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The Tech Stack Study

Tools and techniques used by news publishers

Results of the 2022 survey (12/05/2022)

Note : This document was originally written in French and automatically translated into English by DeepL.

Summary

I. Introduction

What tools do French newspaper publishers use to produce and distribute their digital content? Tech Stack 2022 provides answers from the publishers themselves or those responsible for using these tools: CTOs, editorial directors, product managers, marketing managers, etc.

Between their in-house tools and those acquired externally, they all manage a rapidly evolving technical arsenal through licenses, developments, plugins, customizations, and, of course, updates. The jargon "stack" aptly describes the spontaneous and iterative nature of adding solutions required by the evolution of technology and public usage. Producing content means first choosing resources to serve a site and its applications. This study reflects the diversity of the task.

In 2022, Tech Stack is in its second edition. It was created last year within a consulting firm, Underlines, on the initiative of its director, Marion Wyss. The acquisition of the company by Poool, where Marion Wyss is marketing director, compromised the sustainability of an innovation that had been reinforced in its first year by information from more than seventy French media outlets.

Sciences Po Paris has decided to take over this study and publish it annually. Its content is of interest to two of its schools: the School of Journalism, where students are trained in the use of digital tools, and the School of Executive Education, where students in the "Master's in Media and Digital Management" program learn to develop strategies in the right technological environment.

The basic principle of Tech Stack remains unchanged: to guarantee each respondent the confidentiality of the solutions they use to gain a competitive advantage, while consolidating all responses to provide an overview of the solutions used in France.

A survey powered by publishers

The "Tech Stack 2022" study is based on an online questionnaire. Publishers and technical, marketing, and editorial team managers responded by entering their own usually confidential data. After tabulation, verification, and cross-checking of the data, their responses were used to develop a two-pronged approach for each tool: identifying the most widely used tools and rating their quality.

Indeed, knowing which resources are used is not enough. It is also important to know how satisfied users are with the tool. That is why each tool is rated by its users on a satisfaction scale of 1 to 10.

> Rating 1: tool used for lack of a better alternative (for reasons of cost, time, availability, technical compatibility, etc.) but replacement by another solution is necessary.

> Rating 10: reliable resource whose features fully meet the user's needs, with no plans to replace it.

It goes without saying that ratings assigned to the same tool vary from one media outlet to another depending on a number of factors: site size, budgetary

resources, team skills, framework used, functionality requirements, overall consistency of solutions, etc. However, aggregating the scores of all tools performing the same function makes it possible to determine whether, in France, people feel well served by their CMS, data lake, or mapping tool.

The questionnaire allowed respondents to add an explicit comment to their rating. Some of these comments are quoted here to enrich the study, while respecting the anonymity of the respondents.

The survey also attempted to "frame" data related to resource management: the ratio of staff involved in content production to staff involved in marketing and Tech Stack development and maintenance.

Finally, at the end of the questionnaire, respondents were asked to give a single score in response to the following question: On a scale of 1 to 10, how would you rate the Tech Stack you use in relation to your strategic objectives?

Participants

As the questionnaire was an open consultation, respondents were free to leave certain questions blank or not to rate their tools, and were also free to choose the scope of their responses: either a group publishing several titles or a single media outlet. Twenty responses came from groups. They present technical solutions used on well over a hundred websites, perhaps twice as many. In order to better identify these groups without going into a lengthy list, this document reproduces only the logos of their sites that appear among the 100 most visited press sites according to the ranking established by the Alliance pour les chiffres de la presse et des médias (ACPM) for the month of October 2022.

Responses describing only one site (whether or not it is ranked by the ACPM) expanded this initial feedback. In total, responses to the questionnaire came from eighteen of the top twenty-five sites in the ACPM ranking and, more broadly, from fifty-seven of the top one hundred sites in the same ranking, again for the month of October 2022.

 In accordance with the confidentiality commitment made to respondents, all responses are consolidated and processed anonymously, and respondents are described only in the logo showcase below.

Limitations of the survey

This study does not compare websites but Tech Stacks. Each respondent described a solution (their Tech Stack). This solution applies to a single website or to several websites, or even dozens of websites, depending on whether it is a one-off project or, on the contrary, an industrialized solution.

The adoption rate indicated for each tool corresponds to the presence of the tool, expressed as a percentage, among all Tech Stacks. A tool that is not widely used in solutions therefore has a total adoption rate well below 100%. Conversely, a tool whose functionality is so widely used that several competing tools are sometimes in use on the same site may have an adoption rate of over 100%.

The score out of 10 is the average score given by users of each tool. When a tool is not widely used, its name is mentioned without indicating the rating given by its user(s).

This survey does not establish a hit parade or ranking of tools. It displays references that are usually kept confidential and that content producers have agreed to reveal. The tools are therefore listed in the order that seems most relevant, sometimes based on the hierarchy of their presence, sometimes based on the ratings given to them by users. Of course, it should be remembered that some respondents chose to leave questions unanswered so as not to reveal the competitive advantage gained from a tool.

Knowing which solutions are most widely used is information of relative value. Its full power lies in how each individual interprets it. Much more than a ranking of the most widely used or highest-rated tools, the study offers the opportunity to place the choices made by a site in a broader context. Only the group photograph allows everyone to judge whether, in their field, they are moving forward with the others or whether they are going their own way, with options that are unique to them.

In a restrictive and changing environment, it is clear that trends and obsolescence are at work. Added to this is a contradictory dynamic that prevents any of the solutions used by a respondent from being considered a fixed entity:

- on the one hand, each of the teams (technical, marketing, and editorial) working on a platform has its own activity, which drives it to seek solutions based solely on its own needs;

- on the other hand, once tools and techniques are established in the digital world, they tend to expand their functionality with each new version in order to better market their solutions by satisfying the demands of all teams.

This explains why some respondents worked together to complete a single questionnaire, while some sites or groups provided several responses, each covering only one of the fields: technical, marketing, or editorial.

Technical note

The "Tech Stack 2022" study was conducted, analyzed, and processed under the responsibility of Marion Wyss, who initiated the first edition, and Jean-François Fogel, director of the Executive Master's in Media and Digital Management at Sciences Po Paris.

The data was collected via an online survey available from October 17 to November 10, 2022. After verifying the origin and authenticity of the completed questionnaires and cross-checking the data one last time, eighty-seven Tech Stacks from groups or websites were selected and consolidated into the final result.

