

Confidential document provided under NDA

TRIDS:
Tracking Real Time Intelligence in Data Streams

Analysis of the Forward Defensive Exercise



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Summary

Our terms of reference were:

- To monitor any conspicuous events related to security for the Olympics or in general any security related issue.
- To monitor London events for a 72hrs period from 21/02/2012

The analysis was carried out over 72 hours during the 21st, 22nd and 23rd of February 2012. We set up the TRIDS system to monitor social media to identify any news/posts related to the topics (described below). Three instances of the system were deployed on the Amazon Cloud using differing API keys to guarantee reliability of media feeds. The system collected information from Twitter, Facebook, Flickr, BBCNews, The Guardian and MET Police. Information was gathered using both the standard API of social streams and premium services (using DataSift to access the Twitter and Facebook stream), providing a reliable and thorough access to the (social) media streams.

We identified the **Exercise Forward Defensive as the key event to monitor**, which was jointly developed by the Home office and the Metropolitan Police Service as part of the Government's regular National Counter-terrorism Exercise Programme. The event officially started at 7.18 in the morning of the 22/02 when Surrey Street was closed to the traffic; 2500 volunteers and several agencies such as London Fire Services, London Ambulance, Met Police, and British Transport Police were involved in the simulation. The exercise took place inside and outside the disused Aldwych station, around The Strand.

The TRIDS exercise was conducted in real world conditions with:

- Three operators analysing the data streams in real time, focussing their analysis on specific events and their evolution, these analysts were working at different physical locations;
- An operator working on the collected data to do post-event analysis

The operators had a number of screens open for analysing the data, with different facets to focus on, for example:

1. A screen that followed all the official #exercise hash tag;
2. A screen that followed all the activities in Aldwych;
3. A screen following all the messages related to London and security or exercise.

The operators also had access to the admin interface, allowing them to dynamically change keywords in real-time, in particular by adding new keywords, new users to follow etc. When an operator noticed messages being exchanged by a user that proved particularly interesting/informative, the user was added to the list of users to follow. Communication was maintained between the analysts using Instant Messaging to coordinate activities and maintain a history of the conversations.

At the end of the monitoring, the system had tracked approximately 1.5 million items. The system was able to analyse the amount of data in real time. At the end of the 72 hours it had clocked an average of 60 minutes of CPU usage.

The TRIDS application settings

The system was set up using the admin interface to monitor Twitter, Facebook and Flickr for a pre-defined set of keywords, a series of London-related news agencies (BBC News, The Guardian London News) and some relevant organisations (MET Police, London Ambulance). The system was also generically monitoring all the Tweets incoming from London.

The final set of keywords used to monitor the exercise is presented below. Please note that the keywords set was incremented during the day when a better idea of the event to monitor was reached.

Keywords set for Twitter and Facebook:

counter-terrorism, training exercise, terrorism, olympic park, forward defensive, met police, emergency response, operation forward defensive, ofd, aldwych, terrorist incident, underground station, underground, surrey street, exercise, olympics, simulation, london, london2012, bomb, emergency, emergency services, fire engines, ambulance, police, fire, emergency simulation, 999exercise, terror attack, Exercise Forward Defensive, WC2R, Temple Place, Strand, British Transport Police, London Ambulance Service, London Fire Brigade, Home Office, Visor Consultants, London Metropolitan Police, Paralympic Games, bombers, suicide bombers, National Olympic Security, National Counter-terrorism Exercise Programme, August 8, August 9, London_prepared, CSARN, City Security and Resilience Networks, multi-agency training exercise

Keywords set for Flickr:

Exercise Forward Defensive, 999exercise, London Metropolitan Police, National Olympic Security, emergency simulation, aldwych, terror attack, British Transport Police, London Ambulance Service, London Fire Brigade

Users followed were:

London_Prepared, Ldn_Ambulance, btp_uk, metpoliceuk, LondonFire, CSARN_Update, AboutLondonNews, julesmattsson, CityPolice, c4marcus, YankeeBadger, CameramanJase, JasonRosam, LBC_Declan, GuySmithReports

RSS Feeds followed:

http://content.met.police.uk/cs/Satellite?c=Page&cid=1257246741786&feed=newsappeals&p=1257246741786&pagename=MPS_CMS_Internet%2FMPSSRSSLayout
<http://www.londonambulance.nhs.uk/feeds/LasNews.aspx>
<http://feeds.bbci.co.uk/news/england/london/rss.xml>
<http://www.guardian.co.uk/news/blog+uk/london/rss>

The set of keywords generated about 1.5 million messages from the different streams, mostly from Twitter. For more details on the distribution between sources and the type of messages please see the Data Analysis section.

Timeline of events

We started monitoring the streams at 10.00 on the 21.2.2012. Immediately the news started flowing. For each step some example messages are presented.

Time	Event	Focus
10.02	The live exercise is announced on Twitter.	<p>Twitter, by monitoring all the messages related to London and Olympics.</p> <p>At this point in time a new screen was opened by the operator to monitor “Aldwych” as a location (using the improved geocoding service).</p> <p>The tag #999exercise was added to the list of tags to monitor and a separate screen was dedicated to monitor #999exercise.</p> <p>Btp_uk was added to the list of users to monitor.</p>
17.47	News organisation start commenting or retweeting news about the exercise.	<p>Twitter, by monitoring all the messages related to Aldwych.</p>
22.04	More citizens are commenting about tomorrow's exercise. The common hashtag #999exercise is not widely spread.	<p>Twitter, by monitoring all the messages related to Aldwych in one screen and London and Olympics in a</p>

twitter: baynesmedia 23:48:14 on 2012-02-21 6 days ago
 @metpoliceuk 2 practice 4 Olympics2012 terror trouble http://t.co/4ICukoxK - But what if the naughty people don't attack Aldwych tube?

second screen.

22.2.2012

01.00- 07.00 Citizens spread the exercise news and warn everyone to not panic

twitter: 13milepost 02:49:53 on 2012-02-22 6 days ago
 huge emergency service drill at closed aldwyche tube today 7am >7pm dont panic

twitter: mickeyescouse 05:30:19 on 2012-02-22 6 days ago
 emergency services dealing with a mock #terror attack @ the disused #aldwyche station preparing for the real thing which is not if but when

twitter: williams_sascha 04:31:20 on 2012-02-22 6 days ago
 If you're anywhere near the old Aldwyche tube station in London and hear sirens today - don't panic! http://t.co/tztx4XJ

twitter: julesmattsson 05:58:18 on 2012-02-22 6 days ago
 @RizwaanSabir yes is olympic one by the strand at Aldwyche stn, only a pool camera underground but above ground part will be visible

Twitter, by monitoring all the messages related to Aldwyche in one screen and London and Olympics in a second screen.

A relevant was identified in Jules Mattsson, as he was revealing details about the operation. We decided to follow this user.

7:18 Surrey Street closed

twitter: TfLTrafficNews 07:16:18 on 2012-02-22 6 days ago
 #CentralLondon CentralLondon twitter
 #CentralLondon Surrey Street closed between Strand and Temple today until 7pm due to an event. Diversions in place.

twitter: metpoliceuk 07:18:53 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter
 Surrey St (nr the Strand) now closed ahead of today's emergency services exercise http://t.co/a1puJPk4 #999Exercise

By focusing on the Aldwyche area using the advanced geocoding service we were able to spot the emerging of messages related to Surrey Street.

Locations
 Aldwyche Surrey Street

08:14 Citizens use twitter to ask more information about the exercise. Again the official hashtag is not used.

twitter: SLShead 08:14:54 on 2012-02-22 6 days ago
 twitter
 Anyone know what time emergency services are running terrorist attack test at the disused Aldwyche station?

