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Tackling disinformation in the EU with "Truthster": technological design and DLT

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Abstract

Tackling disinformation is crucial for the development of the Information Society. To do this, it is necessary to empower journalists in the production of trustworthy information, and to nurture an economic ecosystem centred on the secure circulation of content. In this

contribution we present an interdisciplinary approach that aims (1) to find a balance between freedom of expression and other fundamental rights (e.g., privacy and data protection), (2) to develop business models driven by the production of genuine content, and (3) to exploit the potential of distributed ledger systems to provide media certification.

Keywords: Blockchain, TruBlo, Fake news, Trust, Freedom of expression, Journalism

Introduction[1]

An overview: From "truth" and "authority" to "trustworthiness" and "governance".

Truth is a basic human need from a threefold perspective: (1) individually, as a matter of a personal spiritual quest, (2) socially, as a base for trusted personal and economic relations, and (3) politically, as an inevitable requirement for consent in the fair exercise of public power. Conversely, disinformation is as old as human society. In this sense, as regards interpersonal relations, it might be recalled that in the culture of ancient Greece – the cradle of western civilization – popular rumour (*Pheme*) was already distinguished from slander (*Sychophantia*) and malice (*Diabolé*, which was embodied as a goddess). As for the institutional aspect, the exploitation of misleading information has always been valued as an asset, both in critical times – from the Chinese classic *The Art of War* we can quote the imperishable statement "*all warfare is based on deception*"[2] – and as a privileged tool for the ordinary exercise of power by a sovereign.[3]

As we know the Information Society[4] means that the transmission of messages and the broadcasting of news is achieving unprecedent speed and magnitude.[5] The uptake in the

[1] This contribution is the result of joint research of the co-authors. Individual contributions can be attributed as follows: F. Costantini, par. 1 and 5, S. Venier, par. 2, F. Crisci, par. 3, S. Bistarelli and I. Mercanti, par. 4.
[2] S. Tzu, *The art of war* (VI-V b.C.), chapter one.
[3] N. Machiavelli, *De Principatibus* (1514).
[4] J. R. Beniger, *The control revolution: technological and economic origins of the information society,* Cambridge, Mass.: Harvard University Press, 1986.
[5] J. Gleick, *The information: a history, a theory, a flood*, 1st ed. New York: Pantheon Books, 2011.

mass media (the printed press, radio, and television) caused the creation of new enterprises (mass media companies), new marketplaces (advertising) and new professional figures (journalists), while allowing unparalleled concentration in the control of public opinion. As worldwide dictators learned to master the art of media censorship and manipulation,[6] democratic regimes cherished freedom of expression as a means to protect trust in social relations, fair competition among enterprises and fundamental rights of citizens. On the latter aspect, it is noteworthy that continuous efforts are being made by jurisprudence and scholars to update legal concepts and to find the appropriate balance between freedom of expression and other fundamental rights (reputation, privacy, authorship and so on).[7]

The advent of the Internet disrupted the paradigm which had lasted since the end of the eighteenth century. In this sense, the decision by the US Supreme Court in the case of "ACLU / RENO" – in which the Internet was described as "*a wholly new medium of worldwide human communication*"[8] – is symbolic of the foundation of "cyberlaw",[9] the law governing the Internet.[10] In fact, since an indefinite set of heterogeneous resources (e.g. data, services, and applications) is available, is flowing continuously throughout the world and is instantaneously accessible, neither a "centralized" nor a "distributed" approach is feasible for regulating the newly discovered digital continent. For the first of these approaches, the obvious main risk is censorship, which can be perpetrated by private (service providers) as well as public actors (governmental agencies or bodies). Concerning the second, the risk is a global Babel, which leads inevitably to echo chambers, social instability, and institutional uncertainty. Conversely, a "decentralized" approach seems suitable, despite the difficulties in implementing such an approach,[11] because of its flexibility and resilience. It is no coincidence that the same approach was

[6] H. Arendt, *The origins of totalitarianism*, 1st ed. New York: Harcourt, 1951.
[7] S. D. Warren et al., *The Right to Privacy*, "Harvard Law Review 4", no. 5, 1890.
[8] American Civil Liberties Union, Janet Reno, Supreme Court of the United States No. 96–511, 19 March 1997 – 26 June 1997.
[9] L. Lessig, *Code and other laws of cyberspace*, New York: Basic Books, 1999.
[10] M. C. Kettemann, *The Normative Order of the Internet. A Theory of Rule and Regulation Online*, London, Oxford University Press, 2020.
[11] V. Buterin, *The Meaning of Decentralization; "*Medium", 2017). https://medium.com/@VitalikButerin/the-meaning-of-decentralization-a0c92b76a274.

