

# Platforma de *e-Participare* pentru facilitarea implicării cetățenilor în inițiativele *Smart City*

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**Rezumat:** Creșterea populației la nivel mondial și migrarea masivă a acestora către zona urbană dau naștere la probleme noi și greu de gestionat de către guvern și autorități locale. Pentru a menține sau a spori calitatea vieții în condițiile creșterii numărului de rezidenți, tehnologiile ITC pot fi utilizate pentru a implementa proiecte *Smart City* care să aducă beneficii comunităților. Un număr mare de cetățeni simt un sentiment de angajament față de aria locală și au dorința de a se implica în activități de îmbunătățire a calității vieții. E-Participarea se referă la implicarea cetățenilor în procesele de e-guvernare. Lucrarea prezintă proiectarea și dezvoltarea unei platforme destinate participării cetățenilor în inițiativele *Smart City*, al cărei scop primordial îl reprezintă facilitarea interacțiunii dintre cetățean și autoritate pentru a identifica și stabili proiecte de tip *Smart City* de interes prioritar pentru comunitate.

**Cuvinte cheie:** e-Participare, e-Guvernare, Cetățean, Participare cetățenească.

## *e-Participation Platform for Facilitating Citizens Involvement in Smart City Initiatives*

**Abstract:** The increase in the world population and the massive migration of the population to the urban area give rise to new problems difficult to manage by the government and local authorities. In order to maintain or enhance the quality of life while increasing the number of residents, ITC technologies can be used to implement *Smart City* projects for the benefit of communities. A large number of citizens feel a sense of commitment to their local area and have the desire to engage in activities to improve the quality of life. E-Participation refers to the involvement of citizens in e-government processes. This paper presents the design and development of a platform for citizen participation in *Smart City* initiatives, whose primary purpose is to facilitate interaction between the citizen and the authority to identify and establish *Smart City* projects of priority interest to the community.

**Keywords:** e-Participation, e-Government, Citizen, Citizen participation.

### 1. Introduction

More and more people are willing to take initiatives to make their local neighbourhood more liveable [7], in order to have a greater quality of life. As a result, the relationship between government and society is changing. The governance process must become and remain a partnership between citizens and their elected officials. This partnership is based on citizens trust in public administration, namely through the way the administration provides decisional transparency,

honesty towards citizens and opportunities for active involvement of citizens in administrative decisions and projects.

Overall, the level of public participation and citizen engagement in the decision-making processes tends to be low. The citizens are often poorly informed about the subjects being discussed and decided, even though the main goal is to serve the public interest [6].

Active citizens' participation aims to narrow the social gap between the electorate and government institutions. The quality of democracy is dependable by continuous citizen participation in all governmental aspects. For a viable involvement of citizens in the administration's projects, it is necessary to have permanent information and an active consultation procedure. A proper citizens' informing requires that the public administration provides data on its plans according to the standards of open government, and the consultation process identifies and analyses the needs and demands of citizens in the context of the development and development of new initiatives.

A main driver for e-government is the belief that the widespread adoption of digital technologies is vital to national competitiveness in the future. If e-government is to succeed in transforming the citizens' experience of both public services and of decision-making it needs to pay greater attention to demand rather than supply-side issues [4].

It is forecast that by the end of 2050, about 70% of the population will live in cities [2]. This leads to the conclusion that ITC solutions are required to face this trend. A *Smart City* must include key components that enable the centralization of the data, components that can take many shapes and forms from a simple website to more complex and context aware mobile applications and specialized hardware. On the other hand, the accessibility of the data should be guaranteed in such way that the system should be freely accessed by the citizens and should allow them to propose modifications and corrections. By enabling the contribution of the citizens, it can ensure that more objectives are achieved regarding an information and also making it easier to obtain more data from citizens [5].

E-government is in fact a new paradigm for organizing society where social laws and norms remain unchanged, but the way they apply and the values they are assigned. The importance of the concept of e-government is given by a number of fundamental considerations regarding actions that encourage the widespread adoption of digital technology as a key element for a competitive economy, allowing the government to

redefine its role and focus attention to citizens and reduce the costs of public services, without negatively affecting their quality. Ensuring that government works for the public good requires informed, organized, active and peaceful citizen participation. Citizens must therefore understand ideas about citizenship, politics and government. They need knowledge to make decisions about policy choices and the proper use of authority. Digital society is the advanced society or community in the field of adopting and integrating digital technology in people's daily lives (home, work, recreation). In this context, e-Government can be defined as the development, distribution and enforcement of the policy, laws and regulations necessary for the functioning of the digital society, the economy as well as the e-Government. A significant feature of e-government is to attract proactive citizenship through the e-Participation component, in managing and developing public services and delivering them to the digital environment.