08.40 The exercise is further discussed on twitter

twitter: Grey_fox36 08:40:48 on 2012-02-22 6 days ago
 twitter
 What is the point of holding a security test in Aldwyche when the Olympic headache will be in Stratford.

twitter: Ldn_Ambulance 09:44:06 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter
 Today's #999Exercise will test how emergency services & Govt would respond to a terror attack. We'll be wkg with @metpoliceuk @LondonFire

By focusing on Aldwyche and 999exercise. London Ambulance is fast emerging as a relevant user as well as LondonFire so they are added to the list of users to follow.

Most active

CameramanJase DALTON_CFR Dare2CareLor
 InnaMood JasonRosam LBC_Declan Lches46
Ldn_Ambulance LondonFire
 MPSWandsworth MrsReiliss Notcourier
 SPServicesUK WEmporium btp_uk c4marci
 julesmattsson metpoliceuk pinkpotatoes
 virtual_urology

10:03 Citizens opinions on the exercise are starting to spread

facebook: Sean Mckenna	10:03:10 on 2012-02-22 6 days ago
facebook	
TRIDS Nice to see that the police and every other form security are running "practice exercises" for the London 2012 olympics. Is it the same type of practice exercises they did before 7/7/05.....?	
twitter: Inde44	09:04:27 on 2012-02-22 6 days ago
twitter	
TRIDS I wanna be involved in todays mock terror attack at aldwyche , I might pop down with an ak and mix it up a bityeah it'll be fine x	

Facebook and Twitter. Again note 999exercise is not used as hashtag by the public, these messages are retrieved just by focusing on Aldwych and London

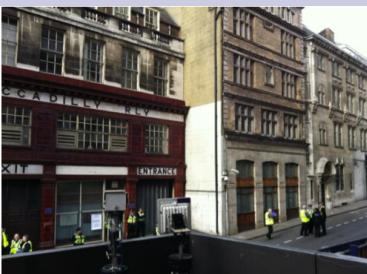
10:08 BBC interviews Jason Killens, head of operations

twitter: Ldn_Ambulance	10:08:06 on 2012-02-22 6 days ago
999exercise twitter	
TRIDS @BBCLondon949 is interviewing Jason Killens, deputy director of ops, about the #999exercise	

Twitter

10:15 The actors involved in the exercise have gone underground

twitter: JasonRosam	10:15:06 on 2012-02-22 6 days ago
twitter	
TRIDS Scene of the staged terror attack at Aldwych/Strand tube station - the actors have just gone underground... http://t.co/lN173OIO	



Twitter, again this message was obtained by focusing on Aldwych as a location, as no relevant hashtags were used.

10:49 The calm before the storm

YankeeBadger
 (Twitter)

11:04 Evacuation alarm sounds

twitter: JasonRosam	11:04:46 on 2012-02-22 6 days ago
999exercise #999exercise twitter	
TRIDS The security training exercise is underway - alarm has gone off at Aldwych Tube - #999exercise - Media from around the world watching...	

Jason Rosam
 @JasonRosam
 (Twitter)
 (BBC London Breakfast reporter)

11:10 Motorcycle paramedic from [@Ldn_Ambulance](#) first on scene at Aldwych station. Twitter

twitter: c4marcus 11:10:23 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter
 Mock  Motorcycle paramedic from @Ldn_Ambulance first on scene at Aldwych station. #999Exercise

11:13 First casualties emerging

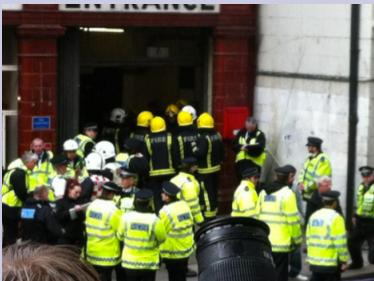
Jules Mattsson
 (Twitter)

twitter: Julesmattsson 11:13:13 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter
 Mock  Mock casualties stumbling out of Aldwych tube, emergency services arriving #999Exercise

twitter: c4marcus 11:15:01 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter
 Mock  'Passengers' beginning to emerge from station entrance, coughing, as first @LondonFire appliance arrives: <http://t.co/EbDfc6wc> #999Exercise



twitter: GordonFarquhar 11:25:32 on 2012-02-22 6 days ago
 Walking wounded being evacuated as part of London Olympic emergency services exercise <http://t.co/KkELNWdt>



Passengers leaving station confirmed by MET at 11:29

twitter: metpoliceuk 11:29:40 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter
 EXERCISE: Passengers starting to emerge from tube as part of #999Exercise in Surrey St. <http://t.co/a1puJPK4>



11:15 Fire-fighters at the scene

Twitter

twitter: LondonFire 11:15:23 on 2012-02-22 6 days ago
 #999exercise #999exercise twitter

First firefighters arriving at the scene of #999exercise



11:15 Helicopter arrives; confirmation of presence of [@Ldn Ambulance](#) and [@LondonFire Brigade](#)

Jason Rosam
(Twitter)

twitter: JasonRosam 11:15:51 on 2012-02-22 6 days ago
 #999exercise #999exercise twitter

The @Ldn_Ambulance response bike has arrived - first passengers out of tube - helicopter above - @LondonFire Brigade here too #999exercise

11:21 Explosive search dogs arrive at the scene

Marcus Edwards
(@c4marcus): (Twitter)
(Home Affairs producer for Channel 4)

twitter: c4marcus 11:21:59 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter

Explosives search dogs from @btp_uk just arrived. #999Exercise <http://t.co/PBmov1Yb>



11:36 Problem highlighted about cluttering road with vehicles

Marcus Edwards
(Twitter)

twitter: c4marcus 11:36:30 on 2012-02-22 6 days ago
 #999Exercise #999Exercise twitter

First issue is that with emergency vehicles parked either side of road, getting others through is tricky <http://t.co/W1Wkn8X> #999Exercise



The issue will be repeated by several citizens later on, among them paramedicSA

London Fire Brigade
(Twitter)

11:42 image of people leaving the station

London Ambulance. It is interesting to note how the first pictures of the exercise posted by London Ambulance

twitter: Ldn_Ambulance 11:42:42 on 2012-02-22 6 days ago
 #999exercise #999exercise twitter

EXERCISE: Pictures from on scene at #999exercise . View of street with emergency services. <http://t.co/kSkIGjmu>



were not visible. This was pointed out by several Twitter followers and then sorted.

11:58 First patients coming out on stretchers

twitter: LBC_Declan 11:58:51 on 2012-02-22 6 days ago
#999exercise #999exercise twitter

 At #999exercise we're seeing the first patients coming out on stretchers. @lbc973 http://t.co /HQXpDWFQ



Declan Harvey
(Twitter)

12:01 Picture feed from Aldwyck station becomes available from Right Now I/O feed (via Twitter)

http://www.rightnow.io/breaking-news/999exercise-aldwych_bn_1329912074406.html

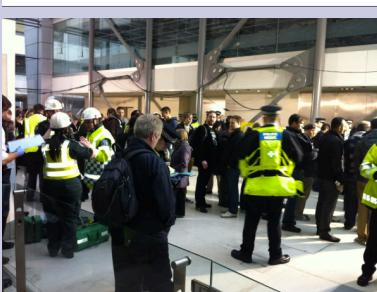
12:02 Blog covering the news with pictures

<http://london-underground.blogspot.com/2012/02/aldwych-tube-in-mock-terrorist-attack.html>

12:06 Survivor reception point

twitter: Ldn_Ambulance 12:06:18 on 2012-02-22 6 days ago
#999exercise #999exercise twitter

 EXERCISE: Pictures from scene at #999exercise in Aldwych. (Actors) Survivor reception point. @metpoliceuk on scen http://t.co/JSATMcZb



