1. Introduction

E-administration, or electronic administration, refers to any of a number of mechanisms which transform what in a traditional office are paper processes into electronic processes, in order to create a paperless office. It is an ICT\(^1\) tool used to improve productivity and performance. The implementation of any e-administration solution should be focused on the suppliant aspect rather than on organization, it should remove dependence on specific individuals, and should introduce transparent systems of working. E-administration can contain both intra-office and inter-office communication for any organization.

The primary reason for the creation and development of electronic public administration was to increase the efficiency of institutional operation first and consequently of governance, as a result. In recent years, e-administration, which mainly served the purpose of efficiency, has become an economic and socio-political tool, which enabled the creation of the service provider state and, at the same time, outlined the system of requirements of the development of modern government operations for EU states. An elaborate discussion about e-administration should overcome the rigid thinking focused on the ideal type organization; a good reason for it is the nature of e-administration, supporting the

\(^1\) ICT – Information and Communication Technology
transformation process of the self-centered public structures into ones that value the citizen, his/her needs and taking part directly in governing. Bearing this in mind, e-administration becomes a real condition for achieving the e-democracy targets, meaning, active citizenship and transparent decision-making processes².

2. **Theoretical aspects of e-administration**

The EU countries’ e-government work, started in 2001, has made such progress that nearly half of government services have become fully online by this day. Apart from increasing digitalization, the current task for the coming years is to develop the skills of citizens and entrepreneurs in applying e-administration, making a use of the available technological foundation, as well as to increase e-administration services efficiency and to establish pan-European operation³.

The success of online administration depends on the extent to which citizens are able and wish to take advantage of the opportunities allowed by electronic administration. Thus, it is especially important to create a user-friendly service provision portfolio: one which takes client needs into account and reaches beyond the traditional administration. In order to integrate users, following unified strategic principles, since 2007 EU states have set a higher online sophistication level of operation, which constitutes a fundamentally new approach to public administration with a view to the fact that, in accordance with this approach, services have to be provided to citizens in a pro-active way⁴.

The foundation and success measurement of the level of development of implementation are thus familiarity with the citizen needs and, from the point of view of the players of public administration, the application of a pro-active service provision approach, based on ICT tools. Even though the application of technological developments and online services do significantly improve the quality of service provided to clients, they do not only ensure client-oriented service and do not mean improvement in efficiency. In the case of client-oriented service, the realization of certain services often requires several institutions to cooperate⁵.

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⁴ A. Matei, D.C. Iancu, *E-Administration as a Way of Increasing the Managerial Capacity in Public Sector*, School of Political Studies and Public Administration (NSPSPA), Bucharest 2009, p. 18.
The system of shared, integrated services, situated above sectoral subsystems, which covers the entire public administration domain is aimed at increasing efficiency on a national level.

The homogenous infrastructure of customer services, human resource management, finances and electronic administration and document management, as well as further development of e-administration services based on a unified framework, are not just crucial for national efficiency, but are also basic requirements for the establishment of the pan-European level of service⁶.

In the years to come, technology will play an increasingly significant role in ensuring that modern public administrations can meet the challenges posed by globalization. The key issues in terms of keeping the pace are economic efficiency, social justice, cohesion and public service reform⁷.

The EU attaches great importance to the establishment of e-administration and the concept of the service providing state. Beyond the coordinated strategic guidance based on national experiences, sharing best practices of various countries and standardization of certain regions⁸.

**E-administration**

A definition for e-administration or electronic administration, refers to any of the mechanisms which transform what in a traditional office are paper processes into electronic processes, in order to create a paperless office. This is an ICT tool intended to improve productivity and performance⁹.

