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Jumping to Conclusions: A Visual Comparative Analysis of Online Debate Platform Layouts

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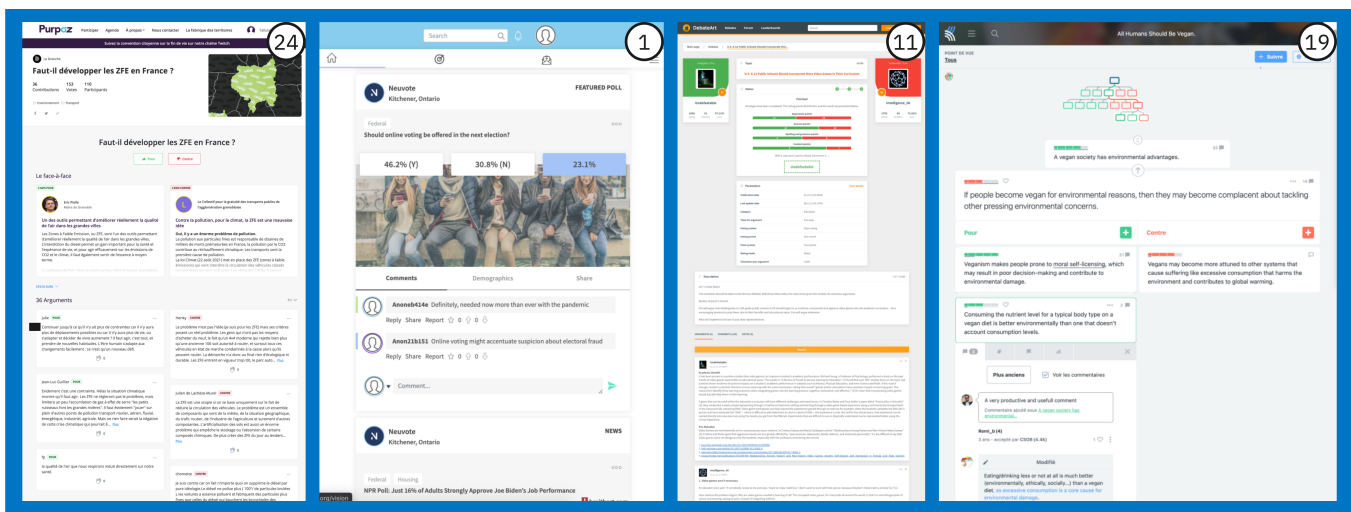


Figure 1: Screenshots of four of the user interfaces that we analyzed: *Purpoz* (24), *Allyus* (1), *DebateArt* (11), *Kialo* (19). Supplemental material is available on <https://osf.io/ywbzp/>.

ABSTRACT

There has been an increase in online debate platforms in recent years that allow individuals to exchange their opinions or to foster civic engagement. Even though the design of platforms has a significant influence on the quality of debates, research has yet to systematically analyze the graphical user interfaces of debate tools that are currently in use. To address this, we collected 25 off-the-shelf online debate platforms and conducted a comparative visual analysis of their graphical user interfaces. We identified different types of platforms, interface blocks, hierarchies, and display layout patterns. We found a strong similarity among these platforms in their design and a shared emphasis on individual input. Drawing from these insights, we discuss how the design of platforms frames the practice of debate and identify potential design dimensions in order to move beyond the existing boundaries of online debate.

CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI)**.

KEYWORDS

Debate platforms, deliberation, civic participation, web design.

1 INTRODUCTION

Over the past decade, we have witnessed the rise of numerous online platforms for debate and deliberation. These platforms aim to amplify the voices and opinions of their users and promote informed citizenship by exposing people to diverse viewpoints and evidence-based arguments. They can also foster participation [78, 82] and enhance the inclusion of citizens in decision-making processes [11, 62, 90, 96]. As they frame how the current public online discourse takes place, it is important to gain knowledge about how they are designed.

The design of these debate platforms has been identified as a crucial factor that influences the level of deliberative quality [3, 4, 31, 32, 102]. Especially graphical user interfaces play an important role as a visual guide, assisting users in understanding the platform’s structure, the location of features, and how to use them [54].

Several academic prototypes have explored how to design such platforms to avoid certain biases in debates, such as polarization

and the lack of listening [34, 56, 58, 60]. However, research has yet to systematically analyze the graphical user interface design of debate and deliberation tools currently available online. In this paper, we examine the graphical user interfaces of online debate platforms to address the following research questions:

- Q1 Can we identify different types of debate platforms? If yes, what are they?
- Q2 What are the design patterns displayed in these platforms?
- Q3 How is the practice of debate framed by these graphical user interfaces?

To address these questions, we collected 25 debate platforms over the course of three years from three independent civic technology repositories. We produced wireframes of their interfaces and analyzed them through a visual qualitative approach. We identified four types of platforms and three recurrent major user interface blocks. These allowed us to classify three different hierarchies of information, and three different design patterns of debate layouts. We also found a widespread and structurally important use of *stance* mechanisms that indicate the position of users or arguments within a debate. Drawing from these insights, we discuss how this frames the practice of debate. Our findings show an emphasis on individual input over interaction with the contributions of other participants. We also observed a strong similarity among these interfaces, particularly in their block hierarchies and layout patterns. We make the following contributions:

- We offer a comparative visual analysis of 26 online debate interfaces.
- We identify and provide a classification of the major graphical user interface blocks of these platforms, their hierarchies, stance mechanisms, and display layout patterns.
- We discuss how the debate is framed through these visual interfaces.
- Drawing from our comparative visual analysis, we extract a set of design considerations and outline new research opportunities.

2 RELATED WORK

The terms debate and deliberation are often used or perceived as synonyms, but their definitions vary subtly. Debate consists of a succession of more or less opposing arguments on the same subject, whereas deliberation is an exchange of arguments and an evaluation of reasons for preparing a choice [21]. Debate is thus a key mechanism of deliberation [72]. The platforms we are studying present themselves as made for debate. However, the scientific literature dealing with such tools mainly mobilizes the term deliberation. In this paper, we will use the term “deliberation” to present work from academic research and “debate” to discuss the platforms we study.

Most of the literature frames deliberation as a versatile activity that helps give legitimacy to a decision in a participatory process. Research at the intersection of HCI [57, 59, 73] and political science [62, 95] has addressed applications that include citizens and policy makers [4, 62] in various different contexts such as budget planning [44, 52], ideation [79], agenda setting [41, 88], and

petitions [57]. To describe such asynchronous distributed deliberation platforms, Aitamurto et al. coined the term “crowdsourced deliberation” [2].

In the following sections, we review previous research that addresses designing for online deliberation, followed by studies on the quality of deliberation across various platforms.

2.1 Designing for Online Deliberation

Previous work on platforms for debate and deliberation in HCI has predominantly focused on the development and study of tools or processes to support different aspects of online deliberation and overcoming challenges such as opinion polarization or how to facilitate self reflection before expressing an opinion.

StarryThought [56] and Opinion Space [34], for instance, aim to address political polarization by visualizing varying opinions on a topic on a spectrum, with the overarching goal of fostering mutual respect. Reflect [60] and Consider.it [59], a platform also analyzed in this paper but created within an academic context, prompts users to actively engage with other people’s arguments by requiring them to restate, summarize, or reuse others’ opinions. ThinkWrite [57] is another platform that focuses on online petitions to enable people to create and work together on new policy proposals and encourage deliberative capabilities. Some work focuses on the role of moderation for deliberation [83], including the introduction of digital juries [33] for content moderation as a civics-oriented decision-making approach. Interface features as a means to improve the quality of deliberation have also been explored to improve the overall deliberative process, including nudges such as partitioning text inputs [75], word counts, personas, storytelling, or even temporal prompts [103].

Fostering participation through deliberation is a further challenge that has been investigated through various strategies and processes in both online and offline activities. *Poli* [94], for instance, aggregates social network messages to support information seeking and dissemination. *Community Conversational* [53], on the other hand, provides a tabletop game for in situ interaction connected to an online platform to review the results. In the case of *Vtaiwan* [46], comments can be created on the platform either during an event or remotely, and *ACTion Alexandria* [44] facilitates online debates to ease the brokering process within a local community. Other research projects such as *Civic CrowdAnalytics* [1] and *Community-Pulse* [49] address the issue faced by public leaders to make sense of a large number of community inputs.

