

# DATA JOURNALISM IN NEWS MEDIA FIRMS – THE ROLE OF INFORMATION TECHNOLOGY TO MASTER CHALLENGES AND EMBRACE OPPORTUNITIES OF DATA-DRIVEN JOURNALISM PROJECTS

“Research in Progress”

Cinzia Dal Zotto, Academy of Journalism and Media, University of Neuchâtel, Switzerland,  
[cinzia.dalzotto@unine.ch](mailto:cinzia.dalzotto@unine.ch)

Yoann Schenker, Academy of Journalism and Media, University of Neuchâtel, Switzerland,  
[yoann.schenker@unine.ch](mailto:yoann.schenker@unine.ch)

Artur Lugmayr, Curtin University of Technology, Western Australia, Australia,  
[lartur@acm.org](mailto:lartur@acm.org)

## Abstract

*Data journalism includes three dimensions and requires three different types of journalism skills: computer assisted reporting, news applications development and data visualization. Computer assisted reporting represents an expertise in obtaining, analyzing and finding newsworthy angles in data. News reporters with this skill are able to discover interesting and relevant findings by analyzing data with the help of information technology tools. However, only news application developers know back-end programming, database configuration and build interfaces to applications, and data visualization specialists can ensure user-friendly interactivity of today's graphics. News organizations willing to engage in data journalism thus depend on collaboration between people belonging to very different professional cultures. Limits to collaboration work in this sense are resistance to change, lack of common language, different logics of communication, lack of measures to address these issues. Within this context the role of IT assumes a critical importance. Information technology needs to develop simple and dedicated tools that improve and facilitate not only data access, processing and visualization, but also a common language and knowledge exchange between developers, graphic designers and journalists so that data projects can be easily and more quickly processed and managed. This paper conceptually develops this idea.*

*Keywords: data journalism, digital media, new media, journalism, big data,*

## 1 Definition and development of data journalism

The use of data to improve news content and information delivery is a very old practice. Back in 1821 the Guardian published a leaked table of schools in Manchester matching the number of students attending with the total costs per school (Gray, Bounegru and Chambers, 2012). The analysis of those data pointed out for the first time the real number of students receiving free education, which was much higher than what official numbers showed. The data would seem uncontroversial today, but at that time it was sensational information. Leaked to the Guardian by a credible source, identified only as "NH", the table showed how the official estimates of only 8,000 children receiving free education were inaccurate, in fact the real number was close to 25,000. According to Simon Rogers (theguardian.com, 26.09.2011), in 1821 the official statistics for the city of Manchester were collected by just

four clergymen, an impossible task for such a small team and one which resulted in inaccurate and faulty data. Another early example of data powered information was given by Florence Nightingale, a British social reformer and statistician. In her key report to the parliament – ‘Mortality of the British Army’, published in 1858 – she used statistics and graphics to advocate the need for improvements in health services within the British army. Nightingale is described as "a true pioneer in the graphical representation of statistics", and is credited with developing a form of the pie chart now known as the polar area diagram. By combining various diagrams, each one illustrating seasonal sources of patient mortality in the military field hospital she managed, Nightingale highlighted that the vast majority of deaths were caused by preventable diseases rather than bullets.

Before the advent of digital technologies, data collection and analysis was a very time consuming practice requiring profound efforts and the deployment of a considerable amount of resources. By combining data with technology, news organizations have nowadays a very powerful tool at their disposal to improve their ability to produce and convey information. Although computer-assisted reporting has been existing since the 1960s, the growing availability of open data online as well as of resources such as open source software have intensified the relationship between journalists and computer-based technology and led to the definition of a new journalistic practice called data journalism.

