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ABBREVIATIONS

ABBREVIATION	DESCRIPTION
H2020	Horizon 2020
EC	European Commission
WP	Work Package
EU	European Union
RIA	Research and Innovation Action
AFC	Automated Fact Checking

EXECUTIVE SUMMARY

This document is structured two main sections: a market analysis and a preliminary business requirements analysis. Albeit exposed sequentially (with the preliminary business requirements analysis first), both sections are logically interrelated.

After a brief introduction about the growing severity of the fake news and misinformation phenomenon, the second chapter defines more precisely the scope of this document.

The Preliminary Business Requirements section begins by introducing the Business Model Canvas conceptual model, continues with the value proposition for FANDANGO results (i.e. providing technological decision-support to experts who professionally assess news and claims to identify and counter misinformation, refraining from reaching automatic and final conclusions about fact-checks) and finally defines the main customer segments to serve. In addition to the logical segments of established media outlets and news agencies, we evaluate fact-checking organisations as the next logical segment and identify similar needs also for corporate communication departments of large firms operating in sensitive sectors. A thought about advertisers and advertising agencies and educational institutions as types of organisations that are showing a growing involvement against the misinformation phenomenon is also given.

The document then explores other business requirements that may be modelled in the BMC blocks. An extensive list of possible partners is given, followed by key activities that have to be executed in order to actually deliver the chosen value proposition to the selected markets, possible customer relationships, as well as the channels used to reach the customers.

A first market analysis is presented next. We begin by identifying actors that in diverse forms are starting to operate to satisfy the market needs that FANDANGO results will contribute to satisfy as well (competitors in a very late sense). We then carry out a SWOT and a PEST (Political, Economic, Social, Technological) analysis to evaluate these four main variables characterizing the environmental context influencing the future of business based on Fandango results.

It should be noted that this is just the first business and impact document, and, in this sense, very preliminary. During the project two other important document will be delivered, namely D8.2 "*Application areas business requirements and preliminary exploitation plan*" and D8.3 "*Final Exploitation plan and technology uptake*". For this reason, this document shouldn't be considered as a complete document, but just as a baseline for future analysis and complete deliverable, containing all business plan information, such as full market analysis, cash-flow analysis, organisation structure and resources, etc.

1. INTRODUCTION

Working out which news and claims to trust and which not to trust has always been important. The main difference in today's world is that technology, and the Internet in particular, gives us access to many more news and claims, often more than we can process.

Since truth is no longer guarded by media outlets acting as gatekeepers, but it is networked by peers, for every fact there is one or more rebuttals. All those claims and counterclaims may look identical, confusing many people. In this maze of contradictory data, hoaxes spread quickly, in particular on social media, and spark angry backlashes from people who take what they read at face value.

Misinformation has hence become a hot issue in Europe and worldwide: a survey conducted by the Pew Research Centre [1] towards the end of last year found that 64% of U.S. adults said made-up news were causing confusion about the basic facts of current issues and events. In Europe, according to a study [2] by the Reuters Institute at Oxford University, the level of Facebook interaction (defined as the total number of comments, shares, and reactions) generated by a small number of fake news outlets matched or exceeded the one produced by the most popular news brands.

Having a large number of misinformed people is a significant problem for the democracy, but misinformation is a challenge for the media industry, because media outlets and news agencies have to deal with a noisy and confusing environment which complicates fact gathering, floods their fact-checking resources and reduces the perceived value of their verified articles. Even worse, media outlets are often actively targeted by misinformation agents [3].

Trust in media is a critically important factor against misinformation: in a society where citizens trust mainstream journalism, these outlets can act as a bulwark against viral falsehoods. On the other hand, as trust in the media declines, citizens increasingly turn to a wider collection of news sources, not all of which perform an extensive vetting of their reporting.

Increasing the exploitation opportunities of FANDANGO results is hence important not only for the partner consortium but also as an element of a much broader long-term strategy aimed to fight fake news and misinformation. To this end, this document contains a preliminary analysis of the market and the business requirements for FANDANGO results.

2. SCOPE OF THE DOCUMENT

This document D.8.1 *Market analysis and preliminary business requirements* is meant to provide a preliminary analysis for the future financial viability of business operations based on FANDANGO results. This document is composed of two main sections:

Preliminary business requirements are analysed first. For this we decided to adopt the BMC (Business Model Canvas), conceptual model. This choice will not only allow us to evaluate business requirements by using a sound and complete conceptual model, but it will also result in a first step - to be improved and completed in the following 8.2 and 8.3 deliverables - in the design of a complete and hopefully effective business plan for FANDANGO results.

In the following section, the market analysis, we provide a first look at the early competitors, a SWOT analysis and a PEST analysis.

3. PRELIMINARY BUSINESS REQUIREMENTS

Preliminary business will be analysed adopting the BMC (Business Model Canvas), conceptual model. The BMC was developed by Österwalder and Pigneur in 2010, as a conceptual tool to define and refine a Business Model by evaluating and defining choices about the main interrelated aspects of a business operation.

A BMC is visually modelled as a rectangle decomposed in nine logical blocks: 1) customer segments, 2) value proposition, 3) channels, 4) customer relationships, 5) revenue streams, 6) key resources, 7) key activities, 8) key partnerships, 9) cost structure, as depicted in the image below.
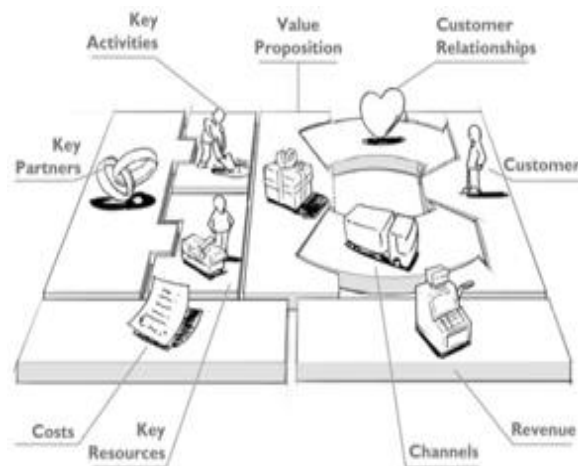
Figure 1. Business Model Canvas by Österwalder and Pigneur (2010)

To fill in each BMC block the strategist or business analyst is supposed to evaluate a set of issues typical for the specific topic. The resulting overall model can then be checked for internal consistency.

In this preliminary analysis we performed the following analysis sequence:

- Define the Value Proposition
- Identify the Target Customer Segments to target first and refine the Value Proposition to suit their specific needs
- Consider preliminarily possible future Key Partners
- Derive the Key Activities from the refined value proposition
- Outline a range of possible choices for Customer Relationship Management
- Consider the related options available for Channels
- Introduce Key Resources

As we went through the previous logical sequence, from one canvas block to the following one, the level of detail and certainty about the outlined possibilities and choices decreased.

This is quite natural since we still are in a project stage where not all complexities and technical hurdles have been dealt with. As a consequence, some choices e.g. the ones about customer segments, value proposition and key activities that are preliminarily outlined here might be completed or expanded, while the ones regarding customer relations, channels, key partnership and key resources may be substantially refined or revised in future deliverables, while finance related BMC blocks (the ones Revenue streams and Costs) have been postponed to future deliverables.

3.1. VALUE PROPOSITION

In general, the value proposition is the offer that a business organization proposes to its customers.

The value perceived by the customers should always exceed the cost of the specific product/service being provided and may accrue - in the eye of the customer - from different value factors such as product/service performance, level of customization, effectiveness, reliability, usability, cost and risk reductions etc...

In our specific case, research activities at their current stage provided us a preliminary yet quite clear idea about the future FANDANGO Value Proposition. In other words, partners started this analysis being aware of the core services they might able to offer, based on the expected FANDANGO results.

In fact, the expected technical results will allow FANDANGO partners to offer a software platform (delivered as SaaS or on premises) meant to **support human experts that professionally work to identify and debunk misleading news and claims**. FANDANGO results will do this by providing:

- Detection and scoring of disinformation clues.
- Support for the expert analysis of reliable data related to the news/claim under scrutiny, through interactive exploration of official reliable open data sources and databases and verified claims.

In other words, all FANDANGO results will be aimed only at professionals, who evaluate news and claims to identify and disprove misinformation and disinformation in different market segments that we will identify in the following section. Casual users will not be a market segments that we will try to serve.

For professionals, the expert evaluation and final judgement will never be substituted by an automatic decision. The value lies in systems able to effectively support the human evaluation process.

More specifically, FANDANGO results will do this by identifying clues of potential and misinformation and by facilitating the access to relevant and reliable open data.

To offer this value proposition we will provide an IT platform (likely offered as on-line SaaS service, even though on premises installations cannot be ruled out at the moment) able to effectively support the human professionals by providing them the two groups of features mentioned above:

1. Detection and scoring of clues of potentially misleading content,
2. Support in the analysis of reliable data related to the claim under scrutiny, through interactive exploration of official reliable open data sources and databases of verified claims.

This last group of features will be heavily influenced by the specific domain of knowledge of interest to which the FANDANGO results will need to be somewhat tailored; this aspect is currently undergoing research exploration.

The first group of features, on the other hand is somewhat more consolidated, and is domain agnostic to a larger extent. In fact, this group of features will offer a *fakeness* scoring, based on Big Data analysis techniques (Machine learning models in particular). More specifically, a set of different separate scores will be computed by analysing different component of a specific news, i.e. text, authors, source, media.

In short, the process necessary to check the trustworthiness level of an online article will require that a professional user specifies the content to be analysed by providing its URL. The FANDANGO platform will then provide - in a reasonable response time - a set of scores, one for each relevant *fakeness* clue:

- "fake" writing style (on the basis of Natural Language Processing techniques),
- manipulation in the associated media (video and images analysed by adequately trained machine learning models),

- out of context video and images (video or images untampered originals but used out of their original context),
- authors and source credibility,
- an overall metrics combining all the criteria/scores above.

