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FANDANGO DELIVERABLE

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EXECUTIVE SUMMARY

This deliverable, one of WP8 results, deals with the main application areas, business requirements and preliminary exploitation plan FANDANGO.
In particular, the exploitation plan, prepared according to the boosting recommendations suggested in the Plan for the Exploitation and Dissemination of Results in Horizon 2020, outlines the actions needed to capitalize on the knowledge and technological results achieved in FANDANGO, to bring its added value to the market (in a business perspective) and society in general (in a social responsibility perspective).
Chapter 1 introduces the fake news phenomenon and the damages it is producing on society and business, Low-cost media devices and free digital media sharing platforms make it easy for everyone to further propagate the news they read. Being the sharing of images, videos and texts, just one click away, many people often, do not perform any attempt to fact-check what they just read before sharing it further.
This behavior can result in a largely misinformed public opinion; a negative condition that may bring consequences severe and difficult to manage, as too many people, exposed to fake news, react by adopting some incorrect behavior, causing damages, to them or others.
Finance, medicine, climate change, environmental politics are among the topics most often affected by fake news.
Chapters 2 and 3 deal with how firms active in the media or other industries, respectively, are currently facing up fake news and what are their requirements.
Chapter 4 focuses on the three topics covered by FANDANGO pilots.
State of the art Machine Learning and Natural Language Processing can be used to fight fake news and to reduce their impact in the real world. Complex and long procedures for fake news detection already exist They usually involving personal research and, if necessary, the consultation of an expert. Even though they produce some results, they are still not reliable enough.
FANDANGO, leveraging on AI techniques, proposes a new approach to fight fake news: detecting typical fake news clues by analyzing text, images, videos, authors, and publishers.
Chapter 5 follows is about the FANDANGO business and exploitation plan. This chapter further details the first preliminary work about this topic already presented in D8.1.
In particular, professional users are confirmed as the only target customers across several market segments: mainstream media and news agencies, fact-checking organisations, and private firms in sensitive sectors. We will offer them relationships of different complexities ranging from simple off the shelf service delivery to complex system integration project. Technical delivery will be “as a service” cloud provisioning, even though on-premise installation will be considered when required. We expect that at least for the first few years large system integration projects will be the bulk of our revenue stream.
It is worth pointing out that also subjects such as advertisers, advertising agencies, educational institutions, and Media Literacy initiatives can be targeted for FANDANGO marketing initiatives, to build awareness and indirectly market potential for further revenues.
The exploitation plan presented in Chapter 6 offers three main perspectives: strategy, channels, and activities. Our strategy will be based on a 4Ps Model. The 4P (product, price, place, and promotion) are key elements for service marketing and choices about one P interact significantly with the ones about any other P. Moreover, the marketing mix of the four Ps may be constrained by internal and external factors in the overall business environment.
Last but not least channels and activities choices are introduced by using a Marketing Funnel approach.

1. INTRODUCTION

This deliverable, one of WP8 results, deals with the main application areas, business requirements and preliminary exploitation plan FANDANGO.
We start by analyzing how some sectors that are of particular interest FANDANGO try to fight fake news.
Fake news is any content meant to deceive.
Due to their emphatic tone, fake news can have a severe impact in many different sectors, regarding society as a whole or some businesses in particular.
Misinformation is shared in different ways and fake news can be easily fed not only to private citizens and organizations but also to professional journalists and media outlets.
This phenomenon can negatively influence people's views, mindsets, and opinions.

Hunt Allcott, from New York University and Microsoft Research, and Matthew Gentzkow and Chuan Yu, from Stanford University, in October 2018[1], assembled a list of more than 570 sites identified as sources of false stories in a set of previous studies and online lists.

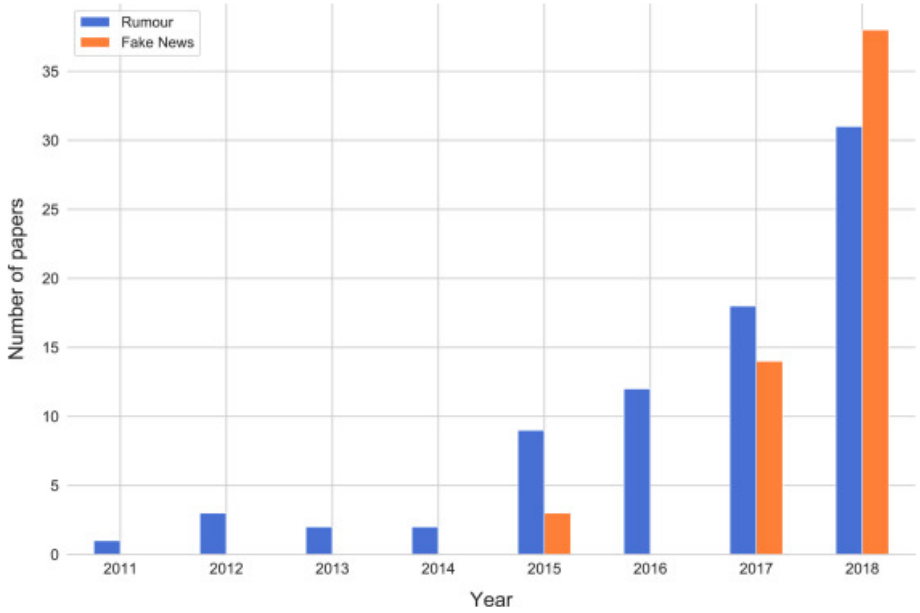


Figure 1[2]. List of web site containing fake news.

Chiara Tonelli, Professor of Genetics at the University of Milan and President of the Scientific Committee of the Veronesi Foundation,[3] supports the theory of how fake news can be used to encourage specific reactions in the public opinion. According to her, fake news spreading is facilitated by fear and ignorance among readers.
Too often a lazy and superficial attitudes lead too many people to believe in what they read or see on the web, without performing any check about it, controls that could be obtained by considering aspects such as:

- the source, the author, the date of publication,
- the bias of the wording,
- different articles about the same news;
- expert opinions on the matter.

Users should read more carefully and perform controls on their own before further sharing hoaxes that can negatively affect the public opinion.
Fighting fake news was the main aim of the latest World Conference "Science for Peace", organized at the Bocconi University of Milan by the Umberto Veronesi Foundation.

Veronesi himself maintains that:
"The greatest fear is people's double ignorance, (due to) the lack of awareness: not knowing not to know leads people to be satisfied with the little they know supposing that it is, actually, what is enough to know [...]
[...] It is an ignorance that often brings arrogance and contempt for knowledge, it considers culture, knowledge, deepening uselesses, turning off little by little the engine of science.
Even medical and scientific fields, which have generated amazing results overcoming general ignorance and going further into knowledge, can change people's lives for the better ".

Fake news can be conceived about almost any topic.
Moreover, by adopting deep fake techniques, hackers, haters, and other similar profiles who are actively involved in misinformation, can generate with a reasonable effort, deep fake content (not only text but also graphics, audio and video recordings) that looks convincing and realistic.
This level of sophistication makes attention to detail a top priority to fight misinformation.
All major Social Networks are committing to the challenge of detecting fake content, but the growth of so many, diversified and substantially unmonitored sharing platforms, makes the potential influence of fake news a growing concern nonetheless. The challenge, today, is not only to identify the misinformation through meticulous analysis and control in the platform where it was originally shared, but also, to be able to quickly block and deny any furtherly copy shared on different platforms.

Obviously, timing in fake news detection is very important. Detection strategies currently in use are slow: they usually require some degree of personal research, then further checks, and then, perhaps, expert opinions. Asking for an expert opinion is often just the final step of a time-consuming set of procedures, which are not standard, but just recommended.

Social Media are one of the main sources for news consumption. This makes platforms like Facebook and Twitter a double-edged sword in terms of information research process. While quick information can give important clues for research, agents of misinformation can count on the ease of information re-sharing. Re-sharing is just a click away, in a process that is much easier than it used to be on traditional media.

Social networks have a peer-to-peer (P2P) approach (each entity, called peer, participates in the provision and the reception of a service) which contributes to misinformation credibility. In sharing platform, such as Facebook or Instagram, each peer (commonly a "user") shares one, or more, news/photos/posts of its own, making them visible to other peers (other users). A second peer, who "receives" the file, can furtherly share that post. In case of sharing, it will consequently become a "server" of that file.. This mechanism allows a very large audience to read and share news quickly. The more a post is shared, the more difficult it is to trace back the origin of a fake.
The possibility to share with a substantial degree of anonymity further facilitates the spread of fake content.

Please notice that human involvement is always necessary to support detection strategies that are beyond a single fake content.

FANDANGO can aid in alleviate most of these difficulties.
Designed primarily for text and images, FANDANGO uses algorithms capable of being language agnostic, given an adequate training of the specific machine learning technique.
FANDANGO, is also domain agnostic approach, and hence can tackle the problem at a higher level of abstraction than other approaches. FANDANGO in looking for clues of fake content in images, text style, and other attributes is basically automating controls that professional users could do by themselves.

2. How Media companies face up fake news

Due to the strong challenge of finding a proper amount of details able to define an information as a fake, techniques and tools for fake news detection are varied and ingenious.

According to a 2018 survey taken by the CNN, the use of their smartphone is the first action most people do (Figure 2), so this is the device by which most people first learn about what is happening around the world.

Since newsletters often post news on their own websites (CNN, BBC, ETC,) and they are consulted more than any other "news output tool", their content is much more subject to be shared, more than what is published by normal news or radio news services. in these terms, double checking the news content is a must do.

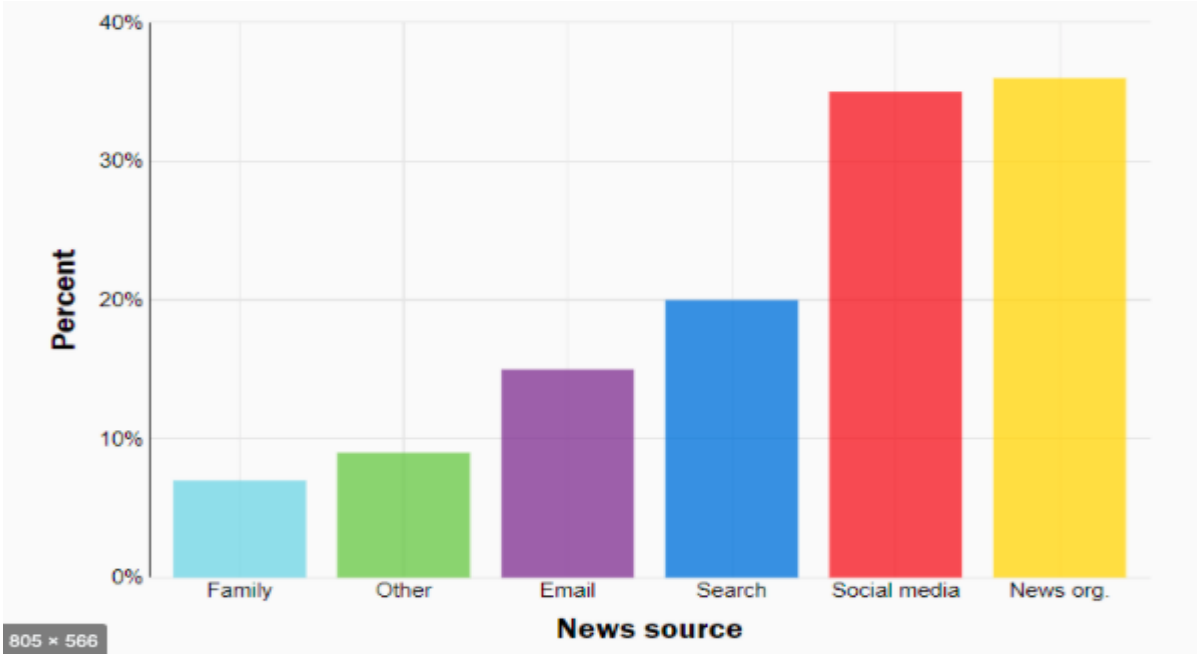


Figure.2 News Source average in 2018

Detection is the unique and arduous task to identify a fake content and to start an identification process. The main aim is to find and register specific features in order to create tools and processes able to make it easier to identify a news as a fake, or not, mainly according to its content.