Even though the paternity of the term is disputed, Adrian Holovaty was probably the first to explicitly mention data journalism. In a manifesto published in 2006, he argued that journalists should publish data in a structured format so that they can be subjected to statistical analysis (holovaty.com, 2006). The first major news organization to officially adopt the term was The Guardian when launching a Datablog in March 2009. The blog gained immediate public attention by releasing a UK Treasury spending interactive and user-friendly database following the members’ of parliament expenses scandal. This publication resulted in the British Parliament being now committed to releasing huge amounts of data every year. However, it was only after the publication of the Wikileaks’ Afghan War documents in July 2010 – 92,201 rows of data, each one containing a detailed breakdown of a military event in Afghanistan – that data journalism became a widely used term among the journalistic community and an increasingly expanding journalistic practice. Nonetheless, questions about (1) how to overcome resistance to change when merging journalism with data and technology, (2) how to recruit, develop and retain data savvy journalists, and (3) how to efficiently and effectively manage action teams composed by members who belong to different professional cultures are still wide open but of vital importance for news media organizations struggling for survival while facing the present digital transition. Within this proposal we will explain why these are the questions that need to be addressed and how the IT support is a fundamental factor here.

## **2 The importance of data journalism for the news media field**

According to Aitamurto, Sirkkunen and Lehtonen (2011) data journalism is now perceived by journalists as a tool for producing better journalism with the help of statistical, visualization and interactive methods for analyzing, clustering and presenting data. Data journalism is also associated with data mining practices and described as a new technique to extract relevant information from large amounts of data. For Paul Bradshaw (2012), data journalism opens up new possibilities “when you combine the nose for news and the ability to tell a compelling story with the sheer scale and range of digital information now available”. Those possibilities might emerge using programming to automate gathering and combining of information from different sources, using dedicated software to find connections between large amounts of documents, or applying interactive features and infographics to explain a complex story. Considering the information overload to which every person is confronted with today, gathering, filtering and visualizing what is happening beyond what the eye can see has a growing value and is becoming the field where journalists can play a major role in the future.

Several news organizations such as The Guardian have already integrated data journalism in their online strategies (Aitamurto, Sirkkunen and Lehtonen, 2011) and changed their organizational structure accordingly. Before Wikileaks, data bloggers at the Guardian were sitting on a different floor,

with graphic designers. Since Wikileaks, they moved to the same floor, next to the news desk. Nowadays the publication of an article is just the beginning of a story. The same data can be turned into compelling visualizations and into news interactive applications that people can use long after the article is published. So data driven journalism, which was mostly a one-person job before, is now a team work requiring the combined effort of reporters, statistics, information technologists and graphics experts (Aitamurto, Sirkkunen and Lehtonen, 2011). Being physically close makes it easier for data specialists to suggest ideas to the desk and for reporters across the newsroom to think of data journalists to help with stories. This proximity is not happening in all newsrooms. Most newsrooms do not even have journalists specialized in working with data. Yet data journalism seems to be of crucial importance for the future of news organizations as this practice can bring undeniable added value to news content.

Data savvy journalists can bridge the gap between statisticians, IT experts and writers: locating outliers and identifying trends that are not just statistically significant, but rather relevant for understanding the inherently complex world of today. When information was scarce, most of journalists' efforts were devoted to hunting and gathering. Now that information is abundant, processing is more important. Data driven journalism can support (1) analysis and thus help bring sense and structure out of the never-ending flow of data, as well as (2) presentation of data to get what is relevant for citizens (Meyer, 2012, p. 6). Journalists are needed more than ever today to curate, verify, analyze and synthesize the wash of data. Within this context, data journalism has profound importance for both our society and the journalism profession.