The value for all customers segments will accrue from the following value drivers:

- **Cost savings**: the process to check news trustworthiness today is expensive. It relies on human experts (often well-paid professionals) who use their experience, judgement and network of connections to analyse news, being supported only by general purpose IT services (e.g. a Google search). The resulting process uses too much time and valuable resources: any effective technological support for it would translate in significant cost savings for our customers. Given the scarcity of experienced professional and the aggressive growth of the mis/disinformation phenomenon, we expect the cost savings to be very significant and we will try to preliminarily evaluate them in our field trials.
- **Time savings**: no matter how proficient and dedicated human experts might be, they risk being overwhelmed by the increasing amount of unreliable news. Fake news also tends to spread quickly especially on social networks that A) are vulnerable to automatic bots pretending to be humans and actively spreading fake news B) encourage people to share what they read with little or no check. Therefore, reducing the time needed to identify a fake news is a clear value for all market segments. News agencies in particular - given the nature of their core business - feel the urge to evaluate breaking news quickly.
- **Risk reduction**: given adequate time and resources any potentially misleading piece of news can be properly checked. However, under time pressure the risk of misjudging a piece of news (a fake one as real, or the other way around) is significant. In case of an error, the credibility of our client may suffer severely, with economic consequences that may be substantial. This aspect is important for all our selected market segments, even if the underlying mechanisms causing economic damage may be different across them.
- **Image improvement**: a persistent and positive track record in the detection and debunking of fake news can be crucial in building a brand image for some of our clients - fact checkers and high-quality media outlets in particular.

The final refined version of the FANDANGO Value Proposition will need to consider both quantitative (price and efficiency related) and qualitative (customer experience and process related) aspects.

3.2. CUSTOMER SEGMENTS

Starting from the general value proposition, we began our analysis market and preliminary business requirements by defining the Customer Segments that we will try to serve first. This is a crucial step to define real and useful business requirements. In fact, different customer segments may have specific needs that may in turn result in different business requirements.

FANDANGO results have the potential to create value for different customer segments, detailed next.

3.2.1. MEDIA AND NEWS AGENCIES

At project inception, the proposers focused on news agencies and newsrooms of established media companies. This customer segment was identified early on, and hence it is represented in the consortium. In the following paragraphs we detail some additional aspect of the analysis that confirms them as a primary target.

Established media and news agencies outlets are being actively targeted by malicious actors in their attempt to spread disinformation. In fact, even if established media and news agencies have somewhat lost -in the perception of the general public- their role as reliable guardians of the truth, their news reporting still reaches a substantial amount of readers, on paper, on air or online. To leverage this reach, disinformation agents consciously attempt to deliver misinformation to them, with the goal of getting a hoax endorsed, shared or retweeted; even denial can be useful in their eyes, in what is sometimes called "strategic amplification".

Claire Wardle, News Research Director of First Draft, "an organisation dedicated to supporting journalists, academics and technologists working to address challenges relating to trust and truth in the digital age", talks about the "trumpet of amplification" [3]:

> *Disinformation often starts on the anonymous web (platforms like 4chan and Discord), moves into closed or semi-closed groups (Twitter DM groups, Facebook or WhatsApp groups), onto conspiracy communities on Reddit Forums or YouTube channels, and then onto open social networks like Twitter, Facebook and Instagram. Unfortunately, at this point, it often moves into the professional media. This might be when a false piece of information or content is embedded in an article or quoted in a story without adequate verification. But it might also be when a newsroom decides to publish a debunk or expose the primary source of a conspiracy. Either way, the agents of disinformation have won. Amplification, in any form, was their goal in the first place.*
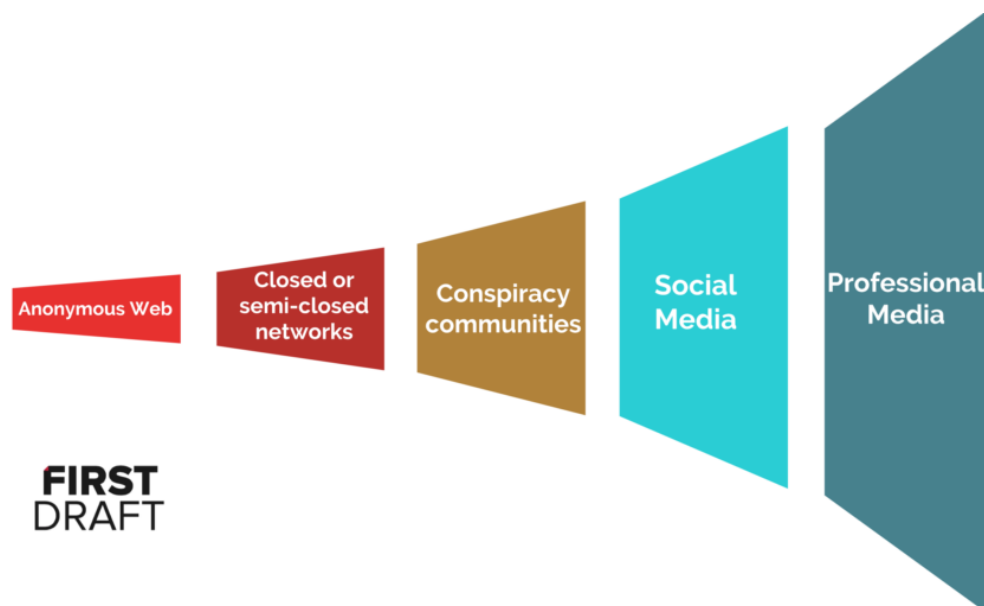
Figure 2. Trumpet of Amplification, by Claire Wardle (First Draft)

The need to be perceived as a reliable source is reinforced by a significant trend toward subscription-based business models undertaken by leading media companies. Advertising revenues are declining in the traditional print and broadcast channels due to competition from online advertising while, at the same time, a large share of online advertising is being retained by Google and Facebook. Thus, subscriptions are beginning to be seen as the main strategy for survival. Although the number of readers who pay for news is still a minority, subscriber bases are actually growing.

A report by Sehl et al. [4], "Pay Models in European News", based on a sample of 171 among the most important news organisations in six European countries (Finland, France, Germany, Italy, Poland, and the United Kingdom), summarises the situation as such:

66% percent of the newspapers operate a pay model. Freemium models, where some content is freely available, but premium material only available for paying users, are the most widely used, followed by metered paywalls that allow free access to a limited number of articles each month before requiring payment.

71% of weekly newspapers and news magazines operate a pay model. Again, freemium models are the most widely used, followed by metered paywalls.

We thus find that most newspapers and news magazines across Europe are moving away from digital news offered for free and supported primarily by display advertising, and are cultivating a wider range of sources of revenue, including various pay models in addition to native advertising, ecommerce, events etc.

The research suggests that some people across all age groups, including younger users, are willing to pay for quality content and services that they find valuable. It goes without saying that converting free readers into paying customers requires the production of high-quality and reliable content.

Some of the biggest and most well-known outlets are leading the way and showing it's a viable strategy. Newman, in a report [5] for the Reuters Institute for the Study of Journalism, states:

The New York Times is now running at four million subscribers (3.1m digital) with a mantra that every piece of content should be worth paying for.
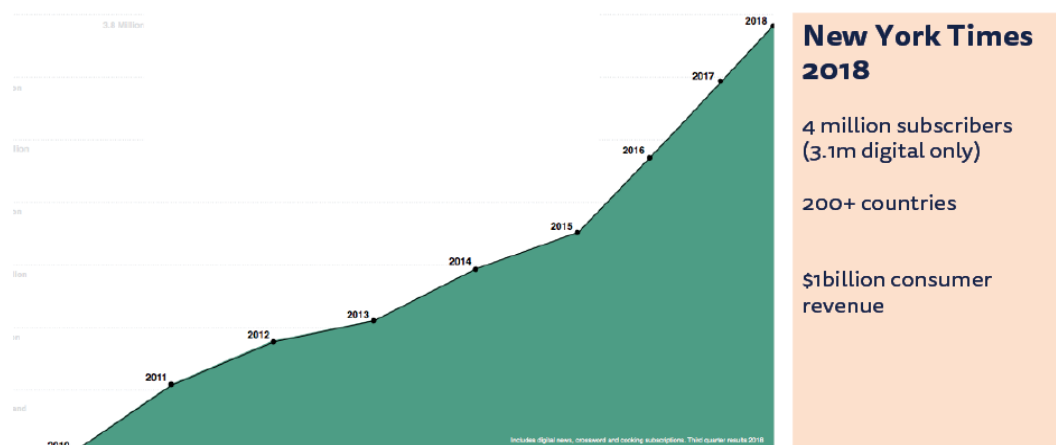
Figure 3. New York Times subscription growth 2010-18. Source: New York Times.

Nordic publishers are also at the forefront of digital subscription trends. Sweden's divisive elections helped Dagens Nyheter to top 150,000 digital subscribers for the first time while in Finland Helsingin Sanomat returned to growth off the back of sharp rises in digital subscription. And in France, Mediapart celebrated its tenth year with profits of €2.4m off a subscription base of 140,000. It seems that investigative journalism can thrive in a digital age and make money too. [...] The Guardian announced one million supporters over the last three years (via donation or membership) and are on the verge of breaking even, after years of heavy losses.

In order to be a reliable source, established media will need not only technology but also cultural and organisational changes. Journalists in particular will have to learn to better deal with the misinformation phenomenon and there might be some room for more collaboration among media outlets.

We can safely assume that technology will have a prominent role, so a question arises: are media outlets ready to adopt technology and do it effectively? According to Newman's report, publishers are "planning to invest more this year in harnessing the potential of Artificial Intelligence (AI) and Machine Learning (ML)", not to replace existing editors and journalists, but to complement their work. 78% of respondents said investment in AI was "needed to help meet future challenges". Their position may be summarised using the words of Lisa Gibbs, Director of News Partnerships at AP:

We always need more journalists. However, we must also invest in technology to help those journalists be as efficient as possible so they can pursue the work with the highest impact. In addition, AI investments will help us serve our audiences and combat misinformation.

