Smart Cities In India- A Challenge

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Abstract

In India phenomenon of smart cities is getting popularity day by day. As India is a developing country and every citizen wants a good life, good atmosphere, good environment and everything in systematized format, for the same demand the concept of Smart City has been developed. Smart City can be defined as "A developed urban area that creates sustainable economic development and high quality of life by excelling in multiple key areas; economy, mobility, environment, people, living and government". Across the world, the stride of migration from rural to urban areas is increasing. By 2050, about 70 per cent of the population will be living in cities, and India is no exception. It will need about 500 new cities to accommodate the influx. Interestingly, urbanization in India has for the longest time been viewed as a by-product of failed regional planning. Though it is inevitable, and will only change when the benefits of urbanization overtake the costs involved, it is an opportunity for achieving faster growth. With increasing urbanization and the load on rural land, the government has now realized the need for cities that can cope with the challenges of urban living and also be magnets for investment. The announcement of '100 smart cities' falls in line with this vision. The concept is not without challenges, especially in India. For instance, the success of such a city depends on residents, entrepreneurs and visitors becoming actively involved in energy saving and implementation of new technologies. There are many ways to make residential, commercial and public spaces sustainable by ways of technology, but a high percentage of the total energy use is still in the hands of end users and their behaviour. Also, there is the time factor - such cities can potentially take anything between 20 and 30 years to build.

Keywords: smart cities, infrastructure, urbanization, urban development, city planning

1- INTRODUCTION- WHAT IS SMART CITY

The first question is what is meant by a 'smart city'. The answer is, there is no universally accepted definition of a smart city. It means different things to different people. The conceptualization of Smart City, therefore, varies from city to city and country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the city residents. A smart city would have a different connotation in India than, say, Europe. Even in India, there is no one way of defining a smart city.

Some definitional boundaries are required to guide cities in the Mission. In the imagination of any city dweller in India, the picture of a smart city contains a wish list of infrastructure and services that describes his or her level of aspiration. To provide for the aspirations and needs of the citizens, urban planners ideally aim at developing the entire urban eco-system, which is represented by the four pillars of comprehensive development-institutional, physical, social and economic infrastructure. This can be a long term goal and cities can work towards

developing such comprehensive infrastructure incrementally, adding on layers of 'smartness'.

In the approach of the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country. The core infrastructure elements in a smart city would include: (a) adequate water supply, (b) assured electricity supply, (c) sanitation, including solid waste management, (d) efficient urban mobility and public transport, (e) affordable housing, especially for the poor, (f) robust IT connectivity and digitalization, (g) good governance, especially e-Governance and citizen participation, (h) sustainable environment, (i) safety and security of citizens, particularly women, children and the elderly, and (j) health and education.

Accordingly, the purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes. Area-based development will transform existing areas (retrofit and redevelop), including slums, into better planned ones, thereby improving live-ability of the whole City. New areas (green-field) will be developed around cities in order to accommodate the expanding population in urban areas. Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services. Comprehensive development in this way will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive Cities.

A 'smart city' is an urban region that is highly advanced in terms of overall infrastructure, sustainable real estate, communications and market viability. It is a city where information technology is the principal infrastructure and the basis for providing essential services to residents. There are many technological platforms involved, including but not limited to automated sensor networks and data centers. Though this may sound futuristic, it is now likely to become a reality as the 'smart cities' movement unfolds in India. In a smart city, economic development and activity is sustainable and rationally incremental by virtue of being based on success-oriented market drivers such as supply and demand. They benefit everybody, including citizens, businesses, the government and the environment. The concept of smart cities originated at the time when the entire world was facing one of the worst economic crises. In 2008, IBM began work on a 'smarter cities' concept as part of its Smarter Planet initiative. By the beginning of 2009, the concept had captivated the imagination of various nations across the globe. Countries like South Korea, UAE and China began to invest heavily into their research and formation. Today, a number of excellent precedents exist that India can emulate, such as those in Vienna, Aarhus, Amsterdam, Cairo, Lyon, Málaga, Malta, the Songdo International Business District near Seoul, Verona etc.

