

Design of the Electronic Course on Egovernment Interoperability Essentials

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Abstract: Efficient and effective delivery of cross-border and cross-sectoral eGovernment public services is crucially dependent on interoperability, provision of which directly contributes to the achievement of the goals of the Digital Agenda for Europe in particular and the Europe 2020 Strategy in general. In this context, main issues, knowledge units, best practice, and legal base of interoperability must be done fully understandable for all (staff of local, regional, and national public administrations, national institutions and agencies, managers of eGovernment projects, public service developers, policy makers, etc.) who are involved in defining, designing, and implementing Europe-wide public services. However, at the moment there are no known learning courses on interoperability in the EU member countries. The LLP Leonardo da Vinci project "ELGI - eLearning for eGovernment" addresses this issue and aims at the development of an innovative e-learning course for acquiring knowledge concerning interoperability. The e-course is intended to be useful for three main target groups: decision makers responsible for the process of legislating in the field of eGovernment, public administration staff who are/will be users of public services, and contractors or, in other words, organizations involved in development and delivery of public services. The current paper presents work-in-progress related to the design of the mentioned e-course. It covers all main aspects of the design starting from steps that were undertaken to create an information base needed for production of the e-course content and finishing with the detailed specification of the e-course structure. Therefore, the paper specifies the information base of the e-course, course aims, target groups, organization of learning process, modules, and topics. Moreover, each topic is presented in terms of its content and learning outcomes. The e-course will allow target groups to acquire all the actual knowledge on interoperability in one place.

Keywords: interoperability, eGovernment, e-course

1. Introduction

The importance of interoperable public services (PSs) has been acknowledged as an essential component of EU Commission's efforts to contribute to improvement of the Single Market and making Europe an attractive place to live, work, and invest. Regardless that the Member States are responsible for interoperability of their own systems, interoperability at European level is needed in order to implement common EU policies. Currently, there is a huge number of ongoing efforts in establishing of interoperability, but at the same time no learning courses exist for acquiring corresponding knowledge by target groups directly or indirectly involved in development of eGovernment. The project "ELGI- eLearning for eGovernment" (2011-2013) aims at producing an e-course for delivering knowledge concerning interoperability. The paper presents work-in-progress related to the design of the mentioned course. The methodology undertaken includes the following steps: 1) conducting the state-of-the-art research at EU and national level with aim to create an information base needed for production of the e-course content; 2) creating the curriculum, and 3) producing learning objects. The paper is organized as follows. Section 2 describes steps related to creation of the information base of the e-course. Section 3 pays attention to the course aims, target groups, and learning method. Section 4 presents the detailed curriculum. Conclusion and directions of future work are discussed in Section 5.

2. Creating the information base

In order to identify information sources needed for creation of the e-course content, the following activities were carried out simultaneously:

- Research on EU policy and practices:
 1. identification of initial information sources by studying materials available at <http://europa.eu>;
 2. analysis of the information sources and fixing references to additional sources;
 3. searching of additional sources;
 4. producing the report (Anohina-Naumeca, Latiseva, and Sitikovs 2012).Steps 2-3 were performed repeatedly until no more sources were found.

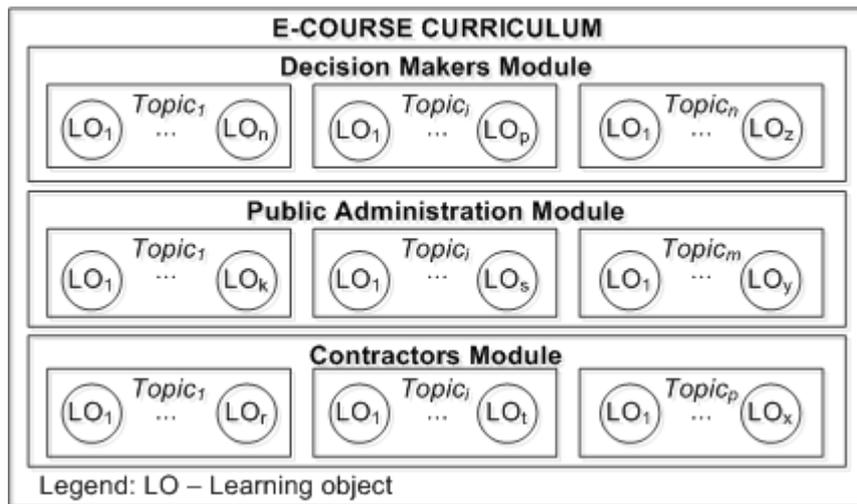


Figure 1: Curriculum of the e-course (adopted from (Goetzen et al 2012))

- Research on national policy and practices:
 1. development of a report template with aim to unify information from different countries;
 2. producing initial reports by filling the template with information specific for each partner country;
 3. reviewing the reports by the leading partner and producing the set of final reports (Bulins et al 2012, Casalino, Rubichi, and Mastrofini 2012, Georgogianni 2012, Goetzen, Chmielecki, and Hernes 2012, Manolov 2012, Ubrich, Gomez, and Chiusdea 2012).