Tools such as DREW [71] and Belvedere [97] have been used to analyze and improve online deliberation within the field of argumentation theory. Both propose to construct a debate through two interfaces: a chat space and a graphical space. On the other hand, Darmawansah et al. [23] implemented the Collective Reflection-based Argumentation Mapping (CR-AM) strategy used on the online platform Kialo Edu [74], which is also analyzed in this paper. In this paper, our focus lies not on the creation of new platforms for debate but on how available off-the-shelf debate platforms are graphically designed.

2.2 Studying the Quality of the Content on Online Deliberation Platforms

A large part of the literature has focused not on creating debate artifacts but on studying existing tools, as indicated by various survey papers [39, 78].

Since debate can take place outside of dedicated online spaces, this research analyzes diverse mediums, including participation platforms [79], social networks [32], forums [102], and public policy platforms [3]. This work focuses primarily on evaluating the quality of the deliberation, or deliberativeness [103], that takes place online. This is also the case of the recent work of Aitamuro et al. [4] that investigates the influence of disagreement and agreement in comments on the platform “*Open Town Hall*” for the idea generation process. Other work has compared different platforms - often two or three - in order to qualify which one is more suited to foster debate. Esau et al. [31], for example, conducted a quantitative analysis comparing various mediums, including consultation platforms, a newspaper, and a social media platform. Their findings indicate that the overall quality of the exchange was highest on the online consultation platform and lowest on social networks. The findings of these comparative approaches underscore the importance of carefully considering the design of platforms. For instance, findings from a content analysis of the posts on three platforms [102] suggest that design does not determine the outcomes of deliberation but can facilitate or impede it. Another example is the work of Esau et al. [32] that analyzed the quality of deliberation exchanges on a forum, a social network, and a news website. Their findings indicate that discussion on a forum tends to be more rational and respectful, leading them to conclude that design plays an essential role in debate platforms. These results are in line with a broad agreement that the design of a deliberation platform has a substantial impact on the quality of the discussion [3, 31, 32, 79] even if it is not the only determinant [3, 89, 95].

The important role played by design leads to several high-level implications that are supposed to be used as design guidelines. Towne and Herbsleb [98] highlight the necessity to focus on design to encourage contribution, as well as designing for navigability, usability, quality content, and adoption. In the context of platforms dedicated to crowdsourcing for deliberation of a Finnish law, Aitamuro and Landmore [3] have examined both the platform’s design and its use. Based on these observations, they propose five design principles for crowdsourced policymaking: inclusiveness, accountability, transparency, modularity, and synthesis. More specific design implications have also focused on information resources and their production [25, 87].

All these studies set forth high-level criteria for designing online deliberation platforms and demonstrate how a platform’s design influences the quality of discussions, argument exchanges, and idea generation. These criteria are vital as they guide the overall framework of a platform. However, they do not focus on the subtleties of graphical user interfaces, which are equally important. The graphical user interface directly impacts how users discover and interact with the platform, and studying it can offer designers actionable insights to help them rethink and improve their future projects. Therefore, in this paper, we aim to study graphical user interfaces from a visual design perspective. We also seek to conduct

a comparative analysis of multiple existing debate platforms, a type of research that has not yet been carried out.

3 METHOD

The concept of “code is law” by Lessig asserts that on the internet, the primary source of social norms is encoded within the platforms [65]. Designed artifacts are crafted with a specific intent regarding their users, how they will be utilized, and the ultimate purpose they serve embodied through aspects such as architecture [6, 51], nudges [17, 64], and patterns [10, 43, 70]. They are not merely technical resources; they also manifest aesthetic and visual qualities. Users interpret the form of these artifacts, making judgments and decisions based on their perception of the design and their understanding of how to use it and for what purpose [54].

Kender & Frauenberger [54] draw attention to the power that a design artifact holds over users with the notion of *Aesthetic Design Power* as “*the intended and unintended influence the form of a designed artifact has, consciously and unconsciously, on users, to behave in a certain way in their interactions with the artifact and beyond*”. We aim to apply a similar lens to debate platforms to gain a comprehensive understanding of these artifacts by analyzing their visual interfaces, prescribed use, and the practical aspects of designing online debate. Analyzing visual interfaces is particularly appropriate for addressing our research questions, as they can offer visible evidence of information structures (Q1, Q2), visual patterns (Q2), hierarchical positions, and embedded norms (Q3).

Inspired by quality criteria in qualitative research [76, 99], we aim to assure the transparency, rigor, and reflexivity of our process by presenting a detailed description of 1) the platform collection, 2) the principles for our visual analysis, and 3) the visual analysis procedure. Notably, our visual coding is producing interpretive and descriptive results and should be considered as such.

3.1 Platform Collection

Many existing online platforms can potentially be used for debate [47, 102]. However, not all of these platforms might be designed with the intent to support debate activities through dedicated features. We aimed to focus our analysis on platforms that are identified by their designers as debate platforms to specifically understand how debate is designed online. Since debate is often promoted as a civic practice, we decided to look for platforms on civic technology directories to find platforms labeled as debate platforms. The term “civic technologies” encompasses various initiatives that use digital resources for policy-making to increase political engagement and citizen participation [11]. We screened three civic technologies directories (see Figure 2). One of the directories was in English (Civic Tech Field Guide ¹) and two were French (civictchno.fr ², democratieouverte ³).

The Civic Tech Field Guide describes itself as “the most comprehensive collection of tech projects for the public interest and democracy”, including 4278 records. To narrow our search, we collected platforms from its pre-defined subcategories that could encompass

¹<https://civictech.guide/>

²<http://civictchno.fr/>

³<https://democratieouverte.org/>

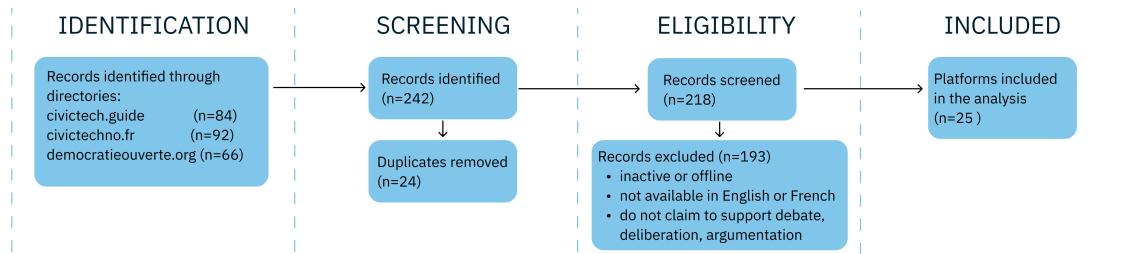


Figure 2: A flow diagram of the different stages of our platform collection process: the platforms we identified, screened, and excluded. CC BY figure at <https://osf.io/ywbzp>.

debate, including: “online forum: civic forum”, “group-decision making”, “online forum: neighborhood forum”, and “engagement tech”, ending up with 84 platforms with at least one of these keywords. From Civitechno.fr, a French “civic tech’s actors directory”, we gathered all 92 platforms. Lastly, from Démocratie ouverte, which showcases “democratic innovators”, we gathered all 66 platforms. After removing duplicates, we ended up with 218 platforms.

We then screened these platforms using several selection criteria. To be selected for the final corpus, a platform had to:

- C1 Still be active and online at the time of the screening.
- C2 Be accessible to us: if the website was behind a paywall and had no demonstration or screenshots of the interface, we had no material to conduct our research.
- C3 Be available in English or French.
- C4 Promote debate, deliberation, argument exchange, or collective decision-making as one of the platform’s functionalities. We screened the description of each entry in the directory, and when information was too sparse, we read the platform’s homepage and “about us” section.

This screening reduced the number of platforms from 218 to 25 (see supplemental material) [7–9, 13–16, 18–20, 26–29, 35, 37, 48, 50, 55, 67, 68, 81, 84–86]. This drastic drop in the number of platforms was one of our first findings. We ended up with this smaller number of platforms because only a few claimed to be designed for debate. Some of the excluded platforms would offer only questionnaires, reporting, and survey functionalities. Some of them hosted discussion forums, but did not mention of debate as a possible use. Based on our screening process, debate does not seem to be the main focus of civic technologies nor a favored practice of participatory policies.