chosen by the Internet pioneers for the network architecture which became today's Internet.[12]

Currently, almost thirty years after the decision in the ACLU / RENO case, and after a further wave of innovation in ICT (e.g. social media), it seems that not only does the concept of truth need to be revisited according to new epistemic perspectives, but also that legal provisions alone are inadequate to enforce truth, or even to safeguard it. On the one hand, the concept of "trustworthiness" seems to be more theoretically grounded,[13] flexible[14] and future-proof[15] than that of "truth". On the other, concerns about trustworthiness in communication are strengthened by the exploitation of the potentials of new technologies (e.g. artificial intelligence and "deep fakes").[16] In tackling such issues, legislators at every level have started to adopt a softer approach to regulation, introducing complex governance systems that include three basic components: (1) traditional legal provisions, which offer a uniform framework of general and abstract rules;[17] (2) business models allowing economic sustainability (costs of maintenance and transactions); and (3) a technological infrastructure, combining the general rules of law with the design of an ecosystem that is intended to make resources virtual and to automate processes.[18]

From a theoretical perspective, it seems today that such a model of governance – with the combination of the three components mentioned above – is the most suitable method for regulating a decentralized set of interdependent human communities which rely on a,

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[12] P. Baran, *On Distributed Communications Networks*, "RAND Corporation papers", Santa Monica, California, 1962.

[13] E. Gettier, *Is Justified True Belief Knowledge?,* "Analysis", 23, no. 6, 1963.

[14] N. Luhmann, *Vertrauen: ein Mechanismus der Reduktion sozialer Komplexitaet*, "Soziologische Gegenwartsfragen", N. F., Stuttgart: F. Enke, 1968.

[15] S. O. Funtowicz et al., *Uncertainty and quality in science for policy*, "Theory and decision library", Series A. Philosophy and methodology of the social sciences, Dordrecht; Norwell: Kluwer Academic Publishers, 1990.

[16] M. Coeckelbergh, *Democracy, epistemic agency, and AI: political epistemology in times of artificial intelligence*, "AI Ethics", 2022, https://doi.org/10.1007/s43681-022-00239-4, https://www.ncbi.nlm.nih.gov/pubmed/36466152.

[17] U. Pagallo et al., *The middle-out approach: assessing models of legal governance in data protection, artificial intelligence, and the Web of Data*,"The Theory and Practice of Legislation", 2019, https://doi.org/10.1080/20508840.2019.1664543.

[18] M. Craglia et al., *Digitranscope. The governance of digitally-transformed society,* Luxembourg: UR 30590 EN, Publications Office of the European Union, 2021. https://publications.jrc.ec.europa.eu/repository/handle/JRC123362;
A. Theodorou et al., *Towards ethical and socio-legal governance in AI*,"Nature Machine Intelligence", 2, no. 1, 2020, https://doi.org/10.1038/s42256-019-0136-y.

likewise decentralized, worldwide network to survive and flourish as peacefully as possible. This approach is adopted even at the EU level, as confirmed by many recently adopted (e.g. the Digital Markets Act[19] and the Digital Services Act[20]), or soon to be enacted (e.g. the "AI Act"[21] and the "Cyber Resilience Act"[22]), provisions.

Tackling online disinformation in the EU: A holistic approach

The fact that our democratic societies depend strongly on the ability to produce, share and consume trustworthy information from a wide variety of sources is particularly acknowledged by the European Commission, which – in its Communication on *Tackling online disinformation: a European approach* – has defined disinformation as "*verifiably false or misleading information that is created, presented and disseminated for economic gain or to intentionally deceive the public, and may cause public harm. Public harm comprises threats to democratic political and policy-making processes as well as public goods such as the protection of EU citizens' health, the environment or security*".[23] While, on the one hand, democracy in Europe rests on the existence of free and independent media, on the other, ICT is profoundly changing the way in which traditional and new media produce and distribute information, and the ways in which users are engaged in the dissemination of information. In other words, it is not only governments and digital platforms, but each media creator, who is in the forefront of the battle against disinformation, and every user can be held hostage by propaganda.

