Linked Resources in Debates About the German Network Enforcement Act on Twitter

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Abstract: This paper analyses linked resources in debates about the German Network Enforcement Act (NetzDG) on Twitter. Public discourse about this law has been contentious in Germany and abroad with opponents of it cautioning against overblocking and threats of censorship, while supporters highlighted the necessity to hold platforms accountable for illegal content to protect minorities and eventually the democratic public sphere. The conversation on Twitter provides valuable insights into the stakeholders, topics, and communicative practices that shaped this discussion about platform regulation and free speech, which has substantially impacted the European digital policy agenda, eventually culminating in the Digital Services Act (DSA). We first collected tweets mentioning NetzDG and produced a network graph to visualise the interaction between accounts that took part in these debates based on their retweet activity. Then, we extracted every URL inserted in the tweets collected to understand what resources those accounts refer to. Findings revealed that accounts linked to the German right-wing party Alternative für Deutschland (AfD) tend to share links to so-called alternative online media sites and reference content of AfD politicians on other social media platforms (Eg.: Youtube and Facebook). The cluster composed of liberal tech, media, and legal experts, however, tends to reference specialized IT blogs and websites, while the cluster composed of accounts related to the German liberal Party (FDP) primarily linked content of the legacy media. These findings allow us to identify the informational resources and media that have had the greatest impact on the NetzDG discussion on Twitter through their relevance for the groups represented by the individual network clusters. Furthermore, they shed light on the ways in which this highly technical and juridical expert discourse concerning the regulation of speech online is translated for a discussion in broader society.

Keywords: Platform Regulation, Free Speech, Hate Speech, NetzDG, Social Network Analysis, URL Sharing

1. Introduction

This paper presents the results of an analysis of URLs (Uniform Resource Locators) shared on Twitter in conversations concerning Germany's Network Enforcement Act (NetzDG), a law focused on combating hate speech online (Eifert & Gostomzyk 2018, Gorwa 2024). Due to its controversial nature, NetzDG is a highly debated topic, with considerable representation on social media, such as Twitter. At stake in this discourse about platform regulation and free speech is the development of the digital public sphere and the ways in which speech rights and restrictions online need to be balanced in order to best serve the enhancement and protection of democracy (Haupt 2024). This paper is part of a wider study whose main objective is to understand how Twitter accounts interact around this topic, what kind of external resources (news articles, videos, etc.) they share and how they share them, as well as the nature of the discourses that circulate within those networks. For this specific paper, we look in particular at the external content shared on the platform to understand what people reference when debating internet regulations and free speech and how those references differ between clusters within the network.

First, we produced network graphs on the dataset to explore the connections and interactions between accounts, to understand how information spreads in the network, to identify particularly influential accounts, and to uncover the structure of the online community. The data was obtained on November 14, 2022, using the Twitter API. We configured our queries to extract all tweets posted between December 16, 2016, and November 13, 2022, that contained any of the following keywords: "NetzDG," "Netzwerkdurchsetzungsgesetz," "Facebook-Gesetz," "Network Enforcement Act," and "Gesetz zur Verbesserung der Rechtsdurchsetzung in sozialen Netzwerken" in order to capture the discourse about the law on Twitter. In total, our dataset consists of 391,548 tweets from 83,229 distinct accounts. Figure 1, below, was produced with Gephi (Bastian et al., 2009) and shows the network representation of the data based on retweets.

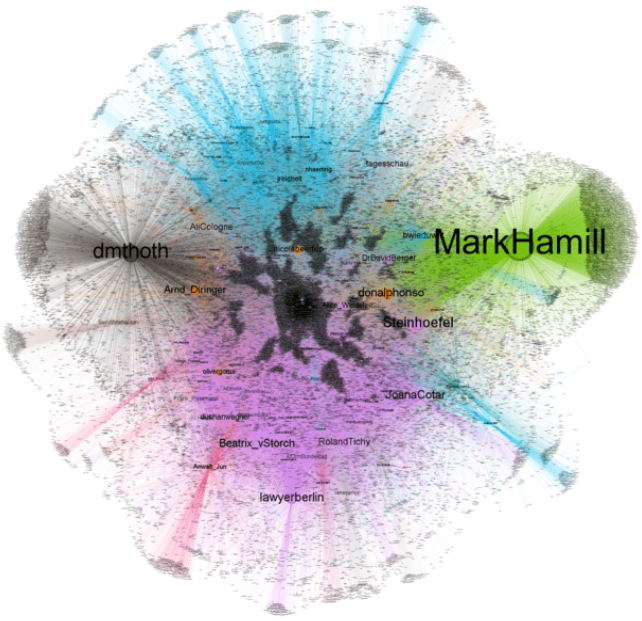

Figure 1: Network representation of the data based on retweets

In this network, the nodes are Twitter accounts, and the edges are the interactions between them, in this case the retweets. Given the vast size of the data, visualizing the entire network presented significant challenges in terms of both processing power and interpretability. Large-scale networks with tens of thousands of nodes can be overwhelming, making it difficult to recognize meaningful patterns or insights. Additionally, many users in the network with very low numbers of retweets may have minimal influence only. These accounts rather add noise than value to the analysis. To address these challenges, we filtered the data to focus on the TOP 100 most influential accounts — those who were retweeted by the highest number of distinct users. This approach enhances computational performance and processing time, especially for large networks with thousands of nodes, which can be difficult to visualize without filtering, and can help to identify influential actors more efficiently (Boccaletti et al., 2006; Bruns, 2011). In sequence, we clustered the network. Typically, users who are closely connected through frequent retweet interactions tend to cluster together, forming tightly-knit groups or communities within the network (Himelboim et al., 2013; Myers et al., 2014). This was calculated by finding the Modularity[1] in order to help identify groups that are more connected to each other than to the rest of the network. For visualization, we adjusted the node colours according to their community and the node sizes according to their degree of influence in the network. The bigger the node, the greater the number of distinct accounts within the network that have retweeted the corresponding Twitter account's NetzDG-related tweets.

