

Implementing Digital Parliament Innovative Concepts for Citizens and Policy Makers

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Abstract. The organizational stability of Parliaments comes in direct contradiction with rapid progress in digital technology in recent decades, particularly in the ICT domain. By participating in a series of networking activities through European funded research programs, the Hellenic Parliament and the Austrian Parliament have placed themselves in the forefront of parliamentary innovation. This paper will focus on these activities and relevant findings on their impact, citizen adoption and application-to-end-user acceptance, where end users are parliaments and citizens alike. A range of technological challenges that modern Parliaments face and discrete actions of parliamentary innovation will also be shown. Finally, the paper will present the prospects that arise from the use of the latest ICT technologies in Parliaments. We shall also examine limitations in the use of such tools and shall propose potential areas of technological research and innovation for parliamentary application.

Keywords: Europe · Parliaments · Project · User adoption · User interaction · Policy making · Policy adoption · LEX-IS · Spaces+ · NOMAD · ARCOMEM · METALOGUE

1 Digital Democracy Trends

What is evident, nowadays, is that on the one hand Governmental Institutions and Public Authorities are trying to understand the upcoming complex world and its needs. Citizens on the other hand demand more openness, transparency and commitment to results. Other institutions such as Parliaments struggle to understand, enhance and transform their institutional role within the new digital society, so they tend to apply new digital technologies and tools with a characteristic lag due to their role and in a rather unstructured way. In the Digital Democracy era, these institutions seem not to have a clear communication, dissemination and exploitation plan for the role of social media in the policy making process, as in the Hellenic Parliament case. At the same time, other European Parliaments, such as the Austrian Parliament, have clearly identified the

possibilities that emerge through applications of new technologies in the legal informatics, digital democracy with public participation, digital transformation and parliamentary communication domain.

The latest trends in social networking analytics closely related to policy making cycles and legislative procedures could be found in a series of recent EU funded projects in digital democracy, e-participation and civic engagement addressing mostly citizen's enhancement in the policy making process. According to latest digital market trends, people engagement in politics and policy-making makes the whole decision-making process easier to understand, thanks to Information and Communication Technologies (ICTs) [1]. Additionally, collective social awareness projects cover many issues, from open democracy to collaborative consumption and internet science [2].

A lot of sibling research EU-funded projects in the field have been conducted the last 7 years, thanks to the latest evolution of the Social Web [3]. The list of demonstration use cases (among them pilot actions for the Hellenic and Austrian Parliaments) is not exhaustive, as the digital democracy trends and society's digital transformation is proceeding faster than in the last decade. Policy makers like Members of Parliament (MPs), who participated in these projects mainly as users, face a task of unprecedented complexity and difficulty to fully understand the pilot applications and demonstration use cases. Trying to adopt or to assess their innovative outputs, results and primary outcomes, they tend to compare them with the traditional policy making approaches used so far, they still seem to find difficulties in capturing the society's complex and interconnected nature [4].

Moreover, governments may have neither the resources nor the necessary know-how to deal with countless innovative challenges that have arisen the past decade, by horizontally sharing and analyzing each and every involved citizens' status, opinion, preferences, reviews, ratings and needs around specific issues in the various social media, respecting their privacy at the same time which is crucial, especially for data protection authorities, brings to the table the need for a global expertise that reduces the information asymmetry between governments and citizens. As presented in [5, 6], the aforementioned approach so far did not successfully involve in the overall process all significant stakeholders, whose interests are affected by decisions and relevant policy outputs, as well as individuals, although their working environment, financial conditions, social presence and consequently their well-being is tightly dependent on the formulated policies.

2 ICT in the Parliamentary Context

Parliaments, as institutional foundations of democracy, are traditional organizations in the sense that they heavily rely on tradition. As a direct consequence, parliaments are inert to changes. Their institutional identity, their organizational structure, their Rules of Procedure often remain stable over longer periods of time. The recognition that new means of political communication from the bottom-up, or from the top-down, are critical to parliamentary life and that political parties can no longer be the most effective channels for this communication has convinced political leaders, parliamentarians and parliamentary staff of the need for alternative means of interaction through ICT [7].

For this reason, parliaments struggle to maintain and advance their institutional role within the new digital society, as they tend to apply new technologies with significant time lag and in a rather unstructured and often reluctant way. For this reason, over recent years, the intensive use of ICT in parliaments has formed a new concept and role for parliaments, that of an electronic parliament or e-parliament [8].

