

EUROPEAN SUSTAINABLE DEVELOPMENT THROUGH NETWORKED ELECTRONIC SERVICES

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ABSTRACT

An important percentage of the projects undertaken at EU level are mainly set up in view of creating strategies, methods and models for developing the digital infrastructure of the Member States, but also to ensure sustainable development at national, European and international level. The European Sustainable Development Network has set priorities that need to be and are addressed within the framework of the majority of the projects aforementioned.

KEYWORDS: *sustainable development, electronic services, European, development, e-SENS.*

1. INTRODUCTION

According to the reviewed literature (Waas et al. 2010) (Robert et al. 2005) (Breheny 1992) “sustainable development” is a complex concept and it presents more than one definition. However, it is widely accepted by scholars that “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:*

- *the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and*
- *the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.”*

On September 25th 2015, the 193 countries of the UN General Assembly adopted the 2030 Development Agenda titled Agenda for Sustainable Development containing the 17 Sustainable Development Goals (SDGs) including goals like: no poverty, good health, affordable energy, industry, innovation and infrastructure, sustainable cities and communities, and so on. These goals “allow for a range of measures, including financial support and debt relief, the transfer of technologies and scientific know-how to developing nations on favorable terms, and the establishment of an open, non-

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discriminatory and equitable trading system to help developing nations increase their exports.”[11]

ICT can support the 17 goals by combining new technologies with social and institutional innovation in order to reduce the environmental footprint human activities. “It can facilitate the networks, partnerships and actions we need to work things out in a complex and connected world. The digital revolution could spread benefits to all sectors of society and all corners of the planet, bringing benefits to all regardless of location, age, disability or income.”[12]



Figure 1. UN Sustainable Development Goals diagram

Source: <https://sustainabledevelopment.un.org>;

This could be achieved by replacing the business model that is based on products and material possessions with business models based on services. For example, instead of buying physical products or travelling we can replace them with digital alternatives.

Many public services such as personal documents, tax claims, company registration or VAT are available online only at a national level in some countries. The European Commission supports cross-border solutions through Large scale pilot projects (LSPs) that have been developed and run under the ICT Policy Support Programme in five main areas: eID, eProcurement, eBusiness, eHealth and eJustice to engage public authorities, service providers and research centres across the EU.

2. NETWORKED ELECTRONIC SERVICES

a. Tourism

Nowadays, thanks to continuous development, electronic services (Anghel, 2013) (Lindgren, 2013) have applications in many areas, such as:

- tourism (Maha, 2012);
- healthcare;
- research;
- education;
- transport, etc.

With regards to tourism some of the electronic services offered to users are:

- information related to tour preparation, in order for tourists to decide what to visit, what time to visit, sights localization, incurred costs, comfort and safety information, etc.;
- relevant information about the trip offered at the right time to allow completion of routes by passengers with maximum comfort and safety.

Tourists are not accustomed to receiving intermodal information or think in an intermodal way. For example, pre-travel decision: the tourist is not quite able to compare different types of travel modes easily and efficiently with the information available. Even travel agencies are largely unable to do that.

The situation is the same in the case of information during the journey, which is largely supplied by the operators of the individual modes, irrespective of complementary ways, even in intermodal terminals. The full range of information dedicated to tourists and designed to meet their needs to be as dynamic information.

b. e-Health

The development of electronic systems in the health field is a continuous and timely research. The European Union and other developed nations, such as the U.S., Canada, Japan, Australia went from stage projects and achievements point to projects of national interest, even continental, current telemedicine services, computer networks and data transmission dedicated telemedicine.

One such project is the European Large Scale Project (LSP): epSOS (www.epsos.eu, 2014), which defined how Member States can cooperate and integrate their processes in order to implement e-health services for the entire European continent.

This new reference model is available under open source licenses, thus allowing the project to share developments with others. The architecture and work plan of the project are shown in Figure 2.