E- Government is a powerful tool to provide specific information to the citizen's need at a certain point in his life through a multitude of digital channels: web portals, real-time help centres, car-centres, or self-service online kiosks “. Online web portals are the most important and offer a multifunctional IT system that provides a secure point of access to a wealth of information and services through a web interface.

E-government is not just about government website and e-mail. Nor just service delivery over the Internet. Nor even about digital access to government information or electronic payments. It is all about how citizens relate to each other. Indeed, it is a neo-culture, allowing citizens to communicate with governments, participate in policy making, and communicate with one another [3].

## **2. *Smart City* initiative enablers**

In order to prioritize *Smart City* projects, it is necessary to involve citizens actively in the e-government process. Citizen satisfaction levels relative to the *Smart City* aspects may vary from one city to another, so a citizen e-participation platform can determine the importance of implementing certain projects according to the area considered as a priority by citizens.

Citizens engagement ultimately leads to better citizens: people who are aware of their rights to participate in the first place and are more confident of their ability to do so [1]. E-Government portals are considered of major importance in the online public administration reform. They provide that “single point of contact” to, preferably, all the services and information that the public administration has in the online environment.



**Figure 1.** An overview of *Smart City* ([www.iotnet.eu/wp/solutions/](http://www.iotnet.eu/wp/solutions/))

## 2.1 Similar platforms in EU States

*Smart City* initiatives are of particular importance at European level. In the EU vision, a *smart city* goes beyond the use of ICT for better resource use and less emissions. It means smarter urban transport networks, upgraded water supply and waste disposal facilities and more efficient ways to light and heat buildings. It also means a more interactive and responsive city administration, safer public spaces and meeting the needs of an ageing population [8].

EIP-SCC - *European innovation partnership on smart cities and communities* – is an initiative supported by the European Commission that brings together cities, industry, small business (SMEs), banks, research and others with the goal of improving urban

life through more sustainable integrated solutions and by addressing city-specific challenges. In a competition organized by EIP-SCC in 2014, 370 commitments around *smart city* projects & solutions were submitted by more than 3000 partners.

One of the most important platforms for e-participation is the Estonian e-Participation tool - Osale. The Osale platform offers three main functions. The first one is to offer citizens the opportunity to propose new legislative initiatives to present their ideas or to criticize petitions submitted by the government. The second function is the one that permits citizens to participate in public hearings and consultations. A third function offered by this platform is to look for legal acts depending on the stage they are in.

In this platform, all government agencies are advised to publish initiatives before adopting them. However, registration of initiatives by government agencies is not regulated in any way and is purely optional. One of Estonian objectives on the information society is to raise the standards of living for its own citizens by developing citizen-based IT services. The strategy consists in developing citizens knowledge in the IT field in order to benefit as much as possible from the advantages of the information society. One of the most important advantages is helping citizens to save more time and money by using implemented electronic services. While gaining time people proved to be relaxed and more efficient.

Given the above considerations, a platform where the citizens can express their ideas, arguments or development proposals can prove a benefit for the national e-government process.

Designing the On-Line Platform to enrol smart-city project initiatives consisted of designing the software architecture initiative registration, setting the technologies to be used in on-line platform development, data types, information management, user classes and roles, and workflows, and description of the base components of the platform: the database, the database logic model, and the physical model of the database. The first major step consisted in identifying the functional and non-functional requirements. The requirements were established by analysing similar platforms developed in other EU States that have proven their success – such as Estonia's *OSALE* and Sweden's *Citizen in the middle*, and some e-government portals available in Romania – such as *e-Romania*.

In the development process we used the Model-View-Controller approach which aims to keep the working logic of an application separate from display logic. Separating a project in this way means that each level is doing its job extremely efficiently, maintaining its relationship with other levels that operate within clearly defined limits. It also means that multiple views and controllers can interface with the same model, and new or different views and controls can interface with a model without forcing a change in the design of the model.

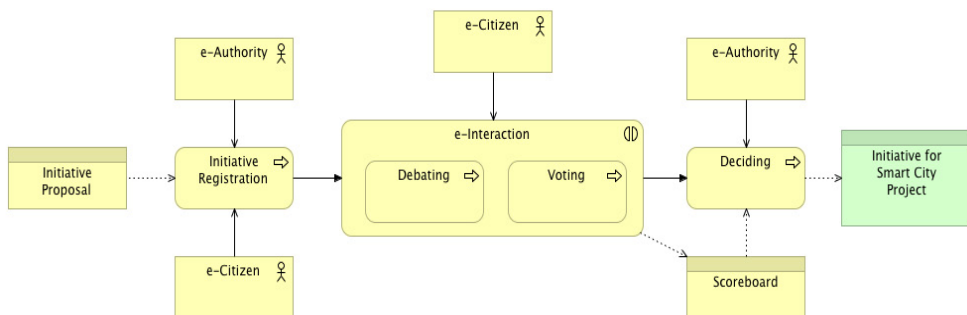
*CodeIgniter* and *PHP* were used for writing the application. *CodeIgniter* is an open-source PHP-based framework that contains a multitude of libraries, helper, plug-ins and other resources that deal with many of the more complex procedures and functions for which PHP is widely used. *CodeIgniter* greatly simplifies things for programmers, while maintaining high performance.