12:09 London Ambulance declares number of patients

Ldn_Ambulance
(Twitter)

twitter: Ldn_Ambulance 12:09:30 on 2012-02-22 6 days ago
 #999exercise #999exercise twitter
 EXERCISE: At #999exercise so far we have treated 3 patients (pseudo) – 2 seriously injured & the third patient for less serious injuries

12:46 Pictures of casualties



Met police (via Twitter)

13:04 BBC Feature announced

twitter: Ldn_Ambulance 13:04:56 on 2012-02-22 6 days ago
 #999exercise #999exercise twitter
 #999exercise is featured on @BBCLondonNews at 1pm. Find out more about the emergency services exercise with @metpoliceuk @LondonFire

1:13 Flickr stream becomes available showing casualties



London Ambulance (via Twitter)

Jules Mattsson on Flickr

<http://www.flickr.com/photos/julesmattssonphoto/6920341089/in/set-72157627264076204>

1:16 Citizens voice concern over exercise as unrealistic

Twitter

twitter: harvardjames 13:16:59 on 2012-02-22 6 days ago
 #999Exercise #wakeupsheeple #conspiracy 999Exercise wakeupsheeple conspiracy twitter
 Only idiots believe the #999Exercise is a REAL exercise. The government is faking preparedness against attack. #wakeupsheeple #conspiracy

twitter: cliffordtibber 13:55:14 on 2012-02-22 6 days ago
 #999exercise twitter
 #999exercise doesn't look to me anything like the chaos that epitomised 7/7. PR stunt?

2:08 Theresa May, Mayor of London and Met Commissioner arrive at the Twitter

scene.

twitter: LBC_Declan 14:08:33 on 2012-02-22 7 days ago
 999exercise twitter
 Home Sec Theresa May, @MayorofLondon and Met Commissioner arrive to inspect #999exercise .
 @lbc973 http://t.co/x4X5XXih

- 3pm The MET declares that "live play elements" element of the exercise, which may have been visible to members of the public, ended at around 1500 GMT" BBC

3.03 Picture of a police dog issued

Twitter

twitter: metpoliceuk 15:03:06 on 2012-02-22 7 days ago
 999Exercise #999Exercise twitter
 EXERCISE: Picture of a police search dog down at the scene of #999Exercise in Surrey Street
 http://t.co/GfbNeqXc



3:22 London Ambulance issues pictures of casualties

London Ambulance (via Twitter and Web site)



15:46 London Ambulance makes available pictures on Facebook

<https://www.facebook.com/media/set/?set=a.253803418032836.61686.130563780356801&typ>

e=1

16:10 Concerns about possible mistakes during the exercise is expressed

twitter: LBC_Declan
999exercise #999exercise twitter

16:10:52 on 2012-02-22 6 days ago

 Met Police Commissioner tells me some mistakes made on July7 have been repeated today i.e. communication failings. @lbc973 #999exercise

4:20 Police blog feed from the Netherlands posts pictures from the day (source unknown mostly taken from different Twitter feeds) including videos from BBC and Al Jazeera.

LBC_Declan
(Twitter)

<http://hulpverlening.nl/forum/index.php/topic,6923.msg68606.html#msg68606>

17:05 British Transport Police makes available pictures on Flickr

British Transport Police - Sets
Exercise Forward Defensive
Thumbnails Detail Comments

Slideshow 

A major exercise to test the emergency service and Government response to a terrorist incident on the London Underground during the Olympic and Paralympics Games period was held in central London on 22 February 2012.

6 photos | 1,008 views

http://www.flickr.com/photos/btp_uk/sets/72157629064195044/

5:31 Mirror.co.uk runs an article on their web site including several pictures of casualties and emergency forces as well as a video (examples below)

<http://www.mirror.co.uk/news/uk-news/london-2012-terror-attack-drill-739789>



17pm – Several comments from citizens pro- and against the exercise, some onwards arguments heated (“you twat...”), mostly in favour.

Twitter

18:30 BBC news

BBC

19:25 Surrey street reopens – end of exercise

MET (Twitter)

twitter: metpoliceuk
999Exercise #999Exercise twitter

19:25:23 on 2012-02-22 6 days ago

 Surrey St WC2 is now re-open following today's #999Exercise . No more updates from us about the exercise. Thanks for following.

Data Analysis

The data were analysed both in real-time and after the event using the faceted browsing interface (Figure 1) and the search interface (Figure 2). The faceted browsing interface will provide means for an operator to see the stream of incoming data and filter them by language, tag, sentiment, location etc. The search interface, DisKover, is mainly aimed at post-event analysis, as the operator will be able to perform advanced searches and quantitative analysis of the data. All the images and graphs presented in this report have been generated using our interfaces.

