent narratives that immunize the mind from the cynicism and nihilism that is pervasive in today's culture and changes the way we think about our relationship with one another and the planet itself—towards possible futures where technological innovation, tempered by ethics and reason, meets the needs of both man and nature and not the other way around.

The alternative path, based on symbiosis and reciprocity, is a biologically oriented, resource-based society that, with help of ICT, revitalizes and empowers local economies, encourages polycentric development of urban metabolisms and vindicates the sanctity of city and country, whose relationship has defined our civilization thus far.

The menagerie of policies that define modern society must look beyond connectivity based solely on technology, transportation and trade toward their surrounding hinterlands, their rural communities and the bounds of the natural environment, promoting a dynamic equilibrium that will transform our cities to reciprocities.

The task of transitioning to a post-scarcity society that maintains some semblance of normalcy will require an interdisciplinary approach that includes our finest engineers, physicists, doctors, designers, community organizers, artists, farmers, teachers and above all, individuals and communities.

Another future for big data

We are part of a growing number of scientists, activists, politicians and entrepreneurs with divergent ideologies trying to comprehend and tackle the most complex and difficult problems our species have ever faced: hyper urbanization, economic inequality, rampant consumption of nonrenewable resources, climate change and the degradation of natural environment.

The key thing to realize is that nothing happens over night. Retrofitting our cities with smart sensors, installing new energy systems and carbon sequestration technology, or testing new strains of genetically modified crops that can save millions of lives will take time and—most dauntingly—money, and a lot of it. But it will also imply that we need to organize and plan our cities in a different way. Crossing borders of specialisms, but also physical and even legal borders.

The revolutions of big data, empowerment of individuals and self-organized communities will foster the urban environments of the future. Data tied to geography becomes important information, giving municipalities greater options for faster, more efficient decision-making.

While big data allows for better identification of outlier values and a finer stratification of data, the flood of information raises issues about the quality of the data and who has access to it.

Big data will not only make buildings and urban areas smarter, but as a second order effect, buildings or communities will become active participants in for instance energy markets.

As regulatory policies change, more building owners will find it financially feasible to participate in energy markets on their own terms (smaller-, prosumer, so-called kilowatt), allowing them to upload electricity generated or store it onsite. As buildings or areas operate as 'prosumers' in energy markets it is not that obvious that energy produced will be renewably sourced, and whether the energy produced is sustainable or not, they can disrupt existing business models and the systems in place that are designed for electricity flow in one direction - from centralized sources.

« Instead of using algorithmic truncation to minimize risk and maintain the status quo, we must learn to embrace risk and complexity in all its obscurity and splendor »

Après l'euphorie de la smart city : 4 clés pour l'innovation urbaine

Christian LEVY, Inspecteur général, Commissariat Général à l'Environnement et au Développement Durable (CGEDD)



Une approche plus pragmatique de la smart city

Nous sortons des premières euphories de la ville de demain qui n'offraient que deux alternatives : une ville « big bother » avec un pilotage prédictif, centralisé, automatisé sans interventions humaines sur les principales fonctions urbaines ou la perspective d'une succession d'« écoquartiers », nouveaux phalanstères sociaux technologiques qui par effet cumulatif devraient entraîner la ville vers un autre modèle urbain.

Nous pouvons entrer dans une phase de maturité de l'innovation urbaine en faisant preuve de pragmatisme, en nous donnant comme objectif d'innover et d'optimiser les fonctionnalités urbaines de la ville existante à toutes les échelles urbaines en situation organisationnelle et économique réelle.

La ville alliée aux technologies numériques, la smart city, est un creuset favorable pour une multitude d'innovations, à condition d'articuler des solutions faiblement technologiques, mais à forte implication comportementale des citoyens et des projets à forte intensité technologique et sociétale. Elle deviendra ainsi intelligente au fur et à mesure que les citoyens et les usagers en deviendront les acteurs conscients et volontaires.

Quatre conditions pour une innovation urbaine ambitieuse et effective

1. Les innovations doivent traiter simultanément les aspects technologiques, organisationnels, de gouvernance et de modèles économiques. C'est une difficulté et en même temps une chance, à certaines conditions. Ainsi est-il inutile de développer des réponses technologiques sophistiquées à des problèmes mal identifiés.
2. La pérennité et l'animation d'un écosystème d'innovation (grands concessionnaires, PME et ETI, start-up, chercheurs, politiques, citoyens...) demandent de disposer de structures d'animation et de soutien dans la durée et d'un cadre qui favorise la collaboration entre donneurs d'ordres locaux et secteur privé. Cela suppose aussi l'existence d'ingénieries de projet publiques et privées souples et réactives.

3. Le monde urbain offre la possibilité d'impliquer les usagers comme acteurs de l'innovation. Cela suppose l'instauration de liens de confiance sur la sécurité des systèmes, la protection de la vie privée, la maîtrise des risques intrusifs, la transparence dans l'utilisation des données et des systèmes de gouvernance et la pérennité des services offerts.
4. La prise en compte des changements dans les organisations (nouvelles organisations locales et nationales, formation aux nouveaux métiers, nouvelles pratiques d'usage) doit être anticipée.

Les services urbains, grand gisement d'innovation

L'optimisation des réseaux existants

De nombreuses métropoles et villes moyennes conduisent des projets innovants concernant les services urbains de base dans les domaines de la mobilité, du cycle de l'eau, des déchets, de l'énergie, de l'éclairage, de distribution de froid ou de chaud, des infrastructures de communication.

Les services urbains constituent un réservoir d'innovation majeur, à condition que les innovations soient développées au plus près du réel et de l'ensemble de la chaîne de production, gestion, distribution et consommation des services.

Les innovations dans les domaines de l'énergie et des déplacements apparaissent comme le plus matures et donnent lieu à l'émergence de nouveaux opérateurs.

- Dans le domaine énergétique elles permettent de tester en vraie grandeur en testant les interactions entre technologie et environnement social et économique, le plus souvent dans des quartiers souvent neufs, comme à travers les démonstrateurs de smart grid (Nice grid, projet Greenlys à Grenoble, Issy Grid)
- Le secteur de la mobilité connaît de son côté de nombreuses réalisations lancées par les collectivités (par ex, Optimod à Lyon), des start-up, ou encore des joint-ventures entre grands groupes et start-ups (Cityway à Montpellier) C'est un domaine stratégique qui génère des bouleversements dans la répartition de la valeur entre les opérateurs de mobilité.

L'approche intégrée

L'approche dite intégrée recouvre des démarches de nature différente. Elle génère des investissements forts en termes de recherche/expérimentation, d'innovations technologiques, de changements réglementaires ou assurantiels notamment. Cet axe d'innovation est celui qui donne lieu au repositionnement de nombreux acteurs économiques existants.

