Twitter

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Twitter (/ˈtwɪtər/) is an online news and social networking service where users post and interact with messages, "tweets", restricted to 140 characters. Registered users can post tweets, but those who are unregistered can only read them. Users access Twitter through its website interface, SMS or a mobile device app.[10] Twitter Inc. is based in San Francisco, California, United States, and has more than 25 offices around the world.[11]

Twitter was created in March 2006 by Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams and launched in July of that year. The service rapidly gained worldwide popularity. In 2012, more than 100 million users posted 340 million tweets a day,[12] and the service handled an average of 1.6 billion search queries per day.[13][14][15] In 2013, it was one of the ten most-visited websites and has been described as "the SMS of the Internet".[16][17] As of 2016, Twitter had more than 319 million monthly active users.[6] On the day of the 2016 U.S. presidential election, Twitter proved to be the largest source of breaking news, with 40 million election-related tweets sent by 10 p.m. (Eastern Time) that day.[18]
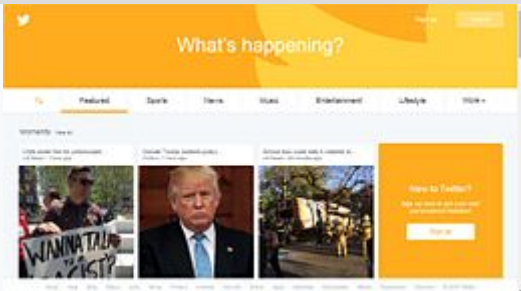
Twitter, Inc.

Screenshot

The login/sign up page of Twitter in November 2016

Type of business	Public
Type of site	News and social network service
Available in	Multilingual
Traded as	NYSE: TWTR
Founded	March 21, 2006[1]
Headquarters	San Francisco, California, U.S.[2]
Coordinates	37.7768°N 122.4166°W
Area served	Worldwide
Founder(s)	Jack Dorsey Noah Glass Biz Stone Evan Williams
Key people	Omid Kordestani (Executive Chairman) Jack Dorsey (CEO)
Industry	Internet
Revenue	▲ US$2.52 billion (2016)[3]
Net income	▼ US$-456 million (2016)[3]
Employees	3,898 (2016)[4]
Subsidiaries	Vine Periscope
Website	twitter.com

Contents

Alexa rank	▲ 11 (Global, June 2017)[5]
Registration	Required to post, follow, or be followed
Users	319 million active users (2016)[6]
Launched	July 15, 2006[7]
Current status	Active
Written in	Java,[8][9] Ruby,[8] Scala,[8] JavaScript[8]

History

Creation and initial reaction

Twitter's origins lie in a "daylong brainstorming session" held by board members of the podcasting company Odeo. Jack Dorsey, then an undergraduate student at New York University, introduced the idea of an individual using an SMS service to communicate with a small group.[19][20] The original project code name for the service was **twttr**, an idea that Williams later ascribed to Noah Glass,[21] inspired by Flickr and the five-character length of American SMS short codes. The decision was also partly due to the fact that domain twitter.com was already in use, and it was six months after the launch of twttr that the crew purchased the domain and changed the name of the service to **Twitter**.[22] The developers initially considered "10958" as a short code, but later changed it to "40404" for "ease of use and memorability".[23] Work on the project started on March 21, 2006, when Dorsey published the first Twitter message at 9:50 PM Pacific Standard Time (PST): "just setting up my twttr".[1] Dorsey has explained the origin of the "Twitter" title:

...we came across the word 'twitter', and it was just perfect. The definition was 'a short burst of inconsequential information,' and 'chirps from birds'. And that's exactly what the product was.[24]

The first Twitter prototype, developed by Dorsey and contractor Florian Weber, was used as an internal service for Odeo employees[25] and the full version was introduced publicly on July 15, 2006.[7] In October 2006, Biz Stone, Evan Williams, Dorsey, and other members of Odeo formed Obvious Corporation and acquired Odeo, together with its assets—including Odeo.com and Twitter.com—from the investors and shareholders.[26] Williams fired Glass, who was silent about his part in Twitter's startup until 2011.[27] Twitter spun off into its own company in April 2007.[28] Williams provided insight into the ambiguity that defined this early period in a 2013 interview:

A blueprint sketch, c. 2006, by Jack Dorsey, envisioning an SMS-based social network.