Shedding light onto cases previously impossible to offer to the public, data journalism already proved to be a powerful tool for executing the watchdog function, reducing information asymmetry and thus enhancing democratic development of societies (Vermanen and Fries, 2012). Data driven journalism represents media's attempts to adapt and respond to the changes of our information environment and therefore better serve public interest (Aitamurto, Sirkkunen and Lehtonen, 2011). This includes more interactive, multidimensional storytelling enabling readers to explore sources underlying news and encouraging them to participate in the process of creating and evaluating stories (Viana, 2012, p. 10). The importance of data journalism for the journalism profession relies on the fact that it offers a future perspective. According to Kayser-Bril (2012), data fluency can help journalists sharpen their critical sense when faced with numbers and thus gain confidence when exchanging with public relations departments of companies and public institutions. Furthermore, not only media but also companies and institutions around the world are looking for "sense-makers" and professionals who know how to dig through a big amount of data and transform it into tangible content. This is an undeniable opportunity for journalists considering the downsizing trend affecting news organizations today. For freelance journalists data fluency can provide a way to new offerings and stable pay, too.

Data-driven journalism is perceived also as a mean to increase transparency of journalistic processes. By enabling the production of digital news pieces which include direct links to information sources and data compilations, data journalism can contribute to (a) enhance public trust in journalism and media, thus to (b) reinforce readers' loyalty as well as to (c) potentially expand both online and print readership. Media firms could apparently consider data journalism as a long-term investment providing them with greater visibility and establishing image and reputation of their brands. In addition, data driven content can be a very important marketing vehicle for media organizations opting for this new practice. In order to promote themselves online news outlets often invest in tools such as Search Engine Optimization (SEO) and Search Engine Marketing (SEM). Performing data projects normally generate a lot of clicks and may even go viral. According to Lorenz Matzat, journalist at OpenDataCity, trying to reach the same attention through SEM would cost publishers more than a data driven project (Gray, Bounegru and Chambers, 2012, p.54). Data Journalism seems therefore to potentially deliver an undeniable contribution to the news media industry currently struggling to find a viable business model for the inevitable digital transition.

### **3 State of the art an importance of data journalism for news media in Switzerland**

If data journalism is increasingly practiced in Britain (The Guardian, The BBC) in the United States (The New York Times, The Chicago Tribune), in Germany (Deutsche Welle, Zeit Online) or in France (Le Monde, Le Dauphiné Libéré), Swiss editors seem to ignore this evolution of the profession. Not satisfied with this impression, we conducted a round of telephone interviews and found out that there are a few very active journalists around who are trying to push forward the practice in a couple of newspapers. For Mehdi Atmani, data journalism responsible at Le Temps, « there is great need for data journalism in Switzerland, a countless number of subjects to develop and stories to tell based on data, but the field is still a desert ». Atmani took some time off to spend a few months with the data journalism team at the Guardian in London. Once back he succeeded in convincing his editor to hire a new journalist and plan for setting up a dedicated data journalism department with a wider team. This new department will be operational in a few months. According to Atmani the challenge for newsrooms is now training reporters to the new techniques: "The job is now to get hands dirty. I observe, however, that it is easier for the younger generation of journalists, already accustomed to new technologies ». He also adds that it would be important for Le Temps to collaborate with the two other precursors of data journalism in Switzerland, i.e. the NZZ and the investigative cell of Tamedia in Bern. Nicolas Roulin, web chief editor at the RTS, believes that data journalism represents a "quite clear" evolution of traditional journalism. At the moment the RTS can only count on a couple of people dealing with visualizations, the lack of resources being the obstacle for developing a dedicated data journalism department. "If we are given the means, it would be a dream to develop and practice data journalism in a consistent manner" adds Roulin. A key challenge is represented by training and self-training is for now the only answer, he explains. At 20 Minutes there is no practice close to data journalism so far. The few graphics used for the newspaper are mostly outsourced from agencies such as AFP. For Mathieu Coutaz, web chief editor, the small size of the newsroom and the production rhythm make "data journalism something still a bit too far away for us". There is no dedicated data journalism team at La Liberté, either. Here the website is managed by one person employed on a part-time basis. Jean-Jacques Robert, newsroom secretary, explains however that "we cannot escape the future. The important thing is to choose the right time to make the turn". For him, the main problem lies in the fact that this practice is not profitable yet. He therefore follows the developments and waits the time when the replication of a viable business model will be possible. Also for the Freiburger Nachrichten investment costs represent the obstacle preventing publishers to engage in data journalism. L'Express / L'Impartial enrich more and more their online articles with infographics, however real data journalism does not appear on the publisher's agenda yet.