Un certain nombre d'innovations sont mises en œuvre à l'occasion d'opérations d'urbanisme (écoquartier) qui redéfinissent les liens entre logements et espaces publics.

Un fort potentiel existe dans de nombreux secteurs notamment, des déchets solides ou liquides avec la valorisation énergétique (bio gaz par exemple) ou du cycle de l'eau (récupération de chaleur fatale, optimisation par le multi-usage), utilisation de matériaux recyclés, « routes intelligentes », etc. La sécurité de l'approvisionnement (en quantité, en qualité) est un des enjeux majeurs de la valorisation de ces flux croisés.

D'autres innovations s'appuient sur de nouveaux services pour contribuer au même objectif d'optimisation des infrastructures avec par exemple la mise en place de services nouveaux de livraison pour le « dernier kilomètre ».

Enfin, des sociétés développent des équipements de mutualisation de la collecte des données (société Sigfox par exemple).

Maquettes numériques et bases de données

La maquette numérique interactive urbaine (CIM) se prête à de multiples avancées en matière de conception et de gestion urbaine et offre désormais plusieurs expérimentations grandeur nature qui permettent de mesurer son potentiel très important d'innovation et d'offre de nouveaux services.

Les réalisations de Rennes ou de Singapour donnent un aperçu des potentialités de cette démarche qui autour d'une modélisation progressive de l'ensemble des constructions et réseaux de la ville constituée, crée un écosystème de services nouveaux par une multitude d'opérateurs.

Les bases de données doivent permettre d'améliorer la performance de services existants, de créer de nouveaux services et de réaliser des économies d'échelle. La répartition de la valeur ajoutée (espérée ou constatée) donne lieu à de fortes tensions entre fournisseurs de données, autorités publiques et start-up propriétaires/développeurs d'application.

À chaque étape du processus, de la collecte à l'agrégation au traitement des données, acteurs technologiques et économiques se disputent le bénéfice de la valeur ajoutée en proposant des services et des technologies nouvelles.

Les grands groupes des services urbains, de l'aménagement ou du numérique deviennent des propriétaires incontournables de données alors que de leur côté des start-up ont plus d'agilité et de capacités d'innovations pour développer de nouveaux services que les propriétaires de données n'exploitent souvent trop peu ou mal.

Certains domaines se prêtent bien au croisement d'informations, des données et à un pilotage centralisé. C'est le cas de la gestion des situations d'urgence ou de la gestion du cycle de l'eau ou de sujets transversaux liés à la qualité de vie (pollutions de l'air ou pollutions sonores). L'information multiservice des citoyens est un domaine propice au croisement des données avec de nombreuses expériences de bases de données.

« Articuler des solutions faiblement technologiques, mais à forte implication comportementale des citoyens et des projets à forte intensité technologique et sociétale »



La smart city, quel numéro de téléphone ?

On ne compte plus les définitions de ce qu'est ou non une « smart city ». Les réseaux économiques et professionnels, les prises de position « pour » ou « contre » la « smart city », sont tout aussi nombreux et divers. Les priorités ne sont pas non plus les mêmes selon que l'on évoque la transformation de marchés matures et de villes constituées ou de vastes programmes de construction et de modernisation des infrastructures à l'image de l'initiative 100 Smart Cities lancées en 2014 par le gouvernement indien.

La production abondante de référentiels, guides, méthodes, indicateurs et guides de bonnes pratiques autour des questions liées à la « smart city » ne doit toutefois pas masquer la mobilisation croissante de la communauté internationale pour déterminer des cadres communs, des normes et des indicateurs permettant de mesurer les progrès et de faciliter les échanges d'expérience. C'est aussi un enjeu économique et industriel de premier ordre, qui dessine progressivement les contours des futurs marchés de produits et de services au croisement du développement urbain et des technologies digitales.

Nicolas BUCHOUD



À l'échelle internationale, il existe deux grandes enceintes de discussion et de négociation. Celle de l'ISO et celle de l'IEC (International Electrotechnical Commission). C'est en 2012 que l'ISO (Organisation internationale de normalisation) a décidé de créer le premier comité de normalisation internationale dédié à une approche territoriale du développement durable. De 11 pays membres participants (et 16 pays membres observateurs) en 2012, le comité technique est passé aujourd'hui à 22 pays participants (et 17 pays observateurs). Plus récents, les travaux de l'IEC sont portés principalement par les États-Unis et de grands groupes multinationaux. Au cœur des enjeux entre ISO et IEC figurent les questions de compatibilité et d'interopérabilité entre les bases de données et la définition des référentiels (techniques, financiers) liés à l'émission d'obligations vertes (green bonds).

Deux normes ISO et quatre référentiels ISO existent ou sont en cours de développement. Ils constituent un excellent panorama des questions liées au développement des smart cities et montrent qu'une lecture convergente des enjeux liés à la « smart city » est un phénomène très nouveau. Ils concernent les champs suivants :

- Norme relative à l'harmonisation des indicateurs de performance des services urbains et de la qualité de vie dans les villes¹ (2014).
- Norme relative au « développement durable dans les communautés (2016)².
- Référentiel relatif au recensement et analyse des indicateurs existants sur le développement durable et la résilience de villes³.
- Référentiel pour la définition, l'identification, l'optimisation et l'harmonisation de méthodes de mesure de la performance des infrastructures urbaines intelligentes (énergie, eau, transports, déchets et TIC)⁴.
- Deux référentiels sur les infrastructures dites « intelligentes » que les collectivités développent et/ou utilisent à travers le monde plus particulièrement sur leurs aspects techniques et technologiques⁵.

Christian LEVY, Inspecteur général, Commissariat Général à l'Environnement et au Développement Durable (CGEDD)

¹ Norme ISO 37120 (2014, en cours de révision à l'initiative de la France)

² Norme ISO 37101 (2016) Un guide d'application de cette norme devrait être développé afin de faciliter sa mise en œuvre. Une proposition pilotée par la France associant la Chine et l'Allemagne est en cours et sera développée en 2016/2017

³ Référentiel ISO TR 37121

⁴ Référentiel ISO TS 37151 (2015)

⁵ Référentiel ISO TR 37150 et ISO TR 37152

Building an integrated innovation system for the transition to a low carbon economy



Brian KILKELLY, Urban Transitions Lead, EIT-Climate KIC

Europe is an urban Continent. What happens in its cities is crucial to the success of the EU's climate change agenda. Across Europe, more than 4,000 cities – large and small – have signed up to the Covenant of Mayors with the goal of reaching and exceeding the EU's 2020 targets. Hundreds of imaginative and innovative low-carbon projects are underway. Yet currently the general picture is that these projects still remain isolated initiatives, lacking in strategic coherence and with no agreed perspective on where to focus investment and how to scale them up.