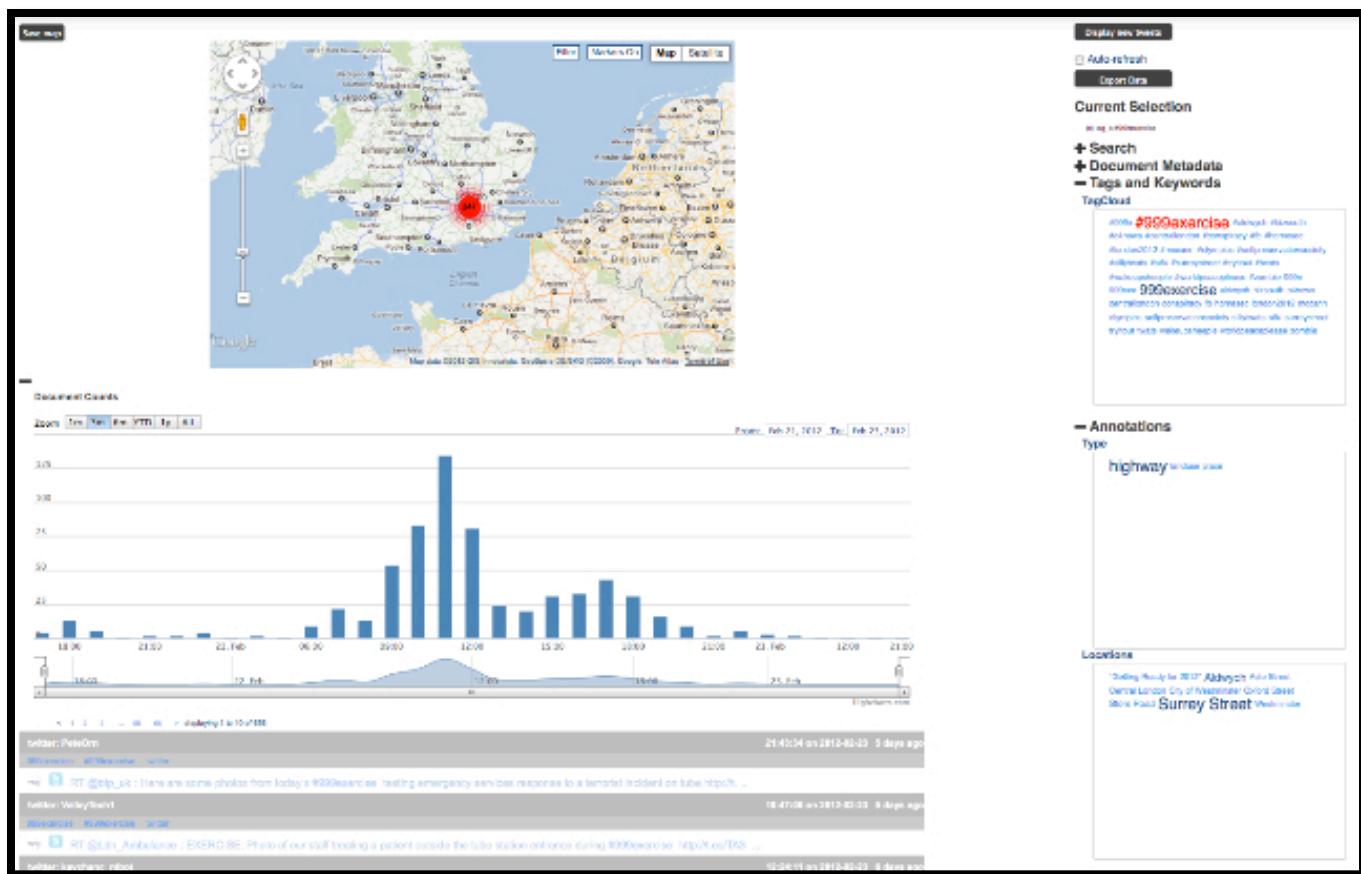


Figure 1 - Faceted browsing interface

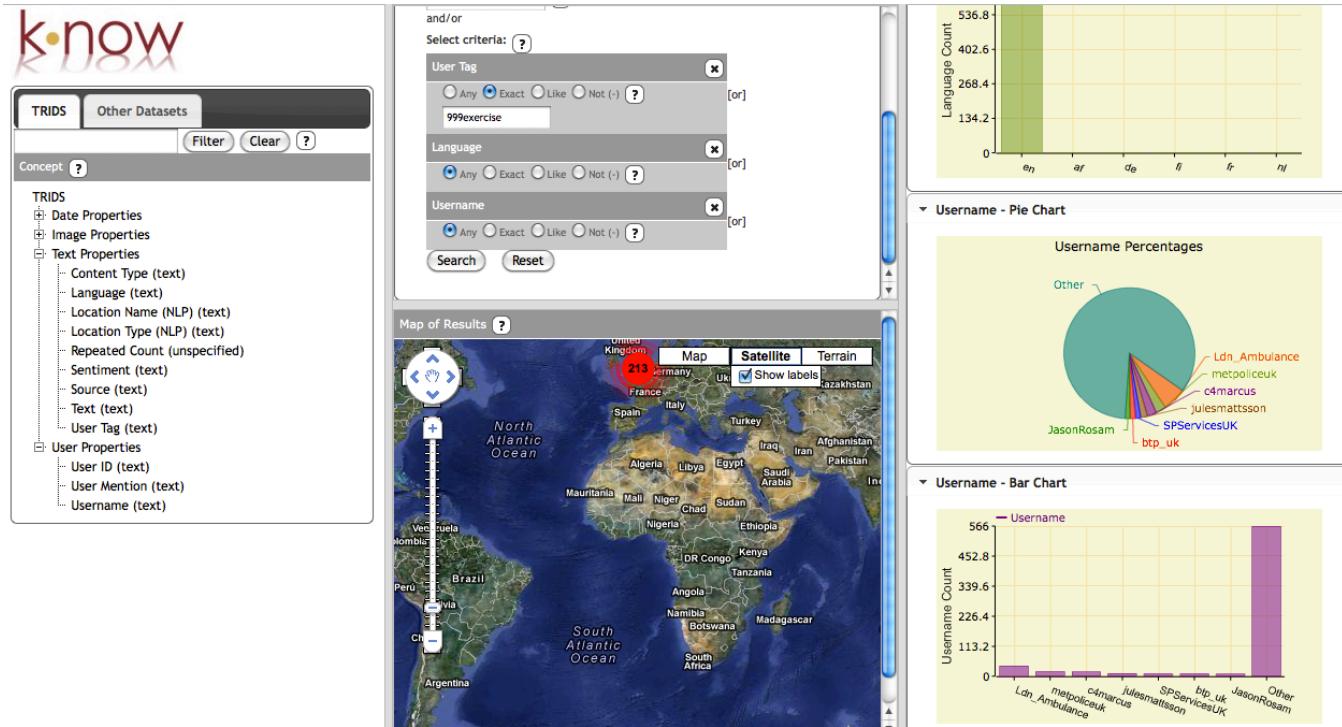


Figure 2 - DisKover search interface

The total number of messages collected by the system was 1560075, distributed as follows (Table 1):

Source	Number of messages
Twitter	1,504,983
Facebook	54,731
Flickr	73
RSS feeds	288

Table 1 - Total number of messages collected

The incoming messages are analysed by the back-end intelligent system and processed to enrich them with additional information, such as location, language etc to enable advanced search and filtering on the document metadata. The main system features are discussed below.

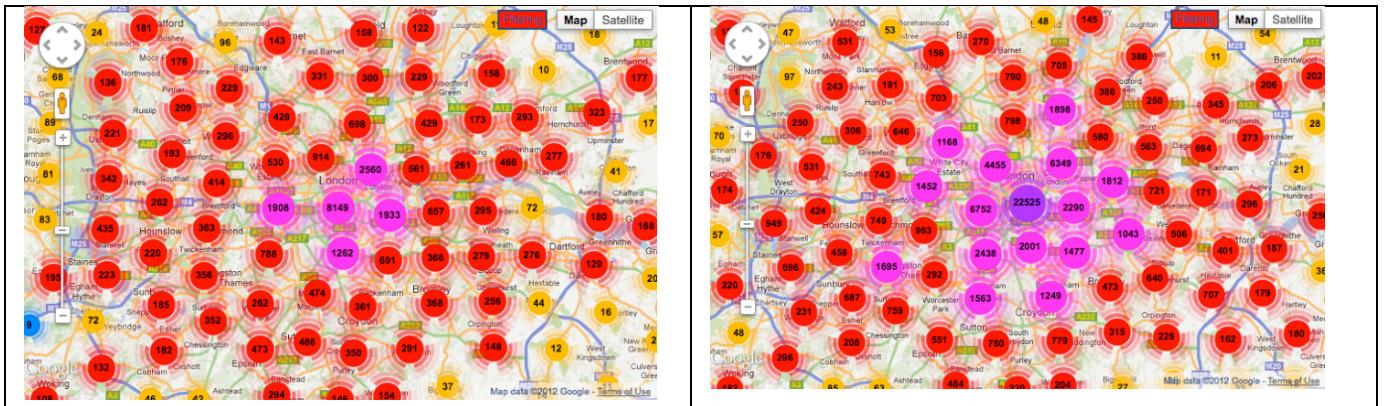
Geotagging

Advanced system features were used to process and store the data such as geotagging (using NLP techniques to boost the low amount of geotagged data and to provide user-friendly description of location names and location types, e.g. train station, highway etc). Our NLP approach doubled the total number of geolocated documents from 3.97% to 7.41% (see Table 2).