> With Twitter, it wasn't clear what it was. They called it a social network, they called it microblogging, but it was hard to define, because it didn't replace anything. There was this path of discovery with something like that, where over time you figure out what it is. Twitter actually changed from what we thought it was in the beginning, which we described as status updates and a social utility. It is that, in part, but the insight we eventually came to was Twitter was really more of an information network than it is a social network.[29]

The tipping point for Twitter's popularity was the 2007 South by Southwest Interactive (SXSWi) conference. During the event, Twitter usage increased from 20,000 tweets per day to 60,000.[30][31] "The Twitter people cleverly placed two 60-inch plasma screens in the conference hallways, exclusively streaming Twitter messages," remarked *Newsweek'*s Steven Levy. "Hundreds of conference-goers kept tabs on each other via constant twitters. Panelists and speakers mentioned the service, and the bloggers in attendance touted it."[32]

Reaction at the conference was highly positive. Blogger Scott Beale said that Twitter was "absolutely ruling" SXSWi. Social software researcher danah boyd said Twitter was "owning" the conference.[33] Twitter staff received the festival's Web Award prize with the remark "we'd like to thank you in 140 characters or less. And we just did!"[34] The first unassisted off-Earth Twitter message was posted from the International Space Station by NASA astronaut T. J. Creamer on January 22, 2010.[35] By late November 2010, an average of a dozen updates per day were posted on the astronauts' communal account, @NASA_Astronauts. NASA has also hosted over 25 "tweetups", events that provide guests with VIP access to NASA facilities and speakers with the goal of leveraging participants' social networks to further the outreach goals of NASA. In August 2010, the company appointed Adam Bain from News Corp.'s Fox Audience Network as president of revenue.[36]

Growth

The company experienced rapid initial growth. It had 400,000 tweets posted per quarter in 2007. This grew to 100 million tweets posted per quarter in 2008. In February 2010, Twitter users were sending 50 million tweets per day.[37] By March 2010, the company recorded over 70,000 registered applications.[38] As of June 2010, about 65 million tweets were posted each day, equaling about 750 tweets sent each second, according to Twitter.[39] As of March 2011, that was about 140 million tweets posted daily.[40] As noted on Compete.com, Twitter moved up to the third-highest-ranking social networking site in January 2009 from its previous rank of twenty-second.[41]

Twitter's usage spikes during prominent events. For example, a record was set during the 2010 FIFA World Cup when fans wrote 2,940 tweets per second in the thirty-second period after Japan scored against Cameroon on June 14. The record was broken again when 3,085 tweets per second were posted after the Los Angeles Lakers' victory in the 2010 NBA Finals on June 17,[42] and then again at the close of Japan's victory over Denmark in the World Cup when users published 3,283 tweets per second.[43] The record was set again during the 2011 FIFA Women's World Cup Final between Japan and the United States, when 7,196 tweets per second were published.[44] When American singer Michael Jackson died on June 25, 2009, Twitter servers crashed after users were updating their status to include the words "Michael Jackson" at a rate of 100,000 tweets per hour.[45] The current record as of August 3, 2013 was set in Japan, with 143,199 tweets per second during a television screening of the movie *Castle in the Sky*[46] (beating the previous record of 33,388, also set by Japan for the television screening of the same movie).[47]

Jack Dorsey, co-founder and CEO of Twitter, in 2009.

Twitter acquired application developer Atebits on April 11, 2010. Atebits had developed the Apple Design Award-winning Twitter client Tweetie for the Mac and iPhone. The application, now called "Twitter" and distributed free of charge, is the official Twitter client for the iPhone, iPad and Mac.[48]

From September through October 2010, the company began rolling out "New Twitter", an entirely revamped edition of twitter.com. Changes included the ability to see pictures and videos without leaving Twitter itself by clicking on individual tweets which contain links to images and clips from a variety of supported websites including YouTube and Flickr, and a complete overhaul of the interface, which shifted links such as '@mentions' and 'Retweets' above the Twitter stream, while 'Messages' and 'Log Out' became accessible via a black bar at the very top of twitter.com. As of November 1, 2010, the company confirmed that the "New Twitter experience" had been rolled out to all users.