In order to refine and expand the framework used in the first edition in 2021, the study leaders sought advice from six professionals:

Edouard Andrieu, Product Director, Contexte

Mohamed Belmaaza, Head of Content and Audiences, Webedia

Mathieu Dehlinger, Editor-in-Chief, BFMTV

Maxime Hanssen, Editor-in-Chief, Challenges

Celia Meriguet, Director, Franceinfo Digital

Sacha Morard, CTO, Le Monde Group

In the silo-free world of digital technology, it is impossible to believe that a technique or tool is used exclusively by one profession. However, in order for everyone to be able to navigate the questionnaire, the resources studied had to be divided into three areas (marketing, editorial, and technical). Classifying professional qualifications in these areas is therefore not a definitive or stable distribution of constantly changing job titles, but the authors of the study have made the following assumptions:

Marketing: analyst, data chief, subscription manager, partnership manager, digital advertising manager, UX manager, etc.

Editorial: journalist, editor, editor-in-chief, proofreader, editorial secretary, community manager, graphic designer, motion designer, editorial development manager, etc.

Technical: CTO, back-end and front-end developer, mobile developer, ano/evo manager, system and infrastructure administrator, project manager, architecture manager, SEO specialist, cloud engineer, etc.

II. Needs and tensions

The first finding of this study is the considerable fragmentation of the sector. Competition is intense. Few tools have established leadership positions. Many groups or sites also create their own "in-house solutions" for reasons of cost, control over their environment, or to have something that exactly meets their needs. Ultimately, while there is a certain amount of excitement, this does not compensate for the existence of areas where resources appear modest, or even inexplicably insufficient, as shown by the rate of equipment adoption for each tool.

The most popular tools

In total, only nine tools are cited by more than a third of respondents as part of their tech stack in their respective fields. The "nominees" on this list are: Google Analytics (free version), Didomi, Google Data Studio, Adobe Premier Pro, Microsoft Teams, Batch, Poool, and finally, Google Ad Manager, and AT Internet/Piano Analytics. The latter two products even manage to exceed the 50% threshold. But for these nine winners in the competition, nearly 250 brands are cited. It is clear that most of the tools used therefore tend to have low penetration in a fragmented universe.

The power of Google and its parent company Alphabet is evident from the responses. The Mountain View company's tools are cited by respondents in twelve categories covering all areas: marketing, editorial, and technical. Some

harsh comments suggest that certain respondents deplore this power and, above all, this widespread presence.

A wide variety of tools exist to provide core business functionality: email/CRM, subscription management, CMS, editorial planning, and analytics. These are areas where around fifteen different tools are cited by respondents. Conversely, five or fewer tools are mentioned when it comes to A/B testing, data lakes, paywalls, image authentication, reverse image search, and text-to-speech.

Tools on the rise

The authors of the survey made at least two mistakes when drafting their questionnaire. First, by asking whether facial recognition tools are installed in newsrooms. No responses were received regarding this feature, even though it is widely mentioned in seminars on investigative journalism.

The second mistake was asking which tool is used to access satellite photos, which have become necessary due to the growing coverage of climate change, drought, fires, etc., not to mention the coverage of the conflict in Ukraine. The responses provided were too few to be meaningful for publication and were omitted from this document.

"In-house solutions"

In almost all areas, content producers are abandoning off-the-shelf tools in favor of in-house technology. However, this option ranks among the most widely used solutions in only five areas. On the technical side: building a proprietary solution for CMS, firewall, and paywall. On the editorial side: the editorial work planning tool. Finally, one last in-house tool is used by both editorial and marketing teams: A/B testing.

Conversely, there is a lack of in-house solutions for analytics and several key editorial functions: newsletters and email campaigns, internal editorial messaging, and map production.

Staffing

■ marketing   ■ rédaction   ■ technique

The final point established by the study is the relative weight, in full-time equivalents (FTEs), of the marketing, editorial, and technical teams. The responses describe the professional populations in the following proportions:

Marketing: 659 (9.6%)

Editorial: 5,486 (80%)

Technical: 714 (11.4%)

What is the value of the Tech Stack in France?

A questionnaire that prompts each respondent to reveal what they would normally keep hidden can only reveal a series of insights into each tool. No definitive conclusion can be drawn, but five areas of weakness are apparent.

1. Reserved satisfaction

Respondents do not consider their Tech Stack as a whole to be a successful solution. They were asked to rate it on a scale of 1 to 10. The average score given was 6.4/10, while the average score given to the tools by the same respondents was 7.0/10. Ultimately, it seems that everyone has learned to appreciate what they know how to use, while feeling that their overall solution is not as complete as they would like it to be and as technology would allow.

2. A poorly served subscription system

Another weakness lies in the high expectations expressed by many publishers with regard to online subscriptions. This is a paradoxical ambition, as it is accompanied in this study by a unanimous finding of weakness: subscription management tools receive the lowest average rating (5.6/10). This is even lower than A/B testing tools, which are the most immediate way to assess the relationship between a media outlet and its audience, and which are found to be underutilized.

3. Social media monitoring under threat

Social media monitoring tools also feature among the lowest scores (5.8/10). This is a source of concern, openly reported in the comments, as the most widely used of these tools, CrowdTangle, which is the benchmark for decision-making in many newsrooms, is set to disappear. Meta, its owner, has not provided a date for the end of the service, but this is seen as a threat, as no alternative has yet been able to establish itself among content producers.

4. Lack of preparation for AI

In many sectors, AI is driving developments. This is also beginning to happen in the digital press, where solutions are already in place for collecting, formatting, and editing information, as well as optimizing web stribution, and marketing, provided that sufficient data storage capacity is available, which is the raw material for AI. This is not the case for half of the Tech Stacks described, which say they are not equipped with a data lake solution. A delay in getting started is therefore possible, even though this technology is specifically designed to handle key issues such as editorial production volume, product customization, marketing efficiency, etc.

5. Audience data that is difficult to obtain

Several factors mentioned in the comments confirm the difficulties publishers face in obtaining the audience data essential for recruiting advertisers and subscribers. Everything is mixed up: Google's announcement of the removal of third-party cookies, which has been repeatedly postponed but remains on the agenda; fluctuations in European and French regulations, which do not facilitate the development of sustainable solutions; the dependence on external analytics tools, where, as this study confirms, there are few "in-house solutions"; and finally, the drop in the consent rate of internet users when a site asks them if they accept cookies at the beginning of their visit.