In terms of the main goals to be achieved through the introduction of AI, Newman's report summarises its findings as such:

Last year 72% of publishers said they were experimenting with AI, but this year we can expect to see more real-life deployment. This will fall into three main categories:

1) Using ML to personalise content and create better recommendations for audiences;

2) Automating more stories and videos (so called robo-journalism);

3) Providing tools to help augment and support journalists deal with information overload.

FANDANGO's results will fit nicely in the latter category, helping media professionals cope with the increasing volume and complexity of misinformation online.

3.2.2. FACT-CHECKING ORGANISATIONS

In the last few years we witnessed a growing interest in supporting the activity of specialized groups of professionals (fact checkers) that undertake the challenging task of checking facts/claims on the basis of demonstrable evidence and supporting data.

From a technical perspective supporting fact checkers is extremely challenging, probably more challenging than providing an alerting system against fake news and disinformation. In fact, fact checkers need to evaluate in all their grey shaded detail claims that often cannot be simply classified as fake, disinformation or misinformation but might simply be too biased view of reality. It is therefore particularly difficult for algorithmic IT based approaches to support fact checking.

However, it is logical to foresee that the evolutions of FANDANGO results may be targeted toward fact-checkers. In the following table we list a set of entities, coming from a commercial background and specialised in news verification in Europe. Because of their stance and importance, we also added the major United States players.

NAME	COUNTRY	DESCRIPTION	WEBSITE
20 Minutes Fake Off	France	20 Minutes section devoted to hoaxes and fake news debunking.	https://www.20minutes.fr/societe/desintox/

CrossCheck	France	Collaborative journalism project that brings together newsrooms across France and beyond to accurately report false, misleading and confusing online claims.	https://crosscheck.firstdraftnews.org/france-en/
CORRECT!V	Germany	Non-profit investigative newsroom that shows an elaborate approach to carry out independent, high quality journalism.	https://correctiv.org/en/correctiv/
Newtral	Spain	Media start-up that produces fact checking audio-visual content to be distributed on TV and social media.	https://www.lasexta.com/programas/el-objetivo/
Faktisk.no	Norway	Fact checking outlet launched with the backing of four of Norway's biggest news organizations — VG, Dagbladet, NRK and TV 2.	https://www.faktisk.no
Faktograf.hr	Hungary	A joint project of Croatian Journalists' Association (HND) and civil society organization GONG, created with the main purpose of fact checking.	https://faktograf.hr
The Ferret	Scotland	Ferret Fact Service (FFS) is the fact-checking arm of investigative not-for-profit co-operative The Ferret.	https://theferret.scot
Le Monde - Les Décodeurs	France	The fact checking and data visualization department of Le Monde, created in 2014.	https://www.lemonde.fr/les-decodeurs/
Désintox - Arte - Libération	France	Désintox is the distinct fact checking section of Libération, a legally registered French media outlet.	http://www.liberation.fr/desintox,99721
Maldita	Spain	Maldita and its different brands publish fact checks about a wide range of topics for social media.	https://maldita.es
Pagella Politica	Italy	Fact checks the political debate in Italy.	https://pagellapolitica.it
Teyit.org	Turkey	News verification site.	https://teyit.org/eng/
TheJournal.ie FactCheck	Ireland	Fact checking section from TheJournal.ie	http://www.thejournal.ie/factcheck/news/
Viralgranskaren	Sweden	Fact checking entity part of the newspaper Metro.	https://www.metro.se/viralgranskaren

BBC Reality Check	UK	Fact checking section from BBC News.	https://www.bbc.com/news/topics/cp7r8vgl2rgt/reality-check
AP Fact Check	USA	Fact-checking and accountability journalism from @AP journalists around the globe	https://apnews.com/tag/APFactCheck
Polygraph.info	USA	Polygraph.info is a fact-checking website produced by Voice of America (VOA) and Radio Free Europe/Radio Liberty. A resource for verifying the increasing volume of disinformation and misinformation being distributed and shared globally. A similar website in Russian can be found at factograph.info.	https://www.polygraph.info
The Washington Post Fact Checker	USA	Fact checking section of the Washington Post.	https://www.washingtonpost.com/news/fact-checker
Snopes.com	USA	Web site that researches hoaxes and urban legends. The oldest and largest fact-checking site on the Internet.	https://www.snopes.com
PolitiFact	USA	Home of the Truth-O-Meter and independent fact checking by the Poynter Institute.	https://www.politifact.com

Table 1. Fact-checking organisations

Another set of players operate in a similar logic but operate as Civil Society Organisations:

NAME	COUNTRY	DESCRIPTION	WEBSITE
Full Fact	UK	UK's independent fact checking charity.	https://fullfact.org
Demagog.cz	Czech Republic	Registered NGO that monitors and verifies the political discourse in Czech Republic.	https://demagog.cz
Doğruluk Payı	Turkey	Doğruluk Payı is a project of Dialogue for Common Future Association (Ortak Gelecek için Diyalog Derneği).	http://www.dogrulukpayi.com
FactCheck Georgia	Georgia	A project of Georgia's Reforms Associates (GRASS), a non-partisan, non-governmental policy watchdog and think tank, which conducts research and public policy analysis, and provides advice and project management in the fields of	http://factcheck.ge/en/

		public policy and public administration reform.	
Fact Check NI	Ireland	Northern Ireland's first dedicated fact-checking service. It publishes nonpartisan articles on the accuracy of statements by public figures, major institutions, and other attributable claims of interest to society. Fact Check NI is a project of the charity Foundation Northern Ireland.	https://www.factcheckni.org
Africa Check	South Africa	Africa Check is a non-profit organisation set up in 2012 to promote accuracy in public debate and the media in Africa. The goal of their work is to raise the quality of information available to society across the continent.	
Faktabaari	Finland	Faktabaari is a Finnish fact-checking service bringing accuracy to the public election debates. Is run by a transparency NGO called Avoin yhteiskunta ry (Open Society association, Finland).	https://www.faktabaari.fi/in-english/
International Fact-Checking Network	USA	The International Fact-Checking Network is a unit of the Poynter Institute dedicated to bringing together fact-checkers worldwide.	https://ifcncodeofprinciples.poynter.org
Climate Feedback	USA	Climate Feedback is a project hosted by the Center for Climate Communication at the University of California. Climate Feedback is dedicated to provide insight on the credibility of information that shapes public opinion on climate change.	https://climatefeedback.org
Ellinika Hoaxes	GR	A project for debunking hoaxes that emerge in the Greek Internet space	http://ellinikahoaxes.gr

Table 2. Civil society organisations

In addition, several public and private initiatives focused on fighting disinformation and propaganda have been more or less recently established and may be similarly considered potential clients:

NAME	DESCRIPTION	WEBSITE
EU vs Disinformation campaign	Campaign run by the European External Action Service East Stratcom Task Force to better forecast, address and respond to pro-Kremlin disinformation. The team was set up after the EU Heads of State and Government stressed	https://euvsdisinfo.eu

	the need to challenge Russia's ongoing disinformation campaigns.	
Media.eu	Programme of the EU Commission in the European Single Market framework around Media Freedom and Media Pluralism. #TackleFakeNews.	http://europa.eu/rapid/press-release_IP-18-1746_en.htm

Table 3. Public EU initiatives

While initiatives at the national level are:

NAME	COUNTRY	DESCRIPTION	WEBSITE
First Draft	USA	The leading project fighting mis- & disinformation. Run by the Shorenstein Centre.	https://firstdraftnews.org
Stop Fake	Ukraine	Monitors / fact-checks / debunks Russian propaganda. Created by studs/alums/faculty of Mohyla School of Journalism.	https://www.stopfake.org
KremlinWatch.eu	Czech Republic	A strategic program of the European Values Think-Tank aimed at revealing and combating Kremlin information warfare against Western democracies.	http://www.kremlinwatch.eu
DisinfoPortal	USA/EU	A portal tracking efforts to counter disinformation in the US and Europe. Managed by the Eurasia Center at Atlantic Council (Washington, DC).	https://disinfoportal.org
Datalyrics	Central Europe	Datalyrics is an independent, private non-profit based in Central Europe, providing in-depth insight into the topics that divide societies based on academic research and sound journalism. Knowledge boutique about divisive topics	https://datalyrics.org/en/
EU Disinfo Lab	Belgium	The EU DisinfoLab is a non-governmental organisation based in Brussels. Its mission is to fight disinformation with innovative methodology and scientific support to the counter-disinformation community.	http://disinfo.eu
Myth Detector	Georgia	Myth Detector debunks myths and reveals disinformation about Georgia's Euro-Atlantic Integration in Georgian Media.	http://www.mythdetector.ge/en

Atlantic Council's Digital Forensic Research Lab	USA/EU	The Atlantic Council's Digital Forensic Research Lab (DFRLab) has operationalized the study of disinformation by exposing falsehoods and fake news, documenting human rights abuses, and building digital resilience worldwide.	https://www.digitalsherlocks.org
Integrity Initiative	UK	Countering disinformation and malign influence. Promoting media literacy and media freedom. A European collective of journalists, researchers & practitioners	https://www.integrityinitiative.net
Global Disinformation Index	UK	Bringing Metrics to the World's polluted information ecosystem.	https://www.disinformationindex.com

Table 4. National initiatives

3.2.3. LARGE FIRMS IN SENSITIVE SECTORS

In addition to the segments identified in previous sections, we recognised the fact that private firms, especially large firms in sensitive sectors (e.g. food, pharma, travel and tourism, environmental and security concerns, etc.) are also being increasingly exposed to the risk of being damaged by totally false or exaggerated claims. In other words, the phenomena of misinformation and/or disinformation are already damaging, or may potentially damage, not only subjects that provide news or information to people, (both in traditional paper/broadcast/internet forms or in less traditional forms/formats as in the case of specialized blog sites) but also subjects whose core business has nothing to do with media, news or opinions.

