

Using Structured e-Forum to Support the Legislation Formation Process

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Abstract. Many public policy problems are ‘wicked’, being characterised by high complexity, many heterogeneous views and conflicts among various stakeholders, and also lack of mathematically ‘optimal’ solutions and pre-defined algorithms for calculating them. The best approach for addressing such problems is through consultation and argumentation among stakeholders. The e-participation research has investigated and suggested several ICT tools for this purpose, such as e-forum, e-petition and e-community tools. This paper investigates the use of an advanced ICT tool, the structured e-forum, for addressing such wicked problems associated with the legislation formation. For this purpose we designed, implemented and evaluated two pilot e-consultations on legislation under formation in the Parliaments of Austria and Greece using a structured e-forum tool based on the Issue Based Information Systems (IBIS) framework. The conclusions drawn reveal the advantages offered by the structured e-forum, but also its difficulties as well.

Keywords: e-participation, e-consultation, public policy, structured e-forum, Issue Based Information Systems (IBIS).

1 Introduction

The high diffusion of ICT, and particularly the Internet, which offer new interactive, cheap, inclusive and unconstrained by time and distance environments for public political communication, and at the same time the trend towards more participation of citizens in the processes of public decision-making and policy-making, have been the main drivers of the emergence and development of e-participation [1], [2], [3], [4]. Electronic participation (or e-participation) is defined as the extension and transformation of participation in societal democratic and consultative processes mediated by information and communication technologies (ICT) [2], [3], [4]. As local, regional and national governments of many OECD member countries try to extend citizens participation with the provision of additional effective channels of communication with civil society based on innovative usage of ICT, several different tools have been

researched, deployed and tested for this purpose, such as e-forum, e-petition and e-community tools [3] - [7].

However, limited research and use has been made of more structured ICT tools for this purpose, such as the structured discussion e-forum. The structured e-forum tool allows participants to enter in an electronic discussion semantically annotated postings, or postings on other participants' postings, based on a predefined discussion ontology [8], [9]. This paper investigates the use of an advanced ICT tool, the structured e-forum, for addressing such wicked problems associated with the legislation formation process. For this purpose we designed, implemented and evaluated two pilot e-consultations on legislation under formation in the Parliaments of Austria and Greece using a structured e-forum tool based on the Issue Based Information Systems (IBIS) framework [10] - [12]. The research presented in this paper has been part of the LEX-IS project ('Enabling Participation of the Youth in the Public Debate of Legislation among Parliaments, Citizens and Businesses in the European Union') (www.lex-is.eu) of the 'eParticipation' Preparatory Action of the European Commission [13].

This paper consists of six sections. In section 2 the background is briefly described, while in section 3 we present the research methodology we adopted. Then in sections 4 and 5 we presented the evaluation results for the abovementioned two pilots we implemented. Finally in section 6 we suggest a set of combined conclusions drawn from the collective experience of the two cases presented.

2 Background

Rittel & Weber [14] proposed a classification of problems into 'wicked' and 'tame' ones. The wicked problems are the most difficult to address, since they are characterised by many stakeholders with different and heterogeneous problem views, values and concerns, and also lack mathematically 'optimal' solutions and pre-defined algorithms for calculating them, having only 'better' and 'worse' solutions, the former having more positive arguments in favour them than the latter. Kunz and Rittel [10] suggest that wicked problems are most effectively addressed through consultation and argumentation among stakeholders, and propose for this purpose the use of 'Issue Based Information Systems' (IBIS), which aim to '*stimulate a more scrutinized style of reasoning which more explicitly reveals the arguments. It should help identify the proper questions, to develop the scope of positions in response to them, and assist in generating dispute*'. They are based on a simple but powerful discussion ontology, whose main elements are 'questions' (issues-problems to be addressed), 'ideas' (possible answers-solutions to questions-problems) and 'arguments' (evidence or viewpoints that support or object to ideas) [10] - [12].

Many public policy problems belong to the class of wicked problems, being characterised by high complexity, many heterogeneous views and conflicts among various stakeholders. Therefore the best approach for addressing them is through consultation and argumentation among the stakeholders, using ICT to the largest possible extent. Based on the relevant literature [10] - [12], [14], the most appropriate kind of ICT tools for this purpose would be structured ones according to the abovementioned IBIS framework. However, the tools which have been researched and used for this purpose, such as e-forum, e-petition and e-community tools, are characterised by low structure.