2.1. General features journalists and experts have to work with for a proper fake news detection in media industries

According to the Poynter Institute for Media Studies[4], in June 2016 there were "more than 100 fact-checking projects in action in almost 40 countries". This could leads to think that today there are several reasonably working tools to help fact-checking and fakeness evaluation. However, this is not really the case.

Due to the almost completely non-supervised cyber domain that we face and to the ever increasing number of shared misinformation, fake news detection in media industries is becoming more challenging every day. A recent report[5], made by the Jump-shot Tech Blog, found that Facebook has 50% of the total traffic made up by fake news websites creators and just 20% of this 50% is made up by secured websites. According to this report, around 60% of adults worldwide get news from social media and media websites. Hence the ability to identify fake content in online sources is more urgent than ever.

What are the features (not standardized) journalists and experts have to work with for a proper fake news detection in media industries?

- Availability of different points of view (truthful and deceptive) on the same subject - Finding accurate and reliable models for both a positive and a negative point of view is the first step for predictive methods. Finding balances between counterparts for authentic news is a challenge.

- Foundation -The sources of news considered credible are those that last over time and with a reputation based on a "checks and balances" system. Crowdsourcing assessments (whether a message is a truth or a lie) have previously been successful in identifying false news.

- Homogeneity in length - A short tweet with just: title, summary of a Facebook paragraph, some text could not constitute a sufficient data set. Normalization can be performed for some non-uniformly distributed data sets

- Calendar - The text must be written within a predefined time frame. A later news has a greater power than a news published in 2-3 years.

- Credibility – Unawareness about writing style creates further difficulties for the interpretation of news. More research is always needed on the interaction between humor and deception.

Detection is considered in different content types:

- Texts: syntax analysis and linguistic features;
- Graphs: falsified analyzes and incorrect intertwined studies reported on not trustworthy calculations;
- Videos and Images: tools for images editing (see the current video and image editing phenomenon “deepfake”).

Individualization procedure adopted for fake news detection in texts:

  - Concordance between title and text (the larger the gap between text and title, the higher the probability of the information being fake),
  - Coherence between text and its related multimedia content,
  - News genre (i.e., Latest news, editorials, publications),
  - Topics (i.e. Business, politics, science, health),
  - Use of similar authors (i.e. professional training, mainstream vs. citizen journalists; serious versus humorous),
  - Comparison of publishing channels,
  - Vision of the topic (the more the writer position is vague and un clear, the higher the probability of the information being fake or at least incomplete),
  - Non-specific references (the fewer references in the text, , the higher the probability of the information being fake),
  - numbers and percentages too exposed and wording aimed at eliciting strong emotions are clues of manipulated information [6].

According to the paper Deep Learning Algorithms for Detecting Fake News in Online Text and to Le and Mikolov, 2014 and Tang et al. 2015[7] and Venkataraman, Liu, & Glance, 2013[8], there are two different approaches to proper text detection.
The first one is based on separating features able to identify:

- linguistic anomalies;
- psychological anomalies;
- topical anomalies.

This approach until now has proven to be of unsatisfactory performance and too slow to avoid impacts in the real world because.

A second approach is based on a network model able to learn document-level representation in order to discover general features in a text published to learn semantic representations. If there are any general anomalies, the information can be considered as not trustworthy. Unfortunately, reliable and versatile models are still missing and also this approach still offers limited performance.

2.1.1 CASE STUDY: TRUMP'S ELECTION 2016

Following the 2016 Trump's election, a specific concern was raised in political studies about the effect of "fake news" on media and social media during election campaigns. According to Hunt Allcott[9] and Matthew Gentzkow[10]:

- 62 percent of US adults get news from social media;
- the most popular fake news stories were shared on Facebook more than on any other mainstream news platforms;
- many people who read fake news report they believe them.

Despite a lack of conclusive proof about this conclusion many believe that fake news on social media might have been pivotal in the election of President Trump: the most discussed fake news stories tended to favor Donald Trump over Hillary Clinton. This has been declared in the aftermath of the 2016 US presidential election[11].

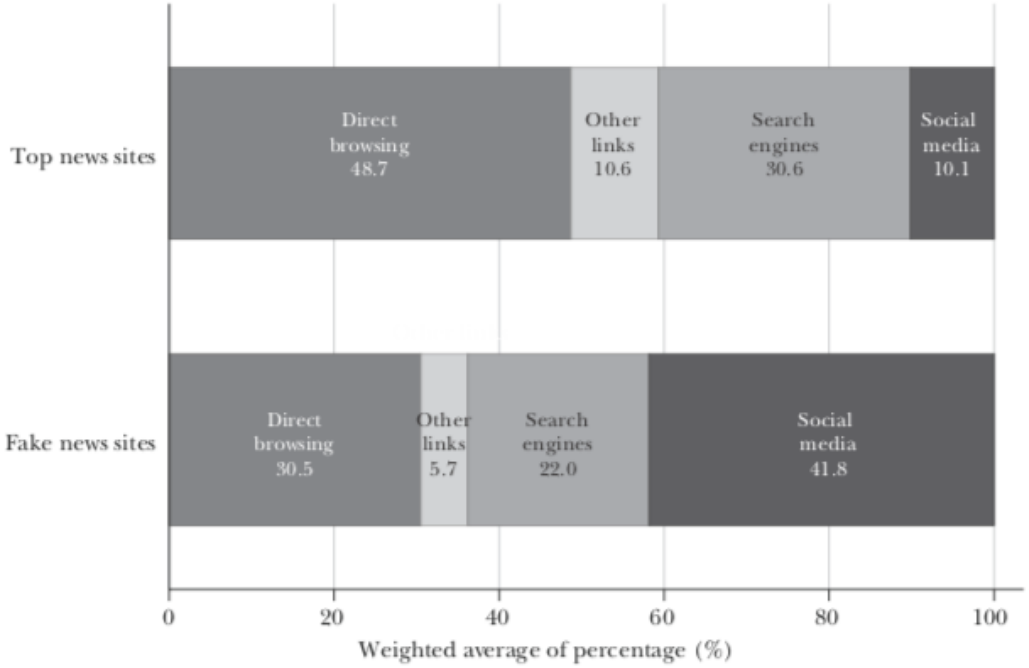


Figure 3. Share of Visits to US News Websites by Source

In figure 3, in the upper graph, Social media referrals represent only about 10% of a total online traffic during Trump's elections. In the lower graph, fake news websites rely on social media for more than 40%.

The average US adult read and remembered several fake news articles shared during the election period. Pro-Trump articles were, obviously, higher exposed than pro-Clinton articles and this created concerns about how much this might have affected the election results. So, the main focus is on the effectiveness of fake news exposure and how this is able to change the way people vote.
One month before the 2016 election, respondents reported they spent 66 minutes per day:

- reading,
- watching,
- listening

to news related to the forthcoming election.
After collecting the answer, the survey consequently asked which of those sources was the most important (in terms of frequency and quantity of articles read) source of news and information about the 2016 election people (from both sexes) used.

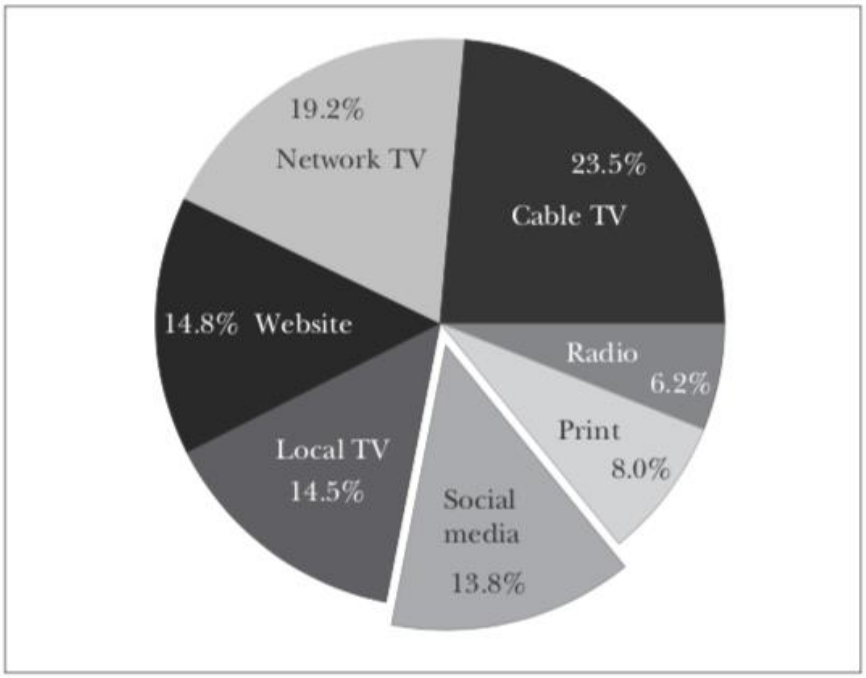


Figure 4. Importance of information sources during the 2016 US election

As it is possible to see from figure 4.:

- cable TV,
- network TV,
- websites,
- local TV
- Social Media

were the main information sources during the 2016 US election.
These results show that social media became an important source of political news and information.

Putting all these facts together, a number of commentators have suggested that Donald Trump might not have been elected president were it not for the influence of fake news[12].

In conclusion, it is not trivial to assume how much technology must work to create detention and prevention solutions that might support and help an already existing human involvement for the

dissemination of fake news. Even if the research has worked hard in order to find a solution, there is still the need of a more specific plan to be effectively completed and efficient.

2.2 What are the detection tools/tricks currently used in Media Companies?

Given the strong and fast expansion of the fake news phenomenon, some tools[13] to detect fake news are beginning to appear.
More specificcaly, we can distinguish two main different types of such tools.

fact-checking websites:
Considered as a contemporary way of journalism, they consist of websites that help to understand the nature of the articles published on the net, to evaluate their authenticity.
News can be of any nature and these websites work thanks to teams of experts who:

- examine all arguments and counterarguments to have a complete and exhaustive vision of the topic, providing also relevant and impartial details;
- examine all specific claims trying to reach relevant conclusions about them as well;
- track political promises looking for details that can give an exhaustive view of political positions;
- are transparent about their sources and evaluation methods trying to give an impartial view;
- disclose their sources funding and affiliations.

Examples of existing fact-checking websites currently in use:

- AllSides Media Bias Ratings
- FactCheck.org
- Flackcheck.org
- Politifact (figure.3)
- Snopes
- TruthOrFiction.com
- others

AI algorithms to detect:
As mentioned in the introduction, algorithms can be a significant help for fake news detection procedures. They provide some help in the initial screening, depending on the origin of the reference sites and on the topics covered, however, there still no algorithm is able to give exhaustive results that can help experts in the field without additional work and double checks.
In an approach somewhat resembling the antispam filters for email inboxes, algorithms can help out to determine a reference/sender an appropriate level of content flagging to help detect fake content.