III. Tools and techniques

Marketing tools

A/B testing

- Average user rating: *5.9/10*

Marketing, editorial, and SEO teams typically share the use of this tool, which allows the audience to vote in real time on the display of content. However, its presence remains limited: it is only in use in a third of the Tech Stacks deployed.

Solutions

Solution	equipment rate	rating
🏠 In-house solutions	5	7/10
AB Tasty	11	6.8/10
Google Optimize	9	6
Kameleoon	11	4.8/10

Note

- Only one-third of respondents describe a Tech Stack equipped with an A/B testing tool, but these are not necessarily the largest sites in terms of resources or those using solutions common to an entire group of sites. The distribution of those not equipped is also quite diverse.

- None of the respondents without the tool expressed a lack of interest in it, but all felt that it required too many human resources, and sometimes too much budget, to consider using it.

- Several responses mention specific, but not insurmountable, deployment concerns on mobile applications.

- This tool has the second lowest average score in the entire study.

A few comments

"There is a gap in the market: no tool is capable of performing A/B testing on the web, television, and an app at the same time."

"You have to constantly be mindful of the tool's impact on UX and page loading speed."

"It always requires a lot of careful configuration work."

"Since Google Analytics was disconnected, we can no longer use Google Optimize: we have to find something else."

Marketing tools

Ad servers

- Average user rating: *6.6/10*

Among the solutions mentioned by respondents, two providers are widely used and sometimes even used simultaneously on the same site.

Solutions

Solution	equipment rate	rating
Google Ad Manager	*61*	*6.5/10*
Smart AdServer	*21*	*6.6/10*
🏠 **In-house solutions**	*4*	*7.5/10*
Also mentioned: **Xandr, ADMAX, Deep Edge Query, audienzz**	*Total: 8%*	*---*

Please note

- Use this data with caution: some Tech Stacks are used for ad-free models, while others use two tools simultaneously (Google Ad Manager and Smart Adserver) to supply their site with advertising.

- Caution should also be exercised with regard to the division of tasks between publishers and advertising agencies: some respondents felt that the choice of plug-in tool was not within their remit and did not provide an answer.

- The usual complaints from content publishers about advertising (see comments below) are present.

- Some respondents indicate that advertising formats sometimes require the use of editorial publishing tools for online publication.

A few comments

"The ad server is slow."

"Ads take too long to display."

"GDPR-CNIL compliance has become an issue."

Marketing tools

Analytics

- Average user rating: *7.1/10*

In this field, a variety of tools is the norm. In many solutions, several tools are used together to aggregate traffic and audience behavior data. There is a shared belief that data tracking is central to the business, and even constitutes the very core of marketing and content creation.

Solutions

solution	equipment rate	rating
AT Internet/Piano Analytics	*53*	*7.4/10*
Google Analytics (free version)	*42*	*7/10*
Chartbeat	*21*	*7.6/10*
Matomo	*11*	*5.7/10*
Also mentioned: **Amplitude, Google Analytics 360, Nielsen-Médiamétrie, Marfeel, IO Technologies, Wysistat, Taboola Newsroom, Woopra, Adobe Analytics**	*Total: 36%*	*---*

Note

- This data should be viewed in the specific context of the formal notice issued by the CNIL last summer to certain websites to withdraw from Google Analytics.

- If we add together the two versions of Google Analytics (free and premium), the adoption rate for Google is 51%.

- The recent acquisition of AT Internet by Piano (two widely used tools) has influenced many of the comments, with users saying they will wait until the end of their migrations before giving their opinion.

- Expectations are high in terms of certain criteria: data accessibility, data export, and ease of dashboard creation.

- No "in-house solution."

A few remarks

"Qualitative analysis tools are virtually non-existent."

"We use several solutions, each with its strengths and weaknesses, but we feel we have everything we need with our range of tools."

"There are good tools available in a changing legal environment."

Marketing tools

CMP

- Average user rating: *7.3/10*

Is this the result of the regulatory requirement imposed in May 2018 on all publishers distributing cookies to suddenly comply with the General Data Protection Regulation (GDPR)? This feature, beyond one dominant player, has seen a wide range of providers establish themselves in Tech Stacks.

Solutions

solution	equipment rate	rating
Didomi	*47.4%*	*7.8/10*
🏠 **Home remedies**	*12.3%*	*7.1/10*
Sirdata	*7*	*7.7/10*
***Also mentioned:* Axeptio, Cookiebot, Commanders Act, Sourcepoint, WordPress plugin, Tarte au citron, SFBX**	*Total: 15.8%*	*---*

Note

▪ In the comments, the CMP is seen as an unnecessary constraint by many publishers.

Some comments

"Doing your CMP internally allows you to optimize its performance, but it is quite time-consuming."

"We did not want to integrate a third-party solution for this need, for reasons of independence and data sharing."

"We synchronized our solution with our tag management and the input of a service provider that studies best practices in the market."

"Does the job for free."

Marketing tools

Datalake

- Average user rating: *7.5/10*

The race for data is on, both for editorial teams (using machine learning and data journalism) and for marketing (relentlessly tracking user journeys and profiles).

Solutions

solution	equipment rate	rating
Google BigQuery	*19.3*	*7.4/10*
🏠 **In-house solutions**	*10.5*	*7.6/10*
Amazon S3/Redshift	*7*	*8*
Azure Synapse Analytics	*5.3*	*7/10*
Also mentioned: **Snowflake, Cloudera**	*Total: 3.6%*	*---*

Please note

▪ The overall equipment rate is low (or respondents did not want to disclose this information).

▪ The gap between scores is one of the smallest recorded in the questionnaire: satisfaction appears to be consistent regardless of the tool chosen or produced in-house.

A few comments

"We are not mature enough in terms of data to make use of it."

"Choice of an internal solution to control confidentiality."

"Ongoing discussion: should we invest in equipment?"

Marketing tools

DMP/CDP

- Average user rating: *7.1/10*

Beyond traditional analytics, ensuring the collection, organization, and activation of audience data, regardless of its level and source, is a must for any tech stack: the battle for data is on, everywhere.

Solutions

solution	equipment rate	rating
Mediarithmics	*8.8*	*7.2/10*
1plusX	*5.3*	*7/10*
Adobe Audience Manager	*5.3*	*7.3/10*
Permutive	*5.3*	*7.3/10*
🏠 **Home remedies**	*5.3*	*6.5/10*
Also mentioned: **Imagino, Weborama, Piano** (cXense), **Actito**	*Total: 10.6%*	*---*

Note

▪ Many respondents "skipped" the question: either they did not want to reveal a highly effective solution, or they have not yet reached the level they want to achieve.