For such firms, it is conceivable to fine tune the FANDANGO results to aid corporate communication departments in identifying and countering misinformation.

In this specific case the debunking exercise might be somewhat easier to support by using specialised IT tools – since it is reasonable to assume that corporate communication department may get plenty of access to real and reliable corporate data to disprove false claims, while at the same time fact checking might not be the core professional competence or interest of such professionals.

In any case the pressure to identify and debunk misinformation in the shortest possible time is felt in this segment too, since malignant claims can cause damages in the consumer perception that might be difficult to restore when the false claim is debunked too late.

3.2.4. ADVERTISERS AND ADVERTISING AGENCIES

As highlighted in a "Fighting Fake News" workshop hosted by the Information Society Project at Yale Law School [6]:

> *Inspired by digitally organised consumer boycotts, advertisers have recently shown an increased interest in ad placement, and they are insisting that they or their advertising agencies exercise more control over what content their advertising supports. Some companies have created their own whitelists of sites they deem to have reliable content.*

In other words, there is already a push from the advertising sector toward improved fact-checking. If advertisers, which still account for a substantial share of revenues for established media companies, improve their investments in media companies that produce high quality news, while dropping those that do not adequately investigate before publishing, they might contribute indirectly to the market potential for FANDANGO results. In the remainder of the project the consortium will also evaluate more direct strategies of involvement for advertisers and advertising agencies.

3.2.5. EDUCATIONAL INSTITUTIONS

Media Literacy initiatives can obviously be beneficial, in the long run, in the society fight against misinformation. A full set of European Media Literacy Initiatives can be found in the EuroMediaLiteracy database [7] and the Council of Europe report, "Mapping of media literacy practices and actions in EU-28" [8].

On the other hand, educational institutions might be interested in using IT tools in their educational programs. For the moment we turned our attention to the following list of Media Literacy initiatives:

NAME	COUNTRY	DESCRIPTION	WEBSITE
French Centre for Media and Information Education (CLE MI)	France	Is part of the French Ministry of Education, has been responsible for promoting the use and awareness of media in the education system since 1983.	
Mediawijzer.net	The Netherlands	It provides the Dutch population with guidance on how to become media literate in order to progressively participate fully in society. It brings together in its network more than 1,000 organisations: schools, public libraries, public broadcasting organization, Stichting Kennisnet, Beeld en Geluid, education experts and other academics.	https://www.mediawijzer.net/about-mediawijzer-net/
Swedish Media Council	Sweden	The Swedish Media Council is a government agency whose primary task is to promote the empowering of minors as conscious media users and to protect them from harmful media influences.	https://statensmedierad.se/ovrigt/inenglish.579.html
Flemish Knowledge Centre for Media Literacy	Belgium	The Flemish Knowledge Centre for Media Literacy, which is part of the Flemish Ministry of Media, aims to promote critical thinking in the use of media.	https://cjsm.be/media/themas/mediawijsheid/vlaams-kenniscentrum-voor-mediawijsheid

Table 5. Educational institutions

3.3. KEY ACTIVITIES

The key activity block of the BMC describes the key activities that have to be performed to actually deliver the chosen value proposition to the selected market segments. In general, key activities may be more than

a few, ranging from production to logistic, from plant optimization, to building brand recognition, from cost savings to after sales service, etc.
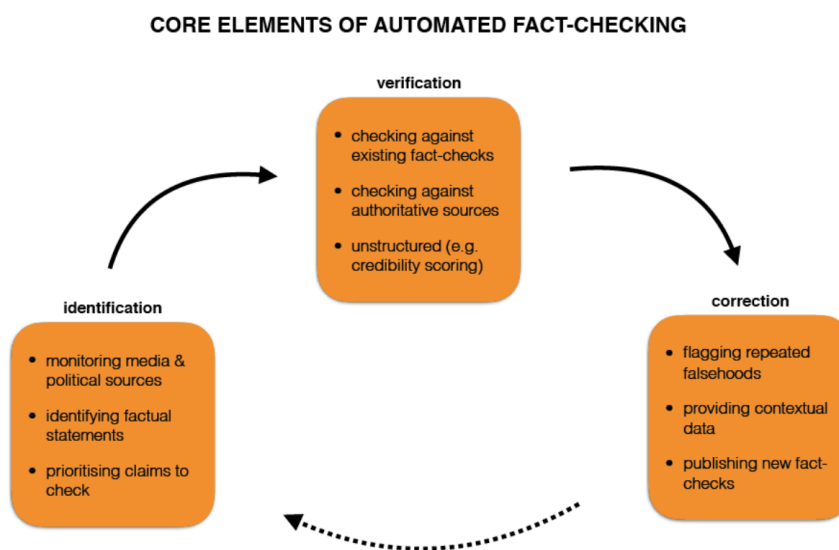
In our specific case, several activities are extremely important.

- Given the complexity of the subject being dealt with, we conceive FANDANGO as an open platform, able to integrate new services provided not only by the consortium partners but also by third parties. Therefore, a continuous partnership building activity, to establish an effective model of cooperation with third parties service providers, and find possible win-win relationship might be extremely important. This aspect will be specifically expanded in the next section.
- To increase the effectiveness in the real world, the FANDANGO platform could benefit from an effective integration in specific fact-checking workflows. System integration activities to be carried out in specific integration projects may be crucial as could be an effective capability of organisational design.
- However, as important as these activities might be, a crucial activity will be about customizing the FANDANGO platform for any given sector. To a relevant extent, domain-specific (i.e. immigration vs economic growth vs environmental concern ...) content has to be processed (annotated into an appropriate ground truth). In fact, by doing this effort all machine learning related algorithms will perform to their best possible levels. Domain-specific contextualisation would be even more important to support factual open-data based investigation.
- Accurate software engineering for all FANDANGO results and further development activities, following the end of the research project will be even more crucial to enhance performance and keep the system in line with the expected progresses that misinformation and disinformation techniques will experience over time. This is the reason why ongoing technical monitoring of the growing sophistication in misinformation/disinformation techniques will be necessary. This will be investigated in the remainder of this section.

In recent years, there has been a significant attention in literature to tools able to counter hoaxes and misinformation, by leveraging computers, machine learning and artificial intelligence. Unfortunately, as formulated by Brandolini, "The amount of energy needed to refute bullshit is an order of magnitude bigger than to produce it." [9]

Currently, available AFC solutions, as described by Graves in 2018 [10], deal with:

...one or more of (the) three overlapping objectives: to spot false or questionable claims circulating online and in other media; to authoritatively verify claims or stories that are in doubt, or to facilitate their verification by journalists and members of the public; and to deliver corrections instantaneously, across different media, to audiences exposed to misinformation. End-to-end systems aim to address all three elements – identification, verification, and correction.

CORE ELEMENTS OF AUTOMATED FACT-CHECKING

verification
- checking against existing fact-checks
- checking against authoritative sources
- unstructured (e.g. credibility scoring)

identification
- monitoring media & political sources
- identifying factual statements
- prioritising claims to check

correction
- flagging repeated falsehoods
- providing contextual data
- publishing new fact-checks

Approaches to AFC

Figure 4. Approaches to automated fact-checking. Source: Graves [10]

FANDANGO results try to identify and verify misinformation, leaving the final decision to the end user.

Some important technical aspects to be improved upon until the end of the project, but also after FANDANGO results reach the market, are:

- To date, all AFC applications platforms can identify only **simple declarative statements**, but cannot analyse implied claims or distinguish claims embedded in complex sentences, (people, however, can). This is an important limit because in discussions programs, debates or speeches, people often imply references to previous sentences to complete the meaning of a phrase.
- The "**ground truth**", established through algorithms trained based on objective protocols, is **not unchangeable, universal or permanent**: it will be necessary to update it periodically following a clear methodology.
- In fact-checking (both, manual and automatic), many claims that cannot be categorically classified as true or false, but **nuances** should be considered before issuing a verdict.
- Effectively verifying claims against data from trusted inputs (statistical institutes, research centres, etc) would exponentially increase the number of claims that could be verified; for this the AFC system should be able to recognise what data that needs to be checked to verify the claim, access it in a suitable format, from a trusted source. AI is trying to find a solution to this problem by trying to parse the statements to query the right databases.

Chengkai Li, a professor at UT-Arlington and one of the creators of ClaimBuster, agrees that the most important bottleneck is caused by data:

> *"The big challenge is the lack of data sources. Understanding the claim and formulating the query and sending the query to the source, that's one challenge. But another challenge is the lack of authoritative and comprehensive data. It's not just about the technical solutions, it's about the lack of data quality" [10]*

Approaches such as the **authors' or sources' reliability** will be offered in FANDANGO, however, even the most reputable sources make mistakes. As Dr Andreas Vlachos, a lecturer at University of Sheffield remarks:

"The most dangerous misinformation for each of us comes from the sources we trust. Philosophically, I don't want my model's decisions to be affected by the source, even though the source matters. I'm not saying one should never look at it, but we should also have models that ignore that part. Because everybody says incorrect things." [10]

3.4. KEY PARTNERS

Evaluations about key partners in addition to the original FANDANGO consortium is a conceptually crucial part of any BMC modelling and is particularly relevant to our case. In fact, the fight against disinformation and misinformation is growing to such a level of complexity that an effective future strategy of on innovation, centred around future key partnerships (whatever the specific form the partnership may assume), will likely be a crucial factor in substantially increasing the chances of success.

As we described it in previous sections, we conceive FANDANGO as an open platform, able to integrate new services provided not only by the consortium partners but also by third parties. Future key partners will likely be specialized service providers adding value in specific features (e.g. reverse image search etc.).

However, given the R&D stage the project is currently in it is still too early to get to specific decisions about this. For the moment being, we then limited ourselves to identifying a set of actors we think we could establish a fruitful collaboration with.