3.2 Principles for a Visual Analysis

The visual analysis was conducted by three HCI researchers from a Central European perspective, two of which are graphic and web designers. Objectifying graphic and web design norms can be difficult, as they are often applied and analyzed intuitively by designers [54, 63]. However, most of the time, they follow Gestalt principles and grid systems.

The Gestalt Principles. The Gestalt principles, also known as the laws of perceptual organization describe how humans perceive and organize visual information [101]. These principles had a significant influence on graphic design and user interface design [12, 38, 91].

Gestalt principles explain how we perceive graphical units of meaning, which designers learn throughout their training and studies. Through these principles, we identified sets of interface elements that can be brought together as coherent visual and interactive units within the layout. In this paper, these units are described as blocks. For example, the visual proximity of several interface elements (principle of proximity) or similar graphic aspects between two components (principle of similarity) can lead us to identify a single block. On the other hand, superimposing two parts of the interface using a z-index can lead us to separate these two parts into two different units (figure-ground principle).

Wireframes and the Grid System. To deconstruct the hierarchy of the visual interfaces, we employed a common graphic design technique: creating a wireframe. A wireframe is a blueprint of a user interface design emphasizing layout, functionality, and position over detailed visual elements and text. Typically made early in the design process [42], wireframes outline the grid system of the interface. The grid system [77] is a structural scaffolding consisting of intersecting vertical and horizontal lines used to organize and arrange content on a page or screen. This system helps designers maintain consistency and alignment across graphical elements and prioritize the content they have to display. For instance, in Western culture, elements with a higher importance are often placed closer to the top left corner, like the logo or navigation menu. Beyond their role in creation, wireframes and the grid system serve as a powerful analytical tool for evaluating and critiquing existing designs. By identifying a design’s grid, we can understand the hierarchy of its content. Later in this paper, we refer to the process of recreating wireframes from finished interfaces by analyzing the grid system as *reverse wireframing*. These reverse wireframes enabled us to analyze the interfaces in terms of blocks, hierarchies, and information structures at a given point in time, that is at the arrival on the debate page.

3.3 Visual Analysis Procedure

The analysis process consisted of seven main phases and took three years, from 2021 to 2023. First, on each selected platform we read their purpose statement (Phase 1). We then took a screenshot of each debate platform (Phase 2) and drew a detailed *reverse wireframe* on top of it to graphically identify the main hierarchy of user interface blocks (Phase 3). We listed and coded each interface block’s components in order to create a visual coding (Phase 4) and produced an abstract wireframe for every interface (Phase 5). Then

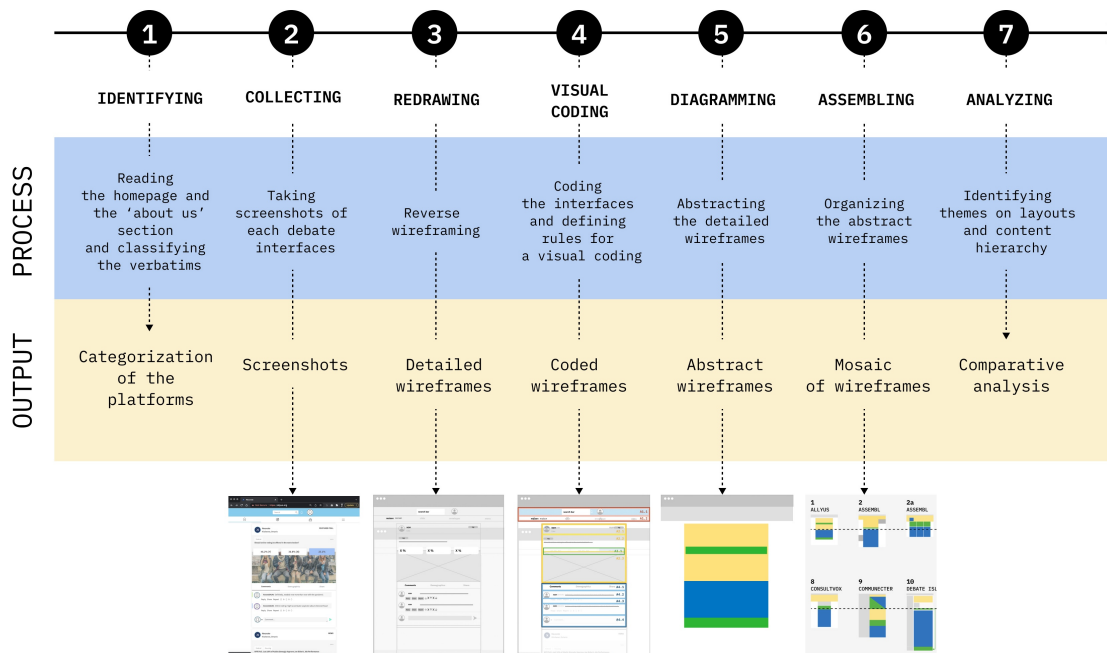


Figure 3: A synthetic overview of the analysis phases: 1) Identifying and classifying the types of platforms, 2) Collecting the screenshots of debate interfaces, 3) Redrawing the interfaces, 4) Visual coding of the interfaces, 5) Diagramming, 6) Assembling the mosaic of diagrams (Figure 4), 7) Analyzing the mosaic. CC BY figure at <https://osf.io/ywbzp>.

we composed a mosaic (Phase 6) of the resulting wireframes (see Figure 1). Lastly, we analyzed the mosaic of wireframes to identify their similarities and differences (Phase 7). Below, we describe the details of the analysis process.

Phase 1: Identifying. As a first approach to our corpus, we read the homepages and 'about' sections of each platform. We extracted these descriptions (see supplemental material), which enabled us to classify the platforms and their claimed purposes.

Phase 2: Collecting. For each platform, we took a screenshot of the debate page's graphical user interface. If a platform had multiple debate interfaces, we took a screenshot of each interface. We centered our analysis on the desktop version of the platforms, as it is commonly presented as a use case example on their websites.

Phase 3: Redrawing. We drew a detailed wireframe on top of each screenshot to graphically identify the main hierarchy of user interface blocks in Figma⁴, a web application for interface design. In this phase, we included every structural detail block, button, title, text area, input field, and diagram.

Phase 4: Visual Coding. We divided the detailed wireframes into blocks (coherent visual and interactive units within the layout). We then assigned an identifier to each block to code them in a spreadsheet. The first and last author defined this coding process. They collaboratively coded three screenshots into detailed wireframes and reached a consensus on how to identify and code the blocks. The first author then coded the whole corpus. The second author reviewed each screenshot together with the first author to

finalize the coding. This process allowed us to identify the common main interface blocks.

Phase 5: Diagramming. To identify the hierarchy of information in the graphical layout and visualize the coding created in the previous step, we abstracted the detailed wireframes (see Figure 3). For each detailed wireframe, we manually redrew only the blocks that had the common main functionalities identified in the previous step. We associated a color with each block (see subsection 4.2).

Phase 6: Assembling. To facilitate a comparative analysis and identify differences and similarities between the platforms, we created a mosaic of the abstract wireframes (see Fig. 4).

Phase 7: Analyzing. During collaborative synchronous sessions, the three coders analyzed the mosaic with the screenshots. The mosaic provides an overview of the hierarchy of the main functionalities, while the screenshot contains semantic information. We focused on design patterns and differences among the platforms. With the help of the previously identified blocks, we analyzed their compositions and hierarchies and compared them between platforms.

4 FINDINGS

We analyzed the 25 platforms (①–⑳) with respect to the types of platforms, their user interface blocks, common hierarchies of blocks, and display layout patterns. Additional information on all platforms and their coding is available in the supplemental material (<https://osf.io/ywbzp>).