In network analysis of social media, the frequency with which users are retweeted can be a significant indicator of their influence and relevance within the network (Cha et al., 2010). When accounts are frequently retweeted, it means that their content resonates with others, prompting further dissemination[2]. This amplification effect suggests that the account has a strong voice in the discourse, effectively shaping opinions, spreading information, or reinforcing particular messages (Cha et al., 2010). In essence, Twitter accounts that are frequently retweeted can be seen as central figures in shaping conversations and trends on the social media platform and thereby as important actors in an online space that is highly relevant to the public discourse on matters of political and societal concern. Accordingly, we interpret the biggest nodes in our network as particularly important stakeholders within the discourse about NetzDG on Twitter and focus our analysis on these accounts.

[1] Modularity in Gephi is calculated by an algorithm that identifies internal – or community – structure (Blondel et al. 2008), producing a visualization of sub-networks within the network.

[2] Previous work on reasons why people retweet has shown that users often believe that those contents might interest their followers, with private benefits, such as increasing the likelihood of being seen and also retweeted, being central to their motivation (Recuero, Araujo & Zago, 2021, p. 311).

2. Methodology

The retweet network as depicted in Figure 1 encompasses 40.131 accounts (48% of the accounts collected to create the overall dataset). Creating a network visualization based on retweets means that part of the dataset will not be included since we decided to consider only those accounts that received a certain number of retweets. Therefore, a network graph like this also works as a filter, which has generated a sub-dataset to be used for this study. The following Table 1 shows data distribution across clusters.

Table 1: Percentage (and number) of accounts that compose each of the network's clusters.

Clusters	Purple	Green	Blue	Orange	Black	Red	Turquoise	Brown	Grey
n accounts	8,644	7,851	6,925	3,454	4,782	2,358	1,623	1,089	3,405
% of network	21.54%	19.56%	17.26%	8.61%	11.92%	5.88%	4.04%	2.71%	8.48%

We removed some clusters from further analysis due to their limited relevance for our research question. These included clusters green, black, and brown, which consisted of only a single prominent node. The Green Cluster is represented by the user @MarkHamill, a well-known Hollywood actor who tweeted twice about NetzDG and was retweeted often due to his large follower base. The Black Cluster by the user @dmthoth from Korea was omitted as well as the Brown Cluster, which is centred around the user @SenWhitehouse, a U.S. Senator from Rhode Island (Sheldon Whitehouse). Additionally, the grey clusters consist of smaller and less significant groups, resulting in being too small for detailed analysis and were therefore also removed.

The charts below show the distribution of accounts and retweets across clusters. These charts only include clusters that will be analysed in this study, namely purple, blue, orange, red, and turquoise.

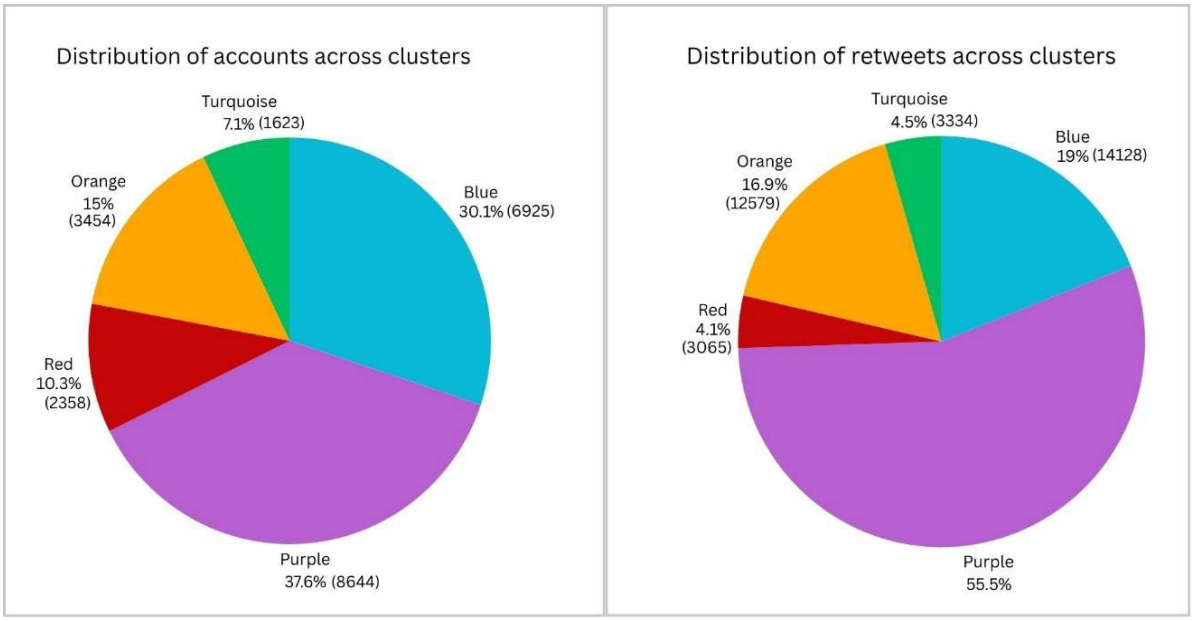

Figure 2: Distribution of accounts across clusters (lefthand side); and distribution of retweets across clusters (righthand side). Here, percentage is calculated considering only clusters purple, blue, orange, red and turquoise.

