



The Dead Drops of Online Terrorism

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Summary

With the proliferation, spread, and impact of violent extremist and terrorist content on the Internet and social media, governments, and security agencies have increased their countermeasures online. In response, terrorists and violent extremists have similarly altered their behavior by changing tactics and migrating to new platforms.

One of the more sophisticated ways extremists and terrorists are using online communication to avoid detection is the use of virtual dead drops in the form of anonymous sharing portals. Anonymous sharing portals have no-login requirement and, thus, provide anonymity and allow for sharing links of which content is to be collected, shared, and mass-distributed.

Keywords: Social, Anonymous, Communication, Internet

Introduction

Due to the proliferation, spread, and impact of violent extremist and terrorist content on the Internet and social media, governments and security agencies increased their countermeasures online. Consequently, terrorists and violent extremists responded by changing their online tactics and moved to other platforms. One of the more sophisticated ways extremists and terrorists are using online communication to avoid detection is the use of virtual dead drops in the form of anonymous sharing portals. Anonymous sharing portals have no-login requirements, thus providing anonymity and allowing for sharing links of which content is to be collected, shared, and mass-distributed. Consequently, anonymous sharing portals such as justpaste.it, telegra.ph, and various cloud storage services have become the most used dead drops by ISIS and other terrorist and extremist groups.

The Dead Drops Platforms

There are several anonymous sharing platforms. The most popular is Justpaste.it, a Polish-made site that does not require registration, is not open to search engines, and specific contents are accessible only by a given or shared link. More important from the terrorist point of view is the ability to protect the contents from automated searches by web crawlers and algorithms by allowing the use of encrypt tags. As reported by Stalinsky and Sosnow, “JustPaste.it has been the most important content-sharing website for jihadis.”¹ Very often, as reported by Shehabat and Mitew, links to items uploaded on justpaste.it have been shared on social media to promote exposure.² Other than justpaste.it, a newer service is the Telegram’s blogging platform called Telegraph. Additionally, terrorists use cloud sharing platforms as revealed by the study conducted by Ayad, Amarasingam and Alexander.³ The present study is an attempt to explore the various platforms used by terrorist groups like the Islamic State, al Qaeda, and al Shabab to store and disseminate material on a variety of virtual dead drops like anonymous platforms and cloud services. Specifically, we focused on the following research questions:

¹ Stalinsky, S., & Sosnow, R. (2016). “The jihadi cycle on content-sharing web services 2009–2016 and the case of Justpaste. it: favored by ISIS, Al-Qaeda, and other jihadis for posting content and sharing it on Twitter–jihadis move to their own platforms (Manbar, Nashir, Alors. Ninja) but then return to Justpaste. It”. MEMRI Inquiry & Analysis Series No, 1255(6).

² Shehabat, A., & Mitew, T. (2018). “Black-boxing the black flag: anonymous sharing platforms and ISIS content distribution tactics”. *Perspectives on Terrorism*, 12(1), pp. 81-99.

³ Ayad, M., Amarasingam, A. and Alexander, A. (2021). “The Cloud Caliphate: Archiving the Islamic State in Real-Time, Institute for Strategic Dialogue (IST)”. Special Report (May 2021). URL: <https://ctc.usma.edu/the-cloud-caliphate-archiving-the-islamic-state-in-real-time/>.

RQ1: What are the platforms used by terrorist groups as their virtual dead drops?

RQ2: Who are the terrorist groups using the dead drops?

RQ3: What type of information is stored in these dead drops?

RQ4: Are there differences in the use of dead drops across terrorist groups?

RQ5: Are there changes over time in the use of these dead drops?