▪ The challenge is clear: the aim is to obtain levers that enable effective activation, but significant constraints are openly mentioned, such as the necessary internal resources and budget.

▪ Many comments refer to a start-up or ongoing deployment: the domain is often described as a "work in progress."

A few remarks

*"**We initially chose to consolidate our data on an external platform, but this is just the first step...**"*

Marketing tools

Email marketing/CRM

- Average user rating: *6.7/10*

"Pushing" information to the public, through occasional emails or newsletters, is a feature used by almost all respondents. This is an area where there is a particularly high number of providers.

Solutions

Solution	equipment rate	rating
Sendinblue	28	7/10
Selligent	23	6.2/10
Ownpage	19	7/10
Mailchimp/Mandrill	12	7/10
Mediego	7	7.8/10
Cheetah	7	5.8/10
Also mentioned: Actito, vero, SendGrid, Mailjet, Mailgun, Pardot, Emarsys, D-AIM, Mailrose Place, Adobe Campaign, Salesforce Marketing Cloud	*Total: 28%*	---

Note

- No respondents claimed to have an in-house solution in their tech stack. The sector is subject to fierce external competition, with 17 providers mentioned.

- In terms of external solutions, comments cite recurring points with varying levels of satisfaction: interfacing with other tools and APIs, the ability to segment a CRM to send different messages, and ease of use of dashboards.

- Respondents emphasize the importance of provider assistance and technical support.

A few remarks

"The more contacts you have to serve, the more you pay."

"Scripting and marketing automation are real needs for publishers."

Marketing tools

Manager/subscriptions

- Average user rating: *5.6/10*

A crowded market: at a time when publishers are convinced of the need for subscriptions in their business model, the number of solutions used to manage them is exploding.

Solutions

Solution	equipment rate	rating
Ediis (GLI)	*22.8*	*4.4/10*
🏠 **In-house solutions**	*16*	*5.8/10*
TBS Mahalo	*15.8*	*5.7/10*
Salesforce	*5.3*	*6.5/10*
Also mentioned: **AboWeb, Alice, Maxio, Zuora, Majorel, Protecmedia (Shipo), Chargebee, MPP Global Solutions, Stripe Billing, Magellan, Restrict Content Pro** (WordPress plugin), **Advantage**	*Total: 27%*	*---*

Note

- This is the lowest average rating given to any tool by respondents.

- Even users who have built their own "in-house solutions" give themselves low scores.

- The comments associated with the scores are among the most abundant in the survey and define a very broad set of expectations: data, payment and direct debit management, agile marketing operations management, responsive support, and control of an associated e-commerce chain.

A few comments

"The impacts we are looking for: marketing agility, UX quality, complete control of solutions, control of customer relations, reduction of running costs."

"A homemade solution, therefore relatively expensive but tailored to our needs, with control over the roadmap, etc."

"Managing subscriptions is a technological legacy from the paper era that has failed to modernize."

"It's cumbersome... overly complicated... very inflexible."

Marketing tools

Manager/contributions

- Average user rating: *7.5/10*

From comments written on the fly by anonymous visitors to responses from internet users who have signed up to share their experiences, the need to correct abuses is constant and substantial. The solutions are very diverse, ranging from outsourcing to a service provider to internal filtering/validation.

Solutions

Solution	equipment rate	rating
Netino	*29.8%*	*7.0/10*
Logora	*14.1*	*7.7/10*
🏠 **Home remedies**	*14*	*5.5/10*
Discourse	*3.5*	*7.5/10*
Atchik	*3.5*	*5.5/10*
***Also mentioned:* Viafoura, Drupal, SAP Gigya, Bodyguard, WordPress, Disqus, Coral**	*14.7*	*---*

Note

- Use this data with caution: some providers simply monitor comments, while others offer a full range of features to gather genuine audience feedback.

- The issue of interfacing with registration (of subscribers or registered users) is a need mentioned in the comments.

- Respondents have very different assumptions when looking for a solution, ranging from those who do not want any input from their audience to those who, on the contrary, say they are overwhelmed by the volume of contributions required for their editorial formula.

A few remarks

"You have to choose either low functional coverage or dedicated tools."

"Comment sections are the trash cans of the internet."

"It's crucial not to depend on a third party for this feature."

"It's not very complicated to manage comments, so we developed a solution ourselves."

"Comments are difficult to leverage because advertising has killed the space at the bottom of articles."

Marketing tools

PDF reader

- Average user rating: *6.5/10*

This tool, which was initially intended to serve as a bridge between print and digital media, remains relevant despite the rise of live streaming and the overall improvement of wired and Wi-Fi networks.

Solutions

solution	equipment rate	rating
Milibris	*28.1*	*6.7/10*
🏠 **Home solutions**	*10.5*	*6.3/10*
Twipe	*10.5*	*6.3/10*
Immanens	*7.0*	*6.5/10*
Also mentioned: **Forecomm, PageSuite, Paddix, PDF embedders** (WordPress plugin)	*8.9*	*---*

Note

▪ Respondents are very divided on this tool. Many are very interested in it, both in terms of its impact and the volume of business it generates. Conversely, others believe that it is a proposition that will become obsolete.

A few comments

"Reading a PDF: but this is 2022!"

"With an in-house solution, PDFs stay online forever."

Marketing tools

Paywall

- Average user rating: *7.1/10*

In the current rush to set up online subscriptions, building a subscriber portfolio involves a two-step process that all publishers go through: setting up a paywall and then configuring dynamic versions.

Solutions

solution	equipment rate	rating
🏠 **In-house solutions**	*24.6*	*7.8/10*
Poool	*35.1*	*7.3/10*
Qiota	*12.3*	*5.8/10*
Also mentioned: **SwissPay, Restrict Content Pro** (WordPress plugin)	*3.7*	*---*

Note

- Caution should be exercised when interpreting the equipment figures: the free model remains fully valid for many respondents.
- No respondents mentioned using two different tools simultaneously.

A few comments

"The paywall meets our needs. However, the teams have encountered several issues: first, with the creation of scenarios and different templates on the site, and second, with the risk of the paywall being circumvented."

"The work is optimization, not installation."