NAME	DESCRIPTION	WEBSITE
BDVA	Big Data Value is the Public Private ecosystem around Big Data in Europe. Consortium member Engineering is founding partner of the PPP Big Data Value Association, leading the Business Impact Task Force.	http://www.bdva.eu
NEM	The NEM Initiative (New European Media Initiative) fosters the convergence between consumer electronics, broadcasting and telecoms in order to develop the emerging business sector of networked and electronic media.	https://nem-initiative.org/
InVID - In Video Veritas!	The InVID innovation action develops a knowledge verification platform to detect emerging stories and assess the reliability of newsworthy video files and content spread via social media	https://www.invid-project.eu
Reveal Project	The Reveal Project develops tools and services that aid in Social Media verification. They look at verification from a journalistic and enterprise perspective.	https://revealproject.eu
PHEME	Deals with the identification of so-called "phemes" (as memes enhanced with truthful information), modelling their spread across social networks and online media. The focus is	https://www.pheme.eu

	on speculation, controversy, misinformation disinformation.	
CPN	CPN (Content Personalisation Network) is an ICT19 project dealing with the content/news production and personalisation. VRT and Livetech are partners of the CPN).	

Table 6. Synergic partners in the ICT community

Since partnerships will be crucial for FANDANGO success in the market, we are working to devise a strategy about it: partner and stakeholder engagement is an ever-changing practice. Our consortium is continuously evaluating this aspect and will provide a final study about this and about the possibilities of collaboration after the project end of European in D. 8.3 (M36).

To do this, we will use the communication goals described in D.7.2 as main metrics:

1. Acknowledgment of the project, its objectives and progress, by initiatives with similar or complementary goals.
2. Acknowledgment of the data integration models and tools developed to enable information interoperability by the relevant communities working on ICT, Big Data integration and the scientific and academic community.
3. Show how the FANDANGO set of tools makes the news verification process easier and helps generate trustable information. We will conduct a number of activities focused on groups such as journalists, fact-checkers and anti-disinformation campaigners.
4. Promote the use of our research results to target users and build community around the platform.

3.5. CUSTOMER RELATIONSHIP

To successfully run future operations, it is important to be able to establish and maintain a fruitful relationship with customers.

For FANDANGO it is still too early to define customer relationship management or even to model the different possibilities in detail. However, it is clear that to ensure the survival and success of future operations, FANDANGO partners will have to define the types of relationship they want to establish with their customers (possibly distinct strategies for different market segments).

For the moment it is sufficient to state that given the complex nature of the FANDANGO based services, we will need to consider all options about future customer relationships growing in complexity and associated costs, from simple self-service to supported self-service, to supported communities, to one to one customer assistance, up to full-fledged service co-creation. All of them are viable in principle and all will need to be considered for further evaluation.

It is likely – we think – that a reasonable balance between quality of service and cost will be centred around a dedicated, consultancy style connection with the more important clients. This direct contact model will be facilitated because it not only allows the customer to get a better chance to customize and improve their specific FANDANGO platform implementation (training and problem solving will likely be part of this premium offer). Facilitating this type of customer relationship will also allow the development team to gather data and feedback to further improve the platform, a fact that will be very useful for long term success.

An additional aspect that we will decide about will be the opportunity to encourage the creation of a user community to allow direct interactions among different clients.

3.6. CHANNELS

The selection of channels to reach customers is a crucial element of a successful strategy.

The choice of delivery channels for FANDANGO results will be strictly related to the customer relationship choices outlined in the previous block. However, we can already state that on–line SaaS (Software as a Service) delivery of FANDANGO services will likely be the best option in most cases. Specific clients with a heightened sensibility to security/privacy/hacker risks might require on-premises installation of the whole platform. In this case maintenance costs would grow to a level that needs careful consideration in order to understand whether or not this option is viable.

As far as sales channels are concerned, it is still too early to perform an analysis, but we can state that the participation at valuable events and fairs in the tech and media sector will be an important chance for the project to showcase its pilots and get feedback from potential clients.

Given the technical complexity of FANDANGO results, the consortium research partners also think that submitting FANDANGO research results to elected scientific journals and conferences may prove useful for future marketing. We identified the following list:

TITLE	TYPE
IEEE Trans. On Knowledge and Data Engineering	Journal
IEEE Trans. Image Processing	Journal
IEEE Trans. Multimedia	Journal
IEEE Trans. Pattern Analysis and Machine Intelligence	Journal
IEEE CVPR	Conference
ICMR	Conference
ICML	Conference
ACM Multimedia	Conference

Table 7. The scientific / academic community

3.7. KEY RESOURCES

This BMC block describes the key resources (assets) that will be required to develop a value for the customers. In general, these resources may include human, financial, physical and intellectual resources.

In order to make the FANDANGO results work we will need the following resources:

- IT resources. In general, a powerful IT, big-data oriented IT infrastructure will be needed to achieve an adequate level of performance for the FANDANGO platform. In some specific sensitive cases,

hardware and software related resources may grow to relevant level of complexity and associated costs.

- Human resources. As we already clarified a strong professional expertise will be always necessary to counter disinformation and misinformation especially having considered the ever-growing level of sophistication that these attempts are reaching. The human resources that might be necessary to have represented in the professional team that will be in charge of evolving the platform and supporting its operation might be enriched by non-IT professionals such as journalists, sector experts, data scientists.
- Content resources. In any given domain the progressive building of past claims/news is a relevant resource that will need to be progressively built and kept up to date.

3.8. COST STRUCTURE

This section describes the combination of all possible costs that can make the business model work.

For designing a cost structure, it is important to answer the following question: what are the most important costs in our business model?

Development costs: these costs include acquisition of hardware and software.

Delivery infrastructure: cloud hosting, software licensing.

Human resources: to ensure that the business will work properly it is important to invest in qualified human resources to develop the tools, test them and provide the first pilots for the demonstration - people who will be responsible for selling the project's final product and organize the marketing activities. Another important investment in human resources is customer relationship personnel and post purchase assistance.

3.9. REVENUE STREAM

This BMC block is meant to examine the issues and the choices related to generating revenue streams from the different customer segments. Different revenue streams may be conceived: sales of complex system integration projects, simple license fees, open source schema with paid consulting fees.

In this first phase FANDANGO partners are considering licensing or SaaS pay per use schema of payment.

4. MARKET ANALYSIS

In this section, we propose a first attempt to analyse the market in which FANDANGO results will be operated, by looking at the early competitors, and by performing a SWOT and a PEST analysis.

The final market strategy will be submitted in the D8.3 Final Exploitation plan and technology uptake in M36.

4.1. PRELIMINARY COMPETITOR ANALYSIS

The misinformation challenge is recent and technology to help countering it is far from being mature. However, some actors have already began to operate in the area and can hence be considered competitors for FANDANGO results.

Storyful is possibly the most mature actor in the FANDANGO's target market. Founded in 2010, Storyful defines itself as a social media intelligence agency. It combines proprietary technology and a global newsroom to provide verified social content to publishers, after investigating and verifying the authenticity of social news in real time. Their business model is based on selling services and verified content to newsrooms. Storyful was purchased by Rupert Murdoch's News Corp in 2013, when it had acquired high-profile customers such as the Wall Street Journal, the BBC or the New York Times. Since then, capital investments by News Corp have allowed Storyful to expand globally and grow their staff to 200 employees.

A relevant aspect of Storyful approach is the fact they create their own software tools to track trends on social media and help their employees and customers verify content more quickly. One such tool is Heatmap which allows Storyful "to use keywords and lists that keep track of micro-trends on social platforms. When a word or phrase starts popping up in the Heatmap Feed, Storyful can be one of the first media organizations to view and verify content." [11]

Figure 5. Storyful's Heatmap is a custom-built tool to monitor social media trends.

Storyful's story of growth, high-profile customers and a multi-million dollars sale to News Corp has been an inspiration for the independent fact-checking organisations that have been launched in Europe over the

last few years, often with limited budgets. Alexios Mantzarlis, former director of the Independent Fact-Checking Network, wrote in 2015 "What can fact-checkers learn from Storyful's business model?" [12]:

> *From a survey conducted of 30 fact-checking organizations before the Poynter fact-checking conference in London, we know that half have yearly budgets below $200,000 and nine (nearly a third) are running on $50,000 or less. Moreover, most fund a majority of their operations through grants.*
>
> *No one better than the fact-checkers themselves are aware that this position is not long-term sustainable. Several fact-checkers run effective paid services for newsrooms or universities; at least five have run successful crowdfunding operations this year. Nonetheless, the sustainability of fact-checkers' business models remains a key issue.*

In that article, David Clinch, global news editor at Storyful, offers his view about their business model, and states that "Storyful has proven that verification is journalism – and that there is a business model for journalism". For Clinch, Storyful's success comes from breaking out a very important aspect of journalism and creating a new business model around it, a business model very different from the traditional media one, based on good distribution, advertising revenues and high barriers of entry. Hence, "journalism and publishing are being broken up into smaller parts (aggregation, viral videos, business intelligence), each has or is finding its own business model."

Clinch also attributes their success to a sensible combination of technology and journalism, as they are both needed to address as misinformation: "Technology is important but is not all there is. We are a combination of technology and journalism, which has proven an important part of our success. Tech companies have realized that there is no single algorithm for journalism (which is why we count both Facebook and Google among our clients). At the same time, journalists are understanding that verification isn't just a tool, but also an editorial expertise."

