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ORIGINAL ARTICLE

Social media analytics for future oriented policy making

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Abstract Research indicates that evidence-based policy making is most successful when public administrators refer to diversified information portfolios. With the rising prominence of social media in the last decade, this paper argues that governments can benefit from integrating this publically available, user-generated data through the technique of social media analytics (SMA). There are already several initiatives set up to predict future policy issues, e.g. for the policy fields of crisis mitigation or migrant integration insights. The authors analyse these endeavours and their potential for providing more efficient and effective public policies. Furthermore, they scrutinise the challenges to governmental SMA usage in particular with regards to legal and ethical aspects. Reflecting the latter, this paper provides forward-looking recommendations on how these technologies can best be used for future policy making in a legally and ethically sound manner.

Keywords Social media analytics · E-government · Public policy · Migrant integration · Research ethics · Informed consent

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Introduction

Foresight and forward-looking approaches in decision and policy making are becoming increasingly essential for governments. While businesses have been counting on social media for detecting trends among their clients, accurate forecasting, demand planning and leveraging the data for forecast reliabilities in the past couple of years [1], governments are just about to explore the opportunities that social media and the analyses of user-generated contents (social media analytics, SMA) hold for their future-oriented activities.

This is mainly due to the fact that the growing number of relevant actors, a multi-level policy framework, external impacts as well as intertwined and "wicked problems" [2] make (forward-oriented) policy analyses increasingly challenging. Thus, governments start to see the value of social media as information source and as instrument for gathering feedback and detecting future trends. Due to the complexity of the problems they are dealing with, policy and decision makers demand for new analytical and supportive instruments that can keep pace with technological developments and account for a rapid and real time information gathering mechanism taking hold of peoples' (particularly citizens') opinions, comments, attitudes, moods or other sentiments that are expressed via social media.

From the citizens' perspective, on the other hand, one can state that social media have taken an immense role in their daily lives. As Grubmüller, Krieger et al. [3] demonstrate, social media have increasingly entered people's daily lives in the past decade and as such have tremendously influenced our communication behaviour. Omand, Bartlett et al. [4] state: *"We are transferring more and more of our lives onto vast digital social commons"*. This is also true for political communication, be it to make political statements, to express political attitudes, to judge political measures or to mobilise for political purposes. Hence, social media also increasingly

pervade the political discourse in many countries. Analysing more than three million tweets, many hours of YouTube videos and thousands of blog entries in Tunisia and Egypt, Howard, Duffy et al. [5] for instance came to the conclusion that *"social media played a central role in shaping political debates in the Arab Spring"*. They found that revolutionary activities in the brick-and-mortar world often followed after a large rise of social media communication. Investigating the role of social media during the post-election upheavals in Iran in 2009, Müller and van Hüllen [6] distinguish between a power shift and media shift. They found an *"interplay between a mediascape, where many-to-many media increasingly matter and the powerscape, where reaching many will always matter"* [6]. Evidence shows that also in Western societies, citizens increasingly make use of social media for campaigning for their political goals [7].

In this paper we will discuss under which conditions it is legitimate and effective for governments to count on SMA. First we will describe the societal and technological changes that came along with the emergence of Web 2.0 applications as well as the impacts on government-society relations. Thereafter, we will examine how governments and public administrations are making use of social media and SMA in the context of e-governance policies. In the subsequent section we will present the example of the European research project UniteEurope that is developing an SMA-tool for local governments in the field of migrant integration policy support. The last two sections focus on challenges for governments coming with SMA usage.

Web2.0 technologies and their role in civic engagement

The emergence of the World Wide Web in the 1990s and the appearance of social networks changed our societies' communication patterns as well as the relations among citizens, between citizens and governments, consumers and companies. A wide range of actors – *"regular citizens, activists, nongovernmental organizations, telecommunication firms, software providers, governments"* [8] – operate in social networks, blogging and micro blogging sites or discussion forums for various purposes. The ability to connect with other people, *"form communities to socialise, share information, or to achieve a common goal or interest"* [9, 10] had tremendous impacts not only on private communication habits but on civic engagement in a broad sense. According to a report of PewInternet *"66 % of social media users*[1] *have employed the platforms to post their thoughts about civic and political issues, react to others' postings, press friends to act on issues and vote, follow candidates, 'like' and link to others' content, and belong to groups formed on social networking sites"* [11].