As we can see, data journalism is starting up in Switzerland but it is still underdeveloped when compared to some other countries. Considering that the effects of structural changes are starting now to be felt also by Swiss news media organizations, and the practice appears to be crucial for the future development of professional journalism and news media firms in general, we believe that an in depth analysis of how business opportunities and managerial challenges related to data journalism can be tackled with the support of IT is of utmost importance and can contribute to the future of media firms and journalism in Switzerland.

### **4 Literature review**

Given that data journalism is a young discipline based on innovations in the information technology sector, little academic research has been devoted to this subject until now. The available literature to date is mainly dedicated to the description of knowledge and practical skills required in the field. Present studies explain the basics for future data journalists to work with data and explain for example what the most appropriate computer and visualization tools are depending on the subject. This is the case of *The Data Journalism Handbook* (Gray, Bounegru, Chambers, 2012), which seems to be con-

sidered as the standard work on this topic. The online book *Data Journalism Heist* (Bradshaw, 2013) introduces the reader to key techniques and programs such as Excel for finding data and turning it into stories. Regarding academic research, the empirical study by Aitamurto, Sirkkunen and Lehtonen (2011) discusses very relevant cases of data journalism practices in Europe and in the USA. Interviews conducted by the authors among traditional large newsrooms as well as local and national newsrooms, have enabled to identify the current role of data journalism in news organizations. i.e. a way to provide relevant information to readers in meaningful ways. According to the results of this study, news organization further engage in data journalism to find hidden stories and to discover more facts to support evident narratives. This study touches also upon the composition of data journalism teams and the skills required for this new practice. Teams are small, even in big companies, usually including only two to five people. They combine journalism, web development, data analysis, visualization and statistics skills. For providing support to the data-analysis process, news organizations see a future need for mathematicians and statisticians on their data-journalism teams. Aitamurto, Sirkkunen and Lehtonen finally point out that, whatever the background and composition of the team, constant learning and experimenting with new tools is necessary.

There is no proven business model for data journalism (Aitamurto, Sirkkunen and Lehtonen, 2011). News organizations think that data journalism is so far a matter of journalistic value, and hold potential for impact rather than for revenue. One reason to explain this view is that data journalism often takes a lot of time. Norwegians journalists claim that time and goodwill granted from editors are the two main factors limiting data-driven journalism. They point out the difficulties to make other newsroom staff understand that all tasks related to data journalism, from visualization to analysis and collection of data, take time (Karlsen and Stavelin, 2013) and therefore require more resources than traditional journalism tasks. However, people interviewed for this study see future potential for data journalism also as a revenue source. Data journalism stories usually attract a large number of readers and make them stay longer on the site compared to average news stories. Advertisers seem thus to be ready to pay more for ads appearing in data powered content. According to Emily Bell (2012) automation of some stories and ownership of newly collected data could both reduce costs and create new revenue sources. These practices should therefore be at the core of exploration and experimentation in newsrooms. Bell further states that data is probably going to be as big a transformation for journalism as the rise of the social web; newsrooms will rise and fall on the documentation of real-time information and the ability to gather and share it. Yet the ability to work with data is a nearly absent skill in newsrooms. Further, even if some news organizations already have application programming interfaces (APIs) allowing outsiders to access their data – the Guardian is experimenting this business model – this activity is still marginal instead of at the center of business planning and development in newsrooms (Bell, 2012).

