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# Analysis of interactivity in digital journalism

<https://doi.org/10.3145/indocs.2022.2>

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Santos-Hermosa, Gema; Lopezosa, Carlos; Codina, Lluís (2022). Analysis of interactivity in digital journalism. In: Freixa, Pere; Codina, Lluís; Pérez-Montoro, Mario y Guallar, Javier (ed.). *Visualisations and narratives in digital media. Methods and current trends*, (pp. 13-25). Barcelona: DigiDoc-EPI. <https://doi.org/10.3145/indocs.2022.2>

## Abstract

We analyse interactivity in the digital press, focusing our study specifically on aspects related to user experience and user options for interaction. In so doing, our objective is the improvement of digital communication, by offering the news media a solid basis from which to evaluate their business model and their readers' behaviour. We exploit a methodology based on the design and testing of a research protocol and undertake a comparative analysis employing an iterative process, thus 'grounding' our final theory in the data gathered. In this way, we obtain a protocol – 'Analysis of interactivity, searchability and web visibility in digital newspapers' or SAIPD in its Spanish acronym – that facilitates the extraction of data from the digital news media. This tool, as its name suggests, is designed around the three characteristic dimensions of the digital media (i.e. interactivity, searchability and web visibility) and employs a series of analytical parameters and indicators. In this chapter we examine four of these parameters related specifically to the dimension of interactivity: the media-user relationship, user-generated content, the user-user relationship and the personalization of content.

## Keywords

Digital journalism, digital news media, interactivity, searchability, user's experience, SEO, entrepreneurship in digital communication.

## Título

### **Análisis de la interactividad en el periodismo digital**

## Resumen

*Este trabajo analiza la interactividad en los diarios digitales, situando en el centro del estudio los aspectos relacionados con la experiencia de usuario y sus posibilidades de interacción. El objetivo que se pretende alcanzar es la mejora del emprendimiento en la comunicación digital, proponiendo a las empresas periodísticas bases sólidas de valoración de su modelo de negocio y del comportamiento de sus lectores. Los métodos empleados son el diseño y testeo de un protocolo de investigación y la realización de un análisis comparativo mediante un proceso iterativo desde la teoría a los datos, y a la inversa hasta obtener un protocolo articulado en indicadores operativos que permiten la extracción de datos. El protocolo en el que se enmarca la dimensión de interactividad que presentamos se denomina 'Análisis de la Interactividad, buscabilidad y visibilidad web en periódicos digitales', o SAIPD. Este sistema de análisis ha sido diseñado con base en las tres dimensiones características del medio digital (interactividad, buscabilidad y visibilidad web) y se ha desarrollado a partir de una serie de parámetros e indicadores de análisis. En el presente capítulo nos fijamos en cuatro de estos parámetros; concretamente los vinculados a la dimensión de la interactividad: la relación medio-usuario, los contenidos generados por usuarios, la relación usuario-usuario y la personalización de contenidos.*

## Palabras clave

*Periodismo digital, medios digitales, interactividad, buscabilidad, visibilidad web, SEO, emprendimiento en comunicación digital.*

## 1. Introduction

Journalism has to learn to adapt, whenever the occasion arises, to the particular channel or support that it uses. It had to adapt when it made the move from the print media to radio and again when having to adapt to television. Today, the main challenge journalism faces is adaptation to the digital media. It is for this reason that this study examines one of the most intrinsically important dimensions of the digital medium: namely, interactivity. This is an extension that any digital newspaper must dedicate the utmost attention to because, otherwise, it runs the risk of losing not only its readership, but also something that is considerably more valuable these days, the coveted *engagement* of its users.

To be able to analyse and improve this dimension, here we develop a heuristic protocol that can be applied to the digital media and which should prove useful for both researchers and professionals in the field of digital journalism. First, we outline a methodological framework for the overall conceptualization of the study protocol. Then, we focus our attention on the specific dimension of interactivity, presenting in detail each of the analytical parameters and indicators developed. The proposed heuristic places the focus squarely on the consumer of digital media, on their experience as a user and on their options for interaction. The ultimate objective is the improvement of digital communication platforms, by offering the news media a solid basis from which to evaluate their business model and their readers' behaviour.

