Organization of the corridor for Science and Technology of yazd

منطقـه ویـژه
علـم و فنـاوری یـزد
Yazd Science and
Technology Corridor

Yazd
smart city

Yazd smart city's perspective

The path attaining to smartness city is unique to its own city and it depends on its maturity level and its distinctive challenges. In order to take the first steps for changing Yazd to a smartness city, thinking center of Yazd smartness city was formed with the Yazd university orientation, and for attracting participation and coordination of relevant organization in smart making Yazd. The goal of this center was:
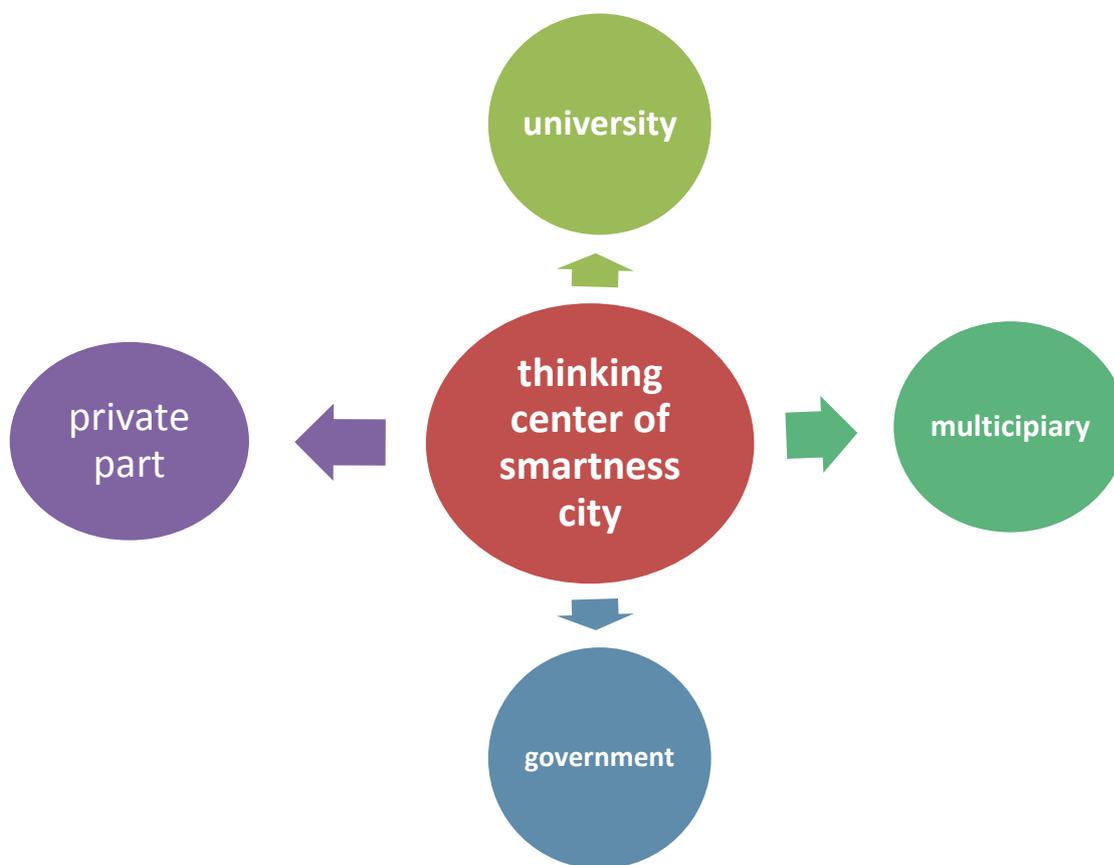

Figure 1- thinking center of Yazd smart city

• Leading, studying and implementing Smart City requirements
• Attracting partnerships and coordination of relevant organizations in order to making prepare Yazd as a smart city
• giving ideas and solutions for problems and challenges and future thinking about subjects interested to managers and policymakers of smart city and help them to make decision.

To define the smart city of Yazd, goals assignment, identification of weakness points and suggesting suitable solutions for solving these weakness points, a structured process was used. In this process, several beneficiaries have been consulted by thinking center of Yazd smart city and their comments and information were used to accelerate discussion, decisions, and activities for forwarding Yazd to achieve prospect of smart city.

definition of smart city of yazd	→	identification main fields to be far from goals	→	proposing solutions, leader projects

Figure 2- road map of Yazd smart city

Step 1: Defining Yazd Smart City

Today, there is several programs for making smartness Yazd and are performing. But, in order to move purposefully and completely toward smart city of Yazd, so it is necessary to formulate a clear perspective. Also, related goals, tangible, measurable and applicable indexes should be defined. In general, by defining smart city, we are looking for a city that its citizen life quality to be improved by using different technologies especially communication and information technology and sustainable economy development to be guaranteed.

A common methodology called "Smart City wheel framework "was used to define smart city of Yazd. A series of indexes in related to six dimension of interrelated smartness were selected in accordance with the cultural, social, economic and climatic conditions of Yazd city including smart life, smart transportation, smart governance, smart environment, smart economy and smart people.

In following, it is necessary a desired values of indexes to be defined as an objective by considering current state of city and adapting and targeted modeling from other leading cities. At this stage, attending and participating of related organization is very necessary.

Figure 3- six dimension of interrelated smartness

smart ife   smart ransportation smart gcvernance   smart environment smart economy   smart people

Step two: identifying main gaps from goals

By comparing current situation and desired situation, the main weaknesses and gaps to the optimum situation are identified in each of the six dimensions that need to be solved to access the Yazd smart city's perspective.