In India the cities with ongoing or proposed smart cities include Kochi in Kerala, Ahmedabad in Gujarat, Aurangabad in Maharashtra, Manesar in Delhi NCR, Khushkera in Rajasthan, Krishnapatnam in Andhra Pradesh, Ponneri in Tamil Nadu and

Tumkur in Karnataka. Many of these cities will include special investment regions or special economic zones with modified regulations and tax structures to make it attractive for foreign investment. This is essential because much of the funding for these projects will have to come from private developers and from abroad. The concept is not without challenges, especially in India. For instance, the success of such a city depends on residents, entrepreneurs and visitors becoming actively involved in energy saving and implementation of new technologies. There are many ways to make residential, commercial and public spaces sustainable by ways of technology, but a high percentage of the total energy use is still in the hands of end users and their behavior. Also, there is the time factor; such cities can potentially take anything between 20 and 30 years to build. Currently 31% of India's population lives in cities; these cities also generate 63% of the nation's economic activity. These numbers are rapidly increasing, with almost half of India's population projected to live in the cities by 2030. Smart Cities focus on the most pressing needs and on the greatest opportunities to improve quality of life for residents today and in the future. The Smart Cities Mission is a bold new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens. Good ideas come in many shapes and sizes, and are designed to improve quality of life. They may involve technology, institutional or managerial reforms, and the involvement of citizens. The choice of solution is only smart if it is right sized to the challenge it aims to address; bigger isn't necessarily better.
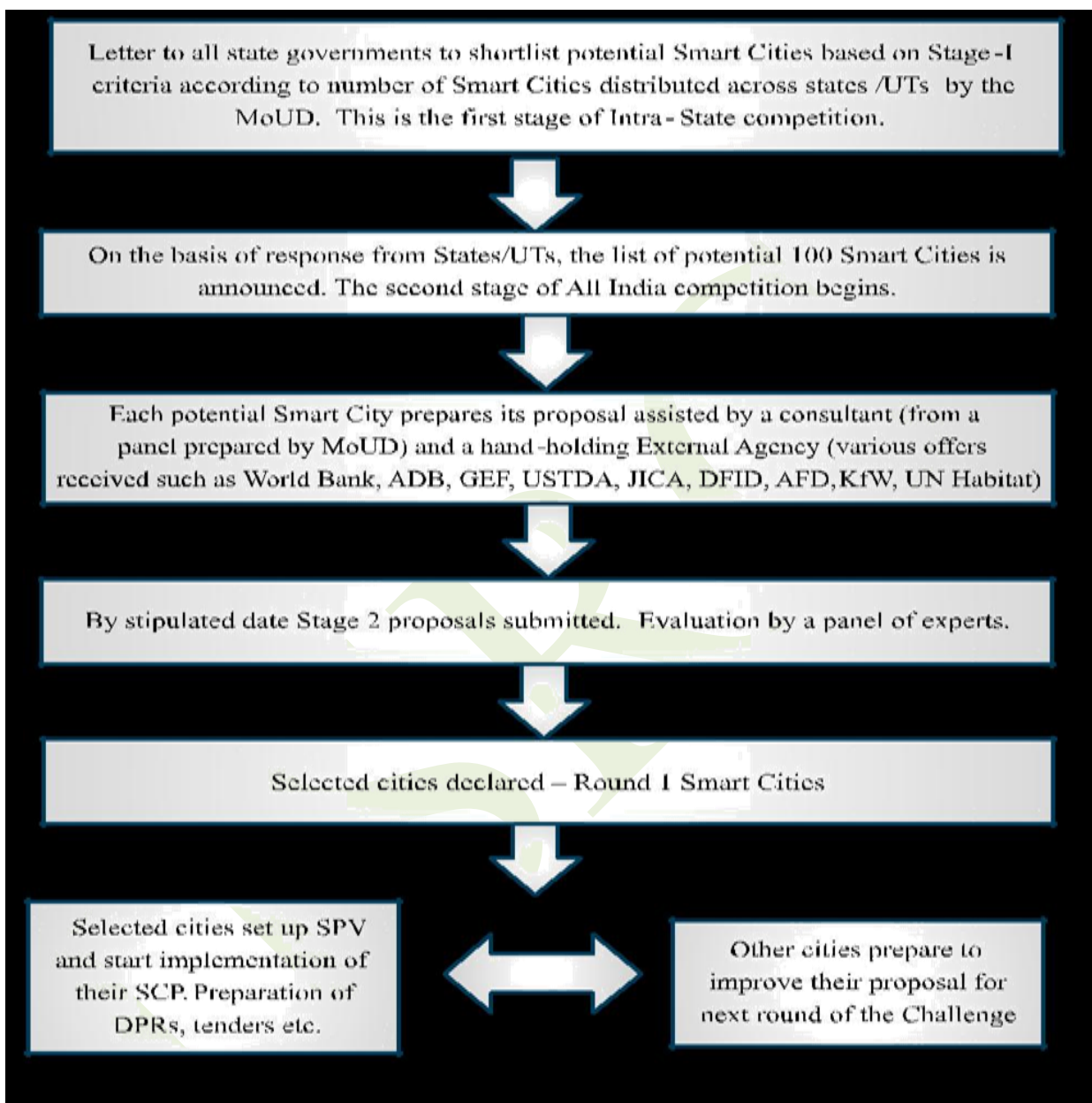
2- SMART CITY FEATURES

