What is and how will the future social media look like, how we are going to get there, and what has to be done to enable the future Social Media? Probably the largest research and innovation community of in area of media and content in Europe organized within the NEM Initiative will elaborate inputs to answer these questions within a coordinated action among the community members and beyond, which will be supported by the Vital Media project\(^1\) of the Horizon 2020 EU research and innovation program.

To do so, the NEM Steering Board is already working on definition of an initial vision “The Future of Social Media” proposal, which is now open for discussion with all NEM members and other stakeholders around the European media landscape interested to participate. At the NEM Summit 2017, the 10\(^{th}\) edition of the NEM annual conference and exhibition which will be held in Madrid, Spain, on 29/30 November 2017, the discussion will be further enlarged through a number of presentations, invited talks, and open discussions. Results of this activity will be summarized in a white paper, expected to be published in December 2017, aiming at identifying the next steps towards the future of social media, including required research and innovation activities in the next period to achieve the defined goals, as well as related standardization, regulatory, and policy actions. The white paper will provide a base for further detailed elaboration of all these aspects which will be detailed in due course throughout 2018.

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\(^1\) VITAL MEDIA is a support action project under the Horizon 2020 Programme of the European Union – number: 688310 – project duration: June 2016 – May 2018.

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# TOWARD THE FUTURE OF SOCIAL MEDIA

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1) Introduction

Social Media used to be defined as a set of computer-mediated technologies that facilitate the creation and sharing of information, ideas, and other forms of content and applications via so-called virtual communities taking advantage of modern network and communications infrastructures. Social media uses web-based technologies to create a variety of interactive platforms through which individuals and communities can share, create, modify, and discuss different types of information and digital content which is available in the global Internet landscape. It can be stated that during last one-two decades the social media applications introduced significant changes to way people communicate, as well as businesses, and more over entire communities organized through common interests. Moreover, the recent developments in Internet and communications technologies, media and entertainment sectors, as well as many other spheres of professional activities and life show that social media becomes a standard part of different services and applications offered to people through a variety of communication and consumer devices; computers, tablets, smart phones, smart watches, etc. Furthermore, so-called classical media services, such as broadcasting and even traditional “paper” based media, are more and more introducing and using various social media technologies, to improve the overall user experience and further extend their offers and businesses.

The Social Media is currently being used to infer social behavior and derive tendencies, in combination with the big-data analysis tools. Its capabilities are tremendous to obtain information about the acceptance of a new product or service, identification of needs, or even the determination of ways to influence particular social acts and events. A practical example of the above ideas is the still open question of whether social media, in combination with big-data analysis tools, influence world-wide elections or not. Furthermore, a concern about digital competition is acute in Europe because quite often digital markets and the Social Media platforms are dominated by few, big and foreign companies, accumulating volumes of exclusive operating data on their platforms and services and using it as the raw material for artificial intelligence or machine learning could have an insuperable competitive advantage over new entrants. Users gain good services, and often free of charge, from such platforms but there are also some potential drawbacks; e.g. using a predominant position to collect data (even improper), keeping that data exclusive in order to maintain monopoly power, which even might obstruct further innovations and creation of new ideas, or using it to prevent customer to change the platform providers. Therefore, from the competition point of view it is also desirable to ensure Personal Data and Profile Portability in the future Social Media services.

We can conclude that in the near future it will be more and more difficult to distinguish among traditional media, if we may say so, and social media. Where is or will be the border between traditional media and social media (e.g. shift from off-line to on-line media) as well as the border between social media and any future type of service or application, or will there be any borders in the future? What is and how will the future social media look like, how we are going to get there, and what has to be done to enable the future Social Media? This White Paper elaborates inputs received from broad European media community, to answer these questions and define a set of actions needed to be taken in a coherent and coordinated way in the next period to enable establishment of a future European Social Media landscape.
2) Future Social Media Scenarios

This section elaborates on ideas and visions on the future Social Media by presenting the related scenarios. This section is open for further contributions and ideas. The final structure of the section will depend on the gathered community inputs.

Big Data – collection and analytics

Social media platforms have a relevant impact on the modern society since they have increasingly been changing people’s way of living and interacting with the rest of the world. They have been able to attract an increasing number of users by providing those services and opportunities according to a business model that on user’s side is perceived as “for free”. By entering the social network, users have access to a community that share information, contents, emotions and give the possibility to stay always in touch with personal contacts, whatever the physical distance in between. In return, users are asked to provide essentially the following things

- Explicit Profile data (e.g. name, age, place of living...)
- Users’ interactions within the social media (e.g. posts, photo/video shared with the community, comments on other posts...)
- The right to collect, store, and elaborate any user data for various purposes.