In order to address this issue, the EU institutions released a *Code of Practice on Disinformation* in 2018,[24] and this was revised in 2022 with the *EU Strengthened Code of*

[19] Regulation (EU) 2022/1925 of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act), OJ L 265, 12.10.2022, p. 1–66, ELI: http://data.europa.eu/eli/reg/2022/1925/oj

[20] Regulation (EU) 2022/2065 of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act), OJ L 277, 27.10.2022, p. 1–102, ELI: http://data.europa.eu/eli/reg/2022/2065/oj

[21] Proposal for a Regulation laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain union legislative acts, COM/2021/206 final https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52021PC0206

[22] Proposal for a Regulation on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020, COM/2022/454 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0454.

[23] COM(2018) 236 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0236.

[24] https://digital-strategy.ec.europa.eu/en/library/2018-code-practice-disinformation.

Practice on Disinformation.[25] The aim of this initiative is to encourage stakeholders to adopt a set of measures to empower content creators and users by ensuring the safe design of the architecture of their systems and by providing them "*with tools to assess the provenance and edit history or authenticity or accuracy of digital content*". We can argue that this document confirms that an approach resulting from the combination of legal provisions, economic balances and technological tools is valued as a viable strategy even in this specific field. However, designing an abstract model, despite the positive reception, and even wide adoption, by stakeholders, is not sufficient to eradicate disinformation, because of the different causes, the many modes, the heterogeneous actors, and the impact of this phenomenon. For this reason, the EU is committed to fostering the development of new methods and tools to contain the spread of disinformation, and to financing research and innovation projects.[26]

Outline of the contribution: Presenting the "TRUTHSTER" project

In this contribution we present the background research for the "TRUTHSTER" project which, in our view, can be considered to be not only an example of the actions put in place by the EU aimed at tackling disinformation but also a paradigm for the approach adopted by the EU institutions.[27] Indeed, as we will explain below, we envisage an ecosystem composed of three pillars: (1) a set of legal rules deriving from both legislation and private agreements, (2) a sustainable business model based on an "open innovation" paradigm, and (3) a digital platform based on distributed ledger technologies which is intended to avoid, *by design*, both a centralized monopoly over media production and a lack of control of its circulation. Furthermore, our driving concept is that trustworthiness in information can be better pursued by empowering individual media creators in their effort to build trust in their own professionality. Hence, the practical outcome of TRUTHSTER is a tool – a mobile application – which, it is intended, will integrate a "proof of validity" of digital media generated from a journalist's device before it is shared, and will focus on content

[25] https://digital-strategy.ec.europa.eu/en/library/2022-strengthened-code-practice-disinformation.
[26] Joint Communication, Action Plan against Disinformation, JOIN/2018/36 final, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52018JC0036.
[27] L. Floridi, ed., *The Onlife Manifesto. Being Human in a Hyperconnected Era*, Open Access , Cham: Springer International Publishing, 2015.

whose creation process requires interaction with another human actor (mainly video interviews, audio recordings, and photos). In the process, a customized disclosure notice, containing the terms and conditions regulating the media release, would automatically be sent to the interviewee, thus acknowledging her/his fundamental rights (primarily, privacy).

In the following paragraphs we will address each pillar separately. In section 2 we give the outline of the legal framework, focusing on the specific concerns that media creators – primarily journalists, influencers, and digital entrepreneurs in general – need to address when balancing freedom of entrepreneurship and of expression with rights to privacy and data protection. In section 3 we briefly describe the proposed business model and in section 4 we provide an overview of the technologies to be deployed. At the end we offer a few final remarks.

The legal pillar: Balancing rights and protecting their core

Fundamental rights represent the overall architecture that underpins information sharing in our democratic societies. In particular, the right of freedom of expression represents the cornerstone of the activity of journalists.[28] Indeed, according to the European Convention on Human Rights (ECHR), journalists, as well as NGOs, bloggers and scholars, are the "watchdogs" of public opinion, thus benefiting from special protection (Article 10 ECHR). Consequently, public authorities are not allowed to restrict the freedom to investigate, and to report and comment on, all matters of public interest.[29] In order to obtain this increased protection, journalists are expected to comply with the duties and responsibilities connected with their role. For instance, while the ECHR states that journalists are not required to verify official sources in reporting news released by them, the professional responsibility of journalists entails a requirement to validate information to a reasonable extent before releasing it publicly. In the case of an interview

[28] As recognised by the Universal Declaration of Human Rights (article 19), the European Convention on Human Rights (article 10) and the Charter of Fundamental Rights of the European Union (article 11).