	Total Number of messages	Geo-tagged at source	Additionally Geo-tagged by TRIDS	Total Geotagged
Twitter	1,504,983	59,691 (3.97%)	51,811 (3.44%)	111,502 (7.41%)

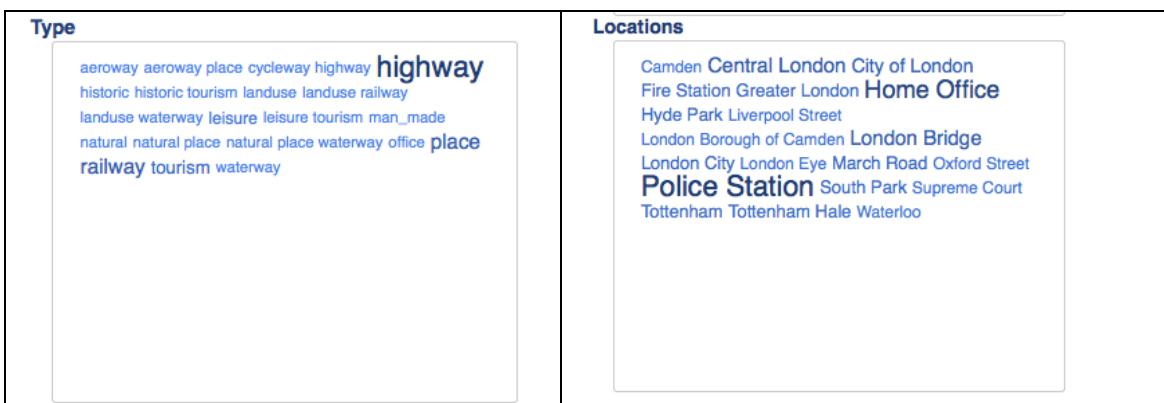
Table 2 – Geotagging percentages

An example of the effectiveness of the added geolocation is the below figure (Figure 3), that presents two images showing the clusters of geolocated messages for London during the period under analysis: the first image shows the messages originally geolocated by users and the second one shows the posts tagged by the NLP geotagger.

**Figure 3 - Comparison of original geotagging and NLP geotagging presented in the browsing interface, focused on London**

The map presents a visual clue to the density of information, by clustering messages with a similar location and colour coding the clusters accordingly to the amount of information. The clusters with more data are displayed in lilac. Looking at the two images above, at a first glance the image on the right is the only one that has a lilac clusters, and a very high amount of pink clusters, as it has more geotagged information. The advanced geotagging is also used to identify the common places a tweet refers to, by type and by name.

For example if a tweet mentions the word railway this will be recognized by the system and turned into an annotation that the user can use to browse the data (through a visual place tag cloud). For the London events, without any focus the major places and locations recognized by the system were:

**Figure 4 - Place type and Place name tagclouds during the 72hrs monitoring period**

By focusing on the most frequent tag for the Forward defensive exercise, 999Exercise, the location cloud changes reflecting the location where the exercise has taken place (see Figure 5).

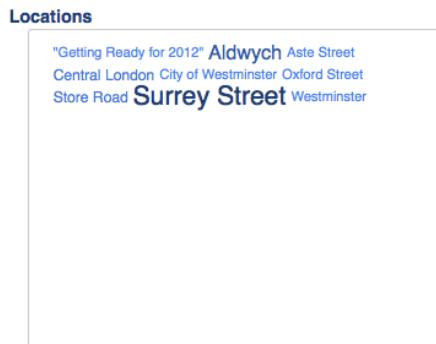


Figure 5 - Location Names tagcloud and clustered map focusing on 999exercise

Comparing the geolocation results for the tag 999exercise reveals even more the effectiveness and usefulness of the NL geocoding. Out of all the messages tagged as 999exercise or discussing the 999exercise, only 10 were originally geolocated. The NLP geocoding boosted this number to 213 (see Table 3).



Figure 6 - The image on the left shows the originally geolocated messages for the 999exercise tag, the image on the right shows the enriched geolocation performed by the NLP geotagger.

Languages

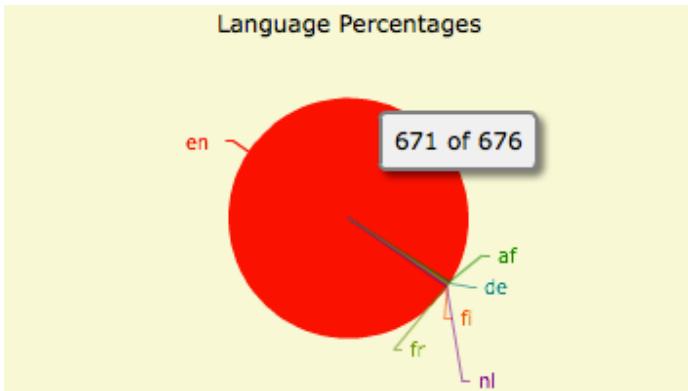
Messages were mostly identified in English, however on Twitter the following languages were mainly identified. Classification looks mostly correct for each of them. Some messages (especially very short or containing slang) are classified as multiple languages.

Language	Number of messages	Language	Number of messages
Total	1,504,983		
English	1,335,951	Arabic	2,786
Danish	3,166	German	14,881
Spanish	22,905	French	14,401
Indonesian	16,088	Italian	9,568
Japanese	6,419	Korean	2,846

Dutch	13,848	Norwegian	5.257
Portuguese	12,065	Romanian	2,341

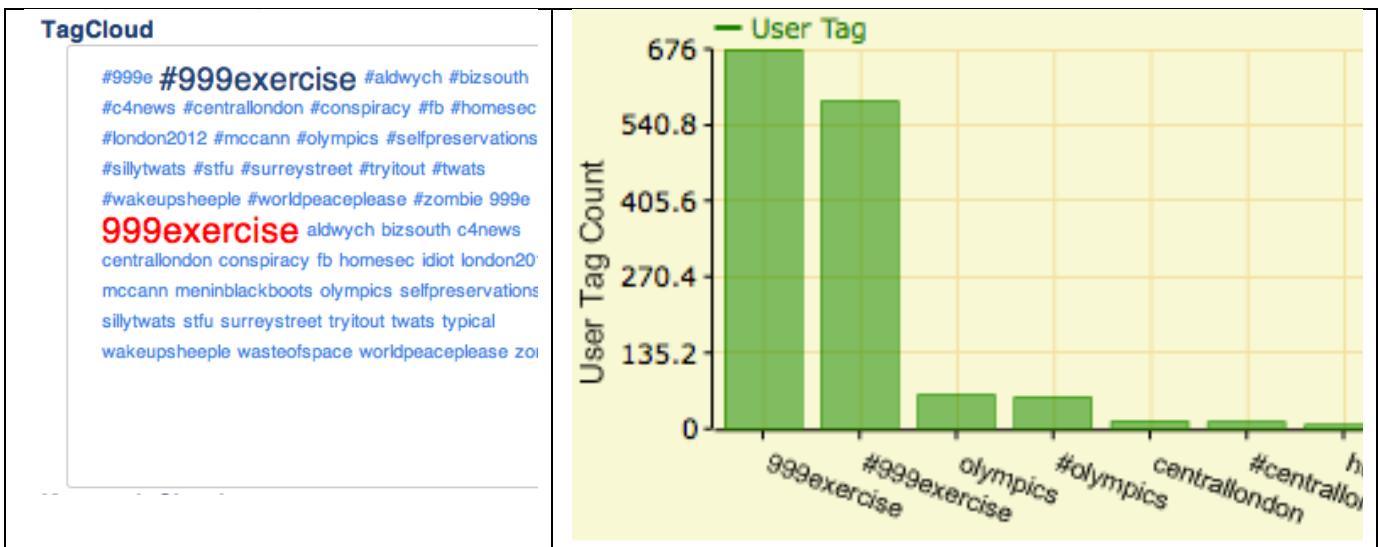
Table 3- Distribution of languages in the whole dataset

When focusing on the 999exercise tag, most of the messages were sent in English, as apparent from Figure 7.

**Figure 7 - Distribution of languages for the 999exercise tag**

Tagcloud and keywords

Figure 8 shows the tag distribution for the 999exercise tag.

**Table 4 –The image on the left represents the tag cloud for the tag 999exercise, whilst the image on the right represents the most frequent tags associated with 999exercise.**

Looking at the 999exercise tag during the day it is interesting to see it emerging the day before the exercise around 5-6 pm (that correspond to several tweets from involved parties announcing the exercise) and then trending during the actual exercise hours.