Another study conducted by The European journalism Centre aimed at identifying the training needs for data-driven journalists (Bounegru, 2011). According to the survey conducted among 235 journalists in 40 countries, 73% of the respondents saw in the lack of adequate knowledge the main barrier for implementing data journalism in their newsrooms. 72% of them are thus very interested in acquiring the necessary skills to practice data journalism. 83% of the respondents wanted to learn how to integrate data into stories (e.g. giving more depth to a story and providing context through the use of statistical data and data visualization). 65% wished they could learn technics to interrogate data. Appelgren and Nygren's study (2014) confirms that the main challenge facing the working methods of data journalism is the shortage of time and the need for training and developing data journalism skills. According to the online survey they conducted among Swedish journalists the level of experience is correlated to a positive attitude towards data journalism as well as to working with numbers and statistics.

In the study conducted among Norwegians journalists general problem solving and mastering the web have been indicated as the most important skills needed, besides journalism, to run data-driven project (Karlsen and Stavelin, 2013). The same study reports that newsrooms value the skills required for data-driven journalism. However, such skills are often “black boxed” by editors, non-programming staff

and data journalists as well. In fact, even programming journalists see themselves as journalists “first” and distance themselves from the technologists working in the ICT departments. It is common practice in Norwegian newsrooms to bypass ICT departments by choosing lightweight technical approaches and find solutions that do not require direct assistance from ICT. However, such a reaction can substantially limit the scope of journalism activities. Similar findings emerge from the study conducted by Royal (2012) within the NYT Interactive Department. Nonetheless at the NYT a hacker culture emphasizing creativity, innovation and collaboration seem to be present within journalists. In Norway journalists subscribe to the same values but are at the same time careful to underline that innovation should happen within the boundaries of the journalistic tradition. The cultural clash between journalists and technologists becomes evident as a factor inhibiting the formation of interdisciplinary data journalism teams (Karlsen and Stavelin, 2013). These results allow us to state that there is a deep need for dedicated and journalism friendly IT powered tools in order to support not only data mining and analysis but also business process management activities within news organizations.

## 5 Data journalism requirements and skills

In the last couple of years data journalism saw a few great productions such as Nate Silver’s unforgettable use of statistics to model the US election results (<http://fivethirtyeight.com/>), or The New York Times amazing visualizations in the Snow fall (<http://www.nytimes.com/interactive/2014/01/02/nyregion/snowfall-in-the-northeast.html>). These still very costly applications of data journalism are not only keeping pace with developments in the discipline, they are also setting new standards for what can be achieved and increasing expectations from the public. The steep increase in the standard of statistics used by certain news organizations or certain data savvy individuals, who found courage and financial means to invest in the development of data journalism, have seen the emergence of the statistical journalist as a protagonist on one hand, and of public expectations for statistical analysis in journalism to meet professional standards on the other hand. Indeed, excel spreadsheets and databases are just numbers without analysis, statistics can provide some useful tools in this respect. However, to make sense of data and to ensure efficacy and efficiency in data journalism, mastering IT and statistics is not sufficient. The famous founder of the Wonkblog at the Washington Post, Ezra Klein, just left the newspaper to join Vox Media, an online media group, in order to develop a news site where facts are reported in their context ([lemonde.fr](http://lemonde.fr), “Une star du Washington Post passe sur le Web”, 27.01.2014). According to Klein, journalists have never been as good as today in reporting news; however, they are not sufficiently performing in putting information into context. In order for journalists to develop the so called “helicopter view”, link stories with data and therefore contextualize information, data processing skills seem to have at least equal importance as in depth knowledge in specific fields such as economics, management, physics, biology, geology, or geography.