On top of that, a few European parliaments have clearly identified the possibilities that emerge through applications of new technologies in the legal, public participation and parliamentary communication domain, through participation in EU-funded research activities in the ICT domain, within the context of the 7th Framework Programme (FP7). Both the Hellenic Parliament and the Austrian Parliament have been active in such research consortia that can be also described as European research networks. The nature of these networks, which also include a variety of non-parliamentary actors (universities, research institutes, civil society organizations, small and medium sized enterprises etc.), is going to be examined. In particular, data from the EU funded projects LEX-IS, +Spaces, NOMAD, ARCOMEM, METALOGUE are going to be analyzed and presented in a structured way.

As reported before, mainly due to the capabilities offered by Web 2.0 tools and channels, an array of new techniques and opportunities are emerging through the massive use of the social web, both into the policy-making process and the legislative procedures. The implications due to the use of social media go well beyond the simple advancements in traditional interaction between audiences and stakeholders, e.g. dialogue, collaboration, exchange of ideas etc. These new media have the potential to radically change politics for good, on all levels and in every sector; a true paradigm shift in the policy development.

Based on the above projects' results there are many novel ideas, cases, tools and techniques to exploit the recent market trends for identifying the best exploitable policy implications or models with advanced linguistic analysis on the social Web, giving an emphasis on policies implementation and civic engagement on them. However, the use of ICT poses significant challenges to parliaments, many of which do not readily adopt new technology with exceptions of the Scottish, Austrian, Portuguese and UK Parliament. As a result, most parliaments have acquired some of the forms and elements of ICT and the new social media, but most have not yet been able to use them in a highly successful manner or incorporate them effectively into their work procedures. Adequate staff and funding are clearly important. However, cultural and institutional factors, along with how a parliament uses technology, can have as significant an effect as management procedures and financial resources [9]. Although the methodologies used may extend to other areas like brand monitoring and reputation, the ICT techniques used basically rely on data and opinion mining and on the conceptual representation of policies and argumentation theories.

The abovementioned facts show that parliaments could promote citizen participation, either in formal or informal context, is able to promote both representative and participatory democracy. Unfortunately the lack of comprehensible visualizations, useful to citizens and policy makers for easing out the complexity in policy decisions, the under-performance of existing policy models in conjunction with real life simulation mechanisms, and the insufficient use of the huge amounts of data that are available on

the web, are among the important issues that need to be tackled in order to take the leap forward in policy making. Therefore, ICT tools still have untapped potential and remain a “novelty” for the majority of government systems, despite their already acknowledged benefits in their application by governments related to the quality and speed of policy making, as well as to evidence-based policy decision making.

Last, but not least, citizen participation can establish at the end of the day a two-way collaboration and a long-term cooperation between parliamentarians and citizens with the use of these ICT tools. The 3Cs’ scheme “coordination, collaboration and cooperation” corresponds to the components of inclusion, awareness, engagement and participation [10].

3 Parliamentary Participation in EU Programmes

3.1 LEX-IS

The LEX-IS project is aimed at improving the legislative process in National Parliaments. By using of state-of-the-art ICT-tools and methodologies LEX-IS strengthened public participation within the legislative process, e.g. during drafting and public debate of draft law. With the introduction of a web-based platform, a set of specialized services was made available to the project stakeholders: Parliaments, businesses, citizens and, especially, youngsters.

In particular, stakeholders had the ability to query and view the legal structures and elements, such as draft laws, legal components, legal documents and supportive information, in multiple levels of abstraction and decomposition, using content management engines and legal metadata schemas. Moreover, the argumentation structure of a law under formation could be made visible, using semantic annotation and argument visualization techniques. Finally, stakeholders had the opportunity to express opinions around legal components, arguments that are presented by the participating organizations, or opinions of other parties, in a structured way that promotes participative decision-making.

Figure 1 presents the operation principle of the LEX-IS platform. The system provided adequate argumentation support to every category of users. To achieve this, it implemented a specific methodology that determined the best course of action at a user’s request based on the nature of the user and the current state of the legislative process.

The LEX-IS platform, as presented in [11], may contribute in improving political accountability and in enhancing trust into democratic institutions and their representatives. It also became possible to attract citizens who were not willing to participate in face-to-face events or were generally reluctant to openly express their opinion.