The purple cluster is the biggest cluster in our network, both with regards to the number of accounts that are part of this cluster (8644; 37.6% of the network) as well as in terms of the retweets that the tweets of these accounts have received (41304; 55.5% of the network). Our network analysis has shown that politicians and local political groups of the German right-wing party Alternative für Deutschland (Alternative for Germany, AfD) are predominantly part of this cluster. This impression of an AfD cluster is further underlined by the prevalence of

accounts of different so-called alternative media sites from the right-wing orbit.[3] Roland Tichy (@RolandTichy) with his online magazine Tichys Einblick (@TichysEinblick) is among these accounts as well as David Berger (@DrDavidBerger) who runs the blog Philosophia Perennis (https://philosophia-perennis.com/). Furthermore, we find legal experts with close connections to these circles such as lawyers Joachim Steinhöfel (@Steinhoefel) and Markus Roscher (@lawyerberlin) occupying important positions in this cluster.

The blue cluster is the second biggest cluster in our network. It contains 6925 distinct accounts (30% of the network) and these accounts' tweets have been retweeted 14128 times, which accounts for 19% of the retweets of all clusters that we examine here. This cluster is categorized less by a clear political party-affiliation but revolves around a politically more diverse group of law, technology, and media experts. The accounts of journalists such as Hendrik Wieduwilt (@hwieduwilt), technology activists such as Markus Beckedahl (@netzpolitik), IT blogs and websites (@netzpolitik_org, @heiseonline)[4], and legal experts (@nhaerting, @sas_assion) occupy important positions in the network and characterize this cluster.

The orange cluster, which lies at the centre of the network and is positioned between the blue and purple clusters, is the third biggest cluster. It contains 34354 distinct accounts (15% of the network) and these accounts have received 12579 retweets, which account for 16.9% of the retweets of all clusters. This cluster has a strong connection to the German liberal party, the Free Democratic Party (FDP). With Nicola Beer (@nicolabeerfdp), Christian Lindner (@c_lindner), the party's official account, @fdp, and Jimmy Schulz (@jimmyschulz), four of the TOP 13 accounts are related to the German liberals. Aside from these political stakeholders, we find accounts of journalists and media institutions in the cluster such as blogger and journalist Rainer Meyer, aka Don Alphonso (@_donalphonso) as well as a legal expert, namely the lawyer and legal scholar Arnd Diringer (@Arnd_Diringer).

Having created the sub-dataset based on the retweet interactions, as well as having identified the clusters within the network, we started the text processing step to collect the shared URLs. The objective was to examine the websites that have been referenced in tweets via hyperlinks to identify the informational resources that have been spread within the individual clusters. This procedure creates an opportunity to describe the individual clusters in more detail, to analyse the impact of relevant stakeholders on the discourse, and to determine the media that have been shared in the Twitter conversation about NetzDG.

The URLs in the tweets of our dataset point out sources that are both external (linking to content on websites outside Twitter) and internal to Twitter (linking to content on the platform). These hyperlinks are important pieces of information as users/accounts often employ them either to support or refute arguments or simply to make content visible to a wider audience – information spreading (Holton et. al., 2014). By analysing news sharing on Twitter, in particular, Chadwick, Vaccari, & O'Loughlin (2018) concluded that the main motivations behind the act of posting links to news articles are: (1) to inform others, (2) to persuade others; and (3) to find out other people's opinions.

Using Python code, we identified all tweets containing a URL in the text. This corresponds with 49% (193,413) of the entire dataset. When shared on Twitter, URLs are shortened by the platform, making them look like 'https://t.co/xxxx'. To find the original URL that was posted by each user, we made use of a Python library called 'Requests'[5], which facilitates sending and receiving data from websites. After obtaining the list of URLs included in the tweets, we created a list of the most shared domains, simply by cleaning parts of the URLs. Both the original URLs and the domains were assigned to the users included in the clusters analysed in this study. In total, 3114 tweets posted by accounts labelled as belonging to one of our clusters included a URL.

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[3] "Alternative media" (German: Alternativmedien) is a politically charged and contested term. The scholarly discourse about it reflects a noticeable shift from its earlier application to primarily politically left-leaning media and counter publics to its more current use regarding right-wing online media (Zarbock, 2024) as well as calls for replacing the term altogether (Knast 2024). Following Schwaiger (2022) and Knast (2024), who argue that both left- and right-wing alternative media share crucial similarities beside existing differences, the authors decided to stick to the term. We are applying it here to right-wing online media such as Philosophia Perennis and particularly Tichys Einblick, which has been categorized as a Type 1 alternative medium by Schwaiger. Such alternative media engage in the quest of opposing mainstream media content and politics assuming that they spread "deliberately false reports or lies that need to be uncovered" (Schwaiger 2022, p. 153-154).