The platforms in our collection have their official seats in a number of countries including France (⑳/⑳), ④, ⑤, ⑧, ⑨, ⑭, ⑰,

⁴<https://www.figma.com/>

	REF	TYPICAL USER	TYPE OF PLATFORM				HIERARCHY			DISPLAY LAYOUT PATTERN			
			PARTICIPATION	SOCIAL NETWORK	SKILL	ENCYCLOPEDIA	TOPIC-SUBMIT-DISPLAY	TOPIC-DISPLAY-SUBMIT	DISPLAY-TOPIC-SUBMIT	THREAD	COLUMNS	ROUNDS	TEXT THROUGH STANCE
1	ALLYUS	[7] Citizen, Politician		■			■			■			■
2a	ASSEMBL 1	[9] Member of an organization	■				■			■			
2b	ASSEMBL 2	[9] Member of an organization	■				■			■	■		■
3	CITIZEN OS	[13] Citizen, Member of an organization	■				■			■			■
4	CIVOCRACY	[14] Citizen, Member of an organization	■				■			■			■
5	COGITO	[15] Citizen		■			■			■			■
6	CONSIDER.IT	[18] Citizen, Member of an organization	■				■			■			■
7	CONSUL	[19] Citizen, Member of an organization	■				■			■			■
8	CONSULTOVOX	[20] Citizen, Member of an organization	■				■			■			■
9	COMMUNECTER	[16] Citizen, Member of an organization		■			■			■			■
10	DEBATE ISLAND	[48] Citizen			■		■			■			■
11	DEBATEART	[8] Citizen			■		■			■		■	■
12	DEBATE.ORG	[81] Citizen			■		■			■		■	■
13	DEBATEWISE	[26] Citizen, Curated expert				■	■			■			■
14	DEBATOMAP	[27] Citizen	■				■			■			■
15	DECIDIM	[28] Citizen, Member of an organization	■				■	■		■			■
16	DEMOCRACYOS	[29] Citizen	■				■			■			■
17	FLUICITY	[37] Citizen, Member of an organization	■				■			■			■
18	JENPARLE	[50] Citizen	■				■			■			■
19	KIALO	[55] Citizen			■		■			■	■		■
20	LIQUID FEEDBACK	[35] Citizen, Member of an organization	■				■	■		■			■
21	LOGORA	[67] Reader of a newspaper		■			■			■			■
22	LOOMIO	[68] Member of an organization	■				■			■			■
23	POLITIKER	[84] Citizen, Member of an organization	■				■			■			■
24	PURPOZ	[86] Citizen, Member of an organization	■				■			■			■
25	YOUR PRIORITIES	[85] Citizen	■				■			■			■

Table 1: All the 25 platforms we analyzed (①– ②5) coded by: type of platform, hierarchy, display layout pattern, and text through stance mechanism.

⑱, ⑳, ㉑, ㉒), USA (⑥, ⑩, ⑫, ⑰), Canada (①), Estonia (③), UK (⑬), Netherlands (⑦), Spain (⑮), Argentina (⑯), Germany (⑳), New Zealand (㉒), and Iceland (㉓). However, many platforms have use cases in a range of different countries. For example, *Consul* ⑦ has been developed in Madrid (Spain), has its headquarters in the Netherlands, and has use cases in Europe, Africa, and South and North America.

A number of the platforms are completely or partly open source (③, ⑥, ⑦, ⑨, ⑮, ⑯, ㉒, ㉓). Some of the platforms are operated by non-profit organizations including *Citizen OS* ③, *Consul* ⑦, and *Decidim* ⑮ while most of the other platforms are held by companies. While some platforms are directly accessible to the public to

debate topics (such as ①, ③, ⑤, ⑨, ⑩, ⑪, ⑫, ⑬, ⑰, ⑲, ㉓) a large number of them offer a service to public or private clients to realize their projects with the help of the platform (including ㉒/㉓, ④, ⑥, ⑦, ⑧, ⑭, ⑮, ⑰, ⑱, ㉒, ㉓). The platforms' typical users are largely aimed to be members of a public organization (e.g., citizens or inhabitants of a city) or a private organization (e.g., an association's members, workers, or consumers in a company). In *Allyus* ①, politicians are supposed to be part of the debate, *DebateWise* ⑬ includes curated experts, and *Logora* ㉒ is aimed at readers of a newspaper. Since the beginning of our research, some of these platforms have become unavailable, such as *Cogito* ⑤ and *Debate.org* ⑫.

4.1 Types of Debate Platforms

All of these platforms have been selected from civic tech directories. This term embraces various initiatives that use digital resources to change political rules or amplify political engagement [11]. By analyzing how the platforms describe themselves and the purpose they claim to support, we identify four types of platforms. We found a diversity of platforms valuing different aspects of debate, even if the majority of them are participation platforms.

Debate as Participation (16/25). Most of the platforms in our corpus are presented as tools for participation [22] through debate [5]. Their use is initiated by an organization to include people in processes of ideation or consultation. For example, *Decidim* (15), *Your Priorities* (25), *Purpoz* (24), or *Consider.it* (6) enable users to debate topics proposed by an institution or organization. While these questions can sometimes be generated by one individual among many, these platforms are nevertheless presented as being able to help collective organization and dialogue between different levels of society.

Debate as Social Network (4/25). Social network platforms are distinguished by their focus on relationships between users. These platforms emphasize the need to form new interest groups or insist on the importance of creating a community of users, which can typically be accommodated within a social network [93]. In their descriptions, they stress the importance of creating a new type of social network and perpetuate a critique of other social networks as impeding the quality of debate [47, 92]. This is the case of *Alljus* (1), which attempts to differentiate itself as “not like other social media platforms”, while *Cogito* (5) aims to “reinvent democracy and the debate of ideas through a social network”, and *COmmunecter* (9) is introduced as a “free and local social network”. They are structured as feeds or portals that attempt to unite communities around public issues. *Logora* (21), on the other hand, creates discussion forums for online newspapers. The main aim, however, remains to “build a community” of users rather than asking readers to participate in editorial topics even if the results of debates can inspire future topics for the editorial staff. Another participation platform, *Purpoz* (24), recently stated that it now also acted as a social network. However, it was initially designed as a platform for participation, and the category change did not affect the graphical debate user interface, so we kept it as participation. Nevertheless, this case shows that there can be shifts that blur the lines between platform categories.

Debate as Skill (3/25). Three platforms in the corpus present debate as an oratorical practice to be learned. This set of platforms is distinguished by the common feature of designating winners in the debate. They attach little importance to the collective experience that a debate can represent, preferring instead an individualized and rhetorical approach to debate [45]. From this perspective, debate is seen as a joust of arguments with an emphasis on each individual’s ability to effectively defend a point of view. These platforms, all of which are American, are reminiscent of the debate clubs common in American education [100]. Two almost identical platforms, *DebateArt* (11) and *Debate.org* (12) aim to “improve skills in argumentation and eloquence”. They enable their users to initiate a debate topic and take on an argumentative role, either as defender or opponent. As soon as another user takes on the opposite role, the

debate can begin, taking place in several rounds between the two participants, while other users can read, comment, and vote on the arguments presented. *Debate Island* (10), on the other hand, claims that it “helps users improve their debating skills”. It adopts an approach where all platform users argue under an initial proposition, similar to a forum. However, an artificial intelligence module seeks to determine the winner of the debate based on criteria supposed to quantify the quality of arguments, such as sourcing, relevance, spelling, and grammar.

Debate as Encyclopedia (2/25). The platforms in this group aim to compile all the arguments on a subject. In this way, they fulfill an encyclopedic role akin to Wikipedia [69]. However, they focus exclusively on documenting controversies and issues and do not operate according to the same model as a wiki. In these types of platforms, debate is valued as a mean of providing an overview of complex issues. The practice of debating enables an ecosystem of arguments to be assembled, with the goal of mapping out an issue in its entirety. Two platforms in the corpus correspond to this category: *Kialo* (19), whose aim is to “explore all aspects of a debate”, and *DebateWise* (13), which wants to provide access to a “rounded view”. *Kialo* (19) offers its web users the chance to debate an initial question. Since each argument can also be debated, the debate unfolds recursively. Each argument becomes the subject of a new debate, and together, they form a tree structure that attempts to cover all facets of the subject under discussion. On *DebateWise* (13), users can vote on questions written by experts appointed by the platform and then comment on the whole subject.

4.2 User Interface Blocks

Within this corpus, the platform *Assembl* (2a) has two distinct interfaces that can accommodate debate (*Assembl* (2a) and *Assembl* (2b)). *Citizen OS* (3) and *Debatomap* (14) have each two screenshots of tabs. As a result, from the 25 platforms, we gathered 26 distinct debate interfaces consisting of 28 screenshots.