In order to bridge the growing gap between citizens and the state, parliamentary institutions were included to the implementation team. The LEX-IS project was implemented by 7 partners from 4 EU Member States. The majority of the partners (4) was Greek, with 3 partners coming from Germany, Austria and Lithuania. As for the nature of partners, most of them (4) were universities, 2 were Parliaments and 1 a private company. One has to take into account that Kauno Technologijos Universitetas, the Lithuanian University, has been providing data and insights of the Lithuanian Parliament. Hence, in total,

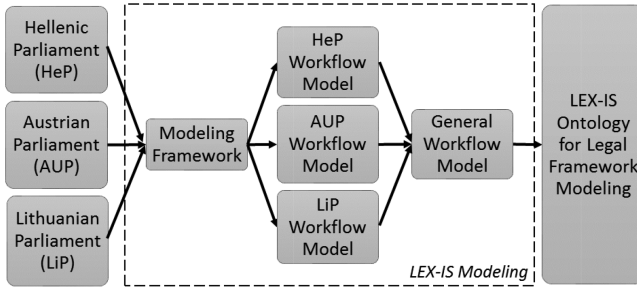


Fig. 1. LEX-IS operation principle

legislative procedures and case studies from 3 Parliaments have been examined: Hellenic Parliament, Austrian Parliament, and Lithuanian Parliament.

The LEX-IS project demonstrated that it is possible to use state-of-the-art ICT tools and methodologies to attract public attention and participation in the preparatory stages of the legislative process, that is during the (a) preparation phase, (b) policy debate, and (c) draft legislation formation. Such tools can be applied to model e.g. through legal role-activity-document ontologies and workflow management technologies, and, consequently, manage complex legislative frameworks and legal structures, e.g. draft legislation, existing legislation, amendments and changes, effectively. The semantic annotation of legal elements, as well as the development of internet-based tools for information retrieval and argument visualization is of key significance in the evolutionary process of such endeavors.

3.2 +Spaces

The project +Spaces (Policy Simulation in Virtual Spaces) uses existing social media spaces to model real world behavior [5]. The goal was to bring together citizens from different online communities into a common virtual framework. Analysis of these virtual spaces has the potential to provide insight to policy makers and assist them in forming and presenting their arguments to the ever growing on-line community, thus increasing potential acceptance of new policies.

The +Spaces platform creates and deploys applications in virtual spaces (Facebook, Blogger, Twitter, Open Wonderland), which provide information about the policy with a clear description of the policy topic, pre-defined roles, selected keywords, standard questions and moderated statements, guiding the public to react to it in various ways. Feedback from the civil society is obtained through well-defined and structured polls and debates, as well as through role playing simulation, in which the citizens are invited to take a certain role, in favor or against a certain policy, and express thoughts and opinions from the respective point of view. This novel approach, the details of which may be found in [12], provides users with new insights and a better understanding of various aspects of the discussed policy.

+Spaces provides governments with an integrated environment where policy makers can propose regulations, run simulations and then study the real users’ reactions on a large, and a mere focus group, real-world scale. Simulation evaluation is performed by utilizing the +Spaces tools, which also include several data visualization schemes. Hence, policy makers are able to draw immediate conclusions on the impact of their policy to the virtual communities, and even fine tune different aspects of the policy to match its expected outcome.

In order to achieve the desired functionality, several technologies for the aggregation, filtering and analysis of the textual data contained in the virtual spaces were developed. Particular care was placed in the development of recommender and reputation systems, as one needs to ensure that only reliable sources of data are taken into account. Figure 2 presents a schematic diagram of the +Spaces project. Its vital modules include functionality for Reputation & Recommendations (R&R), Identity Management & Authorization (IM&A), Data & Statistical Analysis (D&SA) and Data Management & Baseline Security (DM&BS).

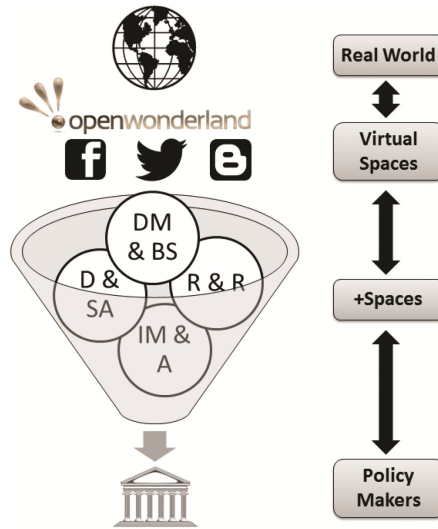


Fig. 2. +Spaces schematic diagram

The +Spaces project was implemented by 8 partners from 6 countries. There was a large geographical distribution of the partners that also included one non-EU actor from Israel. From the EU partners, 3 were Greek, and each one from Belgium, Germany, Spain and the United Kingdom. This project was heavily based on private company participation (3 partners), with equal participation of universities and research institutes (each represented with 2 entities) and one Parliament (Hellenic Parliament).