The city works with sector representatives. Each representative is supposed to collect information and claims from the sector’s inhabitants. Generally, it is done through a specific document to be filled in. This document is addressed to the town hall where the administration is to process it. In offices, the representatives are given a card enabling them to identify themselves and to complete the online document. They can follow the evolution of each claim through the whole process. Employees will have complete information at their disposal and can concentrate on the analysis phase and on the response concerning the claim. The elected officials will use this information as current indicators of local life,

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⁷ Government Decree No. 257/2007 (X. 4.) on the rules of actions electronically performable in the course of public procurement proceedings, and the application of the electronic price slope.
and use it to make more appropriate decisions. In this model, the citizen is considered as a “consumer of rights” claiming personalized and efficient public services. It corresponds to a government « for the people » with a strategy of citizen satisfaction improvement\(^{10}\).

**E-government**

This management mode, called here “e-government” reflects a vision of a relatively passive citizen-agent responding to his duties. Based on the need of quantifying and comparing solutions, this government of the people depends on regular consultations in order to improve the policy’s acceptance. Therefore, electronic voting is the most appropriate tool – it facilitates the communication of citizens’ opinions to government, conserving a consultative characteristic at the same time. This approach may be considered as a “pull” system where government seeks predefined information. Thus citizens’ capacity is limited to propose solutions and initiatives in a “technical democracy”\(^{11}\).

We live in an utterly technical and technological society and we are, unaware of it, constantly surrounded by technology. Mobile networks and the Web are “new” communication systems, without which our society would not be able to function. It is not easy to imagine not being able to make mobile phone calls, to send messages all over the world within seconds by e-mail or to retrieve information from the Web with only a few clicks. It is not just citizens who are living a digital lifestyle, though. Public administrations and authorities are also fully embracing information technologies in order to communicate in modern ways. The term e-government was created years ago to describe this idea\(^{12}\).

There are the following interaction levels in e-government:

- **Information**: Making information available online, for instance, on the Website of a public authority.
- **Communication**: The ability to access and exchange information interactively.
- **Transactions**: Carrying out services, including signing application forms and delivering official documents and notifications electronically\(^{13}\).

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E-government is the set of all electronic public administration services available to everybody in the country. It also means a modern and innovative land, in which quality, trust and customer service are of key importance. Public administration and authorities use technologies such as the Internet or mobile phone services to stay in touch with citizens and business units. They also use these technologies to carry out internal work processes. E-government has an effect on every citizen, business and public authority\textsuperscript{14}.

Modern information and communication technologies (ICT) enable public authorities to make “traditional” services more customer-friendly and to make them independent of opening hours in an office. ICTs are also used to introduce new electronic services over the Internet, for instance an automated notification service for passport renewal. These services not only can be customized to meet the needs of citizens and businesses, they also save time and money\textsuperscript{15}.

**E-governance**

E-governance is the public sector’s use of information and communication technologies in order to improve information and service delivery, encourage citizen participation in the process of decision-making and make government more accountable, transparent and effective\textsuperscript{16}.

The distinction between government and governance is important: Governance places the stress on the way in which decisions are made, while government stresses the way in which these decisions are carried out (Marche, Mc Niven, 2003). The “pull” system changes to a “push” system, with information emerging from the ground. In the model of e-governance, interactions between citizens and government are necessary.

“The participatory model contains a recognition that knowledge is discursive, contingent and changeable – that it emerges through interaction” (Chadwick and May, 2003). The citizen is now considered as a source of ideas and initiatives that provides a mutual enrichment. The e-governance model can initiate a reflection on the local government’s knowledge\textsuperscript{17}.


\textsuperscript{17} H. Michel, *e-Administration, e-Government...*, op. cit., p. 4.
Differences between e-administration, e-government and e-governance

Tab. 1. Four types of Citizen Relationship Management using ICTs

<table>
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<tr>
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<th>e-government</th>
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<tbody>
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<td>To be created</td>
<td></td>
</tr>
</tbody>
</table>

| Corresponding ICTs tools | Online administrative services, e-procedures... | Electronic consultation, using e-voting methods and tools | Collaborative tools. Online Construction of collective propositions | To be created |

3. Technical aspects of e-administration

Presenting various technical aspects of e-administration, and bearing in mind their importance, even indispensability for the efficiency of e-administration, the questions of cloud computing and electronic signature have been discussed below, with examples of their functioning illustrated with diagrams.