Marketing tools

Push notifications

- Average user rating: *7.7/10*

Web push and/or mobile push: reaching out to audiences when they do not come to a media outlet themselves is a source of recurring tension between publishers, who fear provoking rejection through excessive solicitation, and internet users, who do not want to be disturbed but do not want to give up the service. Overall, the adoption rate is high: the feature remains useful to both groups.

Solutions

solution	equipment rate	rating
Batch	*35.1%*	*8.3/10*
Airship	*12.3%*	*7.2/10*
OneSignal	*7.0*	*7.0/10*
WonderPush	*5.3*	*5.7/10*
Also mentioned: **Adrenalead,** 🏠 **In-house solutions, Google Firebase**	*7.0*	*---*

Note

▪ Many references to two requirements: ease of use and the ability to grant access based on the user's position in the editorial hierarchy.

▪ Other references: customization, segmentation of the subscriber base, easy cleaning of this same base, use of icons other than phone emojis.

A few comments

"We have stopped sending push notifications."

"We want to send notifications regardless of the time and the team on site, with the ability to push simultaneously to our various applications."

"Our tool monetizes as well as shoots!"

Marketing tools

Data visualization/strategy

- Average user rating: *7.0/10*

Making a strategy visible provides both an operational management tool and a resource for bringing a team together. The digital world has been quick to equip itself in this area, surpassing the practices of the past. The rate of adoption is high.

Solutions

solution	equipment rate	rating
Google Datastudio	*47.4*	*6.8/10*
AT Internet Dashboards	*28.0*	*6.3/10*
Table	*14.0*	*7.3/10*
Microsoft Power BI	*10.5*	*7.3/10*
Also mentioned: **Looker, 🏠 In-house solutions, Qlik, Apache Superset**	*12.3*	*---*

Note

- An important criterion for respondents: the ease of connecting external sources to each other and also connecting them to internal data.

- Many comments related to this tool spill over into an assessment of the quality of the company's management, asking questions such as: Are we mature enough to use it? Are we using solutions that are too "basic"?

Some remarks

"We have progress to make."

"A tool that seems interesting and powerful for some teams and is considered complicated and tedious by others."

"We need specialists to set up this data."

Editorial team tools

Image authentication

– Average user rating: *7.3/10*

A tool that is not widely used but is currently being promoted in the international press, as images play a key role in the fight against disinformation. The tool also saves time in production tasks (verification).

Solutions

solution	equipment rate	rating
TinEye	*2*	*10/10*
WeVerify	*2%*	*9/10*
🏠 **Home remedies**	*7*	*6.25/10*
Yandex	*2*	*---*

Note

- Great caution is advised when using this data: the tool is mentioned in only 13% of the Tech Stacks provided in response to the questionnaire.

- The responses partly cannibalize each other because WeVerify is a plugin that provides access to TinEye and Yandex features under certain conditions.

A few comments

"Price is an important factor in the choice."

"The combination of this tool with image search is a criterion that cannot be overlooked."

Editorial team tools

CMS

- Average user rating: *7.0/10*

The term "back office" seems to have been replaced by "CMS" in the responses. No website is complete without a CMS. And, increasingly, an in-house CMS.

Solutions

solution	equipment rate	rating
🏠 **In-house solutions**	*29.8*	*7.3/10*
Drupal	*26.3*	*5.6/10*
WordPress	*19.3*	*8.1/10*
Eidosmedia	*8.8*	*7.2/10*
***Also mentioned:* Melody, S-Pulse** (formerly Lea)**, Arc Publishing, Sirius, Django, K4, eZ Publish, XMS Pressnews, CUE** (Stibo DX)**, Swyp, Trias**	*30.4%*	*---*

Note

▪ Many respondents mention a new solution currently in development or coming soon: the field seems to be very active.

▪ Respondents added the words "in-house solution" to the name of a commercially available CMS to indicate a high degree of customization.

▪ The frequent use of terms such as "obsolete," "outdated," "archaic," and "old school" in the responses supports the idea that the solutions are outdated and therefore need to be replaced.

A few comments

"In-house solution, therefore more flexible but takes longer than an off-the-shelf solution."

"In-house CMS developed to order and positioned as a business engine and lever for change (internal and external) rather than as a content pipeline."

25

Editorial team tools

Live video editing

- Average user rating: *7.5/10*

With the acceleration of information cycles and continuous social media activity, on-the-fly video editing has become an acute need for both on-site and off-site use.

Solutions

solution	Equipment rate	rating
Adobe Premiere Pro	*38.6*	*7.5/10*
Wildmoka	*5.3%*	*7.0/10*
🏠 **Home remedies**	*3.5*	*6.5/10*
***Also mentioned:* YuzzitPro, Switcher Studio, Kinemaster, PlayPlay**	*7.0*	*---*

Note

▪ Criteria mentioned in comments: the ability to distribute immediately to all platforms, ease of use for bringing an editorial team to the image.

A few remarks

"**The solution may be imposed by the fact that we produce videos in-house and need consistency in the production process."**

Editorial team tools

Editorial infographics

- Average user rating: *6.8/10*

Infographics software faces several challenges: ensuring equivalent display quality on the web and on mobile devices; enabling full use of editorial data processing; ensuring the visual consistency of infographics with the rest of the content display.

Solutions

solution	equipment rate	rating
Datawrapper	*19.3*	*7.1/10*
Flourish	*17.5*	*7.5/10*
Illustrator	*14.0*	*6.5/10*
Infogram	*12.3*	*6.2/10*
Also mentioned: **Google Charts,** 🏠 **In-house solutions, D3.js, Canva, WeMap**	*5.3*	*---*

Note

- Mapping can sometimes hinder page loading performance: several respondents emphasized this constraint.

- Many respondents refer to their professional skills and connections: graphic designers, journalists, data analysts, etc.

A few comments

"**Looking for a tool that allows us to use a single provider.**"

"**It's difficult to maintain graphic consistency and keep track of everything that's been done with multiple tools.**"

Editorial team tools

Messaging

- Average user rating: *7.4/10*

The pandemic has finally established equality: writing = messaging. Setting up channels and defining the messages that circulate are now key factors in organizing editorial work.

Solutions

solution	equipment rate	rating
Microsoft Teams	*43.9*	*7.3/10*
Slack	*42.1*	*7.6/10*
WhatsApp	*22.8*	*7.6/10*
Google Chat	*15.8*	*8.3/10*
Also mentioned: **Discord, Skype, 🏠 In-house solutions, Messenger**	*5.3*	*---*

Note

▪ Virtually no respondents chose to skip this question.