[1] Referring to the United States

Web2.0 technologies offer a wide range of possibilities for engagement, participation, communication and collaboration as they allow each and every individual with internet access to publish, share or edit comments, postings, videos, photos etc. This implies new possibilities of interaction, diverse news and opinions, engagement in the form of *"one-to-one, one-to-many and many-to-many communications"* [12]. For reasons of delimitation, the scope of this article will be narrowed on these Web2.0 technologies only, whilst concepts and techniques of the semantic web (Web3.0), the internet of things and the outernet (Web4.0) will not find explicit consideration.

Concerning civic engagement and political organisation, there are several empirical examples of social media usage, some of the most famous appearing during the Arab Spring and the Occupy movement. As Clay Shirky states, *"social media have become coordinating tools for nearly all of the world's political movements"* [8]. In the wake of the uprisings in Tunisia and Egypt in 2011 which led to the fall of long-lasting regimes, the prominent role of Facebook and Twitter within these protest movements has been emphasised and extensively debated. The terms "Facebook Revolution" or "Twitter Revolution" have been invented and imposed on the mainly youth-led upheavals due to the usage of social media to start, discuss and organise dissent towards the respective dictators and their power regimes [13]. However, as Howard and Hussain [14] stress, the importance and critical role of Twitter, Facebook etc. must not be overstated:

> "Democratization movements had existed long before technologies such as mobile phones and the internet came to these countries. But with these technologies, people sharing an interest in democracy built extensive networks, created social capital and organized political action; virtual networks materialized in the streets. Brave citizens made their shared opposition to authoritarian rule known, and digital media helped to accelerate the pace of revolution and build its constituency. Digital media served as an 'information equalizer'" [14].

While social networks as well as mobile phones are used extensively as forums to raise awareness for political and social issues/nuisances on the one hand and instruments for mobilisation and communication during protests on the other, the engagement of citizens and civil society groups needs to materialise in the streets [14]. There are also other obstacles for the realisation of new media's democratic potentials, especially the risk of governments repressing free access and usage of Internet and mobile phones, censorship as well as the prosecution of bloggers etc. [8].

Having said this, governments aiming at retrieving information out of social media shall be made aware of the opportunities and limits, and need to find a realistic aim for their SMA activities.

Social media and SMA for governments

Governmental institutions and political stakeholders make use of social media tools in various ways and for different purposes [12, 15, 16]. These actors are active on Facebook and Twitter which they use, amongst others, for promoting their policies, campaigns, or popularity, whilst the purposes, tools and goals vary.

> "Social media strongly supports network communications and enables governments to communicate better within the multiple networks outside of government and the informal organization (networks) within government. Leveraging these networks offers enhanced opportunities to achieve public goals" [17].

In the case of politicians' and parties' online activities, the aim is often to gain support, increase engagement of citizens, or raise a candidate's profile [11, 18–20]. The most prominent example so far was US President Obama's election campaign in 2008, which *"has often been described as the first electoral campaign in which the use of social media had a decisive impact"* [19] and has set a "*precedent for the use of social media applications as election tools"* [20].

For governments, one of the major motives for using information and communication technologies (ICT) at all is to increase transparency. In this regard, *"(…) the Internet has greatly reduced the cost of collecting, distributing, and accessing government information"* [9, 21]. Whilst internet-based e-government services have taken root in the past decade, we detect the trend that web2.0 technologies are of increasing interest for governments and tend to provide a convincing and unbureaucratic alternative for giving access to information and, more globally, for demonstrating transparency. As Bertot et al. [9] phrase it: *"The social media applications of the Internet (…) have the potential to enhance existing and foster new cultures of openness"*. This is in line with other authors, such as Mäkinen and Kuira [22], who analysed the role of social media in the post-election crisis in Kenya and declared these media a tool for *"transparency and openness"*. Also, Dadashzadeh [23] points out that the increasing importance of social media in society represents a cultural shift and comes along with rising expectations among citizens that will move more and more governments to make use of the internet in general and social media in particular. Similarly, Keenan et al.'s assumptions, that were already made in 2003 and thus three years before YouTube has taken its rise, express that *"New IT is diffusing into businesses and everyday life (…). IT is pervasive. (…) This has the potential to change a vast range of social activities"* [24]. Translated into governmental online behaviour, Dadashzadeh talks about a *"(…) strategic transition from e-government to web-based participatory government or e-governance"*, requiring *"(…) access for all citizens through targeted information and tailored services, engaging citizens and their experience for co-producing public value, and increasing transparency and accountability of government"*. Thus, *"(…) its strength lies in the increasing audience engagement—which helps a government agency accomplish its mission"* [23].