Examples of existing fake news detectors currently in use:

- MIT'S
- MATHESIA
- DETECTING FAKE NEWS
- FAKE BANANAS (figure.4)
- LOGIC-O-METER
- others

2.2.1 CASE STUDY: FACT-CHECKING WEBSITES. POLITIFACT

Figure 5. Polifact's UI

On Sept. 11, 2012, terrorists attacked the U.S. Consulate in Benghazi, Libya, resulting in the deaths of four Americans.

Since that day, rumors have claimed that Chris Stevens, the U.S. ambassador killed in the attack, was tortured and raped before his death. PolitiFact already fact-checked the claim when it first surfaced: it was an overlapping of images and the evidence were not supported.

A new viral post used a photo of a tortured man as evidence of the false claim that Stevens was tortured but evidences for a previous rape are not provided.

But the photo depicting violence does not show ambassador Stevens. The image, actually, appeared on the internet years before Stevens' death. Facebook screens the troubling torture image from viewers until they click on an "Uncover Photo" icon, warning first that, "This photo may show violent or graphic content."

A website called "The Meme Policeman" found the photo on the internet as early as 2004 when it appeared in a story by Spanish newspaper Diario de León about Argentinian military torture.

Nevertheless, Politifact found the image posted on various blogs as early as 2009. As well, a reverse-image search shows versions of the photo on the internet as early as 2008, so four years before Stevens' death.

3. How Industrial Companies face up fake news

The level of thrust in mainstream media has dropped significantly in the past few years, especially among young adults. Online readers can't be sure whether the story they're reading is true or tailored to get them to agree with a certain perspective.

For brands and their marketers, nothing is more critical than consumer trust. An Outbrain study[14] found that 77% of respondents accept content from familiar brands, while only 67% believe in content shared by friends on social media sites. The study also suggests that consumers find ads more credible when they appear on sites they already know. But what happens when ads from a trustworthy brand appear on sites that are considered misleading?

Typically, ads are placed based on user data as opposed to website content. Then, brands "blacklist" certain sites, ensuring their ads don't appear on websites that don't align with their values. But due to the large number of websites, it's possible for brands to inadvertently miss one such sites and have their ads run on a less-than-reputable site.

Actually, fake news content about a Brand's product can influence its economic performance, and the Brand reputation in general. Therefore, Fake News detection for industrial companies is deeply aligned with Brand Protection activity.

Most of fake news mark out viral and captivating aspects. Some brands are also willing to exploit those aspects in order to stand out from competition. Not only small brands, but also big brands sometimes follow this approach. More specifically, big companies provide proper teams that, through negative concepts in wrong contexts in the right moments, can jeopardize a national/international brand reputation. Brand protection systems are already included in companies' detection programs, but they seem not to be effective enough in order to provide a proper and effective protection detection plan. Very often large organizations are willing to finance advertising campaigns or bots with the intentional purpose of hitting a specific brand. Since fake news are created also to "show up" a negative side of a brand/company by distorting their operations also private people can be responsible. Since real intentions of companies' use of fake news have been shown, it is also not surprising how also individuals can manipulate information in order to deceive someone in particular. Trolls (individual users/hackers) take advantage from their own ability and tools for editing, manipulating, creating fake information in order to act against someone else.

Brand protection consists in finding the best protection to defend the intellectual property of a product from:

- defamation,
- vulgarization
- improper use.

Any brand name can be digital and inserted in any context. Any user can easily click and search online the name of a random brand.

3.1 Brand protection and fake news

Any user today can go online, get suitable information and, if he/she wants to, write intentional misinformation about a brand to damage its reputation. In our time, when digital life is important and fake

news are common, a firm wanting to defend its image and the value of its brands might deem necessary to monitor major sharing platforms, identify any misuse and, in case report any violation of the law from which it could suffer. Violations are always regulated and limited by the law also in the case of controversy between competing brands.
Violations are generally defined as:

- Defamation: an improper use of a brand in order to put it in a bad light, influencing the consumer to avoid consumption/use.
- Vulgarization: a procedure in which an interested party intentionally devalues a brand by removing its main characteristic. In this way, the product is diminished making it "equal to all others."
- Improper use: use of the trademark for illegitimate purposes in order to take unwarranted advantage against clean and proper commercial rights.

All these violations cause damages to brand image and reputation, potentially affecting also commercial results of any product related to the affected brand. This is why defensive strategies are becoming considered by serious marketing departments.

There are intervention strategies that deal with

- Research
- Identification
- Elimination of trademark infringement.

Research consists in the insertion of keywords in search engines following a procedure that involves numerous steps and teams for an accurate work. The research takes place through specialized teams that work privately through anti-counterfeiting practices navigating the network, and looking for any improper brand use. The idea should be to create a fairly strong and varied online portfolio where several domain names are registered in order to make it more difficult to create a duplication of a certain website, so a deceptive one, using a domain registered in that portfolio.
In case of individuation, a second step is to identify the information that causes damage to the image of that product affected by the misinformation.
According to brand actual damages, the last phase is the elimination by different standard[15] local legal procedures, among which one may cite[16]:

- injunction: report the violation,
- take the case to court: it can only be brought before specific sections set up in the courts and appellate courts,
- precautionary measures: they are intended to immediately stop the violation,
- prosecution: presents the fraud of the counterfeiter and involves the application of a fine in addition to the possibility of seizure of the counterfeit products (if any),
- return damages and lost profits: compensation for damages resulting from the violation of an industrial property right or unfair competition. The amount is established by taking into account many factors including:
    - the lost earnings of the right holder,
    - the benefits for the infringer,
    - non-material damage/the fee that would have been paid if the authorization to use the infringing industrial property right had been requested.

3.1.1 CASE STUDY: VACCINE HESITANCY AND (FAKE) NEWS "IN MY COUNTRY, VACCINE-PREVENTABLE DISEASES NO LONGER EXIST, SO THERE IS NO REASON TO GET VACCINATED."

A World Health Organization alarm. Although the European Region achieved its highest ever estimated coverage for the second dose of measles vaccination in 2017 (90%), countries with measles outbreaks have experienced a range of challenges in recent years including a decline in overall routine immunization coverage in some cases, low coverage at subnational level or among some marginalized groups and immunity gaps in older populations. Most cases are occurring in unvaccinated or under-vaccinated individuals [17].

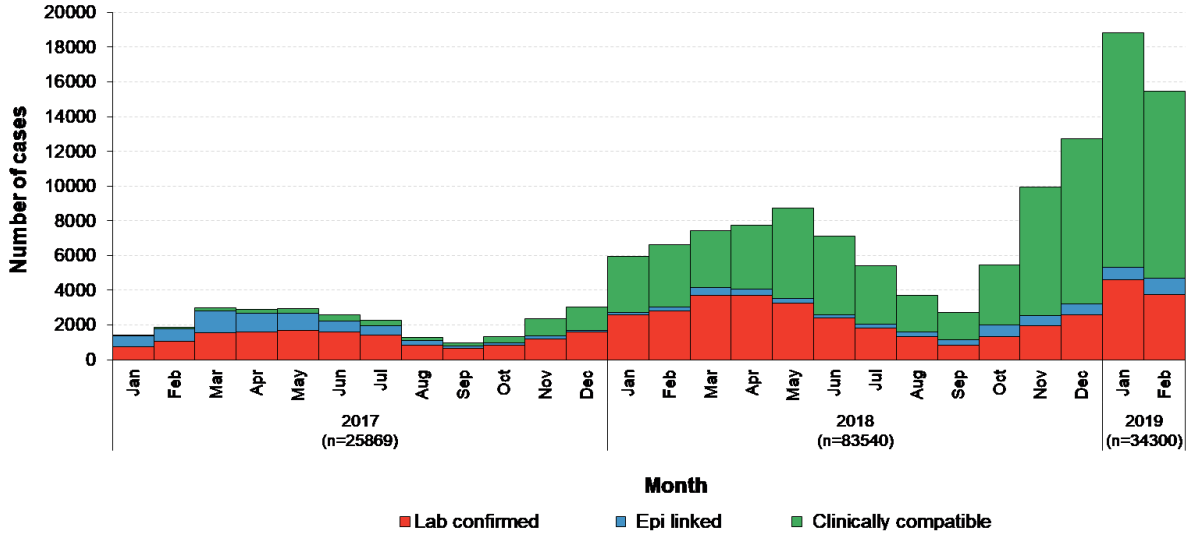


Figure 6. Monthly distribution and classification of measles cases, January 2017– February 20191, WHO European Region

"*There are millions of people globally at risk and in the first six months of 2019, the cases reported are the highest ever since 2006, with outbreaks that put the health systems to a severe test and cause serious illnesses, disabilities and deaths in many parts of the world"*.

"*all subjects over 6 months of life must be protected from measles before going to an area where the virus is circulating*".

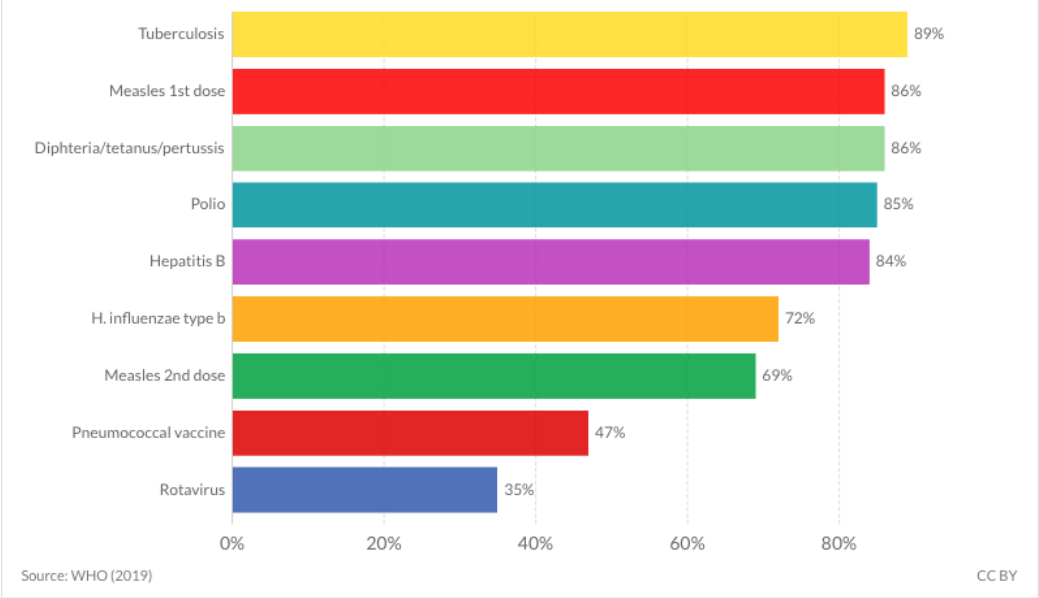


Figure 7. Global Vaccination coverage. 2018 [18]

Although there is already a worrying percentage for the number of patients who accept to take the measles vaccine (86%), the most worrying factor is given by the concerning percentage of patients who take the second dose required for a proper treatment (only 47%).