3.1. An example of an IT system in administration

Along with the advances made in information and communication technology (ICT), the LAB (Local Administration Bureau) provides varied support to the local government, helping them perform efficient administration and ex-

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18 Ibidem, pp. 5–6.
Pandig residents’ services through ICT by arranging electronic application and other formalities, promoting their use, and ensuring information security.

The Basic resident register Network is indispensable for building electronic central and local government. This network eliminates the need to attach a copy of the resident’s record in various administrative procedures and the need to submit a report on the current pensioner’s status in various pension programs. Recently, the network has helped to clarify the situation of pension records that are to be integrated. Furthermore, the Basic Resident Register card with a photo of the resident can be used as a public ID. Once residents acquire an “electronic certificate”, they can use it for authentication purposes in electronic applications made through the Internet as well.

The figure below shows an exemplary structure of an IT system for e-administration services.

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**Fig. 1. The structure of network for e-administration**


3.2. An example of a CC project in administration in Poland

“Computerization of Local Government Bodies using cloud computing” is a project aimed at enabling public administration offices to provide new and integrated e-administration services to citizens and enterprises. Taking advantage of functionalities available from the Electronic Platform for Public Administration Services (ePUAP), the project will produce new ICT systems for local government institutions and integrate systems which local government bodies are using currently. The scope:

The tasks to be carried out within the project are as follows:

- to commission and launch ICT infrastructure to be shared by local government units and to enable them to provide public administration services;
- to commission, develop and implement integrated electronic services to be provided by local government bodies to citizens and enterprises;
- to integrate public administration's resources and IT systems, which involves relocating some of the currently available services to the new, shared infrastructure;
- to carry out an effective information campaign for the project and proper training for local government officials.

The expected benefits of the project include more effective and cheaper services provided to citizens and enterprises. The project will also reduce the operating costs for public administration and reduce the amount of traditional paperwork, so that different official matters will be arranged in a shorter period of time. The project will also introduce a more cohesive policy with regards to launching and standardizing different systems used to manage documents.

One of the main reasons for creating the project are the findings of a study conducted by European Commission as part of the Digital Agenda Scoreboard. According to the study, wide discrepancies in the extent to which different public administration offices are computerized are a major hindrance to the development of e-administration in Poland.

The Cloud project guidelines originate from the results of a survey carried out by the IT Projects Centre in local governments in September 2012. The survey revealed that local government officials were much interested in developing cloud computing-based services. The survey has also helped to identify the current condition of local government bodies and it determined technological and organizational challenges faced by local government bodies.

Fig. 2. Private and Public Cloud Computing

Fig. 3. Scope of the project

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3.3. Electronic Signature and Trust profile

Electronic signature is the basis of a great number of electronic services, which is why this issue requires more consideration.

*What is the digital signature?*

The digital signature has as its purpose ensuring data authenticity and integrity. It is a technology based on applied cryptography with the use of specific hardware and software tools. The digital signature creates a unique electronic record in the document, which can be re-verified later to ensure that no changes have been made to the document over time\(^\text{24}\).

\[^{24}\text{Eibl, Herwig, Karning, Kustor, Ledinger, Leitold, Medimorec, Pirker, Reichstadter, Rupp, Schheidbach, Wagner-Leimbach, Administration... op. cit.}, \text{p. 98.}\]

What are the different types of digital signatures?

Various types of digital signatures are available. Some of them are used only to ensure technical data authenticity; others are also accepted by applicable regional legislation as equivalent of a seal (i.e. seal for paper documents).

Varying with the country and region, different digital signatures can be allowed or required for electronic invoices, including:

- **Electronic signature** – (also called a weak electronic signature or light electronic signature), is usually understood as “data in an electronic form, attached to or logically associated with other electronic data and which serve as a method of authentication”\(^{26}\).