The visual coding led us to the identification of interface blocks. These are sets of interface elements that can be brought together as a coherent visual and interactive unit within the layout. The interface blocks aim to provide an understanding of the structure of the interface. We identified three main blocks in the 26 interfaces and an additional block for outliers and other elements.

TOPIC. The TOPIC block displays the subject that is being debated (yellow blocks in Figure 4). This block is always written by the person who creates the debate space, and its main role is to frame the debate. It usually contains a headline, such as a question or a statement, and an explanatory paragraph (see Figure 4). Therefore, this block is mainly a text block, even if it is often supported by figures, videos, and other media as additional sources of information on the subject. TOPIC blocks often contain a tagging system to identify the main themes of the debate, metadata about the debate (such as number of participants or time specifications), and information about the identity of the debate’s creator (such as profile picture or name). There are rarely any input functionalities in these blocks. The few we have noted are related to helping users keep track of the evolution of the debate, such as bookmarking (*Debate Island* (10)),

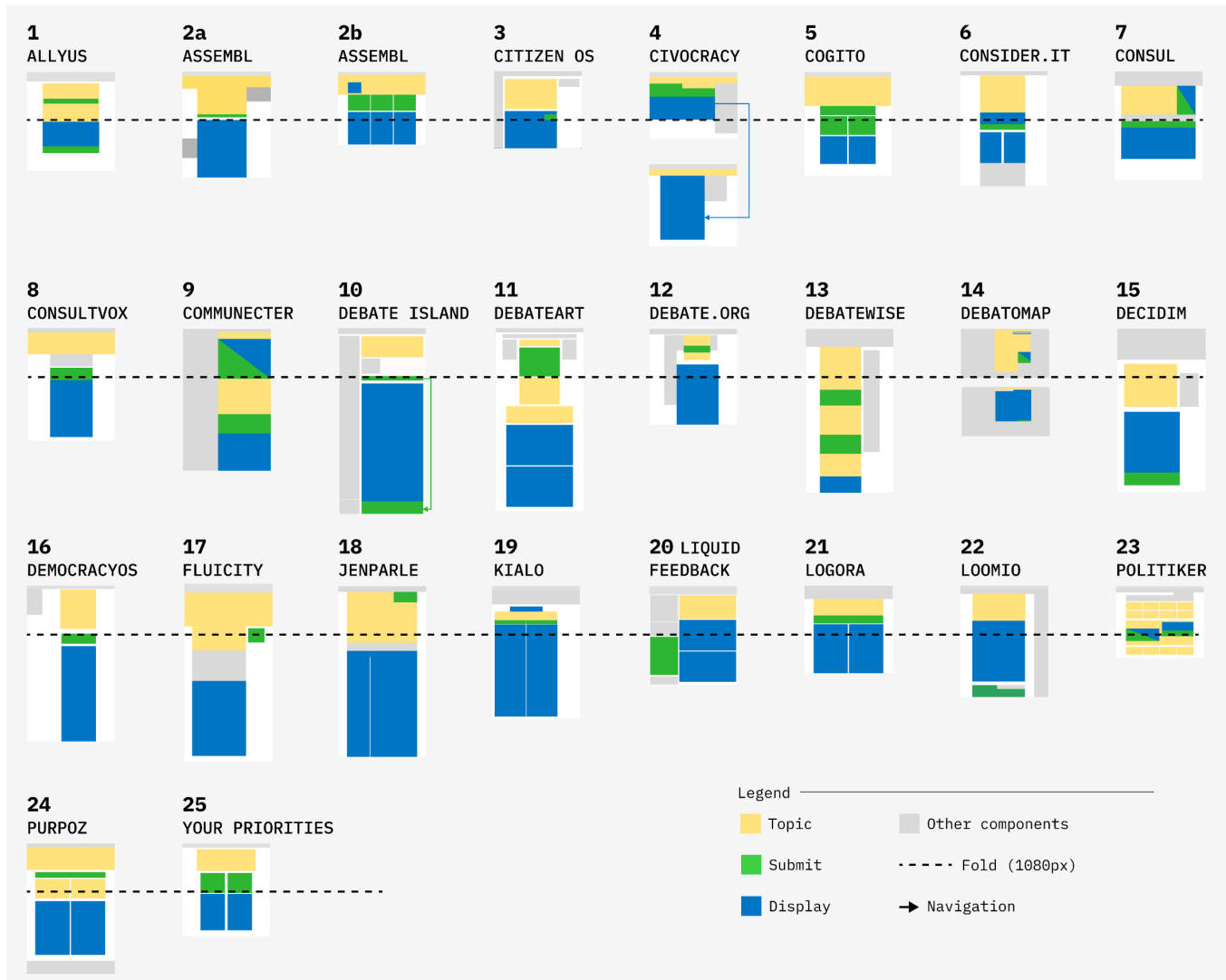


Figure 4: This mosaic shows the abstract wireframes of the 25 debate platforms we surveyed. Each one of them is composed of three main blocks, **TOPIC** (introducing the topic of the debate), **SUBMIT** (allowing participants to vote or input text), and **DISPLAY** (displaying the contributions of the participants). The dotted line represents the fold (the lower limit of the space seen without scrolling).

indicating interest (*Liquid Feedback* ⑳), and receiving notifications (*Jenparle* ⑱).

SUBMIT. The SUBMIT block is composed of all the functionalities to submit a contribution directly about the debate’s topic (green blocks in Figure 4). They are often labeled with terms such as “participate”, “debate”, “contribute” or “comment”. It constitutes the main block where users are enticed to share their input in the debate, even though there can be other input elements within other blocks for people to use (such as upvoting or downvoting other people’s arguments).

The two main input elements for submissions are text inputs and voting inputs (see Figure 5). Text inputs enable people to express their opinions through writing in a text field. Voting inputs, on

the other hand, enable users to express their position in favor or against a topic providing pre-defined options to select from. These two input types can also occur in combination (see stances subsection 4.3). Some blocks are both a SUBMIT and DISPLAY block (⑦, ⑨, ⑭, ⑳). These blocks include a voting mechanism and a display of votes in the same block (as in *Consul* ⑦, see Figure 5).

DISPLAY. The DISPLAY block is composed of the submissions of users. Therefore, it can be a display of text, votes, or a combination of the two (see Figure 5). When displaying text is involved, the block often contains an identification system showing the author next to the submission. It might also include interaction features between users, such as replying to or liking a contribution. The display of votes is often represented through information visualizations like