[4] Following Donges & Gerner (2019), the news websites netzpolitik.org and heise online can be classified as "specialized media" (spezialisierte Fachmedien). Their thematic focus is on Internet policy as well as on topics regarding information and telecommunications technology (heisegroup 2025, netzpolitik.org 2025). We categorize and call these media as well as other websites in our dataset that concentrate on issues at the intersection of technology and society as IT blogs and websites.

[5] Documentation can be found on https://pypi.org/project/requests/.

3. URL Analysis

In all individual clusters, *twitter.com* is the domain that has been posted most often. It is not surprising that the platform on which the conversation is happening is a frequent point of reference. Posting the URL of a tweet on Twitter (the process we described as internal linking above) is more or less equivalent to retweeting the post in question. As concluded by Metaxas et al. (2021), retweeting indicates not only interest in a given message but also trust in both the message and its author, as well as agreement with the content of the message. When made through URL sharing, it highlights the account from which the original tweet is coming from and spreads the tweet's content to the posting account's own network of followers, thereby drawing attention to this content.

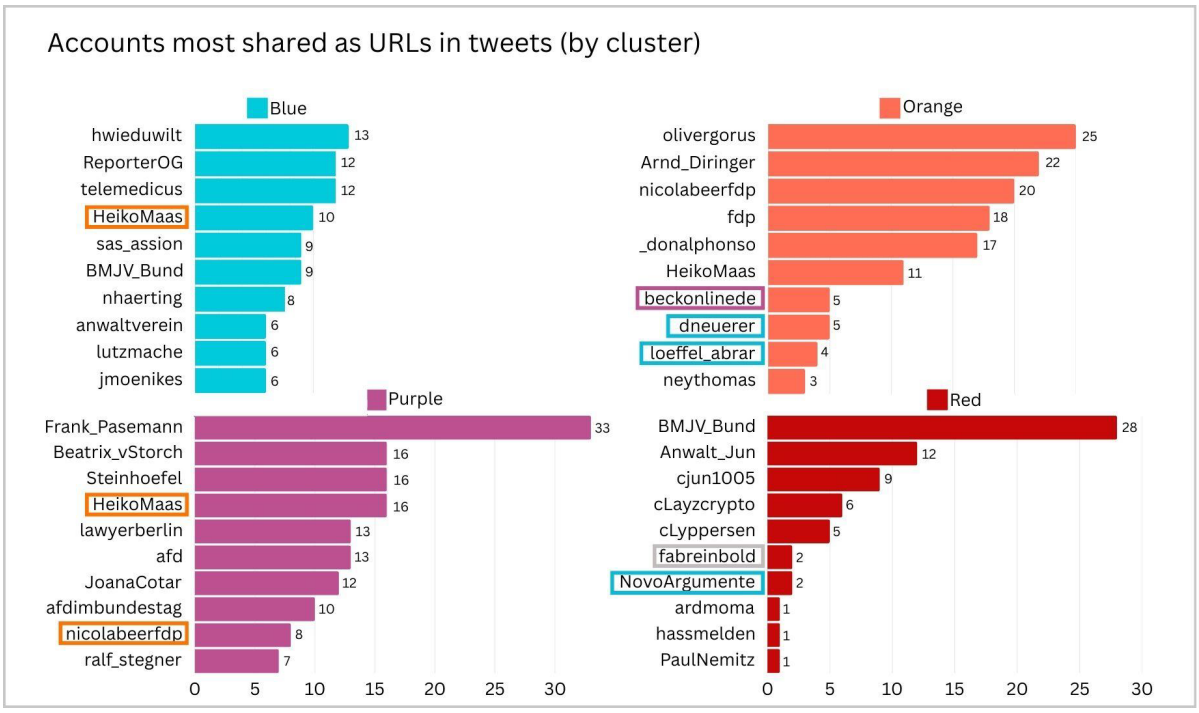

Figure 3: Chart shows TOP 10 accounts most shared as URLs in tweets for clusters blue, orange, purple and red. Accounts whose original cluster is different from the cluster where they have been shared are marked by a rectangle in the colour of their original cluster.

The chart in Figure 3 provides a summary of the Twitter accounts that have been referenced most often by tweeting their URLs and it is arranged by each individual cluster. This overview highlights that the clusters generally reference accounts in this way that are part of their own cluster. It therefore illustrates the point that sharing tweets in the form of a URL can be interpreted as a different form of retweeting. The only major exception to this rule is the linking of the account of the sitting minister of justice, Heiko Mass. While his account (@HeikoMaas) has been retweeted relatively seldom by the blue and purple clusters, we find it referenced by URL fairly often in both of these clusters. Additionally, we find @HeikoMaas linked by URL in the orange cluster.

In the upcoming domain analysis, we will focus on links that point to websites outside of Twitter to examine which sites beyond the Twitter-verse were deemed to be useful resources or relevant content for the individual clusters in the context of the NetzDG discourse.

3.1 URLs In Purple Cluster

The linking activity in the purple cluster strongly references the alternative media sites Tichys Einblick, Tichyseinblick.de (ranked on top after Twitter.com) and Philosophia Perennis, Philosophia-perennis.com (ranked third). These media were already very present in the retweet data analysis of this cluster, but when it comes to posted URLs these websites clearly dominate the ranking. The third site of this kind, Dushanwegner.com is also highly ranked at the 5th place, but received fewer postings than the two aforementioned sites, as we can see in Figure 4.

