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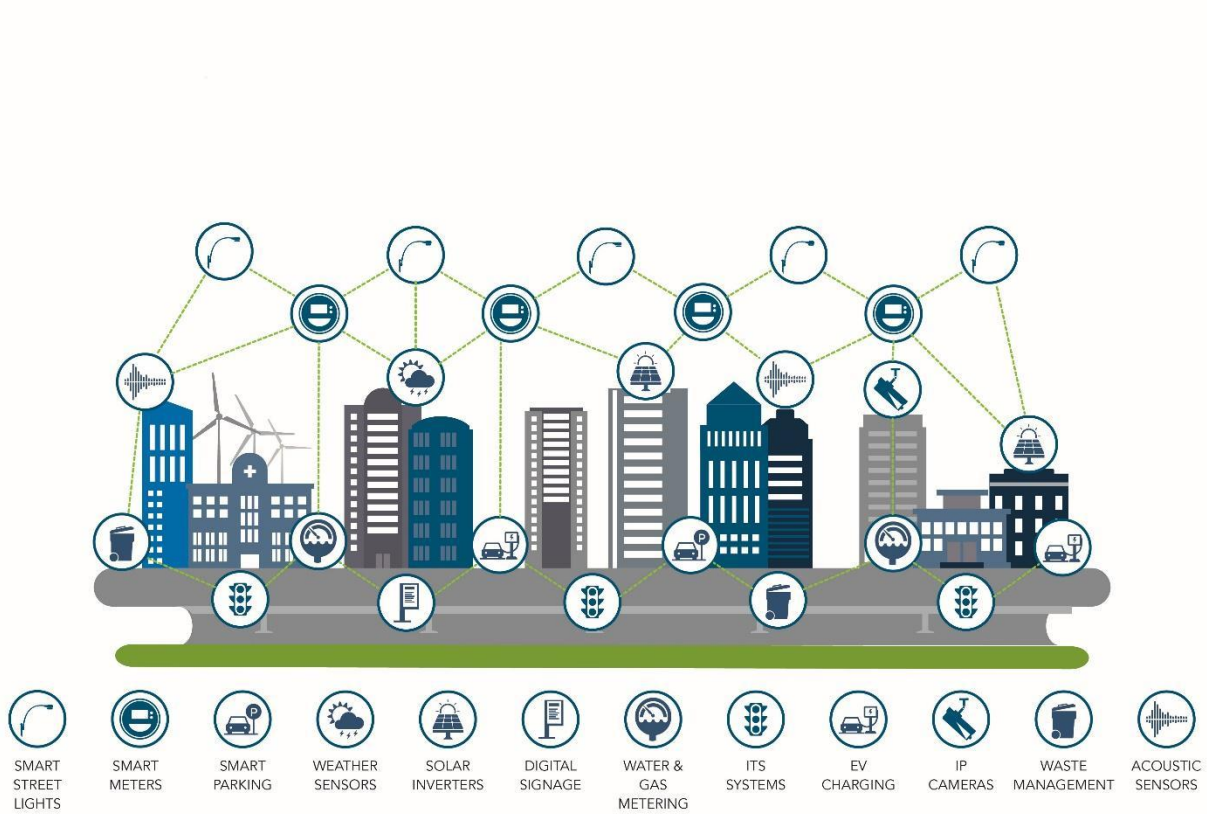
START UP FOR DEVELOPMENT

