Planning and Implementing Smart Cities in Pakistan:

A Structured Framework

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Abstract— It is said, that in coming years more and people will live in cities. These cities will need to be smart. The need to build Smart Cities is to face and solve the problems caused by increased population, city sizes and environmental issues, and to achieve tenability and maintainability with the help of advanced technologies. The popularization of 3G and 4G services launched in 2014 can also be used to enable smart city applications. The building of Smart cities will boost up the economy as well as lead Pakistan to step into the market of smart living technologies.

Keywords: 3G and 4G, Smart Cities, smart living technologies

I. INTRODUCTION

Smart cities are the future of the world and it is predicted that by the next 50Years more than 70 percent population of the world will be living in cities and big towns and to facilitate such large populations the cities will need to be capable of adopting the increasing demand and request for infrastructure and services. The cities should also be able to cope up with the problems caused by increasing population and city sizes. Real-time updates will be needed on pollution, water flow, power requirements, traffic patterns, crime ratio in different areas, parking spaces available, and road rush situations etc. [1]. To make all this happen, these smart cites must be able to capture and share large amounts of data rapidly and when it's about large data, monitoring needs to be more effective and interactive. The technology needs to be extended to next level.

Pakistan is an under development country and to plan and implement smart cities here we have to closely understand what exactly we want and which framework should be implemented to achieve such goal. A structured method is needed not only to build the basic infrastructure but also for the efficient working of such cities.

II. BACKGROUND

The idea of Smart city has established as the combination of 'Smart Growth' and 'Intelligent Cities' [2]. However, the idea of a Smart City goes step further than just the connections between citizens and service providers [3]. It is basically allowing and encouraging the people living in cities to become a livelier part of the community [4]. They can give feedback on the condition of roads or the quality of facilities and the living environment. They can provide useful information for the betterment of health and medical facilities in the cities. The citizens can volunteer for community activities. Employment is the need of life and "Smart Cities" can become the attractive locations to live and work but the concept is not stagnant: there is no perfect or absolute definition of a smart city so we can say that there is no end but an ongoing process or series of steps which can make cities smarter, more live able and, hence, enable the cities to face new challenges [5]. So, a Smart City is the one which enable every citizen to involve with all the facilities according to his or her needs [6, 7].

Future of smart cities in Pakistan is very bright but we will need a proper framework for the establishment and development of such cities. First of all, we will have to make sure that our cities are digitally connected with high speed land and wireless network and all parts are capable of the free flow of information, which will lay a foundation for the cites of Pakistan to become smart, creative and economically important. Secondly, the cities can't be smart if they are not sustainable and this is not possible without good governance. Thirdly we have to enhance technology because sustainability and maintainability can't be achieved without the help of advanced technology.

III. PROPOSED FRAMEWORK

The framework proposed for the establishment of smart cities in Pakistan are based on the following pivot points:

- Visioning and conceptualization of Smart Cities ☐ Selecting the appropriate location.
- Strategy for planning and development
- Identification of key project areas
- Execution of the projects
- Monitoring and evaluation of plans & projects
- Maintenance and governance of the cities.

A. *Visioning and conceptualization of Smart Cities*
Visioning the smart cities is the first step for the development of smart cites and federal government will have to play the key role in this visualization and conceptualization of such cities [2]. The Government will have to define the scope and limitations with the help of specialized professionals in the establishment of smart cities. The federal government should establish smart city board. This board will play the overall administrative and consultative role in the establishment of smart cities.

B. *Selecting the appropriate location*
In the selection phase the federal government will work side by side with the provincial governments to set the pilot cites to launch the first phase of the smart city development project, this phase will expand from one year to five years. It will be ideal if there at least one city from each province is selected. The appropriate criteria and indicators should be carefully selected which will guide the selection process.

C. *Strategy for planning and development* After the
selection phase of smart cities establishment project the next phase will be based on the strategy which should be followed, the strategy should be developed by provincial governments in partnership with private sectors so that the investment and technology can be shared [8, 9]. The planning should be based on outcomes rather than on assets. The set of indicators should be designed to govern the planning.

D. *Strategy for planning and development*

After the strategy planning phase the project phase will start which will also be governed and over looked by local governments, the next step will be the identification of the key project areas. The projects should focus on the improvement of the existing infrastructure and also on creating the new modern infrastructure [10]. There should be projects which will lead to the implementation. There should also be some projects to influence the behavior of people by providing them sufficient information on smart city's ongoing projects.

E. *Execution of the projects*
The execution and implementation of the projects will be the part of this phase. The list of activities will be defined which will include the detailed project planning, financial details to ensure the smooth project completions as well as there should be the clear identification of the partners and stakeholders for the projects.

F. *Monitoring and evaluation of plans & projects*

The monitoring and evaluation of the projects is a continuous ongoing phase which will keep a look on the changes in indicators and will capture any upcoming change so that new planning can be done and new strategies can be developed. Besides this an effective and efficient evaluation is the key to success of the projects [11]. It will also monitor the policies developed by the government as well as the partners and stakeholders.

G. *Maintenance and governance of the cities* Nothing will
remain the same without maintenance, and to maintain such level of maintenance, the governance plays a vital role. This phase will govern the maintenance process which will remain continue.

IV. GOVERNING BODIES
The three tier architecture is proposed for the governance of the smart cities establishment project in Pakistan.

Figure 1. Governing Bodied Model

A. *Federal Level*
A smart city board will be established at federal level which will be presided by Prime Minister. This board will play an overall administrative and consultative role. It will review the proposed possible cities. It will also review the proposals for different smart city projects. It will approve the funds needed and will review the activities periodically and will recommend any changes if needed.

B. *Provincial Level*
The provincial governments will establish the smart city committees by the orders of smart city board at federal level. Each committee will be headed by the Chief Minister. This

committee will provide guidance and advice to the smart city board and will interchange ideas for the better development of smart cities. It will make strategies and will help tendering and counselling of projects as well as grant funds for development and maintenance.

C. City Level

Advisory board will be established at city levels to ensure the proper implementation of smart city at root level [2, 11]. It will provide help in exchange of knowledge between provincial committees and stake holders. It will also define the future road-map for the smart city applications as well as guarantee the resources deployment between the timeframe and will regulate the development fund issued by smart city committee

V.   CONCLUSION

The reason to develop such Smart Cities is to make the people an active part of the community and to make Pakistan to step into the market of Smart Technologies. To gain such life of Smart Cities and to attain intelligent automated services, the Government must cash in Cloud Computing and the advantages of Virtualization. Particularly, the Government as well as citizens must join hands to bring out the idea of Smart Cities from the paper, into the real world.

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