Given that social media and their popularity are but one outcome of what is commonly referred to as the "knowledge society", they can be seen as essential policy response. According to Keenan et al. *"(…) it is reflexive to apply foresight to issues of the knowledge society, using knowledge society tools to examine the knowledge society itself"* [24]. Thereby, for the authors, foresight is based on several features: They describe knowledge as *"widely dispersed"* and constantly changing, but above all necessary to *"(…) inform decisions (…) for policies and strategies to be based on sound evidence and expert opinion"*. This qualifies social media an ideal solution for foresight policy making, even though—depending on the digitalisation progress in a given society—one must be aware to be stirring in a spectrum *"from technocratic to democratic decision making"* [24]. This is especially due to the "digital divide" that is prevalent in almost any society and excluding citizens that are computer/social media illiterate and/or for other reasons unable to get internet access. In most Western societies, digital participation is dependent from gender, age, education, and income [cf. e.g. 25]. This is one of the most obvious limitations that governments using social media for decision making are confronted with, which will be discussed more in depth at a later section.

Next to the requirements and perspectives formulated in the pertinent literature, we also find empirical evidence that governments themselves have an increasing interest in using social media, and in particular in receiving feedback on their "performances" as well as in involving citizens in their decision making processes [3]. As the UN E-Government Survey 2012 [26] found, governments all over the world already use the internet for collecting their citizens' opinions (currently governments in 123 countries in both the developing and the developed world). In particular, there was a sharp increase in comparison to the numbers found 2 years earlier: whilst in 2010, 55 state governments claimed to provide online surveys or feedback forms, in 2012 this was the case for 87 governments. Similar results were found for online polls (2010 available in 30 countries, 2012 in 54).

The most striking increase appeared in the category "other interactive tools" (from 33 in 2010 to 58 in 2012, which is an increase of 73 %), which comprises social media like Facebook and Twitter (see Fig. 1). *"Thanks to the provision of government information through social networks such as Facebook and Twitter, citizens are able to make comments and suggestions to governments while these sites also offer governments a useful tool for reading into public opinion"* [26]. Around 25 % of these governments state that they integrate the feedback gathered through these social media in their decision making processes [26].

These data are backed by a different approach which shows that public social media usage is already practiced by

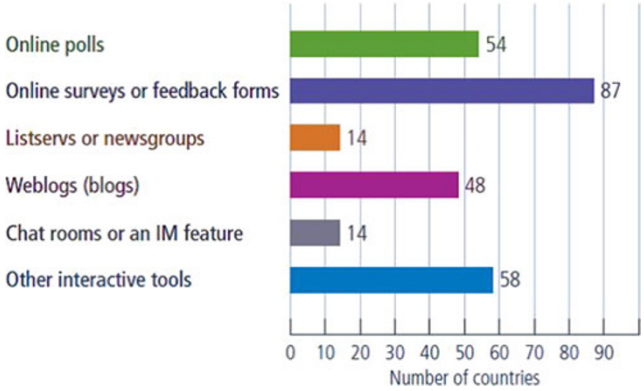

Fig. 1 E-consultation tools used by governments [26]

governments in 78 UN member states (i.e. 40 % of all member states), indicated by a statement such as "Follow us on Facebook or Twitter" on government websites [26]. The UN 2012 Survey concludes that Facebook and Twitter are *"(...) increasingly being deployed by governments as vehicles for consultation. The 24–7 reach of these tools provides a cost effective mechanism for citizen alerts as well as for views on how the government is doing. (...) The number of countries encouraging government officials to respond to citizen input more than doubled, from 16 to 38"* [26].

Beyond the sheer social media usage of governments to communicate with citizens and/or receive information and feedback, the phenomenon of crowdsourcing for e-government becomes more and more pertinent. The underlying idea that governments make use of specialist as well as local knowledge of citizens in order to improve their administrative processes and public services is fairly recent. Inspired by the success of open source software communities to voluntarily and co-creatively provide public goods the concept of crowdsourcing spilled over to self-selected experts beyond the scope of software development. Projects such as "FixMyStreet" in the UK or "Marker Brandenburg" in Germany provide a privately (in the case of the former) or publicly (in the case of the latter) operated infrastructure that ascribes citizens an active role in the amelioration of public services in their communities [27, 28].