*MySQL* was used for the system's database. *MySQL* is a database management system based on SQL technology. At the same time there is also a relational database management system. This means that a database stores data in multiple separate tables rather than storing all data in the same place. The link between the data in the tables is made by different common identifiers.

*Bootstrap*, a HTML, CSS, and JS frameworks for developing responsive web projects, was used for the user interface. It provides a vast collection of tools that contains HTML and CSS templates for forms, buttons, printing, navigation, and other interface related components.

### 3. e-Participation for *Smart City* initiatives

The system revolves around 3 main categories – *citizen*, *authority*, *initiative*. The workflow is presented in Figure 2 and describes the processes taking place inside the platform.



**Figure 2.** e-Participation for *Smart City* initiatives workflow

An initiative proposal can be registered by a citizen or by a governmental authority. After the registration, the proposal enters into a debate and voting process, where citizens can express their opinions and give scores to the proposals. During the debate process, the initiator can make adjustments to the initiative in accordance with the debate suggestions.

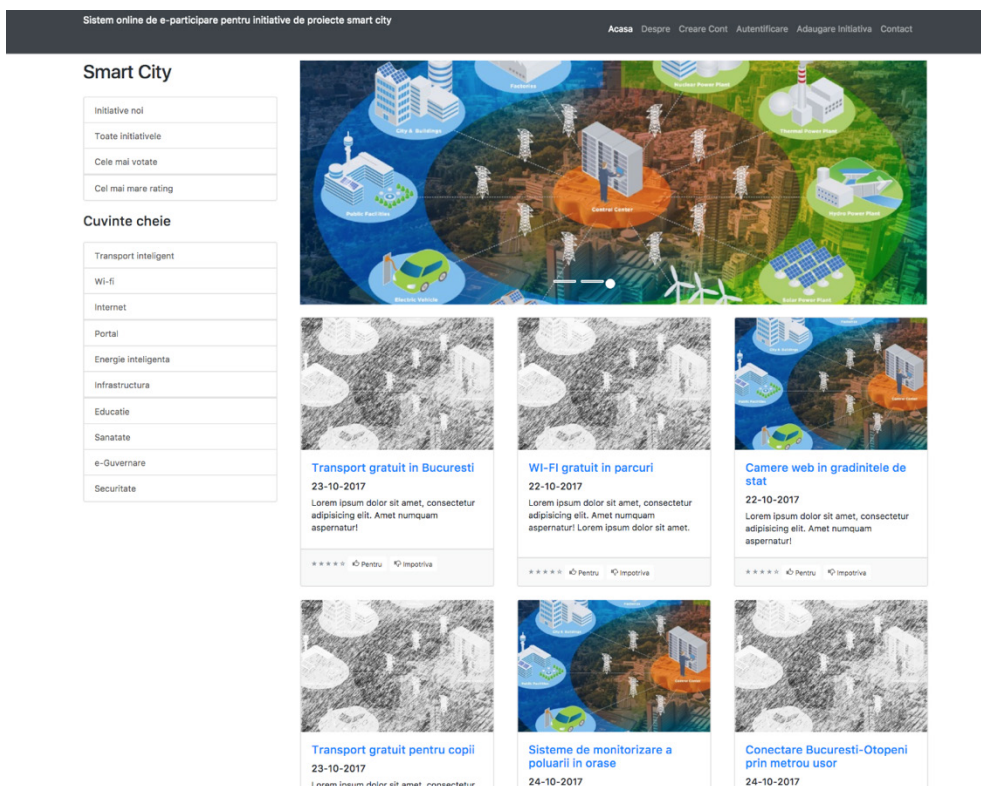
The initiatives must address one of the *Smart City* topics and are not automatically published. A moderator must approve the submission; in case the initiative is poorly formulated or lacking description the moderator notifies the proposer to make the necessary adjustments. This verification has the purpose of maintaining the quality

of debate and ensuring that after the debate and voting process is finalized, the proposals are ordered in a scoreboard and enter into a decisional process performed by governmental authorities. The final outcome of the workflow represents a *Smart City* initiative considered of high importance by the citizens.