MODULE 2

SMART GOVERNANCE



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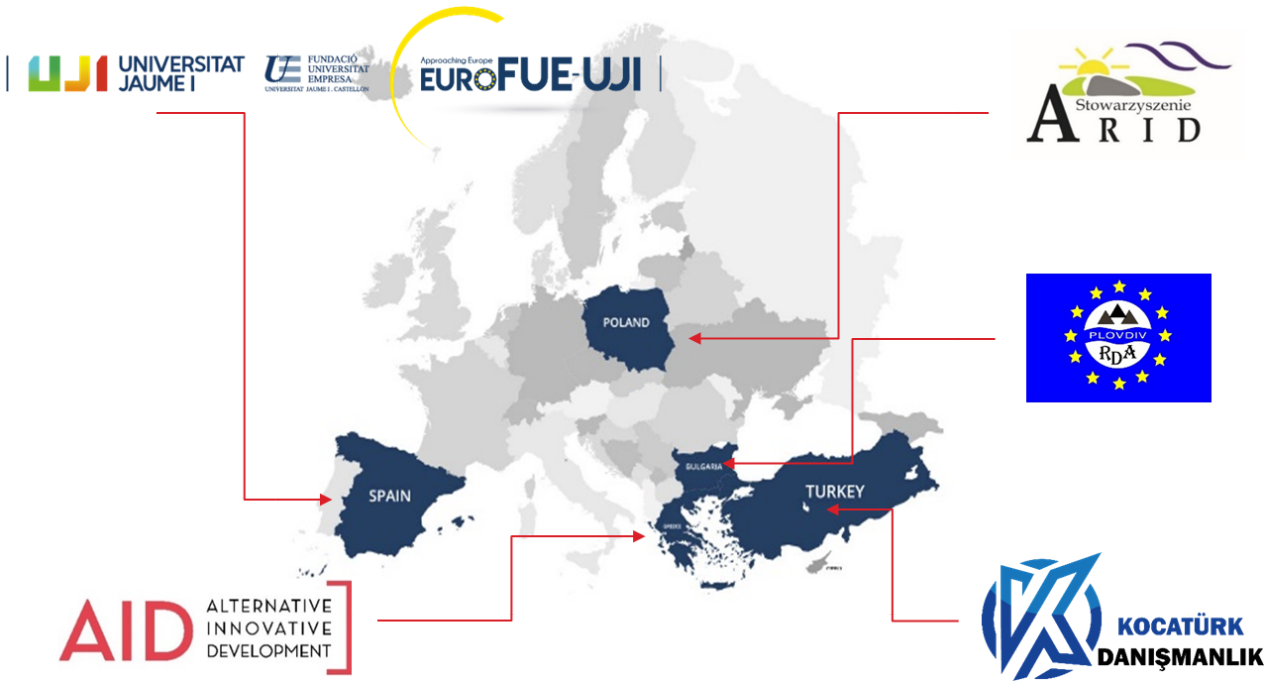

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CONTENT MAP:

ANNOTATION AND LEARNING GOALS:

The module is focusing on smart governance as the most complete enterprise governance management product for decision-making ecosystems.

The main goal of the module is to improve knowledge, skills and professional competencies in the field of smart governance.

EXPECTED LEARNING OUTCOMES:

After studying the module, the trainees are expected to acquire theoretical knowledge, cognitive and practical skills in the field of smart governance, as follows:

Knowledge:

Based on the theoretical knowledge acquired from the second module, the student will learn the theoretical information on how smart governance using Information and Communication Technologies (ICT) in the most rational way at every step of the process by considering both technological and managerial aspects in advance of determining what, when, where, by whom and how.

After completing the exercise, the student will have learned the concepts of e-government, smart governance, and its trends.

The student also will know the smart governance elements, steps for smart governance, and successful implementations, which focus on various aspects of smart governance.

Skills:

The student mainly will be able to develop a participatory mission to management. It will be possible for the students to apply the knowledge on how to be a part of smart governance in public administration processes such as analysis, planning, implementation, and policy making.

At the end of this activity, the student will be able to compare good examples of smart cities from various countries. Thus, he or she can analyse them and synthesise new solutions for cities' problems regarding administrative processes.

They will also learn to understand their information needs and to use the results of current techniques, applying them to the setting of objectives.

Attitudes:

The general attitude of the student is expected to understand that she/he is part of the decision-making processes of cities in order to solve administrative issues.

The student has the ability to define her/his information needs for developing e-government services.

By the end of this course the learner should be able to:

- identify the term of smart governance and its components and characteristics,
- associate e-governments with smart governance,
- gain knowledge on smart governance trends,
- learn smart city governance,
- explore good examples of smart governance.

The main purpose of this module is to build or strengthen the capacity of participants and their respective institutions in the domain of smart governance and its implementations.

FORMS AND METHODS OF WORK

Learning during this module will be achieved through presentations by experts as well as through gamified tools. The theoretical modules (1, 2, and 3) seek to provide participants with the basis needed for vulnerability and adaptation assessments thereby enabling them to understand the appropriate frameworks, methods and tools. Module 4 contains a number of case studies which demonstrate how to apply the various concepts, methods and tools presented in the previous modules.