While there are examples of successful crowdsourcing projects for e-government mainly on the local level some authors remain cautious and understand social media mainly as preliminary potential that needs to be explored [29]. Magro, too, understands crowdsourcing for e-government – and the related research – to be at the beginning, requiring intermediary steps. He identifies a need *"to translate social media driven e-participation into the act of governing"* [10].

Technological approaches for SMA

Whilst it is evident that governments increasingly make use of social media for feedback and monitoring purposes, there are no corresponding data when it comes to the usage of automated SMA-tools. The commercial sector very quickly identified the usefulness and profitableness of user-generated content on social media [30, 31]. It was mainly for commercial purposes that the (semi-)automatic monitoring and analysing of citizens' publicly accessible comments and postings was introduced in the early 2000s [30]. By now, there is a wide range of social media monitoring and SMA tools available in different price ranges [16, 31]. These software solutions aim at supporting companies and organisations with primarily quantitative monitoring and analyses of their media appearance, mentions of brands, products, company names, as well as sentiment analysis on specific issues/products.

SMA-tools (SMAT) can be described as *"technology tools to implement social listening and measurements programs"* [32] based on user-generated public content (such as postings, comments, conversations in online forums etc.) with different features like *"reporting, dashboarding, visualization, search, event-driven alerting, and text mining"*. Concerning governments, it must be assumed that currently, the majority of these feedback gathering mechanisms on social media are conducted manually by government officials; though evidence from on-going research projects suggests that there is a certain demand among governmental bodies for technologies that allow for automated and systematic SMA [3, 16]. The authors conclude that the deployment of SMAT will be rising also in the governmental sector in the near future. They point to the EU project "UniteEurope", where it is *"(...) local governments that show a major interest in applying a SMAT that allows collecting and analysing citizens' statements on social media with regards to urban migrant integration"* [3]. The project is going to be debated in more detail in section 4.

As the World Bank study on "Information and Communications for Development" [33] emphasizes, it is a desirable development for governments to integrate social media as well as mobile techniques in their e-services portfolio, mainly because of the higher participation rates that can be yielded than with conventional e-government applications. This is especially true since mobile social media applications have taken rise and facilitate broad social media usage by mobile phones. According to the UN 2012 survey, this helps *to "(...) improve public services, reduce costs and increase transparency"* [26]. This is especially true if governments want to *"(...) seek public views and feedback, and monitor satisfaction with the services they offer so as to improve their quality"*, because *"(...) government agencies can quickly engage citizens as co-producers of services, not just passive recipients"* [26].

These claims for a paradigm shift by proponents of social media do not remain uncontested. Landsbergen [17] compares the enthusiasm to that back when the World Wide Web ("Web 1.0") was expected to "*flatten organizations, increase government transparency, and democratize society*". He claims that indeed, new technologies do create a "window of opportunities";

however, *"(...) empirical research, the history of the web, and the long list of implementation issues listed herein provide evidence that social media will not automatically improve government or governance"* [17].

In any case, governments should be given appropriate means to explore the social web for themselves. As a forward-looking, trends-detecting method, particularly SMA can be applied in a highly beneficial manner as good practises prove. This should be exemplified by the EU research project "UniteEurope" in the next section.

UniteEurope: A SMAT for local governments

"UniteEurope" (www.uniteeurope.org) is a European Commission funded research and development project that is set out to support local governments in Europe in their efforts to foster urban integration of immigrants. The underlying idea of UniteEurope is to provide public administrators and NGOs with user-generated contents publically communicated via social media that helps them to detect trends in their citizens' (i.e. immigrants' and autochthones') discourses relevant for integration. This concerns local public policy and measures in all phases of the life cycle including planning, implementation, execution and evaluation. For instance, if there are many postings pointing out migrant discrimination in a particular entertainment facility via social media, one might expect tensions in this area in the near future. Integration specialists will be able to counteract this faster by immediately approaching the said facility to prevent further escalation, e.g. by providing a mediation service.