## 2. Methodological framework

Our protocol has been christened “Analysis of interactivity, searchability and web visibility in digital newspapers” (or SAIPD in its Spanish acronym) (Santos-Hermosa, Lopezosa & Codina, 2022) and is a heuristic device. On occasions, such protocols are referred to as expert analyses, given that the analytic system so designed is intended for use by experts (and not users). Heuristic or expert analyses have a long history, both in the academic and professional worlds (Nielsen & Molich, 1990; Abdelmaguid et al., 2004; Pedraza-Jiménez et al., 2016), their main characteristic being that they can be applied before, after or in addition to user studies. Another of their characteristics – and one that makes them particularly interesting to us – is that they can be used to carry out comparative analyses and they can support both academic and professional research.

In designing the protocol and its specific dimension of interactivity, we have employed the methods that underpin grounded theory. This involved the initial gathering and analysis of data which served to establish the bases of our theory; from here we returned back to our data sources until we arrived at our final theory, “grounded”, that is, in the data. To undertake the initial data analysis, we employed protocols developed and validated in previous

research: PICs (Linares et al., 2015) and PAXBCM (Lopezosa et al., 2020;2021). Indeed, these two protocols have been tested and validated by the Digital Documentation and Interactive Communication (DigiDoc) research group and have been successfully used in conducting funded R&D projects and for writing publications in peer-reviewed journals.

The specific dimension of the protocol that we analyse is, on the one hand, an extension of previous protocols, from which we select and adapt aspects related to user actions in the digital medium, but, on the other, it also incorporates completely new elements with a specific focus on user interaction. All this allows us to obtain more ambitious results that give us greater possibilities of analysis, as well as ensuring greater precision in their use by analysts and professionals of digital media; facilitating, as far as possible, an improvement in the task, by offering news media companies solid bases for evaluating the parameters studied. Finally, the application undertaken here of the protocol itself to specific case studies is completely novel.

### 3. Dimension of analysis

The dimension of interactivity in digital newspapers consists of four analytic parameters (see Table 1), each of which is made up of different indicators.

<b>Protocol for the analysis of interactivity in digital journalism</b>		
<i>Nº</i>	<i>Indicator</i>	<i>Score</i>
<b>Parameter 1: Digital medium-user relationship</b>		
1.1	Reader-author written communication	0-1
1.2	Reader-author communication via Twitter	0-1
1.3	Reader-author communication via Facebook	0-1
1.4	Reader-author communication via Instagram	0-1
1.5	Reader-newsroom communication	0-1
1.6	Reader-newsroom communication via Twitter	0-1
1.7	Readers' comments	0-1
1.8	Readers' votes	0-1
1.9	Readers' ratings	0-1
1.10	Comments on the blogs of the digital medium	0-1
1.11	Rectifications	0-1
1.12	Confidentiality channels	0-1
<b>Parameter 2: User-generated content</b>		
2.1	User-generated texts	0-1

2.2	User-generated photographs	0-1
2.3	User-generated videos	0-1
<b>Parameter 3: User-user relationship</b>		
3.1	Contact between registered users	0-1
3.2	Contact between users (readers) and other users	0-1
3.3	Ranking of information according to user activity	0-1
<b>Parameter 4: Personalization of content</b>		
4.1	Offer of newsletters	0-1
4.2	Syndication of content on mobile or via email	0-1
4.3	Specific subscriptions	0-1
4.4	Recommendations based on a user's recent navigation	0-1
TOTAL		N

**Table 1.** Systematic protocol for the analysis of interactivity in digital journalism

The parameters specifically identify what we seek to measure or evaluate in a digital medium, such as the relationship (that is, the *engagement*) between the medium and its audience. In turn, these parameters, in order to be examined in depth, need to be specified in operable indicators, that is, characteristics that can be analysed and, where appropriate, measured. The indicators represent the *how* (or the way) each parameter is evaluated. Hence, there is always a 1:N relationship between parameters and indicators, whereby each parameter is studied employing two or more indicators. The score associated with each indicator (Table 1) is based on a system that uses binary values (values 0 or 1). This binary system, applied across all the parameters, evaluates whether an indicator is present (score 1) or not-present (score 0). Each of the parameters analysed and their corresponding indicators are presented below. We provide a detailed description of each element and examples to illustrate them.