Problem-based learning:

- Explore the issues
- State what is known (individual students)
- Brainstorming and exchange information on knowledge
- Define the issues
- Develop solutions to problems
- Presentation (groups)
- Discussion
- Evaluation

GENERAL MODULE OVERVIEW

A complex mix of different technologies, socio-economic factors, governance arrangements, policy and business-related factors play an important role in the development of the smart city concept. For this reason, in the implementation of the smart city concept, various ways are followed according to the specific policy, target, financing and scope of each city. The terms related to smart city, which are mostly used in the same or sometimes different meanings in the literature, are as follows:

- Smart City
- Knowledge City
- Sustainable City
- Talented City
- Wired City
- Digital City
- Eco-City

If it is necessary to make a broad definition of smart cities within an operational understanding, the following statement can be stated. It is human and social capital investments, traditional (transport) and modern (ICT) communication infrastructure, sustainable economic growth and the emergence of a high quality of life with the wise management of natural resources and the rational management of natural resources through participatory governance. This definition is based on an operational concept consisting of six features: smart economy, smart people, smart governance, smart mobility, smart environment and smart living (Giffinger et al., 2007). These features are listed in Table 1.

Table 1: Smart City Features and Key Factors

SMART ECONOMY	**SMART PEOPLE**	**SMART GOVERNANCE/ PARTICIPATION**
Innovative Spirit entrepreneurship Economic Image and Trademarks Productivity Flexibility in the Market Internal Reinforcement and Transformation Ability	Proficiency Level Proximity to Lifelong Learning Social and Ethnic Pluralism Flexibility and Creativity Cosmopolitanism and Public Life Participation	Participatory Decision Making Public and Social Services Transparent Governance Political Strategies and Perspectives
SMART MOBILITY	**SMART ENVIRONMENT**	**SMART LIFE**

(Transport and ICT)	(Natural resources)	(Life quality)
Local Accessibility Internal Accessibility Accessibility to ICT Infrastructure Sustainable, Innovative and Safe Transport Systems	Attractiveness of Natural Conditions Pollution Environmental Protection Sustainable Resource Management	Cultural Facilities and Education Facilities Health Conditions Personal Security Life Quality Touristic Attraction and Social Solidarity

In this context, the top 10 smart cities worldwide can be listed as follows: Vienna, Paris, Toronto, New York, London, Tokyo, Berlin, Copenhagen, Hong Kong, and Barcelona (Rank City Source: Jones Lang LaSalle, 2013).

This module, on the other hand, focuses on smart governance, which is using Information and Communication Technologies (ICT) in the most rational way at every step of the process by considering both technological and managerial aspects in advance of determining what, when, where, by whom and how. In other words, it is a governance consisting of e-government services that provides the principles of transparency, participation and collaboration in public administration processes such as analysis, planning, implementation and policy making. The module contains four units. The structure of the Module 2 is as follows:

1. UNIT 1: Conceptual Background of Smart Governance
   1.1. Introduction
   1.2. The Components of Smart Governance
   1.3. The Characteristics of Smart Governance
2. UNIT 2: E-Government
   2.1. Introduction
   2.2. Benefits of e-Governance
3. UNIT 3: Smart Governance and Values
   3.1. Introduction
   3.2. Smart Governance Elements
   3.3. Steps for Smart Governance
4. UNIT 4: Good Practices of Smart Governance

UNIT 1. CONCEPTUAL BACKGROUND OF SMART GOVERNANCE

Unit 1 identifies the term of smart governance, the components of smart governance and its characteristics. Additionally, the unit will associate smart governments with smart cities.

1.1. Introduction

The cities that emerged with the settled life of human beings were behind the rural population in terms of population. However, with the industrial revolution, the population of the city has experienced a great explosion in the last two hundred years. The urban problems brought about by this development turned into problems that the state administrators could not solve from the center. Urban studies, which developed over time, have resulted in intensive population migrations brought by industrialization, unplanned urbanization, infrastructure, transportation, water, electricity, security, waste, etc. Although it has partially solved the problems, it has not yet found a full solution. As a new phenomenon, Smart Information Technology permeates not only the life of the urban people, but also the rural life.