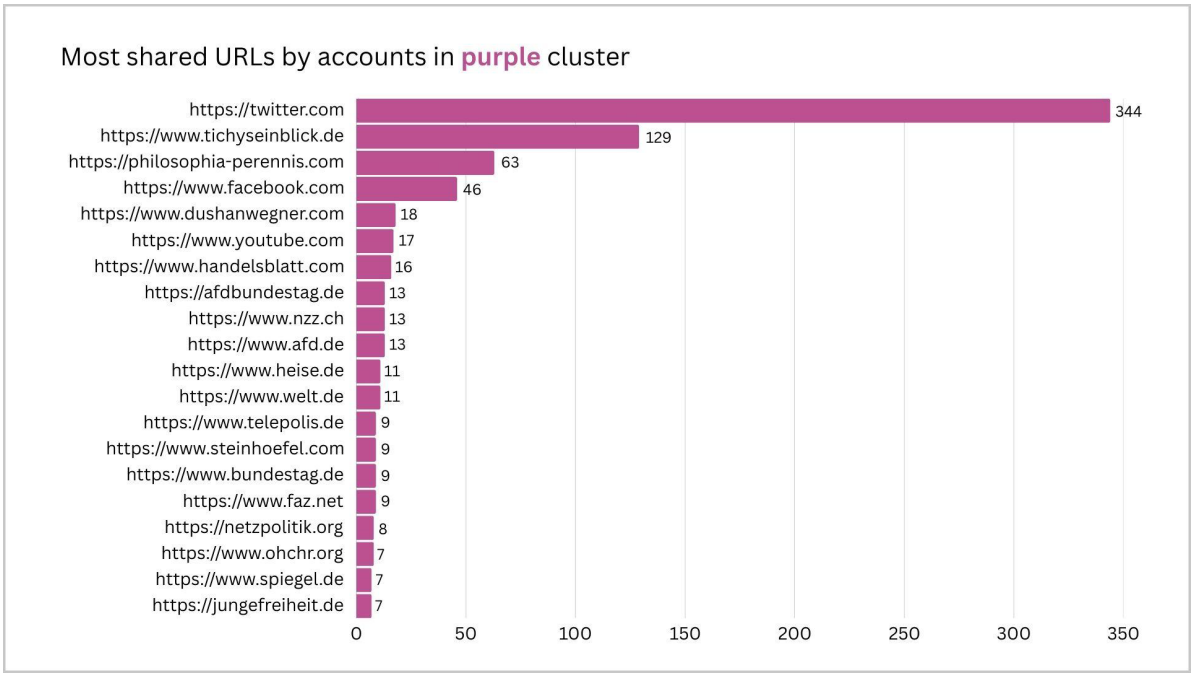

Figure 4: Chart shows TOP 20 most shared URLs by accounts in purple cluster.

Two platforms that were not part of the retweet data analysis figure prominently within the URL postings of the purple cluster. Facebook.com is ranked at the 4th place, while Youtube.com is positioned at 6th. This is particularly noteworthy since neither of the platforms plays a prominent role in the URL ranking of the blue or orange clusters. While the blue cluster has none of them linked in the TOP 20, Youtube.com is linked only a few times and ranked at 19th place in the orange cluster.

Tables 2 and 3 provide an overview over the Youtube channels and Facebook accounts that were referenced in these URLs by listing the TOP 5 references to each platform. We can see that the Youtube channels pointed to belong to prominent accounts of the purple cluster. While Markus Roscher is present on Twitter as @lawyerberlin and a key node in our network analysis of the cluster, the other references also go out to well-known persona or entities from the purple cluster such as Joachim Steinhöfel (@Steinhoefel), the AfD parliamentary group (@AfDimBundestag) or the Youtube channel of Tichys Einblick (@TychysEinblick).

3.1.1 Most Shared Youtube Links by Accounts in Purple Cluster

Table 2: Table shows the most shared YouTube links by accounts in the purple cluster, followed by the number of times the specific video was mentioned and by which channel. Information on the number of subscribers the channel has, and video views was collected on the 29th November 2024. Videos' publishing date is also included.

	URL	Mentions	Youtube channel	Subscribers	Views	Publishing date
1	Youtube link 1	4	Markus Roscher	336	7,9k	16.05.2017
2	Youtube link 2	2	Steinhoefel	22,7k	28k	12.12.2017
3	Youtube link 3	1	AfD-Fraktion Bundestag	470k	3k	13.12.2019
4	Youtube link 4	1	AfD-Fraktion Bundestag	470k	29k	16.01.2020
5	Youtube link 5	1	TichysEinblick	236	110k	01.03.2020

With regard to Facebook, table 3 shows a strong linking of the accounts of AfD politicians, especially the one of Alice Weidel (present in our Twitter network data as @Alice_Weidel). These results suggest that references to the platforms Youtube and Facebook in the form of tweeted URLs mostly spread content of people and

institutions that are key nodes of the purple retweet cluster. It is another way of drawing attention to their content hosted on other platforms than Twitter.

3.1.2 Most Shared Facebook Links by Accounts in Purple Cluster

Table 3: Table shows the most shared Facebook links (posts) by accounts in purple cluster, followed by the number of times they have been mentioned and the author of the post (user). Information on the number of reactions, comments and shares the post received was collected on the 29th November 2024. Post publishing date is also included.

