The "EU Community" Project - Coupling the Power of Data with Community Expertise

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Abstract. The EU Community project seeks to promote, facilitate, and ultimately exploit the synergy of a cutting-edge intelligent collaboration platform with a community of institutional actors, stakeholders, scientists, consultants, media analysts and other individuals that can make valuable contributions to EU policy debates. Its ultimate goal is to effectuate a transformation in the modus operandi of EU politics and move closer to achieving the illusive goals of improved transparency, efficiency, awareness and engagement, ultimately leading to better policies for a better European Union.

Keywords: EU policy, blended Human-AI approach, expert sourcing, user community, policy modelling, predictive modelling, web crawling, sentiment analysis, document similarity, reputation assessment, visualisation.

1 Introduction

As the institutional and financial crises and the rise of centrifugal voices show, EU policy-making requires better transparency, awareness and engagement.

There are high hopes that ICT can help. But there is a great disparity between envisaged potential and actual impact. This is not due to technological reasons, but due to a failure to address the nature of the problem.

EU policy issues are complex, multi-actor and difficult to understand [12,13]. Fruitful debates require the participation of contributors with different kinds of expertise. If contributions and contributors are isolated, value that could arise out of synergies is lost to the policy process. What the EU needs is not isolated contributions, but contributions from a community of knowledgeable individuals who can complement each other and collaborate on the common goal of a fruitful debate (in spite of any disagreements of opinion). Only thus may a useful synthesis be achieved.

Social media have revolutionised the Web, allowing the free expression of opinions on a potentially world-wide scale, turning internet users that had hitherto been consumers of the web's content into networks of generators and re-transmitters of content [1,2]. However, they have had a limited role in enriching EU policy processes and have failed to become a forum where expert opinions can be expressed and the kind of synthesis required to better inform policy-making can be achieved.

There have been valiant efforts by the European Commission to increase transparency and participation such as the Transparency Initiative [16, 17]. These efforts include ICT support by means of services such as EUSurvey and open data resources such as the Transparency Register and EurLex. While useful and definitely in the right direction, the European Commission's ICT efforts to increase external participation have not been game changers.

This is not by accident, but by design. Open consultations using EUSurvey are meant to obtain external input in a form that is efficient to process within the framework of the EU institutions' existing processes, not to disrupt them.

ICT research can change both what is possible and what is practical. While practically all IT systems used by governments and businesses today are not unlike IT systems of yester years in terms of what they do (data entry, data retrieval and reporting enriched by fairly basic statistics), this does not reflect the limits of ICT technology nor does it define the limits of currently possible ICT-based innovation. EU institutions have taken a stance towards external participation in the policy-making processes shaped by perceived practical limitations (inability to process a large number of non-standard format responses, inability to engage in dialogue with a large number of respondents) rather than on potential contributors' desiderata. This seems to be the right choice, the only choice even, given the institutions' limited human resources. The EU Community project challenges the assumptions behind such reasoning.

The EU Community project goes both beyond the state of the art and beyond the aspirations of earlier research projects, while being informed by both their successes and their failures [11]; it is en route to creating both

- an intelligent software platform for engaging in and monitoring policy debates and
- a community of institutional actors (including top-level EU policy makers such as Commissioners, MEPs, and members of national governments), stakeholders, consultants, researchers, media professionals, and others potentially valuable contributors to the debate.

The EU Community project has the potential to be a game changer in EU policy processes because its starting point is the desiderata of potential contributors (open dialogue and opinion exchange both with external contributors and with institutional actors across all stages of a policy process, with no limitations on the format their contribution may take and with recognition of their contributions' value and of their own value as contributors). It uses technology both to ensure a much richer debate and synthesis of opinions is achievable and to simultaneously ensure the resulting richer debates are efficient to follow, not only by the institutions, but by all interested parties.

The present paper gives a high-level overview of the EU Community project explaining how it blends expert sourcing with cutting edge ICT technology. Section 2 presents the project's underlying concept and Section 3 discusses how that concept is being turned into results. Sections 4 and 5 present the two user-facing components of the intelligent software platform. Section 6 highlights technical challenges met by methodologies following the overarching approach of combining intelligent data processing and expert sourcing. Finally, Section 7 provides the conclusions of the present paper and the next steps both within the context of the project and beyond.

2 Concept

A fundamental premise of the EU Community project is that it is the synergy of technology and human expertise that can improve the current status quo in EU policy making.

One strength of the EU Community project is the community of knowledgeable and influential individuals who share knowledge, information and opinions on EU policy topics on the project's intelligent software platform.

Its other strength is its intelligent software platform, which fosters collaboration, opinion- and knowledge-sharing, but at the same time provides state-of-the-art technology for gathering, classifying and presenting information relevant to policy debates, guided by the community's activity and contributions.

The platform gains from community members' contributions; community members gain both from the platform-curated content and from other community members' contributions in policy debates hosted on the EU Community platform. The platform and the community reinforce each other's strengths, generating value for each other, leading to greater uptake of the platform (strengthening of the community) and more input for the platform's intelligent infrastructure (allowing the platform to produce additional, better, and more relevant results). Bootstrapping and effectively nurturing and safe-

guarding this positive feedback loop will enable the project to reach critical mass and achieve its goal of becoming a game changing innovation in the field of EU politics.