### **Parameter 1: Digital medium-user relationship**

This parameter comprises indicators of the provision of means of contact between the reader and the medium (indicators 1.1 to 1.6) and indicators related to user feedback (indicators 1.7 to 1.12), key features in the media as highlighted by Paskin (2018). The former capture the procedures offered by the digital medium to enter into contact with it, that is, channels of contact with the journalists or with the newsroom (mail, Twitter, Facebook, Instagram, etc.). The latter capture the options made available by the medium to obtain user feedback: comments on news items, votes, reactions (i.e. 'likes'), participation in surveys, etc. This parameter comprises the following 12 indicators:

### 1.1 Reader–author written communication:

Users can send messages via a form or by email to the author of the news item to provide information about the story or to expand on it.

### 1.2 Reader–author communication via Twitter:

Users can send messages via Twitter to the author of the news item to provide information about the story or to expand on it.

### 1.3 Reader–author communication via Facebook:

Users can send messages via Facebook to the author of the news item to provide information about the story or to expand on it.

### 1.4 Reader–author communication via Instagram:

Users can send messages via Instagram to the author of the news item to provide information about the story or to expand on it. On occasions, even a link to the social network is available in the author’s biography: “Authors” section with information about journalists, photographers, etc. (likes, hobbies, social media accounts). A good example of this is provided by the online newspaper *Uppers* (see Figure 1).

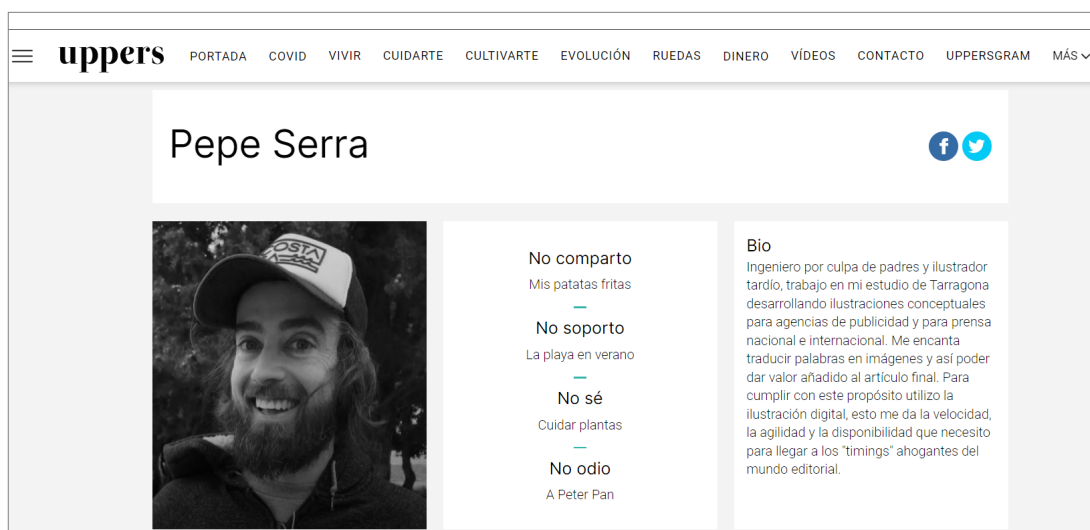


Figure 1. Example of an author profile from *Uppers* (<https://www.uppers.es/autores/pepe-serra/>)

### 1.5 Reader–newsroom communication:

Users can contact the newsroom of a news media outlet by email to learn more about the published content or to request further information.

### ***1.6 Reader–newsroom communication via Twitter:***

Users can contact the newsroom of a news media outlet via Twitter to learn more about the published content or to request further information. In this case, although it falls outside our protocol, the relationship between digital media websites and external platforms, such as Twitter, could be fruitfully studied. Although almost all media outlets would appear to have Twitter profiles, not all of them are active. A more detailed knowledge of the comments or reactions of Twitter users could improve perceptions of interactivity.

### ***1.7 Readers' comments:***

Users can send comments about the news items to which they have access and see the comments of other readers.

### ***1.8 Readers' votes:***

Users can participate in surveys created by the digital medium or other proposed voting options.