- **Advanced electronic signature** – means electronic signature which meets a number of additional requirements, including: a unique link allowing identifying the signatory. The signatory himself/herself is in control over this type of signature. The signatory generates the signature on their own and links it to the data to which it relates; any subsequent changes of the data are thus made detectable. Advanced electronic signature guarantees the integrity and authentication of the text.

- **Qualified digital signature** – an advanced electronic signature based on a qualified certificate, created by a secure-signature-creation device. All technical elements used to apply such signature must be of the latest technology\(^{27}\).

4. **Practical aspects of e-administration**

The European Commission planned to introduce 20 basic electronic services in the Europe Action Plan and, in terms of e-government development, 12 for citizens and 8 for the business sector. Electronic services for citizens are provided in the activities that follow:

- Registry books,
- Personal documents,
- Taxation,
- Job Search,
- Social Security,
- Car registration,

\(^{26}\) Addendum: ACC (Association of Corporate Counsel) Law Department Executive Leadership Session Saving Time and Money By Capturing e-Signatures: Issues and Opportunities, Palo Alto, California 2012, p. 10.

• Construction permits,
• Reports to police,
• Access to library,
• Change of address,
• Applying for education,
• Arranging appointments for medical examination.

The following electronic services are intended to be introduced into the economic sector:
• Corporate income taxes,
• Value-added tax,
• Contributions for employees,
• Registration of companies,
• Statistical reporting,
• Customs declaration,
• Public procurement and
• Environmental permits.28

4.1. E-signatures
With the invention of a simple to use citizen card, a free tool was created to sign legally binding documents, invoices and contracts electronically in a very simplified way. It is possible to add an electronic signature to PDF documents quickly and securely, which is the legal equivalent of a handwritten signature.

The authenticity of such a signature and genuineness of the transmitted data can be verified at any time by the sender or recipient.

The best-known uses of digital signatures are:
• electronic public administration procedures,
• legally valid signing of contracts,
• public contract bids,
• Internet banking,
• “e-billing”, invoices are submitted electronically,
• encryption of confidential information and much more.

The service page of the citizen card contains well-organized, easy to understand information about the citizen card and the various ways of using it. The Website can be the means used to sign PDF documents using the citizen card online, as well as check signed PDF document.

4.2. E-identification

Electronic identification (e-ID) is one of the tools serving to ensure that the access to online services is secure and electronic transactions are carried out in a safer way. Secure electronic identification is an important factor enabling data protection and the prevention of online fraud. These aspects matter especially in areas such as e-government, where citizens and businesses need to trust that their data are treated in full respect of the existing data protection legislation.

e-ID can guarantee the unambiguous identification of a person and make it possible to make sure the service is delivered to the person really entitled to it. However, there is a lack of common legal basis engaging each state to recognize and accept e-IDs issued in other states. The insufficient cross-border interoperability of national e-IDs prevents citizens and business units from benefiting fully from the digital single market29.

4.3. E-passports

E-passports use RFID30 technology in order to improve security and reduce the chances of passport forgery. A microchip and, in some countries, biometric data – iris, fingerprints, or face information – is embedded in the passport holder. By means of RFID, passport data is sent to customers and the border control staff wirelessly. The process of reading an e-passport is complicated because of the need to verify the passport’s integrity, and the necessity of preventing unauthorized readers accessing passport data. The steps followed are:

- Authenticate the RFID reader: to make sure that an unauthorized person is not trying to access the passport, the reader authenticates itself using digital certificates. This is known as Extended Access Control and is also used to ensure the chip is not a clone (an exact, unaltered copy) of another genuine passport chip. EAC is not applied by all countries.
- Create a secure connection: to prevent eavesdropping by any nearby unauthorized readers, the data is encrypted before being sent from the passport to the authorized reader. This is known as Basic Access Control (BAC).

30 Radio-Frequency Identification.
• Verify the integrity of the chip: To ensure that the data on the passport's chip has not been changed since it was issued (for instance, by replacing the chip with another one, or by changing the digital photo), the data on the chip is signed with a digital signature, which is checked when the data is read. This is known as Passive Authentication (PA).