3 Realisation

Over the course of 36 months, a consortium of leading research centres, ICT SME's and a large media network, are building on prior know-how and user requirements analysis to create advanced prototypes, perform pilot-testing and ultimately roll-out the envisaged platform.

They are supported by a number of high-calibre experts and a foundation serving as community guarantor. The outcomes of the project will be exploited both by individual partners and in unison, with the support of an EU policy media network, with a track record of sustainability and multilingualism.

Three pilots suiting the EU political mandates 2014-2019 have been selected (Energy Union, Entrepreneurship & Innovation and Future of Europe) and will be undertaken by a network of European stakeholders (policy-makers, journalists, experts, NGO's and informed citizens) in several EU countries, supported by localised policy media.

The EU Community platform consists of two user-facing components, PolicyLine and EurActory, as well as a number of intelligent components supporting them. The design of the platform built on previous learning from RTD projects in Policy-Modelling, e-Participation and Smart Cities, combined with comprehensive analyses of existing social media and state of the art review.

To ensure the software platform's and the project's relevance, the consortium engaged and consulted with EU policy analysts, leaders of EU policy sub-communities and web 2.0/3.0 mentors in well-documented offline interactive workshops, which took place during both the project's preproposal stage and as part of the project's requirements specification work package . Further refinements are taking place on the basis of user feedback during an extensive piloting phase.

4 PolicyLine and the Processes Behind the Policies

Behind every EU policy there is an entire multi-actor process that leads up to it. To enable better policy understanding and collectively solve complex issues, EU Community delivers innovative technological solutions via PolicyLine, a tool combining state-of-the-art visualisation techniques with community-based and AI-based data collection and curation.

PolicyLine's innovative visualisation of policy processes allows community members to get a view of policy processes at different levels of detail, ranging from a high-level overview to examining specific items in the policy process timeline and the feedback community members have left about them.

PolicyLine's visualisation takes into consideration the community's feedback gathered via a simple and intuitive interface and other factors (such as author reputation) thus allowing the most important proposals, opinions, relevant scientific papers and media reports to stand out.

At the same time, PolicyLine relies on the web crawling and machine curation modules to separate relevant valuable information from noise on the web and create a barometer of public sentiment for policy makers, stakeholders and media analysts in the community to take into consideration. The unique blend of human and machine curation unlocks a view of EU policy making across the different stages of its lifecycle that is comprehensive and up-to-date, but not at the expense of quality and relevance.

A number of under-the-hood technologies, contribute to both PolicyLine's innovation and value proposition to its users:

- intelligent analysis of large collections of documents via text mining solutions such as topic identification, document clustering and sentiment analysis,
- ranking of documents and EU policy actors via innovative algorithms taking into consideration a multitude of criteria in order to avoid single-sighted biases,
- highly accurate predictive modelling based on experts' opinions combined with big data statistical analysis.

5 EurActory and the People Behind the Policy Processes

EurActory is the second user-facing component of the EU Community platform. It is a tool that aims to:

- ultimately evolve into a directory of all key actors that play a role in EU policy making, whether they are part of the community of users of the EU Community platform or not, and
- gauge their influence and expertise on the basis of a unique and innovative system collecting input from a multitude of sources in order to provide a balance between off-line reputation, online presence metrics, and community-assessment of contributions to policy debates.

Whereas the focus of PolicyLine is on the community's contributions (whether made via members of the community or not), the focus of EurActory is on the actors of the EU policy-making scene (whether they are part of the community using the platform or not). Whereas the main role of PolicyLine is to ensure valuable contributions stand out, EurActory aims to ensure that valuable contributors stand out.

For registered members of the community, EurActory provides functionality that allows them to curate their own profile, link to their social media accounts, and claim expertise or endorse their peers on the different areas of EU policy-making.

As in many community-based sites, the EU Community platform employs a gamification approach to encourage community-based content which rewards members of the community contributing to the platform's content according to the community-perceived value of their contributions. However, the gamification approach taken is very subtle and combined with due consideration for the world beyond the platform in assessing an individuals' reputation per policy domain in the circles of EU policy making. This combination of considerations aims to encourage participation without unduly disfavouring experts that have yet to engage with the platform or indeed also experts with no active social media presence. This is important for the credibility of EurActory, which, in turn, is important for attracting new members to the community.