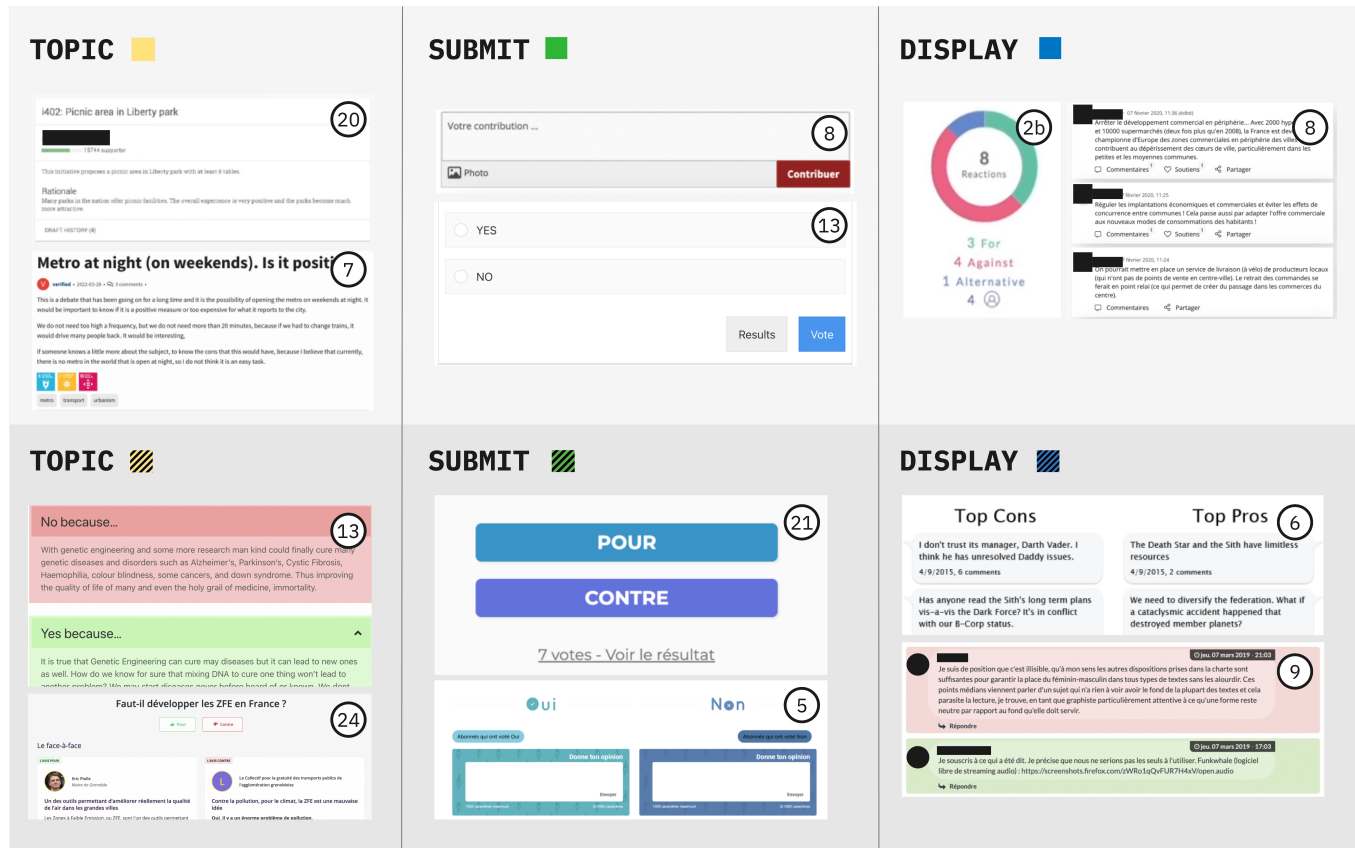


Figure 5: First row: examples of the different blocks we identified. TOPIC: a title accompanied by a paragraph in *Liquid Feedback* (20) and *Consul* (7), SUBMIT: a text input in *consultvox* (8) and vote input in *DebateWise* (13), DISPLAY: a visualization of votes in *Assembl* (2b) and a discussion thread in *consultvox* (8). Second row: Examples of user interface elements in the corpus that incorporate stances. TOPIC: pro and con arguments in *Purpoz* (24) and *DebateWise* (13), SUBMIT: voting inputs in *Logora* (21) and dedicated text fields in *Cogito* (5), DISPLAY: assigned columns in *Consider.it* (6) and arguments labeled through colors in *CCommunecter* (9).

pie charts or bar charts (as in *Assembl* (2b)). The DISPLAY blocks in the corpus are organized through discussion threads, stance columns, and rounds (see 4.5 for more details on display layout patterns).

Others. These blocks include common interface elements such as headers, navigation bars, footers, and other contextual information, as well as two outliers that were too specific to be relevant to this comparative analysis (gray in Figure 4).

4.3 Stances

One prominent feature of the interfaces in our corpus is the consistent sorting of users, arguments, or votes into recurring categories, typically labeled as “for” or “against”, occasionally incorporating a neutral stance or other scales. We have chosen to adopt the term *stance* for this mechanism. This term is used in the literature in linguistics [30] and has been adopted by the field of online stance detection [61], which aims to identify the stance of an author towards a specific subject based on textual content. Work in HCI has

examined stances in online discussion and polarization [40, 56, 66] with the goal of showing a diversity of opinions in online spaces.

TOPIC (2/26). In platforms including a stance within the TOPIC block, the subject is organized into two opposing arguments to frame the debate. While most of the platforms do not include a stance mechanism, *Purpoz* (24) is introducing the debate through two opposing points of view from experts on the subject. Similarly, *DebateWise* (13) is presenting the topic through opposing arguments authored by experts curated by the platform (see Figure 5).

SUBMIT (17/26). In the SUBMIT block, users often have to label themselves or the argument they are submitting in relation to the subject of the debate. This can be through voting inputs (as in *Logora* (21)) or through dedicated text fields (as in *Cogito* (5)) (see Figure 5). In 13 of the interfaces, people must take a stand on the topic in order to be able to submit a text. We call this feature “*text through stance mechanism*” (see Table 1). In some cases, for voting mechanisms, people have to take a stance (vote) in order to see other people’s stances (voting results) as in *DebateWise* (13).

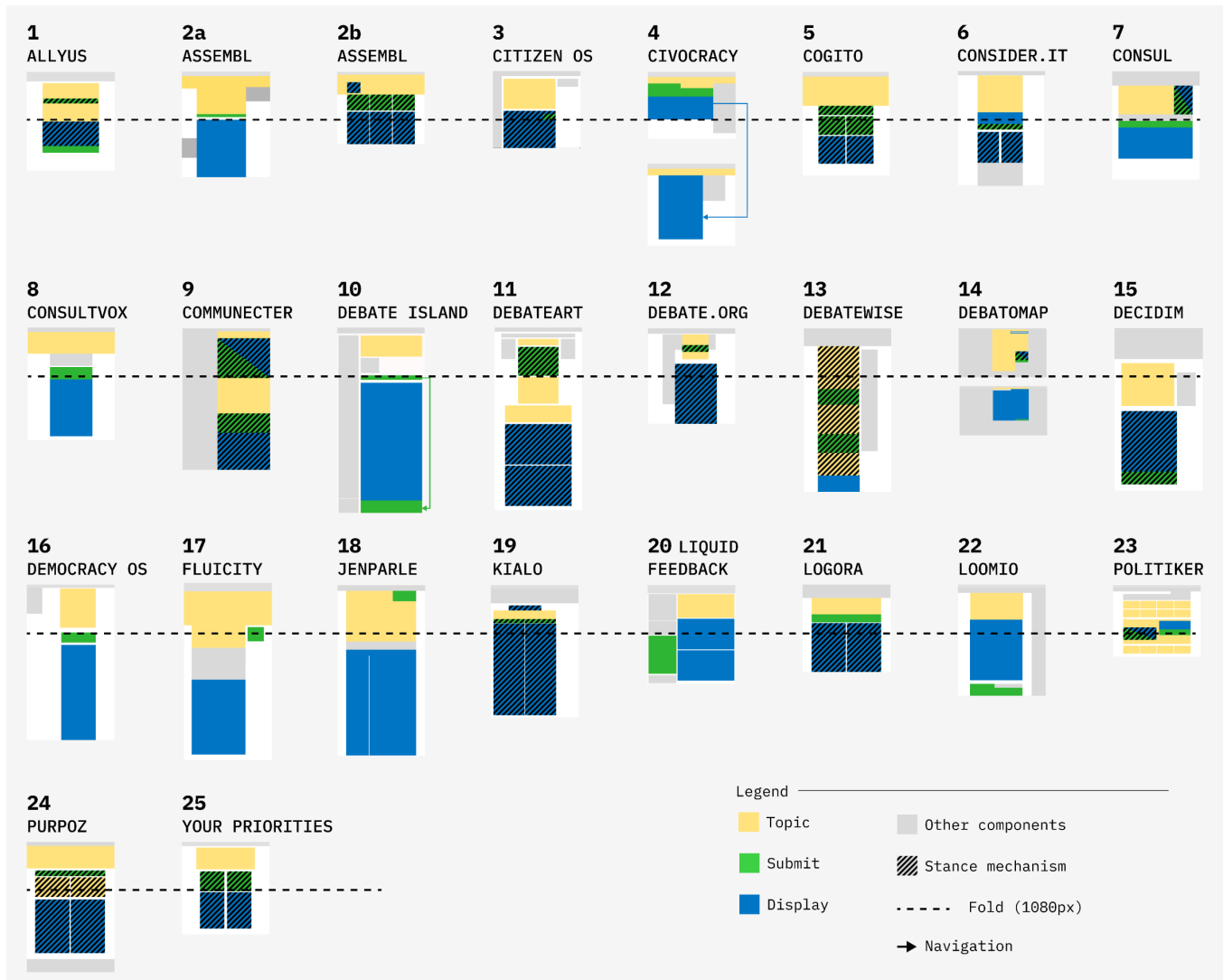


Figure 6: A mosaic of the abstract wireframes of the 25 debate platforms displaying the main common blocks of functionalities including **TOPIC**, **SUBMIT**, **DISPLAY**, **other blocks**, and black stripes for stance mechanisms. CC BY figure at <https://osf.io/ywbzp>.