Some typical features of comprehensive development in Smart Cities are described as (a) Promoting mixed land use in area-based developments — planning for 'unplanned areas' containing a range of compatible activities and land uses close to one another in order to make land use more efficient. The States will enable some flexibility in land use and building bye-laws to adapt to change; (b) Housing and inclusiveness — expand housing opportunities for all; (c) Creating walk able localities — reduce congestion, air pollution and resource depletion, boost local economy, promote interactions and ensure security. The road network is created or refurbished not only for vehicles and public transport, but also for pedestrians and cyclists, and necessary administrative services are offered within walking or cycling distance; (d) Preserving and developing open spaces — parks, playgrounds, and recreational spaces in order to enhance the quality of life of citizens, reduce the urban heat effects in Areas and generally promote eco-balance; (e) Promoting a variety of transport options — Transit Oriented Development (TOD), public transport and last mile para-transport connectivity; (f) Making governance citizen-friendly and cost effective — increasingly rely on online services to bring about accountability and transparency, especially using mobiles to reduce cost of services and providing services without having to go to municipal offices; form e-groups to listen to people and obtain feedback and use online monitoring of programs and activities with the aid of cyber tour of worksites; (g) Giving an identity to the city — based on its main economic activity, such as local cuisine, health, education, arts and craft, culture, sports goods, furniture, hosiery, textile, dairy, etc; (h) Applying Smart Solutions to infrastructure and services in area-based development in order to make them better. For example, making Areas less vulnerable to disasters, using fewer resources, and providing cheaper services.

3- PROCESS OF SELECTION OF SMART CITIES
Different steps in the selection of Smart Cities are given below.

Letter to all state governments to shortlist potential Smart Cities based on Stage-I criteria according to number of Smart Cities distributed across states /UTs by the MoUD. This is the first stage of Intra-State competition.

On the basis of response from States/UTs, the list of potential 100 Smart Cities is announced. The second stage of All India competition begins.

Each potential Smart City prepares its proposal assisted by a consultant (from a panel prepared by MoUD) and a hand-holding External Agency (various offers received such as World Bank, ADB, GEF, USTDA, JICA, DFID, AFD, KfW, UN Habitat)

By stipulated date Stage 2 proposals submitted. Evaluation by a panel of experts.

Selected cities declared – Round 1 Smart Cities

Selected cities set up SPV and start implementation of their SCP. Preparation of DPRs, tenders etc.