Building upon the positive developments from the COP21 'Paris Accord' of a step change in city level action to support national emission reduction commitments, and recognizing the unique value of the Climate KIC community, we believe our times to be an unprecedented opportunity to deliver climate mitigation and adaptation benefit.

However, cities are very complex. And so is innovation, at component, building, district and even broader scales. A new more systemic approach to innovation including transportation and mobility, the built environment, energy, water, or waste management issues is necessary. We believe innovation within each system needs to diffuse faster. More crucially, ambitious integrated innovation across these systems is yet to emerge on a large scale. This is required if we are to succeed in making significant urban emission reductions and increased city resilience.

While it is already a challenge to integrate individual innovations, true systemic innovation still rarely happens, especially at district and city levels. This can be because all relevant actors do not necessarily share problems and solutions need to be provided by many companies and organizations which can lack an effective coordinating driver with long term interest. A critical component of successful urban innovation strategies is to nurture a more efficient dialogue between all parties.

City authorities and increasingly corporate actors acknowledge that socio5technical systems and citizen behavior are at the core of fundamental and accepted transitions and thus need to be strongly incorporated in any innovation endeavor. It is also perceived that there often is a lack of actors that can neutrally coordinate change in cities at systemic level.

While Europe is the source of our ideas, talent, and focus, we recognize that there is an enormous demand for urban innovation internationally and that developing economies are where we will achieve impact at scale.

In that context, the Smart Sustainable Districts (SSD) program has been launched in order to connect highly ambitious districts across Europe, identify solutions to their sustainability and climate change challenges and nurture an in-depth approach to systemic urban change in European cities.

- London Queen Elizabeth Park
- Rotterdam Stadshavens Harbour
- Utrecht Central Station area
- Paris Dock de Saint-Ouen
- Gothenburg Johanneberg
- Copenhagen Nordhavn
- Berlin Moabit West

The SSD program is not about bringing funding or subsidies to a select number of projects, it is about working with those projects, providing them with complementary resources, so as to upgrade knowledge sharing, build on the lessons learned at a broader scale and achieve higher impact innovation.

Key drivers of impact for Smart Sustainable Districts:

- Integration
- Factor 4 thinking
- Replicability
- Scalability
- Measurement via key performance indicators

« While it is already a challenge to integrate individual innovations, true systemic innovation still rarely happens, especially at district and city levels »

Experimental and systemic change

Michel SALEM SERMANET, Chief Executive Officer, ITE Efficacity



Energy efficiency is high on the European innovation agenda H2020. Improving energy efficiency by 20% in 2020 is one of the goals of the European Union's 20-20-20 plan. However, a more holistic approach to cities energy efficiency is required. Presently, a variety of individual strategies and approaches by different stakeholders tackling separate key aspects hinders strategic energy efficiency planning.

For this reason, Efficacity, an interdisciplinary advanced public-private innovation institute located in the Descartes cluster of Paris Marne-la-Vallée and launched as part of the 2nd French national plan for strategic investments, has created a systemic and integrative approach by connecting scientific excellence and innovative enterprises with proactive cities. We believe future large scale and eco-systemic changes will come from better connections between public, academic, and private R&D and well-managed interdisciplinary processes. We gather a workforce of about 100 researchers in the field of urban energy systems and energy efficiency.

Our research works focus on the following:

- Optimizing key components of the urban system at sub-district scale, including major urban hubs such as metro stations
- Optimizing energy systems at district scale, taking into consideration energy recovery, decentralized energy generation, storage and smart networks
- Developing new methods and tools to measure the environmental, social and economic impacts of a project at the urban scale, as well as innovative business models to boost investments that contribute to urban energy transition

Two specific examples of the potential of these new approaches are given below.

Metro stations are a good example of the need for a systemic approach. In recent years, great efforts have been made to reduce the energy consumption of rolling stock. Less attention has been paid to metro stations energy efficiency, which represents a third of the total metro system bill in Paris (Grand Paris Express investment project).

Metro stations are not only heavy energy consumers but also sources of considerable amounts of partly under-exploited energy, such as energy recovery from the train braking systems, waste heat from equipment and plant rooms, or renewable energy such as geothermal. Therefore, Efficacity is conducting research and field experimentations to recycle these resources, not only to optimize the energy efficiency of stations but also for the benefit of the surrounding districts which can be connected to the stations.

Another example is energy efficiency at district scale. Efficacity has developed a holistic approach aimed at matching the present and future energy needs of a given territory with its energy sources including both renewable energy (solar, geothermal, wind, biomass, etc.) and waste heat recovery (waste incineration plants, waste water, data centers, hospitals, etc.). This approach includes three key stages: a robust energy diagnosis to identify all energy sources in view of energy needs, the screening of all potential energy systems and technologies, and the selection of the most appropriate energy system through detailed energy simulation and a final multi-criteria selection process which takes into account environmental and socio-economic impacts.

Through its research programs, Efficacity aims to develop a new approach to urban energy efficiency and innovative solutions to support stakeholders at every stage of their projects.

« Large scale and eco-systemic changes will come from better connections between public, academic, and private R&D and well-managed interdisciplinary processes »

Smart Region. It is about a comprehensive and open economic strategy

Steve WRAY and Anne Marie BONNER, Economy League of Greater Philadelphia



Growing with disruptions : a 5 priorities plan

As regional leaders, we live in uncertain times. All around us, disruption seems to be the dominant theme – technological change is upending industries and labor markets; economic disparities are growing; and governmental systems are seemingly unable to bridge partisan differences to come to common-sense solutions. Civic leaders of metropolitan regions can sometimes feel like they are being tossed around in very rough economic seas, with little control of their futures.

We are trying something different in Philadelphia. Recognizing that our region needed to take control of its own destiny, in 2009, the Economy League of Greater Philadelphia launched World Class Greater Philadelphia with the goal of developing and sustaining a new way of working together across sectors to achieve big goals for our metropolitan region.

From the beginning – as exhibited by its very name – the World Class agenda has sought to expand the region’s global orientation and presence. We’ve prioritized strategies to grow global export and investment opportunities, educate and train a workforce that can compete internationally, and increase connections to the largest and fastest-growing metropolitan areas in the world.

Philadelphia’s strategy includes the development of several innovation districts, mixing economic assets with physical assets and networking assets, such as University City or the Navy Yard. Innovation nevertheless reaches a full impact when it is incorporated in a larger metropolitan vision.

While still a work in progress, here are 5 promising ways that business, civic, and public sector leaders in Greater Philadelphia are putting our region on the international map – and fostering economic growth and opportunity for our citizens in a smart way.