Social Media platforms, by means of Big Data collection and analytics, can derive the preferences and usage behavior of the members and use them to monetize user data selling them to advertising agencies that have the opportunity to issue efficiently targeted marketing campaigns. Social Media use all the information retrieved by user interaction within the community to generate useful insights that helps to update and optimize the existing services and to create new services.

This model (Figure 1) has proved to be extremely successful for any party involved in the chain. The growth in terms of number of users and level of engagement with the platforms has been rapidly rising in the last years bringing to an average daily use of Social Media in Western Europe of about 80 minutes. This number is expected to grow even more, because of the increasing number of contacts joining the communities and the diffusion of mobile fruition of Internet contents and platforms.
In order to maximize users’ engagement, leading to increased appeal for advertising agencies, Social Media platforms have been continuously enlarging their service proposition, with the target to cover more aspects of users’ lifestyle and to create a platform capable to provide a complete offer that enhances current portfolio on one side and meets more clients’ needs than just entertainment (that is efficiently matched today with current proposition) on the other (Figure 2).

**Figure 1: Social Media business model based on Big Data – collection and analytics**

**Figure 2: Shifting and enlarging Social Media service proposition**
As to other aspects of people’s lifestyle, social media want to become a trusted entity for accessing news and information, so they are starting (e.g. Facebook) to engage with professional editors in order to spread reliable information inside the community. Some other services that are expected to be included in the Social Media value proposition for instance are the tourist travel guides that let them gather much more user data and build innovative business models, and payment applications. Furthermore it is supposed that in coming years Augmented and Virtual Reality applications will be added to the social platforms, leading to a very rich offer in the entertainment field.

**Social TV**

Social Television (Social TV) is the union of television and social media which is becoming increasingly popular in the society. E.g., Facebook is providing long streamed clips of video, and video now exceeds 50% of all traffic on the Facebook sites and is expected to rise to over 75% in the next few years. This has, to date, primarily been short clips (a few minutes), but in mid-2017 Facebook Watch has been launched, a service offering long-form television, including specially commissioned content. Also, many people increasingly watch both short and long form content on YouTube and other similar platforms. They upload, share, and comment upon a huge range of video, whether self-generated or from a secondary sources.

In the last 20 years the competitive and commercial pressure in the television industry has increased tremendously as a result of an ever-increasing number of channels and digital platforms viewers can use to access their content. In order to retain viewers, Social is a recognized and proven proposition for introducing social and interactive elements to traditional broadcast formats, with the aim of making formats more personal, dynamic and attractive for viewers, which decreases churn.

An example of a scenario with socialized promos is the launch of a new Game of Thrones season. In the weeks before the first episode, call-to-actions are broadcast asking the audience to Tweet the name of their favorite characters together with an image of their own impersonation of that character. All approved submissions are rendered into a typical Game of Thrones scene, replacing the face of their impersonated character. The most hilarious and suitable results are selected and scheduled as part of a series promos that are broadcast before, during or after the actual airing of the first episode. All rendered clips, whether they made it to television or not, are made available online (own portal of the channel or any of the established Social Media) and all participants receive a link from which they can download their own personal promo, and share it with anyone they like.

A similar campaign based on the same technology can be created for brands launching new products.

While socializing broadcast productions is a promising and innovative playfield, there’s another aspect that’s often overlooked, namely the surrounding advertisements and promos that eventually pay the bill of the broadcasters. Today the same anonymous ad or promo is shown to millions of users time and time again, which feeds disinterest, irritation and eventually churn. Obviously, this is precisely what the brands behind the ads do *not* want to happen and the ineffectiveness of the current paradigm is an important factor behind today’s decline in advertisement revenues (For Broadcasters whereas on-line and social platforms advertisement revenues are growing).
The majority of video content is available on-line, where a significant part of the available content is made across different locations worldwide by looser production teams. Long-form of video content is watched on screens at home and shared and commented upon by friends. It is downloaded to transportable devices (phones, tablets) to be watched offline. Short-form is also very popular on mobile devices, which is enabled by increasingly higher data transmission rates.

There are two negative aspects of this evolution:

- On content owners: monetizing decreased revenue from advertising due to diluting markets, reduced number of subscriptions.
- On society: blurring of lines of truth – fake news, filter bubbles

Pilot studies have shown that advertisement value can be increased enormously by adding social and interactive elements to traditional clips, just like they did for traditional broadcast. Clips containing seamlessly embedded user generated content significantly increase brand awareness and intention to buy, i.e., value for the advertising brand.

We feel that there’s tremendous unexplored value in the socialization of ads, which – in the absence of technologies and processes available to mine it – is still left unexploited by the industry today. Moreover, once advertisements can be made as social as the broadcast formats are today, it even becomes possible to link their respective social elements, thereby adding even more value to the ecosystem.