Other cities prepare to improve their proposal for next round of the Challenge

(a) Each aspiring city competes for selection as a Smart City in what is called a 'City Challenge'. There are two stages in the selection process. After the number has been indicated to the respective Chief Secretaries, the State/UT will undertake the following steps:-
(i) Stage 1 of the competition: **Short listing of cities by States**; The State/UT begins with short listing the potential Smart Cities on the basis of conditions precedent and scoring criteria and in accordance with the total number allocated to it. The first stage of the competition will be intra-state, in which cities in the State will compete on the conditions precedent and the scoring criteria layout. These conditions precedent have to be met by the potential cities to succeed in the first round of competition and the highest scoring potential Smart Cities will be shortlisted and recommended to participate in Stage 2 of the Challenge. The

information sent by the ULBs in the forms has to be evaluated by the State Mission Director and the evaluation placed before the State-level High Powered Steering Committee (HPSC) for approval. The cities emerging successful in the first round of competition will be sent by the State/UT as the recommended shortlist of Smart Cities to MOUD by the stipulated date (to be indicated in the letter to Chief Secretaries). The State Government has to fill the form and send with the recommended list. The MOUD will thereafter announce the list of 100 Smart Cities.

(ii) Stage 2 of the competition: **The Challenge round for selection;** in the second stage of the competition, each of the potential 100 Smart Cities prepares their proposals for participation in the 'City Challenge'. This is a crucial stage as each city's Smart City Proposal (SCP) is expected to contain the model chosen, whether retrofitting or redevelopment or green field development or a mix thereof, and additionally include a Pan-City dimension with Smart Solutions. The SCP will also outline the consultations held with the city residents and other stakeholders, how the aspirations are matched with the vision contained in the SCP and importantly, what is the proposal for financing of the Smart City plan including the revenue model to attract private participation. An evaluation criteria for the SCPs has been worked out by MoUD based on professional advice and this should act as guidance to the cities for preparing their proposal. By a stipulated date, to be indicated by MoUD to the States/UTs, proposals will be submitted to MoUD for all these 100 cities. These will be evaluated by a Committee involving a panel of national and international experts, organizations and institutions. The winners of the first round of Challenge will be announced by MoUD. Thereafter, while the winning cities start taking action on making their city smart, those who do not get selected will start work on improving their SCPs for consideration in the second round. Depending on the nature of the SCPs and outcomes of the first round of the Challenge, the MoUD may decide to provide handholding assistance to the potential Smart Cities to upgrade their proposals before starting the second round.

4- PARTICIPATION: CITIZEN SCIENCE

Public participation is a long-standing tradition in institutionalized planning but the emergence of the digital world has turned the activity on its head. The ability for all citizens to communicate with one another and with agencies and groups that represent them, has provided a new sense of urgency and possibility to the idea that smart cities are based on smart communities whose citizens can play an active part in their operation and design. There are many such initiatives at the present time and we will focus on ways in which citizens can access information about what is happening in their communities and cities but also explore ways in which a wide range of different groups can become actively involved in the design and planning process, both remotely and in face-to-face situations using data, models and scenarios all informed by contemporary ICT. Current forms of participation are responding to new ICT but still remain inert and somewhat passive. New media and the web are increasing the liquidity of this type of interaction as both data and plans are being shared. Participation is becoming more bottoms-up than top down, more in the spirit of the way complex systems actually evolve. In Future ICT, we envisage that we would pioneer a number of demonstrators as to how an informed citizenry might engage with experts from many domains in generating scenarios for improving the quality of urban life and urban performance, in ways that hitherto have not been possible. This will require a huge mobilization of resources which draw on many aspects of the Future ICT proposals and imply serious progress in

data, model, and policy integration. Already key data sources are being opened up such as mapping data, crime and policing, house price data, health data and so on and this will provide the momentum for the various demonstrators that we will initiate.