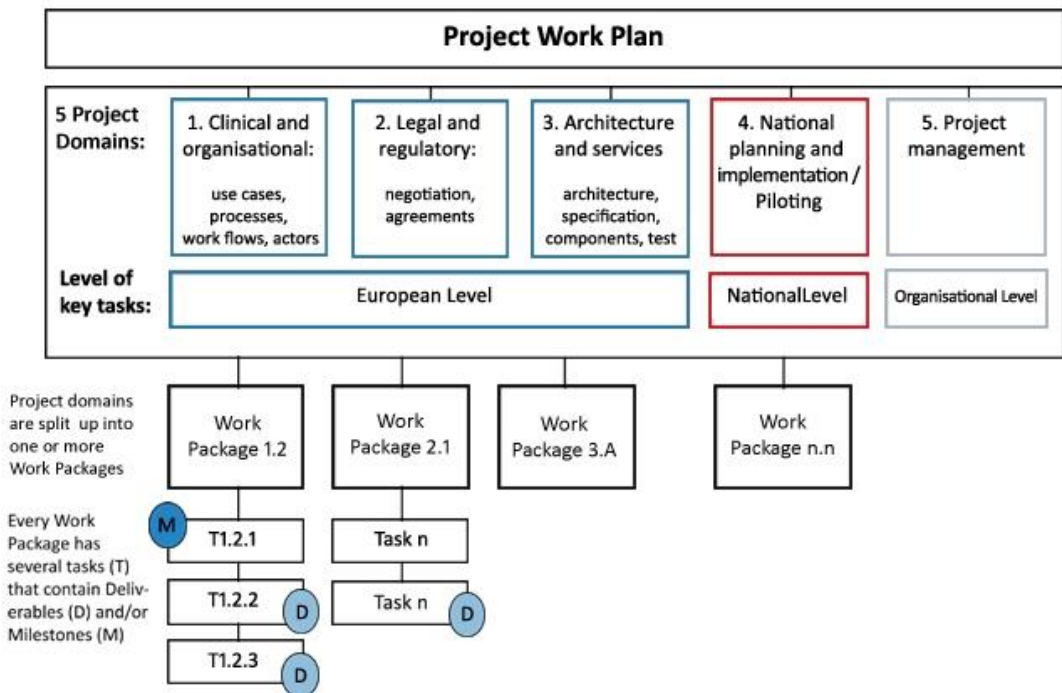


Figure 2. The architecture of the epSOS project
Source: www.epsos.eu, 2014

The epSOS project demonstrates that medical treatment for citizens residing in foreign countries can be improved by providing health professionals with the necessary patient data in a secure electronic format.

The international concerns in the area of e-health have presented and still present major influences in Romania, as such currently, a number of projects financed by either government institutions or European funds for electronic services in e-Health are being implemented at a national level.

c. e-Learning

Distance learning and educational electronic services open up new ways of learning for many people. An educational program or software installed in one place can be accessed and used by thousands of students and others around the world regardless of location or time.

Factors that generate demand for electronic services in education include:

- tendency to prepare of the students;
- degree to which teachers are trained to use innovative methods to educate;
- degree to which they are applied new pedagogical approaches.

Elements taken into account in determining these factors are:

- structure and culture of the national education system;
- pedagogical approach in schools, higher education and industry;
- how curricula are developed and controlled;
- the freedom of teachers to experiment;
- amount of stiffness in the pedagogy;
- literacy level in the country;
- level of innovation in education and training;
- level of preparation of teachers, trainers and the methods by which they are trained in the use of electronic services.

In the railway transport sector aims to integrate rail transport modes guided total chain mobility through the development of railways and railway systems advanced management approaches based on user-friendly and cost-effective by introducing modern instruments already available in the new information society.

Passenger of trains should be provided with clear and well organized dynamic information created specifically for their individual needs. It would be easier for passengers where information could be provided in a standard format that can make it easier to assimilate. Requirement dynamic passenger information is expressed in all areas of transport.

Identifying relevant data defining standard coding rules, ergonomic design and user interface, creating appropriate database also applicable to trade multi-modal traffic management and routes are subject to a number of studies considered and research projects. Therefore, standardization of protocols and interfaces is essential to achieve an easy and effective access to information through electronic services.

For road transport were possible development of electronic services in the area of providing information for the driver due to:

- compatible receivers with different service;
- the demonstration provide information about emergency, parking, weather;
- conventional signs with messages were used to disseminate dynamic travel information and messages to drivers in order to investigate the effect on traffic management strategies.

Research support infrastructure for air transport providers contribute to the provision of electronic services for operators of transport, as defined in the entire transport sector.

The safety function has been developed with a view to minimize the impact of their operations on a regular traffic. Cost-benefit analysis and validation processes have established successful project results in electronic services for air transport.

3. EUROPEAN SUSTAINABLE DEVELOPMENT

The European Sustainable Development Network - ESDN (www.sd-network.eu, 2014) is an informal network of public administrators and experts in various fields that deal with sustainable development and sustainable development strategies in Europe.

As stated in the introductory chapter „sustainable development implies meeting the needs and requirements present generation without compromising the ability of future generations to ensure these needs and necessities”. Moreover, sustainable development offers a vision of progress that integrates short- and long-term goals, locally and globally.