For broadcasters, this proposition increases the value of their most important source of revenue, i.e. their advertisements. For broadcasters and brands/advertisers it increases the effectiveness of their promotional material. For the market as a whole it creates a playfield where productions and advertisements can be linked through their social elements.

Finally, because of their embedded social content and their diversity, consumers and viewers will perceive these ads and promos much more positively and dynamic than their boring and often irritating predecessors.

Further aspects: Content/information - sharing and publishing in social media

Paradigm change from off-line to online publishing

The digital transition has significantly transformed the publishing value chain; introducing substantial opportunities for disintermediation, as digital technologies eliminate certain limitations of the physical world, but also for reintermediation, as new players take up some of the new functions. Whereas a disruptive potential is obvious, however, the digital transition does not eliminate or even completely subvert the essential roles of the value chain: e.g. the writing and publishing of books as one of the prominent examples. For publishers, new production processes entail a multiplication of tasks, linked in particular with the production of e-books and the management of metadata, as well as a wide range of innovations in products (mostly focused on the digital enhancement of books), services and business models (as the sale of books shifts toward the commercialization of access models).
Social media are an important element of this evolving framework: they provide an alternative channel for marketing and sales to publishers, and allow the creation of a direct link with readers, establishing a dialogue and also highlighting and raising the profile of a publishing house among its customers. Social media can also become tools for innovation in book production, as they can be vehicles to involve readers in the creative process. Many social media dedicated to books and reading have emerged, which develop communities of book lovers and can become in turn instrumental for the launch of books and authors.

Decentralized vs centralized Social Media approach
The centralistic focus of current social media platforms is problematic and is mostly based on the traditional media approach that offers one ‘central’ channel (newspaper or television) for all content. To ensure the audience of these channels receives relevant information the content distribution is curated and/or edited. In the case of social media this curation is mostly done by an algorithmic assessment of user interests and based on engagement signals (e.g. likes, comments etc.) that are spread by the user and/or the directly related social network. These signals are then automatically matched with content (both from the social network of the user and commercial/ads) and resulting in a mixed stream of content ‘personalized’ to what the algorithm thinks the user might find interesting. It can be argued that the main benefit of the centralistic paradigm of current social media networks is the establishment of a ‘marketplace’ for premium (ad-based) content resulting in most social network providers focusing on matching content with user interests to increase engagement, the main metric to assess content value and interest.

Several challenges have been identified in relation to the centrality of current social media networks:

- Focus on limited media sources and missing context of information due to automatic algorithms
- Trust issues – Filter bubbles, Echo chambers and Fake news
- Privacy and ethical issues in respect to information flow control

To overcome the current limitations of ‘Media’ focus and platform ‘Centrality’ a more open, flexible and distributed solution is required. This solution is built on the pre-requisite that objects and people are digitally identifiable by location and proximity to each other. Furthermore, that users operate in a post-mobile era in which the mobile phone is replaced and extended by one or several wearable devices that allow the extension of sensory perception through digital insertion, such as visual (AR/VR) and/or other senses (e.g. touch, hearing and smelling). Future social systems therefore should be able to support highly dynamic real-world social interactions with the person’s environment. For this to be enabled several different technologies need to be extended and further researched towards this vision.

New way of searching information
Today, the usual way to find information is to use search engines which are browsing huge data bases trying to find matches with the user queries. Search engines are software system that is designed to search information on the web. They get their information by web crawling from site to site. The “spider” checks for the standard filename addressed to it, before sending certain information back to be
indexed depending on many factors such as the titles, page content, headings ... Indexing means associating words and other definable tokens found on web page to their domain names and HTML-based fields.

Some technics for indexing and caching are trade secrets, whereas web crawling is a straightforward process of visiting all sites on a systematic basis. Typically when a user enters a query into a search engine it is a few keywords. The index already has the names of the sites containing the keywords, and these are instantly obtained from the index.

The usefulness of a search engine depends on the relevance of the result set it gives back. While there may be millions of web pages that include a particular word or phrase, some pages may be more relevant, popular, or authoritative than others. Most search engines employ methods to rank the results to provide the “best” results first.

Social IoT networking
In the next future, there will be more connected things than humans and these things will have to communicate together in order to synchronize themselves or to solve a problem. Such use case should be replicated in many use cases that will require such a social IoT Network: health, logistics, energy, smart city, Industry 4.0...

The evolution of the Internet of Things (IoT) is transforming our lives into a cyber-physical-social hyperspace and changing what it means to be social, thanks to smartphones, tablets, and all types of wearable devices, which are connecting people and things both directly and indirectly through various applications and platforms.