DISPLAY (16/25). In *DISPLAY* blocks with a stance mechanism, each argument is labeled as a for or against (or including a third option as in *Assembl* (26)). Stances are often displayed in assigned columns such as in *Consider.it* (6) or in a thread by labeling the arguments through colors as in *COmmunecter* (9) (see Figure 5).

The entire interface of a platform can be structured through these stance mechanisms: reading a subject organized into antagonistic points of view, voting on arguments to express a stance, submitting a text specifying a stance towards the subject, and finally, showing each post clearly labeled as being for or against the subject's proposal. This mechanism occupies a central place in several of these interfaces since it can condition access to the writing and/or the reading of the arguments.

4.4 Hierarchies of Blocks

The placement of blocks and functionalities in a web page is typically made according to their importance [80]: The more important the content, the higher its position on the web page. Most of the time, important content is above the fold (the lower limit of the space seen without scrolling, set at 1080px) because attention drops drastically after it (i.e., 57% of viewing time is spent above the fold [36]).

We found a strong similarity between platforms' hierarchies as we identified only three different hierarchy models, with one of these models concerning 21 out of 26 interfaces.

We found that the **TOPIC** is the first block in 25 out of 26 interfaces (see Figure 4). The **DISPLAY** is often entirely below the fold (13/26) and is only slightly above the fold in 6 of the remaining interfaces,

which suggests that it is a block with a lower priority for 19 out of 26 interfaces. The SUBMIT block is above the fold for most platforms (18/25) and is smaller in comparison to the two other blocks.

To categorize these hierarchies, we have noted the order of appearance of the three main blocks within each interface. For each hierarchy, we counted each block once.

We observe that the interfaces follow three different types of hierarchies for the order of blocks (see Figure 7 hierarchies A–C).

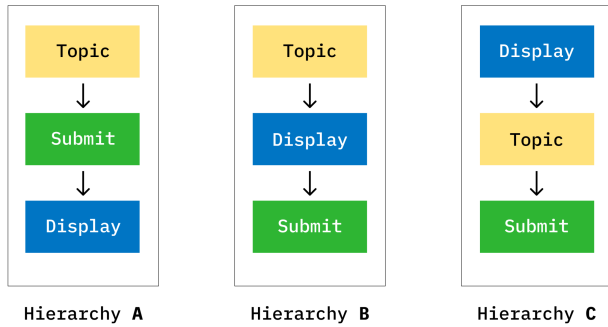


Figure 7: The three hierarchies of blocks we found in the debate interfaces. CC BY figure at <https://osf.io/ywbzp>.

Hierarchy A (21/26). The most common hierarchy follows the order TOPIC– SUBMIT– DISPLAY. We identified two sub-groups within this hierarchy. *Hierarchy A1 (17/26)* follows strictly the order TOPIC– SUBMIT– DISPLAY. *Hierarchy A2 (4/26)* contains an additional stance DISPLAY block between the TOPIC and SUBMIT blocks solely dedicated to visualize votes (see *Assembl* (26), *Consider.it* (6), *Consul* (7), and *CCommunceter* (9)). As this is an illustrative block, not showcasing arguments but results of the voting, we decided to categorize these platforms as a sub-group of Hierarchy A.

Hierarchy B (4/26). This group of interfaces (*Decidim* (15), *Liquid Feedback* (20), *Politiker* (23), and *Loomio* (22)) presents the blocks in the order: TOPIC– DISPLAY– SUBMIT.

Hierarchy C (1/26). The platform *Kialo* (19) is an outlier as it presents a display block first, i.e., a tree structure of the debate where you can see the different arguments by hovering over the diagram. It follows a DISPLAY– TOPIC– SUBMIT hierarchy.

4.5 Display Layout Patterns

The visual analysis of these blocks allowed us to identify three design patterns of the DISPLAY block layouts throughout the platforms. The first two layouts can be found on 24 of the 26 interfaces analyzed. They, therefore, represent the most common way to organize online debates in the corpus.

The Discussion Thread (17/26). This layout is similar to a traditional Internet forum and is present in the majority of interfaces. Threads can be displayed in different ways: nested (arranging posts and their replies in a tree structure) or linear (displaying all posts in chronological order regardless of reply relationships) (see Figure 8A). Some of the platforms use color to display participants’ opinions to differentiate the stances (see Figure 8), with

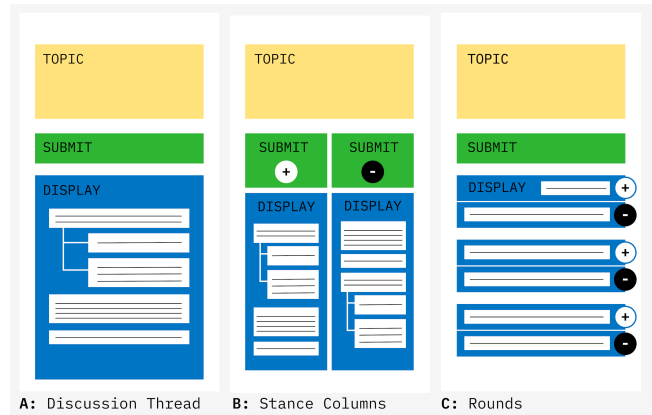


Figure 8: The three display layout patterns of debate interfaces: A. Discussion thread, B. Stance columns, C. Rounds. CC BY figure at <https://osf.io/ywbzp>.

green typically expressing agreement and red disagreement with the original statement (*Allyus* (1), *Citizen OS* (3), *CCommunceter* (9), and *Decidim* (15)).

Stance Columns (7/26). One common layout of several interfaces is the use of columns to display opinions and spatially separate the stances of submissions (see Figure 8B). This is either in two columns (*Cogito* (5), *Kialo* (19), and *Your Priorities* (25)) expressing “for” and “against” or in three columns including an alternative option (*Assembl* (26)).

Rounds (2/26). This layout is present in two similar platforms (*DebateArt* (11) and *Debate.org* (12)) where two debaters oppose each other on a subject (opposing stances). The submissions are displayed in several rounds where each participant can only write one post per round (see Figure 8C).

5 DISCUSSION

Through a comparative visual analysis of the elements of the graphical user interfaces of 25 debate platforms, we offer a classification of common building blocks, their hierarchies, and layouts. Our visual analysis is interpretive and focuses on the design of the platforms and how their graphical user interfaces frame the practice of debate. Only an analysis of user behaviors and the resulting debates, however, can show how people actually appropriate them. Graphical user interfaces subtly guide users toward specific actions while introducing obstacles for certain other behaviors; the actual use, intentions, and goals behind this can only be inferred [54]. Also, as our research only tackles western interfaces, more research is needed on platforms in other parts of the world, following other reading directions and different conventions for prioritizing content. In the following, we discuss similarities in the design of the interfaces, how their hierarchies frame the debate process, and we highlight how our findings can inform the design of future systems.

5.1 Similarities Between Platforms

Definitions of what constitutes a debate and criteria for what makes a good debate can be varied (see section 2). During our process (see

subsection 3.3), we did not work with a pre-established definition of debate but selected any platform described on their website as promoting debate, deliberation, or argumentation to collect a broader range of platforms. Based on their descriptions we could identify four main types that span a range of different views of debate. Even though most of them foster participation, we also collected platforms that promote debate as a social media practice, an encyclopedic subject, or a skill to improve.

Our analysis of the debate platforms showed a notable similarity between their designs. We identified only a limited number of different hierarchies and layouts across our corpus: all platforms include a TOPIC, SUBMIT, and DISPLAY block. Out of the 26 interfaces, 21 followed the TOPIC-SUBMIT-DISPLAY hierarchy, and 24 interfaces out of 26 followed the threaded discussion or stance columns layouts. Regarding the types of platforms and their display layouts, participation platforms and social networks adopted both threads and columns. The two platforms (11, 12) that incorporated rounds as a display layout were both skill platforms, which aligns with their intended purpose of debate as a competition with multiple rounds. Like most participation platforms, all social network platforms followed the TOPIC-SUBMIT-DISPLAY hierarchy. The platforms that followed the TOPIC-DISPLAY-SUBMIT hierarchy were participation platforms. Lastly, one of the two encyclopedia platforms (*Kialo* 19) is an outlier with a unique hierarchy (DISPLAY-TOPIC-SUBMIT). Our analysis of debate platforms shows that there is a strong similarity in how these different platforms organize their content with some notable outliers. Our findings point towards a homogeneity in how debates are designed online within the surveyed debate tools that all self-identify as promoting debate or deliberation. These observations parallel findings from Kender and Frauenberger [54], who note a similar homogenization trend in the aesthetic design of social media platforms.