Sustainable development requires profound changes in thinking, in economic and social structures in consumption and production to be taken by the company as a principle of life for the average citizen.

The European Commission adopted in October 2007 the first report on the Sustainable Development Strategy [<http://ec.europa.eu/eurostat>]. The monitoring report was published and its findings were based on an analysis of an extensive set of sustainable development indicators.

The overall objective of the EU Sustainable Development Strategy is to identify and develop actions that will help in achieving continuous improvements regarding the long-term quality of life through the creation of sustainable communities able to manage and use resources efficiently.

Thus the Strategy establishes objectives and actions to following key challenges priority, Figure 3 (ec.europa.eu, 2014):

- sustainable consumption and production;
- conservation and management of natural resources;
- sustainable transport;
- public health;
- climate change and clean energy;
- social inclusion, demography and migration;
- global poverty and sustainable development challenges.



Figure 3. Sustainable Development Strategy

4. INFLUENCE OF ELECTRONIC SERVICES ON SUSTAINABLE DEVELOPMENT

Electronic services can influence in many ways the sustainable development of Europe.

The e-SENS project (www.esens.eu, 2014) (Electronic European Simple Networked Services) is a Large Scale Project which aims to develop the European Single Digital Market through innovative solutions in digital information and digital public services. Through its piloting Work Packages (WPs) this project will strengthen, improve and expand technical solutions that will promote interaction in the online public administrations in Member States.

The project has been structured into six core work packages, with the aim of showing a distinction between non-technical work (general coordination and communication), technical work and the actual piloting. A work package can be thought of as a sub-project, a building block from a structure that allows the project management to define the main actions necessary for achieving the project goals. The six work packages under e-SENS auspices are:

- Work package 1 - Project Management (General Coordination, Administrative Management & Advocacy) - comprises functions of leadership, management, team building, and administration. The leadership function encompasses effective project organization and the specification of roles, responsibilities, and authority throughout the project.
- Work package 2 - Communication and Marketing - supports alignment activities needed to both raise awareness around the project as well as ensure access to knowledge. The main task of this work package is to communicate the project solutions to a wide group of stakeholders: representatives of public administration, IT industry, and end users.
- Work Package 3 - Sustainability and Long-Term Governance - goals are: to pave the way for sustainability and long-term governance of high-level building blocks such as electronic identities, electronic signatures, electronic delivery and electronic documents and to propose recommendations for further policy development concerning the governance and sustainability of the interoperability architecture of the building blocks.
- Work Package 4 - Project Legal Expertise Centre - provides a network of legal experts who offer legal advice on request, both on the topics of the pilots as well as on general, cross-sector EU legislation.
- Work Package 5 – Piloting – aims to demonstrate that deploying real-life ICT services within European countries is feasible and sustainable, applied to a number of use cases with different national systems. Based on technical building blocks, real transactions among public administrations, or between them and citizens and businesses, will take place under WP5.
- Work Package 6 - Building Blocks Provision- focuses on providing architecture driven solutions and building blocks for cross-border transactions, while fulfilling the pilot requirement in the target domains, providing them with state of the art technologies. The work will include interoperability areas of infrastructure, semantics and security.