"Although measles cases and deaths are decreasing in the world, in 2017, 14,451 cases of measles were reported in the EU, three times as many as in 2016 (4,643). The two countries with the highest number of cases were Romania and Italy, according to the European Centre for Disease Prevention and Control (ECDC). In 2017, 87% of cases involved unvaccinated cases. Over the last two years 50 people died in the EU because of measles."[19]

Medical consultancy is required for all who are not sure of their vaccination status, and in the case of vaccines missing, any traveler must be vaccinated at least 15 days before the departure toward a country where measles still exists.

The WHO urges all global governments to guarantee immunizations against measles. In 2018, the

- Democratic Republic of the Congo,
- Madagascar
- Ukraine

have recorded the greatest number of affected cases.
In Madagascar cases are decreasing dramatically thanks to an emergency vaccination campaigns at national level.
Large outbreaks are still under way in:

- Angola,
- Cameroon,
- Chad,
- Kazakhstan,
- Nigeria,
- Philippines,

- South Sudan,
- Sudan
- Thailand.

According to the WHO, "the reasons why people do not get vaccinated vary a lot: the lack of access to quality health services, the presence of conflicts and wars. Not only that, there is also misinformation and a lack of awareness of the need to get vaccinated that play a fundamental role. In several countries, measles is spreading among older children, young people and adults who have not been vaccinated in the past " and if it is not treated, agents can go across the globe reaching all that countries where it is wrongly convinced Measles does not exist anymore".

3.1.2 CASE STUDY: OLIO ITALICO[20] IN THE ITALIAN MARKET IS FAKE NEWS.

According to Food Industry Monitor[21], Italian food and drinks move an export business that arrives to over three times the GDP of the country[22] representing Italian lifestyle, taste, and culture around the globe.
The 'made in Italy' is known and appreciated not only for quality of national food products, but also for the great investments that Italian manufacturers have made over the years in marketing and communication.

Companies that today must also counter the threat of fake news, which risks compromising reputation and turnover conquered in years.

5 July 2018
New oil, called 'Italico' is produced with foreign blends, even if the 50% is made by italian olives[23]. Italico is a "special" agreement stipulated by Coldiretti/Unaprol e Federolio, considered as two of the most important Italian oil producers.

Actually that was a fake news, exploited for profit interests that had nothing to deal with the real Made in Italy we talked about before on the part of consumers and farmers.

The price set in the alleged supply chain agreement would be 4.3 euros per kilogram[24] that inevitably brought a real trade war with a consequently downturns, mainly covering Italian:

- growers
- producers
- entrepreneurs.

Taking advantage of the difficulties of production that olive oil companies had between 2017 and 2018, this fake news aimed at attacking a historic agreement for 100% Italian oil from olives grown and milled in Italy, which concerns a quantity of 10 million kilos for a value of the supply chain contract of over 50 million euros, which cuts:

- intermediaries,
- speculations
- fixers.

The CNO, the national Consortium of Italian olive growers, launched a petition on change.org against "the squalid mixtures" to save also the real 100% Italian extra virgin olive oil.

Italian olive-growers replied: "*We will oppose in any way this crazy plot that the president of Federolio called 'Italico', a disguised Italian sounding that aims to kill the extraordinary and unique Italian variety of mono-varietal oils, DOP, Bio , IGP that constitute the wealth of Italian olive growing* "

Gennaro Sicolo, National Consortium of Olive Growers' President, declared: "*We immediately launched an online petition to say no to these squalid mixtures, to save Italian extra virgin olive oil and protect producers and consumers*" in order to report the false information given.

Finally, Coldiretti himself declared[25]: "*there is no reference regarding the name of the product as ITALICO, nor let alone the blends of Made in Italy extra virgin olive oils with those imported from abroad*".

4 FAKE NEWS ON FANDANGO APPLICATION AREAS

Some social topics are often exposed to fake news, likely meant to create some specific effect on the public opinion.
In particular, in view of electoral campaigns hoaxes and fake news abound on policies about sensitive areas such as: finance, immigration, and the environment [26].

4.1 ENVIRONMENT

Fake news about the climate crisis risk to cause one of the most damaging disinformation of all times.
While almost all reviewed scientific studies conclude that human activities are directly responsible for climate change, unfounded pseudo-scientific opinions are trying to influence the public opinion to reduce the attention that the phenomenon demands, likely to sustain negationist political positions that are putting the world at risk of a climate collapse.

In 2015, the Paris Agreement[27] put forward some environment preservation strategies.
The commitment of the participating States was to keep the rise in average global temperatures below 2 degrees centigrade. Since then negationist political opinions and related disinformation caused a lack of commitment from some of the major polluting countries.
In the meantime, rising temperatures, the most evident effect of climate change, are already causing natural disasters, costing human lives and huge material damages arising from different specific adverse consequences:

- eroded beaches coasts and less snow on ski slopes are reducing the appeal of some touristic location;
- drought and desertification are spare-heading climate-related flows of migration, and causing great distress in wildlife also in some cases resulting in the full extinction of some species;
- agriculture is suffering from the change in temperature and rain patterns;
- etc.

Fake opinions about climate change serve economic interests. Undermining the scientific truth to make people believe that the production of CO2 is inconsequential, or even beneficial to our planet (which obviously it is not), may lead people to not take the necessary actions to reduce their consumption patterns. This is unacceptable when scientific results consistently show that if we do not adopt CO2 reducing measures, a sharp increase in the global average temperature will happen with extreme consequences, even the extinction of the human race.

Natural disasters can also be used to influence the local public opinion in view of electoral campaigns.
Fear, dissatisfaction, and panic are emotions that are manipulated by fake (see case study 5.1.2) to cause desired re-actions in the public opinion.
Fake opinions are often accepted and shared because of preconceived general opinions or sheer ignorance. Such preconceptions are hard to manage for local authorities that often to deal with groups of people support theories deprived of any scientific evidence (e.g. conspiracy fanatics thinking that the world is hiding something important).
When natural disasters (often not real, but just alleged) threaten people and the local government fails in keeping them under control, people react by reducing their trust in the current government and vote accordingly in the next elections.

4.1.1 CASE STUDY: LIES REGARDING THE CLIMATE CHANGE. OPEN LETTER TO THE UN SECRETARY, GENERÀL ANTONIO GUTERRES ON YEMEN.

As an example of disinformation about climate change, we may cite the letter[28] sent to the UN Secretary, Antonio Guterres, on February 25, 2019, by some denialist energy industry technicians, entrepreneurs, and lobbyists. The letter claimed that:

- there is no climate crisis;
- investments in renewable sources are endangering the economic stability of entire nations;
- the increase of CO2 in the atmosphere might even be good for the environment;
- the bleaching events on the Great Barrier Reef are not driven by climate change.

This group of denialists, named Clintel, includes some known people including:

- Hugh Morgan (former president of the Business Council of Australia);
- Ian Plimer (director of the mining project Roy Hill Holdings of Gina Rinehart);
- Peter Ridd (former James Cook University scientist).

According to this letter, climate change alarmism is just the result of a big lie told for years:

"*Scientists should openly face the uncertainties and exaggerations in their global warming predictions while politicians should dispassionately count the real benefits as well as the imagined costs of adapting to global warming and the real costs as well as the imagined benefits of mitigation*".

The Intergovernmental Panel on Climate Change[29], supporters of the opposite opinion, maintains that this letter does not present an exhaustive evidence to support the denialist thesis. The climate crisis is not only undeniable, but it is also affecting the daily life of the world population[30].

The letter from Clintel argues that the Global Warming phenomenon is not caused only by human activity (emission of greenhouse gases), but from natural hot and cold cycles.

An affirmation which is denied by various scientific studies: in particular, a long-term research published in the journal Nature Climate Change explains[31] that "*the responsibility for a human intervention regarding global warming would have a certainty level of 5-sigma"* (5-sigmas corresponds to around 1 in 3,500,000 chances of not being true).

The letter also maintains that global warming is advancing slowly than expected by most climate models (that predicted an exponential increase starting from 2016). Again this is contrary to the prevailing scientific opinion according to which global warming could lead to an increase in temperatures up to 7° by the year 2100.

About the alleged absence of correlation between extreme weather events and climate change. The World Meteorological Organization published a detailed report[32] in which it demonstrates just the opposite: in 2018 alone over 62 million people have suffered from catastrophic climatic events due to global warming and climate change.

Finally,, according to several pieces of research from Cambridge University we have to reject also: *"the recurring denialist assumption that the increase in CO2 in the atmosphere means more food for plants and trees throughout the planet and therefore a substantial benefit for the biosphere".* The increase in CO2 can easily be seen as a strong aid for plant growth that would accelerate in the future, but on the other hand, the plant would have a shorter life span. The result is translated into reduced CO2 absorption capacity of the global flora which would further fuel the increase in carbon dioxide in the atmosphere.

4.1.2 CASE STUDY: LIES REGARDING NATURAL DISASTERS FOR POLITICAL PURPOSES. SULAWESI ISLAND NATURAL DISASTERS[33].

On September 26, 2018, the Indonesian island of Sulawesi was hit by a magnitude 7.5 earthquake, which caused a tsunami that caused important damages. Hundreds of homes were swept away.

Fake news foreseeing a second stronger earthquake, caused a panic risk among Indonesian citizens. To make the situation even more serious, a set of other false information was shared on Facebook alarmed by reporting false consequences:

- the (alleged) death of the mayor of Palu;
- the risk of structural failure in a large dam on the island that would have caused a second flood;
- fake images and reports exaggerating the risk of a possible volcanic eruption on Sulawesi, consequent to the earthquake.

The authorities tried hard to identify the minds behind this alarmism. In 2019, the Indonesian authorities arrested several people suspected to have carried out a precise plan to destabilize the Indonesian government and affect the local political balance before the forthcoming elections.

The Indonesian Ministry of Communications commissioned a team of about 70 people to identify any other misleading news that could threaten again the public peace.

However, these efforts caused concern. Malaysia canceled the law against fake news after receiving criticism about the fact that this law would have excessively restricted the freedom of speech and the freedom of the press rather than dealing effectively with misinformation.

Singapore is currently trying to adopt a similar law, although rights groups raise similar concerns about the problems that it could cause and its likely inability to prevent the spread of fake news.

4.2 IMMIGRATION

Some people read to experience a pleasurable time have fun, and much less to be really informed.
Many do not look for different opinions on news, and take at face value the first information they get directly from broadcast channels or social media.

Another topic lending itself to extreme fake news activity is immigration. Fake news about flows of migrants abound, and lead many people to have an alter perception of reality. Often local populations are convinced

of being subject to a larger immigration flow than it is really the case. Episodes of intolerance and racism often follow: Serious misinformation for various reasons (mainly socio-political), try to manipulate the public. In countries like Italy, but also to a lesser extent in Portugal and Spain, disinformation on immigration has led the public opinion to be very detached from reality. Misinformation on migratory flows, very often due to political reasons, started becoming a threat for peaceful internal coexistence, fueling, in some cases, hate and racial intolerance.