For, instance most of the political e-consultations on public policy problems are conducted in e-forum environments, which allow participants to enter postings, or postings on other participants' postings, without any semantic annotation or structure. This might reduce the quality, discipline, focus and effectiveness of the e-consultations.

On the contrary, a structured e-forum tool based on the IBIS framework and require from the participants to make semantic annotations of their postings in an electronic discussion. The type of allowed semantic notations are predefined, based on the adopted discussion ontology, e.g. in case of adopting IBIS allowing the entry of a new 'issue', the suggestion of an 'alternative' or simply a 'comment' on an existing issue, or the entry of a 'pro' or a 'contra' argument on a previously suggested alternative. Therefore the participants themselves have to annotate their postings with a semantic that properly represents the content of their text entries the forum. Also they have to associate their postings to other participants' postings according to rules defined in the adopted discussion ontology, e.g. in case of having adopted IBIS we can associate an 'alternative' only to an 'issue', but not to a 'pro' or a 'contra' argument. This sequence of semantically annotated postings creates threads of in depth discussions which are more convenient to be tracked, analysed in a formal manner and subsequently evaluated in order to draw useful conclusions. The above characteristics of the structured e-forum tool might have a positive impact on the quality, discipline, focus and effectiveness of the e-consultations. For this reasons it is important to examine its suitability, advantages and disadvantages as an e-participation tool for supporting e-consultations on wicked public policy problems. However, to this date there has been conducted very little research work in this area [8], [9]. Our research aims to contribute to filling this research gap.

3 Research Methodology

In order to investigate the use of structured e-forum for addressing wicked problems associated with the legislation formation process, through structured e-consultations among stakeholders, we adopted the following methodology:

I. Initially we analyzed the process of legislation formulation in the Parliaments of Austria and Greece, which were participating in the LEX-IS project.

II. Based on this analysis, we designed two pilot e-consultations on legislation under formation in these two Parliaments using structured e-forum. This included definitions of the bills to be discussed, the participants, the discussion ontology, the timing of the discussion and also the informative material to be provided to the participants). Concerning the discussion ontology it was decided in most of the threads to use the one of IBIS: issue-alternative (or comments) – pro or contra argument (termed 'structured forum I'); also, in some threads to use a simpler one for comparison purposes: question – answer – comment (termed 'structured forum II').

III. As a next step we proceeded to the implementation of the pilot e-consultations.

IV. Finally we evaluated the two pilots using both quantitative and qualitative methods. In particular, the evaluation of each pilot included four stages:

i) Analysis of the discussion trees that had been formed by the postings of the participants. This analysis included the calculation of the following metrics:

- number of postings entered by the participants per thread,
- number of postings per type, for each the allowed types (i.e. for ‘structure forum I’ e-discussions: key issues, comments, alternatives, pro-arguments, contra-arguments, while for ‘structure forum II’ e-discussions: Questions, answers, comments),

- number of postings per level of the discussion trees
- percentage of the postings assigned a mistaken type

ii) Quantitative Evaluation, based on the statistical processing of participants’ responses to an evaluation questionnaire we formulated and distributed electronically to them, which allows the assessments of:

- the perceived ease of use
- and the usefulness of the structured e-forum, adopting a ‘Technology Acceptance Model’ (TAM) approach [15].

iii) Qualitative Evaluation, based on semi-structured focus-group discussions with participants and representatives of the Parliaments, which allows as well assessments and in-depth understanding of the perceived ease of use and usefulness of the structured e-forum, and the corresponding.

iv) Synthesis of the conclusions from the above three stages and final conclusions.

4 The Austrian Parliament Pilot

The Austrian pilot concerned a ministerial draft bill titled “Child and Youth Welfare Law”; it reached a high number of participants (120 registered users – mainly high school pupils), who entered 253 postings, and made 12618 visits in the e-participation platform. This draft bill has been discussed in ten threads.

Analysis of the discussion trees. In six threads the IBIS discussion ontology was used, while in the remaining ones was used the abovementioned simpler one. Table 1 shows the numbers of postings per type and in total for each discussion thread. We can see that the forums of type I, though the a more complicated discussion ontology, were used more intensively than the forums of type II. However, we remark that the difficulty of assigning to each comment the correct type lead to the large number of “comments”, i.e. many participants decided to choose the “comment” instead of pro- and contra-arguments or questions and answers (overall 55% of all postings were comments, 40% from forum type I and 15% from forum type II); we can see that in the threads “Eingriff in die privaten Lebensbereiche”, “Junge Erwachsene”, and “Rechtsansprüche” participants used almost only comments to express their opinion. This indicates that while the structured e-forum tool imposes more structure in the e-discussion, these young participants (mainly high school pupils) tend to less structure.