Method

To examine the use of online dead drops by terrorist groups, we applied several stages of data collection and analysis. First, we created a database by selecting all terrorist content that included material designed for intimidation, radicalization, recruitment, online guidance to use weapons and explosives, calls for attacks, and, in addition, that it was published either on anonymous sharing platforms or available to download on a cloud share platform. It should be noted that anonymous platforms such as justpaste.it and Telegraph don't have a homepage and it is possible to access the content only if one has the direct link. We searched Twitter for any links to anonymous and cloud-sharing platforms: Twitter was chosen since Stalinsky and Sosnow already noted the use of Twitter to share links to extensive content that they post on content-sharing web services.⁴ On Twitter, we searched for terrorist postings containing the following keywords, all associated with anonymous and cloud share platforms: JustPaste.it, Telegra.ph, dump.to, Noteshare.id, pastethis.at, manbar.me, nasher.me, files.fm, pixeldrain, onedrive, nextcloud, cloud drive, top4top, Yandex.Disk, MixDrop, 4shared, Cloudmail, Archive.today, PCloud, UsersDrive, and Dropapk.to. For example, on Archive.today, we searched daily for terrorist content by looking into all the screenshots saved on the web archive under the host justpaste.it, telegra.ph, noteshare.id, pastethis.at, manbar.me, nasher.me, and dump.to. The database includes the links used for directing to the virtual dead drops and the contents posted there, including texts, photos, videos, news broadcasts, weapon and explosives manuals ("cookbooks"), and infographics. In fact, we created and analyzed two databases, one for the anonymous platforms and one for the cloud share platforms.

In the second stage, the database was subjected to a systematic content analysis, using a codebook with the following criteria: platforms used for the dead drops, date of publication, type of

⁴ Stalinsky & Sosnow, "The jihadi cycle on content-sharing web services," 2016.

content posted, a brief description of the content, extra links included in the posts and audience reaction (comments, likes, retweeting). Our 6 months' scan (December 2020 to May 2021) revealed numerous postings on the dead drops sites, as described in Table 1.

Name of the platform	Number of items analyzed	Type of content
<i>Justpaste.it</i>	43	<ul style="list-style-type: none"> • Daily report • Al Naba magazine issue • Propaganda video • Photo report • Infographic • Telegram and hoop messenger accounts • List of extra links
<i>Telegra.ph</i>	27	<ul style="list-style-type: none"> • Daily report • Al Naba magazine issue • Propaganda video • Photo report • Infographic • Telegram and hoop messenger accounts • List of extra links
<i>Files.fm</i>	118	<ul style="list-style-type: none"> • Mp4 file news report video • Mp4 file propaganda video • PDF/Word file transcription of propaganda video • Zip file Al Naba magazine • Video file Al Naba newspaper • PDF file propaganda book
<i>Pixeldrain</i>	60	<ul style="list-style-type: none"> • Mp4 file propaganda video • PDF file Al Naba magazine • Zip file Al Naba magazine • Zip file infographics
<i>Mediafire</i>	60	<ul style="list-style-type: none"> • Mp4 file propaganda video • PDF file Al Naba magazine • Zip file Al Naba magazine • Zip file infographic
Onedrive	12	<ul style="list-style-type: none"> • Mp4 file audio speech • Mp4 file propaganda video
<i>Nextcloud</i>	40	<ul style="list-style-type: none"> • Mp4 file propaganda video

Name of the platform	Number of items analyzed	Type of content
<i>Top4top</i>	44	<ul style="list-style-type: none"> • PDF/Word file transcription of a speech • PDF/Word file transcription of a propaganda video • PDF file propaganda documents • Mp4 file propaganda video • PDF file Al Naba magazine
Extra anonymous platforms <ul style="list-style-type: none"> • <i>Dump.to</i> • <i>Noteshare.id</i> • <i>Pastethis.at</i> • <i>Manbar.me</i> • <i>Nasher.me</i> 	Total : 34 <ul style="list-style-type: none"> • 11 • 2 • 8 • 8 • 5 	<ul style="list-style-type: none"> • Al Naba magazine issue (<i>dump.to</i>) • Single article (<i>noteshare.id, pastethis, manbar.me</i>) • Propaganda video (<i>pastethis.at</i>) • Photo report (<i>nasher.me, manbar.me, pastethis.at, dump.to</i>) • List of extra links (<i>dump.to, manbar.me, pastethis.at, noteshare.id</i>)