As a benefit for government agencies, the use of virtual spaces supports efficient collection of citizens’ feedback and enables governments to extrapolate conclusions for real societies. This improves the prediction of how planned policy measures impact people. Through the +Spaces platform the Hellenic Parliament was possible to address

several public groups on different stages of the policy making process. In addition, +Spaces was able to support policy makers’ presence in social networks. Moreover, the advanced 3D & 2D role-playing simulations and the 3D debates created fresh ideas for policy makers, that could make the +Spaces platform useful as a policy marketing tool.

3.3 NOMAD

The core of the NOMAD projects lies in the interpretation of citizens’ discussions available on the web and using them as the basis for end-to-end policy development, from the setting of the political agenda towards definition, implementation and monitoring of single policies [6]. The project improves the monitoring of policy-delivery in the face of citizens’ rising expectations and enhances the citizens’ active participation in the decision-making process. NOMAD provides fully automated solutions for content search, acquisition, categorization and visualization that work in a collaborative form in the policy-making arena. A basic sketch of the NOMAD policy modeling environment functionalities includes: data acquisition via web and social media crawling, opinion mining, argument extraction and advanced visualization, as summarized in Fig. 3.

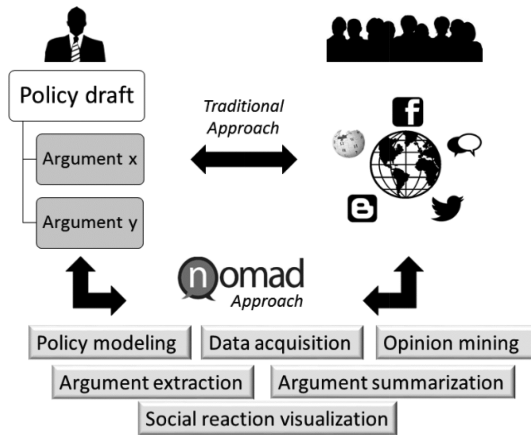


Fig. 3. NOMAD policy modeling environment

The project reported on the study on need finding and usability testing of a user interface for collaborative policy formulation. The task complexity required extensive need finding procedures and more than two iterations of design prototyping in order to ensure the high usability of the proposed visually driven policy modeling authoring process. The hardest challenge was to derive interaction scenarios from users that lacked the expertise and scientific background to utilize the deeper linguistic concepts of the content. This was a first try on creating a policy-modeling environment for users who traditionally use other means for collecting information.

All project modules have been available to the decision-makers via a web plat-form containing an integrated Tool-Suite, which enabled users to easily switch between them.

The Suite was used to scan both the formal and informal web, such as forums, social networks, blogs, newsgroups and wikis etc., in order to gather feedback on the level of acceptance of policy proposals, thus creating a stable feedback loop between policy formation and public opinion.

The NOMAD project has been being implemented by 9 partners from 6 EU Member States. It has been a Greek-centered project, with 4 of its partners being Greek. There are also partners from Austria, Belgium, Germany, Ireland and the United Kingdom. Regarding the partner mix, it relies mostly to the private sector (4 companies). The consortium also includes 1 university, 2 research institutes and 2 Parliaments (Hellenic Parliament and Austrian Parliament).

The Hellenic Parliament's pilot of the NOMAD program was conducted in the frame of the country's policy making process. Aiming to promote NOMAD's use as a policy making tool, the parliament aspired to create a policy model that would simplify the work of the policy maker by providing the people's opinion on each relevant subject.

3.4 ARCOMEM

Social media are becoming more and more pervasive in all areas of life. This kind of digital material is both ephemeral and highly contextualized, making it increasingly difficult for a political archivist to decide what to preserve. These new world challenges the relevance and power of our memory institutions. ARCOMEM's aim is to help transform archives into collective memories that are more tightly integrated with their community of users, and exploit Social Web and the wisdom of crowds to make Web archiving a more selective and meaning-based process. For this purpose, in order to help exploit the new media and make our organizational memories richer and more relevant, an innovative socially-aware and socially-driven preservation model was developed and investigated.