Table 1. Postings per type for each forum thread

forum/entry	Forum type 1					Forum type 2			Total
	Issue	Alternative	Pro argument	Contra argument	Comment	Question	Answer	Comment	
Verwandtenpflege §21	3	5	40	29	18	0	0	0	95
Recht auf Erziehung §1	1	3	3	2	28	0	0	0	37
Rechtsansprüche	0	0	0	0	0	2	1	13	16
Datenverwendung §40	0	0	0	0	0	2	2	8	12
Eingriff in die privaten Lebensbereiche	2	1	0	0	49	0	0	0	52
Junge Erwachsene §29	0	0	0	0	0	2	0	11	13
§35(2)4	0	0	0	0	0	2	2	4	8
Aufgaben der Kinder und- Jugendhilfe §3	0	0	0	0	0	1	0	1	2
Kündigung von Pflegeverhältnissen §19(6)	0	0	0	0	0	0	0	0	0
Stellungnahmen	7	3	1	0	7	0	0	0	18
Total	13	12	44	31	102	9	5	37	253
Total %	5%	5%	17%	12%	40%	4%	2%	15%	100%

In Table 2 we can see for each thread the percentage of total postings and pupils' postings which have been assigned a mistaken type; we remark that in some threads this percentage is very high. The main reason for this is that, as explained above, many participants have simply chosen the entry type 'comment' instead of 'answer' (in forum type II) or 'alternative' (in forum type I); in some other cases type 'comment' was used instead of 'pro' or 'contra argument'. These mistakes appeared mainly in discussion threads with a bigger depth. One reason for these mistakes can be the complexity and bad readability of the threads, which increases with depth. We estimated that 16 of the 'comments' entered should have been 'answers', 65 should have been 'pro' or 'contra arguments' and 7 should have been 'alternatives'. Another reason can be that when there is a sequence of 'pro' and 'contra arguments', the participants finally do not know whether to use a 'pro' or a 'contra argument' to make their statement clear. We estimate about 11 mistakes of choosing 'pro' instead of 'contra argument' or the opposite.

Table 2. Percentage of postings assigned a mistaken type for each forum thread

forum/entry	total entries	user entries	mistakenly chosen entry types	mistakenly chosen entry types out of total entries	mistakenly chosen entry types out of user entries
Verwandtenpflege §21	95	93	21	22,1%	22,6%
Recht auf Erziehung §1	37	36	22	59,5%	61,1%
Rechtsansprüche	16	14	5	31,3%	35,7%
Datenverwendung §40	12	9	2	16,7%	22,2%
Eingriff in die privaten Lebensbereiche	52	51	40	76,9%	78,4%
Junge Erwachsene §29	13	11	9	69,2%	81,8%
§35(2)4	8	6	1	12,5%	16,7%
Aufgaben der Kinder und- Jugendhilfe §3	2	1	0	0,0%	0,0%
Kündigung von Pflegeverhältnissen §19(6)	0	0	0	-	-
Stellungnahmen	18	9	2	11,1%	22,2%

Finally we examined and compared the depths of the discussion threads. In general a discussion with a higher depth means higher interaction among the participants. Table 3 shows for all threads the number of entries per level. We remark that discussions in the threads of forum type I (e.g. the first, second and fifth ones) reached a higher depth than the ones of type II. This can be explained taking into account the bigger interaction that the usage of ‘pro’ and ‘contra arguments’ creates. However, on the one hand these argument types improve the interactive discussions among the participants, but on the other hand this results in a number of simplistic posts containing only “I agree” or “I disagree” (mainly in forum type I threads). This problem may be reduced through the provision to the user of a ‘rating’ capability, enabling him/her to state ‘agree’ or ‘disagree’ on a previous entry, without having to enter one more entry for this.