• Authenticate the passport holder: a biometric template is generated from the digital image contained on the passport's chip. A photograph of the passport holder is taken at the customs point, and a biometric template from this image is compared to the one on the chip31.

Over 100 countries, among others the United States, the United Kingdom and France, have been using e-passports for several years and no chip failures have been reported. Through a pilot project began in January 2009, Passport Canada has already issued over 60,000 diplomatic and special passports containing an electronic chip, and also no problems have been reported32.

4.4. E-voting

Technology has also become commonly used in modern elections in the process of voting. While using electronic voting systems, voters travel to a voting station as usual, where their vote is cast and counted by means of a computerised system. In contrast, online or Internet voting involves casting a vote from a location other than an election station – often the voter’s home – using a computer connected to the Internet.

In optical scanning electronic voting systems, voters travel to a voting station, authenticate themselves to election staff an usual, and cast their vote on a paper ballot slip. A computerised system uses OMR33 technology assists in counting the ballot slips. Election staff may count ballots that the machine cannot read, or they may be counted as invalid votes if they are unclear or have been completed incorrectly. Optical scanning systems are the simplest type of e-voting system.

Direct Recording Electronic (DRE) voting machines does not require paper ballot slips, and instead it presents candidate choices on a screen, allowing the voter to cast their vote by means of a touch screen or any other input device. These votes are then saved in the DRE machine's memory to be counted later. Votes from DRE machines in different areas are totalled to produce the final result34.

33 Optical Mark Recognition.
Internet voting systems

A Public Network Direct Recording Electronic system (PNDRE) allows voters to cast a vote from any device connected to the Internet. Voters visit an election web site and authenticate themselves using a variety of methods. Voters in Estonia, for example use their national identity smart cards along with a smart card reader connected to their computer. Other systems involve receiving authentication details through snail mail and using these to access the voting system. Once a vote is cast, it is transmitted to a central location to be counted.

Whichever voting method is used, there are primary concerns which must be addressed in any voting system, paper or electronic:

- Secrecy /security: most countries have secret voting rules, meaning it must not be possible to determine who any individual has voted for.
- Authenticity of the voter: ensuring that the voter is eligible to vote, and that the voter really is who they claim to be.
- Integrity of the results: votes must not be added, removed, or changed, and the final result must be correct. The votes must be safe from deliberate or accidental changes, and it must also be possible to verify this later if, for instance, a recount is needed. This requires a record of the votes without breaking the secrecy of voting35.

Advantages

E-voting and online voting allow quicker and hopefully more accurate counting of votes. They can also provide greater equality of access – for instance, incorporating accessibility features for disabled users, or producing ballot slips in different languages. Online voting allows voting from home, hopefully increasing the voter turn-out. Computer systems can also warn voters of possible errors such as voting for too many or too few candidates, which reduces the number of spoilt votes.

Risks

Although electronic vote counting seems to be easy, it may actually involve potential problems and unique challenges related to the integrity and reliability of the results. Significantly, most electronic voting machines are black boxes: an input is made but there is no way of verifying how the machine processes it to produce an output. For example, a vote may be cast for one candidate but actually counted for a different candidate (or simply ignored), and there may be no way to verify

this – even if the on-screen output suggests that the vote was counted correctly. This is especially concerning when voting machines produce no physical receipt of the vote and thus recounts are impossible to perform. Although the total votes may correspond to the total number of voters, without a receipt of the vote there is no way of proving that each vote was counted correctly.36

4.5. E-court

An electronic court (e-court) is the process where the traditional courts are made more effective and their work gains speed through the use of information and communication technology (ICT). From filing of the case to its final adjudication, all is done online.


4.6. E-taxes

E-taxes may be defined as an online system with automated tax declaration forms. Tax declarations in many countries are filed electronically. Using a secure ID, a taxpayer logs onto the system, reviews their data in pre-filled forms, makes any changes that are needed, and approves the document with a digital signature.