As any SMAT set-up to operate in the governmental sector, UniteEurope is based on the assumption that citizens have access to and are willing to provide particular aspects of expert knowledge governments have difficulties to draw on. Focusing on this particular policy field, the project's aim is to acquire local knowledge in the realm of migrant integration that local governments would not have access to otherwise. It is about "listening" to their citizens' pertinent social media communications in order to take their opinions, attitudes and sentiments into account, learn from insiders' viewpoints and thereby detect trends and deduce prognoses. Public sector employees such as integration officers, policy advisors or NGO personnel providing services for migrants or citizens in urban districts holding a high share of migrant population will learn about particular events, developments or discourses that are mentioned on social media.

In order to achieve these aims, the development of the UniteEurope tool has been following a step-by-step approach:

Step 1: Based on the state-of-the-art in the academic debate, migrant integration specialists have developed a taxonomy of the policy field by building a specific matrix ("grid model") of integration categories relevant for the endeavour.

Step 2: Social scientists have investigated the local situations of the involved cities (Malmö, Rotterdam, Berlin and Vienna) by analysing the respective integration issues, the relevant actors, their work-flows, as well as the current policies and on-going and expired measures.

Step 3: Based upon this research the integration specialists were able to come up with integration-related and -associated multi-lingual key words. They annotated the latter according to the integration taxonomy. By doing so, relevant social media contents can be allocated to respective fields (e.g. a topic would be "housing" or "discrimination").

Step 4: According to a pre-defined methodology, a set of social media sources was selected, which will form the very fundament of the tool. Thereby the project consortium makes use of the most common social media sites, as well as specific sources known by integration specialists to be active in this policy field.

Step 5: An algorithm tested by the integration specialists determines which posts are to be stored in the database of the tool. This database builds the index of posts that are likely to be interesting for the public administrators of the tool.

Step 6: The software can produce statistical analyses on this index, such as which topics become more important in a particular week as compared to the week before. Furthermore, an algorithm determines which posts are most likely to be relevant for the user.

The objective of the developed software solution is to provide bottom-up information based on citizens' expressed opinions serving as the empiric groundwork for socially rooted policy development and foresight. The dynamic nature of the tool which identifies trends, upcoming issues, and arising challenges allows for policy makers to use the provided information for strategic foresight. This way, the usage of user-generated data allows combining insight and foresight for *"envisioning the future (...) and developing capabilities to relate current decisions to long-term prospects"* [24].

Legal and ethical challenges of public SMA usage

Privacy and data protection aspects

Intensely interacting with local governments and NGOs, the UniteEurope consortium has encountered challenges of a legal and ethical nature that can serve in an exemplary manner for related projects or similar endeavours. These are in parts due to the sensitive policy field that UniteEurope is operating in,

but – in a larger part – also to the weak legal footing of SMA and the peculiarities of governmental end users.

As Wetzstein and Leitner [34] elaborate, public bodies making use of social media analyses do not "*focus on people as customers or consumers, but as citizens (...) and often act in fields of "great societal relevance and political interest".* Therefore, SMAT designed for governmental purposes require more elaborate considerations on legal and ethical aspects for a variety of reasons.

In the first place, social media have changed our very notion of privacy. Participants seem to care little when it comes to sharing personal information about oneself, about one's friends or networks in digital environments. Often it is difficult for the user to distinguish between what is public and what is private [4]. *"The space for private, unidentified, or unauthenticated activity is rapidly shrinking. (...) nearly every human transaction is subject to tracking, monitoring, and the possibility of authentication and identification"* [35]. The fact that the very concept of privacy is becoming increasingly blurred is further exacerbated by the absence of clear privacy regulations in the field information and communication technologies in general and social media in particular.

While it seems that privacy concerns tend to be of minor importance to social media users, empirical evidence proposes that such concerns are increasing when users interact directly with governmental agencies, e.g. via e-government services. According to the World Bank, "*[c]itizens often express concern about the security of their private and confidential information, possible surveillance, and anonymity"* [33]. The authors suggest that "(w)*ithout strong protection or the quick resolution of any breach, citizens will be wary of sharing their information with the government, and efforts to connect and interact would quickly be undermined"* [33].

As a consequence, citizens' acceptability of governments making use of social media – a sphere where the legal framework is weak and users tend to feel unobserved—requires legitimacy. Therefore, governments need to make sure comply with all existing legal standards to ensure *"trustworthiness, traceability, security and privacy of citizens' data"* [26].