[29] On the role of the press, see e.g. ECtHR in Affaire Campos Dâmaso C. Portugal, § 30; on academic researchers see Başkaya and Okçuoğlu v. Turkey [GC], §§ 61-67; on the role of bloggers and popular users of social media as watchdogs, see e.g. ECtHR *Magyar Helsinki Bizottság v. Hungary* [GC], § 168.

published in a newspaper, however, some differences have been drawn between the transcription of the interviewee's statement and the journalist's own declarations.[30]

As observed above, freedom of expression needs to be balanced with others fundamental rights. This balance becomes more difficult in the digital realm, since on the Internet, as stated by the ECtHR, it is not only that the risks are generally considered to be higher than those related to the traditional press,[31] but also that a new kind of threat has emerged, thus requiring new remedies. This is confirmed by the "right to be forgotten", which can be claimed only against online search engines and media web archives[32] and not against newspapers and the traditional media in general. Furthermore, the fact that fundamental rights are embodied not only in international treaties and legislation but also in secondary sources of law creates interpretative nuances and exceptions, increasing uncertainty for professionals, and thus *de facto* hindering their freedom. As we know, Regulation (EU) 679/2016 (henceforth the "GDPR")[33] establishes specific rights for data subjects and obligations for data processors and controllers. Interestingly, pursuant to Article 85 GDPR and Recital 153, Member States are entitled to provide derogations or exemptions – which must be notified to the EU Commission – to adapt the application of data protection in the field of journalistic production. Pursuant to this clause, for example, the Data Protection Supervisor in Italy has enacted a "*Professional Code*" for journalists,[34] according to which a reporter is required to disclose her or his qualification when collecting news in order to benefit from the exemption from Articles 13 and 14 of the GDPR (the duty to provide information to a data subject). The perverse consequence of this measure, whose aim was to simplify practical duties, is that the status of journalists is weakened since, once they release information – and share, once for all, the personal

[30] See Case of Kącki v. Poland § 52.

[31] See ECtHR, Guide on data protection (2022), para 369 ff, available at https://rm.coe.int/guide-data-protection-eng-1-2789-7576-0899-v-1/1680a20af0

[32] See in particular the groundbreaking judgment of the Court of Justice of the EU (CJEU) in Google Spain (2014), Case 131/12 Google Spain SL and Google Inc. v Agencia Espanola de Proteccio´n de Datos (AEPD) and Mario Costeja Gonza´lez v AEPD. See also ECtHR, Guide on data protection (2022), para 280-282.

[33] Regulation (EU) 2016/679 of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, in OJ L 119, 4.5.2016, p. 1–88, ELI: http://data.europa.eu/eli/reg/2016/679/oj.

[34] Regole deontologiche relative al trattamento dei dati personali nell'esercizio dell'attività giornalistica" (G.U. del 4 gennaio 2019, n. 3), https://www.garanteprivacy.it/home/docweb/-/docweb-display/docweb/9067692

data they collect – they are exposed to legal claims concerning media authorship, consent, personal image and so on, without having any means of defence.

In general, when media reports directly involve persons of interest (e.g., in an interview), their consent for using their personal data or their personal image (e.g., protected materials) can represent a critical requirement, since field reporters are inclined to avoid the practical inconvenience of collecting a documented expression of will (particularly if this is expected to be on paper). Currently, professional media creators lack effective protection to ensure (1) the genuine nature of information sources, (2) the integrity of the content that is produced, and (3) compliance with legal requirements (laws, bylaws, and professional codes of practice) throughout the process of collecting and publishing information. On their part, those who are directly involved in the production of content (e.g., respondents in interviews) are unable to control their own data once the news is spread, or are unaware of their own rights or are incapable of exercising them, or, often, lack the capacity to raise legal claims and request restoration.

The design concepts of the TRUTHSTER application are aimed at addressing such legal issues; specifically: (1) the interview should not be released without the consent of the interviewee; (2) it should be easy for the interviewer to request the consent of the interviewee; (3) the certification of the media content should be activated by the same simple gesture of the interviewee as that by which her/his consent is expressed; (4) the certification of the media content should include any relevant data (embedded as metadata), and should be performed by a decentralized platform to avoid censorship or manipulation; and (5) the documentation of the interaction and of the certification should be available for both the interviewer and the interviewee.