The platform addresses the issue of broad public involvement in the understanding of ‘the problem’ and the process to decide a ‘solution’ [6]. The public participation also allows the reporting of public issues that might otherwise escape from the government attention.

The platform facilitates access for all citizens and government institutions to citizens’ projects and initiatives in the *Smart City* domains. It supports the active involvement of citizens in smart-city initiatives and can highlight the projects with a major impact for the city, region or State. The registration in the platform allows participation in initiative discussions, voting on initiatives by other users, or the inclusion of new initiative proposals. User registration is restricted by the e-mail address to prevent multiple voting, along with server-imposed restrictions based on the IP address and client details used at account registration.

### 3.1 Main page



**Figure 3.** e-Participation platform

The most recent initiatives are displayed first, but the platform offers several ways in which initiatives can be ordered, depending on the user's wishes. One can access the list of all the initiatives registered in the platform. The content area is divided into three columns to deliver as much information as possible to the user.

### 3.2 Adding a new initiative

## Formular de adaugare initiativa

Completati datele de mai jos pentru a inregistra initiativa

<p><b>Titlu initiativa</b></p> <input type="text" value="Wi-fi gratuit in parcuri"/>	<p><b>Imagine</b></p> <input type="button" value="Choose File"/> No file chosen
<p><b>Descriere Scurta</b></p> <input type="text" value="Introducerea de puncte acces wireless in parcurile din Bucuresti si regiunea metropolitana ca toti sa beneficieze de internet gratuit in zonele de recreere si sgrement"/>	
<p><b>Cuvinte cheie</b></p> <input type="text" value="Wi-fi,Internet,gratuit"/>	
<p><b>Domeniul Smart City</b></p> <div style="border: 1px solid #ccc; padding: 2px;"> <p>Agricultura ▾</p> <hr/> <p>Cladiri</p> <p>Parcari</p> <p>Orase</p> <hr/> <p>Mediu</p> <p>Deseuri</p> </div>	
<p><b>Aria de implementare</b></p> <input type="text" value="Regional"/>	
<p><b>Descriere pe larg</b></p> <input type="text" value="Lorem ipsum dolor sit amet, vitae velit assumenda arcu cras, risus integer, elit ante non pretium cursus at mauris. maecenas tincidunt gravida bibendum lorem elit, lectus modi ut. Pedes non in, phasellus lacus blandit"/>	
<p><b>Solutia propusa</b></p> <input type="text" value="Lorem ipsum dolor sit amet, vitae velit assumenda arcu cras, risus integer, elit ante non pretium cursus at mauris. maecenas tincidunt gravida bibendum lorem elit, lectus modi ut. Pedes non in, phasellus lacus blandit curabitur lectus, nullam ornare dolor, elit urna, imperdiet aliquam malesuada ornare id. Tempor luctus mauris scelerisque et dolor velit, mollis sed vel. Cras sit integer felle aliquam, eius enim ut lacinia nec, rhoncus a augue"/>	
<p><input type="button" value="Perioada de votare"/></p> <p><input type="button" value="Inregistreaza initiativa"/></p>	

Figure 4. Form for proposing an initiative

The Initiative Registration component ensures that users' development ideas are embedded within the platform. Thus, users have the opportunity to make their ideas public, and will be debated with other participants and ranked by citizens' votes.

To submit a *Smart City* initiative, the user fills in the Title, *Smart City* domain, Short Description, Broad Description, Suggested Solution, Descriptive Image (or File).



The voting period is selected - the length of time that other users can debate and give notes to the proposal.

### 3.3 Voting

The voting component is important because it allows citizens to express their approval or disapproval towards a particular initiative registered in the platform. Initiatives with the most votes can be sorted from the online platform so that the top proposals can be turned into projects leading to *Smart City* development. In the same way, initiatives with the lowest votes can be sorted in such a way that they can see proposals that have presented lower interest among the citizens. The account types are *citizen*, *institution*, *moderator* and *administrator*. During the voting period, debates can take place and moderators may intervene to preserve the quality of discussions. Also, comments can be marked with *Like/Dislike* and thresholds can be set for hiding poorly rated comments.

## 4. Conclusions

The e-participation system was designed to increase citizens' participation in smart city projects. By creating the e-participation platform, the premises of identifying new possible projects to support the citizens are created. The main motivation is to facilitate the interaction of citizens with both the state institutions and the decision-makers in the financing and implementation of *smart-city* projects. The main benefits to be gained consist in the registration system for project-type initiatives, free access for all citizens to these initiatives, and even voting pro or against these initiatives. The platform contributes to increasing the visibility of smart-city researchers' project initiatives by providing access to these initiatives to all citizens and including decision makers in implementing these projects.

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