According to Rich Gordon ([knightlab.northwestern.edu](http://knightlab.northwestern.edu), 28.06.2013), professor of Journalism and director of Digital Innovation at the Medill School of Journalism, data journalism includes three dimensions and requires three different types of journalism skills: (1) computer assisted reporting, (2) news applications development and (3) data visualization. Computer assisted reporting represents an expertise in obtaining, analyzing and finding newsworthy angles in data. News reporters with this skill are able to discover interesting and relevant findings by analyzing data with the help of spreadsheets, databases and mapping software, some of them may also do scraping. News application developers moved from computer programming or learned programming skills as part of their journalistic work. They know back-end programming, how to configure a database and can therefore build interfaces to applications. Data visualization specialists can present data in an interesting and user-friendly way and, on top of what graphic artists knew before, they do front-end programming to ensure interactivity of today’s graphics. News organizations willing to engage in data journalism need their staff to master these three different sets of skills. It would be ideal for news organizations to have journalists who

blend more than one of those skills. However, such skills will typically be found in at least three different people.

This is the reason why, according to our understanding so far, the vast majority of media organizations embracing data journalism create dedicated teams with members representing three distinct professions: journalists, computer specialists and graphic designers. For Steve Doig, former journalist at The Miami Herald who won the Pulitzer Prize in 1993 for his pioneering data journalism investigation about Hurricane Andrew ([mediaculture.com](http://mediaculture.com), 27.03.2013), the ideal data journalism team for a medium size news organization includes two investigation journalists – one of which is able to treat and analyze data – a developer and two designers to format results and maximize their impact. Doig adds that, if on one hand it is not necessary for a journalist to be a programmer, on the other hand journalists need to understand the work of developers in order to improve collaboration and data projects results. Also Nicolas Kayser-Brill ([mediaculture.com](http://mediaculture.com), 20.01.2013), journalist and data journalism instructor, argues for a greater consideration of this aspect: "It is becoming increasingly important to learn to work with people from other professions, and understand the work of the other ... It is necessary to get your hands dirty, at least once, to grasp the logic and constraints faced by designers, developers or data analysts". According to Hurrell and Leimdorfer (2013, p. 31-32), both journalists within the BBC web team, the technical skills and advice of developers as well as the visualization skills of designers are central to any of their data projects. While each team member is either a journalist, a designer or a developer 'first', Hurrell and Leimdorfer claim that everyone in the team is working hard to increase her/his understanding and proficiency in each other's areas of expertise. Unfortunately the situation is not everywhere as positive as it is at the BBC.

One important barrier keeping most journalists from engaging in data journalism is training to work with data through all the steps needed, from a first question to a big data-driven scoop. The explorative interviews that we have conducted in Switzerland confirm this. Working with data often means to step into a wide unknown territory puzzling both eyes and mind. According to Lucy Chambers and Jonathan Gray from the Open Knowledge Foundation (Gray, Bounegru, and Chambers, 2012, p. 76) "journalists are often not used to working with raw data, and many don't consider it a necessary foundation for their reporting. Sourcing stories from raw information is still a relatively new idea". Kayser-Brill (2012, p. 145), is even more critical: "How can a data-journalist make use of a bunch of numbers on climate change if he doesn't know what a confidence interval means? How can a data-reporter write a story on income distribution if he cannot tell the mean from the median?" Only experienced journalists who force themselves to look at often confusing and boring data can see the hidden stories in there (Lorenz, 2012, p. 4-5). The lack of appropriate education and training is therefore an important issue reported by the professionals. Jean-Marc Manach ([mediaculture.com](http://mediaculture.com), 12.10.2012), investigative journalist, specifies that training is lacking especially at higher levels. He argues that digital and data training is necessary for all employees of a news media company.

As mentioned above, from the survey conducted by the European Journalism Centre a big willingness to get out of the comfort zone of traditional journalism and invest time in mastering new skills has emerged. However, news organizations are either reluctant or not in a sufficiently good financial condition to free time for journalists' development. The presence of a strong resistance to change within the profession of journalists appears to be one of the reasons behind the training gap. This can be grasped from the above mentioned Appelgren and Nygren's study (2014) – who detected a positive correlation between level of experience and willingness to engage in data journalism – but also from the statements of Kayser-Brill ([mediaculture.com](http://mediaculture.com), 20.01.2013): "Journalists realize that much of the work consists of data processing, cleaning files, technical manipulation of web tools. They even discover with horror that using code accelerates sorting activities ... Immediately, the question arises of who should do the job. We feel that some are not thrilled with the idea of having to tackle such an exercise, far from their tastes and culture". According to Eric Scherer, Head of Innovation at France Télévisions ([mediaculture.com](http://mediaculture.com), 20.01.2013), "resistance to change is everywhere, in leaders, journalists and technicians, all those who are shaken by the new situation". Even the still very traditional way to present stories chosen by most mainstream news organizations denotes resistance to change.