▪ It is clear that several messaging services are used simultaneously in some newsrooms.

A few comments

"Too many tools, too many channels, too much chaos."

"Solution imposed by the IT department/senior management, even though it's the editorial team that uses it."

"Depending on the editorial teams and contacts, the company uses different tools."

"It's complicated when there are several hundred people using one tool."

"It would be simpler if we only used one tool."

"Addictive."

Editorial team tools

Editorial planning

- Average user rating: *6.8/10*

In the digital world, editorial production combines responsiveness and calculated anticipation to go beyond breaking news. This dual constraint, combined with the diversity of media (text, sound, image), technical development needs, and finally, constant deadlines, has done the rest: no publication without editorial planning.

Solutions

solution	equipment rate	rating
🏠 **In-house solutions**	*33.3*	*6.9/10*
Google Drive	*29.8*	*6.8/10*
Trello	*12.3*	*7.2/10*
Google/Outlook calendars	*8.8*	*6.8/10*
***Also mentioned:* Notion, Arc XP, Desk-Net, Sirius Conductor, Eidosmedia, Monday, Melody, Airtable**	*19.2*	*---*

Note

- Google and Outlook calendars were placed in a single category because they had identical ratings and also operate on the same principle, linked to email accounts.

- One requirement was repeated in the responses: the interconnection of this tool with the CMS used by an editorial team.

A few comments

"A tool that is not connected to the CMS often results in double entry."

"We need to find the processes and habits that correspond to a tool."

Editorial team tools

Map production

- Average user rating: *7.4/10*

For many websites, producing maps remains a source of frustration: the quality obtained falls short of their expectations. There are plenty of tools available, but using them is costly in terms of time and resources.

Solutions

solution	equipment rate	rating
Google Maps Platform	*8.8*	*8.0/10*
Flourish	*5.3*	*6.3/10*
Wemap	*5.3*	*7.7/10*
Leaflet	*3.5*	*7.5/10*
Also mentioned: **Tableau, OpenStreetMap, QJIS, Datawrapper, Zeemaps, Mapbox, D3.js**	*12.2*	*---*

Note

▪ No "in-house solutions"

▪ The comments reveal that many sites use a variety of solutions, both over time and at any given moment.

▪ "Vector" production is a widely shared ambition.

A few remarks

"Not enough time and internal skills to produce high-quality mapping."

"Mapping is a driver of audience traffic on a website."

"Looking for a tool that provides us with a single service provider."

"To process a large volume of data, such as a map showing all the municipalities in France, specific tools are required."

Editorial team tools

Posting/social media

- Average user rating: *6.9/10*

What sets journalists apart from their editorial teams when it comes to social media is the use of a multi-channel tool by the editorial team. This tool automates and tracks publications. Journalists, on the other hand, publish directly on one network at a time.

Solutions

solution	equipment rate	rating
Echobox	*22.8*	**6**.7/10
Hootsuite	*14*	**6**.2
TweetDeck	*14*	7.1/10
Nonli	*12.3*	8
Also mentioned: **Agorapulse,🏠 In-house solutions, Buffer, Mashup Web, eclincher, Sirius, dlvr.it**	*21.1*	---

Note

▪ Coordination (posting several times or, conversely, not posting at all) is one of the requests made by users.

▪ Many comments mention upcoming developments or changes to tools.

▪ The relationship between the choice of tool and the strategy pursued (or to be developed) on social media is often explicitly mentioned.

A few remarks

"We need solutions that avoid giving passwords to everyone and also allow us to add or remove access depending on arrivals or departures within the editorial team."

"We like to have control over every stage, from writing to distribution."

"Simply automating posts quickly reaches its limits."

Editorial team tools

Reverse image search

- Average user rating: *7.5/10*

Starting with an image rather than a text-based query is becoming an increasingly common use of search engines, particularly in two areas of editorial work: investigation and rapid verification of information.

Solutions

solution	equipment rate	rating
Google Reverse Image Search	*36.8*	*7.5/10*
Also mentioned: **WeVerify, 🏠 Homemade solutions, TinEye Reverse Image Search**	*8.8*	*---*

Note

- Among the criteria cited in the expression of needs: simultaneous search on multiple sites, search on video thumbnails, access to image metadata.
- Concentrated sector: the equipment rate is high compared to the small number of solutions cited.

A few comments

"Usage remains limited, but the need exists."

"No need, occasional use."

Editorial team tools

Speech to text

- Average user rating: *7.3/10*

Natural language processing is advancing, and demand for its applications shows no sign of slowing down. These tools are necessary for obtaining video transcripts and improving archiving, as well as for publishing podcasts with transcriptions of their content. Beyond that, automatic transcription of interviews also speeds up the production of information.

Solutions

solution	equipment rate	rating
Trint	*7.0*	*7.3/10*
Also mentioned: **Otter.ai, Odia, Dragon, Newsbridge, Ava**	*8.7*	*---*

Note

- Consensus: no tool can replace proofreading if quality is the goal.

- No "home-grown solutions."

A few comments

"When it comes to transcribing interviews, the decision is up to each journalist."

Editorial team tools

Text to speech

- Average user rating: *7.3/10*

The editorial option of listening to an article rather than reading it provides an alternative: the author reads their text or a synthetic voice provides an audio version. Regardless of the solution, there is a noticeable international trend: many high-quality websites want to offer audio versions of all their written content.

Solutions

Solution	equipment rate	rating
ETX Studio	**5.3**	*6.7/10*
Audion	**3.5**	*8.5/10*
***Also mentioned:* Nuance, Odia,🏠 Home solutions**	**5.2%**	**---**

Note

▪ Many respondents report ongoing studies or promises of deployment.

▪ The issue of voice quality (whether or not it sounds like a human is speaking) is a requirement for everyone addressing this issue. But not everyone is convinced that this requirement is being met.

A few comments

"**Systematically publishing an audio version of all articles is a strategic decision involving a cost/benefit trade-off for the audience.**"

"**We have chosen to have real actors read some of our articles.**"

Editorial team tools

Social monitoring

- Average user rating: *5.8/10*

Everyone expressed concern about Meta's announcement on June 22 that it would be shutting down the CrowdTangle service. This widely used transparency tool shows the performance of each publication on Facebook, Instagram, and Reddit. No date has been given for its closure. The search for an alternative solution is underway.