The economic pillar: Entrepreneurial innovation

The project proposes a formula for entrepreneurial innovation that seeks to go beyond the traditional distinctions of the innovation process, underpinning innovation in the dimension of cultural entrepreneurship (the evolution of the digital media creation

culture).[35] The proposed business model feeds an alternative socio-cultural dimension into the dominant professional and work models in the traditional news media sector. It is possible to trigger, or at least to nurture, processes of institutional and organizational change in the traditional formulas for the organization of work (in the information chain and in the functioning of newsrooms) and in the management of the journalistic profession.

The characteristic aspects of the TRUTHSTER project's business solution are the concept of entrepreneurial innovation (new organizational forms and innovative business models designed in a coherent manner) and the use of platforms as "relational infrastructures" based on the "participatory culture" of data journalism as a social and cultural phenomenon. Likewise, in the digital maker movement, "Arduino"[36] is at the same time (1) a digital prototyping board (a "digital artefact"), (2) an entrepreneurial model focused on entrepreneurial learning and entrepreneurial innovation practices, and (3) a collective platform for creatives and innovators who are focused on the community and culture of digital makers.

In short, the solution envisaged by the TRUTHSTER project, in terms of its business model and organizational design, is economically sustainable only if its "participatory" dimension and its "membership" mechanism simultaneously feed the three components of the ecosystem: (1) the continuous production of open source applications and tools (especially by professional developers and people from the world of academic entrepreneurship); (2) the adoption of such tools to feed the cultural dimension of the data journalism movement; and (3) the development of the platform as an online community of creatives and innovators around the convergence of technologies such as blockchain and artificial intelligence in news media.

The technological pillar: The need for a decentralized platform

The implications of blockchain technologies in the field of human rights have drawn the attention of scholars. On the one side, blockchain promises to facilitate freedom of

[35] M. Goyanes et al., *Value and Intelligence of Business Models in Journalism*, "Journalistic Metamorphosis: Media Transformation in the Digital Age", SBD, vol.70, 2020, pp. 171-184.
[36] https://www.arduino.cc.

expression and to balance this with the protection of the rights to privacy and data protection.[37] However, because of its own decentralized and immutable structure, blockchain may also hamper some limbs of the above-mentioned rights, for instance with respect to ensuring the accountability of data controllers and the full enjoyment of the right to access, modify and delete personal data. Some recommendations to governments, private actors in the digital sectors and stakeholders have been provided by EU national Data Supervisors[38] and by NGOs.[39]

The opportunity offered by blockchain to provide a decentralized system for the validation of content and a clear chain of custody can be relevant in the field of journalism, and several models have been proposed so far.[40] According to Harrison and Leopold, "[*b*]*y providing greater transparency into the lifecycle of content, blockchain could offer a mechanism to restore trust in our digital ecosystem*".[41] Indeed, blockchain can track and verify the origin of news and visual content, as demonstrated by the "News Provenance Project" of the *New York Times* and IBM.[42] Some media corporations and news agencies have started to develop blockchain-based solutions to address specific concerns such as copyright infringements (WordProof[43]), to certify press releases (ANSA check[44]), and

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[37] *G. Zyskind et al., Decentralizing Privacy: Using Blockchain to Protect Personal Data*, paper presented at the 2015 IEEE Security and Privacy Workshops, 21-22 May 2015.

[38] Commission Nationale Informatique et libertés (CNIL), Blockchain. Solutions for a responsible use of the blockchain in the context of personal data (2018), available at https://www.cnil.fr/sites/default/files/atoms/files/blockchain_en.pdf
For a discussion, see Sonia Daoui et al, GDPR, Blockchain and the French Data Protection Authority: Many Answers but Some Remaining Questions (2018), available at https://stanford-jblp.pubpub.org/pub/gdpr-blockchain-france/release/1

[39] Article 19, Blockchain and Freedom of Expression, 2019, pp. 37-38, available at https://www.article19.org/wp-content/uploads/2019/07/Blockchain-and-FOE-v4.pdf