In Fig. 4 we depict the overall ARCOMEM system architecture [12]. The ARCOMEM system comprises of the following basic structural components:

1. The intelligent crawler. This module is responsible for retrieving the appropriate web content as initially defined by the archivist. Moreover, based on the feedback from both the analysis module and the archivist it refines its strategy in order to harvest only the most relevant parts of the web.
2. Detection of Entities, Topics, Opinions and Events (ETOE). ETOEs are informational elements, i.e. advanced data structures. This component comprises a collection of modules that are responsible for detecting different entities, topics, opinions and events on a given object or sets of objects.
3. Social Web analysis. This module builds upon the detected ETOEs and performs social analysis for extraction of more high-level information on the harvested data (group relations, trust, reputation, etc.). This analysis includes linguistic, machine learning and NLP methods in order to provide a rich set of metadata annotations that are interlinked with the original data.
4. Dynamics analysis. These modules are responsible for analyzing the evolution of terms, opinions, topics, etc. across several crawls and therefore over time through

advanced processing methods. The Social Web Analysis modules especially benefit from the term and entity evolution detection.

5. Database. This is the storage module of the ARCOMEM system. It features a distributed storage engine that stores raw web objects as well as annotations and information from ETOE – Social – Dynamics.
6. Applications. The ARCOMEM applications interact with the system in two ways. First, they can influence the direction of the crawling that they have initiated. Results from the various analysis modules are taken into account in order to amend the crawling strategy and harvest only the most interesting/important content. Second, they can retrieve data from the ARCOMEM database to provide an information-rich, multidimensional means of searching through a vast archive.

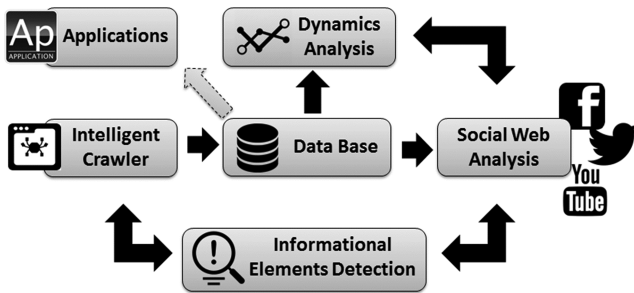


Fig. 4. ARCOMEM system architecture

The ARCOMEM project was implemented by 12 partners from 7 countries. Each 3 of its partners were from Greece and Germany, 2 from the UK and each one from France, Netherlands, Spain and Austria. There was also a broad and nearly even distribution of partner types: Media, research institutes, companies and Parliaments were each represented with 2 partners. In addition, there were 3 university partners and 1 foundation. Preservation of digital information is thought to be a very useful tool to researchers and politicians of the future. In addition, synergies with other research projects for crawling services (e.g. NOMAD) were identified. Also recognized was ARCOMEM's potential of moderating political discussions in the Parliamentary context. Hence, there is potential necessity for ARCOMEM functions as part of parliamentary service, e.g. the library.

3.5 METALOGUE

Natural dialogue systems have shaped a significant and fast-growing market segment, which is widely used in public services. At the same time, state-of-the-art dialogue systems do not fully support flawless machine-human interaction. The goal of METALOGUE is the development of a multimodal dialogue system with the ability to display seamless interactive behavior. In order to achieve this, both the system's own and the users' cognitive processes need to be understood, controlled and manipulated. Dialogue strategies are planned and deployed by a dialogue manager, which incorporates a cognitive model based on meta-cognitive skills. The system constantly monitors both

its own and the users' interactive performance in order to evaluate the users' intentions and adapt its dialogue behavior.

As negotiation skills play a key role in the decision-making processes, research in the framework of the METALOGUE project focuses mainly on educational and coaching applications [13]. The developed components and algorithm comprise a prototype platform, which provides an adaptive environment that helps learners to develop their metacognitive skills, increase motivation, and stimulate creativity in the course of a given decision making and argumentation process.

The METALOGUE system is able to generate virtual dialogue agents for natural interaction using speech (in English, German and Greek), gesture, mimicry and body language. Hence, it allows learners, and particularly the young ones, to train and further develop their train presentational, interactional, semantic, pragmatic and meta-cognitive skills within a scalable and controlled learning environment.