Sources comprising the information base at EU level are presented in (Anohina-Naumeca and Sitikovs 2012). Information at national level is related to legal framework in the field of eGovernment, organizational and technical aspects of interoperability, best practices and systems on trial.

3. E-course specification

The e-course is intended to provide the necessary knowledge for all who are involved in legislating, preparation, and development of eGovernment and PSs in order to ensure common language and awareness needed for a) their effective intercommunication, b) understanding of needs and requirements concerning PSs, and c) design of new eGovernment tools and systems compatible across EU. Therefore, the e-course is designed for three main target groups (Goetzen et al 2012):

- Decision makers (DM) – people who are responsible for legislating in the field of eGovernment (e.g. national policy makers);
- Public administration (PA) staff – people who are/will be users of PSs (e.g. managers of eGovernment projects, social partners, local, regional and national administration, etc.);
- Contractors – companies involved in development and delivery of PSs (e.g. managers of eGovernment projects from the side of developers).

Besides the mentioned above, the aims of the e-course are the following (Goetzen et al 2012):

- to ensure awareness on legal regulations in order to develop interoperable solutions applicable across EU;
- to demonstrate best practice examples in order to avoid development of complex, useless, and ineffective solutions;
- to raise awareness of possible barriers for interoperability.

It is envisaged that any person interested in the subject can join the course using the online e-learning platform. Interaction with a teacher is not planned and on-campus presence is not required. A learner will have possibility to study at his/her own pace, time, and place. The e-course will provide detailed topics with self-assessment tests (an essential part of the e-course) and various multimedia objects such as animation, audio and video podcasts. The learner will follow the e-course topic by topic (Goetzen et al 2012).

4. Structure of the curriculum

The curriculum has a modular structure which is presented in Figure 1. Therefore, the e-course is divided into three modules: DMs Module, PA Module, and Contractors Module. The set of specific modules results from the need analysis done at the beginning of the project in all partner countries. Each module consists of a set of topics. Each topic includes a set of learning objects. Such an

organization of the curriculum allows tailoring of the e-course to the needs of the target groups. Each of the group needs specific knowledge which can be delivered as specialized topics available only to a particular group. At the same time, there are topics which are common for members of all groups (Goetzen et al 2012). Therefore, each target group will master its module independently from other groups.

All the topics are divided into four groups: common topics and topics specific for a particular target group. Their organization into modules together with topic titles and IDs is shown in Figure 2. Table 1 presents the detailed specification of the topics in terms of their content and learning outcomes.

Decision Makers Module	Public Administration Module	Contractors Module
C-1 Introduction to the e-course		
C-2 Introduction to eGovernment and concept of interoperability		
D-P-1 Legal regulations of interoperability		CO-1 Interoperability barriers
D-2 Interoperability barriers	P-2 Interoperability barriers	CO-2 European interoperability architecture
D-3 Interoperability initiatives	P-3 Interoperability initiatives	CO-3 Technical aspects of interoperability
D-P-4 Organizational aspects of interoperability		CO-4 Semantic aspects of interoperability
C-3 Interoperability – the best European practices and pilot projects		
C-4 Interoperability – the best national practices		
C-5 Standardization and compliance verification		
C-6-11 Organizational, semantic, and technical aspects of interoperability by country – 6 topics		

Legend: C-1-11 – Common topics; D-2-3 – Topics only for decision makers; P-2-3 – Topics only for public administration; CO-1-4- Topics only for contractors; D-P-1,4 – Common topics for decision makers and public administration

Figure 2: Organization of the topics into the modules (topics are ordered from top to bottom)