In the future many applications and services will require associated groups of things interacting among them, based on technologies such as swarm intelligence and swarm robotics. The establishment and management of relationships among things can occur with different levels of human intervention. In one case human is responsible only to set the rules of the things social interactions and then enjoys the services resulting from such interactions and groupings, while in the other case things just participate in the human social network built by their owners.

The physical things belonging to our everyday reality are at the same time witnesses and protagonists of the (hi)story of our places (territories, home and work environments,..) and of our social life and communities. If only they could tell stories about what happened to them and around them, the possibility of interacting with things in the person’s environment could provide people with a significantly enhanced experiences and services. We can identify different levels of “social” involvement of such intelligent and social things:

- Things posting information (about the state of environment,...) in the social networks of humans;
- Things interacting with humans and other things at the application layer in social networks;
- Things interacting socially with each other to build a dedicated communication network.
Impact of the evolution of social media on the creative industries

The phenomenon social media is the result of the evolution of the mega trend user-generated content. At the same time, users themselves become actors and consumers of an inter-active scenario that they convey through mobile platforms. Today's reality of Facebook, Instagram and even Tinder is closer to this vision than it appears at glance. Mainly digital natives, but increasingly also the immigrants use such media alternatively and cumulatively to existing media; but their focus has shifted significantly: The individual human existence is melting in an unprecedented way with the medialized world. Reality is medialized, media is reality and the medium is now the only message. In an aesthetic capitalism, symbolic attributes contribute more and more to economic value and the pursuit for fame in a virtual community is becoming increasingly important.

In this environment, the creative economy is increasingly becoming a significant value-adding element. We can identify two mega trends:

- On the one hand, we clearly see the increasing desire for authenticity and real-life, which will also be reflected even more in three-dimensional contexts in the future. It could be that after the mobile sector being the youngest sector of the creative economy, the 3D printing sector will explode within the creative economy. Also, technologies like augmented or virtual realities - usually overrated in the past – could play a modest role. The blending of real life and the contribution of the individual to a common theatre, as it is already possible today in Minecraft, will increasingly determine the mindsets and behavior. The interactive communication as it first began in the games sector will be enriched with artificial intelligence and increasingly gaining in importance in this context. Thus, social media has influenced human behavior much deeper than any other media revolution before. The user slips from passive consumption into an interactive role; the development of communities is only partly moderated but boosted through highly personalized advertising and influencer marketing. The increasing customization of advertising allows business models to be developed that drive the social media community to authentically and simultaneously expand into every part of human life.

- But as a trend we can also identify a second important flow: Users also long for deeper and larger stories. These are currently being portrayed via the new series from overseas streaming services (Netflix, Amazon Prime) and partly also via television stations. This longing for a deeper meaning in the stories is, so to speak, the natural and implicit reaction to the social media-generated network access between reality and medial reality. It creates an increasing degree of relaxation and security in an environment of uncertainty. Therefore, it would be wrong to see the user-oriented social media reality as the only mega trend; at the same time, there is also a new form of storytelling, that is only just beginning and that will not only be reduced to television series. Narrative design is gaining in relevance in Europe - the cradle of narration - and a great opportunity for the creative industries of Europe.
Phenomenon of disinformation / fake news

Nowadays, when the information is consumed by end users (readers, consumers of the provided information) through various social media channels, the end users dealing with significant amount of available information are spending less and less time to digest particular part of information and, on the other hand, the articles and other type of information are provided in a more and more compressed way. In this landscape, the end users cannot pay enough attention on identifying true from false information and vice versa. Thus, rumors, false statements, wrong or diverted facts – the fake news – find a perfect environment not to be identified and, accordingly, to be considered as real and true facts. Targeting the fake news to wake up various users’ feelings and emotions is just an add-on to make the fake news more efficient and reduce the end users attention, so she or he can consume an even clearly wrong information as the right one.

The fake news is usually part of well-prepared propaganda activities, which are known from the history and are not related to nowadays society and social media technologies. However, the social media, where the users’ behaviors from several aspects can be followed up, enables more targeted propaganda activities by spreading the fake news targeting topics of a kind of emotional importance for the end users to increase its impact.

Recently, the fake news has been identified as main tool to negatively influence various democratic processes around the world, to influence outcomes of elections, referendums, and further political decisions. Of course, these cases are intensively discussed within the entire society. However, the fake news affects other areas of life, going significantly beyond the political issues, which are also of a very large importance, such as medicine and science, with a large negative impact potential as well.

As mentioned above, the social media is no creating the fake news as such and it is only used as a mean to distribute it across the world. The reasons for someone to produce and distribute the fake news are coming from perception on political processes and happening in the society at large, which concerns the citizens and open doors for dark side of the society to spread its propaganda. The citizens’ perception on different issues in the modern world (globalization, migration, wars and crisis) and the psychology behind must be taken seriously and from different angles, which will necessary establish a citizens front against the fake news, simply by well, transparently, and permanently informed (social) media end uses.