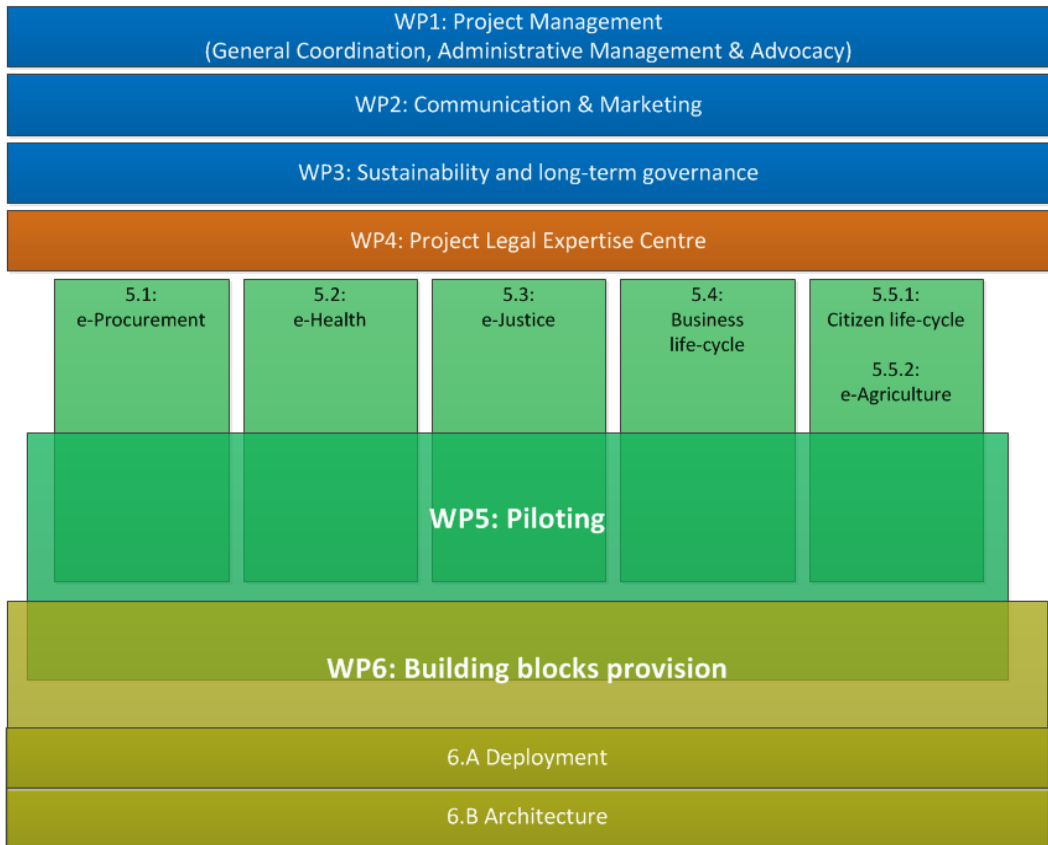


Figure 4. e-SENS Work Package Structure
Source: <http://www.esens.eu/about-the-project/structure/>;

The project is piloted in six domains (<http://www.esens.eu/real-life-piloting/>):

- e-Justice aims to simplify access to cross-border legal procedures and legal means for citizens and businesses. e-Justice comprises several fields in law and is viewed as a horizontal topic gathering all fields which have cross-border dimensions, including many areas of civil and criminal law.
- e-Health pilot within e-SENS focuses on the e-Health domain and will provide cross-border access to health services at EU level. The health services domain is at this moment regulated by Directive 2011/24 EU concerning the application of patients' rights in cross-border healthcare, which provides the legal framework for the e-Health pilot within the e-SENS project. The usecases piloted are ePrescription - the electronical prescription, and eConfirmation - confirmation of patient insurance status.
- e-Procurement domain aims is to take seamless cross-border e-Procurement to its next level, supporting the implementation of the new public procurement directives (2014/24/EU, 2014/25/EU) and the continued standardisation of public procurement processes. This implies the development of specifications and services for the process leading to the award of a contract (pre-award tendering), as well as continued efforts

towards streamlining the processes for ordering and invoicing (post-award procurement). The goal is to offer services that allow tendering processes and support for electronic ordering and invoicing across countries.

- e-Agriculture' has a main objective to assist farmers in accessing all digitally available services, while improving cross-border interoperability. The availability of a technical connection between countries is an essential precondition, as this will provide all citizens from all Member States (MS) with secure and reliable access to online services from other MS using their own national e-ID.

- Business Life-cycle will enable seamless online cross-border services and procedures for administrations and businesses by developing the specifications and services for cross-border or national processes relating to business registration in a Member State. The work conducted within this domain will support the evolution of the Services Directive (Directive 2006/123/EC of 12 December 2006 on services in the internal market), which provides the general framework for both temporary and permanent establishment of business in another MS. The work will also facilitate the interconnection of business registries for specific types of companies.

- Citizen Life-cycle's goal is to set up a framework for different kinds of e-services relating to citizens in the EU member states. This piloting domain includes a collection of national e-services that all have one thing in common – they serve citizens digitally.

Considering that the e-services provided to citizens vary between the different Member States (MS), the use cases might be different across Member States it is possible that one country offers an e-service that no other country offers. Envisaged use cases are: Tax, Study, Work, Pregnancy, Birth, Health, Pension, Education and Citizen master data.

The aim of piloting is to demonstrate that technical solutions developed within the project can be deployed successfully at European level, while providing a unique opportunity for business and citizens to benefit from digital single market. The e-SENS pilots will prove that seamless electronic communication with public administration is possible in the EU. Actual transactions between business/citizens and public administration based on generic building blocks will be available in a wide spectrum of domains and environments.

The e-SENS pilots are dedicated to all European citizens and businesses acting across borders who: want to set up a company in the EU, need to access health care while travelling abroad, want to tender in public procurement in EU countries, face legal difficulties in the EU.