2011–2014

On April 5, 2011, Twitter tested a new homepage and phased out the "Old Twitter".[49] However, a glitch came about after the page was launched, so the previous "retro" homepage was still in use until the issues were resolved; the new homepage was reintroduced on April 20.[50][51] On December 8, 2011, Twitter overhauled its website once more to feature the "Fly" design, which the service says is easier for new users to follow and promotes advertising. In addition to the *Home* tab, the *Connect* and *Discover* tabs were introduced along with a redesigned profile and timeline of Tweets. The site's layout has been compared to that of Facebook.[52][53] On February 21, 2012, it was announced that Twitter and Yandex agreed to a partnership. Yandex, a Russian search engine, finds value within the partnership due to Twitter's real time news feeds. Twitter's director of business development explained that it is important to have Twitter content where Twitter users go.[54] On March 21, 2012, Twitter celebrated its sixth birthday while also announcing that it has 140 million users and sees 340 million tweets per day. The number of users is up 40% from their September 2011 number, which was said to have been at 100 million at the time.[55]

In April 2012, Twitter announced that it was opening an office in Detroit, with the aim of working with automotive brands and advertising agencies.[56] Twitter also expanded its office in Dublin.[57] On June 5, 2012, a modified logo was unveiled through the company blog, removing the text to showcase the slightly redesigned bird as the sole symbol of Twitter.[58][59] On October 5, 2012, Twitter acquired a video clip company called Vine that launched in January 2013.[60][61] Twitter released Vine as a standalone app that allows users to create and share six-second looping video clips on January 24, 2013. Vine videos shared on Twitter are visible directly

in users' Twitter feeds.[62] Due to an influx of inappropriate content, it is now rated 17+ in Apple's app store.[63] On December 18, 2012, Twitter announced it had surpassed 200 million monthly active users. Twitter hit 100 million monthly active users in September 2011.[64]

On January 28, 2013, Twitter acquired Crashlytics in order to build out its mobile developer products.[65]

On April 18, 2013, Twitter launched a music app called Twitter Music for the iPhone.[66] On August 28, 2013, Twitter acquired Trendrr,[67] followed by the acquisition of MoPub on September 9, 2013.[68] As of September 2013, the company's data showed that 200 million users send over 400 million tweets daily, with nearly 60% of tweets sent from mobile devices.[69] On June 4, 2014, Twitter announced that it will acquire Namo Media, a technology firm specializing in "native advertising" for mobile devices.[70] On June 19, 2014, Twitter announced that it has reached an undisclosed deal to buy SnappyTV, a service that helps edit and share video from television broadcasts.[71][72] The company was helping broadcasters and rights holders to share video content both organically across social and via Twitter's Amplify program.[73] In July 2014, Twitter announced that it intends to buy a young company called CardSpring for an undisclosed sum. CardSpring enables retailers to offer online shoppers coupons that they can automatically sync to their credit cards in order to receive discounts when they shop in physical stores.[74] On July 31, 2014, Twitter announced that it has acquired a small password-security startup called Mitro.[75] On October 29, 2014, Twitter announced a new partnership with IBM. The partnership is intended to help businesses use Twitter data to understand their customers, businesses and other trends.[76]

2015 and slow growth

On February 11, 2015, Twitter announced that it had acquired Niche, an ad network for social media stars, founded by Rob Fishman and Darren Lachtman.[77] The acquisition price was reportedly $50 million.[78] On March 13, 2015, Twitter announced its acquisition of Periscope, an app which allows live streaming of video.[79] In April 2015, the Twitter.com desktop homepage changed.[80] However, a glitch came about after the page was launched, so the previous "retro" homepage was still in use until the issues were resolved; the new homepage was reintroduced on April 20. Twitter announced that it has acquired TellApart, a commerce ads tech firm, with $532 million stock.[81][82] Later in the year it became apparent that growth had slowed, according to Fortune,[83] Business Insider,[84] Marketing Land[85] and other news websites including Quartz (in 2016).[86] In June 2016, Twitter acquired an artificial intelligence startup called Magic Pony for $150 million.[87][88]

Initial public offering (IPO)