Table 1: Postings by Terrorists on Dead Drops (December 2020 - May 2021)

Analysis

Anonymous Posting Platforms

JustPaste.it

The most frequently used platform of anonymous posting by terrorist groups is *JustPaste.it*. Terrorist groups using Just Paste.it usually shares the articles' links on Twitter, on other anonymous platforms or on the site Archive Today, a platform that allows for storing snapshots of web pages. Terrorists can use this site by snapshotting it and then re-sharing the links, directing the users to the dead drop on *JustPaste.it*. This way there is a possibility that the link will not be available on the *JustPaste.it* site itself but it will be online and archived on *Archive.today*. Our analysis reveals that the Islamic State - including all its factions, as well as Al Shabaab, and the Taliban (The Islamic Emirate of Afghanistan)- is using the most frequently *JustPaste.it*.



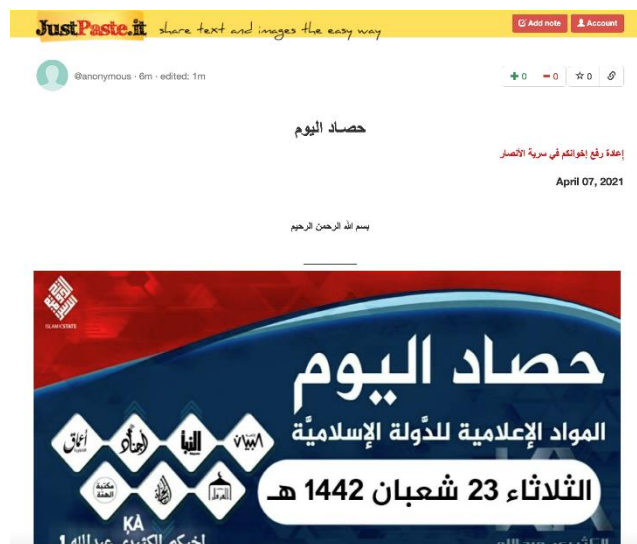
The Islamic State has been using *JustPaste.it* as one of the main anonymous platforms in combination with *Telegra.ph* (anonymous platform provided by Telegram) to share their content after other platforms such as *nasher.me* and *manbar.me* were taken down. Unlike other terrorist groups, the Islamic State uses *JustPaste.it* more frequently to spread terrorist content by including multiple links to other JustPaste/Telegraph posts. Our database reveals that the Islamic State and its news agencies are using *JustPaste.it* for multiple purposes such as daily update of the Islamic State action through a detailed news report including the number of people they either injured, killed or kidnapped, the number of weapons seized, the number of villages destroyed or raided. Sometimes these daily posts are updated with the latest news. Additionally, the Islamic State uses *JustPaste.it* to share photo reports and screenshots of the latest issue of their current magazine (e.g., Al Naba magazine). For example, one of the photo reports from March 2021 shows the “Caliphate's Soldiers” attacking two Congolese army barracks. Another photo report included shows the Islamic State soldiers kidnapping and killing a member of the Egyptian army near Rafah, a Palestinian city in the Gaza Strip.

JustPaste.it, is also used as a way to provide extra links to other extreme and radical content. In fact, each daily report post includes several links to other cloud sharing platforms, links to previous daily reports, the latest issue of their magazine, video versions of the daily reports, propaganda videos, PDF books, infographics and video and radio's transcripts in multiple languages. During Ramadan, several infographics included in the reports are dedicated to the principles and the rules of Ramadan. The material posted offers two-way communication or interactive platforms like Telegram official and bot accounts. Other than the daily reports, the Islamic State publishes frequently special posts on *JustPaste.it* highlighting the creation of new content. In these instances, the posts are shorter than the daily ones and

focus on a single topic with a long list of links to multiple sharing platforms. Finally, the Islamic State uses *JustPaste.it* to post analysis of documents (e.g., the analysis in English of Zawahiri's letter to Zarqawi).