Also in the verification area, we can point to Truly Media, a self-defined "collaborative platform for the analysis and especially the verification of digital content", created by Athens Technology Center (ATC) and Deutsche Welle and co-funded by Horizon 2020 (Reveal project). Truly Media, still in beta, allows teams of journalists to monitor social networks, gather suspicious content and verify it collaboratively, through an easy to use Software as a Service platform.
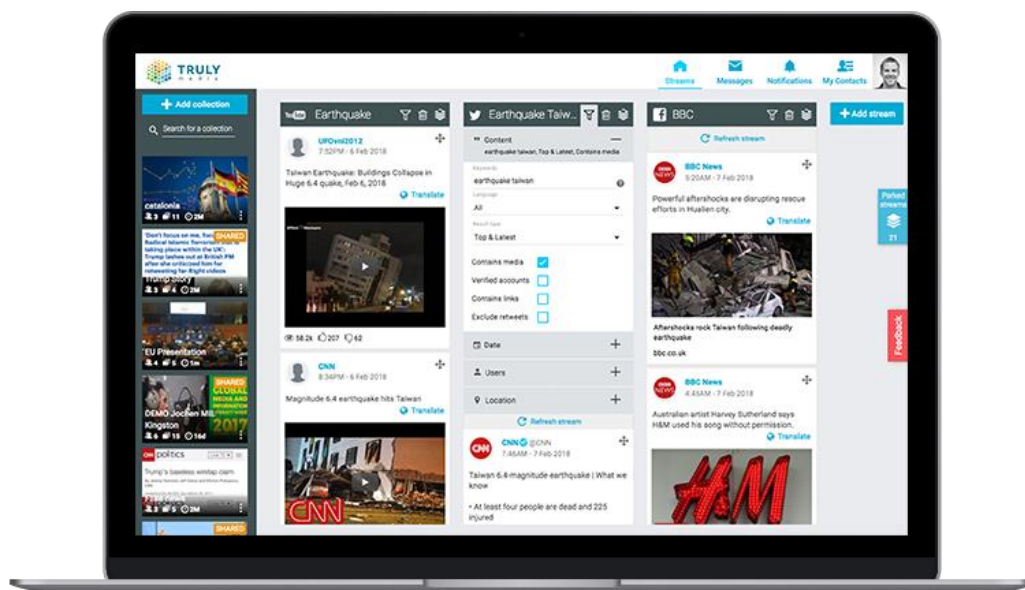

Figure 6. Truly Media enables teams of journalists to verify content collaboratively.

If we look at potential competitors working specifically on the development of fact-checking tools, we can classify them in two categories: initiatives with Venture Capital funding, and dedicated newsrooms that build custom tools to address their own needs. In the first category, commercial initiatives, we can highlight Newsguard and Factmata. On the second one, fact-checking newsrooms that develop and launch their own products, we may cite two leading players, FullFact and Chequeado.

Newsguard, started by experienced journalists from established outlets like the Washington Post, is a browser extension that flags news sites as "red" or "green". It also provides a more detailed 'nutrition label' for some English sites. The assessment is done manually by a team of journalists using nine criteria [13]. But their ratings are already controversial: they flagged the Daily Mail as "red" (i.e. not trustworthy), but they changed their mind after a couple days. Sputnik and Russia Today -well known for spreading unverified news are instead green which shows the limits of a binary classification.
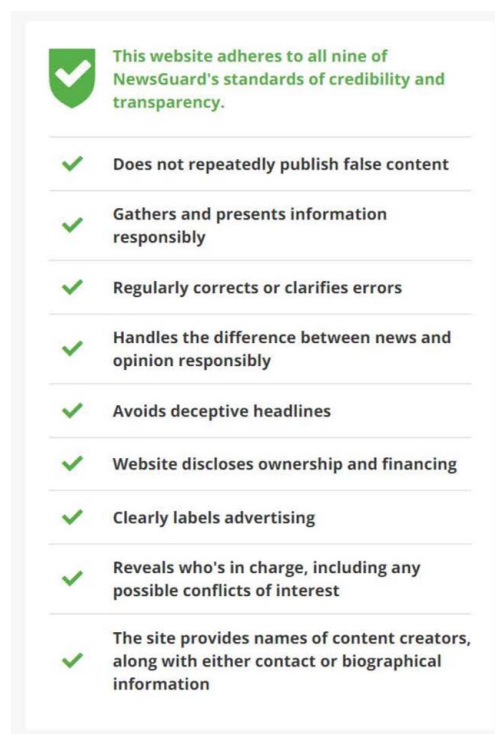

Figure 7. Sample Newsguard's "Nutrition label" for Politico.com.

The London-based Factmata is an artificial intelligence company for automated content scoring and verification, targeting the proliferation of fake and misleading news. The start-up aims to be a hybrid between Wikipedia and Quora, with a community of users' fact-checking or marking news articles for quality with the help of AI. Factmata raised almost 2 million dollars [14] from well-known investors such as Mark Cuban, Biz Stone or Craig Newmark. However, little is known about its technology, as the product hasn't launched yet, beyond what Factmata itself claims: the "Factmata approach" is meant to combine "artificial intelligence, communities, and expert knowledge to identify and classify problematic content".

Full Fact is "the UK's independent factchecking charity". They "concentrate on the areas that are top of the public's concerns, according to the Ipsos MORI Issues Index: the economy, crime, health, immigration, education, the law, and Europe." Full Fact has received funding from diverse sources, such as 350K euros from Google's Digital News Initiative [15] and 115K pounds from Omidyar Network [16], to create an automated fact-checking platform made up of a set of different tools. Full Fact's Live enriches real-time transcripts with references to claims that Full Fact already investigated. An exact match automatically pulls

up the relevant conclusion; in other cases, Live tries to display contextual information such as official statistics. A separate tool, Trends, shows journalists the propagation of individual falsehoods. Its purpose is to show fact-checkers whether their efforts have made a difference and help to target their interventions.
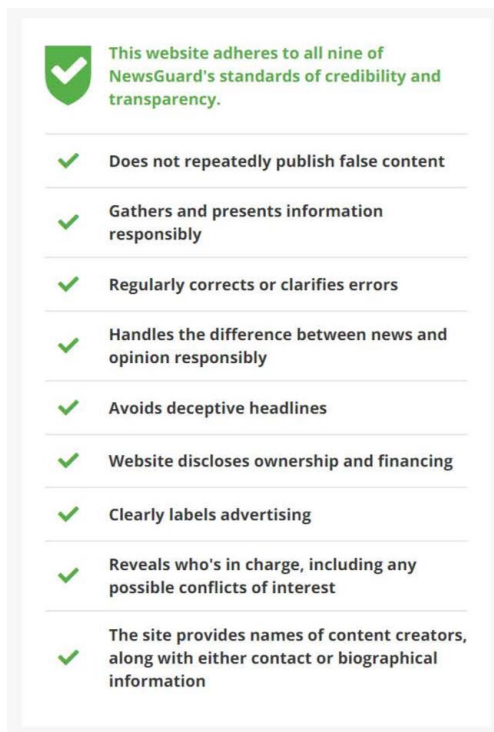

Figure 8. Full Fact's Live tool, showing existing fact-checks matched to a live transcript.

Chequeado, a fact-checking non-profit based in Buenos Aires, has developed automated fact-checking tools such as *Chequeabot*, a "robot" that monitors presidential speeches and about 30 media outlets across Argentina to find claims to check. Constant feedback from the fact-checkers trains the algorithm to focus on statements that are both 'checkable' and interesting. Chequeado has regular financial support from Luminate (part of the Omidyar Group), with $680.000 received just in 2018 [17], and recently got funding from Knight Foundation's AI and the News Open Challenge [18] to launch "a new investigative series on the ethics of algorithms and the implications of automated decision making for Latin America."

4.2. SWOT ANALYSIS

The SWOT analysis is a strategic planning tool used to evaluate Strengths, Weaknesses, Opportunities and Threats of a business (or of any other situation where an organisation has to make a decision). The SWOT for FANDANGO at M15 is in the following matrix table, where we sum up the main strengths and weaknesses, potential threats and opportunities for our approach.

INTERNAL	
Strengths (+)	Weaknesses (-)
Open Innovation Approach	Unable to analyse complex statements

Designed to provide specific fakeness-clues	Ground truth not universal nor permanent
Pilots and scenarios testing involve real users	Human judgement still needed
Software as a Service (SaaS) ready	Platform fragmented in different tools
Leverages machine learning and NLP	Conclusions reached by professional fact-checking organizations often require more context that FANDANGO can provide at M15.
Automatic fake news detection	
Modules designed to match claims about specific public statistics	
Makes available data directly connected to the subject of the claim to the journalists	

EXTERNAL	
Opportunities (+)	Threats (-)
Fake-News is a felt problem	Fragmentation of measures aimed at developing digital literacy
Fact-checking is on the rise	Un-sufficient sharing of debunked hoaxes
As are investigative and data journalism	Media felt as partisan instead of reliable
Established media moving to subscription need to re-establish trust and image	Insufficient critical thinking in media consumers
fact checking implies high HR costs	Slow development of critical thinking about media content
some fact-checking initiatives enjoyed a wave of funding in the last 24 months	Emerging competition
Machine learning, AI are subject to crucial scientific focus.	Lack of a misinformation detection standard

Table 8. Fandango's SWOT analysis.

Let us briefly expand on the perceived strengths.

The idea of the FANDANGO consortium is to offer a platform geared at media professionals, newsrooms, fact-checkers to detect and debunk hoaxes.

FANDANGO project aims to aggregate and verify different typologies of news data, media sources and open data to help professionals to detect and debunk fake news. The objective is to address the aggressive emergence of fake news, post-truths and misinformation, providing an online service (SaaS) that will support journalists to better fight against fake news.

Fake news cannot be detected by one single indicator. Instead, a diversity of signals and indicators need to be considered. These signals work at two different levels: at the article level, content-agnostic scoring based on Big Data techniques (i.e. machine learning models and graph analysis), including language and video/pictures automatic analysis. At a more granular level, content-dependent signals support the data verification process, using open data (i.e. related datasets) and databases of verified claims.