The overall project architecture is presented in Fig. 5. The system was deployed and tested in two use-case scenarios: in social educational contexts for training young entrepreneurs and active citizens in the framework of educational activities of the Hellenic Youth Parliament, and in a business education context for training call center employees to successfully handle their customers. Therefore, METALOGUE may have a strong impact on both the economic and social level.

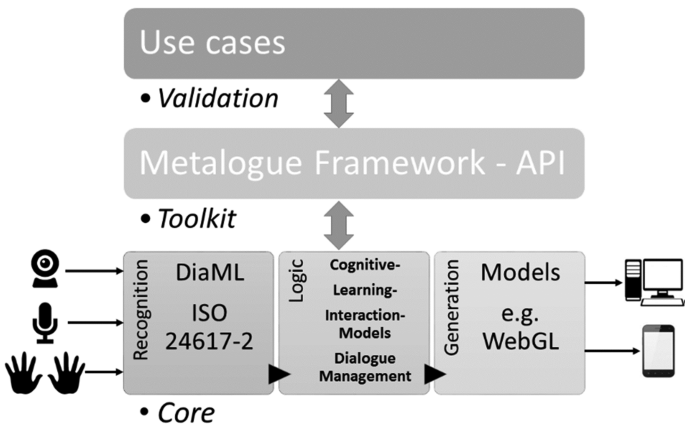


Fig. 5. Overall METALOGUE architecture

The METALOGUE project was implemented by 10 partners from 4 countries. 3 of the partners were German, each 2 were from Greece, Netherlands and the UK, and 1 originated from Ireland. It was heavily University-centered (6 partners). Moreover, 2 companies, 1 research center and 1 Parliament (Hellenic Parliament) were represented in the partner-mix.

4 Structure Analysis of Parliamentary Networks

The five aforementioned FP7 research programmes started to be implemented in the year 2007 and resulted in the creation of large partner networks across the European Union and Israel. In general, particular care has been taken in building most capable consortia specialized to each of the relevant FP7 calls, so that the proposed research could be conducted on-time and efficiently, in order produce sustainable results. Table 1 presents the partners and the duration for each of the discussed projects.

Table 1. Project partners per FP7 project

LEX-IS	+Spaces	NOMAD	ARCOMEM	METALOGUE
2007–2009	2009–2012	2011–2014	2010–2014	2013–2016
Athens Technology Center SA	IBM Research	University of the Aegean	University of Sheffield	German Research Centre for Artificial Intelligence
National Technical University of Athens	Institute of Communication and Computer Systems	Google Ireland	Internet Memory Foundation	Universität des Saarlandes
University of the Aegean	SCAI Fraunhofer	Athens Technology Center	University of Southampton	Rijksuniversiteit Groningen
Kauno Technologijos Universitetas	University of Essex	NCSR'D'	Athena Research and Innovation Center in ICT	Trinity College Dublin University Dublin
University of Koblenz	ATOS Origin	CP	Télécom ParisTech	Charamel GmbH
Austrian Parliament	K.U. Leuven	Fraunhofer IGD	Deutsche Welle	University of Peloponnese
Hellenic Parliament	Athens Technology Center	Kantor Qwentes	Südwestrundfunk	Hellenic Parliament
	Hellenic Parliament	Austrian Parliament	Yahoo! Iberia	Open University of the Netherlands
		Hellenic Parliament	L3S Research Center	DialogConnection
			Hellenic Parliament	University of Essex
			Austrian Parliament	
			Athens Technology Center SA	

The number of partners varies from 7 (LEX-IS) to 12 (ARCOMEM) with an average partner number per project of 10. Further statistical analysis of partner participation in the mentioned FP7 projects is presented in Fig. 6. The analysis reveals that 36 unique partners from 11 countries participated in these 5 programmes (out of a total of 47 partners). The Hellenic Parliament and the Austrian Parliament have 5 and 3 appearances as projects partners, respectively.