Table 1: The topics of the e-course

Topic ID	Content	After studying the topic, the learner will know:
C-1	Introduction	<ul style="list-style-type: none"> ▪ organization of the e-course; ▪ topic goals; ▪ usage principles of the e-platform
C-2	Main concepts related to interoperability	<ul style="list-style-type: none"> ▪ definition of PA, PS, eGovernment, and interoperability; ▪ eGovernment strategic focuses and maturity model; ▪ types of interoperability; ▪ main parties involved in development and usage of PS; ▪ interaction scenarios where interoperability is needed; ▪ benefits and beneficiaries of interoperability
C-3	Best European practices and pilot projects	<ul style="list-style-type: none"> ▪ European programmes and large scale pilot projects (IDA I, IDA II, IDABC, ISA, eTEN, CIP ICT PSP, MODINIS, eCODEX, epSOS, PEPPOL, SPOCS, STORK) and their contribution to interoperability
C-4	Best national practices and pilot projects	<ul style="list-style-type: none"> ▪ examples of projects and systems specific for each partner country
C-5	Role of standardization, mechanisms of selection of appropriate standards and methods for ascertaining of compliance with requirements of interoperability	<ul style="list-style-type: none"> ▪ essence of standardization processes; ▪ types of standards and standardization bodies; ▪ need for standards to achieve interoperability; ▪ methods of selection and evaluation of standards; ▪ conditions and limits for application of standards; ▪ European best practices in application of standardization to achieve interoperability; ▪ methods for establishment and management of standards registers; ▪ nature of interoperability compliance; ▪ European best practices for compliance verification

Table 1 (continued): The topics of the e-course

Topic ID	Content	After studying the topic, the learner will know:
C-6-11	Organizational, semantic, and technical aspects of interoperability in the partners' countries	<ul style="list-style-type: none"> ▪ organizational advantages of interoperability; ▪ main elements of semantic and technical aspects
CO-1	Interoperability barriers	<ul style="list-style-type: none"> ▪ interoperable metadata standards; ▪ interoperable content management; ▪ multiple protocols and languages
CO-2	Common vision of the European Interoperability Architecture (EIA)	<ul style="list-style-type: none"> ▪ place of EIA in the common interoperability governance pyramid; ▪ past efforts in development of EIA; ▪ European Interoperable Infrastructure Services; ▪ definition and essence of EIA
CO-3	Technical aspects of interoperability	<ul style="list-style-type: none"> ▪ basic concepts of technical interoperability; ▪ main technologies; ▪ standardization processes; ▪ rudiments of information exchange; ▪ main aspects of telecommunication and networking; ▪ human interface design; ▪ interoperable content management; ▪ incident handling interoperability
CO-4	Semantic aspects of interoperability	<ul style="list-style-type: none"> ▪ definition of semantic interoperability; ▪ main semantic conflicts; ▪ activities for achieving semantic interoperability; ▪ key factors of semantic interoperability
D-P-1	Legal documents, initiatives, and events on eGovernment and interoperability	<ul style="list-style-type: none"> ▪ EU and national legislation on eGovernment and interoperability; ▪ historical context on documents, events, and initiatives related to interoperability
D-2	Barriers that can hinder progress towards realizing the concept of eGovernment and	<ul style="list-style-type: none"> ▪ barriers for development of eGovernment; ▪ substantial differences between the Member States
P-2	substantial legal, political, administrative, social, institutional, and cultural differences between the Member States	<ul style="list-style-type: none"> ▪ barriers concerning interoperability in PA; ▪ important PSs in the EU that seek to span national and regional boundaries
D-3	Interoperability initiatives important for decision making on interoperability	<ul style="list-style-type: none"> ▪ current political context; ▪ European interoperability governance pyramid; ▪ European Interoperability Strategy
P-3	The main concepts of the European Interoperability Framework (EIF) and National Interoperability Frameworks (NIFs)	<ul style="list-style-type: none"> ▪ essence of the EIF; ▪ recommendations for PAs; ▪ principles of the EIF; ▪ concept of interoperability governance; ▪ conceptual model for creation of PSs; ▪ interoperability levels and agreements; ▪ NIFs
D-P-4	Organizational aspects of interoperability	<ul style="list-style-type: none"> ▪ definition of organizational interoperability; ▪ activities for achieving organizational interoperability; ▪ key factors

5. Conclusion and future work

Taking into account that interoperability of PSs is tightly related to the goals of the Digital Agenda for Europe and the Europe Strategy 2020, the target groups involved in development of eGovernment need to have appropriate knowledge about interoperability issues and the current state-of-the-art. The ELGI project is producing the e-course aimed to solve this problem. At the moment the e-course design and production of its content is completed. The further steps include: 1) developing the e-

course, 2) localizing the e-course, 3) testing the e-course by each project partner, and 4) performing pilot testing and further improvement of the e-course.

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Disclaimer

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