Table 3. Number of postings per level for each forum thread

forum/entry	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
Verwandtenpflege §21	3	13	25	14	17	13	7	3
Recht auf Erziehung §1	1	7	14	12	3	0	0	0
Rechtsansprüche	2	3	4	5	1	1	0	0
Datenverwendung §40	2	4	5	1	0	0	0	0
Eingriff in die privaten Lebensbereiche	1	4	14	22	8	3	0	0
Junge Erwachsene §29	2	9	2	0	0	0	0	0
§35(2)4	2	3	1	1	1	0	0	0
Aufgaben der Kinder und- Jugendhilfe §3	1	1	0	0	0	0	0	0
Kündigung von Pflegeverhältnissen §19(6)	0	0	0	0	0	0	0	0
Stellungnahmen	7	9	2	0	0	0	0	0

Quantitative analysis. A quantitative evaluation questionnaire was returned by 37 out of the 120 registered participants in this e-participation pilot (31% response rate). In Table 4 are shown the average ratings for the structured e-forum evaluation questions. The participants of the Austrian pilot found the structured forum on average between difficult to medium and medium to easy (nearer to the latter - AvR: 2.69) and similarly they evaluated the easiness to access, read and understand the posting of other participants (AvR: 2.76). The structured forum proved is perceived by them on average between slightly worse and slightly better than the normal forum tools (nearer to the latter - AvR: 2.68). Overall most of the participants found that the platform provides proper participation tools and structuring mechanisms to engage in online discussions on such topics (AvR: 1.89), and that the quality of contributions of other participants was on average between low to medium and medium to high (nearer to the latter - AvR: 2.63).

Qualitative analysis. In semi-structured focus-group discussions with participants and representatives of the Austrian Parliament one of the topics was whether it was easy to use the structured e-forum, which are the main difficulties of using it and which are the main advantages it offers. They mentioned that it was not too difficult to assign the right type in a new posting, since all predefined posting types were clear, but this requires additional mental effort; the same happens with finding the right

Table 4. Average ratings of the Austrian pilot respondents in the structured e-forum evaluation questions

QUESTION	AVERAGE RATING
How easy it was to use the structured forum (i.e. to correctly characterize your idea as an issue, an alternative, a pro-argument, a contra-argument, or a comment, and then correctly enter it in the structured forum)? 1=difficult, 2= difficult to medium, 3= medium to easy, 4=easy	2.69
How easy it was to access, read and understand the postings of the other participants and the connections among them in the structured forum? 1=difficult, 2=medium to difficult, 3=easy to medium, 4=easy	2.76
What is your general assessment of the structured forum as a tool for important e-consultations in comparison to the normal forum tools (where you do not have to characterize your posting as an issue, an alternative, a pro-argument, a contra-argument, or a comment, and then enter it correctly)? 1=much worse, 2= slightly worse, 3=slightly better, 4=much better	2.68
Does the platform provide proper participation tools and structuring mechanisms to engage in the online discussion of the topics? 1=no, 2=yes	1.89
How do you assess the quality of the contributions (postings) entered by the participants in this e-consultation? 1=low, 2= low to medium, 3= medium to high, 4=high	2.63

place to add the new posting. Young participants are more 'spontaneous' and do not think much about their statement before entering it; they just choose one possible and reasonable posting type (e.g. 'comment') and start writing it, and do not mind if it can be a 'pro' or 'contra statement', an 'alternative' or an 'answer'. Also, participants could be afraid of writing an 'alternative' or 'answer', finding then as more 'high profile' types and thinking that the text they need to write should be of very good quality and grammatically correct; the fear of too much 'attention' is a reason for avoiding to use alternatives and answers. The main advantage mentioned was the better overview provided on the meanings of participants' postings through the icons in front of each. In general the usage of the structured forum was satisfactory, but some participants found it hard to follow a discussion in threads with a higher depth.

Synthetic Conclusions. From the above three evaluation stages it is concluded that the structured e-forum seems to be 'medium' as to its ease of use to these young and non-sophisticated participants, because it creates to them some difficulties, e.g. in finding the right place to add a new posting and selecting its type, since they require additional mental effort. These difficulties, in combination to the 'spontaneity' of this age and the fear of too much 'attention', results in the mistaken selection of 'lower profile' types (e.g. 'comments') instead of 'higher profile' ones (e.g. 'alternatives' or answers'). Concerning its usefulness these young and non-sophisticated participants

find that the structured e-forum, in comparison with the simple forum, offers some advantages, but they do not perceive them as very high and important.