Smart information and Communication Technologies (ICTs) are finding their ways into public administration, and numerous smart government efforts are marking the start of a new digitalization wave in the public sector. Despite being in the early stages of development, these initiatives promise a new model for the provision of public services: smart government. Because past technical innovations in the public sector did not reach their full potential, it is crucial to know the difficulties if one is to successfully address them (Schedler et al., 2019). IGI Global identifies smart governance in four aspects:

- Concerns the efficiency of public services of a smart city and their improvement through innovations without forgetting the democratic inclusiveness of its residents.
- The process of governance based on using ICT tools and the Internet to provide information and public services, on communication and collaboration between government and citizens and on the principles of good governance.
- Smart governance is about the use of technology and innovation for facilitating and supporting enhanced decision making and planning. It is associated with improving the democratic processes and transforming the ways that public services are delivered.
- The process of governance based on using ICT tools and the Internet to provide information and public services, on communication and collaboration between government and citizens and on the principles of good governance.

1.2. The Components of Smart Governance

The main components of smart governance are governmental organization, citizen participation (and, consequently, government-citizen collaboration), and the use of technology.

Governmental Organization

The first building block of smart governance is the organization of government. This term entails a whole range of sub-facets such as motivation, vision and strategies, attitudes, decision-making, process coordination, and roles and responsibilities, as well as the provision of financial, regulative, technological means and human resources, knowledge management and organizational culture, etc (Przeybilovicz et al., 2017).

The *first* organizational characteristic, commitment, refers to the extent to which local governments are motivated to engage in sustainable development through ICT-supported urban collaboration. According to a large number of papers, smart sustainability governance will not ensue without the cooperation of local governments. The *second* organizational characteristic regards the responsiveness of government. A longstanding relationship between government and citizens requires governments to become a receptive partner towards inhabitants. The *third* organizational characteristic is operational management. This classic organizational feature provides the operational basis to equip technology-supported collaborative governance arrangements with whatever is needed for their running, and covers all facilitative types of measures, actions, and preconditions. Many research emphasize that this requires an integrated approach combining infrastructural, technological, social, and political systems, as well as cross-sectoral bridging between policy domains and urban priorities.

Citizen Participation

The second building block of smart governance is citizen participation. Citizens can offer useful and helpful suggestions for government agencies to arrive at better informed policy decisions (Stratigea et al., 2015; Anttiroiko et al., 2014; Singh Kalsi and Kiran, 2013). Relevant components are (1) the degree to which these forms of citizen participation in urban governance are interactive, (2) the representativeness of the participating population, and (3) motives for citizens to participate.

Use of Technology

The final building block of smart governance is the use of technology, in particular ICTs. We mapped how digital technologies are applied in participatory governance processes aiming at sustainable urban development. We identified the types of technologies used and the aims they are applied for, as well as their limitations. Smart governance can leverage modern technologies such as Internet of Things (IoT), Artificial Intelligence (AI), and Blockchain for numerous applications.

1.3. Characteristics of Smart Governance

The main characteristics of smart governance are transparency, negotiability, and participation.

- Transparency (Transparent Management)
- Negotiability (Collaboration)
- Participation

There are also some requirements of smart governance.

- **Simple**: User-friendly governance through simplification of rules and regulations of the government with the application of ICT.
- **Moral**: Desining a government system based on moral values to uphold the spirit of good and efficient governance.
- **Accountable**: Development of effective information management systems to ensure the accountability of public service functionaries.
- **Responsive**: Making the system more responsive by streamlining them efficiently for more convenience.
- **Transparent**: Clear and transparent government processes through the use of public domain websites and portals.

UNIT 2. E-GOVERNMENT

The Unit 2 defines e-government and its benefits in the context of smart governance.

2.1. Introduction

E-government is a technology production. Technology, which has transformed with the 1970s, has left important effects from economy to management. In this change, the effective prominence of Internet technology in the future has revealed the e-government application. E-government is a practical application apart from a bureaucratic government approach regarding this process. With the use of e-government, the use of time becomes more flexible and the narrowing effect of space is overcome and a global management is achieved (Thompson, 2013).

According to the World Bank definition, e-government is defined as: Government institutions' ability to transform relations with citizens, businesses and other branches through information technologies (such as Wide Area Networks, Internet and mobile computing). These technologies can serve a variety of purposes, such as better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more effective government management. The resulting benefits may be less corruption,

increased transparency, greater convenience, increased revenue and/or cost reduction (Kumar, 2015).