Another active actor on *JustPaste.it* is al Shabaab, whose presence on this platform increased significantly since we started our data collection in February 2021, however they don't share content as frequently as the Islamic State. Yet, similarly to the Islamic State, al Shabaab postings come mostly from Al Kata'ib, the group's media outlet. The links to *JustPaste.it* posts are available either on an archive platform or on Twitter. Unlike other terrorist postings on *JustPaste.it*, al Shabaab seems to follow the "traditional" postings on anonymous platforms by publishing single topic posts. From the data collected, al Shabaab used the platform mostly as a way to spread their propaganda videos. These posts include the title of the video, the poster of the video and a list of links to cloud sharing platforms to access the streaming, download of the content with different video resolution, file option and languages.

The Taliban (or the Islamic Emirate) is also using *JustPaste.it*, however, its presence on this platform is more sporadic and mostly conducted by individual supporters. The Taliban and its supporters use the platform for multiple purposes: to repost spokespersons' statements but also to provide links to their official website and blogs.



Example of a dead drop by the Islamic State on Justpaste.it

Telegraph

Telegraph is an anonymous platform, provided by Telegram, with a minimalist interface that allows users to publish articles, videos and pictures anonymously. The anonymity provided by *Telegraph* attracted several terrorist groups and their followers.

The Islamic State has been using *Telegraph* for a long time and in a very consistent way. Our data reveals that like in the case of *JustPaste.it*, the main benefit of the platform is to remain anonymous and under the radar. *Telegraph* is used by the Islamic State for multiple purposes such as daily report. The IS reports shared on *Telegraph* are very similar to those posted on *JustPaste.it*. The reports, revolve mainly around the group's actions and military successes, crucial to regenerate its image after lost of territories and power. An example of the information provided from March 2021: the conquest of Palma in Mozambique and the killing of more than fifty-five soldiers. Like on *Justpaste.it*, these daily posts often include the online publication of Al Naba magazine, links to the previous reports, propaganda videos, daily report in video version, religious books, publications, extra links to cloud share platforms, as well as official ISIS Telegram and hoop messenger accounts. Finally, some posts on *Telegraph* are used as databases with lists of multiple links to all forms of propaganda material. Some of the links to the group's postings on *Telegraph* were found on *archive.is* but mostly in other *JustPaste.it* posts.



Examples of Contents on Justpaste and Telegraph: Infographics, Daily reports, Al Nab'a Magazine, Propaganda Books

Cloud Sharing Platforms

Cloud sharing is a system in which the user is allotted storage space on a server, providing end users with the ability to access files with any Internet-capable device from any location. Terrorist use these cloud sharing platforms in combination with anonymous websites to share propaganda online without being flagged and consequently their content stays online longer. As our study revealed, terrorists use multiple cloud sharing platforms. The most commonly used are *files.fm*, *Pixeldrain*, *Mediafire*, *OneDrive*, *Cloudshare*, *Nextcloud*, *Cloudflare*, *Yandex.Disk*, *Mixdrop*, *4shared*, *Cloudmail*, *Top4ttop*, *pCloud*, *Usersdrive*, and *Dropakto*. The links terrorists post to direct their audiences to these cloud platforms are in their postings on anonymous share platforms or directly on Twitter.



لتحصول على روابط قنوات إخوانكم في سرية الأنصار لإعادة رفع حصاد اليوم

بوت نشر حصاد اليوم

<https://t.me/Q040bot>

بوت تواصل حصاد اليوم

<https://t.me/Twa5572bot>

Moreover, the content is broad and available in multiple format and language options, resolutions, and the option in certain cases to stream the content. From the data we collected we also noticed that terrorists avoid using the option to publish password-protected links except once, when the posting included sensitive information concerning Mossad agents' identities, the cloud sharing links were published on *manbar.me* and the password itself was included in the anonymous platform post. The terrorists using the cloud sharing platforms, as our data show, are mainly the Islamic State, al Shabaab, al Qaeda, and the Taliban.