Google estimates that for the time being around 0.25% of information available and possible to be found, e.g. through Google search engine, represents false information or fake news.
3) Requirements on policy, regulation, and standardization

This section elaborates on requirements on policy, regulation, and standardization to be taken into consideration by relevant bodies and authorities, as identified as needed for achievement of the future social media visions and scenarios presented in Section 2.

Protection of individual user rights

Regulatory intervention should aim at protecting the individuals’ fundamental rights promoting meanwhile technological innovation and a market-driven business development. Consumer protection is one of the most important issues for the end-user experience. The use of social media, also in combination with communication services, is growing and it is important that consumers are protected in terms of transparency of information and contracts, privacy and data protection, security. In order to better protect consumers the same rules should be applied to digital services in terms of consumer protection and privacy so that a level playing field between providers is guaranteed and consumers are actually aware of characteristics and possible drawbacks on the use of social media. Clear and transparent information to the users should be provided both about the offered service and on personal data collection, storage, use and elaboration and independently of the kind of remuneration of the service (including not direct remuneration, but based on personal data).

General Data Protection Regulation (GDPR) in force since 2016 and in application from May 2018 represents an important step for personal data protection having taken into consideration privacy issues emerging also by social media scenarios and applying for the collection and processing of individuals data independently from the location of the social media service provider. GDPR is based on the following regulatory principle for personal data, which must be strictly applied within future concepts for the social media:

- **Transparency and fairness** - data should never be collected and processed without the data subject being actually aware of it
- **Purpose limitation** - data can only be collected for specified, explicit and legitimate purposes
- **Data minimization** - data should be limited to what is necessary in relation to the purposes for which they are processed
- **Consent** - data collection and processing is based on data subject consent;
- **Storage limitation** - data must be kept for no longer than is necessary for the purpose for which the data were collected or further processed;
- **Accuracy** - data must be kept up to date, erasing and rectifying them when necessary;
- **Integrity and confidentiality** - data processing ensures appropriate security of the personal data

Moreover the revision of e-privacy Directive currently under discussion adds further privacy obligations for electronic communication services and networks and a close attention should be paid on the coherence of the rules and on the avoidance of regulatory asymmetries.
Data Portability and Competition/monopoly issues

Concern about digital competition in Social Media is acute in Europe because quite often digital markets and the Social Media platforms are dominated by few, big and foreign companies, accumulating volumes of exclusive operating data on their platforms and services. Concerns about the control of large amount of data by a few companies have been expressed also by European Commissioner for Competition, M. Vestager, at the Web Summit 2017 Conference (5 – 8, Nov. 2017 in Lisbon) underlining that their dominant position could lead to situation where competition and innovation are undermined.

As a matter of fact, the concentration around few platforms that have strengthened their position across multiple service categories, becoming powerful integrated ecosystem and leading potentially to situations of consumers lock-in. A monitoring of the market is needed in order to evaluate the existence of problems on competition with limitations on user’s choice.

Using that huge amount of user data as the raw material for analytics and machine learning could have an insuperable competitive advantage over new entrants. Users gain good services, often free of charge, from such platforms but there are also some potential drawbacks; e.g. using a predominant position to collect data, keeping that data exclusive in order to maintain monopoly power could be used to prevent customer to change the platform providers. Competitive markets generally flourish in an environment in which there are few or no barriers to switching, enabling customers to easily move to a better deal.

Therefore, from the competition point of view it is also desirable to ensure Personal Data and Profile Portability in the future Social Media services. Here, the GDPR presents a set of recommendations and rules that could provide, particularly on data portability, a promising route to combat customer lock-in, fostering switching between social media providers, including potential new (hopefully European) entrants in this space. The concept of portability (retaining the customer’s identifier when changing provider) and support for switching are well established in the context of broadband and voice services and is tightly regulated at EU and/or national level and must be strictly applied in social media.

Digital Rights Management – prevention of piracy

Whereas the above mentioned requirements on policy and regulation are rather considering empowered end users and protection of their basic privacy rights, an also very important point is protection of intellectual and other rights on content published and re-published across the social media networks. A good example is the e-book publishing and other similar sectors which are suffering from data piracy present in the digital world in general as well as in the social media and networks. Therefore, an important issue is to find appropriate and applicable mechanisms to protect the published content and the corresponding rights preventing the social media users to illegally share and publish content which does not belong to them.

Standardized technical processes

Standardization of technical elements such as

- advertisement templates,
- approval processes
content distribution

will be beneficial for all involved stakeholders as it allows effort to be focus more on the creative side of running a campaign, instead of its technical aspects.