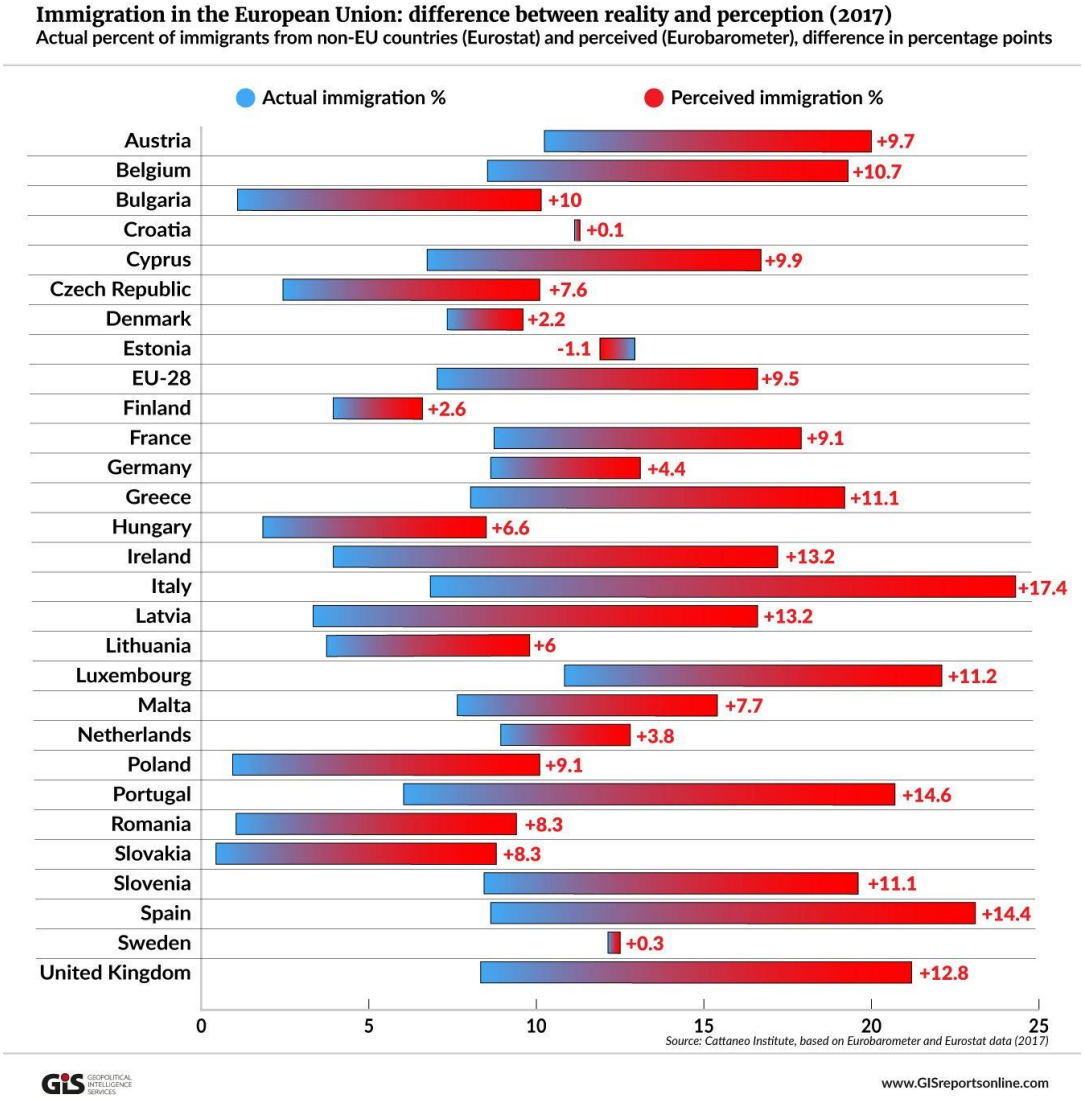


Figure 8[34] Immigration in EU. Difference between reality and perception.

4.2.1 CASE STUDY: THE RAPED RUSSIAN-GERMAN GIRL

In 2016, a Russian television shared a fake video, after the publication of a related article, accusing an Arab migrant of kidnapping and raping a Russian-German girl on January 11, 2016, in the Marzahn district of Berlin. A story that the German police (involved due to the girl's background) declared groundless.

Russian statements report that the 13-year old girl would have been abducted for more than 30 hours by three men.

According to Martin Steltner, the spokesman of the Berlin prosecutor, although it was true that the girl had disappeared for many hours that day, the statements, considered unclear and confused, immediately ruled out the rape hypothesis . To support this, during an interrogation, the girl admitted that the story was fake.

Berlin extreme right showed its dissent in this regard, especially given that the news came in the same period of other cases of sexual abuse in Cologne and other areas of Germany, with the blame attributed to the wave of migrants arriving in Germany.
The girl's parents reported to a Russian journalist that the child had been manipulated by a professional at the time of the interrogatory and that the statements had been manipulated by the Berlin police as well.
Perviy Kanal (Channel One), the Russian television station involved, decided to continue to report in order to support its thesis of abduction and rape, keeping on interviewing the girl parents .
Since this report had been broadcast, the protesters of the German and Russian community took the streets in a show of anger, violence and racial intolerance accusing the German police of hiding the case and defending criminals for political reasons.

One of the most common fake news regarding immigration is that migrants are all criminals.
According to Milo Bianchi (Universite Paris Dauphine), Paolo Buonanno (University of Bergamo) and Paolo Pinotti (Università Bocconi), when migrants are excluded from the foreign communities in which they live, they could find themselves in difficult situations, also ones which can lead to criminality.
Migration is not a cause and criminality is not an effect[35].

Figure 9. Russian immigrants protesting in Berlin

4.3 FINANCE

Misleading articles and online posts may be used to abuse people's trust. After the latest scandals about deceptive articles, reliable articles from reliable sources can drive less trading activity than they had in the past. Especially in finance, fake news makes people wary of trusting real news.

Financial market tends to self-correct in case of rising or falling of shares, we may assume that professional investors to be more likely to recognize deceptive articles than individual investors; if fake news cause prices to rise, they could sell the overvalued stock and drive the price back down.

In a recent study [36], Marina Niessner, finance professor at YALE SOM, classified articles from financial websites as real or fake. According to Niessner, *"Certain knowledge-sharing platforms do seem to matter for financial markets".*
Researchers found that after fake news about some firm were published, their stock prices temporarily tended to quickly rise and fall. This is called a "pump and dump" scheme. Deceptive articles often coexisted with press releases and insider trading, suggesting that those firms tried to artificially inflate their stock prices.
Iit has been around as long as the stock market has. A group of scam artists will get together and buy up a bunch of penny stocks. This drives the price of those stocks higher, and on the back of these rising prices, they get outsiders to invest in the stock—using big promises of easy money.
Then at a predetermined price, the scam artists sell off all of their shares of the stock. This, of course, causes the stock price tumble and the outside investors to lose almost all of their money—while the scam artists pocket the difference in the run-up of the stock price."[37]

Also, new technology, and Bitcoins in particular, can be subject to this pump and dump scheme.
It's the same old scam only in a sector where people are less prepared for it.
Fake news, fake stories or fake involvement endorsements from some celebrities are often part of the deceptive schema. Digital technology makes everything look real, and some people end up getting caught up in this, with relevant financial damages.

4.3.1 CASE STUDY: PHISHING EMAIL FOR DONATIONS OF BITCOINS FOR BREXIT "BOTCH"

Phishing emails are used to solicit users to perform some action, such as:

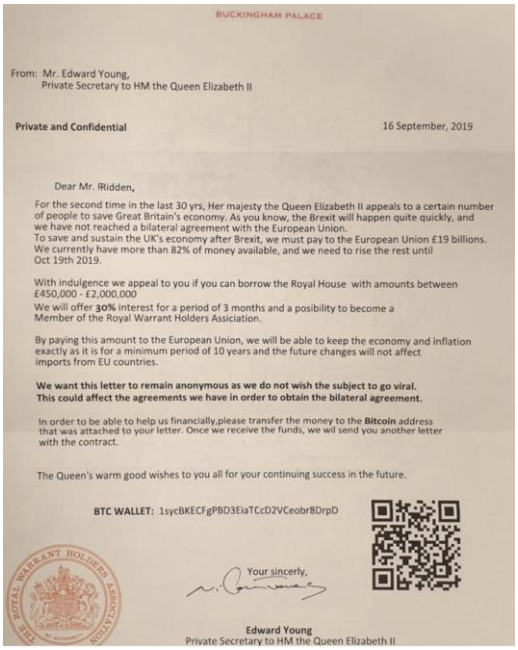
- reset a password;
- provide personal account details or money.

Spotting such emails is hard, so companies and societies always tend to contact users directly from their activity or phone number, if provided.

Every British citizen would trust Her Royal Majesty.

On September 16, 2019, in a physically mailed letter (figure 6 above) apparently from the Queen's private office, Buckingham Palace asked for bitcoin donation to help the U.K. fund after the Brexit "botch".
According to the letter, Brexit was "*happening quite quickly*," and the money needed "*would have been designated to save Great Britain's economy*."
Paul Ridden, CEO of a U.K. technology company, claimed to have received the letter and shared it on LinkedIn.
Rarely poorly drafted scams such this one are posted by regular mail.
According to Ridden:
"In a corporate world, one of the things we're always trying to protect against is these social engineering attacks and I guess coming in on paper, it's perhaps trying to come through a door that's not protected... As

a tech firm ourselves, we're reasonably aware of what's going on—so, nobody's going to be sending any Bitcoin off to them."



BUCKINGHAM PALACE

From: Mr. Edward Young,
Private Secretary to HM the Queen Elizabeth II

Private and Confidential 16 September, 2019

Dear Mr. fRidden,

For the second time in the last 30 yrs, Her majesty the Queen Elizabeth II appeals to a certain number of people to save Great Britain's economy. As you know, the Brexit will happen quite quickly, and we have not reached a bilateral agreement with the European Union.
To save and sustain the UK's economy after Brexit, we must pay to the European Union £19 billions. We currently have more than 82% of money available, and we need to rise the rest until Oct 19th 2019.

With indulgence we appeal to you if you can borrow the Royal House with amounts between £450,000 - £2,000,000
We will offer **30%** interest for a period of 3 months and a posibility to become a Member of the Royal Warrant Holders Assiciation.

By paying this amount to the European Union, we will be able to keep the economy and inflation exactly as it is for a minimum period of 10 years and the future changes will not affect imports from EU countries.

We want this letter to remain anonymous as we do not wish the subject to go viral.
This could affect the agreements we have in order to obtain the bilateral agreement.

In order to be able to help us financially,please transfer the money to the **Bitcoin** address that was attached to your letter. Once we receive the funds, we wil send you another letter with the contract.

The Queen's warm good wishes to you all for your continuing success in the future.

BTC WALLET: 1sycBKECFgPBD3EiaTCcD2VCeobr8DrpD

Your sincerly,

Edward Young
Private Secretary to HM the Queen Elizabeth II

Figure 10. False letter send to Paul Ridden, CEO of a U.K. technology company

Asking an amount between £450,000 and £2,000,000 U.K. Government promised a 30% interest for a three-month loan. Moreover, it promises also the membership of the Royal Warrant Holders Association[38] that have *"supplied goods or services to the Households of HM The Queen, HRH The Duke of Edinburgh or HRH The Prince of Wales for at least five years."*

An aspect that makes the letter even more appealing is, in the event of a donation, the promise to delay Brexit economic shocks and to stop the commercial relations with the EU.
To support and emphasize the importance of the private secretary of the Queen, it "says" the United Kingdom had to pay 19 billion pounds (24.7 billion dollars) to the EU "in order to save and support the national economy ".
If in one hand the Queen had "already collected 82%" of the requested funds and so just an 18% was requested, on the other hand, the deadline was set for October 19th (pretty soon).