Surveys are a way of gauging general opinion on a particular topic. However, there are studies that conclude that the survey is not exploited that much as a tool for interaction (Baños–Moreno et al., 2017), yet it can be a good way of engaging readers and finding out what they think on a particular topic.

### ***1.9 Readers' ratings:***

Users can cast their vote, or have the sense of expressing a preference or their rejection or a greater or lesser degree of satisfaction (for example, awarding stars) with respect to a news item.

### ***1.10. Comments on the blogs of the digital medium:***

Users can comment on the entries published in the blogs of the communication medium.

### ***1.11. Rectifications:***

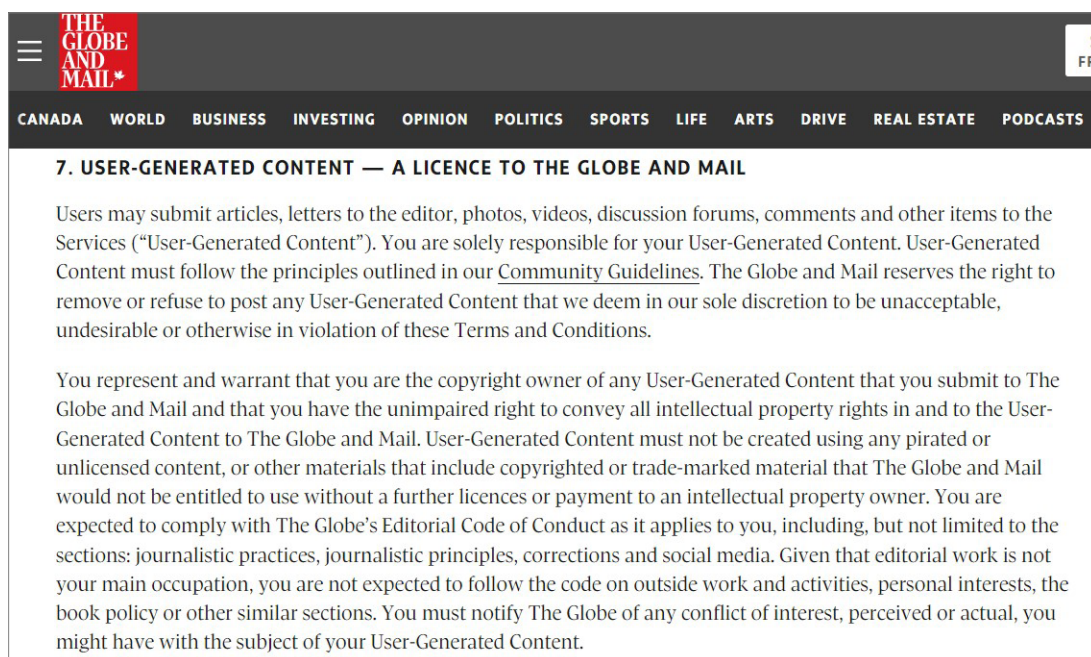
Users of the information published by the media can point out an erroneous fact or piece of information in one of the news items or communicate a technical error or incident so it can be resolved.

### ***1.12. Confidentiality channels:***

Users can send complaints or share information with the media anonymously and safely.

## Parameter 2: User-generated content

This parameter comprises indicators of the type of content (textual and audiovisual) that the media allow their users to both generate and publish. The development of services for digital consumers (social software, video sharing and Web 2.0 applications) and the increased use of mobile devices and tablets have led to the proliferation of user-generated content (Reyna, Hanham & Meier, 2018). These technological advances have changed the way we communicate and socialize, making it possible for the consumer of information to become an author and co-creator of content for the media. We are witnessing the collective production of content, based on various forms of voluntary participation (Simon, 2016), which entails a change in digital media consumption patterns.



**Figure 2.** User-generated content conditions of *The Globe and Mail* (<https://www.theglobeandmail.com/privacy-terms/terms-and-conditions/>)

This parameter comprises the following three indicators:

### 2.1. *User-generated texts:*

Users can send texts to the media company for publication in their newspaper (with texts being reviewed by an editorial team before being published).

### 2.2. *User-generated photographs:*

Users can send photos to the media company for publication (users must be registered).