Regulation in social media

A great advantage of the not regulated market in the social media is that it completely support the principle of freedom of speech, provision of a diversity of issues and discussions, and enables expression of own citizens’ opinions on a large scale. On the other hand, the lack of regulation which causes also luck of any control on the fake news is damaging the above mentioned principles of freedom of speech and diversity, by misusing the gaps in the regulatory social media landscape.

As the fake news usually does not represent illegal content, where the corresponding legal measures are already well established, the related laws cannot be used. However, the following legal and regulatory measures could be applied or start being applied in the future:

- Defamation of private rights, including copyright for some issues and rules against cyberbullying/harassment
- Establishment and application of press codes, such as not using misleading headlines in news, obligation to correct wrong statements, etc.
- IP low for shutting down so-called fake websites, and
- Improvement of election (and other affected) laws to reduce potential influence by fake news

The overall opinion is that it is time now to consider appropriate standards and regulation for checking the available information and its removing when needed. However, instead of a strong and centralized regulation in the social media, application of editorial/publisher standards and a kind of self-regulation among platforms, journalists, users, etc. might be more effective. Regulation or at least a strong regulation might not be of help and could damage free press and overall freedom of speech in the nowadays democracies. On the other hand, responsibility of corporations involved in the social media business could and should be improved. For the time being, the social media platforms do don take the publisher responsibilities, but this behavior is being changing now.

Thus, there is a need for regulation in the social media and extension of publishers and other related rights/rules/laws in this direction. However, the regulations is a sensitive issue, so that the first target should be a kind of self-regulation among the social media actors

The main social media platforms apply a light verification process of the end users’ accounts. However, number of suspicion accounts is observed to increase and the platforms are taking actions to identify and remove these accounts. These activities include also identification of messages sent and accounts used by robots.

It has to be mentioned that the EU and the Members States are limited in concrete actions in controlling the fake news because of independency issues, getting biased, etc. In principle, the states should not be involved in making decision if news is false or true.
Ensuring trust and diversity
Ensuring trust by avoiding fake news and providing integrity of information distributed and listened in the social media channels is one of the major aspects of the future social media, followed also by a need to ensure diversity of information provided from all world regions, different people/user groups, addressing a variety of issues of public importance as, etc.

Beside the regulation measures discussed above and specific thoughts on needed research actions, new business models, as well as education and media & news literacy, re-establishment of trust in organizations sharing/providing the news is crucial to overcome the problem of the fake news.

Of course, the most efficient solution for preventing the fake news is to detect its creation in early stages, which would help in preventing their further distribution. Here, of course, it is difficult to observe all possible sources of polarization and fake news. Another important point is that the re-establishment of trust cannot be achieved by a single control entity or similar because of very important pillar of the today's society to keep principle of freedom of speech and diversity of opinions.

Some fact-checking organizations, such as Full Fact, are directly working on trust re-establishment as fully neutral entities, which is ensured by multiple and independent sources of funding. The target is not to create people’s opinions and the main intention is to help people to make up their minds while consuming different types of information. To ensure it, the transparency of all related processes is needed.

The fact-checking has to be implemented through collaboration among multiple stakeholders, including the main social media platforms, on the global level. Furthermore, it is also needed to consider different cultural factors influencing the considered area, e.g. caused by specifics of languages. Here, the ethical responsibility of platforms and citizens engagement is of a high importance for success, whereas political and societal clarifications are the main tools for fighting origins of the fake news and its distribution.

To conclude, to successfully reduce impact of the fake news and its distribution, broad global activities and collaborations among all relevant stakeholders are needed, including standards and needed regulation as well as cooperation in different world regions by considering as many as possible cultural and language related factors, such as:

- To recognize societal responsibility and promote quality journalism as well as education on media/news literacy and journalists training
- To ensure public funding for fact-checking organizations and tools to be put on disposal for wide public usage, e.g. as open source
- Establishment of common and open data bases, in cooperation with the main platform providers, to enable wide research activities in the area through data analysis
- To cooperate in fact-checking and support the needed innovation as well as adopt multi-platform approach for spreading information and news
- To improve transparency and accountability in all processes as well as support activities on fact-checking and providing related feedbacks and corrections
• Establishment of self-regulation measures among stakeholders involved in overall publishing process in the social media
4) Needed research and innovation activities and education

This section elaborates on needed research and innovation actions, as identified as important for achievement of the future social media visions and scenarios (Section 2) and to fulfill the related policy, regulatory, and standardization requirements (Section 2), to be considered for inclusion in the research and innovation programs of European Commission as well as regional and programs of the Member States in the next period.

Management of user information

Considering the huge amount and relevance of user data that social media are supposed to handle in the coming years it becomes extremely important to impose to Social Media a correct management of user information and guarantee a set of rights to the final users that range to data security and protection, porting of data to another platforms, to complete user control on personal information.