Solutions

solution	equipment rate	rating
CrowdTangle	*17.6*	*7.2/10*
***Also mentioned:* Dataminr, Nonli Intelligence, News Whip, 🏠 In-house solutions, Sprinklr, EzyInsights**	*10.5*	*---*

Note

- CrowdTangle users are convinced that the tool is absolutely necessary for certain editorial decisions.

- The same users feel that Meta is no longer maintaining its tool as it did a few months ago, citing issues such as updates and bugs.

A few comments

"It is essential to have a monitoring tool to track trends."

"Tests are currently underway."

Technical options

CDN

- Average user rating: *7.7/10*

Publishing in the digital world means having pages that are accessible anywhere, anytime. The advent of the cloud has taken this requirement beyond cache and server issues. This is especially true since technical performance is monitored by search engines, starting with the leading one.

Solutions

solution	equipment rate	rating
Cloudflare	*10.5*	*8/10*
Amazon CloudFront	*8.8*	*8/10*
Akamai	*12.3*	*7.8/10*
Also mentioned: **Fastly, 🏠 In-house solutions, Google Cloud CDN, Azure CDN, OVH, Edgio (formerly Edgecast)**	*14.1*	*---*

Note

▪ Many respondents did not answer this question, suggesting that, for them, deciding on hosting was sufficient, as the choice of host seemed to be linked to that of the CDN.

A few comments

"The key words: scalability and reliability."

Technical options

Firewall

- Average user rating: *7.2/10*

Everyone agrees on this point: limiting malicious traffic and critical security alerts on a site is a matter for the firewall. The question remains as to where the constraint should be managed: internally or externally?

Solutions

Solution	equipment rate	rating
🏠 **In-house solutions**	*16*	*6.8/10*
Cloudflare	*3.5*	*---*
Botscorner	*3.5*	*6.5/10*
Also mentioned: **AWS WAF, DataDome, OVH, OnCloud, Akamai**	*Total: 7.3%*	*---*

Note

▪ Respondents provided little information about this tool, as there are clearly two approaches to the issue: for some, the firewall is a separate issue to be managed internally; for others, it is part of the hosting service and therefore the provider's responsibility.

A few comments

"We've had a few attacks."

"The only quality criterion is reliability: holding up."

"Combating malicious traffic ultimately speeds up the site's performance."

Technical options

Hosting

- Average user rating: *7.2/10*

With the advent of the cloud, a few players have taken over most of the global hosting market. This monopoly does not apply to news content providers in France.

Solutions

solution	equipment rate	rating
AWS	*15.8*	*7.4/10*
OVH	*15.8*	*8.0/10*
Google Cloud	*8.8*	*6.5/10*
🏠 **In-house solutions**	*5.3*	*8.0/10*
***Also mentioned:* Orange, Microsoft Azure, Claranet, Infomaniak, Oncloud, SDV, Pockost**	*11*	*---*

Note

- Some respondents insisted on having a French and independent solution.

- A significant number of respondents skipped this question...

A few comments

"Stability, security, price: what more could you ask for?"

Technical options

Video hosting

- Average user rating: *7.1/10*

Two specific features mean that video hosting must be considered separately from other content: it requires considerable storage space, and viewing videos requires embedding a specific player.

Solutions

Solution	equipment rate	rating
YouTube	*31.6%*	*7.1/10*
Dailymotion	*17.5*	*6.4/10*
Digiteka	*14*	*6.9/10*
Vimeo	*7.0*	*7.5/10*
Also mentioned: **JW Player, 🏠 In-house solutions, Brightcove**	*12.3*	*---*

Note

▪ For all respondents, choosing an external provider for video hosting means using that provider's player.

▪ Several respondents use two solutions in the same tech stack.

▪ Two points recur in expectations and, sometimes, in dissatisfaction: monetization opportunities and data availability.

A few comments

"Not all player offerings are on the same level, and the choice of player is based on other criteria: price, monetization, strategic choices, etc."

"Compliance with GDPR-CNIL standards is overlooked."

Technical options

Audio player

- Average user rating: *7.1/10*

Among recent developments in audience usage, the growth of podcasts is the most significant. The format has the advantage of low hosting volume.

Solutions

Solution	equipment rate	rating
Ausha	*14*	*6.9/10*
Acast	*12.3*	*7.3/10*
Saooti	*7.0*	*7.5/10*
***Also mentioned:* Anchor Audio, Edisound, Spotify, 🏠 Home solutions, Spreaker, ETX studio, Drupal player, Soundcloud**	*14*	*---*

Note

- Many criteria are external to the tool when choosing a solution: capitalistic relationship with the supplier, need for support, desire to limit an investment whose merits remain to be verified.

- Unlike video, monetization was not mentioned by respondents.

A few comments

"Our offering is still in its infancy, so price is a key criterion at this early stage."

Programming languages

Front-end framework

The combinations of languages are endless, but the repetition of certain mentions allows us to identify areas of high density.

- The combination of React + JavaScript is the most frequently cited solution (more than a quarter of responses) and ranks slightly ahead in terms of penetration of what respondents refer to as their "in-house solution" without specifying the combination.

- JavaScript is the language that appears in the greatest number of combinations: with React, of course, but also with Vanilla, View, and Vue.

- Other languages mentioned include Symfony and HTMX.

Mobile language

Java is the official native language for Android applications; Swift occupies the same position in Apple's mobile programming universe. Beyond that, everything seems to fit into three languages.

- React Native is the dominant solution, with more than a third of respondents choosing it.

- Other languages mentioned: Kotlin, Swift, Java, Objective-C

- But there are many combinations, with one respondent even using all five languages mentioned in the same application.

Backend language

Unsurprisingly, nearly 90% of responses mention three letters: PHP. In most cases (more than three-quarters of respondents), no other language is mentioned alongside it.

- Other languages mentioned: Python, Java, JavaScript, Ruby.