The six piloting domains of e-SENS directly or indirectly influence the priority elements of the Sustainable Development Strategy, Figure 3.

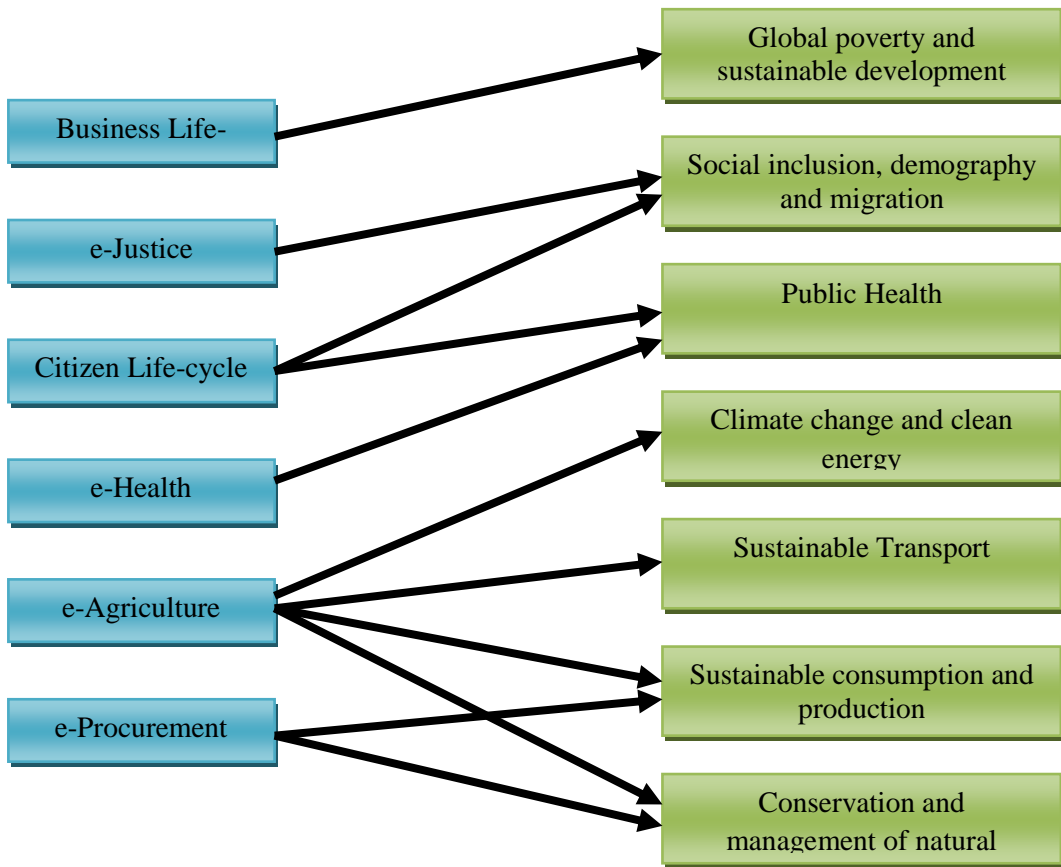


Figure 5. Influence of electronic services on sustainable development

In this way most of the elements of the strategy of sustainable development are influenced by the scope of the project e-SENS.

5. CONCLUSIONS

Influence of electronic services on sustainable development and priority elements of the aforementioned Sustainable Development Strategy demonstrates their importance and how to achieve effective electronic public services including European projects.

UN working groups conducted a research that reached valuable conclusions among which: “Although the costs of using ICTs to build national information infrastructures which can contribute to innovative knowledge societies are high, the costs of not doing so are likely to be much higher” [9].

Electronic services in health bring added value in public health and thus increase the element found in the Sustainable Development Strategy promoted by ESDN.

Electronic services in the e-Procurement domain bring improvements for both sustainable production and consumption through consumer filtering and thus a supplier for the sale of consumer goods is optimally chosen. These electronic services have a beneficial influence for the conservation and management of natural resources as the optimal consumption of products leads to an optimal use of resources and thus they are preserved for future generation consumption.

Electronic services in eAgriculture domain allow farmers to use e-IDs to perform transactions with his or her own national government and with the government of another country thus supporting sustainable development thru efficient production and placement of agricultural product. This results in contributing to achieving some of the 17 Sustainable Development Goals (SDGs) goals for sustainable development: No hunger and Partnership for the goals.

As a result Electronic Networked Services as the ones provided by LSP's, regardless of the domain they apply, bring consistent added value for longtime sustainable development and support the 2030 Agenda for Sustainable Development.

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