« Civic leaders of metropolitan regions can sometimes feel like they are being tossed around in very rough economic seas, with little control of their futures »

1) Seizing the Export Opportunity

For a region that has struggled with slow post-recession economic and employment growth, selling goods and services to the world is a crucial pathway to boosting our regional economy. Other regions have embraced export growth as an economic development priority, with nearly 30% of post-recession economic growth in the US attributable to exports. Recognizing the opportunity to take our region’s export outcomes to the next level, the Economy League and the World Trade Center of Greater Philadelphia and a coalition of partners developed a customized, data-driven metro export strategy. The next steps? Helping more small and medium businesses to become exporters; focused strategies in regional industry strengths; and increasing public awareness of exports as a key economic growth engine for our economy.

2) Welcoming Newcomers

National election rhetoric aside, Philadelphia is betting that welcoming newcomers to our region makes good business sense for our future.

Over the last two decades, Greater Philadelphia has resurfaced as a destination of choice for immigrants and refugees from across the globe. Immigrants are driving city population growth and are responsible for a staggering 96% of Main Street business ownership growth since 2000 with support from organizations like the Welcoming Center for New Pennsylvanians.

And as recently as 10 years ago, only a handful of universities in Greater Philadelphia had strategies to recruit international students to their campuses. Today, it’s rare to find a university in the region that doesn’t have one. Between 2008 and 2012, nearly 25,000 – or 21 out of every 1,000 – students studying at Greater Philadelphia universities were foreign-born. Forty-eight percent of these students remained in the region to work immediately after graduation.

3) Attracting Foreign Investment

With 700 foreign-owned enterprises employing 112,000 people in the region, Greater Philadelphia is already a leading destination for international business investment. Foreign-owned firms provide crucial links to other countries are more likely to export, and can attract additional foreign direct investment to the region. Select Greater Philadelphia, the business attraction marketing arm of the Greater Philadelphia Chamber of Commerce, promotes the region nationally and globally as a top location to do business along with the many bilateral chambers of commerce, foreign consulates, and international community groups that operate in our region.

4) Connecting to International Markets

Greater Philadelphia's airport and ports provide crucial ties to international markets. Philadelphia International Airport, which offers nonstop service to 25 countries, is currently undergoing an unprecedented expansion while building off of specialized assets like temperature-controlled warehousing for perishable airfreight. Likewise, the Port of Philadelphia is undertaking its first major expansion in over 50 years, and the deepening of the Delaware River navigation channel to accommodate larger cargo vessels is increasing Greater Philadelphia's global trade capacity.

5) Building on our History

One of the key lessons that emerged from Philadelphia's 2016 Olympics bid almost a decade ago was that our region did not have a globally recognizable brand. Philadelphia gained another tool to raise its profile in November when it was named the first World Heritage City in the United States. This UNESCO designation provides a globally recognized marker that Philadelphia – the birthplace of American democracy – is a major player on the international stage. Leaders from across the region are developing strategies to link this designation to long-term educational and economic strategies – and to increase our ties with other World Heritage Cities.

Going global isn't the only strategy that will help to grow our economy and increase the economic opportunities available to all of our region's residents. But as the world shrinks and becomes more interdependent, leaders of metropolitan regions can build new relationships and connect local strategies to global opportunities.



Smarter Tokyo in the global context. It is about maximising social and cultural interactions at large scale

Hiroo ICHIKAWA, PhD, Executive Director, The Mori Memorial Foundation, and Professor and Dean, Professional Graduate School of Governance Studies, Meiji University



Analysis of Tokyo's Urban Power: From a perspective of Global Power City Index

Major cities around the world today are caught up in intense and complex competition. The stakes in these processes of global inter-city interaction are extremely high. The Global Power City Index (GPCI) evaluates and ranks the major cities of the world according to their "magnetism", i.e. their comprehensive power which allows them to attract creative individuals and business enterprises from every continent and to mobilize their assets in securing economic, social, and environmental development⁶.

The GPCI-2015 reveals that London, New York and Paris retain their hold on the top three places, respectively. Since hosting the 2012 Olympic and Paralympic Games, London in particular has been steadily increasing its score, further widening its lead on New York. Tokyo continues to maintain the fourth place ranking it has held since the first GPCI in 2008. Improvement in Environment, Accessibility, and Livability slows somewhat, but the city rises from sixth position to fifth in Cultural Interaction due to a rapid increase in the number of foreign visitors and international students.

The Tokyo 2020 Olympic and Paralympic Games gives a momentum for Tokyo to rejuvenate the city through accelerating urban redevelopments and infrastructure improvements, which leads to the increase in the scores for Accessibility and Cultural Interaction.

Developing Tokyo as a smart city is about ICT-assisted city for improved sustainability and liveability, based on existing assets, such as a strong urban management system, a reinforced culture of technology, an increased demand and supply of sustainable energy. The mega-region also needs to adapt to the conditions of a rapidly aging population and upgrade disaster prevention. The 2020 Olympics has triggered a series of initiatives, such as the Government's task force on Innovation, covering 9 priority areas, under the overarching theme "innovation for everyone 2020".

⁶ The Mori Memorial Foundation's Institute for Urban Strategies first released its GPCI in 2008 and has continued to update its rankings every year based on new research. The GPCI evaluates 40 target cities in six urban functions: Economy, Research and Development, Cultural Interaction, Liveability, Environment, and Accessibility. A total of 70 indicators are used in the ranking.

- Advanced multimode rapid transit
- Promotion of social participation through assistive technology (ICT assisted navigation for the elderly, assistive robotic suits for workers...)
- Improved big data, especially as connector between airports/ stations, leisure areas, sport facilities
- Development of large scale advanced pilot projects in Tokyo Region, such as Kashiwa-no-ha smart city (Chiba Prefecture)⁷ or Fujisawwa smart city project in Kanagawa Prefecture
- Large inner-city redevelopment projects in key areas: Marunochi, Nohonbashi, Toranomon

Envisioning Tokyo's Future: a smart intensification

Regarding the possibility of the improvement in Accessibility, the category is composed of indicators such as Number of cities with direct international flights and Travel time between inner-city areas and international airports. These indicators will be improved through initiatives being undertaken now in Tokyo. For instance, the Japanese government is considering increasing the capacity for flights at Narita International Airport and Tokyo International Airport (Haneda), which will lead to an increase in the number of international flights from Tokyo. The current plan is to increase capacity for flights from 700,000 in 2016 to 800,000 by 2020 and then to 1.1 million after 2020. If this volume of flights is achieved, it will be almost the same level as seen in London.