Key point of the Phishing mail: asking recipients to keep the contents secret because it could have negative effects on "bilateral agreements" in force.

Targeted scams and social engineering behind these strategies have reached high levels of complexity with severe consequences. The use of familiar names and platforms to induce victims to trust scammers (who in the U.K. would not trust the Queen) has become quite sophisticated that it is often difficult to identify (see in Italy also with "bitcoins revolution" scam by important local names like Jovanotti and Gianluigi Buffon[39]).

5. PRELIMINARY BUSINESS PLAN

This section describes the first consortium level FANDANGO business model, elaborated by using the BMC (Business Model Canvas) conceptual model and expanding the preliminary analysis carried out in 8.1.

The BMC, developed by Österwalder and Pigneur in 2010, is a conceptual approach to define a Business Model by evaluating and defining choices about the main aspects of any business operation.

A BMC visually is a rectangle composed of 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.

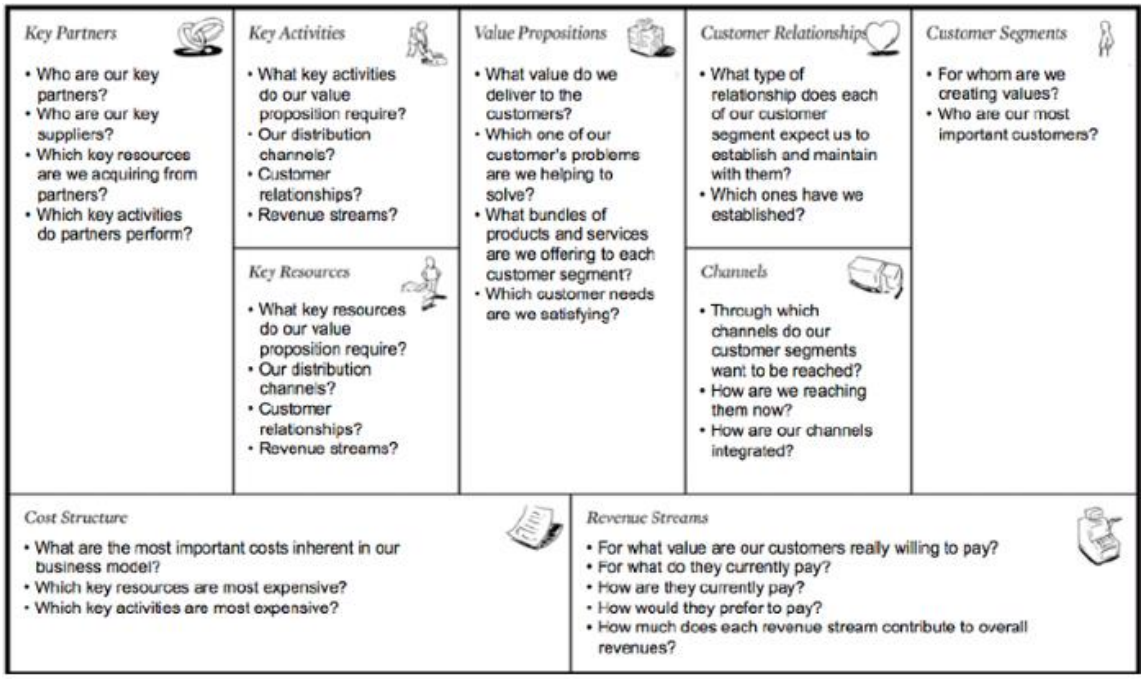


Figure 11. Business Model Canvas by Österwalder and Pigneur (2010)

To fill in each BMC block the strategist/business analyst has to evaluate a specific set of issues for each block. The resulting overall model can then be checked for consistency.

In formulating our business model, we went through a linear sequence:

- Define the Value Proposition,
- Identify the first Target Customer Segments and refine the Value Proposition to suit their needs,
- Suggest future Key Partners,
- Derive the Key Activities from the value proposition,
- Define a range of choices for Customer Relationship Management,
- Consider the related options available for Channels,

- Introduce Key Resources.

In accordance with the iterative methodology adopted in FANDANGO, not all issues have been dealt with, hence going through this sequence, we had to be progressively less specific in our choices. Hence, some BMC blocks will be fully defined later on, based on more precise data about performance levels at various infrastructural investment levels.
We will keep on refining and refining our Business Model in future deliverables, in particular for Revenue streams and Costs.

5.1 VALUE PROPOSITION

The value proposition is the offer that a business organization proposes to its customers. Several value variables, (performance, reliability, usability, customization, the ability to allow cost or risk reductions etc), as they are perceived by the customer, contribute to this value.
For the customer to buy the product/service its perceived value has to exceed the buying price.
Our value proposition is the following: **FANDANGO is a software platform (delivered as SaaS or on-premises) able to support human experts who professionally work to identify and debunk misleading news and claims.**
The FANDANGO platform will do this by providing:

- **scoring of several disinformation clues; the scores are computed by Machine Learning AI models (Big Data domain-specific training sets may improve the reliability of scores); separate scores are computed by analyzing different components of, i.e. text, media, source/author,**
- **interactive exploration of similar verified claims,**
- **optionally facilitated access (links) to official open data about the specific topic.**

FANDANGO results will be aimed only at professionals, who evaluate news and claims to identify and disprove misinformation (in different market segments - see the following section). Their expert judgement will not be substituted by an automatic decision. The FANDANGO platform will just support their evaluation process.
FANDANGO results are not meant for commercial selling to final users (readers) either.

The FANDANGO platform will be offered as an **on-line SaaS service or installed on-premises.** Moreover, consultancy and system integration activities could be offered and would be highly beneficial to seamlessly integrate FANDANGO in the real verification process being used by the specific customer.
In a nutshell, the process to check an online article requires the professional user to specify the content by providing a URL. The FANDANGO platform will then provide - in a reasonable time - a set of fakeness scores:

- "fake" writing style (on the basis of Natural Language Processing techniques),
- manipulated associated media (video /images analysed by adequately trained AI classifiers),
- out of context images/video (i.e. real video or images repurposed out of their original context),
- author and source credibility,
- an overall metrics combining the scores above.

The value for customers will accrue from several value drivers:

- Cost savings: checking news is a time consuming and expensive process. Human experts are well-paid professionals who use their experience, judgement and network of connections to analyse news, with only the help of general IT services (e.g. a Google search). A dedicated IT support will likely bring about significant time/cost savings.
- Time savings: no matter how dedicated the human experts are, they risk being overwhelmed by the sheer amount of fake news. News agencies feel the urge to evaluate breaking news quickly.
- Risk reduction: under real-world time pressure the risk of misjudging a content (a fake as real or the other way around) is significant, and consequences may be severe.
- Brand image: a solid track record in the detection and debunking of fake news is crucial for brand image, in particular for high-quality media outlets and for fact-checkers.
- Integration in real workflows (this will need specific consulting and system integration efforts).

5.2 CUSTOMER SEGMENTS

Starting from the value proposition we began our business planning by defining the Customer Segments that we will serve first.
This is crucial since different customer segments may have specific needs that may need to be addressed.
These first customer segments will be:

- **Established Media companies and news agencies;**
- **Fact-checking organisations,**
- **Large firms in sensitive sectors,**
- **Advertisers and advertising agencies,**
- **Educational institutions and Media Literacy initiatives.**

5.2.1 MEDIA AND NEWS AGENCIES

Advertising revenues for traditional media companies are declining and subscriptions are becoming a crucial source of revenue. Quoting the report Pay Models in European News [Sehl]: "*66% percent of European newspapers and 71% of weekly news magazines operate a pay model. Freemium models, where some content is free, but premium material is only available to paying users, or metered paywalls that allow free access to a limited number of articles each month before requiring payment. Freemium models are the most widely used, followed by metered paywalls.*"
However, consumers are willing to pay only for high-quality and reliable content, so being perceived as a reliable source is more significant than ever before. However, media and news agencies are being actively targeted by disinformation agents, who deliver fakes to them, to get them endorsed and shared. Even denial can be useful for them. As Claire Wardle, puts it : "*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 the major social networks. 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. Either way, the agents of disinformation have won. Amplification, in any form, was their goal in the first place*."

Given this situation, according to the Newman's survey for the Reuters' Institute for the Study of Journalism[40] , publishers are planning to invest more in harnessing the potential of Artificial Intelligence (AI) and Machine Learning (ML), not to replace journalists, but to complement their work. 78% of respondents said investment in AI was needed to help meet future challenges:
1) personalizing content and create better recommendations for the audience;
2) automating more stories and videos (the so-called Robo-journalism);
3) supporting journalists in dealing with misinformation or information overload.

FANDANGO's results will nicely fit in the latter category.

5.2.2 FACT-CHECKING ORGANISATIONS

In the last few years, we witnessed a growing interest for professionals (fact-checkers) who undertake the challenging task of checking facts/claims based on demonstrable evidence and data.
Supporting fact-checkers is extremely challenging for any algorithmic AI-based approach (as in FANDANGO) because fact-checkers need to evaluate claims in all their shades of grey. However, FANDANGO can have a role in a fact-checking workflow as it is now while further evolutions of it may be conceived expressly for fact-checkers, especially for the ones organized and supported by IT platforms, such as factcheckEU (https://factcheckeu.info/en/).
In 8.1 we already provided an exhaustive list of entities specialised in news verification in Europe and in the United States, as commercial organisations and as Civil Society organisations as well as a listing of public and private initiatives focused on fighting disinformation and propaganda.

5.2.3 LARGE FIRMS IN SENSITIVE SECTORS

Misinformation and disinformation are also damaging non-media firms, especially in sensitive sectors (e.g. food, pharma, travel and tourism, environment and security, etc. as previously seen in chapter 5). Firms exposed to false or exaggerated claims are feeling the pressure to identify and debunk misinformation quickly. Late debunked fakes damage brand reputation in a way that is difficult to recover from.
FANDANGO partners will fine-tune project results for corporate communication departments. This specific application case will leverage all FANDANGO AI models plus an effective integration with firm-specific product/service data. It is reasonable to assume that corporate communication departments may get full access to real corporate data to help them disprove false claims. Moreover, the user interface will need to be streamlined since disproving false claims is not the core competence for them.

5.2.4 ADVERTISERS AND ADVERTISING AGENCIES

According to the Information Society Project[41] workshop report : "*Inspired by digitally organized 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 whitelists of sites they deem to have reliable content*."
If advertisers, who still account for a major share of revenues for established media companies, favour media companies that produce high-quality news, while dropping those that do not adequately investigate before publishing, they might contribute to the fight against misinformation. In the remainder of the project, the

consortium will evaluate direct strategies of communication and involvement of advertisers and advertising agencies as a marketing strategy to furtherly diffuse FANDANGO results.

5.2.5 EDUCATIONAL INSTITUTIONS

Similarly, but in an even less direct fashion media Literacy initiatives can obviously be beneficial, in the long run, in the fight against misinformation. A full set of European Media Literacy Initiatives can be found in the EuroMediaLiteracy database[42] and the Council of Europe report, "Mapping of media literacy practices and actions in EU-28"[43] . Moreover, educational institutions might be interested in using IT tools in their educational programs. In 8.1 we mentioned a few Media Literacy initiatives worth focusing on. The list will be re-evaluated and updated by project end.