On September 12, 2013, Twitter announced that it had filed papers with the U.S. Securities and Exchange Commission ahead of a planned stock market listing.[89] It revealed its prospectus in an 800-page filing.[90] Twitter planned to raise US$1 billion as the basis for its stock market debut.[91] The IPO filing states that "200,000,000+ monthly active users" access Twitter and "500,000,000+ tweets per day" are posted.[29][92] In an October 15, 2013 amendment to their SEC S-1 filing,[93] Twitter declared that they would list on the New York Stock Exchange (NYSE), quashing speculation that their stock would trade on the NASDAQ exchange. This decision was widely viewed to be a reaction to the botched initial public offering of Facebook.[94] On November 6, 2013, 70 million shares[95] were priced at US$26 and issued by lead underwriter Goldman Sachs.[96]

On November 7, 2013, the first day of trading on the NYSE, Twitter shares opened at $26.00 and closed at US$44.90, giving the company a valuation of around US$31 billion.[97] The paperwork from November 7 shows that among the founders, Williams received a sum of US$2.56 billion and Dorsey received US$1.05 billion, while Costolo's payment was US$345 million.[98] On February 5, 2014, Twitter published its first

results as a public company, showing a net loss of $511 million in the fourth quarter of 2013.[99] On January 5, 2016, CEO Jack Dorsey commented on a report that Twitter planned to expand its character limit to 10,000 (private messages already had the longer limit as of July), requiring users to click to see anything beyond 140 characters. He said while Twitter would "never lose that feeling" of speed, users could do more with the text.[100]

In September 2016, Twitter shares rose 20% after a report that it had received takeover approaches.[101] Potential buyers were Alphabet (parent company of Google),[101] Microsoft,[102][103][104] Salesforce.com,[101][105] Verizon,[105] and The Walt Disney Company.[106][107] Twitter's board of directors were open to a deal, which could have come by the end of 2016.[101][108] However, no deal was made, with reports in October stating that all the potential buyers dropped out partly due to concerns over abuse and harassment on the service.[109][110][111] In June of 2017, Twitter revamped its dashboard to improve the new user experience.[112][113]
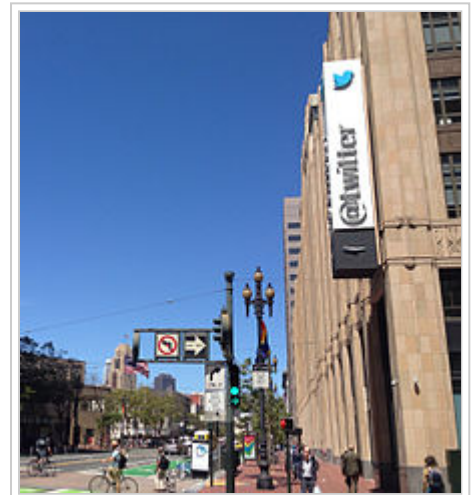
Twitter's San Francisco, California, headquarters, as seen from a corner on Market Street.

Leadership

As chief executive officer, Dorsey saw the startup through two rounds of capital funding by the venture capitalists who backed the company.[114] On October 16, 2008,[115] Williams took over the role of CEO, and Dorsey became chairman of the board.[116] On October 4, 2010, Williams announced that he was stepping down as CEO. Dick Costolo, formerly Twitter's chief operating officer, became CEO. On October 4, 2010, Williams made an announcement saying that he will stay with the company and "be completely focused on product strategy".[117][118]

According to *The New York Times*, "Mr. Dorsey and Mr. Costolo forged a close relationship" when Williams was away.[119] According to *PC Magazine*, Williams was "no longer involved in the day-to-day goings on at the company". He was focused on developing a new startup, and became a member of Twitter's board of directors, and promised to "help in any way I can". In 2011, Stone was still with Twitter but was working with AOL as an "advisor on volunteer efforts and philanthropy".[120] In January 2014 Stone announced the release of Jelly, a 'social Q&A network for mobile'.[121] Dorsey rejoined Twitter in March 2011, as executive chairman focusing on product development. At that time he split his schedule with Square (where he is CEO), whose offices are within walking distance of Twitter's in San Francisco.[119]