In our vision, participation and self-organization are the cornerstones to building a global knowledge resource that, by design, will represent a public good, accessible to every citizen, institution or business. On the one hand, people should be fully aware of the kind of public knowledge infrastructure they are contributing to, and of the potential benefits they will be able to get from it. On the other, people should be in full control of their contributed data/paroles: how their data are being acquired, managed, analyzed and used, when and for how long. Only a 12 public system capable of delivering high-quality information within a trusted framework has the potential for raising a high degree of participation, and only large, democratic participation can ensure the creation of reliable, timely and trustworthy information about collective phenomena. This view is at the basis of a citizen's science, where sentiment and opinion mining from trusted information can detect shifts in collective mood in a timely manner, detect the weak signal of important changes, and detect the structure and evolution of social communities.

5- CONCLUSION

In India which is a developing country and we are continuously using our resources without caring for what problems our future generations will have to face by our act. The concept of SMART CITIES is a very versatile and good concept as it carries all aspects for better human life. We all are living in a civilized and digitized world, all information travels from one part of globe to another within seconds of time. We human being either living in any part of Globe needs same atmosphere to survive and grow, the concept of Smart Cities is actually developed on our mutual understanding of universe, as is one is getting fresh and clean air in Europe why the person living in India can not get the same atmosphere here in India also. In India also lots of programmes were initiated by local government and central government to educate people about concept of smart cities, and how they can participate in the programme by following simple measures. As per estimates, about 25–30 people will migrate every minute to major Indian cities from rural areas in search of better livelihood and better lifestyles. With this momentum, about 843 million people are expected to live in urban areas by 2050. To accommodate this massive urbanization, India needs to find smarter ways to manage complexities, reduce expenses, increase efficiency and improve the quality of life. With this context, Prime Minister Narendra Modi's vision "Digital India," has set an ambitious plan to build 100 smart cities across the country. Modi in his speech quoted, "Cities in the past were built on riverbanks. They are now built along highways. But in the future, they will be built based on availability of optical fiber networks and next-generation infrastructure." It is clear from government vision and operations that they are aware of benefits of smart cities. Every citizen of India must contribute in his own way for better development of nation and to help himself for better development of India, followed with development of city in which he lives. Together we can change the world, live today – think tomorrow.

List of smart cities by state (Projected)

S. No.	Name of State/UT	Names of Cities Shortlisted
1.	Maharashtra	Greater Mumbai, Thane, Kalyan-Dombivali, Navi Mumbai, Nashik, Amravati, Solapur, Nagpur, Pune, Aurangabad
2.	West Bengal	New Town Kolkata, Bidhannagar, Durgapur, Haldia

3.	Gujarat	Gandhinagar, Ahmedabad, Surat, Vadodara, Rajkot, Dahod
4.	Madhya Pradesh	Bhopal, Indore, Gwalior, Jabalpur, Satna, Ujjain, Sagar
5.	Tamil Nadu	Coimbatore, Chennai, Madurai, Tiruchirapalli, Vellore, Salem, Erode, Tiruppur, Thanjavur, Tirunelveli,Dindigul, Thoothukudi,
6.	Karnataka	Bangalore, Mangaluru, Belagavi, Shivamogga, Hubbali-Dharwad, Tumakuru, Davanagere
7.	Kerala	Kochi
8.	Telangana	Warangal, Karimnagar
9.	Andhra Pradesh	Vishakhapatnam, Tirupati, Kakinada
10.	Uttar Pradesh	Meerut, Moradabad, Aligarh, Saharanpur, Bareilly, Jhansi, Kanpur, Allahabad, Lucknow, Varanasi,Ghaziabad, Agra, Rampur
11.	Rajasthan	Jaipur, Udaipur, Kota, Ajmer
12.	Punjab	Ludhiana, Jalandhar, Amritsar
13.	Bihar	Muzaffarpur, Bhagalpur, Biharsharif
14.	Haryana	Karnal, Faridabad
15.	Assam	Guwahati
16.	Odisha	Bhubaneshwar, Rourkela
17.	Himachal Pradesh	Dharamshala
18.	Uttarakhand	Dehradun
19.	Jharkhand	Ranchi
20.	Sikkim	Namchi
21.	Manipur	Imphal
22.	Andaman and Nicobar Islands	Port Blair
23.	Arunachal Pradesh	Pasighat
24.	Chandigarh	Chandigarh
25.	Chhattisgarh	Raipur, Bilaspur
26.	Dadra and Nagar Haveli	Silvassa
27.	Daman and Diu	Diu
28.	Delhi	New Delhi
29.	Goa	Panaji
30.	Lakshadweep	Kavaratti
31.	Meghalaya	Shillong
32.	Mizoram	Aizawl
33.	Nagaland	Kohima
34.	Puducherry	Oulgaret
35.	Tripura	Agartala