We think it could be of great interest for the development of the market, for competition and for end user value creation to have ICT tools, protocols, APIs and systems that can help to declare, enforce, control and report on data management and also on GDPR implementation as well as to ensure the needed user data portability.

Furthermore, in order to do so, there is need for research activities in order to help people to put their query on relevant social networks and also to develop filtering services helping people to capture queries that are relevant for them.

In addition, there will be a need to ensure communication between different social networks from different sectors and also with social media networks in order to bring to the end user the information about the decision taken by the system. Such interoperability among various social networks should be studied in order to facilitate convergence between these social networks and to unlock possible proprietary features.

Social Media tools

From the technology point of view, the nowadays powerful social media has been established by developing and deploying the newest software solutions, enabling all the social media features the citizens are enjoying world-wide. On the other hand, the same tools allow very efficient creation and distribution of the fake news and act as their enablers.

In order to cope with this problem, of course the tools’ capability should not be reduced, but they can be enhanced to help to find and remove fake news and false information from the special media platforms, including fake websites. However, the time needed for removing the fake news is still too long to ensure proper reaction within the needed real time scale.

There is a need to improve social media technologies, in particular fact-checking tools and develop new solutions and processes. Furthermore, reputation tools for ranking the news distributors should be put in place.
Tools for fact checking
The fact checking tools are getting better, but significant improvements are needed to make them faster, to be able to provide the needed feedbacks within minutes. There are ongoing activities in exploring opportunities to apply artificial intelligence in the fake news checking process.

Even there are powerful tools available for checking the potentially fake news, in most of the cases there is a need to finalize a fake news check manually, which means by a human action and a corresponding action from a person or a team. This, of course, wakes up a question of impartiality or independency of people and organizations checking the news and providing the final opinion.

Need for collaboration and data exchange
In order to better analyze the entire problem and provide better tools, it is necessary that the main platform providers open their APIs, so that their data can be used for these purposes. There are open APIs provided, in some cases their users need to pay for it, but amount of information available through the APIs is not yet enough for a substantial problem analysis. However, the large social media platforms, which recognize the overall problem of false news as dangerous for their businesses, are getting ready and committed to collaboration, so we can expect improvements here in the next period as well.

There is a strong need for collaboration on issue of the fake news by all relevant stakeholders on the global level. Furthermore, it is also needed to consider different cultural factors influencing the considered area, e.g. caused by specifics of languages. There is a need to analyze in details all processes related to creation and distribution of the fake news to ensure full understanding of the problem. Collaboration among various actors is needed here as well as access to data and availability of appropriate open source based tools.

New Social IoT models and technologies
In analogy with the social networks of human beings there is a need to study and define a notion of social relationship among things, making them intelligent and social. One possible definition is that things come in social relationship, because and when their owners come in touch with each other during their lives (e.g., devices and sensors belonging to friends, classmates, travel companions, colleagues).

Several different technologies need to be extended and further researched towards the vision on intelligent and social things,

- **intelligence and social abilities** of the things that allow them to interact with people and among themselves are based on reasoning and learning from the following kind of information:
  - semantic information such as common-sense and general knowledge about things domain and environment (e.g. an ontology);
  - user behavior data during interaction;
  - content associated with the things (e.g. photos or videos posted on/from the things).
- people and things are both **social entities**, able to manage and share knowledge and to establish relations with other things and people - social network thus maintains three types of dynamic relations: **user-to-user** (e.g. friendship, similarity, etc.), **user-to-thing** (e.g. ownership, potential interest, etc.), **thing-to-thing** (e.g. similarity, proximity, task, etc.).
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- bidirectional interactions: person and the intelligent thing may start a conversation
- natural interactions: gently and playfully led by interest, curiosity and fun while fully exploiting intelligent and social things.
- content adaptation, personalization and aggregation: the capability to filter, synthesize and mashup content in a meaningful way, ranging from the intelligent search, discovery and recommendations to the digital storytelling, that involve intelligent and social things.

New business and cooperation models
Strategically speaking, publishers and content creators in the digital age still face a degree of uncertainty; they will need to undertake a fundamental evolution that takes carefully into account the creation and distribution of value across all participants, including retailers, distributors, publishers and authors. The role and results of the players of the industry will depend heavily on future content consumption preferences (consumer-centric shift) and patterns and the evolution of the competitive landscape; in particular, moving towards a consumer-centric approach appears as an essential adaptation in the future social media.

On the other hand, the new and innovative business models are probably the best mechanisms to ensure trust to various sources in social media (of course the trusted sources only) and diversity of content to prevent domination of particular world regions, societies, opinion makers, etc.