Airport access will also be improved. There are five international airports in London and two in Tokyo. Though it only takes 15-20 minutes from Paddington Station to Heathrow by the Heathrow Express, it takes about an hour from Narita to Tokyo station by the Narita Express. However, the East Japan Railway Company, which is a major passenger railway company in Japan, is currently planning to construct a new line which connects Tokyo Station to Haneda airport making use of a disused freight line. When it opens, the travel time between central Tokyo and Haneda airport will be less than 20 minutes.

⁷ 3 million sq m of new mixed-used developments for 26,000 residents and 15,000 jobs by 2030

As for Cultural Interaction, the score for this function is expected to improve through urban redevelopment projects being carried out in central Tokyo in three strategic districts: Marunouchi, Nihonbashi, and Toranomom.

Marunouchi is a central business district in Tokyo where several redevelopment projects have been completed since around the year 2000. These projects have already transformed this area from an old-fashioned business district into a sophisticated international business centre. In addition to these newly developed buildings, a large-scale redevelopment project with a signature tower of 390 metres, is also being carried out in this district, which will produce a large pedestrian plaza close to Tokyo Station where people will gather to enjoy dining, shopping, and events in the heart of Tokyo.

In Nihonbashi Area, there is the “Nihonbashi Renaissance Plan” which respects the history of the area and tries to restore it. The biggest challenge for them is to remove the elevated Expressway over the iconic Nihonbashi Bridge in order to restore the beautiful scenery over the bridge. The expressway was built over the Nihonbashi Bridge just in time for the 1964 Summer Olympics, but it is expected that the 2020 Olympics may give the plan momentum to remove the expressway by putting it underground.

Toranomon Area is seeing a wave of construction projects, the most notable of which is a bold plan to create a new avenue, something resembling the Champ-Elysees Boulevard of Paris. A new metro station, a large bus terminal, high standard office buildings and residences, hospitals and hotels will be built around the avenue. This area used to be a business-specific district, but it is being transformed into a mixed-use international district.

In summary, intensification is happening now in central Tokyo. The intensification will become a “magnetism” that attracts people and capital from all over the world. We used to suffer from “Demerits of over-concentration”: Traffic congestion, Air pollution, and Concrete jungle. Yet, the “intensification” in central Tokyo is very different from the “over-concentration” of the past. People can enjoy the natural environment there, and building designs are impressive. A variety of cultural facilities are also being incorporated. It means we are making use of the “Merits of intensification”. Therefore, it is expected that through these developments and improvements, Tokyo will be able to improve its competitive position among global cities and achieve higher accessibility and better opportunities for cultural interaction.

*« Intensification is happening now in central Tokyo.
The intensification will become a “magnetism” that attracts
people and capital from all over the world »*



Smart Cities and the Global South

François-Laurent TOUZAIN, Nazaire DIATTA. Urbanistes
du Monde / École urbaine de Sciences Po Paris



Depuis une dizaine d'années, les usages du numérique appliqués à la ville bouleversent les modes de vie urbains dans un contexte de crise économique et environnementale. Les villes, qui occupent 2 % de la surface du globe, abritent plus de 50 % de la population mondiale, consomment 75 % des énergies produites et sont à l'origine de 80 % des émissions de CO₂.

Dans le sillage de la ville durable, et en mettant à profit de nouvelles potentialités ouvertes par le numérique, des stratégies sont mises en œuvre afin de mieux gérer le fonctionnement des services, optimiser les ressources et améliorer la gouvernance des espaces urbains. L'approche de smart city rejoint les préoccupations des urbanistes de rendre la ville plus efficace, durable et vivable.

Les villes en développement représentent un double défi. Il s'agit de moderniser les infrastructures dans une logique de sobriété dans l'utilisation des ressources (énergétiques, spatiales...). Les investissements nécessaires sont immenses et représentent un effort considérable pour les collectivités et les gestionnaires des villes du Sud. Plus que partout ailleurs se pose la question de l'adaptation aux contextes des démarches de villes intelligentes.

L'émergence d'approches agiles, résilientes ou encore frugales associées aux nouvelles technologies montre que celles-ci peuvent constituer un outil innovant pour résoudre des problèmes urbains. La montée en puissance des réseaux intelligents (d'énergies, de communications, de communautés...) représente aussi une opportunité pour des politiques urbaines plus participatives, par et pour les citoyens.

Pour répondre aux questions suivantes :

- Comment les villes du Sud mettent-elles en place des stratégies de villes intelligentes dans des contextes de rareté des ressources financières ?
- Sur quelles ressources internes et externes s'appuient-elles pour produire de l'innovation ?
- Quels sont les nouveaux jeux d'acteurs résultant de ces démarches ?
- Comment les projets mis en place permettent-ils d'enrichir les analyses de la ville intelligente ?

L'École Urbaine de Sciences Po en partenariat avec Urbanistes du Monde et le soutien de plusieurs entreprises digitales et sociétés d'ingénierie ont lancé un travail d'investigation dans près d'une quinzaine de villes et de métropoles dans les BRICS et les pays émergents. Les premiers résultats sont attendus pour l'automne 2016.

Les modes de coopération entre entreprises, réseaux professionnels et acteurs académiques sont aujourd'hui incontournables et même essentiels à la compétitivité des acteurs économiques en place. Ils y trouvent des sources d'information précieuses et des occasions de réaliser un travail de R&D mutualisé indispensable à l'intelligence économique d'un monde en plein bouleversement. Les tout premiers retours d'expérience, comme à travers le cas de Beyrouth au Liban, mettent en avant la complexité des besoins et des enjeux, entre infrastructures et services urbains essentiels d'une part et développement du capital social d'autre part. Cela interroge directement les habitudes de travail et même les stratégies d'innovations issues de contextes économiques matures.

On peut s'attendre dans les années qui viennent à des changements rapides, en lien avec une évolution profonde des besoins.

« Des approches agiles, résilientes ou encore frugales associées aux nouvelles technologies montrent que celles-ci peuvent constituer un outil innovant pour résoudre des problèmes urbains »

Smarter habitat: managing the transformative power of social communications

Alexey KOZMIN, Founder, Siberian Urban Lab



Several years ago the word “smart” became very fashionable in urban planning. Globally, including the Russian Federation with such a flagship project as Skolkovo innovation city, many “techno smart city” projects have been launched with strong government support, involving significant public investments to drive private investments and innovation.

A lot of such “smart city” projects have been proudly launched but a decade later, many expectations have been seriously lowered. In fact, not even the then highly celebrated *Masdar* and *Songdo* which were built out of greenfields can be considered as being successful. No surprise that recent reviews are harsh, because most of the emblematic illustrations of “smart cities” have ended up as a gloomy collage of samples of smart technologies, where citizens have been replaced by users and consumers.