Files.fm

The most frequently used cloud service used by terrorists is *Files.fm*, a cloud storage platform that is private and encrypted, offering to stream the content before downloading it and the options to comment and if desired, to set up password for accessing the material stored.



Files.fm cloud sharing platform has been used by several terrorist groups and as our scan reveals, mostly by the Islamic State especially for storing propaganda content. We noted that very often the links to the *Files.fm* files were posted on several social media (especially *JustPaste.it*) thus attempting to attract a broader audience and to avoid removal of a single guiding link. For example, we found that in the majority of the cases three *Files.fm* links were added to the daily report post on *JustPaste.it*, directing to

the stored Arabic video version of the daily report. The Islamic State uses this cloud sharing platform to share other types of contents, including the latest issue of Al Naba online magazine, infographics, propaganda videos such as the documentary published by Hadm al Aswar, a pro-Islamic State media outlet, entitled “Preparing Lions to Slaughter the Jews”. Furthermore, the Islamic State uses this specific cloud sharing service to enable their followers to download PDF files of Jihadi religious books.

Another group using this cloud sharing platform is al Shabaab. Like the Islamic State, al Shabaab, uses *Files.fm* cloud mainly for propaganda purposes and in a similar method, posts the links guiding to the cloud files. The contents stored by al Shabaab on *Files.fm* includes video clips created by the Harakat Al Shabaab Al Kataib Media such as the one entitled "From the Frontiers of Glory". The video includes footages of Al Shabaab Mujahiddin fighting against Somali and Burundian soldiers, dead Somali soldiers and the mujahiddin seizing weapons and destroying the enemy outposts. The contents stored by al Shabaab on *Files.fm* include video clips of messages from Al Shabaab spokesperson such as the message to the people of Djibouti by the group’s spokesperson Sheik Abu Ubdeyda Ahmad Omar. Al Shabaab also relies on the use of multiple links directing to the cloud file, to provide its followers with various file types and sizes. Thus, for example, the Sheik Abu Ubdeyda Ahmad Omar message is available on *Files.fm* in multiple video resolutions as well as transcriptions of the speech in PDF and Word formats.

Al Qaeda is also using *Files.fm*. Yet, al Qaeda uses *Files.fm* sporadically. Moreover, the majority of the links directing to the cloud files are published on Twitter and not on anonymous platforms. Al-Hurr, one of al Qaeda’s Media outlets, has been using this cloud share platform to share propaganda video such as the one focusing on al Qaeda’s messages to the Muslim of Kashmir.

Pixeldrain

Another cloud platform used by terrorist groups is *Pixeldrain*. This platform does not require registration and is free of charge. Our scan revealed that this platform is used mostly by the Islamic State and its affiliates. *Pixeldrain* is one of the cloud sharing platforms used by the Islamic State to store and present the issues of Al Naba magazine and infographics, sometimes with the zipfile option. Like in other platforms, the Islamic State uses *Pixeldrain* as additional outlet to share propaganda video clips with multiple video resolutions (e.g., Islamic State of Sinai’s video entitled “The Epic Makers”). Most of the *Pixeldrain* postings revealed by our scan have a close expiring date, indicating that the Islamic State’s operatives are using mostly free accounts.



Al Shabaab, not as often as the Islamic State, use *Pixeldrain* to store and share their propaganda video clips such as the video message to the people of Djibouti by Sheikh Abu Ubeydah Ahmad Omar. The link to *Pixeldrain* appears with other links on a *JustPaste* post and it includes link to the English transcript of the speech (PDF or DOC file). Like the Islamic State, Al Shabaab uses multiple *Pixeldrain* links to provide its followers with the content in different resolutions and size options.