### 2.3. User-generated videos:

Users can send videos they have made themselves to the media company for publication (users are required to provide public and private personal data).

### Parameter 3: User-user relationship

This parameter records the interaction between users, those “human” actions that facilitate interpersonal communication (Larsson, 2012), providing a response also to the dimension of socialization. An example could be responding to a comment from another user (Ksiazek et al., 2016).

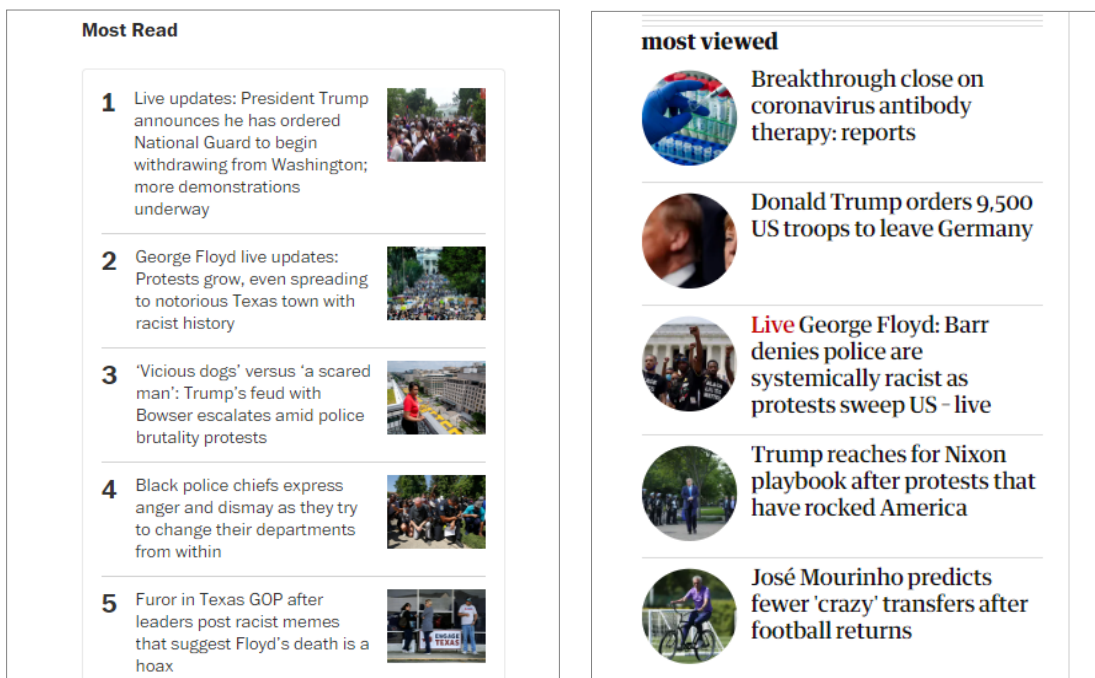
This parameter comprises the following three indicators:

#### 3.1. Contact between registered users:

Users can communicate with other registered users (community of registered users who can interact with each other).

#### 3.2. Contact between users (readers) and other users:

Users can share information from the digital media with other users via the social networks provided by the same digital news media: Twitter, Instagram, Facebook, etc.



**Figure 3.** Grouping of the most read (*Washington Post*) and most viewed news items (*The Guardian*) by other users)

### 3.3. Ranking of information according to user activity:

Users can access information grouped according to the queries of other users (Figure 3).

#### Parameter 4: Personalization of content

This parameter is based on the possibility – or not – of accessing and adapting the content provided by the digital medium in a more personalized fashion. It is concerned with identifying the type of interactivity with which users can personalize or adapt the website content to their own interests and tastes (Choo et al., 2012; Larsson, 2012; Guallar et al., 2012; Rodríguez-Martínez et al., 2012 and Baños-Moreno et al., 2017).

This parameter comprises the following four indicators:

#### 4.1. Offer of newsletters:

Existence of a newsletter and the possibility that users can subscribe to it to consume specific information that they select according to their interests. According to Baños-Moreno et al. (2017), electronic bulletins are one of the most common services within the media. Guallar et al. (2021) add that newsletters are a very favourable channel for content curation, one of the services considered most relevant in digital journalism in the 21st century.