The definitions of e-governance and e-government range from the free circulation of information, the information movement to transcend the physical limitations of traditional paper and physical-based systems, to the use of technology to increase access and delivery of government services to the benefit of citizens, business partners, and employees. The common theme behind these definitions is that E-government involves the automation or computerization of existing paper-based procedures that will require new ways of discussing and deciding on new leadership styles, strategies, commerce, and listening to citizens. E-government supports the use of ICT in public administrations in order to improve the newly offered services, develop the competencies of the employees and increase the democratic process and welfare, accompanied by a change in organization.

E-government aims to increase government access and delivery of services that benefit citizens. More importantly, it aims to strengthen the government's drive for effective governance and help increase this transparency and better manage the country's social and economic resources for development. The key to e-government is the establishment of a long-term, organization-wide strategy to continually improve operations in terms of citizen fulfillment. It meets their needs by transforming internal operations such as personnel, technology, processes and workflow management. Thus, E-government ensures efficient and fast delivery of goods and services to citizens, businesses, government employees and agents. E-government means simplifying procedures and streamlining the approval process. It means facilitating interagency coordination and cooperation to enable government employees and agents to make appropriate and timely decisions.

Working Group on E-Government in the Developing World defines e-government as “using information and communication technologies to promote more effective and efficient government, facilitate government services in a more accessible way, and provide more comprehensive services” (www.pacificcouncil.org). The United Nations defines E-government as using the Internet and the worldwide web to provide government information and services to citizens (www.unpan.org). The United Nations claims that the evolution of e-government consists of five stages from 1996 to after 2005.

Table 2: Five Stages of E-Government Evolution

Stage 1 (1996-1999)	Emerging with Core Web Assets
Stage 2 (1997-2000)	Developing with Interactive Web
Stage 3 (1998-2003)	Completing the Web Process Interactively
Stage 4 (2000-2005)	The Integrative and Transformative Web
Stage 5 (2005+)	Smart City Governance

Among the five stages of e-government evolution, especially the fourth stage, 2000 and later, is important. In the fourth phase between 2000-2005, integration and transformation progressed and user-centered experience, multiple agency connections emerged on various websites. Therefore, a wide range of services has emerged throughout the entire state administration. The e-citizenship portal developed by the Singapore Government is a prime example of this system. The fourth phase is characterized by redefined relationships between government, citizens, businesses, communities and workers that offer seamless experiences and new connectivity, collaboration for services, and rich levels of engagement that result from business models and policy design and development. The consolidation of information, processes and channels among multiple government, non-governmental and private sector organizations allow the user to initiate and complete all tasks easily and securely. This is the concept of integrated and transformative service. Integration requires the following important and imperative demands:

- Understanding customer experiences and regular monitoring and expectations,
- Trained and informed employees,
- Interoperability and standardization of information, processes and technologies, especially at the interfaces of organisations,
- Omnichannel strategies – providing consistent and reliable experiences for users within and across individual service channels,
- Inter-organizational governance audits (Kumar, 2015).

After 2005, many countries witnessed the emergence of smart city governance. In this context, the European Union has a great importance. Governments have transformed themselves into an entity that meets the needs of their citizens by developing an integrated back-office infrastructure. This is the most complex level of online e-government initiatives and is characterized by:

- Horizontal links (between government agencies).
- Vertical links (between central and local government agencies).
- Infrastructure connections (interoperability issues).
- The link between governments and citizens.
- Links between stakeholders (government, private sector, academic institutions, NGOs and civil society).

As a result, participatory governance focused on solving problems is realized through these connections. The smart city offers a tremendous opportunity for e-learning and e-medicine. Smart city residents have to receive lifelong continuous education, especially on fully conscious carbon emission, energy efficiency, environmental efficiency and pollution controls. In smart city technologies, ICT is created 24 hours a day, 7 days a week.

2.2. Benefits of e-Government

E-government provides benefits for citizens, businesses and governments. E-government benefits citizens in many ways. Government service 24/7, economical and convenient service without the physical need for an office, fast and efficient service (electronic and wide bandwidth), transparency, equality, and convenience are some of these benefits (Norris, 2001).

Reducing start-up time, helping to run e-commerce and e-commerce (online business), better compliance with government rules and regulations, more convenient and transparent way of doing business with government, transportation of goods through online tracking, better control and monetary transactions Benefits such as avoiding corruption by doing online (e-banking, e-payment) are some of the benefits that e-government provides to businesses.