List of smart cities by state (Selected in 1ˢᵗ Round)

S. No.	Name of State/UT	Cities Shortlisted
1	Odisha	Bhubaneswar
2	Maharashtra	Pune
3	Rajasthan	Jaipur
4	Gujarat	Surat

5	Kerala	Kochi
6	Gujarat	Ahmedabad
7	Madhya Pradesh	Jabalpur
8	Andhra Pradesh	Visakhapatnam
9	Maharashtra	Solapur
10	Karnataka	Davangere
11	Madhya Pradesh	Indore
12	New Delhi	New Delhi
13	Tamil Nadu	Coimbatore
14	Andhra Pradesh	Kakinada
15	Karnataka	Belagavi
16	Rajasthan	Udaipur
17	Assam	Guwahati
18	Tamil Nadu	Chennai
19	Punjab	Ludhiana
20	Madhya Pradesh	Bhopal

List of smart cities by state (Selected in 2nd Round)

S. No.	Name of State/UT	Cities Shortlisted
1	Uttar Pradesh	Lucknow
2	Telangana	Warangal
3	Himachal Pradesh	Dharamasala
4	Chandigarh	Chandigarh
5	Chhattisgarh	Raipur
6	West Bengal	New Town, Kolkata
7	Bihar	Bhagalpur
8	Goa	Panaji
9	Andaman & Nicobar	Port Blair
10	Manipur	Imphal
11	Jharkhand	Ranchi
12	Tripura	Agartala
13	Haryana	Faridabad

6- REFERENCES

[1] "Mission Statement and Guidelines - Smart Cities" (PDF). Ministry of Urban Development, GOI. Retrieved1 February 2016.

[2] "Narendra Modi launches smart city projects in Pune", Live Mint, 25 June 2016

[3] "Bhubaneswar leads Govt's Smart City list, Rs 50,802 crore to be invested over five years", The Indian Express, New Delhi, 29 January 2016

[4] Cabinet nod To Rs 1 lakh cr for urban renewal, 98 smart cities to take off, New Delhi: Business Standard, BS Reporter, 30 April 2015

[5] "No time extension beyond December 15 for Smart City plan", The Economic Times, 3 November 2015

[6] Smart Cities in India ; smartcities.gov.in

[7] List of 98 Smart Cities, The Times of India

[8] Gibson, D. V., Kometsky, G., Smilor, R.W.(eds), "The Technopolis Phenomenon: Smart Cities, Fast Systems, Global

[9] "Centre unveils list of 98 smart cities; UP, TN strike it rich". The Hindu. 28 August 2015.

[10]http://indianexpress.com/article/india/india-news-india/india-20-smart-cities-list/

[11]"SmartCities.gov.in". smartcities.gov.in. Retrieved 10 May 2016.

[12] Komninos, Nicos (2013-08-22). "What makes cities intelligent?". In Deakin, Mark. Smart Cities: Governing, Modelling and Analysing the Transition. Taylor and Francis. p. 77. ISBN 978-1135124144.

[13] Mayer-Schonberger, Viktor; Cukier, Kenneth (2013). "1". Big Data: A Revolution That Will Transform How we Live, Work and Think. Houghton Mifflin Harcourt Publishing.

[14] Leydesdorff, Loet (2013-08-22). "Triple Helix Model of Smart Cities: A neo evolutionary perspective". In Deakin, Mark. Smart Cities: Governing, Modelling and Analysing the Transition. Taylor and Francis. p. 77. ISBN 978-1135124144.