	URL	Mentions	User	Reactions	Comments	Shared	Publishing date
1	Facebook link 1	6	Alice Weidel	3,4k	447	1,3k	06.11.2018
2	Facebook link 2	4	Alice Weidel	2,9k	529	891	10.11.2017
3	Facebook link 3	3	Alice Weidel	4,9k	1,1k	2k	17.10.2018
4	Facebook link 4	3	AfD_Stuttgart	310	58	540	16.06.2017
5	Facebook link 5	2	Alice Weidel	952	76	490	19.06.2017

Turning back to the URL list of the purple cluster (Figure 4), we can see that different legacy media are positioned further down the list with the business journal Handelsblatt, Handelsblatt.com, ranked at 7th place, the Neue Zürcher Zeitung, Nzz.ch (9th), Die Welt, welt.de (12th), the Frankfurter Allgemeine Zeitung, Faz.net (16th), and der Spiegel, Spiegel.de (19th) following. As with other clusters, we find websites of people and institutions that are part of the retweet network referenced through hyperlinks here as well. The AfD party is present with the website Afdbundestag.de (8th) and Afd.de (10th). Additionally, the website of lawyer Joachim Steinhöfel, Steinhoefel.com (14th) is linked fairly frequently. Information providers such as IT blogs and websites are present with Heise.de (11th), the online magazine Telepolis.de (13th) and Netzpolitik.org (17th), and so is the official account of the German parliament Bundestag.de (15th).

The URL analysis presented here therefore underlines the outstanding importance of the alternative media sites Tichys Einblick and Philosophia Perennis for the discourse within the purple cluster. These sites are by far the most referenced websites and are therefore most likely to be considered relevant informational resources by the interconnected Twitter users in the cluster. Further analyses of the AfD's Internet policy positions, discourses, and ideators may therefore turn attention to these media. The website by Dushan Wegner is referenced frequently as well and so are websites of the party Alternative für Deutschland, which confirms the political orientation ascribed to this cluster in our retweet analysis. Due to the examination of the posted URLs, we are able to identify references to websites that did not come up as Twitter accounts in our retweet analysis. The most important examples in this regard are postings of links to the platforms Facebook.com and Youtube.com. These platforms only play minor roles in the blue and orange clusters but are referenced often in the purple cluster drawing attention to content by accounts of this cluster that is hosted on other platforms.

3.2 URLs In Blue Cluster

A closer look at the posted domains within the blue cluster discloses that IT blogs and websites are referenced most often. The domain Netzpolitik.org ranks at the top after Twitter.com with 136 postings. It is followed by Heise.de (130 postings) and then Golem.de at third place (59 postings). These results emphasize the relevance of the content and the insights produced by IT blogs and websites and their pundits for the discourse on Twitter. The retweet analysis showed that the accounts of relevant IT blogs and websites were retweeted fairly often and had them ranked in the higher mid-tier range on 6th (Heise.de) and 8th (Netzpolitik.org) place as well as on 17th place (Golem.de) of the blue cluster ranking. However, the URL analysis now discloses that the mentioned IT blogs and websites are ranked at the very top when it comes to domains being shared in the blue cluster via hyperlinks. They should therefore be understood as extremely relevant sources of information for the conversation in this cluster.

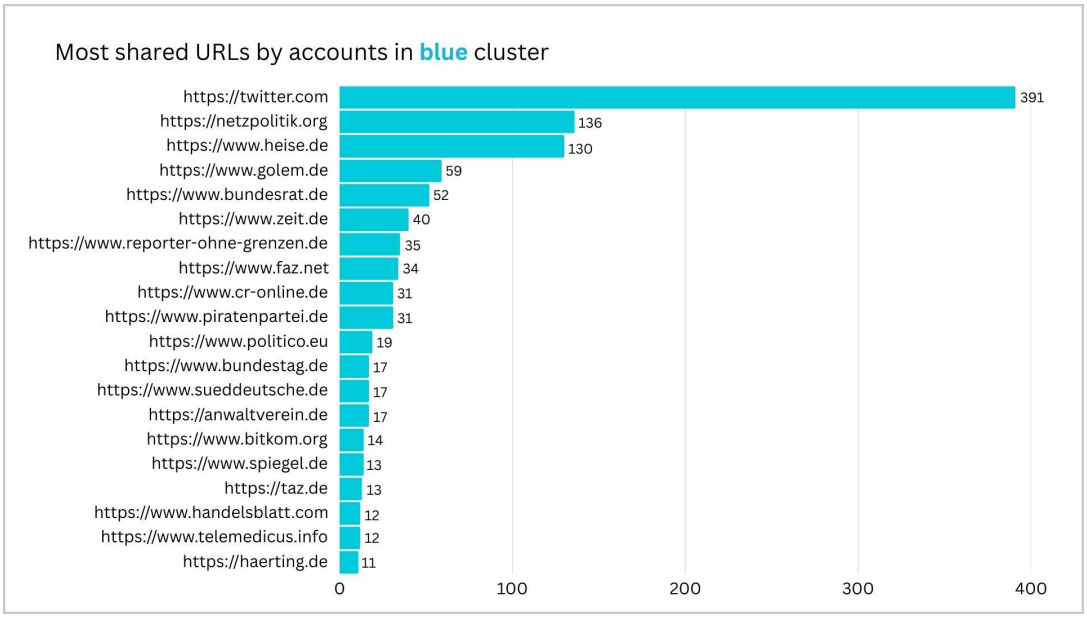

Figure 5: Chart shows top 20 most shared URLs by accounts in blue cluster.