E-government also provides benefits to governments. Better and up-to-date information is provided as a result of better policy making, regulatory and development functions, and rapid acquisition, storage and retrieval of data leads to better decision making. Better management of government processes, better dissemination of government rules, regulations and activities, better performance in regulatory functions such as taxation, better performance in social sectors such as education, health and social security creates a positive image of modern and progressive government. These streams of benefits have demonstrated different patterns of e-governance (smart governance) evolution.

UNIT 3. SMART CITY GOVERNANCE

The Unit 3 identifies the term of smart city governance, smart governance elements and steps for smart governance.

3.1. Introduction

It is accepted that the concept of governance was used for the first time in a report published by the World Bank in 1989, then in some OECD reports, and the concept of good governance was used for the first time in the Second United Nations (UN) Conference on Least Developed Countries in 1990 (Sözen, Algan, 2008). 2009).

Today, the concept of governance is used to express the multi-actor management approach based on participation and partnerships in public administration. With the principle of governance, it will be ensured that all parties that will be affected by the decision are included in the decisions that concern the public, thus enabling non-governmental organizations as well as central and local governments to have a say in matters that concern them. (Ugur, 1997)

Governance refers to both formal and informal processes and institutions that direct and constrain the joint activities of a group. Government is its subset that acts with authority and creates formal obligations. Governance in this context need not necessarily be driven by governments. Private companies, associations, non-governmental organizations (NGOs) and associations of NGOs operate mostly together with government bodies and sometimes without government authority to establish governance (Keohane, 2000). UNESCO defines e-governance as the use of ICTs by the public sector to improve information and service delivery, encouraging citizen participation in decision-making, and more responsible, transparent and effective government. E-governance includes new leadership styles, new ways of discussing policy and investment, new ways of accessing education, new ways of listening to citizens, and new ways of organizing and delivering information and services. E-governance is generally considered a broader concept than E-government, due to the possibility of citizens changing their relations with governments and other countries. E-governance can introduce new concepts of citizenship, both in terms of citizen needs and responsibilities. Its aim is to involve, activate and empower the citizens. E-democracy is built on e-governance and focuses on the effectiveness and innovation of ICTs with higher democratic motivation and intent (www.unesco.org).

The concept of electronic governance, chosen by the Council of Europe, covers the use of electronic technologies in three areas of public action. These are the relations between public authorities and civil society, the functioning of public authorities at all stages of the democratic process (electronic democracy) and the provision of electronic public services. Unit 3 identifies the term of smart city governance, smart governance elements and steps for smart governance.

E-governance is defined as the application of electronic tools in internal government operations to simplify and improve the democratic and business processes of governance, as well as the interaction between government and citizens and government and businesses (Backus, 2001). According to Kettl (Kettl, 2002), smart governance is a method of explaining the links between government and its wider environment such as political, social and administrative. The application of electronic connections refers to the interaction between government and citizens and government and businesses and intra-governmental operations to simplify and improve the democratic, government and business aspects of government.

Kazancıgil (1998) stated that the governance model, which was initially implemented within the framework of the city administration in order to deal effectively with local problems, gradually developed at the central government level and gradually in the process. It draws attention to the fact that it is applied to the management of problems at the transnational level.

3.2. Smart Governance Elements

Figure 1 illustrates the political strategies and perspectives for smart governance, decision making, transparent management, the best public and social services, and above all citizens. Universal e-literacy comes first among the basic requirements of

smart city e-governance. Again, e-democracy is indispensable. The term democracy refers to processes and structures involving government (elected representatives), forms of electronic interaction, and citizens (voters).