Step Three: Propose solutions (leader projects)

In order to fill the gaps between current situation and desired situation and access to Yazd smart city's perspective, it is necessary to propose solution and to design projects. For ensuring the achievement of Yazd smart city's perspective, we should formulate a comprehensive road map so to guide us how to implement these solutions as well as beneficiaries should be manage several risks including technology risks, community acceptance and environmental sustainability.

To effective and comprehensive implementing of these solutions, it is necessary to establish partners ecosystem including government, private sector actors, non-governmental organization, developers and civil society. These actors should be actively participate in designing and implementing of required systems, attracting public and private sector capital and providing hardware infrastructures , social capital and digital technologies.

Each leader projects has a trustee who is responsible for guiding and implementing relevant strategy, filling gap to desired status and accelerating next actions. By successful implementing of these solutions, Yazd will be closer one step to dream of becoming a smart city.

Indicators of Yazd smart city

The first step requires studding different indexes of a smart city and selecting suitable indexes for local of Yazd. So, more than 100 indexes presented in smart city wheel framework were studied in six dimensions. Among them, Yazd smart city indicators were selected. Also, some indexes were added with regards to member's opinions of making local thinking center. In the following, indexes of Yazd smart city were presented in six smartness dimensions.

Smart people

The main feature distinguishing smart city form digital city is presence of smart people defined according to their skills and their education level. The quality of society interactions like integration, social life and ability to communicate with world are some features of smart people. In this dimension, increasing citizen capabilities for using new technologies, increasing people's participation in making decisions and urban activities, and better provision of educational services are considered. In the following, selected indexes for this smart city are as follows:

Indexes of smart people

- Percentage of citizens having access to Internet via smartphone
- Number of civil partnerships proposed by the municipality in last year
- Annually participation of people in urban decision making
- Annually participation of people in urban public activities
- Percentage participation of qualified person in the last urban council elections
- Percentage of citizens with digital literacy
- Percentage of citizens with university education
- Ratio of students to population
- Elite ratio to population
- Percentage of labor force working in creative industries
- Percentage of employees with university education

[1] are industries that their basis is creating and publishing knowledge and information. Its root come back to cultural industry which over time and with revolution of information and communication technology has been emerged in the forms of industries like cinema, software, music, animation, computer games and so on.

Smart economy

Smart economy refers to the cities with the smart industries which are active in the field of new technologies especially communication and information technology using them for production process. In this dimension, development of regional / global competition, citizens' access to business opportunities, help to maintain rural populations and using electronically tools are considered. Then, selected indexes of this dimension of Yazd smart city are as follows:

Indexes of smartness economy

- Per capita of new knowledgeable companies in the year

- Financial turnover of knowledgeable companies

- Percentage of full times employees

- Percentage of technology- based exports

- Number of participants in the international congresses and exhibitions

- Number of foreign tourists per year

- Percentage of foreign students

Smart environment

Smart environment means that we can use new technologies to maintain environmental resources. In this dimension, environmental sustainability, reduction of energy consumption by using of technology innovative and encouraging to reduction in consumption and material recovery are taking into account. Selected indexes for this dimension of smart city are as follows:

Indexes of smart environment

- Percentage of complete building licensed by building engineering systems

- Percentage of produced energy by renewable sources

- Total per capita energy consumption in residential buildings (kwh per year)

- Percentage of urban network meets needs of smart network[1]

- Number of days with unhealthy condition in the years

- Recovery percentage of urban solid waste

- Total per capita of urban solid waste (kg)

- Total per capita of water consumption (liters per day)

- The amount of green space per 100,000 square meters /considering water consumption

- Per capita of public, welfare, recreation places and spaces (sport ground and so on)

- Per capita roofed passage ways (shadow)

1 SmartNetwork Requirements: reciprocal communication, automated control systems for definitive management, real-time information for customers, distributed production

Smart governance

Smart governance includes active and political participation of citizens, citizen services and smart usage of e-government and refers to application of new communicative channels such as e- government or electronics democracy. In this dimension, attention is focused on the development of comprehensive processes, establishment of strong communicative bridge between government institutions and improving access to services. Selected indexes for this dimension of smart city are as follows:

Indexes of smart governance:

- Percentage of government and public services accessible to citizens via web or mobile
- Percentage of the city covered by the city's wireless network
- High-speed Internet penetration (at least 2 Mbps)
- The percentage of urban infrastructure equipped with installed sensors
- Volume of free [1]data compared to total date

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1 Open Data – the date that its use and distribution is free for everyone .

Smart transportation

Smart transportation requires using information and communication technology to improve urban traffic. In this dimension, the main attention is focused on the creating smart transportation systems, reducing traffic nodes by simplifying urban graphs and creating a different culture, such as using new vehicles. In the following, selected indexes for this dimension of Yazd smart city are as follows:

Indexes of smart transportation:

- Per capita public bicycles

- Per capita urban traveling by public vehicle in the year

- The number of public transportation services providing real time information to customers (buses, local trains, metros, high speed transportation systems such as BRT and participatory models such as bicycles and rental cars)

Smart life

Smart life means gathering various aspects that help to improve the citizen life quality, including culture, health, safety, housing, tourism, and so on. In the following, the selected indicators for this smart city dimension of Yazd are as follows:

Indexes of Smart Life

- Percentage of citizens with problems in drinking water, urban sewage, population crowd, lack of electricity

- Dozen Index

- The rate of crimes per 100,000 people

- The percentage of citizens with electronic health records integrated with complete medical history

- Average Life expectation