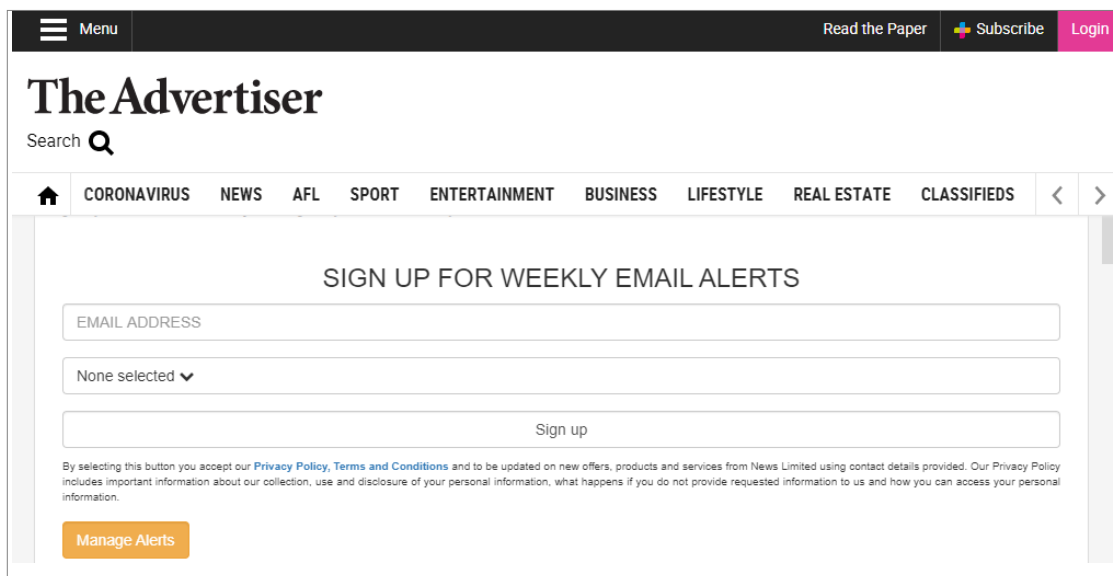


Figure 4. Screenshot of page for signing up for email alerts from *The Advertiser*

#### 4.2. Syndication of content on mobile or via email:

Users can syndicate certain content from the digital medium via their mobile phone or email to consume specific information selected for them according to their interests or

circumstances. For more on this digital experience via applications or adaptations to online devices, see Harvey and Pointon (2019).

#### 4.3. Specific subscriptions:

Users can subscribe to specific content (section headlines, authored articles, topics – dealt with in more depth than in the dedicated section, geographical area, etc.) and/or specific products (Apple Podcast, Google Podcast, Podcast in digital media, blogs, etc.). Although not included in this protocol, subscriptions could also be related to another parallel issue, which would be the presence of digital media on web 2.0 platforms (Figure 5).

#### 4.4. Recommendations based on a user's recent navigation and the most seen/most read rankings:

Users can access content recommendations based on their own recent navigation and on the users' most seen or most read rankings (Figure 6).