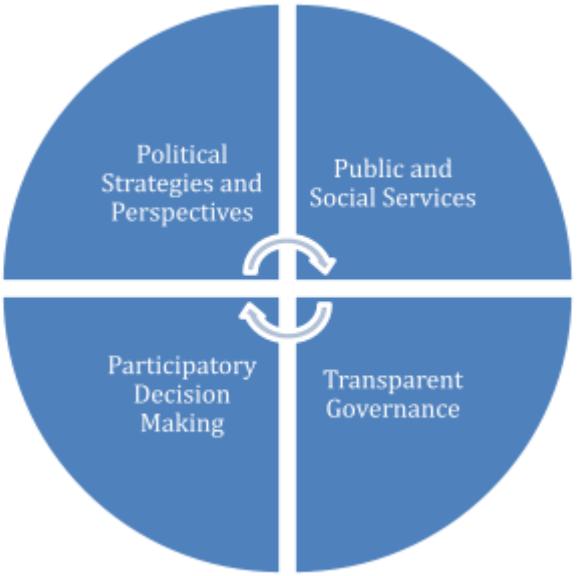

Figure 1: Smart Governance Elements

Online democracy also includes access to officials elected by all voters, use of discussion forums (e-participation), access to meetings and meeting documents, voter registration and ultimately online voting, known as e-voting. In this process, e-consulting and e-participation are very important. Developing smart cities have challenges in the e-governance process. Smart city e-governance challenges can be listed as follows: water supply and sanitation, power supply, urban transport and traffic management, pollution control and environmental sustainability, land use regulation, management of development in populated areas, infrastructure maintenance, policing, disaster management, urban poverty. There are e-governance solutions that fit these challenges. However, research and development investment and extensive coordination are needed to create a common E-governance solution. Administrations and supporting institutions should adopt appropriate E-governance standards and systems that lead to easy integration and information exchange.

3.3. Steps for Smart Governance

Cities today relentlessly turn themselves into information systems that are often real-time. These systems are reconfigured to use physical infrastructure, service offerings and relationships between users, enhanced reactivity, and greater flexibility. For example, in most cases, the goal is better optimization of scarce resources such as parking. The main goal of smart cities is the pursuit of improved environmental efficiency, whether it is to reduce energy consumption or the amount of waste it generates. Smart cities and the digital networks that connect them are best

understood as emergency automation systems powered by interconnected subsystems of scaled technological and human intelligence.

Based on fixed Internet protocol networks and layers of wireless satellite and mobile networks, smart cities are designed to take advantage of the massive amounts of data generated by billions of Internet and mobile devices and services. This includes:

- Machine-to-machine (M2M) communication between mobile devices
- Large-scale data processing by means of "closed computing" in the processing and display of data
- Big data and data analysis that relates and interprets information and information flows.

In this context, increasing the ICT city expenditures, website availability, e-government and strategic plan to promote ICT, increasing the percentage of accessible services, ease of access to information, electronic signature, increase in the number of personnel using Internet-connected computers, citizens using Internet-connected computers Increasing the number of people, transparent governance, e-democracy, electronic voting and continuous e-education are the basic steps towards e-governance for smart cities. Further steps towards e-governance of smart cities are e-governance by using smart city technologies and e-governance for smart city by strengthening e-democracy.

When smart city governance is conceptualized in the light of the extensive literature, four types emerge. The first type of intelligent governance conceptualization; proposes what is needed to transform government structures and processes. In this conceptualization, smart governance is simply smart city governance. In this respect, smart governance is about making viable, correct policies and choices within these existing structures and implementing them effectively and efficiently. Griffinger et al. (2012) emphasize that smart governance encompasses aspects of political participation, services, functioning of the administration as well as citizens. Alkandari et al. (2012) argues that the government should approve smart city development, Winters (2011) argues that urban governments should only encourage higher education centers to develop smart cities.

Finally, Nam (2012) emphasizes that smart governance is about supporting smart city initiatives and the second type of innovative decision-making processes and implementation of these decisions in the conceptualization of smart governance. UNESCAP (2007) emphasizes that “decision-making processes and the process by which decisions are implemented (or not implemented) is intelligent governance. Walravens (2012) adds that decision making can be made innovative using network technologies. New technologies are used to strengthen government rationality in terms of knowledge of government decision-making processes—more easily available and accessible—and in the implementation of those decisions.

The third level in the intelligent governance conceptualization is about creating an intelligent management. Gil-Garcia (2012:274) shows that smart government is a new form in e-governance to use advanced information technologies integrated with

physical infrastructure, processes, institutions, to better serve citizens and communities. This type of smart governance is at a higher level of transformation since the government has to restructure the internal organization. Batty et al. (2012) emphasized that smart governance is a stronger intelligence function to coordinate the many different components that make up the smart city. Intelligent governance is a structure that combines the traditional functions of government and business.