In order to keep privacy impacts, governments shall restrict themselves to using publicly available data only. This means that the respective SMAT must not collect information which individuals post on their private accounts, but limit its access to posts that are explicitly marked "public". However, this is not enough as safeguarding measure, as the European Court of Justice (ECJ) held in 2008: *"A general derogation from the application of the directive in respect of published information would largely deprive the directive of its effect. It would be sufficient for the Member States to publish data in order for those data to cease to enjoy the protection afforded by the directive*" (C-73/07 Satakunnan Markkinapörssi and Satamedia [2008] ECR I-9831, § 48). According to the standards of legitimate data processing imposed by the European Data Protection Directive (Directive 95/46/EC) as well as by the relevant national acts that transpose the Data Protection Directive (DPD) in the EU member states, the decisive point is the question of the "data subject": One author of a posting is not necessarily the only "data subject" dealt with in a posting, because this individual can publish information about third "data subject". In the case that an author publishes "sensitive data" of a third person, this constitutes "illegitimately published information". The "processor" (i.e. SMAT-provider) of such illegitimately published "sensitive data" of a "data subject" commits an activity relevant in terms of data protection principles. Thus, the SMAT-provider is responsible even if the purpose of the tool is not to collect personal data, but to inform future policy [36]. It goes without saying that, data protection regulations do not hold business less responsible than governments; however, it can be observed that governments are more concerned with this legally vague situation and have a greater interest to strive for transparency and social acceptability.

Recommendations from the UniteEurope consortium are to guarantee a careful selection of social media sources alongside their compliance with European and national data protection legislation, but also to render social media authors anonymous by hiding their names and nick names from the end users of the tool. Thereby all provided information is restricted to the text of the posting leaving the author's point of reference, location or any other personal information. Additionally, the end users need to be made aware of the legal situation and safeguarding measures that are being taken. SMAT providers should furthermore consult with and register at the relevant national Data Protection Commission (DPC) and observe legal developments in the fields (further remarks in [36]).

We can preliminarily conclude that SMAT providing governments with data that inform forward-looking policies are standing on a weak legal footing whilst data protection legislation and jurisdiction fall short in grasping the potential consequences coming from these new technologies and their rapid progress. Despite a certain protectiveness towards privacy rights that is shown in the current legal debate, SMA tools remain in large parts unregulated [36].

Ethical issues and methodological consequences

Furthermore, there is a range of ethical aspects that come into play when governments make use of SMAT. These are, to a great extent, depending on the very purpose of the application itself. Taking the case of the UniteEurope project, carrying out social media analysis for supporting integration policy making is a highly value-laden field, which demands sensitive precautions for protecting particularly vulnerable individuals, but also for appropriately avoiding political misuse.

In this regard, Omand, Bartlett et al. [4] mention the issue of interpretation which concerns the fast changing language used in social media, but also aspects of irony or consciously

spread rumors that generally cannot be identified by computers and can lead to misleading result:

> "There are new forms of online behavior, norms and language that make analysis and verification difficult. Translating often unprecedentedly large, complex and conflicting bodies of information into actionable, robust insight is a significant challenge that has not been overcome." [4]

The aspect of rumors on social media is more and more coming into focus of current research, notably in the field of SMA use for crisis mitigation [37]. Public bodies that intend to use the information retrieved from social media for policy making need to be aware of these deficiencies in order to know how to interpret and evaluate the information, however there has not been any significant progress yet. In this regard, it is crucial to inform end users about the limits of the tool with regards to interpretation.

A more severe issue in terms of (research) ethics is that of the missing "informed consent" in SMA, comprehensively dealt with in Krieger, Grubmüller et al. [36].

> "Being in compliance with the law is one step to diminish ethical concerns, but must be considered a minimum standard only for coming up to ethical requirements concerning data protection. In this regard, the lack of 'informed consent' is an issue that requires precautions in order to protect the authors of postings who might not be aware of the public availability of their contents, let alone of their deployment for research purposes." [36]

Whereas the issue of informed consent is also encountered in conventional research methods (e.g. unobtrusive observation), the authors consider it particularly delicate in SMAT *"due to the very nature of 'digital reality' that allows fast and easy detection of data"* [36]. Especially younger users are often not aware of the consequences of their public postings [35], let alone that they might be used as information source for governments. Therefore, measures to ensure anonymity is not only important from a legal, but also from an ethical viewpoint. More generally speaking, *"(g)overnments will need to exercise care in securing their systems and software to avoid any perception of surveillance"* [33].