New models related to search of information
Most web search engines are commercial ventures supported by advertising revenue and thus some of them allow advertisers to have their listing rank higher in search result for a fee. These practices are more and more rejected by end users because they will get the results that are the most profitable for the search engine and not the “best result”.

The future social media should disturb this model because users will question social network parties instead of using search engine. In this new way of searching, when one is searching information, he just has to send its query to a specific social media network and due to the number of users connected on the social media network; it is obvious that one of them have the “best” answer. Such a usage should also very interesting for internet businesses, they just have to filter on the social network queries that are fitting to their business and when it matches send back an answer.

This new practice should take a bigger and bigger role in the future and it should be a chance for European industry to come back on the playground in this field.

Business models for publishing in social media
Economic model of high-quality journalism is in danger, which is the main problem of today’s professional journalism, and it lets enough rooms for alternative journalism in the media arena, which is frequently (not always) used for spreading the fake news. Thus, there is a need to invest more in the journalistic resources and provide additional funding for the area.
The social media business models are based on attention – more people using a platform the more advertisement can be done, so that the social media platforms are mainly interested to get the users’ attention (number of visits, clicks), whereas the available content is secondary, which is one of the enablers of the fake news. Thus, the current business models applied by social media actors are acting in favor of the fake news and should be reconsidered – maybe also through appropriate regulation and taxing measures.

Furthermore, if we define a customer as somebody paying for a service, the real customer of the platforms is the advertising industry, whereas the end users are not paying for information on the social media and, accordingly are not the platforms’ customers in a real sense and can be even seen as product of the platforms, which have established communication links to the end users, have the users data, and know a lot about the users’ behavior.

Thus, the power of attention in the social media, limited number of powerful global players in the area, power of financial flows coming from advertising industry into the social media and its commercialization, unintentionally created an environment for efficient creation and distribution of the fake news. Furthermore, follow-up of financial / advertising flows around the recognized fake news producers, with aim to cat them and with it prevent wide distribution of the fake news is needed as well. This activity is supported by possibility for the end users to report false information and the fake news.

Therefore, there is a need for alternative business models for the social media, which might be imposed by corresponding regulation measures. The new models and related regulation have to ensure creation and distribution of professional made journalistic content (particularly considering quality of information, its presentation, and true facts behind), which is of course significantly expensive, compared with simple and amateur work which is however enough to establish and distribute disinformation and the fake news.

The challenge here is to ensure competitiveness of the proper social media platforms, as news providers, versus so-called fake news/website factories which exist even within European Union and could be counted by consequently applying current laws.

**Collaborative live production workflow**

These high-level requirements mandate a close collaboration between the owners and stakeholders of the various involved realms, i.e. advertisement agencies and networks, the providers of the social media technology, the technology providers for the clip rendering/creation, the owners of the distribution channels and, finally, the broadcast organizations themselves to integrate and enable the workflow in their live productions.

In order to materialize this concept, various technologies, concepts and processes will have to be developed:

- Instead of a single clip that is designed, created and approved months before its first display, advertisements must become dynamic templates of which a large number of different versions will eventually be realized.
• The end-to-end workflow, including its underlying technology, must be developed, from content reception, to moderation/selection, to rendering, to approval of the individual clips and finally the distribution/transmission of all the material to broadcast and/or portals.
• In the context of Social Media, time and volume are everything. This implies that the whole workflow must have a short lead time and be scalable to large numbers.

Education and literacy

Education and promotion of media and news literacy among the social media users are probably the best way to reduce negative impacts of the social media, such as the fake news. Thus, the social media users should be educated to consume the offered information (in internet and particularly in Social Media platforms) in right way, to look for complete information before forming opinions, and to look for more news sources where needed and possible.

Even results of a literacy education experiment with school kids show a strong interest of young people to be educated in this area and their willingness and ability to learn. It can be concluded that there is a need and potential in organizing education programs on media (news) literacy, targeting different groups; of course the end users, the journalists, broad IT personnel involved on various aspects of the social media, as well as many other groups of people.

On media (news) literacy, the corresponding education efforts should be shared among various disciplines which are taught at schools and other education centers instead of focusing on one single “media subject”, to be offered to all EU citizens. On the other hand, the corresponding education of journalists to cope with the problem of the fake news, e.g. training journalists to discard inaccurate news, should be part of overall education process towards future social media.
5) Conclusions
Conclusions will be drafted during the last phase of consolidation of the document and will summarize the main community findings provided in section 2 – 4 after discussions and presentations at the NEM Summit 2017, which will be held in Madrid on 29/30 November 2017, and collocated 24th NEM General Assembly. With it, the conclusions will become the core part of the community White Paper on future of the social media to be issued in December 2017, which will include all other elaborated details in its attachment.

6) Contributors and acknowledgements
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