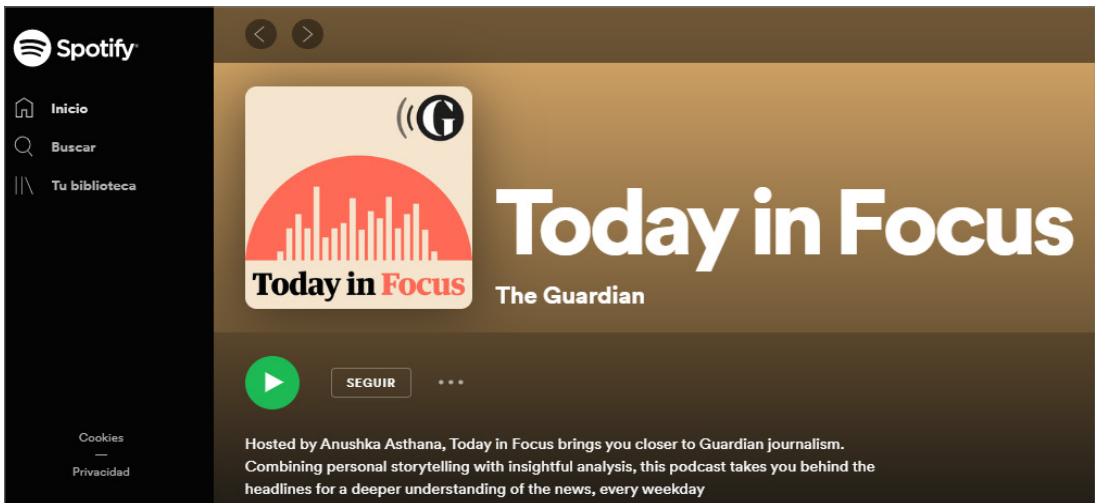


Figure 5. The Guardian channel on Spotify

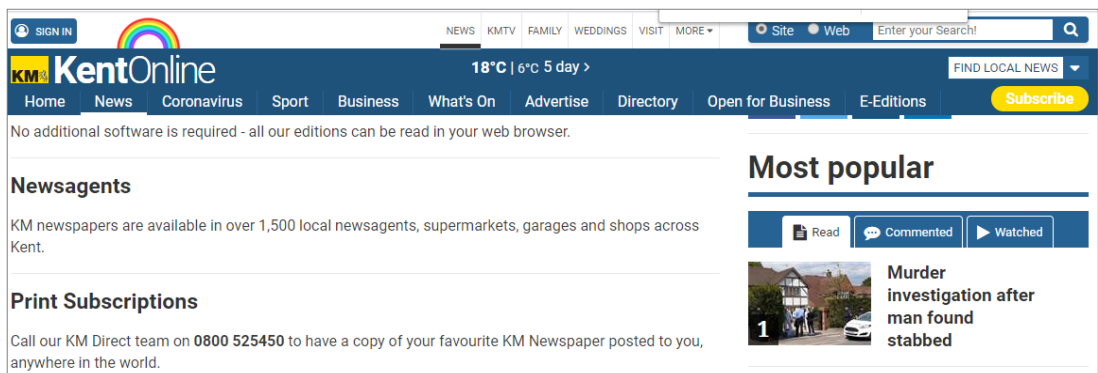


Figure 6. Web page of KentOnline, showing the most read, commented and watched news items

## 4. Conclusions and protocol applications

Interaction has acquired a considerable prominence in many digital industries aimed at improving user experience. For this same reason, the digital news media are aware they must not ignore this feature but rather attempt to integrate it into their products so that they can compete for larger and larger audiences.

The protocol developed is designed in such a way that it can, in the hands of other research teams, be used as it is presented here (first scenario). Equally, other indicators might be incorporated following the same procedure and representing them in a similar fashion to the method employed here (second scenario) or, in the same vein, those indicators that do not fit in with a team's objectives can be eliminated (third scenario). Indeed, research teams might opt to combine scenarios two and three, thus creating a fourth scenario. What we wish to stress is that the ultimate design and application of this protocol is highly flexible and adaptable to the objectives of each study.

Future studies in this line could usefully focus on expanding the comparative analysis to other digital communication media; for example, in a specific geographical area or in a specific sector. Likewise, the application of this protocol to the study of other types of media, such as radio or television portals, streaming platforms, newsletters, etc. could prove insightful.

Finally, in an ongoing study, the authors of this protocol are applying it (publication in process) to a highly select group of digital media, specifically, to a number of recent prize winners in the Online Journalism Awards (ONA) and the World Digital Media Awards (WDMA), as part of their research work in a competitive project.