Apart from individual tax returns, other declarations can be made in the system:

- An enterprise’s declarations for income tax, social tax, unemployment insurance and contributions to mandatory funded pension;
- Value-added tax returns;
- Alcohol excise duty, tobacco excise duty, fuel excise duty and packaging excise duty returns;
- Customs declarations.38

4.7. E-customs

E-customs means the use of Information Technology to carry out customs compliance using electronic communications, which replaces paper for-

36 S. Gray, Information Technology..., op. cit., p. 296.
mat customs procedures, thus creating a more efficient and modern customs environment\textsuperscript{39}.

E-customs can also be described as using digital systems to collect and safeguard customs duties; to control the flow of goods, animals, personal effects and hazardous items in and out of member states; and to provide security from crime.

The aim is to replace paper-based customs procedures with European-wide electronic operations, thus creating a more efficient and modern customs environment. The objectives of the e-customs initiative are to facilitate trade and improve security at the EU’s external borders\textsuperscript{40}.

\subsection{4.8. E-health}

Today's health care delivery is being changed by e-health which is at the core of responsive health systems. Whether to deliver care, deploy personnel, conduct research or support humanitarian action, at every level and in every country the business of health depend on information and communication and, increasingly, on the technologies that enable it. Technological advances, economic investment, and social and cultural changes are also contributing to the expectation that the health sector must inevitably integrate technology into its functioning. The World Health Organization defines e-health as the use of information and communication technologies (ICT) for health related purposes. In its broadest sense, e-health involves improving the flow of information, through electronic means, to support the delivery of health services and the management of health systems\textsuperscript{41}.

\subsection{4.9. Government Databases}

Government databases are debated about in many modern societies. Depending on the country, medical records, telephone and Internet records, vehicle movements, fingerprints, and travel details may be recorded and stored in vast databases. It is often argued that such databases are necessary to improve government services, enhance national security, and prevent crime – while opponents are often concerned about security, privacy, integrity, and increased surveillance.


Medical databases, also called online medical records, store details of a patient’s medical history and treatment. These records can be made available to a specific number of medical staff to facilitate effective treatment. As with any sensitive data, security and privacy while dealing with medical databases are major concerns.

Transport systems where passengers pay with smart cards are able to store complex data about passengers and their movement. Good examples of such a policy are the London Oyster Card system and various European public bicycle sharing systems. Such databases allow transport planners to view statistics about most popular routes and enable them to better plan services, but the possibility of privacy concerns is raised if personally identifiable information is kept.

Police database used in various countries contain personal details including names and addresses, identifying features, vehicle records, and details of stolen property. These databases can be checked by police officers when stopping suspects, to improve identification, check history, or check for any outstanding warrants. Often these checks are performed from mobile computers, either in police vehicles or handheld devices carried by officers.

Police databases are also used for the background checks required by some professions – for instance, teachers and lawyers in most countries have their police record checked before employment, and they are expected to have the record clean.

Telephone call databases are kept by most telecoms companies. These databases record the time of calls, the caller and the call recipient numbers, and the length of the call, but do not record the contents of the calls (among other reasons, because of the storage requirements). If mobile phone calls are made, the location of phones is determined by their position relative to mobile phone masts and may also be recorded42.

4.10. Computerized management of documents

The systems of computerized document registration (protocol), in their most advanced version, will include some innovative government functions. Apart from the possibility of registering traditional paper documents with the protocol office, the following is made possible by them: registering electronic documents; directly linking the registration system with the filing and archive system; more effective forms of access and transparency for administrative acts; supplying useful elements for management control; testing electronic applications in managing document flows.

42 S. Gray, Information Technology..., op. cit., p. 300.
In this context of innovation funding a specific action is necessary to spread application and develop training\textsuperscript{43}.