A further concern is the selection of social media sources that a SMAT uses for contents gathering. As the "core" of the tool, they determine the quantity, the quality, as well as the explanatory power of the yielded results. They decide about which groups, which comments and which opinions are reflected in the results and, on the longer run, considered for policy making. As Grubmüller, Krieger et al. [36] state, the selection of sources needs to be based on aspects such as *"(...) 'Who is active on social media?', which brings about issues of 'digital divide' (exclusion of certain groups of people depending on variables such as age, computer literacy, gender,* etc.*), the strong presence of populist and extremist positions in social networks and, in contrast, the weak presence of (certain groups of) migrants"* [36]. An according methodology has been developed in the frame of the UniteEurope project.

This leads to the question of representation, which not only refers to the input to the tool, but also to the output the tool is producing. In general, as Krieger, Grubmüller et al. [36] recommend, that quantitative results (e.g. frequencies of names/keywords, number of references through users etc.) which are very useful for SMAT in a commercial context, should be accompanied by qualitative data and additional context information (such as the indication of sources, the number of sources, extracts from the postings, links to the original pages, etc.). Otherwise, as they claim, results based on frequencies only *"(...) can be misleading in the sense that individual sources and/or individual users can produce above-average amounts of partial contents"* [36]. Also sentiment analyses (i.e. categorisation of content entities as positive, negative or neutral), which use to be very widespread with commercial SMAT, can be problematic and often not applicable for SMAT for government that deal with value-laden subjects such as migrant integration.

At the same time public administrators using SMAT must be trained in diversity awareness and social media literacy [38–41]. Awareness raising measures for end users shall inform them of both the opportunities and limitations that these new technologies hold for governments. This is also to prevent potential (unintended) misuse of such tools. Thus, Krieger, Grubmüller et al. [36] recommend for SMAT providers to *"providing manuals and training materials that contain sensitizing information with regards to how these data are being gathered as well as both the significance and limits which the results bear"*.

Conclusions and perspectives

Coming from the increasing importance of social media in many societies, also with regards to political communication and civic engagement, we examined in this paper the possibilities for governments to make use of social media as information and feedback source, and whether this is legitimate and effective. Therefore, we looked at automated SMA which has already been used by political parties and private businesses, though mainly for commercial purposes. Governments instead have been more hesitant when it comes to social media and SMA, though first governmental demands for SMAT can be identified. Several governments signalise clear interest with regards to active social media presence, but also show activities using social media (manually) for receiving feedback on their performances.

Next to the generally higher sensitivity of governments towards legal and ethical aspects of technology use, current incidents such as privacy attacks over social media by governmental institutions have increased inhibitions to collect and make use of online user-generated contents. However, as this article points out, social media are an ideal solution to support foresight and future-oriented policy making; therefore, the advantages of SMA for governments shall not be overlooked. Thus it is all the more crucial for SMAT-providers to guarantee for an ethically and legally sound approach. This is demonstrated in this article with the good practice of the European research project "UniteEurope" which counts on the assurance of anonymity, the restriction to publically available contents and the utmost compliance to European and relevant national legal standards. In addition, ethical requirements have been elaborated together with the end users and international NGOs; they serve as benchmark and have thus highly influenced the methodology applied during the development of the tool, notably with regards to the selection of social media sources, the presentation of results (quantitative vs. qualitative approach) or the resignation on technological innovations such as sentiment analysis. Awareness raising activities with the end users (local governments) is another decisive factor.

Building on the case of UniteEurope, we point to the opportunities, limits and risks with regards to governmental SMA usage. We are concluding that governments should be given the possibility to explore SMA, keeping in mind that for assuring transparency and social acceptability, they shall decide on a case-to-case basis whether it is the most suitable instrument for their needs. For UniteEurope, the developed SMAT constitutes a valuable solution because it is at the crossing point of (1) providing insight on the current state of the public discourse on migrant integration (thereby supporting policy makers in *"understanding the true nature of the present"* [42], and (2) enabling foresight methods aiming at improving the current and forecasted situation with a mid- and long-term perspective.

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