Fandango aims to expose its functionality online easily (SaaS), without the need to install complex software solutions. Given the diverse technical skills and day-to-day needs of the Media professionals, this may imply e.g. offering the text/photo/video verification functionality through a browser plugin, dedicated URL or programmable API. Given these considerations we currently perceive as strengths the following points:

- FANDANGO is working to try to automate only specific parts of the verification process through its tools, to **solve the challenges one by one**. It would be a mistake to try to give a complete answer to the entire verification process automatically.
- One effective way to check statements automatically or semi-automatically, especially in case of hoax that re-emerges again or appears elsewhere, is to match them against a database of **claims that have been already verified**. We are working to give this feature to FANDANGO.
- **We welcome human interaction**. One of the main assumptions we chose to adopt (see Deliverable 2.3 User Requirements), is the need for the journalist to keep the last word when deciding whether a statement is true or false. We are trying to assist the fact-checking, but there are still too many nuances to let an algorithm make the final decision.
- FANDANGO technical partners are moving forward to verify statements against claims that come from trusted inputs. At the time of launching the project, the algorithms trained by our technicians will be able to facilitate the decision of whether an information is correct or not by **making available to the journalist data directly connected to the subject of the claim**.

4.3. PEST ANALYSIS

PEST (Political, Economic, Social and Technological) analysis is a technique that considers the variables of the external environment that may impact the future of the project.

The following PEST analysis was drafted considering these elements for the FANDANGO project professional environment, in order to understand how technologies applied to misinformation detection and validation will enable new innovative scenarios in the Media sector.

4.3.1. POLITICAL FACTORS

Political variables cause consequences that may vary from sector to sector and from one country to another. The intervention of public authorities is not always foreseeable in advance. Among the main pollical factors, it is possible to identify: Competition, labour market and capital regulation, Tax Policy; Antitrust choices; Special incentives; Privatisations.

The FANDANGO project is meant to help media professionals disseminate correct in a context of global political instability and growing generation of misleading content, in a year in which Europe is playing a decisive game for global democracy. The European context, and especially, the electoral period from January to June 2019, will be the perfect breeding ground for the generation of all kinds of misinformation that affects candidates of one or another side, but above all threaten the neutrality of the media, the confidence of the people in mass-media and the national and European democratic quality. Having a large number of people in a society who are misinformed is a significant handicap for the democratic process: democracy relies on people being informed about the issues so they can have a debate and make a decision.

The European Commission published in December 2018 the Action Plan against Disinformation [19], which includes a set of actions aimed at building up capabilities and strengthening cooperation between Member States, EU institutions and the diverse stakeholders involved in the process to proactively address disinformation. The Action Plan states:

Disinformation is an evolving challenge, with high potential to negatively influence democratic processes and societal debates. Its increasingly adverse effects on society across the European Union call for a coordinated, joint and sustainable approach to comprehensively counter it.

A key stakeholder in the debate are the social media platforms (i.e. YouTube, Facebook, Twitter), that are receiving increasing pressure to monitor the content uploaded by their users and to try to limit the dissemination of extreme and/or fake content. Platforms have traditionally evaded these responsibilities, as summarised by Newman, writing for the Reuters Institute for the Study of Journalism [5]:

Donald Trump says Facebook, Google and Twitter are intentionally and illegitimately suppressing conservative viewpoints while liberals accuse them of promoting extreme viewpoints. Damned if they do and damned if they don't, platforms are no longer seen as neutral, condemned to become political footballs through this year and beyond. [...] Platforms that rely on user-generated content and algorithmic recommendations have long resisted the notion that they are publishers. But they are now demonstrably facing up to their responsibility for the content they carry.

But the calls for regulation are getting louder. Theresa May, for example, said it very clearly at the World Economic Forum at Davos [20]:

As governments, it is also right that we look at the legal liability that social media companies have for the content shared on their sites. The status quo is increasingly unsustainable as it becomes clear these platforms are no longer just passive hosts. [...] We are already working with our European and international partners, as well as the businesses themselves, to understand how we can make the existing frameworks and definitions work better - and to assess in particular, whether there is a case for developing a new definition for these platforms.

Hence, we can start to see already a broad initiative against online misinformation by governments all around the world, including the European Commission. In some cases, these actions take the form of new laws, which impose new responsibilities to media organisations and social media companies. Daniel Funke, from the International Fact-Checking Network, maintains an ever-growing list of legislation [21], and warns about its widening scope: "these efforts raise questions about infringing free speech guarantees and are frequently victims of uncertainty. The muddying of the definition of fake news, the relative reach of which is still being studied, hinders governments' ability to accomplish anything effective."
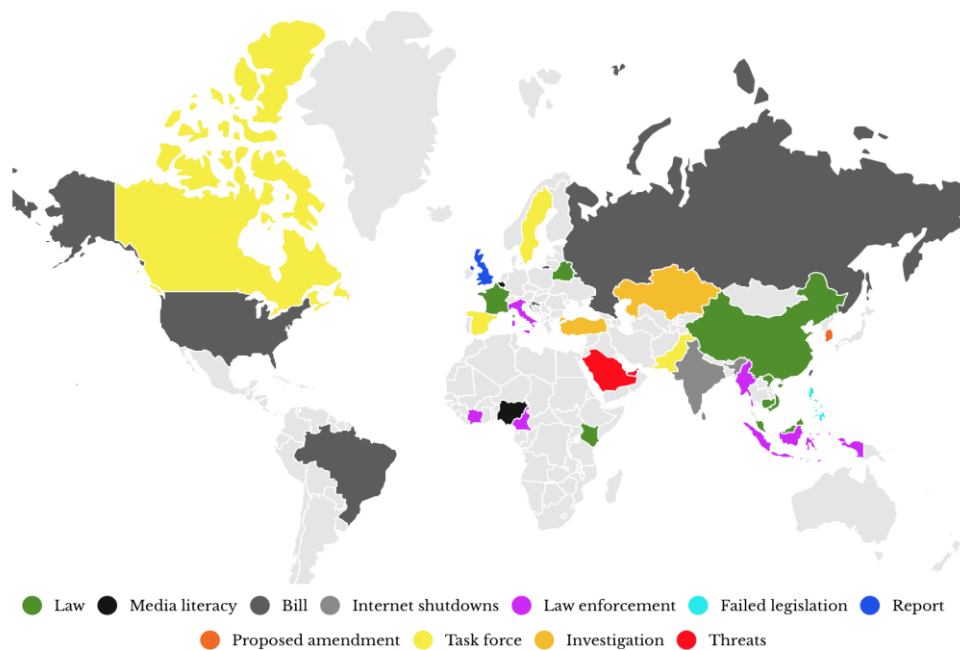
Figure 9. List of government initiatives against online misinformation. Source: Funke [21]

Given the current international political context, the need for products like FANDANGO is clear, in order to face the wave of disinformation that Europe is suffering. The project should be able to leverage the growing interest by public authorities to raise awareness of FANDANGO and other market solutions and approaches, designed to detect and debunk hoaxes, while educating European from all ages in critical thinking.

4.3.2. ECONOMIC FACTORS

In the PEST framework, many economic variables affect the strategic choices. The conditions of the economy also have a profound impact on probabilities for success, in particular: Cost of money; Interest rates; Inflation rate; Unemployment level.

The factors affecting FANDANGO were analysed in further detail in the following sections, as we explained current market conditions and trends. They will also be explored thoroughly in upcoming deliverables, as more detailed business requirements and exploitation plans are developed.

As a short advance, it's important to note that one of the critical target audiences of FANDANGO -media professionals and institutions - are currently living through a (painful) transformation of their business models: a decline in advertising revenues - due to the collapse of paper-based ads combined with the fact Google and Facebook keep most of the profits of online advertisement - is forcing media organisations to bet on digital subscriptions, patronage and audience engagement.

Newman's recent survey of 200 editors, CEOs and digital leaders for the Reuters Institute for the Study of Journalism's [5], including "40 Editors in Chief, 30 CEOs or Managing Directors and 30 Heads of Digital [...] from some of the world's leading traditional media companies as well as digital born organisations" shows that subscriptions and memberships are becoming key priorities: "over half (52%) expect this to be the MAIN revenue focus in 2019, compared with just 27% for display advertising, 8% for native advertising and 7% for donations. This is a huge change of focus for the industry."
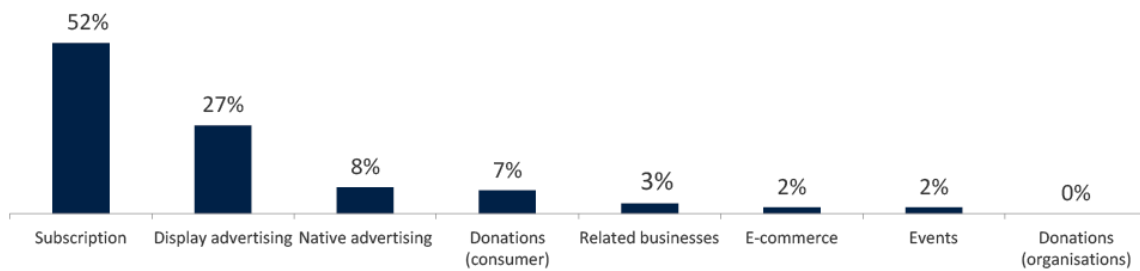
Figure 10. "Q5. Which of the following digital revenue streams is MOST important for your company in 2019?"
Source: Newman [5]

Converting a reader into a subscriber, however, in an environment where news is often available freely in multiple channels, requires branding, a strong identity and trust, i.e. an investment into the production of high-quality, thorough, fact-checked, verifiable content. That is, a move away from cheap, click-bait, viral content, which facilitates the dissemination of misinformation.

Also noticeable in the survey, "over three-quarters (78%) think it is important to invest more in Artificial Intelligence (AI) to help secure the future of journalism – but not as an alternative to employing more editors".

Both the push for high-quality content and the increasing importance of AI in newsrooms are encouraging trends for FANDANGO.

4.3.3. SOCIAL FACTORS

Social trends influence the demand for any specific product or technology. Variables such as cultural aspects, health, population growth rate, age distribution, careers and safety attitudes have a decisive impact on consumer choices. Some of the most important social variables are: Changes in lifestyle; Career expectations; Age groups in the population.