### 4.11. E-procurement

This action is designed to spread, promote and develop e-commerce as an instrument for government purchases of goods and services. The new instrument should serve to attain several objectives:

- Reduce expenditure for purchasing goods and services by public administration;
- Improve and speed up procedures;
- Ensure absolute transparency in tender bids;
- Open up the government supply market and make it more competitive\textsuperscript{44}.

The present and ready to be approved legal provisions in this sphere will allow applying the e-procurement, especially by including new stipulations concerning online auctions, for the supply and the demand to be matched in real time, ensuring that government bodies always benefit from the best market conditions. The publication of calls for tender bids can also be performed by means of electronic information systems, and there is a need for regulations to be issued to make the new method compatible with the current financial rules. An administrative measure will establish coordinating committees the purpose of which is to monitor and guide this process of transformation within the central government departments. The same procedures can also be adopted by local governments\textsuperscript{45}.

### 4.12. E-participation

E-participation is the use of information and communication technologies to extend political participation by enabling citizens to connect with one another and with their elected representatives. In other words, e-participation represents the use of information technology to support democratic decision-making. There is an ongoing growth in this sphere, stimulated by an increasing attention from both practitioner and research communities. Citizens and voluntary organizations can be involved in describing and explaining phenomena, taking part in such a collaborative basic research. On the other hand, a wide range of relevant stakeholders can be consulted by researchers to design or evaluate e-par-

\textsuperscript{43} L. Petre, \textit{Computerization can make administration more efficient and civilized}, It Capital, 2012, p. 39.

\textsuperscript{44} F. Negoita, \textit{The Government’s Strategy concerning The National Action Plan e–Administration in Romania}, Editura Universitara, Bucharest 2011, p. 351.

\textsuperscript{45} M. Preda, \textit{The role of IT in Public Administration}, Editura Lumina Lex, Bucharest 2012, p. 66.
4.13. E-petitions

Generally, petitions are formal requests to an authority, usually a governmental institution. In most liberal democracies, the citizen's right to address government, parliament and/or other public entities by means of petitions is provided for in legal documents, often even in constitutional law or practice (e.g., UK, USA, FRG). With regard to electronic petitions (e-petitions) which involve new information and communication technologies, it is necessary to distinguish between formal and informal types (Mosca & Santucci 2009): Formal e-petitions refer to institutionalized and at least to some extent legally codified e-petition systems operated by public institutions whereas informal e-petitions are systems established and managed by non-governmental, private organizations. Thus, the procedural requirements for initiating informal e-petitions and collecting signatures online are not regulated by public law. Of course, informal e-petitions usually seek to address public institutions after a certain number of signatures have been collected.

Two main types of informal e-petitions can be distinguished: e-petitions initiated by NGOs as part of political campaigns, and e-petition platforms operated by private, both commercial and not-for-profit, organizations which provide the internet-based infrastructure to initiate e-petitions and collect signatures via the Internet.

More information on e-petitions may be found at: www.jedem.org.

4.14. GIS

The implementation of GIS of cities and municipalities is also worth consideration. The map is made of a color orthophoto image of the city, a vector route in several layers (streets, water areas, settlements, working and business districts, local, and no region centers, etc.). It is possible to search by the street name or the house number, which allows easy viewing of certain sites.


Geographic Information System.

5. Predictions and trends about e-administration solutions

Public administration faces an interesting paradox. Along with comparative government, public law, international law, and political theory, it was one of the fields that shaped the new American Political Science Association a century ago. For the last generation, scholars have sought to save or replace it with fields of study like implementation, public management, and formal bureaucratic theory.

The debate, in fact, has reached the point where “traditional public administration” has gained a nearly universal pejorative meaning used for criticizing intellectual approaches whose time has come and gone.\(^{50}\)

Public administration changes, starting from the reconfiguration of the relationships between the citizen’s and public services. Service Charters are a piece of a larger re-analysis of administration in response to changing technologies, economies, public wants, needs and expectations. Within this emergent environment a renewal of public organization theory is necessary, based on Citizen’s demands. Citizen’s Charters constitute the modern orientation of most European Union governments. They are not a policy in and of themselves though, but they are intended to enhance democracy. Citizen’s Charters appear to be a proper instrument in establishing a link between administrative modernization and democratization.