Mediafire

Mediafire is a file hosting, file synchronization and cloud storage platform that offers the user up to 50GB of free space, no download limit with ad-supported downloads. *Mediafire* has been used as a way to spread terrorist contents and especially propaganda videos such as the one published by the Islamic State's al Khayr media foundation entitled "The State of Islam Will Remain". This video includes footage of Mujahidin's fighting to conquer a city or to maintain their outposts. The links to the *Mediafire* cloud storage of such videos are included in *JustPaste.it* postings posts. *Mediafire* is also used by the Islamic State for storing and sharing their newest online magazines and infographics, providing the options to download the file in different sizes and video resolutions. From the data we collected there have been no case where the Islamic State shared *Mediafire* links to on social media such as Twitter and they prefer posting these links on *JustPaste.it* or *Telegraph*.



OneDrive

OneDrive is a personal cloud storage platform that offers the option to upload multimedia from mobile devices with friendly user interface. Its links are not designed as anonymous. However, there is an option to generate anonymous guest links.

OneDrive is a cloud share platform that has been rarely used by the Islamic State but, as our scan revealed, this platform is used to share different kind of content. For example, the Al Furqan Foundation, one of the Islamic State's media production units, used a *Onedrive* link to share the audiotape of the speech of the official spokesman of the Islamic State Sheikh Al-Muhajir Abu Hamza Al-Qurashi titled "Tell Stories So That They May Reflect".

Unlike the Islamic State, Al Shabaab uses this cloud sharing platform more frequently, especially to share propaganda video through anonymous platforms. An example of the use of *OneDrive* by Al Shabaab is the propaganda video created by the official outlet Al-Kataib Media, titled "The Blessed Manda Bay Raid". The video included drone footages from when Al Shabaab attacked the U.S. airfield and base at Manda Bay Airfield in Kenya. The links to the *OneDrive* contents were included in a *JustPaste.it* article and the links to the *JustPaste.it* article were found on Twitter.



NextCloud

Nextcloud is a cloud sharing platform working similarly to Dropbox and Google Drive and provides a cloud platform based on Open Standards and Free Software. *Nextcloud* provides the option to let users upload and edit files anonymously. Islamic State operatives use *Nextcloud* to share propaganda videos by adding *Nextcloud* links to several *JustPaste.it* articles. An example of the content shared by the Islamic State with a *Nextcloud* link is the propaganda video titled "They Answered the Call". This video includes footage of fighting as well as of the combatants' daily life in training camps plus highlights of their social activities such as helping people in need by donating money and food. Like with other cloud share platforms, the Islamic State included for each new release of a propaganda video, at least five *Nextcloud* links, one for each video resolutions.



Top4top.io

Top4top.io is an Arab cloud-based storage system, for uploading and downloading images, audio and video files of large sizes. The Islamic State includes *Top4top* links in their *JustPaste.it* and *Telegraph* postings thus sharing PDF copies of the newest issue of *Al Naba* and propaganda videos. An example of the terrorist content shared with a *Top4top* link is the propaganda video created by the Al Battar media foundation, titled “the Muslim Prisoners of Patience”. This video includes footage of Jihadi prisoners’ daily life as well as footages of martyrs dying in battle and gruesome footages of beheadings. The links to *Top4top*’s Al Battar video were posted on *JustPaste.it*.

Al Qaeda also uses this platform in numerous cases, to share propaganda videos and PDF documents of their spokespersons’ speeches. Al Qaeda through its Al Sahaab (meaning: “the cloud”) news media agency used *Top4top* links to share propaganda documents in English such as the one titled “If You Repeat the Crime We Shall Repeat the Punishment”.