6 Technical Solutions Based on The Synergy of Technology and Human Expertise

Viewing the synergy of technology and human expertise from the technical perspective, there are a number of challenges that can best be addressed in this manner rather than with a pure community-based approach or with an approach relying on collecting and processing data without user input:

- **Informing / Enriching the Debate:** Community members inform each other of new developments on ongoing policy processes using PolicyLine by linking to them relevant web content e.g. green papers, online polls and open consultations, articles, scientific papers, blog posts they have either written or read and found relevant, etc. In the case of policy processes linked to legislative procedures, the intelligent software platform automatically monitors the various steps in the legislative procedure and gathers the institutional documents (proposals, opinions, decisions etc.) within the legislative procedure as it progresses. For documents gathered from other sources, a document similarity algorithm links them to policy processes in accordance to their similarity with documents attached to the policy process by the human experts in the Community.
- **Identifying Important Contributions:** The platform's innovative visualization technology allows the user to navigate through a policy debate either looking at it in fine detail or zooming out and picking out the most important contributions. The importance of contributions is assessed on both the grounds of who its authors are and the community's assessment. The latter is community-input based, but the former is provided by the platform; this way a contribution can have an initial value assessment from the very moment it enters into the platform, thus attracting attention from community members that read it, evaluate it, and comment on it, either making it more prominent or less prominent than it originally was.
- **Identifying the most important actors:** One of the most important tasks for intelligent software platform was designed to perform is identify the most important current and potential actors in EU policy making per policy topic. This lead to the design of a specialized reputation assessment system that both shares commonalities with existing systems and at the same time differs significantly from them. On one end of the spectrum, there are reputation assessment systems that rely only on the gathering and processing of external data (e.g. Klout). As they require no user input, they can provide results about persons that are not in their user base. On the other end of the spectrum, there are community-based reputation assessment systems (e.g. StackOverflow's) that work by collecting community evaluations on each member's contributions within the software platform. They are meant mostly to encourage high quality contributions and turn transactions with the platform into a kind of game in which valuable community members are rewarded with high scores, high rankings, badges etc. The reputation assessment system used in EU Community blends the two approaches. It computes scores for all profiles in EurActory, but has some criteria that are

community-sourced. Interestingly, the community-sourced criteria may concern individuals in EurActory that are not yet users; this helps those unregistered experts stand out from the crowd and leads to efforts to attract them to the platform and the community. More interestingly still, the automated criteria make use of the community-provided evaluations; thus the automated criteria are also guided by the understanding of the concept of reputation that the community has; for instance, when evaluating the reputation of a certain analyst on a certain policy topic, one of the automated criteria attempts to gauge how well connected and influential this policy analyst is, but does so by giving different weights to the analysts' followers in accordance with their reputation in EU policy making on that particular topic, not their general social media profile.

- **Making Predictions:** The intelligent software platform features an algorithm that makes predictions about an ongoing legislative procedures on the basis of data about all previously completed legislative procedures. Knowledge of how all past legislative procedures unfolded allows the prediction algorithms to make highly accurate predictions: the outcome of a legislative procedure can be predicted with an accuracy of over 90%. It was later decided to also allow human experts to make predictions and display the results to the community. The advantage is that while the initial algorithm uses knowledge about past legislative procedures, human experts may have inside knowledge and/or other valuable information about the particular ongoing one they are making a prediction about. One challenge was to combine different predictions by human experts. Another was to combine human predictions with the predictions made by the original AI predictor. Both challenges were met by a framework based on games which allowed multiple alternative methodologies of combining human and AI predictions to appear as AI players competing with each other and with individual human experts. Players' scores are adjusted on the basis of successful and failed predictions and the platform outputs the most successful player's prediction as its prediction; this could be a human expert, the original AI predictor, or any of the AI predictors trying to decide on a prediction having the human experts' and the statistical predictor's predictions as inputs.

As discussed in Section 2, the synergy of the expert community and the intelligent software platform is important from a strategic point of view: it is the instrument that we believe will allow the EU Community project to achieve its goal of effectuating a significant change in how the policy debates in the EU are conducted. As seen here, it has a role to play also at the tactical level: the synergy of the diverse community of experts with the intelligent software platform serves as the basis on which innovative solutions to difficult problems have been provided within the context of the current project. We anticipate this approach will be extended to further areas in future research projects.

7 Conclusions – Next Steps

Better policy-making requires better-informed policy-makers. This can be achieved by better policy processes involving debates where important external views help shape the EU institutions' policy proposals, the institutional policy debate and ultimately the policies that are put into force. The combination of a diverse community of institutional actors, researchers, stakeholder representatives and media analysts aided by tools that allow the most important contributors and contributions to stand out can achieve what neither advanced ICT nor the community itself could achieve on its own.

The EU Community project is a research project with a goal of changing how the policy debates is conducted. To achieve this, the community being formed as part of the project pilots phase will need to keep growing in the following years and the platform will need to keep adjusting to its needs. There are both plans for a follow-up project and realistic exploitation plans that can secure the project's key ideas and technologies live on.

Ultimately the goal is to attract and engage both a large enough portion of the EU's elected leadership as knowing that they listen and even contribute to the debates in the platform will attract other members, as well as to engage a large enough number of non-institutional experts in order to have a diverse dialogue that institutional actors, media and the community as a whole may be better informed by.

A bigger, more diverse and active community will also be able to provide significantly larger quantities of input to the platform. As EU citizens, we will welcome this development as it can be a factor in building a more democratic, better governed EU. As ICT researchers, we welcome the opportunities the large quantities of policy process-related data can bring. The information gathered by the community and the platform is certain to offer opportunities for further research giving results that are currently impossible to obtain.

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