In September 2011, board members and investors Fred Wilson and Bijan Sabet resigned from Twitter's Board of Directors.[122] In October 2012, Twitter announced it had hired former Google executive Matt Derella to become their new director of business agency development.[123] Twitter named former Goldman Sachs executive Anthony Noto as the company's CFO in July 2014, with an "annual salary of $250,000 and one-time restricted stock options of 1.5 million shares ... valued at $61.5 million".[124] On June 10, 2015, Twitter announced its CEO Dick Costolo would resign on July 1, 2015.[125] Noto was said to be considered a potential replacement for outgoing CEO Costolo.[126] On October 14, 2015, former Google chief business officer Omid Kordestani became executive chairman, replacing Dorsey who remains CEO.[127] On January 26, 2016, Leslie Berland, former executive vice president of global advertising, marketing, and digital partnerships at American Express, was named chief marketing officer.[128] In November 2016, COO Adam Bain announced his resignation and CFO Anthony Noto took over Bain's role.[129][130] A month later, on December 20, 2016, CTO Adam Messinger announced that he too was leaving.[131][132]

Logo

Twitter has become internationally identifiable by its signature bird logo. The original logo was in use from its launch in March 2006 until September 2010. A slightly modified version succeeded the first style when the website underwent its first redesign.

On February 27, 2012, a tweet from an employee that works on the company's platform and API discussed the evolution of the "Larry the Bird" logo with Twitter's creative director and it was revealed that it was named after Larry Bird of the NBA's Boston Celtics fame. This detail had been confirmed when the Boston Celtics' director of interactive media asked Twitter co-founder Biz Stone about it in August 2011.[133]

On June 5, 2012, Twitter unveiled its third logo redesign, replacing Larry the Bird with an updated icon simply named as the "Twitter Bird". As of this logo revision, the word "Twitter" and the lowercase letter "t" are no longer used, with the bird becoming the sole symbol for the company's branding.[134] According to Douglas Bowman, designer of Twitter, the new logo resembles a mountain bluebird.[135] Twitter explains on their website not to modify the logo (e.g. rotate the bird, change the logo's color, etc.).[136]

July 15, 2006 – September 14, 2010.

September 14, 2010 – June 5, 2012.

June 5, 2012 – present.

Features

Tweets

Tweets are publicly visible by default, but senders can restrict message delivery to just their followers. Users can tweet via the Twitter website, compatible external applications (such as for smartphones), or by Short Message Service (SMS) available in certain countries.[137] Users may subscribe to other users' tweets—this is known as "following" and subscribers are known as "followers"[138] or "tweeps", a portmanteau of Twitter and peeps.[139] Individual tweets can be forwarded by other users to their own feed, a process known as a "retweet". Users can also "like" (formerly "favorite") individual tweets.[140] Twitter allows users to update their profile via their mobile phone either by text messaging or by apps released for certain smartphones and tablets.[141] Twitter has been compared to a web-based Internet Relay Chat (IRC) client.[142] In a 2009 *Time* essay, technology author Steven Johnson described the basic mechanics of Twitter as "remarkably simple":[143]

The Twitter account page for Wikipedia, demonstrating the account-customized timeline view which shows tweets in reverse chronological order

> As a social network, Twitter revolves around the principle of followers. When you choose to follow another Twitter user, that user's tweets appear in reverse chronological order on your main Twitter page. If you follow 20 people, you'll see a mix of tweets scrolling down the page: breakfast-cereal updates, interesting new links, music recommendations, even musings on the future of education.

According to research published in April 2014, around 44 percent of user accounts have never tweeted.[144]

The first tweet was posted by Jack Dorsey (creator) at 12:50 PM PST on March 21, 2006 and read "just setting up my twittr".[145]

On October 21, 2009, the first tweet was sent from space. US astronauts Nicola Stott and Jeff Williams took part in a live 'tweetup' from the International Space Station with around 35 members of the public at NASA Headquarters, Washington, DC, USA.[146]

Content

San Antonio-based market-research firm Pear Analytics analyzed 2,000 tweets (originating from the United States and in English) over a two-week period in August 2009 from 11:00 am to 5:00 pm (CST) and separated them into six categories:[147]

- Pointless babble – 40%
- Conversational – 38%
- Pass-along value – 9%
- Self-promotion – 6%
- Spam – 4%
- News – 4%