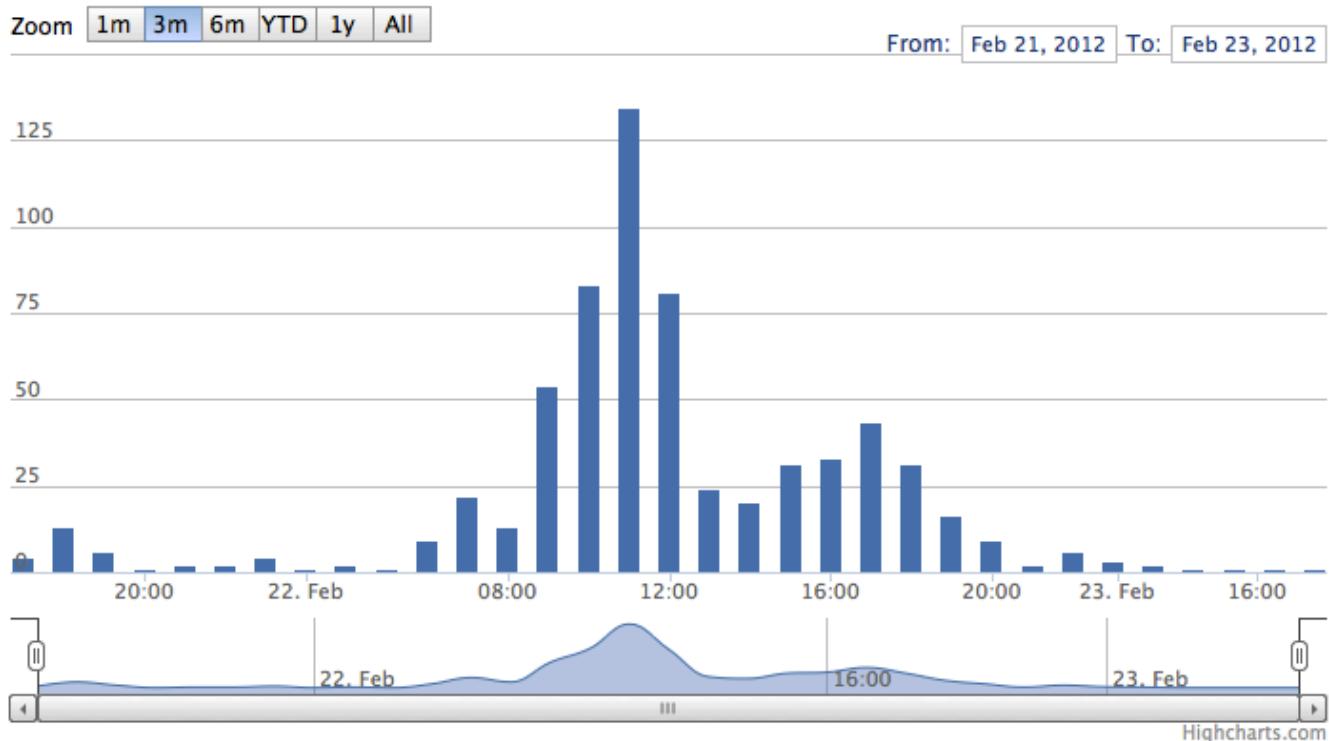


Figure 8 - Distribution of the tag #999exercise over the exercise hours

Note that during the day there were several messages exchanged about the simulation exercise that did not use the official #999exercise. We found relevant information by searching for keywords and tags such as exercise, London or looking for all messages referencing Aldwych as location.

Searching for exercise and London returns 362 messages, mostly related to the simulation exercise but not tagged as such. This is very important as the messages are more often from general public commenting on the situation instead than from official sources (see Figure 9)

Looking at the tags correlated with these messages the tag olympic emerges as one of the most correlated.

User Tag - Pie Chart

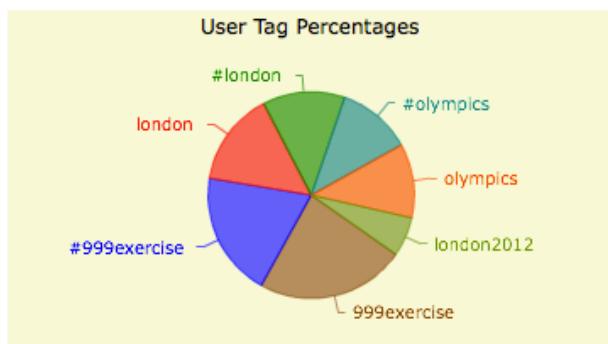


Figure 9 - correlated tags when searching for London and Exercise

The number of overlapping messages is quite low, 38. This shows how important is to not just follow one pre-fixed tag but browse for information related to the event monitored. The distribution of messages marked as exercise and London in the exercise timeframe is also very similar to the one for the 999exercise tag (see Figure 10).

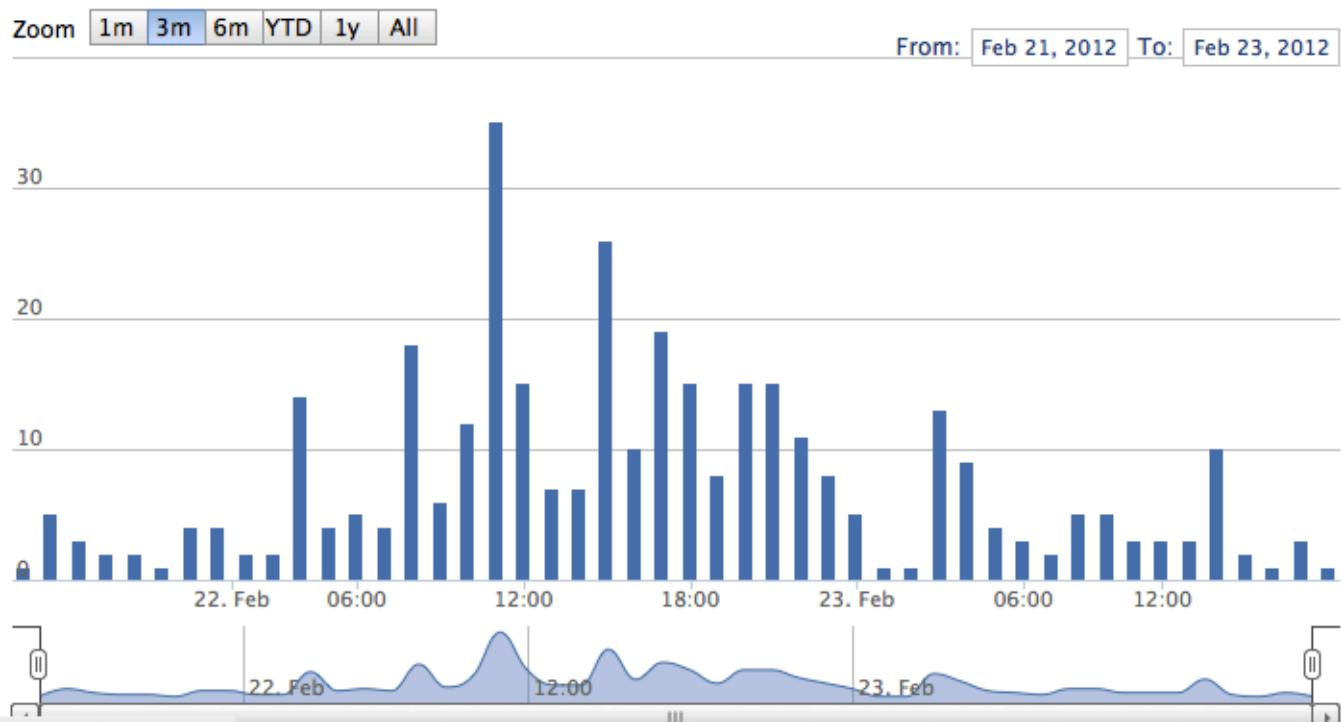


Figure 10 - Time distribution of messages related to London and Exercise

Monitoring the messages related to Location: Aldwych (geolocated by our system) even more messages related to the exercise but not marked with the official tag emerged. A total of 358 messaged geolocated in Aldwych, of which 271 not present in 999exercise tag set.