5 The Greek Parliament Pilot

The Greek pilot concerned the law on ‘Contracts of Voluntary Cohabitation’; it reached a number of 79 registered users, which contributed 131 postings on this highly debated topic in Greece, and made 4192 visits in the platform. A partial length image of the discussion tree of the Greek pilot is provided hereafter in Figure 1, which shows some of the postings entered by the participants (in Greek).

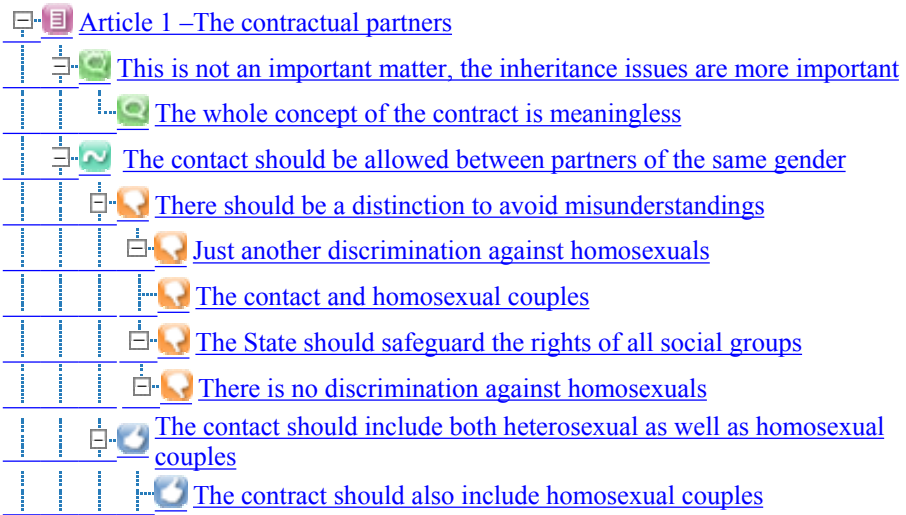


Fig. 1. Greek Forum Overview

Analysis of the discussion tree. In total 131 postings have been entered by the participants in the Greek pilot. Initially we calculated the number of postings per type and found that we had 8 ‘issues’, 13 ‘comments’, 15 suggested ‘alternatives’, 35 ‘pro-arguments’, and 60 ‘con-arguments’; we did not have the excessive use of ‘comments’ we saw in the Austrian pilot. We remarked that a good and balanced discussion tree has been formed, with the expected structure from a well-developed electronic discussion: with several new issues (8) entered by the participants on the root topic (=the law on the ‘Contract of Voluntary Co-habitation’), a higher number of alternatives (suggestions) (15) and a similar number of comments (13) on these issues, and also a much higher number of pro-arguments (35) and con-arguments (60). These results indicate that a structurally well-developed electronic discussion. Next we calculated the percentages of the simplistic postings (=not adding value/new information), and found only 8, which make a 6% of the total number of postings. As a next step we calculated the number of postings with mistaken type, and found 13 such postings, which makes a 10% of the total number of postings, much lower than

in the Austrian pilot. Finally, in order to assess the level of depth of this electronic discussion, we calculated the number of postings per level, and found 8 first level postings, 24 second level postings, 38 third level postings, 27 fourth level postings, 20 postings of fifth level, 13 sixth level postings and finally one 1 seventh level posting. Therefore it can be concluded that the electronic discussion of the Greek pilot was characterized by considerable depth and interaction among the participants.

Quantitative Analysis. A quantitative evaluation questionnaire was returned by 27 out of the 79 registered participants in this e-participation pilot (34% response rate). In Table 5 we can see the average ratings for the structured e-forum evaluation questions. The participants of the Greek pilot on average found the structured forum as medium to easy (AvR: 2.92), and also believe that it is between difficult to medium and medium to easy (nearer to the latter - AvR: 2.76) to access, read and understand the posting of other participants. The structured forum proved is perceived by them on average between slightly better and much better than the normal forum tools (nearer to the latter - AvR: 3.56). Overall most of the participants found that the platform provides proper participation tools and structuring mechanisms to engage in online discussions on such topics (AvR: 1.88), and that the quality of contributions of other participants was high to medium (AvR: 3.08).