Scores for the three areas

The marketing and editorial domains show the greatest differences between the highest and lowest scores. Technical options receive more consistent approval.
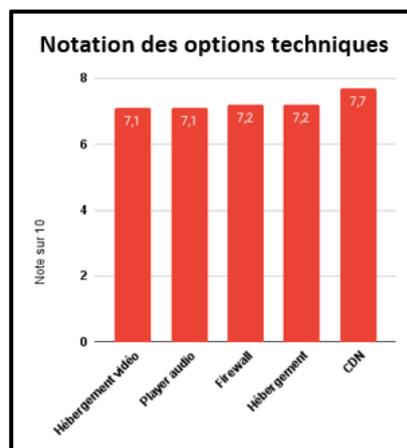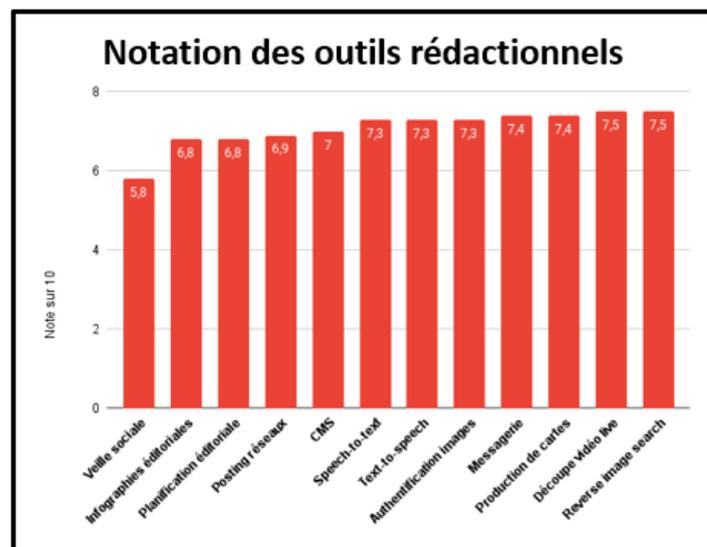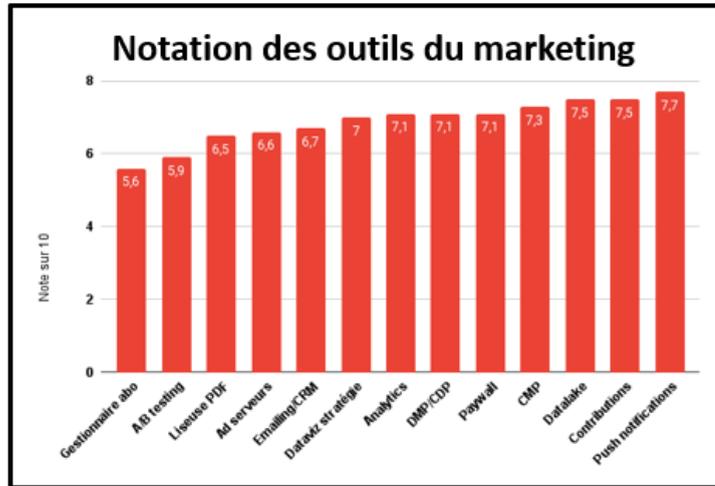
Glossary

The jargon used by teams involved in publishing digital content freely mixes English and French. The study uses what appears to be the most commonly used term in each language. For practical purposes, this glossary explains acronyms and, where possible, indicates the most commonly used term in each language.

(The tools, options, and languages mentioned in the study are listed here in a single alphabetical list.)

A/B testing: A tool for comparing two versions of a web page or part of a web page to determine which performs better based on common criteria.

Image authentication: A tool designed to establish that images have not been modified after they were taken.

 Ad servers (ad techs): All software and tools used by advertisers, advertising agencies, publishers, and other industry players for the strategic planning, management, distribution, and monetization of their advertising activities.

Analytics: A tool for collecting and analyzing browsing and interaction data on a website or mobile application.

Backend language: programming language used to produce, with the help of the hosting server, database, and applications, the actions necessary to provide the content and interactions requested by the public.

CDN (content delivery network)**:** A set of servers distributed geographically to ensure efficient content distribution.

CMP (consent management platform)**:** Technology designed to obtain users' consent to the processing of their personal data, in accordance with legislation.

CMS (content management system)**:** Application used to create, modify, and publish content on a website.

Datalake: Method of central storage, in raw or minimally processed format, of large volumes of data from numerous sources.

Live video cutting: Tool for cutting videos from a continuous video stream from a live broadcast or from a hosting platform's archive.

DMP/CDP (Data Management Platform / Customer Data Platform)**:** Platform that centralizes the collection, organization, and activation of first-, second-, and third-party audience data, regardless of the source.

Emailing/CRM (customer relationship management)**:** A tool for managing interactions via email between a media outlet, its audience, and its prospects.

Firewall: Software or hardware that ensures the security of a network against external attacks.

Frontend framework**:** A development environment for interfaces that allow the audience to view and interact with content.

Subscription manager: Platform for managing subscription plans, maintaining subscriber accounts, regulating access, and monitoring revenue generated.

Hosting: A device for storing content and data associated with the operation of a website.

Video hosting: A system for storing video content and associated data. This tool is often used in conjunction with an associated video player.

Editorial infographics: Tool for the graphic presentation of data within a website's content.

Mobile language: Programming languages for mobile applications.

PDF reader: Tool for browsing through a PDF document.

Instant messaging: A tool used by content producers in one-to-one or group settings to exchange instant messages, information, and files.

Engagement tool: Tool that allows users to post comments, hold debates, or conduct online surveys.

Paywall: A tool that restricts access to certain content on a website to paying subscribers only.

Editorial planning: Tool for managing the work and publications of a digital editorial team that publishes continuously on a website and its applications.

Audio player: Tool for listening to audio files on a digital medium.

Mapping tool: A tool for producing maps linked to a cartographic database.

Posting/social media: Tool for automated management of message and advertisement posts on social media, with audience engagement data tracking.

Push notifications: A system for sending short messages to users who have subscribed to this service, particularly when the app is not open or the website is not being viewed. There are two main models: web push (via a browser) and mobile push (via native iOS and Android apps).

Reverse image search: Search engine that uses an image as a query and returns information in response: URLs displaying that image, related content, modified versions of the image, etc.

Speech to text (transcription)**:** A tool for transcribing spoken language into written text.

Text-to-speech (speech synthesis)**:** Device for reading digital text aloud.

Social monitoring: a system for collecting data on the performance of content published on social networks according to predetermined criteria.

Data visualization/strategy (dataviz)**:** Tool that translates the monitoring of strategy implementation into visual presentations.

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See you next year

Thank you to everyone who shared their knowledge and experience by completing the questionnaire. Thank you also to those who read or will read the data extracted from it. Tech Stack looks forward to seeing you all again in 2023 with a new edition.