Despite Jack Dorsey's own open contention that a message on Twitter is "a short burst of inconsequential information", social networking researcher danah boyd responded to the Pear Analytics survey by arguing that what the Pear researchers labelled "pointless babble" is better characterized as "social grooming" and/or "peripheral awareness" (which she justifies as persons "want[ing] to know what the people around them are thinking and doing and feeling, even when co-presence isn't viable").[148] Similarly, a survey of Twitter users found that a more specific social role of passing along messages that include a hyperlink is an expectation of reciprocal linking by followers.[149]
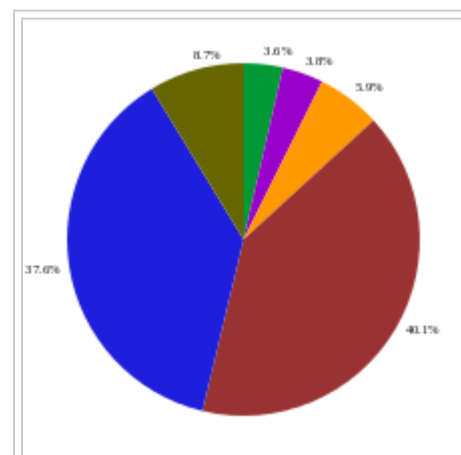
Content of tweets according to Pear Analytics

- News (3.6%)
- Spam (3.8%)
- Self-promotion (5.9%)
- Pointless babble (40.1%)
- Conversational (37.6%)
- Pass-along value (8.7%)

Format

Users can group posts together by topic or type by use of hashtags – words or phrases prefixed with a "#" sign. Similarly, the "@" sign followed by a username is used for mentioning or replying to other users.[150] To repost a message from another Twitter user and share it with one's own followers, a user can click the retweet button within the Tweet.

In late 2009, the "Twitter Lists" feature was added, making it possible for users to follow ad hoc lists of authors instead of individual authors.[138][151]

Through SMS, users can communicate with Twitter through five gateway numbers: short codes for the United States, Canada, India, New Zealand, and an Isle of Man-based number for international use. There is also a short code in the United Kingdom which is only accessible to those on the Vodafone, O2[152] and Orange[153] networks. In India, since Twitter only supports tweets from Bharti Airtel,[154] an alternative platform called smsTweet[155] was set up by a user to work on all networks.[156] A similar platform called GladlyCast exists for mobile phone users in Singapore and Malaysia.[157]

The tweets were set to a largely constrictive 140-character limit for compatibility with SMS messaging, introducing the shorthand notation and slang commonly used in SMS messages. The 140-character limit also increased the usage of URL shortening services such as bit.ly, goo.gl, and tr.im, and content-hosting services,

such as Twitpic, memozu.com and NotePub to accommodate multimedia content and text longer than 140 characters. Since June 2011, Twitter has used its own t.co domain for automatic shortening of all URLs posted on its website, making other link shorteners superfluous for staying within the 140 character limit.[158][159]

On May 24, 2016, Twitter announced that media such as photos and videos, and the person's handle, would not count against the 140 character limit. A user photo post used to count for about 24 characters.[160] Attachments and links will also no longer be part of the character limit.[161]

On July 17, 2016, Twitter launched a new way for advertisers to target users that have tweeted with a certain emoji or engaged with tweets with a certain emoji.[162]

Trending topics

A word, phrase or topic that is mentioned at a greater rate than others is said to be a "trending topic". Trending topics become popular either through a concerted effort by users, or because of an event that prompts people to talk about a specific topic.[163] These topics help Twitter and their users to understand what is happening in the world and what people's opinions are about it.[164]

Countries and cities with local *trending topics* in Twitter.

Trending topics are sometimes the result of concerted efforts and manipulations by preteen and teenaged fans of certain celebrities or cultural phenomena, particularly musicians like Lady Gaga (known as Little Monsters), Justin Bieber (Beliebers), Rihanna (Rih Navy) and One Direction (Directioners), and novel series *Twilight* (Twihards) and *Harry Potter* (Potterheads). Twitter has altered the trend algorithm in the past to prevent manipulation of this type, with limited success.[165]

The Twitter web interface displays a list of trending topics on a sidebar on the home page, along with sponsored content (see image).