5.2 Jumping to Conclusions

The presence of TOPIC, SUBMIT, and DISPLAY interface blocks is in accordance with common definitions of a debate where people give their opinion (SUBMIT) and exchange with others points of view (DISPLAY) on a specific subject (TOPIC) [21]. The majority of platforms in our corpus place the SUBMIT block before the DISPLAY block following the TOPIC-SUBMIT-DISPLAY hierarchy. This hierarchy emphasizes creating a submission on the topic before reading or engaging with other people's submissions. Placing the SUBMIT block before the DISPLAY block puts the focus on individual engagement with the topic rather than on engaging with other people's arguments. There are nuances to this: *Consider.it* 6, for instance, stands out within the corpus for allowing the use of other people's submissions when taking a stance. However, as these groups of platforms prompt people to make decisions before deliberating and reading other people's arguments, this constitutes an overturn of the debate process since deliberation is promoted as a means to give legitimacy to a decision. The goal of exposing people to diverse viewpoints and evidence-based arguments in order to promote informed citizenship also seems to be of secondary interest. Even if the contributions of users were used later by an organization to inform a decision, this would still mean that these platforms are

not tailored to host debate but rather function as data collection tools.

Davies et al. [24] have observed that platforms that enjoin users to post before reading face a lack of online participation and receive many duplicate contributions. The TOPIC-SUBMIT-DISPLAY hierarchy also goes against common recommendations for good deliberation. Friess and Eilders [39] argue that it can undermine the constructiveness of the debate (the fact that people can exchange opinions and arguments with others). Prior related research has already addressed listening to others by restating other people's contributions to improve discussion [60] and *Kialo* 19 is a platform in the corpus that emphasizes the collective construction of arguments. Comparing our findings reaffirms that the platform's structure needs to find a balance between collecting individual contributions and collectively constructing contributions. While facilitating engagement is beneficial to encourage participants to contribute, this group of platforms emphasizes individual engagement rather than collective engagement.

Related to that is the prevalence of stance mechanisms throughout the platforms (see subsection 4.3), which is in line with definitions of a debate as an exchange of more or less opposing arguments. They enable an understanding of different positions in the debate and support the structuring of submissions. However, stance mechanisms also compel people to make up their minds about their own stance – in combination with the TOPIC-SUBMIT-DISPLAY hierarchy – even before engaging with other people's arguments. The text through stance mechanism enshrines the fact that people cannot submit a contribution without having a clear opinion on the question. From an Aesthetic Design Power standpoint, these types of interfaces, therefore, facilitate jumping to conclusions on a topic.

5.3 Breaking the Mold of Debate Platforms: Design Implications

Our identification of common blocks, hierarchies, and layouts provides a classification for rethinking the organization of online debate platforms. We hope that this work can open up new avenues for conceiving and reinventing the design of online debate. Interrogating the identified blocks, hierarchies, and layouts can generate new interfaces to be explored in future research. Breaking down these interfaces and exploring the outliers allows us to establish dimensions to explore in order to move beyond the existing boundaries of online debate.

5.3.1 Diversifying Stances. Stance mechanisms structure an interface into different perspectives. The majority of the presented interfaces that contain stance mechanisms do so through two opposing positions: for and against. Examining the outliers allows us to consider various ways of approaching these stances. *Assembl* 26 makes the simple yet distinct choice of proposing a third alternative stance SUBMIT column. *Allyus* 1 offers a third input vote in its SUBMIT block labeled “other”, while *COMmunecter* 9 has a “blank” voting option. These categories allow for a departure from a binary stance mechanism and provide a space for other less assertive stances that shift away from predefined categories. *Consider.it* 6 takes a leap forward by proposing not categorical stances but a spectrum of

possible stances through an axis, offering a greater diversity of nuances. Opinion Space [34] and StarryThoughts [56] have similarly explored representing people’s opinions on a spectrum in a 2-D space. These possibilities remain somewhat limited to a choice between three categories or confined to a binary axis, but they provide perspectives on larger stance possibilities. Could we have stances on two axes? Could more specific categories for a debate context be implemented? These choices would certainly modify the entire structure of the interface, as some stance mechanisms already do today. Tackling the right granularity of stances for different types of debate can therefore allow for expressing a greater diversity or specificity of stances according to the debate’s needs.

5.3.2 Stances: People vs. Arguments. Within the literature in linguistics and online stance detection, stances are used to classify the position of an author towards a specific subject based on textual content [30, 61]. In our interfaces, the stance mechanisms do not exclusively apply to the author: we found that they are either used to relate to people or to arguments. This distinction significantly alters the modes of participation in the debate. Some platforms request a general stance on the debate topic from users and then label each individual post accordingly. In these cases, it is the person who is subject to the stance mechanism, and each of their arguments will be read as an expression of their overall stance. This is, for instance, the case for *Debate.org* [12] and *DebateArt* [11], which align users’ personal stances with their arguments, as each must defend a specific position. Other platforms, such as *Kialo* [19], offer a different approach. Only the arguments are subject to the stance mechanism. In this case, a person opposed to the topic can still submit arguments labeled in favor of the subject. *Consider.it* [6] leverages this distinction between the stance of individuals and arguments the most: there is both a space for submitting personal stances (on a spectrum) and an expression of arguments conveying the nuances within one’s personal stance. By distinguishing between stances related to individuals and those related to arguments, these platforms offer different opportunities for engagement. They can enforce a close alignment between a user’s overall stance and their arguments or present a more nuanced personal stance through the expression of opposing arguments. Considering these different types of stances helps establish more refined views on the practice of debate. Stance, referring to people, frames debate as a practice where opposing individuals discuss with each other, whereas stance, referring to arguments, frames debate as a venue for opposing arguments to be challenged.

5.3.3 Reimagining The Structures of Debate Platforms. Our findings on the hierarchies of debate platforms point towards potential new structures of online debates. We have found that the most common hierarchy in our corpus is TOPIC– SUBMIT– DISPLAY, which favors the collection of individual submissions before engaging with other people’s submissions. The TOPIC– DISPLAY– SUBMIT hierarchy, on the other hand, puts more focus on engaging with other people’s submissions first. When designing a debate platform, one consideration can be to reflect on what hierarchy it should embody and whether it aligns with the intended type and purpose of the platform.

The distinct blocks could also be integrated more seamlessly by blurring the boundaries between them. The fusion of the TOPIC

block and the DISPLAY block can be seen to some extent in *Kialo* [19], where each argument can become another topic. This could also be achieved the other way around, where the topic would be the main content to edit collectively. The topic, as the subject of the debate, could also be editable so that debating could lead to the construction and correction of the topic. The classification of blocks and hierarchies can furthermore act as a creative constraint. For example, a platform where the core block is the DISPLAY block could restrict the SUBMIT block: people might have to read or react to an argument in order to post something, or they could have to position themselves with regard to what has already been said in order to provide their input. Further ways of intertwining TOPIC, SUBMIT, and DISPLAY functions can enable new ways of interacting with these interfaces.

6 CONCLUSION

In this paper, we provided a comparative visual analysis of 26 graphical user interfaces of 25 deployed debate platforms, identifying interface blocks, stance mechanisms, hierarchies, and display layout patterns as well as four different types of debate promoted online. These platforms are primarily organized through three major blocks: TOPIC, SUBMIT, and DISPLAY, with the most common hierarchy being TOPIC– SUBMIT– DISPLAY. We also identified three common display layout patterns, including discussion threads, stance columns, and rounds. We have observed a strong similarity among the design of these platforms and that the prioritization of their user interface blocks tends to put a focus on individual engagement with the topic rather than on engaging with other people’s arguments. Finally, we discussed how stance mechanisms and our classification of blocks, hierarchies, and layouts can pave the way for novel interfaces to be investigated in future research.

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