Many techno-city have been launched involving hard and software producers, local suppliers of facilities, authorities, politicians, media, etc. But there are no people. Inhabitants in “techno smart city” are just consumers of equipment and services. The alternative, though, might come from social media and community development.

Social communications through apps and smartphones can make the difference at the local level and help ordinary people in their daily life. Both social media and applications are working even in poor cities, even in favelas or slums. They are also quite efficient to overcome the gridlock of transforming agent infrastructures or housing stocks, such as in many Russian cities. In the global South, many people and households rely on modern ICT technologies for connecting but also for services, such as banking, while they still lack access to drinking water, adequate sewage or waste management, reliable sources of energy... clear water, sewage or stable electricity supply.

Smart cities as a marketing vision of a bright holistic future has been replaced by “smart-phone” cities, raising new concerns and new opportunities. It is about including local communities as stakeholders in smart city planning and building. It is about supporting collaborative mechanisms up to the transformation of urban infrastructures and environments.

In Russia we've started processes of local communities' activation and collaboration, as the result of actively engaged citizens raising new cooperative strategies and projects with local or regional governments. Such efforts are aiming at “smarter habitat”, that is more harmonious people-environment-infrastructure systems, where smart-city come second, as a tool to improve social communications and foster change.

« Many emblematic illustrations of “smart cities” have turned into a collage of samples of smart technologies, where citizens have been replaced by users and consumers »



Smart City begins with Connectivity

Dr. Dwinita LARASATI, MA Secretary General - Bandung Creative City Forum Chair - Bandung Creative Economy Committee

Bandung, the capital city of West Java Province in Indonesia, of which nearly 70% of its 2,5 million inhabitants is below 40 years old, is home for more than 50 universities and research centres, and for 12 national strategic industries. The abundance of young, resourceful generation in this city has created local communities who are closely engaged to the latest technology, social media, and many other forms of popular cultures and expressions.

Bandung Creative City Forum (BCCF) is an example of such communities. It was formed as a hub in 2008 by 45 creative communities in Bandung, and has since been creating prototypes of public spaces, urban systems, public involvements, social innovation, etc., to give examples to the municipal government and all city stakeholders of how the communities require the city to be. In 2013, the first chairperson of BCCF (2008-2012) was elected as Bandung Mayor (2013-2018). He brought a number of BCCF programs to the policy level, to escalate the impacts. Considering that the city infrastructures are already taken care of by a similar mindset, BCCF now faces a different challenge: no longer focusing on the physical facilities, but more on the human resource of the city.

BCCF has an annual program, DesignAction.bdg (DA.bdg), a design thinking workshop that involves the municipal government and all city stakeholders (business sector, academics, communities), to exercise with the most urgent urban issue and to come up with solutions and recommendations. In 2015, the third DA.bdg brought up the Smart City issues, whereas “smart” is considered as “connectivities” between citizens and government, people and (online) policy, and so on. This theme was chosen due to the fact that in the last couple of years, new policies and public facilities that were issued in Bandung are closely related to the Internet, social media, and digital applications, in an attempt to improve services and to eliminate corruption. Bandung government has accepted a number of recognitions and awards due to this new facilities, such as the appointment of Bandung Mayor as the chairman of Asia-Africa Smart City Alliance (during The Asia-Africa Smart City Summit in Bandung, April 2015), and of Bandung as a finalist for the World Smart City Award (during The Smart City World Congress in Barcelona, November 2015).



The challenge now is how people perceive all these digital facilities and online platforms to conduct various administrative matters that influence their lives and achievements as urban citizens. DA.bdg facilitated the conversation among the city stakeholders to sort this out, and came to a conclusion that, for cities such as Bandung, it is crucial to have the social and cultural conditions as the main consideration in determining “smart urbanism”.

Due to seeing the importance of connectivity, BCCF also initiated the establishment of Indonesian Creative Cities Network (ICCN) in Bandung, April 2015, which has since been active with setting up collaborative programs among the members (up to today, consisting of around 80 cities and regents). The programs of ICCN are also closely related to The Indonesian Agency for Creative Economy (IACE), which emphasise on urban development based on local potentials, within the context of creative economy ecosystem.

« The challenge is how people perceive the new digital facilities and online platforms to conduct various administrative matters that influence their lives as urban citizens »

Launching new South-South Alliances: the Asia-Africa Smart Cities Alliance

Ridwan KAMIL, Mayor of Bandung

In April 2015 as part of the celebrations of the 60th anniversary of the so-called Bandung conference, the city hosted an international conference on urban development in emerging economies, the Asia-Africa Africa Smart City Summit. The participants, from Asia and Africa, agreed to launch an alliance about smart cities, the Asia Africa Smart Cities Alliance and issued a formal declaration.

The declaration consists of five points of agreement to strengthen development between cities in the Asia-Africa region, including their commitment to building a network and shared knowledge on a smart city model.

The Bandung Declaration on Smart Cities - Asia Africa Smart City Summit

Whereas, on April 18-24, 1955, sixty years ago, the first Asian-African Conference - also known as the Bandung Conference - was held in Bandung, Indonesia to strengthen economic and cultural cooperation between Africa and Asia, and to discuss decolonization and peace.

Whereas, a new common problem arises that should be addressed by Asian and African cities, chiefly urbanization that leads to over population which resulted in the need of better basic service and infrastructure, the mobilization and distribution of natural resources that calls for an effective strategy to improve citizen's quality of life

Whereas, the need to develop new approaches to address these problems are recognized by city and local governments, academicians, the private sector, and communities from different countries of Asia and Africa.



« In 2015, at the first Asia-Africa Africa Smart City Summit, the participants from Asia and Africa, agreed to launch an alliance about smart cities »

We call upon every party to support the following goals in order to strengthen the development of smart cities in Asia-Africa countries:

- To commit to the development and building of a sustainable, smart city model through building a network of knowledge, managerial and technology sharing, mainly between local governments, academicians, business, industries and communities in Asia-Africa
- To make great efforts towards the creation of environmentally friendly cities and smart public services and utilities, particularly in the field of sustainable transport, renewable energy resources, and the prevention and mitigation of disasters within Asia-Africa
- To invest in the development of smart communities through better education and healthcare in order to increase the quality of life of the people.
- To promote the utilization of smart economy systems and to provide support for smart young generation to enhance creativity and entrepreneurship for the continuous growth of sustainable and smart cities.
- To further promote networking and collaborative partnership to advocate for the building of smart cities, through the establishment of the Asia Africa Smart City FORUM/NETWORK/ALLIANCE that will improve the lives of citizens in Asia and Africa.