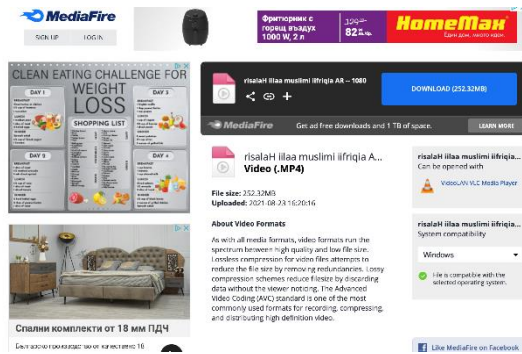
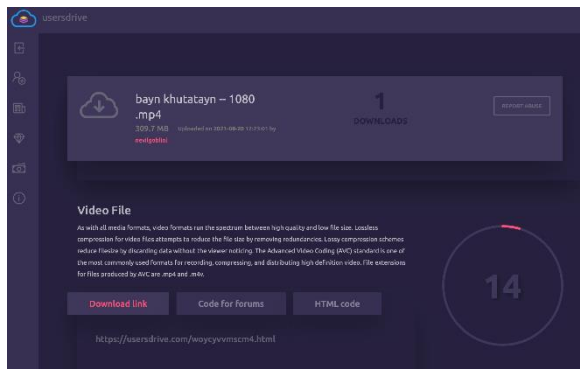


Another group, al Shabaab, also relies on *Top4top* to share their propaganda campaigns. For example, links to *Top4top* have been included in a *JustPaste.it* posting, to share Al Shabaab Al Kataib media outlet’s videos and English transcription of texts. An example of such video is titled “Punish Them Severely to Disperse Those Who are Behind Them”. This video includes footage of a few Al Shabaab terrorist attacks more specifically destroying Somali army’s tanks and trucks with rocket launchers.

Our scan of the terrorist use of cloud sharing revealed a vast range of platforms. In addition to those presented above, we found also *Yandex.Disk*, *MixDrop*, *4shared*, *Cloudmail*, *PCloud*, *UsersDrive*, and *Dropapk.to*. On all of these platforms we found terrorist materials and especially that of Jihadi groups. For example, on *Mixdrop* the Islamic State stores its video titled "Spirits in the Mountain," produced by the Turjuman al Asawirti, an Islamic State media production outlet. This video includes beheading footages of Islamic State's prisoners, two speeches by former US presidents Barack Obama and Donald Trump about the heavy prices of fighting the Islamic State, and the commitment of the Islamic state to destroy their enemies and establish a global Islamic State. Another example is the propaganda video of al Qaeda titled "The Wound of the Rohingya is the Wound of the Ummah". Looking more like a brief documentary, this video includes audio clips of Sheikh Ayman al Zawahiri and real footage of Myanmar soldiers' atrocities against civilians while showing support for al Qaeda from the the Rohingya community.

On *Cloudmail*, the Islamic State shares a video created by Hadm Alaswar media production, a sub-level pro Islamic State media outlet, entitled "Time to Pay". This video focuses on depicting the Islamic State martyrs as victims of the West, presenting real footage of Muslim orphan children and calling other Mujahidin to substitute the martyrs and bring about victory and justice.

One *UsersDrive*, for example, Al Furqan, Islamic State media outlet, presents the "Trample of War", a propaganda video shot in Africa by the Islamic State-affiliated group Talea al-Ansar. This video provides footages of the Mujahidin fighting in the Sahel and a segment from an interview with French President Emmanuel Macron.



Examples on Cloud Sharing Platforms: Propaganda Videos, Books, Magazines

Evolution over Time

Our study have allowed us to track certain changes in the use of virtual dead drops by terrorist actors and thus answer our Research Question 5 about possible evolution in the use of dead drops. It is clear that they migrated from “older” anonymous platforms such as as *nasher.me*, *manbar.me*, *noteshare* or *PasteThis* to newer platforms such as *Just.Paste.it* and *Telegraph*. The content changed as well: before moving to newer platforms, the Islamic State used to publish posts dedicated to a single topic with just a few links while presently - except for sporadic cases- they create multi-topics posts. Moreover, some of the groups, especially the Islamic State, have added new features to their online propaganda in the form of daily reports, as described above.