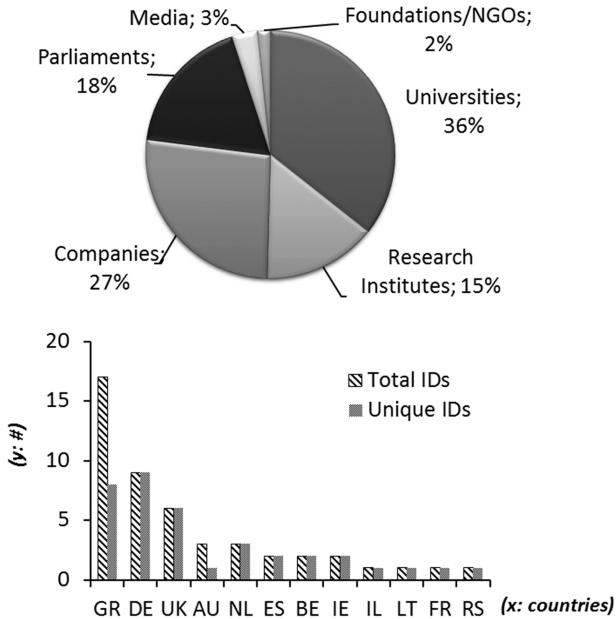


Fig. 6. Partner participation in FP7 projects

Similarly, a broad distribution of the partners’ working sectors can be observed. On average, Universities comprise the largest share of partners with 36%, followed by private companies (26%, both Small and Medium sized Enterprises -SMEs- and large corporations) and Parliaments (18%). Two parliaments are represented here, the Hellenic Parliament and the Austrian Parliament. It has to be noted that the LEX-IS programme also used data from the Lithuanian Parliament that was provided by the Kauno Technologijos Universitetas.

The most significant research topics tackled by the individual projects are depicted in Table 2 below. What is of interest is that there are several common research topics

Table 2. Research topics in FP7 programmes

	LEX-IS	+Spaces	NOMAD	ARCOMEM	METALOGUE
Policy discourse	●	●	●	●	●
eParticipation	●	●	●		
Policy modeling	●		●		
Social Network Analysis		●	●	●	
Visualization		●	●	●	
3D role playing		●			●
Crowdsourcing			●	●	
Multimodal dialogue					●

between these projects, but also a clear evolution and expansion of research over time towards more complex topics in the parliamentary context.

With the know-how collected by the participation in the FP7 research projects the Hellenic Parliament was awarded in 2011 the EU funded IPA (Instrument for Pre-Accession Assistance) Twinning Project “Strengthening the Capacities of National Assembly of the Republic of Serbia towards EU Integration”. This complex project of inter-institutional cooperation was managed solely by the Hellenic Parliament and covered five (5) distinct sectors of parliamentary operation: “law-making process”, “transposition of EU *Acquis Communautaire*”, “organizational structure and procedures”, “oversight” and “parliamentary communication”.

More than 100 short term experts (STEs) on parliamentary affairs from 10 countries (Greece, Austria, France, Germany, UK, Belgium, Slovakia, Poland, Hungary and Montenegro) facilitated the necessary know-how transfer to their Serbian counterparts from the National Assembly, the Government, Independent State Bodies and Civil Society Organizations. The project was successfully completed in early 2015 and made use of the networking capabilities developed through the aforementioned FP7 projects, as well as of specific know-how in the areas of eParticipation, Policy Modeling and Social Network Analysis.

5 Assessment and Outlook Research

Over the last 10 years, the Hellenic Parliament and its research partners have utilized the opportunities of the EU framework programmes for research to understand evolution and transformation of the digital society and the potential impact on political institutions.

All these interesting innovations, the approaches and the models presented above, the evolution of the digital market, the efforts of the Governmental Institutions and especially the commitments of the legislative branch, reveal that there is a need for immediate feedback to the discourses in the policy making arena, in real time, based on citizens’ reactions in the social media. The abovementioned research projects from the previous framework period (2006–2013) could partially identify the users’ needs, described thoroughly in the previous paragraphs.

On top of that, the political communication has been transferred in Web 2.0 or Web 3.0 that radically transforms the policy discourse, and strategic planning of election campaigns, political debates and dialogue with well-grounded transparency in political activities, diffusing messages and information. It is evident that the policy makers need to assess the interests and requirements of their voters/citizens, upgrade the role of political marketing and web communication, and create supportive networks with the interaction of citizens through social media.

However, real-life experience has proved that there are still many unsolved challenges in policy making ICT techniques, which restrain policy makers from providing sustainable and inclusive decisions and citizens from getting engaged in policy discussions. Public policy issues are not generally appealing and interesting, as citizens fail to understand the relevance of the issues and to see “what’s in it for me” as the decline in voters’ turnout and the lack of trust in politicians. Citizens demand more openness,

transparency and commitment to results and increasingly seek to express their views or opinions and influence policy decisions through the new media.