Table 5. Average ratings of the respondents in quantitative evaluation questions for the Greek pilot

QUESTION	AVERAGE RATING
How easy it was to use the structured forum (i.e. to correctly characterize your idea as an issue, an alternative, a pro-argument, a contra-argument, or a comment, and then correctly enter it in the structured forum)? 1=difficult, 2= difficult to medium, 3= medium to easy, 4=easy	2.92
How easy it was to access, read and understand the postings of the other participants and the connections among them in the structured forum? 1=difficult, 2= difficult to medium, 3= medium to easy, 4=easy	2.76
What is your general assessment of the structured forum as a tool for important e-consultations in comparison to the normal forum tools (where you do not have to characterize your posting as an issue, an alternative, a pro-argument, a contra-argument, or a comment, and then enter it correctly)? 1=much worse, 2= slightly worse, 3=slightly better, 4=much better	3.56
Does the platform provide proper participation tools and structuring mechanisms to engage in the online discussion of the topics? 1=no, 2=yes	1.88
How do you assess the quality of the contributions (postings) entered by the participants in this e-consultation? 1=low, 2= low to medium, 3= medium to high, 4=high	3.08

Qualitative Analysis. In a semi-structured focus-group discussion we conducted with participants and representatives of the Greek Parliament one of the topics was whether it was easy to use the structured e-forum, and also its main advantages and disadvantages. They mentioned that overall the use of the structured e-forum was considered a strength of the pilot, since it enables a more focused and effective e-discussion. Also, the semantic capability it offers allows users to quickly form an opinion as to the progress of the discussion on a particular key issue of interest. Most of the difficulties mentioned during this discussion had more to do with the design implementation of the structured e-forum rather than the concept of the structured forum itself. One of them was the difficulty of correct assignment of type to the postings; this is confirmed by the percentage of mistakes in this pilot, which was about 10% as mentioned in the analysis of the discussion tree, being lower than in the Austrian pilot, due to the relatively higher educational level of the participants in the Greek pilot, but not negligible. Another difficulty in using the structured e-forum was wording the title of each posting, which is directly shown in the discussion tree of the structured forum box (while the full description of the posting is shown in another box only by clicking its title in the tree), so that it reflects the content of the posting. In several cases the title was not representative of the explanation of the full argument presented in this separate fill-in description box provided, so the other participants could not understand from the title the content of the posting. Another problem mentioned was due to the moderation of the postings: from the time one posting was entered by a user it usually took 5-6 hours until the moderator approved it and the posting became visible; so it was not possible for this user to see it immediately, and possibly enter more postings associated with it, while the other users could see it with such a long delay. Also, it was mentioned that the platform provides a very small space (box) for the structured e-forum, so the users have to use much scrolling up and down when trying to access previous participants' postings. Another design weakness mentioned is that the structured forum was placed four levels below the homepage of the platform, and this created difficulties for the users to access it.

Synthetic Conclusions. From the above three evaluation stages encouraging conclusions are drawn concerning the potential of using structured e-forum in the legislation process. The participants in the Greek pilot regard the structured e-forum platform as medium to easy to use, though they mention some difficulties they had in using it, and some design weaknesses that have to be addressed. Concerning its usefulness, these more educated and non-sophisticated participants, in comparison to the ones of the Austrian pilot, find that the structured e-forum, is better than the simple forum, enabling a more focused and effective electronic discussion.

6 Conclusions

In the previous sections of this paper has been investigated the use of structured e-forum for e-consultations on 'wicked' public policy problems associated with

the legislation formation. It has been concluded that for the older, more educated and sophisticated participants of the Greek pilot the structured e-forum is better than the simple forum, offering important advantages and enabling a more focused and effective electronic discussion. Different are the perceptions of the younger and less educated and sophisticated participants of the Austrian pilot, who find that it offers some advantages in comparison with the simple forum, but they do not perceive them as very high and important. The participants in the Greek pilot regard the structured e-forum as medium to easy to use, while the ones of the Austrian pilot seem to perceive higher level of difficulties, regarding it 'medium' as to its ease of use. However, both groups find that it requires some additional mental effort from the users than the simple forum. In both pilots the extent of use of the platform by the participants (visits and postings) was satisfactory, and the majority of the participants were rather satisfied by their co-participants and their contributions. Therefore we can conclude that the structured e-forum is a better solution for more sophisticated and knowledgeable discussion groups, while larger and less sophisticated and coherent groups could be best served by the traditional forum tools. So Parliaments could organize e-consultations with the wider public using simple forum, and also with the more sophisticated experts on the laws under discussion using structured e-forum.

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