Again the time distribution of the Location:Aldwych is very similar to the previous ones (see Figure 11).

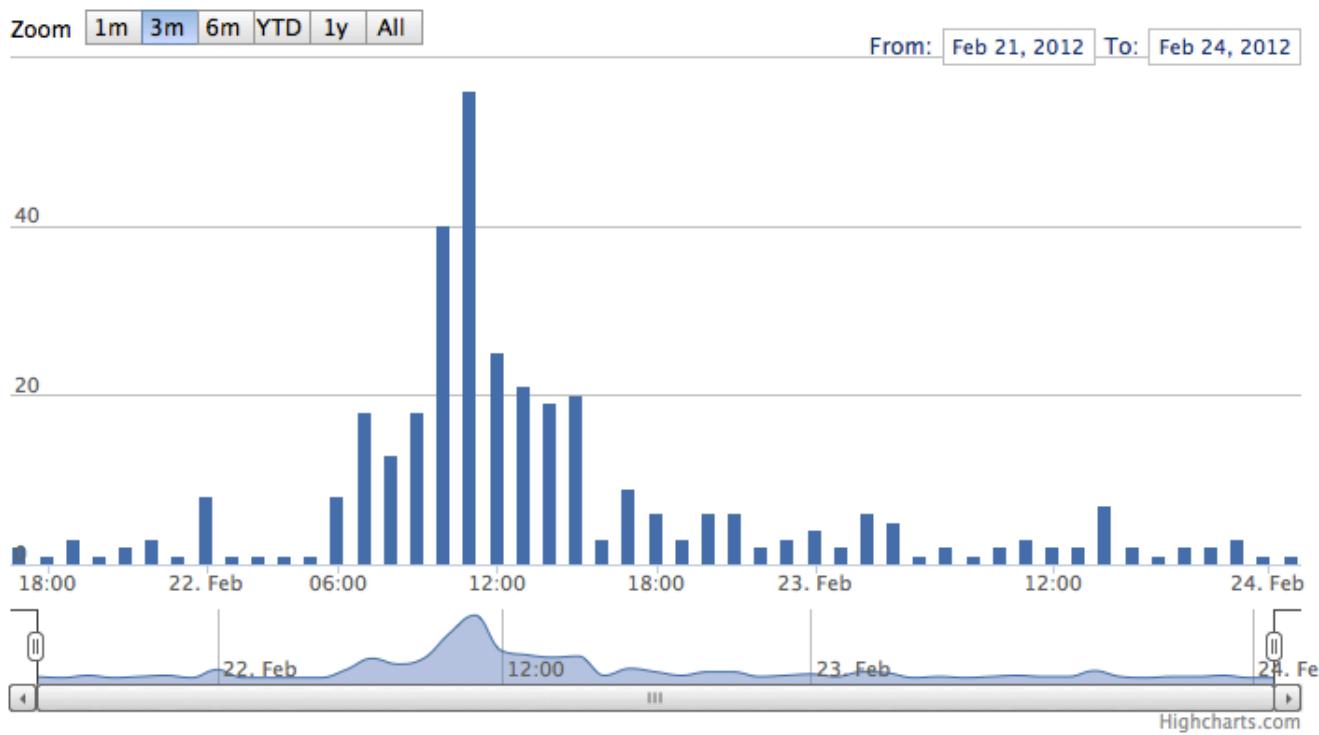


Figure 11 - Time distribution of messages geolocated in Aldwych

Sentiment analysis

A basic sentiment analysis technique was integrated in TRIDS to understand the predominant sentiments related to the exercise.

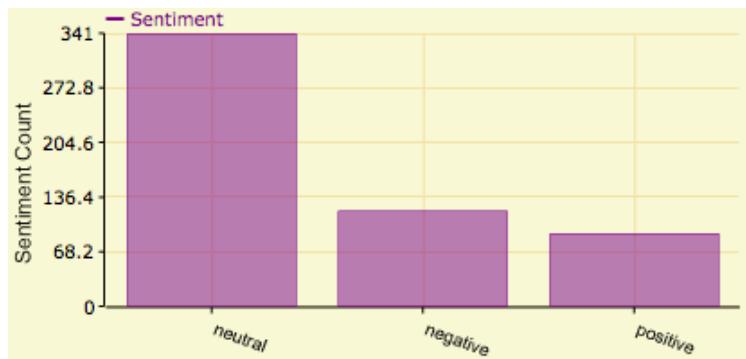


Figure 12 – Sentiment Analysis for the 999exercise tag.

Whilst a high percentage of the messages were marked as neutral (see Figure 12), the system identified several negative messages such as

twitter: MrsReiiss	18:00:17 on 2012-02-22 6 days ago
999exercise #999exercise twitter	
  #999exercise this will never be real enough to prepare you for the real thing @metpoliceuk trying to look good when u still look stupid!!	
twitter: HRSmuffnstuff	18:06:32 on 2012-02-22 6 days ago
999Exercise #999Exercise twitter	
  #999Exercise Terrorists across the globe now thinking "Ok then, forget about the underground. They're expecting *that* one". Or *are* they ?	
Positive messages were also identified, amongst which:	
twitter: PoliceCEPOL	22:41:26 on 2012-02-22 6 days ago
999Exercise #999Exercise twitter	
  RT @MPSDol : Incredible technology being used to bring emergency services together for #999Exercise Great work Op Tech!	
twitter: Oh_Jesus17	19:36:14 on 2012-02-22 6 days ago
#999exercise 999exercise twitter	
  that #999exercise looked so good today on the news, i really wanted to be there	

Users

Focusing on 999exercise, the most active users (both as active information distributors and most mentioned) were as expected the main organizations taking part into the exercise, such as London Ambulance, Met Police and London Fire Brigade (see Figure 13).

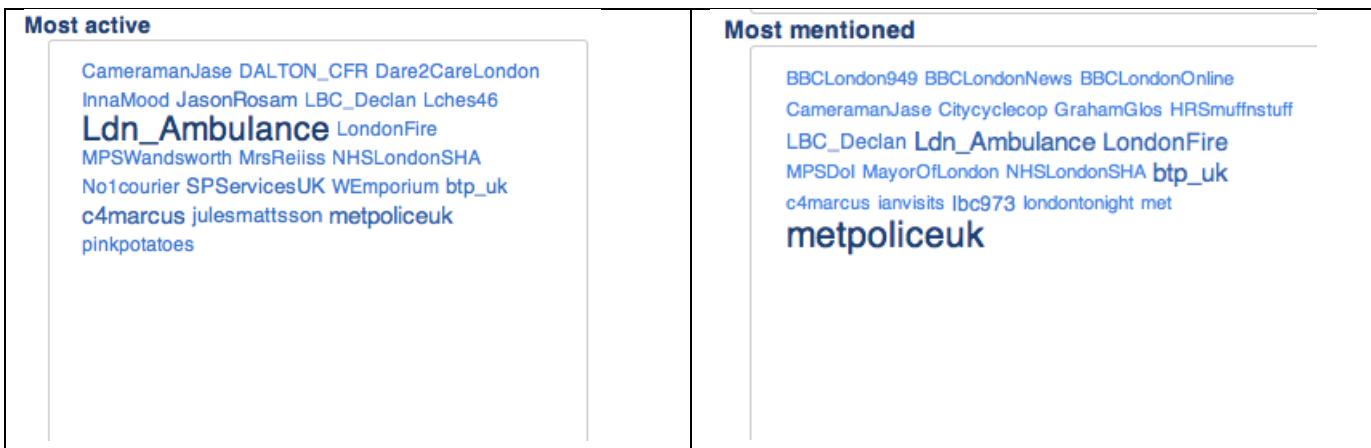


Figure 13 - Most active and most mentioned users for tag 999exercise

Comparing the most active users between the official 999exercise tag and the London and Exercise and Aldwych datasets shows how the messages in London and Exercise and Aldwych datasets are more often generated by normal citizens (see Figure 14).