While the Web has long promised an opportunity for widespread involvement, e-participation initiatives often struggle to generate participation and there is a huge gap between the technological advancements and the active participation of citizens and other stakeholders in the policy-making processes with sustainable policy modelling interactive tools. As a direct result, ICT tools still have untapped potential and remain a “novelty” for the majority of governments, parliaments, policy makers despite the already acknowledged benefits for their use by all of them related to the quality and speed of policy making, as well as to evidence-based policy decision making [14].

These projects are closely related to the idea of monitory democracy, as defined in [15], so individual ICT tools extracted from them and could be used accordingly. On the other hand, “citizen participation in the political process is considered highly important to foster greater government accountability, transparency and responsiveness” and the ICT tools provided can foster participatory democracy (see also [16]). A new trend where these projects could potentially contribute in is the e-Parliament concept where citizens can, and in fact could, be included in decision-making processes, through projects and services that enable everyday life citizens to actively participate and engage in interaction with members of parliament and (just as, if not more, importantly) in peer-to-peer interaction with fellow citizens. Overall, based on the results of these 5 research projects, it seems that there is a need for user friendly integrated ICT tools that allows policy makers to have, among others [17]:

- an interpretation of citizens’ discussions, for or against a policy agenda,
- a stable feedback loop between the vast amount of crowd opinion on the Web and the agenda of the decision-maker, for a given policy,
- a clear and complete plan on the understanding of how the citizens’ opinion, arguments and needs can (or should) affect the policy-making agenda,
- a complete set of tools for the discovery, aggregation, analysis and visualization of arguments, expressed in the Web in support or against a given policy,
- a continuous usability testing bringing more closely the digital transformation and the digital society,
- full integration of multimedia archives (video, image, text) with customized services addressed to citizens’ needs,
- access to interconnectivity, open prototypes, open source tools, open data and open architecture.

Taking into account all the above, the EU Digital Agenda 2020 prospects and goals addressed to National Parliaments could be summarized to the tackling of the following issues:

- Availability of e-Government digital tools and systems
- Language Technologies online content available in every European language
- Transforming Digital Science open, global, collaborative and closer to society
- Cultural Heritage available online
- Making Big Data work
- Tackling societal challenges

– Use of ICT for governmental accountability

The successful results of the described use cases could also be used as a potential marketing tool for the promotion of policy discourse in the digital Parliament context. Hence, they could be further distributed through the main dissemination channels available: the research & scientific community, the industrial community, the public sector and the public community. Real world applications could be created for several potential customers like political institutions, mass media organisations, individual politicians and policy makers. The promotion and distribution of an integrated tool for brand monitoring as a package is the preferred strategy in the beginning and, as the product gains more market share, its modules could also be advertised and sold individually, especially in the more competitive market of Big Data and Content Analysis.

6 Summary

It is evident that the digital environment creates new opportunities for policy discourse and public participation, and the EU is heavily investing in relevant research areas. This paper presents the outcome of a series of 5 research projects, with the particularity of the participation of National Parliaments in the partner-mix. Careful assessment and evaluation of these projects leads to interesting results relating to the evolution of contemporary Parliaments.

By using the described set of tools modern politicians may test, detect and understand how citizens perceive their own political agendas, and also stimulate the emergence of discussions and contributions on the formal and informal web (e.g. forums, social networks, blogs, newsgroups and wikis), so as to gather useful feedback for immediate (re)action. In this way, politicians can create a stable feedback loop between information gathered on the Web and the definition of their political agendas based on this contribution. Vice versa, digital citizens may also employ such tools in order to discuss and evaluate a given policy within the respective community or directly with the policy makers. At the same time, one will be able to track the development of the political discourse, evaluate the consistency and clarity of the political arguments, and ultimately form an opinion or a political choice. However, it must be noted that the aforementioned approaches so far, failed to widely involve in the overall process important stakeholders, both on the policy and the society side.

This contemporary study and concluding evaluation shows that concepts like e-Parliament or Smart Parliament are still far away from the real digital democracy where citizens and policy-makers cooperate, collaborate, or, simply, interact, having a common platform of communication. Above all, this interaction has to take place in a seamless and transparent way, while respecting the users' privacy. The exploitation of this kind of research projects points towards a certain direction. The ultimate scope of such projects is to provide excellent science, facing the societal challenges and showing industrial leadership, in order to improve the research results by building connections between scientists and people, while involving real life institutions, such as Parliaments, and the related stakeholders in the process.

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