## References

- Abdelmaguid, T.; Nassef, A.; Kamal, B. & Hassan, M.** (2004). A hybrid GA/heuristic approach to the simultaneous scheduling of machines and automated guided vehicles. *International Journal of Production Research*, 42(2), 267–281. <https://doi.org/10.1080/0020754032000123579>
- Baños-Moreno, M.J.; Pastor-Sánchez, J.A. & Martínez-Béjar, R.** (2017). Interactivity features of Online Newspapers: from a facsimile model to a multimedia model one. Interactivity in online journals. *Anales de Documentación*, 20(2). <https://doi.org/10.6018/analesdoc.20.2.282401>
- Choo, J.; Cheong, S.; Lee, Y.L. & Teh, S.H.** (2012). I2Navi: An Indoor Interactive NFC Navigation System for Android Smartphones. *International Journal of Electronics and Communication Engineering*, 6(12), 1408 – 1412. <https://doi.org/10.5281/zenodo.1330963>
- Guallar, J.; Abadal, E. & Codina, L.** (2012). Hemerotecas de prensa digital. Evolución y tendencias. *Profesional de la Información*, 21(6), 595–605. <https://doi.org/10.3145/epi.2012.nov.06>
- Guallar, J.; Anton, L.; Pedraza-Jiménez, R. & Pérez-Montoro, M.** (2021). Curación de noticias en el correo electrónico: análisis de newsletters periodísticas españolas. *Revista Latina De Comunicación Social*, (79), 47–64. <https://doi.org/10.4185/RLCS-2020-1488>

- Harvey, M. & Pointon, M.** (2019). Understanding in-context interaction: An investigation into on-the-go mobile search. *Information Processing and Management*, 56(6). <https://doi.org/10.1016/j.ipm.2019.102089>
- Ksiazek, T.; Peer, L. & Lessard, K.** (2016). User engagement with online news: Conceptualizing interactivity and exploring the relationship between online news videos and user comments. *New Media & Society*, 18(3), 502–520. <https://doi.org/10.1177/1461444814545073>
- Larsson, A.O.** (2012). Interactivity on Swedish newspaper websites: What kind, how much and why? *Convergence*, 18(2), 195–213. <https://doi.org/10.1177/1354856511430184>
- Linares, J.; Codina, L. & Freixa, P.** (2015). *Tendencias en Cibermedios. Análisis de la interactividad*. Barcelona: Universitat Pompeu Fabra, Departament de Comunicació. <http://hdl.handle.net/10230/24636>
- Lopezosa, C.; Iglesias-García, M.; González-Díaz, C. & Codina, L.** (2020). Experiencia de búsqueda en cibermedios: análisis comparativo de diarios nativos digitales. *Revista Española De Documentación Científica*, 43(1), e254. <https://doi.org/10.3989/redc.2020.1.1677>
- Lopezosa, C.; Codina, L. & Freixa, P.** (2021). Protocolo de análisis para evaluar la experiencia de búsqueda en medios digitales. *Estudios sobre el mensaje periodístico*, 24(4). <https://doi.org/10.5209/esmp.72988>
- Nielsen, J. & Molich, R.** (1990). Heuristic evaluation of user interfaces. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, (pp. 249–256). <https://doi.org/10.1145/97243.97281>
- Paskin, D.** (2018). News publishing across platforms: Gatekeeping for print, web, Facebook and Twitter. *Newspaper Research Journal*, 39(4), 376–388. <https://doi.org/10.1177/0739532918806897>
- Pedraza-Jiménez, R.; Codina, L. & Guallar, J.** (2016). *Calidad en sitios web: método de análisis general, e-commerce, imágenes, hemerotecas y turismo*. Barcelona: Editorial UOC.
- Reyna, J.; Hanham, J. & Meier, P.** (2018). The internet explosion, digital media principles and implications to communicate effectively in the digital space. *E-Learning and Digital Media*, 15(1), 36–52. <https://doi.org/10.1177/2042753018754361>
- Rodríguez-Martínez, R.; Codina, L. & Pedraza-Jiménez, R.** (2012). Indicadores para la evaluación de la calidad en medios digitales: análisis de la interacción y de la adopción de la Web 2.0. *Revista española de Documentación Científica*, 35(1), 61–93. <https://doi.org/10.3989/redc.2012.1.858>
- Santos-Hermosa, G.; Lopezosa, C. & Codina, L.** (2022). *Interactividad, buscabilidad y visibilidad web en el periodismo digital: Protocolo de análisis y estudio comparativo*. Departamento de Comunicación. Serie Editorial DigiDoc – Observatorio de Cibermedios. Marzo 2022. RTIO4/2021.
- Simon, J. P.** (2016). User generated content – users, community of users and firms: Toward new sources of co-innovation?. *The Journal of Policy, Regulation and Strategy for Telecommunications, Information and Media*, 8(6), 4–25. <https://doi.org/10.1108/INFO-04-2016-0015>