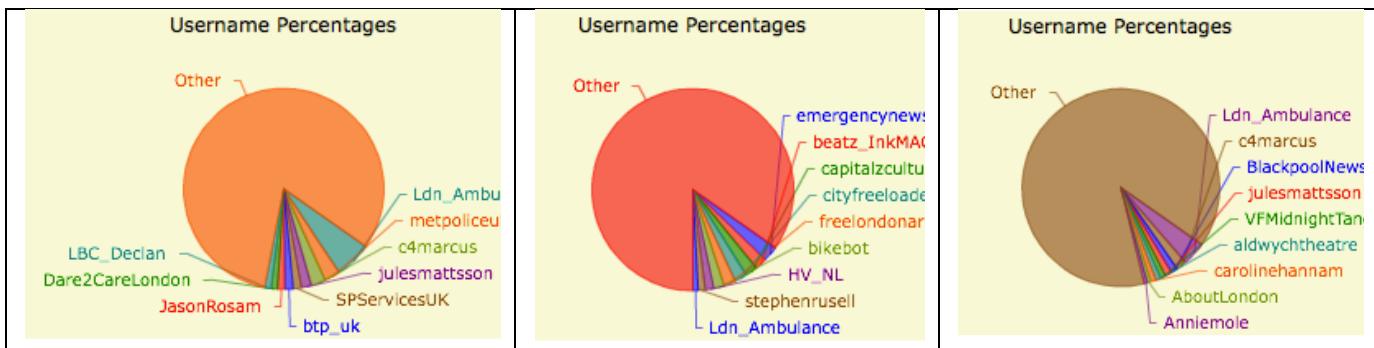


Figure 14 - Most active users for the #999exercise tag (left), London and exercise (middle), Aldwych (right)

Citizens' worries and participation

Several messages collected during the day reflected citizens' worries and expectations for the event.

Concerns about the running of the exercise started as early as 9:32 when someone asked if appropriate measures were taken to account for wheelchair users. The issue is raised in several tweets and pictures have been used to show that apparently no wheelchair volunteers were present.

twitter: OneOffDave 12:14:13 on 2012-02-22 6 days ago
 999exercise twitter
 @Ldn_Ambulance @metpoliceuk @LondonFire Are any of the roleplayers in #999exercise disabled people?

Concerns were also expressed about the unrealistic settings (no traffic, no panic) of the exercise

twitter: Merlin_necro 14:57:24 on 2012-02-22 6 days ago
 999exercise #999exercise twitter
 #999exercise No traffic, victims walking out in a single file and no panic. A truly realistic exercise. I feel soooo safe now...

Concerns were also raised about the fact that details of the operation were advertised and that mistakes from 7/7 were repeated.

twitter: Dazclot 16:20:57 on 2012-02-22 6 days ago
 999exercise #999exercise twitter
 Bit worrying when the met start reporting mistakes from July 7th have been repeated in the exercise today. #999exercise

Cost was another issue raised.

twitter: MrsReiss

17:57:47 on 2012-02-22 6 days ago

999exercise twitter

  @btp_uk @metpoliceuk #999exercise what a pointless waste of money!!

Several citizens lauded the initiative and several declared they wished they were involved.

Interest from Abroad

Interest in the exercise was shown as far as Belgium and the Netherlands.

twitter: FonsDeBackere

11:01:52 on 2012-02-22 6 days ago

999Exercise twitter

  Interesting exercise! We try to follow #999Exercise here in Belgium. Good luck from fire brigade Roeselare - Belgium.

twitter: PortailBlog

12:29:26 on 2012-02-22 6 days ago

twitter

  Photo: Un exercice des sapeurs-pompiers londoniens (An exercise of the fire brigade londoners) (Source Bnf),... <http://t.co/br5uElsZ>

Issues

The main issue identified during the exercise concerned the reliability of public API for social media. This did not affect TRIDS, as the system was run in two modalities, one using the free public API and one using a paid data service (Datasift) that offered premium access to Twitter and Facebook. This addition to the TRIDS system increases its reliability: during the exercise the free public Twitter API had several issues, and a ban was imposed over the retrieval of too many messages per second. This was overcome by gathering data from the premium feed. In light of this event we consider mandatory reaching an agreement with a premium Twitter provider to guarantee reliability of access if used for a major event.

Smaller issues were identified in the interface. For example the interface did not provide any mean to visually identify retweets, therefore cluttering the screen and distracting the operators' attention. Looking at the timeline of events (see Appendix) after 3pm all the messages about the exercise were mainly retweets, some of them several hours late. The system was adapted so to still show the re-tweets but in a different colour, so to enable immediate recognition.

twitter: mexy777 #999Exercise #999Exercise twitter	5 days ago
RT @metpoliceuk : EXERCISE: Officers taking part in #999Exercise in Surrey St earlier, helping evacuate 'passengers' played by actors ht ...	
twitter: LukyKnightRyda #999Exercise #999Exercise twitter	5 days ago
RT @metpoliceuk : EXERCISE: Officers taking part in #999Exercise in Surrey St earlier, helping evacuate 'passengers' played by actors ht ...	
twitter: MrsReiss #999Exercise #999Exercise twitter	5 days ago
#999Exercise this will never be real enough to prepare you for the real thing @metpoliceuk trying to look good when u still look stupid!!	
twitter: Lewis_Clarke #999Exercise twats #999Exercise #twats twitter	5 days ago
For everyone moaning about the #999exercise .. Yeah, okay let's just not prep for a terror event, then if it happens it does?! #twats .	
twitter: MrsReiss #999Exercise #999Exercise twitter	5 days ago
RT @Tel_Hejazi : What a waste of money #999Exercise	

Retweets are in light grey font, new tweets are in black font.

Conclusions

The TRIDS system enables the monitoring of (social) media streams to identify any news/posts related to a particular focus of analysis. It provides several functionalities to facilitate the real-time effective analysis of such overwhelming amount of social data.

In first instance several different data streams are conveyed in a single and consistent system, thus providing (i) more complete information (what is missing in one social stream can be present in another); (ii) a full multimedia picture (different stream can complement each other, e.g. Flickr providing images and Twitter providing textual facts and opinions); (iii) evidence about a given event, when is present along different data streams.

The concept of focus of the analysis enables the operator to specify one or multiple topic of interest and therefore collect and visualize only data which is relevant to the analysis; also the system allows multiple instantiation thus enabling different operators (or one operator switching over multiple screens) to focus on specific aspects of the analysis. The filtering of data is also done to promote novel rather than repeated information. The operator is provided with visual tools to define their interest and focus their attention along multiple dimensions (locations, users, keywords, tags) and can change or refine it throughout the whole observation phase.

The storage of data and the bookmarking system also allow a post-hoc analysis of the data, to trace back and understand things that went right or wrong during the observation. The monitoring of the 999exercised proved the usefulness of TRIDS technology especially for what regards advanced NLP techniques used to extract terms and geolocate messages.

The framework adds an invaluable intelligence layer over the usage of social media in both single and combined media streams. The effective combination, both at data and visualization levels, provides a full picture and a single point of access of all the data.