Smart cities or smarter skills ? Créer de nouvelles compétences dans un contexte de mutations

Marie-Françoise GUYONNAUD, Responsable Pédagogique MBA Smart city et management des éco-quartiers, Institut Léonard de Vinci. Président de Smart Use



Nous assistons à une réforme copernicienne de l'énergie, du bâtiment et de la ville de façon plus générale. Toutes les formes d'innovation permettant de renouveler l'expérience utilisateur et de répondre aux enjeux de performance globale (environnementale, sociale, économique) peuvent trouver leur place. Les bâtiments, les infrastructures urbaines, les moyens de transport doivent être « infrastructurels » pour accueillir ces nouveaux usages. Ils deviennent des plateformes de services.

Le numérique est un moyen d'y parvenir notamment grâce :

- Au BIM (Building Information Modelling), pour la création, la réalisation, l'usage et gestion des données des bâtiments, infrastructures et territoires ;
- À l'internet des objets qui permet de déployer une infrastructure numérique étendue ;
- Au Big data et aux plateformes de services, permettant de mesurer et vérifier les performances, mais aussi, pour développer de nouveaux services.

Dans ce contexte, les évolutions de compétences et des métiers se développent dans une approche interdisciplinaire tout en prenant appui sur :

- des outils numériques
- des démarches de management qui privilégient l'animation d'équipes et le travail collaboratif en intégrant la « valeur de l'expérience client »
- la mobilisation de méthodes de co-construction de design et prototypage, d'innovation ouverte en prenant appui sur un écosystème de partenaires.

La dimension « smart » devient la capacité à décroisonner, ouvrir, relier, partager, créer, redonner des capacités d'action pour nous permettre de nous adapter aux changements.

La priorité consiste à développer de nouvelles aptitudes à apprendre, valables aussi bien pour des étudiants de niveau master et issus de différentes filières (ingénieurs...) que dans un cadre de formation continue.

Les outils de formation doivent désormais proposer une approche systémique de l'aménagement et la gestion des territoires, reposant sur des objectifs de développement durable mesurés et partagés, l'acquisition de méthodes et maîtrise d'outils, l'apprentissage du numérique sous toutes ses coutures par des travaux pratiques ciblés afin de comprendre les technologies et maîtriser l'ensemble des implications liées à leur mise en œuvre.

Avec le MBA Smart city et management des écoquartiers ou le MBA Smart Energie, il s'agit de passer de la théorie à une pratique personnelle intelligente et apprenante. Les apprentissages sur des « terrains » sont réalisés en équipes pluridisciplinaires ouvrant la formation entre pairs, avec un tutorat de professionnels d'horizons différents aux compétences complémentaires et des collaborations directes avec les professionnels des territoires, des organisations impliquées. Les démarches agiles et partenariales sont au cœur de la construction des cursus proposés. Les cadres juridiques, contractuels, économiques et financiers sont également étudiés en tenant compte de la rapidité des mutations à l'œuvre..

Ces formations se déroulent sur une durée de un an et visent à doter les professionnels en début ou en cours de carrière de nouvelles compétences transversales, à les former à travailler de manière plus collaborative, à comprendre les potentialités des technologies et à les mobiliser au service des projets de territoire...

L'expérience montre qu'une première action collective simple d'acculturation des acteurs est généralement la première brique à développer dans une organisation. Ensuite, une démarche pragmatique est de prendre appui sur les expériences d'usage dans l'environnement immédiat (domicile, travail, loisirs...) pour démultiplier les opportunités d'apprentissage, de passer d'un mode consommateur passif de formation à celui de contributeur, de passeur (pair à pair).

Le dispositif de formation dans la Smart City repose également un nouveau contrat de réussite avec la personne formée et de nouveaux modes de collaboration avec les organisations et territoires.

En parallèle, en donnant aux individus, aux consommateurs, aux citoyens des outils qui les transforment en producteurs, on transforme radicalement le marché ou l'organisation aussi bien que l'économie qui en vit. Le territoire ou l'organisation peut accompagner la multiplication des formes de créativité et des capacités de formation, de production, des nœuds de créativité, des lieux où les idées se forment et grandissent.

« Développer de nouvelles aptitudes à apprendre, valables tant pour des étudiants de niveau master et issus de différentes filières que dans un cadre de formation continue »

Towards an education-based smart city

Ana RUIZ BOWEN, Head of « Energy , Habitat, Environment », École des Hautes Études d'ingénieur de Lille



Cities are in a constant transformation process and adapting to new paradigms. The increasing of issues to take into account in a city project multiplies the number of actors who intervene which in turn increases project complexity.

These actors have to develop new skills, include new working methods; taking into account the different stakeholders and to work outside their comfort zone.

Today a single discipline cannot meet all the emerging technical, social and economic needs of a city. Therefore smart cities require the combination of multiple skills from a variety of stakeholders, who must learn to cooperate and work together. Modern, efficient training combining architecture and engineering, is required to provide professional skills ensuring such collective and collaborative work. Such a way of working is now at the heart of the issues and stakes related to project complexity.

How can we foster and develop these multidisciplinary skills and adopt a holistic approach? What are the new skills we need to transfer and to develop?

Several trends in city design are emerging ranging from “optimistic technology visions” to “ecologically resilience”. We believe that in all scenarios future propositions will have to link and merge technology and social issues, which is no easy task

New academic programs are being developed bearing in mind the need to bring together these disciplines during training. Future actors have to experience and practice new ways of collaboration before they engage professionally. Therefore architects, civil engineers, telecom engineers, environmental engineers can all study together in masters such as these. This is the case for existing Master in City Sciences of the UPM (Universidad Politecnica de Madrid) or the new Smart City MSc at UCL (Université Catholique de Lille) starting in September 2016.

The majority of these programs focus on to different degrees on environment and sustainability, Sustainable Urban planning, Sustainable building, ICT technology, Mobility, innovation, energy, economy, sociology and governability.

These programs must also produce new skills, linked to behavior and know-how. Co-construction methods and collaborative innovative approaches as developed in the ADICODES (workshops of innovation and co-design) in Lille or from the CRIT (research group on Creativity, Innovation and Urban Transformation) in Barcelona can help nurture an attitude or enable group productions. Creativity, aptitude to innovation, global vision and analysis, ability to deal with complex issues, active listening, communication and entrepreneurial skills are the qualities of tomorrow.

Learning should now be considered as a collective experience, shared and pleasant where students think and act as part of a community of which they are responsible.

Transformation of existing academic programs at graduate and post graduate levels remains too rare and too slow as compared with the magnitude of transformation needs of cities. It should be a common European priority to work on « smart city » and urban change professional skills.