![Fig. 5. Recommendations for e-administration, evolving approach to public service delivery](image)

In the whole-of-government approach, the focus of e-government initiatives has shifted from the provision of services to the use of ICTs to increase the value of services. As Figure 5 indicates the approach to public sector service de-

livery has evolved over time from the traditional model of government dispensing services via traditional modes to an emphasis placed on e-government and e-services per se, to an integrated approach for enhancing the value of services to the citizen. In many countries all over the world, public sector development strategies are being revisited to establish how the value of the public services can be enhanced\textsuperscript{51}.

6. Conclusions

In conclusion, it should be highlighted that the use of electronic technologies in administration makes the handling of matters cheap, fast, and possible to implement any time of day or night. There is a noticeable difference between Poland and highly developed countries. Due to concerns of Polish administration and solving technical problems, e-administration solutions are becoming more and more frequently put into practice.

Moreover, the project “Computerization of Local Government Bodies using cloud computing” described in the article is a very good example of applying modern solutions for private cloud computing in the administration.

E-signature, e-ID card, e-passports, e-voting, e-participation, government databases and computerized management of documents seem to be an increasingly popular trend in all the countries of the world. Differences between e-government, e-administration, e-governance and The Learning City have been explained.

The e-services discussed are already implemented and used. In the future, however, the requirement for more complex e-services will emerge for a wide variety of applications. In addition, a lot of new applications and constraints will be introduced. Some of the main concerns in security solution design for future e-services may be anticipated and listed as follows:

- building trust,
- new authentication/non-repudiation mechanisms,
- integration of multiple services,
- mobility – handheld devices,
- enhanced hardware\textsuperscript{52}.


The understanding of electronic administration demonstrated in the texts analyzed here is a serious matter to consider in public service and instrumental operational development.

Abstract

Theoretical, technical and practical aspects of e-administration

This paper presents theoretical, technical and practical aspects of using electronic administration (e-administration). Differences between e-government, e-administration, e-governance and The Learning City are explained. Several selected and existing technical solutions are presented and analyzed. The paper contains a brief description of activities concerning the problem of Cloud Computing (CC) in Administration in Poland, especially in the perspective of Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS). Significant aspects of CC have been discussed, e.g.: the “Computerization of Local Government Bodies using cloud computing” project. It is assumed that CC may be useful to reduce the cost of developing and maintaining IT systems. This paper describes how closely e-administration is related to the proper functioning of modern governments. E-administration mechanisms, the structure and functions of selected systems are described. This study brings its contribution to the understanding of the methods of e-administration.

Keywords: administration, e-administration, IT systems, e-government, public sector.

Streszczenie

Teoretyczne, techniczne i praktyczne aspekty e-administracji

W artykule przedstawiono teoretyczne, techniczne i praktyczne aspekty wykorzystania elektronicznej administracji (e-administracja). Wyjaśniono w nim różnice między e-administration, e-government i e-governance oraz The Learning City. Przedstawiono i przeanalizowano kilka wybranych i istniejących rozwiązań. Artykuł zawiera krótki opis działań dotyczących implementacji Cloud Computing (CC) w polskiej administracji, dokładnie w perspektywie infrastruktury jako usługi (IaaS), platformy jako usługi (PaaS), oprogramowania jako usługi (SaaS). Przedstawiono rzeczywisty przykład stosowania Cloud Computing – projekt pn. „Informatyzacja jednostek samorządu terytorialnego.

Słowa kluczowe: administracja, e-administracja, systemy IT, e-gospodarka, sektor publiczny.

Bibliography
3. Audit of Public access point to the Polish e-Administration, Nasza Księgarnia, Warsaw 2009.
8. Division for Public Administration and Development Management (DPADM), Department of Economic and Social Affairs (DESA), United Nations, Public Administration, Country Profile, Poland 2004.