5.3 KEY ACTIVITIES

Key activities are the activities that have to be performed to deliver the chosen value proposition. They may span the whole value chain from production to logistics, from plant optimization to building brand recognition, from cost savings to after-sales service. For FANDANGO they will be:

- partnership building activities to establish effective cooperation with third parties service providers that can leverage FANDANGO as an open platform, creating new FANDANGO-compatible services,
- system integration activities for integration in real fact-checking workflows (client-specific projects),
- customization for specific domains (e.g. immigration vs economic growth vs environmental concerns vs..); this effort may require the linking of domain-specific data, content and knowledge in the fact-checking workflow, and the fine tuning of ML models by using domain specific training set,
- a continuous technical watch on misinformation and disinformation techniques,
- evolutive software maintenance to improve the performance and keep the system apace with new or improved misinformation and disinformation techniques.

This last aspect, in particular, will have to consider that:

- according to Graves: "...*AFC solutions can deal with one or more of (the) three 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*". FANDANGO currently mainly focuses on identification: extensions to verification and correction will need to be considered after project-end;
- according to [Brandolini], *"The amount of energy needed to refute bullshit is an order of magnitude bigger than to produce it."* We think we may choose to focus on 3 aspects. 1) analyze not only simple declarative statements but also claims embedded in complex sentences 2) improve the process to periodically refine the ground truth by following a clear methodology; 3) consider true to false nuances for accurate fact-checking.

5.4 KEY PARTNERS

Fighting disinformation and misinformation is a difficult endeavour and partnerships can effectively contribute to it.
To facilitate partnerships FANDANGO is being conceived as an extensible platform, i.e. as a set of specialized software services running on top of an Open Source state-of-the-art Big Data middleware. All FANDANGO components are being designed to allow the integration of further services provided by third parties. We expect these services to add specific value (e.g. a reverse image search).

Since a first pilot execution has been just completed and a revision process based on first pilot results has been started, we are still limiting ourselves to identifying a set of actors that we think we could cooperate in the future. These subjects or initiatives were already identified in a table in 8.1.

5.5 CUSTOMER RELATIONSHIP

We decided to keep all our customer relationship options open. We will support relationships of growing complexity, from simple self-service access to basic FANDANGO services, to support user communities (communities with direct interactions among clients), to direct assistance, up to full-fledged system integration projects (training and problem solving will be part of this offer package).
Large clients with sophisticated needs will likely need consulting and system integration. This will allow us to customize the specific FANDANGO implementation and integrate it in the real client news verification workflow. Obviously, this type of relationship may allow us to gather more accurate feedback, useful to further improve the FANDANGO platform.

5.6 CHANNELS

The choice of FANDANGO delivery channels will be strictly related to the customer relationship types.
On–line, SaaS (Software as a Service) delivery of FANDANGO will be likely for simpler relationships, and sometimes viable also for more complex system integration relationships.
However, specific clients with a heightened sensibility to security, privacy, hacking risk or performance requirements may choose an on-premises installation of the whole platform.
Set-up and maintenance costs would obviously grow substantially in this case.

As far as sales channels are concerned, participation at valuable events and sector fairs will be the most important an important sales channel for the first two years after project-end.
Given the technical achievements of FANDANGO, the partners will also submit FANDANGO research results to selected scientific journals and conferences, to aid in future marketing.

In 8.1 we already 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 1. The scientific / academic community

5.7 KEY RESOURCES

The key resources are the main assets that will be needed to create value for our customers. They may include human, financial, physical and intellectual resources.
FANDANGO will need the following key resources to work:

- IT infrastructure resources. A powerful big-data oriented IT infrastructure will be needed to achieve adequate performance for the FANDANGO platform. The infrastructure may be made available as SaaS or on-premises. It may grow to a relevant level of complexity and costs.
- Human resources (consortium partners). In the FANDANGO professional team in charge of evolving the platform and supporting its operation, in addition to skilled IT technicians, we are considering the option to add a few non-IT professional figures: journalists, data scientists and experts of the specific content sector being investigated (climate, immigration, ecc.).
- Human resources (clients). Strong professional expertise will always be necessary to counter disinformation and misinformation, since FANDANGO results are only meant to support the human (expert) judgement.
- Content resources. In any given domain the progressive building of past claims is a relevant resource that will need to be progressively built and maintained, to establish a reliable ground truth corpus that we will use to further train our Machine Learning AI models.

5.8 COST STRUCTURE

The most important costs in the FANDANGO business model are:

- Development costs: software evolutive maintenance including hardware and software used in development.

- Delivery infrastructure for any specific client: cloud hosting fees or on-premises investment, plius software licensing and optionally system integration activities costs.
- 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.

5.9 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,
- freemium models.

It has to be also considered that FANDANGO partners have different and complementary backgrounds; in this first exploratory phase some partners, coming from a stronger system integration background will be likely to consider system integration projects targeted at large clients as the preferred option. In this case FANDANGO results will be subject to specific licensing costs.

Other partners may try to explore with attention simpler relationships with a SaaS delivery. For these cases the consortium will define an appropriate pay per use pricing model, possibly a freemium model as specified later in this document.

Let us try a first rough estimate. There are about 400.000 professional journalists in Europe. Let's assume that only 10% of them get actively involved in fact-checking or news verification processes and that at a steady-state FANDANGO will only able to get a 5% share of this market opportunity. The overall steady user base would then count about 2.000 professional users.

This estimate is cautious since it does not consider other target segments such as private firms, or markets outside Europe and is also quite conservative about both the potential market (only 10% of professional journalists potentially interested) and the market share (5% of them).

If we assume simple freemium pricing at 60 € per month and per user (this is also a conservative estimate since it is likely that part of the revenue stream will originate from more complex relationships, that would add system integration and consulting revenues).

In these simplifying assumptions, the annual accrued revenues would be at about 1440000 €/year. Considering a 30% margin this level of revenue would leave about 1 million €/year for further platform evolution, which is a reasonable level for sustaining a long-term strategy of further progressive expansion.

6. PRELIMINARY EXPLOITATION PLAN

We define the Exploitation Plan as "preliminary" as it is the first plan provided with a general idea, giving an overview of the kind of services to understand strategies, channels and activities reserved to Fandango as a supporting tool for false information detection.

The idea is to show the opportunities reserved for customers who, in case of purchase, will understand the FANDANGO advantages.

We will describe the individual (partner by partner choices) Exploitation Plans in the next deliverables.

The exploitation activities of FANDANGO, from an overall point of view, will be carried out in parallel with the dissemination activities as depicted by the figure below:

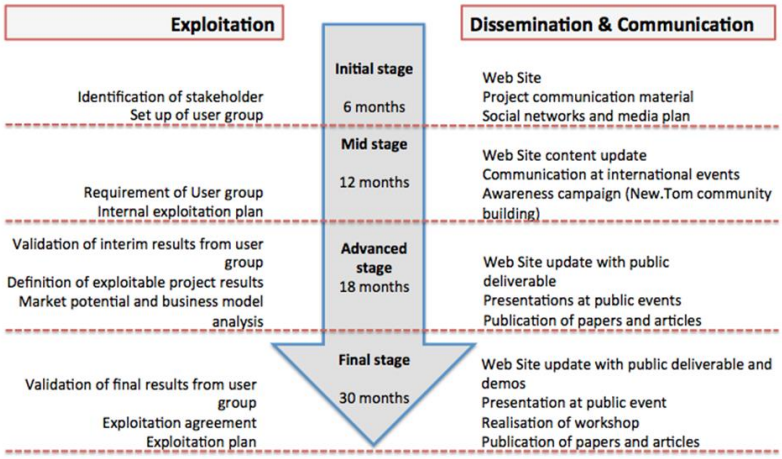


Figure 7. Exploitation and Dissemination structure

The goal of maximising the impact will be achieved by trying to achieve the widest possible exploitation of the project's outcomes. To do this, we defined an exploitation plan to disseminate the project's results, mainly in the final user communities (newspapers, broadcasters, news agency, newspapers' portals). The effort in this direction will be carried out by all partners, to be the most efficient and authoritative possible. The results achieved by executing the dissemination plan will be integrated in the exploitation process by an iterative process during the project lifecycle.

6.1 EXPLOITATION STRATEGY

Under the FANDANGO Grant Agreement, the consortium must take measures to ensure the exploitation of the results up to four years after the end of the project. This includes the following use of results:

- further research activities;
- developing, creating or marketing a product or process;
- creating and providing a service, or using them in standardisation activities.

According to H2020 glossary, the term exploitation is defined as "*the utilisation of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities*". Therefore, the objective of exploitation is to "effectively use project results through scientific, economic, political or societal exploitation routes aiming to turn R&I actions into concrete value and impact for society".

The project results are defined as *"Any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including intellectual property rights."*

The project exploitation strategy is in line with the FANDANGO plan for dissemination and exploitation of the project's results. As such, this plan is based on the five pillars, as follows:

- Pillar 1: *Targeted impact areas*. Those are the main topic areas and market targets where the consortium aims to create a significant impact
- Pillar 2: *Potential end-users and uses of the results that will be generated.* This is the main audience that will leverage the project outcomes. However, the exploitation strategy aims to target audience also beyond the defined categories.
- Pillar 3: *Dissemination and exploitation measures, materials and goals per target audience.*
- Pillar 4: *Dissemination and exploitation channels*.
- Pillar 5: Dissemination and exploitation strategy.

Based on T8.1, the overall FANDANGO exploitation strategy focuses on the following key aspects, that will be further refined in the next tasks and deliverables:

1. *Identification of Exploitable Assets.* This identifies the set of Exploitable Assets, which the FANDANGO consortium believes to have value for exploitation.
2. *FANDANGO business model and Plan.* This proposes partners the business model through which the generated innovation will be brought to market.
3. *Individual Exploitation Plans.* This describes the exploitation activities and plans, undertaken individually by each partner.
4. *Exploitation analysis of the FANDANGO system*. This part of exploitation activities focuses on the analysis of both the integrated FANDANGO platform, as the main exploitable asset of the project.

6.2 EXPLOITATION APPROACH

We here describe a first attempt at defining a commercial strategy for FANDANGO results, by using two different models:

- 4P;
- Marketing Funnel.

The 4P is a model used to conceptualize what emerges from the Business Plan in real elements of the product or service being sold. The 4P are:

- **Place** = Convenience – thinking about how comfortable it is to get the FANDANGO value for the user. How Media and News agencies, fact-checking organizations, large firms in sensitive factors, advertising agencies and educational institutions, as the main customers, can understand the real advantages of FANDANGO? Web platforms will certainly help to understand the product quickly and efficiently. Blogs, affiliation programs, Social Media and events will be parallel

opportunities to start activities meant to build reputation and awareness, more than engagement and conversion;

- **Price** = The main price model for FANDANGO could be a Freemium model. A combination of the words "free" and "premium," the term freemium is a type of business model that involves offering to customers complementary services as an extra. The basic services are free for the user to try; more advanced services, or additional features, instead have to be bought (premium). The freemium model tends to work well for Internet-based businesses with small customer acquisition costs, but high lifetime value. The freemium business model allows users to utilize basic features of the software, game or service free, charging only advanced features the basic package. It is a popular tactic designed to attract users.
  The premium services would be paid monthly per single license and the average price could be around 60€/month. Different and complementary revenue streams may be conceived: sales of complex system integration projects, simple license fees, open-source schema with paid consulting fees.
- **Promotion** = Communication (of Customer Value) – Communicating the value of FANDANGO is an important goal that we want to achieve by using online advertising, Social Media (such as Facebook, Instagram). They will be used to demonstrate that the product is in line with customer needs.
  Offline advertising in newspapers (the ones with a specific focus on innovation), can also promulgate the value of FANDANGO to its potential customers.
  Personal communication will certainly be used as well as it provides a more efficient direct contact: participation in events, fairs, and trade shows will allow us to contact and communicate to prospect customers. Also, public relations, as well as internet communications, will contact the customer directly, providing well-defined groups of people with information in the most direct way possible.
- **Product** = Customer Value – FANDANGO is being designed to offer a friendly and ergonomic user Interface with an attractive design. It streamlines human interaction resulting in better and faster debunking process that reduces tedious aspects related to text and images.
  FANDANGO helps to evaluate small details that are not easy to spot for the human journalist; it will be largely domain agnostic , so FANDANGO service can be distributed on a large scale, improving the service economics perspectives. creates value for different customer segments focusing first on news agencies and newsrooms of established media companies and it can be used to verify claims regarding any topic.