[40] B. Kim et al., *Journalism Model Based on Blockchain with Sharing Space*,"Symmetry-Basel", vol. 11, no. 1, 2019, https://doi.org/https://doi.org/10.3390/sym11010019;
F. Jurado et al., *Tracking News Stories Using Blockchain to Guarantee their Traceability and Information Analysis*, "International Journal of Interactive Multimedia and Artificial Intelligence", vol. 6, no. 3, Sep 2020, https://doi.org/10.9781/ijimai.2020.06.003;
M. Sintes-Olivella et al., *Blockchain at the service of quality journalism: the Civil case*, "Profesional De La Informacion", vol. 29, no. 5, 2020, https://doi.org/ARTN e290522 10.3145/epi.2020.sep.22;
L. Teixeira et al., *A New Approach to Crowd Journalism Using a Blockchain-Based Infrastructure*, "Momm 2020: The 18th International Conference on Advances in Mobile Computing & Multimedia, 2020, https://doi.org/10.1145/3428690.3429159.

[41] Kathryn Harrison et al., *How Blockchain Can Help Combat Disinformation*, "Harward Business Review", 2021, https://hbr.org/2021/07/how-blockchain-can-help-combat-disinformation.

[42] https://www.newsprovenanceproject.com.

[43] https://wordproof.com.

[44] https://www.ansa.it/sito/static/ansa_check.html.

even to certify online content for forensic purposes (LegalEye[45]). Furthermore, blockchain-based solutions can offer a different monetization system and incentivize high quality content with smart contracts, which may be used to automate payments for content that has been verified according to predefined quality standards. Smart contracts may represent an alternative to payments that derive from click-at-all-costs models, which are often driven by sensationalized (when not completely fake) content.

We believe that blockchain technology may serve as one of these technical solutions, as it offers a mechanism to enhance trust in the information shared. It can ensure that providers of information are verified and that users' rights can be exercised, as it can securely store the timestamps of a publication and certify the provenance of news stories, thus increasing the reputation of legitimate content producers. Furthermore, smart contracts offer a new, simplified, and automated tool to boost the value chain of trusted information, since they can regulate how information can be created, shared, and consumed (e.g., by managing copyright validation and micropayments).

Our solution is based on three main components: (1) a mobile and web interface for the interviewer, (2) a cloud-ready backend server, and (3) a web app for the interviewee. The user experience is described below. The interviewer will use her/his mobile device to log into the TRUTHSTER application, which identifies her/him and the device itself, after a preliminary KYC procedure. The user is allowed to insert the personal data (e.g. name, address, and contact details) of the interviewee and to configure the legal framework regulating the digital content (including privacy and media release options chosen by the interviewee) before the content is generated. Once the content is recorded, the interviewee is requested (e.g. by an SMS sent to her/him or through scanning a QR code) to interact with the interviewer.

This interaction triggers four events: (1) the calculation of the hash of the file (together with metadata included by the user, such as the identity of the interviewee, and metadata that is recorded automatically, such as the GPS position of the device), (2) the transmission of such data (in a human comprehensible format) to the interviewee for

[45] https://www.legaleye.it.

future reference (e.g. GDPR notice), (3) the upload of the file into a cloud server,[46] and (4) the storage of the hash and metadata on a decentralized platform, which is provided by Alastria,[47] an open-source and permissioned[48] blockchain platform. At the end of the process, the interviewer is notified of its completion.[49] The interface is enriched by other functionalities, such as a navigable history of the interviews stored in the database and other practical tools.

Conclusion

While blockchain is not only a technological innovation but undoubtedly also a social phenomenon, its practical benefits and disadvantages are still under discussion, with "pros" and "cons" which depend on the context of the application (and this context is very wide, ranging from cryptocurrencies to supply chain validation). In our project, the use of a blockchain platform offers the supreme advantage that it allows the theoretical background (the need for decentralized governance to support the trustworthiness of the media) to be aligned with legal requirements (the challenge of protecting fundamental rights in the digital realm) and with sustainability concerns (the interest of the single media creator as a design requirement). In the coming months we are planning to release a White Paper both to showcase the outcome of our research and to demonstrate the validity of our tenets.

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[46] MongoDB, https://www.mongodb.com. MongoDB is a document database that builds highly available and scalable internet applications. Its flexible schema is popular among development teams using agile approaches.
[47] https://alastria.io/.
[48] Thanks to Alastria ID, only authorized people (registered interviewers) are allowed to write in the blockchain.
[49] Thanks to the Node.js server that notifies the user when the process is complete.

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