It is emphasized that the fourth and most transformative level of conceptualization is intelligent governance, which is about reorganizing the position of government within the urban system. Batagan (2011:85) states that smart management operations come most important in helping cooperation between departments and communities and making services citizen-oriented and promoting economic growth. Similarly, it can be said that smart governance helps to foster cooperation and economic growth among institutions and communities and makes significant operations and services truly citizen-centered. Schuurman et al. (2012) states that in smart cities, governments should encourage the participation of all stakeholders in order to create an interactive, participatory and knowledge-based urban environment. Finally, Kourtit et al. (2012) argue that smart governance, including all actors, are pro-active and open-minded governance structures to maximize the socio-economic and ecological performance of cities and to deal with negative externalities. These four perspectives on the management of smart cities are summarized in Table 3.

Table 3: Smart City Governance Perspectives

Smart Governance Perspective	**Conversion Level**	**Focus**
Smart City Government	Low	Good Administration, Good Policy
Smart Decision Making	Medium-Low	Innovative Decision Making
Smart Administration	Medium-High	Innovative Administration
Smart Collaboration	Highly	Innovative Governance

Source: Meijer, 2013

The rapid urbanization of societies in the 21st century offers scalable solutions that empower networked societies. While ICTs are critical to providing platforms for smart urbanization, it is citizens themselves who will or will not solve societal, political and economic challenges. As networks reshape society and governance structures, the possibility of shaping smart cities as democratic ecologies increases with each passing day. Smart cities are challenging for democratic governance as they find new solutions to the delivery of government services and empower citizens and communities to be agents for their own governance. The more citizens are empowered to participate in the formation of government, the more likely it is to form real community to serve collaborative democracy.

UNIT 4: GOOD PRACTICES OF SMART GOVERNANCE

Civic Ledger – Government-To-Citizen (G2C) Smart Transactions

Smart government transactions open the door for a transparent and secure method to provide citizens with public services in cities. It simplifies the access for engagement between local authorities and citizens on issues regarding taxes, licenses, and documentation by providing a digital, transparent and personalized experience using blockchain, smart contracts, smart communications, data encryption, and other technology advancements for the government. Australian startup Civic Ledger leverages blockchain technology and smart contracts to create digital marketplaces for citizens to self-serve and manage government-granted entitlements like permits, licenses, and vouchers, as well as streamline the operation of patent registrations and distributed exchange platforms.

Civocracy – Civic Engagement Platform

Civic engagement platforms allow for sharing ideas and suggestions between citizens and the government regarding upcoming and potential projects in cities. Digital communication methods help authorities reach a wider, more diverse group of smart citizens. German startup Civocracy develops a platform for civic engagement, which connects local governments with their citizens to make collaborative decisions. Software features include city-led discussions, debates, real-time tracking, identifying their most active members, crowdsourcing ideas, and enabling multi-level administration.

PromptGov – Addressing Citizen Grievances

Using smartphone applications, citizens now have the opportunity to report public service issues, while providing evidence in the form of photos or other media files. These applications activate the device's GPS location for efficient routing of the required staff and management of the reported issues in one platform. The USA-based startup PromptGov provides a cloud-based civic assistance software to report issues using a mobile application, a social media agent or through Short Messaging Services (SMS). Grievances are visualized on a map for both citizens as well as for operators. They make use of Artificial Intelligence (AI) to manage the most commonly reported non-emergency requests. It can detect duplicate incidents and automatically prioritizes requests based on various factors such as the location, the scope of grievance and the availability of staff.

Polys – Online Voting System

Shifting to online voting platforms allows for expanding the voter base while getting citizens more involved in decision-making processes regarding any new policies. Web and mobile voting applications provide intuitive interfaces with projects

descriptions, details, and instructions. Such a voting mechanism can increase voter turnout as citizens can cast votes from the convenience of their home or office. Russian startup Polys develops a voting system based on blockchain technology which significantly cuts the chance of manipulating the results for any vote. Their solution enables identification through SMS and smart cards for the integration with a client's website or application. The system also ensures that all votes are cast anonymously to ensure voter privacy.

SWIM – IoT for City Infrastructure Management

Modern smart cities have several data sources, such as ticket sales of public transport systems, tax data, police reports, and sensors on roads and buildings which are continuously collected for further analysis. Internet of Things (IoT) city infrastructure platforms work to reveal patterns of interaction between citizens and infrastructure for further smart management, for example, in handling lesser-used city spaces or by creating traffic management or energy consumption policies. The USA-based startup SWIM develops an IoT platform which transforms raw data from smart city sensors and controllers into a real-time streaming API. Their solution utilizes edge computing with a "store-then-analyze" architecture to ensure high speeds and improved efficiency in data management for making important decisions regarding the city.

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