The Consortium defined a preliminary market positioning, based also on the 4P guidelines, shortly described in the following table:

4P	Customer need	Solution
Place	Where do I find Fandango?	• FANDANGO Blog • Website and marketing landing page • White papers • Social platforms (eg. Twitter, Linkedin) • Advertising platforms • Marketplace • Catalogs

		● Brochures
(Model) Price	How much am I expected to spend for Fandango?	● Freemium model ● Around 60€ per month per licence
Promotion	Where do I get info for Fandango?	Online advertising: ● Social Media ○ Facebook, ○ Instagram, ○ ect. Offline advertising: ● media ○ Newspapers ■ Wired ■ HBR ■ etc Personal communication: ● direct meetings with the costumer in ○ trade shows ○ events Public relations: ● media relations ● government relations ● Investor relations ● media relations ● Marketing communication internet communications: ● mailing lists, ● newsletters, etc.
Product	Why should i choose Fandango?	● easy to use ● better and faster debunking exercise ● Efficient elimination of tedious aspects ● One by one solutions ● Human interaction ● Evaluate details inside specific contests ● Customer service large scale ● Generate alliances ● Value for different customer segments ● In contact with any topic

Based on the 4P model, the consortium performed a more precise planning using the Marketing Funnel.

The Marketing Funnel is a conceptual approach to model the process that brings a potential customer to the actual purchase decision. Our marketing funnel describes this process for FANDANGO results. With careful analysis, a marketing funnel can help identify the actions that can positively influence consumers decisions at specific stages. The process is made up of steps to be analyzed with the eyes and interests as a potential Fandango consumer to better understand his/her needs.
The steps are the following:

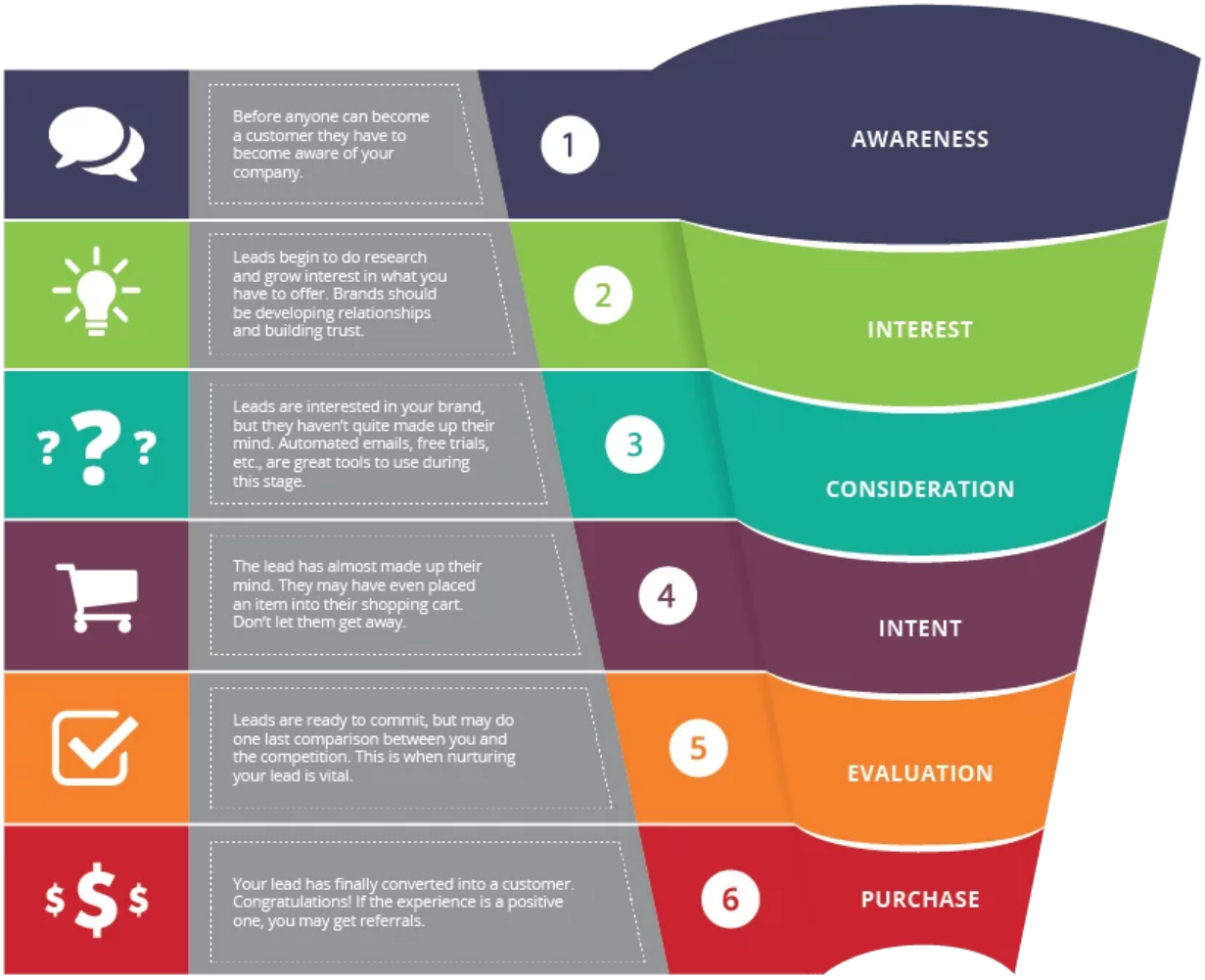


Figure 8. FANDANGO Marketing Funnel

FANDANGO being a B2B Product the FANDANGO Funnel will have to be conceived accordingly.

6.3 EXPLOITATION TOUCHPOINTS

The selection of channels to reach customers is a crucial element of a successful strategy. However, for FANDANGO, it might still be too early to expand an analysis about sales channels to any significant extent. Tech and media sector related events will be an important chance for the project to showcase results, pilots and get a feedback from potential clients. The participation is crucial to catch the attention of potential customers by giving them a realistic idea of Fandango, its usefulness and its suitability to specific, starting a relationship with them. Direct contact with customers is always a good element for a successful strategy.

The choice of delivery channels is strictly related to other customer relationship choices, described in D8.1.

On–line SaaS (Software as a Service) delivery of the platform will likely be the most interesting option, in most cases. However, specific clients presenting a heightened sensibility to security/privacy/hacker risks might consider or even prefer the on-premises install of the whole platform. In this case maintenance cost would grow to a level that needs careful consideration from the consortium partners in order to understand whether or not this option is viable on the production side.

Taking this into consideration, the following Exploitation channels can be adopted:

Funnel Stage	Touchpoints
Awareness	• Email • Social Media • Online and offline Advertisers • Media's intervention • Tradeshows • Event • Vendor-specific at conferences
Interest	• Blog • Webinars • e-Books • Newsletters • Social media platforms • Events
Consideration	• Feedback • Surveys • Interviews
Intent	• Demonstrations
Evaluation	• Case Studies • Catalogues • Brochures • Testimonials • Trials
Purchase	• Affiliation • Business meeting • Web-site • Landing Page

6.4 EXPLOITATION ACTIVITIES

Exploitation activities goal is to approach the client, to inform him and make him feel interested and confident about the project.

The selection of the activities by which FANDANGO wants to reach its customers is the concrete realization of the strategy chosen in the exploitation channels seen above.
Participation in an event, for example, allows customers to have a direct contact with FANDANGO.
We have already seen the exploitation channels with which we can guide the concrete knowledge of the different FANDANGO'S exploitation activities.
In order to make a single customer be able to have a personal experience, it is essential to bring Fandango to his/her life helping him/her also listening to his/her criteria that would help us, firstly, to improve the product in a short period of time and in a more efficient manner.
Also, the customer feels satisfied only once the payment has been completed in the smoothest way as possible.

Benefits will make the managers look like "heroes" to their bosses, so, giving the right tool to make them be able to do their work in the best way they can, is the winning strategy. Fandango implementing helps improving team's overall productivity as well as save the company money.
In this terms we could group together the categories on which Fandango works for successful marketing:

- price: quality/price ratio;
- efficiency: welcoming human interactions, FANDANGO has the competence for a fast and effective procedure of fake news detection;
- productivity and outputs: in addition, the more efficient Fandango is, the more results will be obtained, the more winning outputs for the company;
- progress/value: consequently, the greater efficiency, the greater the credibility of the same by completing quality work, favoring their value and progress;
- alignment: the greater the progress, the greater the awareness that Fandango will be perfectly aligned with the objectives to be achieved.

Please find below Activities:

Funnel Stage	Activities
Awareness	• blog article • videos • shared posts • advertising • direct emails • media mentions
Interest	• opinions • reports
Consideration	• feedback • surveys • interviews • phone consultation
Intent	• price matching services

	● payments arrangements ● discounts ● promotions
Evaluation	● temporary use packages ● Trials
Purchase	● Loyalty programs ● Discounts

7. CONCLUSION

Since the technical results of the FANDANGO project (components, platform) are still in a middle stage, the objective of this deliverable is to provide a reference to ensure that the technical dimension is oriented to the future market opportunities and to prepare an effective launch upon completion of the Project.

Therefore this report presented the first exploitation plan, ensuring the potential impact of the project result, meeting the overall aim of the project, namely to demonstrate that a fake news detection tools for Media Industries and not only for this segment market can be a key component to protect brands reputation and prevent risks for societal issues.
The progress of the implementation of this exploitation plan will be monitored and reported through the project period upcoming deliverables which include the full exploitation plan and action/analysis of technology uptake from FANDANGO (D8.3 Final Exploitation plan and technology uptake -M36).

In this report it is shown that FANDANGO has several elements to be a product that contributes to a more efficient control of the online fake news spreading phenomenon, facilitating its detections. This is also because FANDANGO results can be largely applied across several and different domains.
The multiplicity of contexts, individualized in this deliverable, emphasizes the versatility of FANDANGO.
All partners agree that they plan to use the results of the project well after its end. More specifically, the research technical institutes that participate in the project foresee, among others, to use these results in further services and products they research and develop. All partners will especially try to promote the FANDANGO approach to private stakeholders and European institutions as a tool that can help in the holistic, uniform and transparent evaluation of news trustability.

The current report has presented the activities done in WP8 for exploitation, and clustering tasks in the 24 months of the project. The forecasted activity for those tasks has been introduced as well. The consortium will periodically review: communication, dissemination exploitation plans and other WP8 tasks activities, in synergy with the WP7, referring to the plans presented in this deliverable until the end of the project.
This monitoring and updating actions will allow the consortium to make a wide international awareness of the project and its results.

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