The changing contents included a change in the content from positive items to more negative items. For example, when scanning “older” postings on *nasher* and *manbar*, we found photo reports of the livestock and poultry market in an Islamic State conquered city Hawija in the Kirkuk Province of Iraq. Such positive items are no longer featured in newer platforms like *JustPaste.it* and *Telegraph*, where violent, aggressive, threatening texts and visuals are the dominant themes. Before moving to *JustPaste.it* and *Telegraph*, the Islamic State was using specific platforms for specific types of contents (e.g., using

Dumpto.to to publish photo reports) while more recently those photo reports are included in the daily reports or in any dead drop postings that have become multimedia platforms. Differently from previous anonymous platforms like *manbar*, *nasher*, *pastethis* and *noteshare* focused on visual contents (e.g., infographics, photo reports), today the Islamic State is presenting longer news reports, combining texts with visuals. We also noted a significant decrease in the reactions of users to the content posted on most of the used anonymous platforms.

The new use of dead drops relies on more outlets and more links to the same contents. Some terrorist groups are using systematically several anonymous platforms to publish day after day their latest report. Our scan also reveals an impressive increase in the use of dead drops, either in the forms of anonymous platforms or cloud sharing. For example, the Islamic State re added to its anonymous daily posts another messaging app called *Hoop messenger* to provide additional option for contacting the group and also to give another venue to share propaganda. *Hoop messenger* was included in few posts in December 2020 and January 2021 but then abandoned until April 2021, giving more space to *Telegram* accounts. We also noted an increasing number of postings of links on social media directing to contents stored in cloud sharing platforms. For example, the Islamic State increased its postings of links to cloud sites on platforms like *files.fm*.

Conclusions

Terrorists have used online services for over two decades and have become more sophisticated in doing so. As terrorist use of the new media became more intensive, sophisticated, and alarming, so did the various countermeasures launched by governments, military, and counterterrorist agencies. But the never-ending dialectic struggle between cyber-savvy terrorists and counter terrorism professionals, requires new thinking, preemptive measures and future-oriented policies.

The use of dead drops in the form of using anonymous platforms and cloud sharing poses a real challenge to countering online terrorism and extremism, especially because terrorist group are reacting to the new counter measures taken. From a theoretical perspective, our findings should be interpreted

within the framework of the new terrorist and extremist online ecosystem, taking into consideration the change in dynamics the array of new platforms, and the resilience of the network structure.⁵

From a practical perspective, our findings show that despite the efforts made by the *Global Internet Forum to Counter Terrorism* (GIFCT) and *Tech Against Terrorism* to enforce regulations and removal of terrorist online contents, the cyber-savvy terrorist are moving to new forms of online presence. For example in 2018 the *JustPaste.it* owner and joined the *Global Internet Forum to Counter Terrorism* (GIFCT) to use the GIFTC hash-sharing database to locate terrorist content on his platform. However due to GIFTC limitations, as our findings reveal, *JustPaste.it* and other platforms are still hosting terrorist postings and material on a daily basis.

By posting their contents on anonymous platforms and directing users to them and to other platforms, terrorists make their online existence harder to detect and remove. Despite the fact that all these abused platforms and services are privately owned and the challenges, the public and private sectors would benefit by showing why government-business partnerships are necessary, and how their existence could help online security.

Finally, this study reemphasizes the need to look toward, to examine preemptive measures and to focus on emerging trends, and platforms. There are numerous incentives that can be offered to the planners, designers and developers of the future for considering counter terrorism measures in their plans and design. Governmental support and rewards are certainly one of the promising incentives.

⁵ Fisher, A., Prucha, N. & Winterbotham, E. (2019). "Mapping the Jihadist information ecosystem: Towards the next generation of disruption capability". Global Research Network on Terrorism and Technology: Paper No. 6, London: Royal United Services Institute Publications.