Legacy media such as Zeit.de (6th place), Faz.net (8th place), Politico.edu (11th place), Sueddeutsche.de (13th place), Spiegel.de (16th place), taz.de (17th place), and Handelsblatt.com (18th place) also rank in the TOP 20 and partly at high places. However, they are neither ranked as high as the IT blogs and websites, nor do their number of postings come anywhere close to those of Netzpolitik.org or Heise.de. Considering the fact that the accounts of these legacy media are for the most part also less often retweeted than the IT blogs and websites, as the retweet analysis has shown, clearly stresses the significance of the latter for the discussion in the blue cluster. For the discourse on Twitter, these websites seem to be much more relevant than legacy media, most likely because of their particular thematic focus on tech topics and the concomitant expertise.

Furthermore, we find the websites of the Bundesrat, the Federal Council of Germany, (Bundesrat.de) ranked at 5th place and the site of the German parliament (Bundestag.de) at 12th. Both websites provided information regarding discussion sessions concerning the NetzDG law and other updates on the legislative process and were therefore referenced and linked often. These two institutions only played a minor role in the retweet data but became visible through the analysis of posted domains. The same is also true for the media websites of Die Zeit, Der Spiegel, and taz as well as for the site of Bitkom (bitkom.org), the association of digital business in Germany. The Twitter accounts of these institutions did not make it into the TOP 20 of the retweet data in the blue cluster, but they are present through the posted URLs as this examination shows.

Especially remarkable is the high presence of thematic portals from the juridical realm. With the IT law portal cr-online.de (9th place), the website of the German Bar Association, Anwaltsverein.de (14th place), the information law project Telemedicus.info (19th place), and the website of Nico Härting's law firm, Haerting.de (20th place), we find four of these very specialized law websites and institutions among the TOP 20 most often posted domains. These websites and projects are run by lawyers and legal scholars and provide highly specialized information and discourse on legal matters on their platforms. When looking at the posted URLs in the blue cluster, the importance of IT blogs and websites as well as of specialized legal input through juridical expert portals stands out. Together with the information collected in our retweet analysis, this data reveals that legal, tech, and media experts play a crucial role for the conversation in this cluster.

3.3 URLs In Orange Cluster

The orange cluster displays a clear tendency to the linking of legacy media. Aside from Twitter.com, we find the domains of the business journal Handelsblatt (2nd) and the Frankfurter Allgemeine Zeitung (3rd) at the very top. These media are followed by Welt.de (5th), Der Spiegel (7th), Der Tagesspiegel (9th), and Zeit.de (13th), but also the German television news broadcast Tagesschau, Tagesschau.de (12th). This focus on content of legacy media clearly stands out in comparison to the purple and blue clusters.

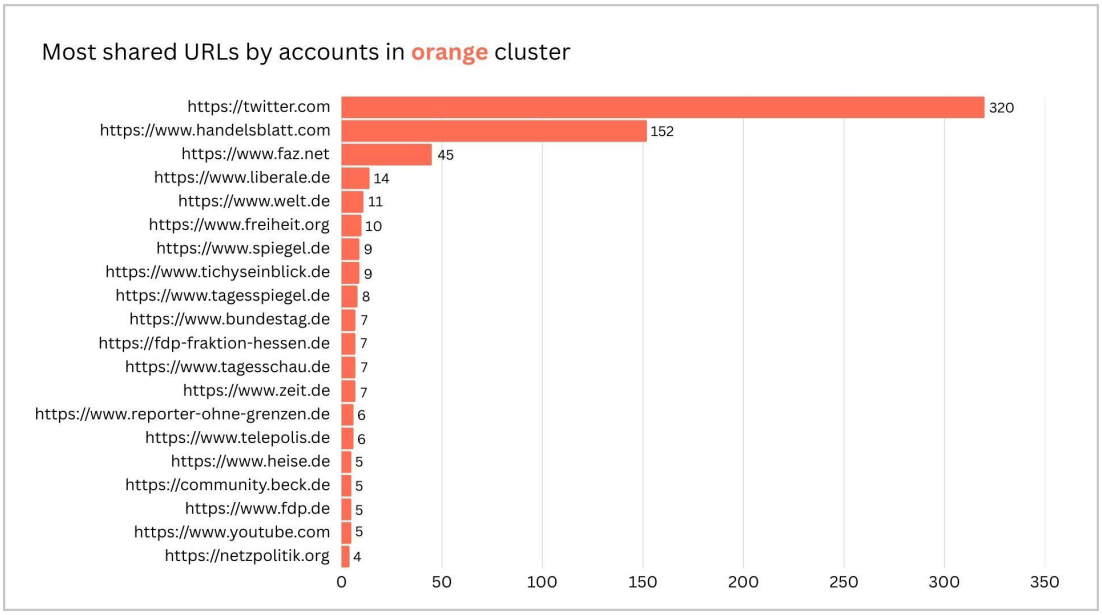

Figure 6: Chart shows TOP 20 most shared URLs by accounts in orange cluster.

Several websites connected to the German Liberal Party, FDP, figure prominently in the ranking as well: Liberale.de (4th) and the website of the Friedrich Naumann Foundation, which is associated with the FDP, Freiheit.de (6th), the regional FDP group from Hessen, Fdp-franktion-hessen.de (11th), as well as the official party website, Fdp.de (18th) are to be mentioned here. In this respect, the URL analysis clearly confirms the political orientation of the orange cluster towards the German liberals.