The Norwegian journalists interviewed by Karlsen and Stavelin (2013) ended up preferring traditional linear storytelling, emphasizing computation as useful for research rather than presentation. Journalists focus less on giving the readers access to “raw” data and choose simple elements such as timelines, maps, writing, sound and video to support linear narrative rather than free exploration. These forms are relatively quick to make and limited in functionality. Graphics, tables, grids or filtering are elements that demand more skills and time. This trend may be explained by a not sufficiently positive feedback from readers on advanced journalistic forms, so that the time invested to develop them is not worth it. Another explanation can be the primacy given to linearity by the established tradition of journalistic storytelling – which aims at explaining and conveying already thought out ideas rather than letting the audience explore. According to graphic expert Alberto Cairo (2012) “function constrains the form”, and maintaining the traditional function of journalistic storytelling expresses a form of resistance to change, too.

## **6 Critical role of information technology for the future of journalism and conclusions**

From this preliminary review of the existing literature and practitioners’ view on data journalism we can conclude that collaboration between people belonging to very different professional cultures seems to be one of the critical success factors for data journalism projects. According to Jean-Marc Manach, investigative journalist (mediaculture.fr, 2013), journalists, designers and developers must still learn to communicate better among each other. They currently speak different languages and do not share the same way of reasoning. Typically separated organizational units such as online and offline newsrooms, as well as newsrooms and IT departments are being merged, however no measure is being adopted to overcome inevitable cultural clashes and stimulate knowledge transfer (Dal Zotto and Cohen, 2007; Dal Zotto, 2012). Older journalists lack technological skills while younger ones lack contextualization skills, yet no time window is being open for staff to develop themselves. Resistance to change emerges as one of the main factors explaining lack of competence in the relevant fields and lack of training measures. Attachment to traditional journalism techniques and conceptions emerges as source of resistance, too. Learning and knowledge exchange processes – which are supposed to fill training needs but also reduce resistance (Appelgren and Nygren, 2014) – need thus to be established; opportunities for journalists to acquire data processing, analysis and visualization skills as well as for developers and designers to understand the journalism frame of mind need to be created. Exactly within this context the role of IT assumes a critical importance not only for the success of news media firms but maybe even for their survival in the future. Information technology needs to develop simple and dedicated tools that improve and facilitate not only data access, processing and visualization, but also a common language and knowledge exchange between developers, graphic designers and journalists. Only appropriate, simple and user friendly IT tools can help journalists overcome their fear towards technology, collaborate and understand IT experts and thus ensure the successful development and integration of data-driven journalism in newsrooms. Such tools should further support the development of contextualization ability as well as interdisciplinary team management.

As Emily Bell (2012) said “the news industry shot itself in the foot 15 years ago by failing to recognize that search and information filtering would be a core challenge and opportunity for journalism”. As a result, around 30% – up from 11% in 2011 – of news consumers on any kind of digital device describe themselves as getting their news through Facebook and Twitter instead through dedicated news sites. However, social platforms are now wondering how they might better manage the business of editing. Their answer of course develops around the building of algorithms which will decide “on our preferences” which news and comments we should read. This kind of solutions is far too automated, opaque, centralized and unregulated to fulfil the need for open, reliable and objective information and thus allow the development of networked but democratic societies. The time has come thus to enable a constructive collaboration between information technologists and journalists to ensure the public service mission of news organizations in the future.

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