« Learning should be considered as a collective experience, shared and pleasant where students think and act as part of a community of which they are responsible »

We need energetic societies to get smarter with our cities

Dr Lan-Phuong PHAN, Founding Partner, Renaissance Urbaine



48% of the cities and urban dwellings that will be hosting the world urban population by 2050 are not being built yet. In times of growing anxiety, resources scarcity, the tech-optimism brought up by smart city champions about a decade ago has reached its limits. We don't need to build smart cities. We need to be smarter about cities, about the way to build them, transform them, managed them, maintain them.

The modern way of building cities and communities, including planned cities, is in default. Centralized planning and construction with a just an added layer of technology is not a sustainable response for our times. We have entered an era where we cannot simply rely on governments, be they national, regional or local. We need an energetic society, as coined by Maarten Hajer, curator of the 2016 Rotterdam Architecture Biennale (IABR), to get smarter with our cities now and in the very near future.

The metropolitan paradigm illustrates a shift toward a matrix urban world, where clear boundaries are blurred, be they between the public and the private sector, between the North and the Global South. Smart City alone cannot stand as the new narrative for the years to come. As academic consolidated literature fails at assessing current changes, we lack the skills and the knowledge we need in a new age we could describe as the age of experimental.

Priority should go to promote both collective and individual abilities to engage and actively take part to build our common future.

This contrasts with the vortex of innovations that occur in many technological and scientific fields, from connected devices to artificial intelligence to man to robot... While the world urban population has grown from about 3 billion in 2006 to nearly 4 billion in 2016, the number of internet users has risen from barely 1 billion in 2006 to over 3,4 billion in 2016. The Tech vertigo is being fueled not only by urban demographics but also by nation-states and cities competing to invest in the 'next economy', investing billions in start-ups and innovation ecosystems, without clear return on those investments.

But smart cities are not just about investing. They are about involving. It is a dialogue between urbanization and the digital era. It is about moving from labs and experiments to eco-systemic changes. Many cities, urban infrastructures, communities, citizens, locales and worldwide, are surrounded by challenges and opportunities. They are working at the very edges of their capacities. It is time to move to a new generation of smart cities and smarter understanding about cities, and expand our skills and know-how. Smart cities need energetic societies.

« The current Tech vertigo is being fueled by a global competition to invest in start-ups. But smart cities are not just about investing. They are about involving. »

Get smarter, support change-agents

Marjolijn WILMINK, program manager, Initiative TwentyOne, cluster MVO CSR Netherlands



Globally, there are many experiments where cities try and position themselves in light of imagined 'next economy' futures. Cases in which new value models are (co)created, technological, spatial and social innovations smartly connected, new financial rules developed and the roles of public and private partners are being reassessed.

We can discern that many successful experiments hinge on particular 'agents of change'. They act as the main catalysts, but can have widely varying backgrounds. Agents of change are impact driven connectors and inspirators who color a vision of their city. While they may have various backgrounds, they all work across the traditional borders of their fields and institutions: they are connectors and go-betweens. From a position of relative independence they mobilize the right stakeholders, shift between execution and strategy, between local and global, and between citizens, the private sector, researchers and government.

We are talking about:

- Activist administrators
- Initiating spatial designers
- Creative citizens
- Inclusive entrepreneurs
- Practice-oriented academics

Without these agents of change it is difficult to reach results that surpass the interests of individual stakeholders and that will ultimately lead to urban system innovations. Agents of change actually develop sustainable urban value propositions, which are lucrative for public and private investors.

How do we embed and structurally secure the results of the efforts of these change agents? Change-agent supports play a crucial role, as highlighted by Eduard Ravenhorst, founder of the cooperative society De Coöperatieve Samenleving and well-known expert connecting civil society players with governments and businesses. He points out to two critical concepts:

New level playing field

- Changemakers still have to deal with the old level playing field, where the government and market still dominate the game. As a social entrepreneur or cooperation, changemakers are often seen as an outlaw. "How do we create a new level playing field in which organized citizens are recognized as an important player?"

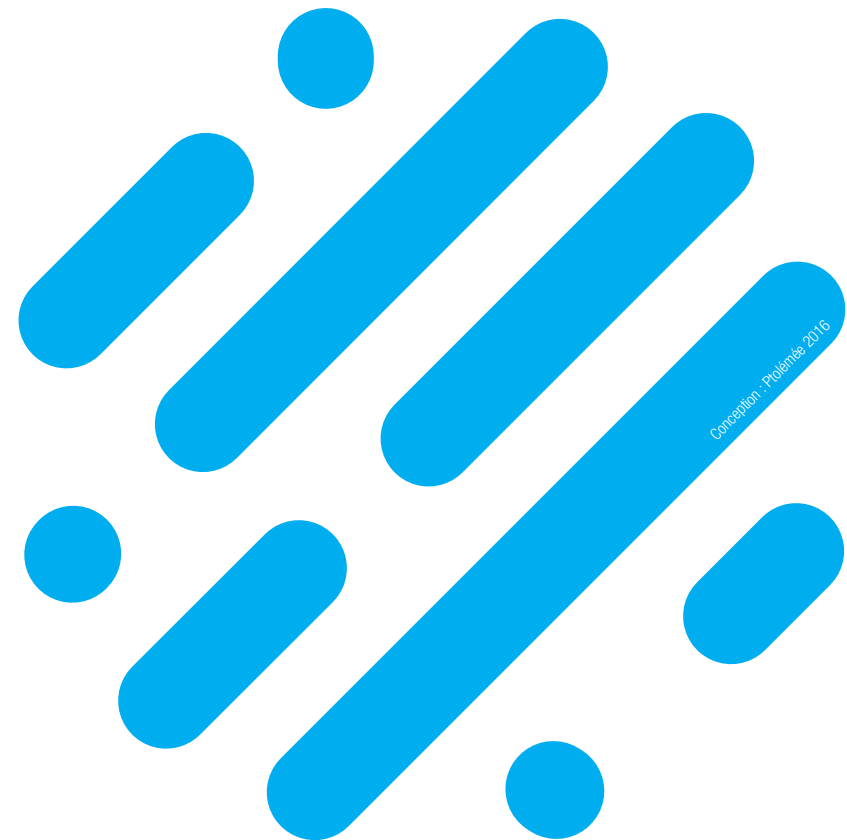
Freezones / labs / embedding cases

- How to move from prototype to system change? Several changemakers feel the need for freezones or spaces for disruptive experiments. There is a need for experienced based learning. In order to move to system change/mainstream, changemakers feel that they need to anchor their cases into policy and embed it in society. In order to achieve this, it is important to invest in networks that support your case and have influence on politics.

« Change-agents all work across the traditional borders of their fields and institutions: they are connectors and go-betweens »

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