As relation to FANDANGO specifically, the social context is unequivocally linked to the economic and political ones we have mentioned before. Nowadays, technology and the Internet give us access to vast amounts of information, often more than we can assimilate carefully. Additionally, truth is no longer dictated by media outlets acting as gatekeepers, but it is networked by peers, and for every fact there is one or more rebuttals. These social tendencies, which enable the creation of content "to the reader's liking", as well as the appearance of *filter bubbles* and *echo chambers*, will continue to be present in European societies by the time FANDANGO goes out to the market and will actively impact on the demand that people make of information.

New unfolding trends of information consumption may influence FANDANGO's exit to the market. For example, Buffer -developers of a well-known app for social content sharing- predicts [22] the growth of immediate content via informal small groups ("In-the-moment content will win out over highly-produced content. The stories in social networks and the ephemeral videos will be the most consumed content, overtaking the Media and the News Feed.") and growing influence of AI in the filtering and personalisation of the user experience. As Alexios Mantzarlis, former Director of the International Fact-checking Network, warned during ICT Vienna 2018, as the information consumption trends evolve, so do the fake news, which will be a challenge for all the initiatives fighting misinformation, including FANDANGO.

But there's one particular factor that must not be ignored when looking at the explosive growth of the issue of fake news and misinformation since the 2016 US elections: a widespread lack of trust on traditional media sources by readers, which can be seen clearly in a number of studies and opinion polls.

For example, a report by Newman and Fletcher for the Reuters Institute for the Study of Journalism, "Bias, Bullshit and Lies – Audience Perspectives on Low Trust in the Media" [23], which tries to explain "the underlying reasons for low trust in the news media and social media across nine countries (United States (US), UK, Ireland, Spain, Germany, Denmark, Australia, France, and Greece)". The authors conclude, after analysing thousands of open-ended responses, that the recent viral fake news is perceived by readers of a symptom of a low-quality information environment, together with hidden media agendas, clickbait material, misleading advertising, sponsored content, and partisan takes. In their own words:

> *Among those who do not trust the news media, the main reasons (67%) relate to bias, spin, and agendas. Simply put, a significant proportion of the public feels that powerful people are using the media to push their own political or economic interests, rather than represent ordinary readers or viewers. These feelings are most strongly held by those who are young and by those that earn the least.*

> *In many countries, particularly the US and UK, some media outlets are seen as taking sides, encouraging an increasingly polarised set of opinions. Others are criticised for not calling out lies, keeping information back, or creating a false equivalence of partisan opinions that are obscuring facts and understanding.*

These findings match a second report, by Kleis Nielsen and Graves, "News you don't believe: Audience perspectives on fake news" [24], where the authors warn about "a wider discontent with the information landscape" and the fact that "people feel much of the information they come across, especially online, consists of poor journalism, political propaganda, or misleading forms of advertising and sponsored content." The authors point to some structural changes as possible explanations for this phenomenon, such as the loss of the gatekeeping role by traditional media outlets:

> *The second structural change is the move from a twentieth-century environment dominated by broadcast and print mass media to an increasingly digital, mobile, and social media environment. Publishers are still critically important as producers of news in this landscape but play a less central role as distributors and gatekeepers, as audiences have greater choice and as a small number of large platform companies increasingly shape media consumption through services like search, social media, and messaging applications [...]. In this environment, it is easier to publish any kind of information, including false and fabricated information."*

The survey data shows that less than half of online news users in the US and the UK trust "most of the news most of the time". In three of the four countries, nearly half of the population don't express trust even in the news they consume. When asked about their trust on news consumed via social media, and whether online platforms help users "distinguish between fact and fiction", the responses are similar and highly correlated, i.e. readers sceptical of one type of source rarely trust another, in what the authors describe as "generalized scepticism", reusing a term from Newman and Fletcher.

Data from Newman et al (2017). Based on Q6_2016_1. Please indicate your level of agreement with the following statements: - I think you can trust most news most of the time and Q6_2016_6. I think I can trust most of the news I consume most of the time. Base: All markets 2017.
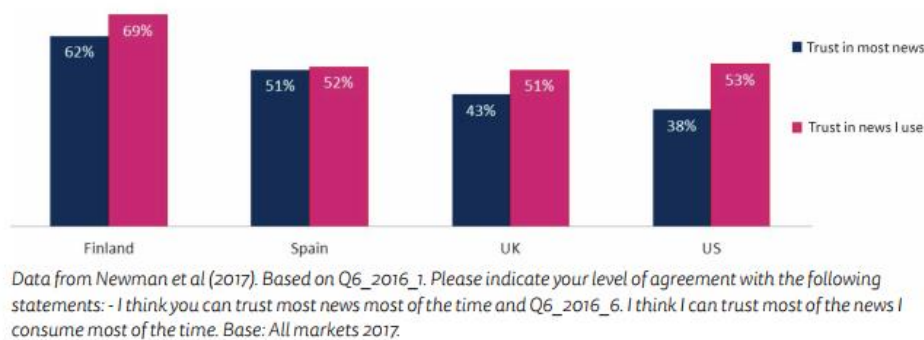
Figure 11. Trust in most news versus trust in my news. (Source: Nielsen [24])

But all is not lost: while many readers complain in surveys and focus groups about the overall low reliability of media, they often save a few trusted news outlets and see them as potential leading examples and correctives:

> *[People] often have a dim view of tabloid media and of partisan outlets that they disagree with politically. But many identify specific organizations they would turn to if they need credible information. One participant in one of our London groups said: "The Times [has] a paywall and the reason they do it is that it costs a lot of bloody money to verify these facts, so there is no fake news here. Then whatever out there in the wild is feral news, fake news."*

Combined with the push for differentiation and digital subscriptions by media outlets described in the previous section, we can see the current low trust as a potential beneficial factor for FANDANGO: outlets need to invest in high-quality content in order to regain the lost readers' trust and confidence, and any tool that helps them avoid mistakes and propagate misinformation is a good investment.

4.3.4. TECHNOLOGICAL FACTORS

Technological progress can quickly bring out new products and production processes while making others obsolete. It can also create opportunities/threats by breaking down or raising barriers to entry of new competitors in a specific sector. Management must anticipate technological change in its sector and in those related to it.

Some technological variables are: Total public expenditure on R&D; Total sector spending on R&D; Increase of productivity through automation.

Technology is increasingly seen as an enabler for more accurate journalism, and new techniques and methodologies, such as Open Source Intelligence - pioneered by digital organisations such as Bellingcat -, previously seen as niche, are now becoming mainstream. Bellingcat, leveraging freely available datasets and tools such as Google Earth, reverse image recognition and expert geolocation, has published important exclusives on issues such as the downing of the MH17 plane in Ukraine or the Novichok murders in the United Kingdom. In a similar manner, BBC News Africa was able to verify murders by soldiers from the Cameroon army. Artificial intelligence, natural language processing and big data are now being applied on complex tasks such as user content verification and fact-checking, as will be discussed later in this document.

Of particular interest to FANDANGO is the application of deep learning and video manipulation to create new forms of misinformation, e.g. what is commonly known as "deep fakes". Newman [5] predicts the

popularization of this content, as the technology involved, previously complex and demanding specialized resources, becomes available to a general audience:

> *"With sophisticated video manipulation technology now openly available many fear a new wave of misinformation. Software such as Fake App has made the technology easy to apply for those with basic programming skills – not least with free tutorials readily available on YouTube. A video of Barack Obama calling Trump a 'total and complete dipshit', was released in April by film director Jordan Peele in conjunction with BuzzFeed as a way of raising awareness about how AI-generated synthetic media could be used to distort and manipulate reality. Deep fakes have also been widely used to insert celebrities into pornography and to add the actor Nicolas Cage into movie scenes. Expect a proliferation of deep fakes in 2019 including the first attempts to deploy these powerful technologies to literally put words into the mouths of political opponents."*

The increased sophistication and volume of misinformation, and their increasingly visual nature, highlights the need for further research in the application of AI, Big Data and Machine Learning, as well as platforms like FANDANGO. It also highlights the need to continue evolving FANDANGO's features and capabilities after its launch, in order to adapt to the evolving characteristics of misinformation.

5. CONCLUSIONS

This document defined FANDANGO's target sectors and began the process of deepening our understanding of their specific needs. Since the FANDANGO platform is not fully defined yet, we still cannot fully assess our product's benefits and features, and therefore we have only highlighted the main features that are or will be available.

Conducting a continuous market research focus will help us in improving our understanding of our customer base, and help us decide the direction of the final marketing strategy. Among the relevant market trends taken place at the moment, we think that the diffusion of subscription-based models is particularly relevant: in fact, although the number of readers willing to pay to read news is still a minority, the idea that quality news may no longer free on the Internet is beginning to gain ground.

In addition, to date, established media are actively trying to counter disinformation attacks. In fact, despite the fact that the established media have lost their role as exclusive guardians of the truth, their news still reach a remarkable number of readers, both on paper and online. So, misinformation agents often attempt to subvert and divert their news. In the meantime, established media outlets seem ready to invest more in technology to leverage the potential of Artificial Intelligence (AI) and Machine Learning (ML), not to replace journalists, but to aid their work.

For the time being let us draw some conclusions by stating that:

- At the current stage of the project, the best achievements in detecting claims by AFC have been the extraction of simple objective statements from a text/article, combining Natural Language Processing with Machine Learning in order to identify the claims to be verified and examine them.
- Given the high cost of fighting fake misinformation, many fact-checkers are **beginning to introduce more and more software to help them identify claims**. This is a promising indicator for FANDANGO results especially considering the valuable feedback from real users that we can count on to iterate and pivot to adapt to the needs of our users faster.
- An accurate fact-checking job usually takes at least a day of professional work to be carried out, so FANDANGO may result to be extremely useful by increasing newsrooms' accuracy and productivity.
- Since the automatic verification is very limited to very specific statistics, such as weather or stock market reports, FANDANGO is **developing modules designed to match claims about specific public statistics,** such as migration, or climate change, against the official figures, in order to expand the spectrum of verification.

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