Furthermore, it is notable that the alternative media website Tichys Einblick, which figures so prominently in the purple cluster and can be seen as closely related to AfD positions and topics, also appears within the ranking of the orange cluster. It is ranked fairly high at the 8th place which suggests that there is a certain overlap between positions in the orange and purple clusters. This conclusion can also be drawn by looking at the distribution of the two clusters in the overall network, in which the orange cluster is positioned between blue and purple and seems to have some overlap with both clusters. A mix of other websites play a minor role in this ranking such as IT blogs and websites with Telepolis (15th), Heise.de (16th), and Netzpolitik.org (20th), or the websites of Reporter ohne Grenzen (Reporters without Borders, 14th) and Youtube.com (19th).

In terms of the orange cluster, the URL analysis discloses a clear focus on the linking of content from legacy media institutions. This separates the cluster from the other big clusters, blue and purple, with their preference for linking content from alternative or specifically tech and law related online media. Furthermore, the tendency towards sharing content related to the political orientation of the German liberal party, FDP, confirmed the cluster's political bias already established in our retweet analysis.

The red and turquoise clusters are too small and posted too few links to allow for a meaningful description and comparison with the bigger clusters discussed here.

4. Discussion And Limitations

The URL analysis presented in this paper confirms the classification of the individual clusters as generated in our network analysis. We found that accounts within the distinct clusters post hyperlinks that reference media and accounts that have been associated with the respective clusters based on the interpretation of the accounts' retweet behaviour. This concerns both the linking of sources internal (Twitter accounts) and external to Twitter (websites beyond the Twitter-verse). The URL analysis also identified clear differences in media use and the spreading of informational resources between the clusters and therefore confirmed their distinctness from one another. This particularly concerns the websites that are most often linked in the individual clusters while there is some overlap between the clusters regarding resources that are less often linked.

With regard to the purple cluster, the linked websites clearly highlight a close connection to the German AfD party and their sympathizers. Twitter accounts of AfD politicians are often linked by URL in this cluster and their content hosted on other platforms such as Facebook and Youtube is often referenced in this way. The alternative

online media Tichys Einblick and Philosophia Perennis clearly stand out as the informational resources most often linked in this cluster. These findings suggest that these alternative media sites are hubs for the development, discussion, and dissemination of the AfD's Internet policy standpoints. Further research needs to confirm this assumption by analysing these websites' contents and their contribution to AfD positions and the right-wing discussion of Internet policy issues at large. The blue cluster contains a politically more diverse group of tech, law, and media experts. These results of our network analysis have been validated by the URLs that have been shared in this cluster. We find the well-informed and specialized IT blogs and websites of Netzpolitik.org, Heise.de, and Golem.de at the very top of the most linked websites in this cluster, while legacy media outlets are referenced much less frequently. Together with the remarkable presence of specialized juridical platforms, these results underline the relevance of expert knowledge for the composition of this cluster from which politicians and political parties are mostly absent. Our findings suggest that the impact of IT blogs and websites on matters of internet policy is remarkable since they appear to be important stakeholders that inform above all the expert discourse. The orange cluster is centred around accounts with an affiliation to the German Liberal Party and we also find their content being prominently posted via hyperlinks. Regarding the informational resources posted via URL, legacy media are most often shared, which constitutes a major difference to the practices we observed in both the blue and purple clusters.

Some URLs are, however, found across clusters. This is the case of IT blogs and websites Netzpolitik and Heise; the website of the German Parliament (Bundestag.de); and legacy media outlets like Der Spiegel, Frankfurter Allgemeine Zeitung, and the business journal Handelsblatt. Another legacy media outlet, Die Welt, has appeared among the top 20 most shared domains, but only in the Orange and Purple clusters. Die Welt is politically aligned with a more conservative position, which resonates with the other content shared by both clusters, as mentioned above. However, it remains less relevant than alternative media for the Purple cluster, and, despite ranking 5th in the Orange cluster, it was tweeted 13 times less frequently than Handelsblatt. This inter-cluster analysis highlights the importance of traditional media outlets as references for public debate, despite the confrontational attitude of far-right groups towards these organisations.

This study comes with several limitations. It aims to capture the discourse about the NetzDG law on Twitter by searching for the abovementioned search terms and compiling a tweet corpus for analysis based on these results. However, it is certainly possible that there are instances in which users discuss the implications of NetzDG without referring to the law with one of these terms. If this is the case, then we miss these contributions and cannot integrate them into our corpus for further examination. This issue is particularly relevant for Twitter discourses since replies to initial posts about NetzDG that do not mention any of our NetzDG search terms are not collected by our method. The same applies to threads that start with a reference to NetzDG in the first tweet but then do not mention it in the following ones anymore. These tweets are not collected and are therefore not part of the analysis. Additionally, we need to keep in mind that Twitter is not representative of the digital public sphere, much less so of the general public sphere. Twitter users are usually technophiles and both relatively well-informed and interested in topics relating to technology and platforms, at least much more so than the average of the population. Therefore, our sample refers to a rather specific section of the population. However, despite these limitations, our method captures a good part of the discourse about NetzDG on Twitter and can therefore provide valuable insights into the conversations of particularly interested and relevant stakeholders regarding the topic of platform regulation and freedom of speech.

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