Twitter often censors trending hashtags that are claimed to be abusive or offensive. Twitter censored the #Thatsafrican[166] and #thingsdarkiessay hashtags after users complained that they found the hashtags offensive.[167] There are allegations that Twitter removed #NaMOinHyd from the trending list and added an Indian National Congress-sponsored hashtag.[168]

Adding and following content

There are numerous tools for adding content, monitoring content and conversations including Telly (video sharing, old name is Twitvid),[169] TweetDeck, Salesforce.com, HootSuite, and Twitterfeed. As of 2009, fewer than half of tweets posted were posted using the web user interface with most users using third-party applications (based on an analysis of 500 million tweets by Sysomos).[170]

Verified accounts

A verified Twitter account formally validates the identity of the person or company that owns the account—the aim of the "verified" status is to prove that a real-world person or company is not being impersonated, through the placement of a small blue checkmark by the top-right corner of a user's page, or next to the username in the platform's Search function.[171] Twitter is responsible for assigning the blue checkmark, and it is frequently applied to the accounts of notable people in politics, music, movies, business, fashion, government, sports, media, and journalism.[172]

The owners of verified accounts can also access additional features that are not available to standard Twitter-account holders.[173] These features include:

- The ability to choose how their notifications and mentions are presented. Since verified accounts typically receive a lot of followers, account holders can filter these notices based on whether or not they are from verified accounts.[174]
- The ability to view information about their followers and their involvement on Twitter.
- The ability to receive direct messages from all followers or only selected followers.

Verified status does not imply that Twitter continuously checks whether such accounts have been hacked. The account of Tesla Motors, for example, was impersonated briefly in 2015.[175] Some users have tried to impersonate verified accounts without hacking them by placing the checkmark in their background images. Twitter referred to this as a breach of their rules and introduced a design update to make this more difficult.[176] In July 2016, Twitter began allowing anyone to apply for a verified account.[177]

The official Twitter profile of Twitter, Inc. The blue check mark right of the profile name confirms that it is a verified account.

Mobile

Twitter has mobile apps for iPhone, iPad, Android, Windows 10, Windows Phone, BlackBerry, and Nokia S40.[178] Users can also tweet by sending SMS.[179] In April 2017, Twitter introduced *Twitter Lite*, a progressive web app designed for regions with unreliable and slow Internet connections, with a size of less than one megabyte, designed for devices with limited storage capacity.[180][181]

This has been released in countries with slow internet connection such as the Philippines.[182]

Third-party applications

For many years, Twitter has limited the use of third party applications accessing the service by implementing a 100,000 user limit per application.[183]

The mobile version of Twitter, mobile.twitter.com

Authentication

Since August 31, 2010, third-party Twitter applications have been required to use OAuth, an authentication method that does not require users to enter their password into the authenticating application. This was done to increase security and improve the user experience.[184]

Related headlines featur e

This feature adds websites to the bottom of a tweet's permalink page. If a website embedded a tweet onto one of their stories, the tweet will show the websites that mentioned the tweet. This feature was added onto Twitter so if the viewer doesn't understand what the tweet means, they can click on the sites to read more about what the person is talking about.[185]

Polls

On October 21, 2015, Twitter began to roll out the ability to attach poll questions to tweets. Polls are open for up to 7 days, and voters are not personally identified.[186]

Streaming video

In 2016, Twitter began to place a larger focus on live streaming video programming, hosting various events including streams of the Republican and Democratic conventions during the U.S. presidential campaign as part of a partnership with CBS News,[187] Dreamhack and ESL eSports events,[188] and winning a bid for non-exclusive streaming rights to ten NFL *Thursday Night Football* games in the 2016 season.[189][188]

During an event in New York in May 2017, Twitter announced that it planned to construct a 24-hour streaming video channel hosted within the service, featuring content from various partners.[190][188] CEO Jack Dorsey stated that the digital video strategy was part of a goal for Twitter to be "the first place that anyone hears of anything going on that matters to them"; as of the first quarter of 2017, Twitter had over 200 content partners, who streamed over 800 hours of video over 450 events.[191]

Twitter announced a number of new and expanded partnerships for its streaming video services at the event, including Bloomberg, BuzzFeed, Cheddar (*Opening Bell* and *Closing Bell* shows; the latter was introduced in October 2016) IMG Fashion (coverage of fashion events), Live Nation Entertainment (streaming concert events), Major League Baseball (weekly online game stream, plus a weekly program with live look-ins and coverage of trending stories), MTV and BET (red carpet coverage for their MTV Video Music Awards, MTV Movie & TV Awards, and BET Awards), the NFL (streaming news and pre-game shows),[192] the PGA Tour (*PGA Tour Live* coverage of early tournament rounds preceding television coverage),[193] *The Players' Tribune*, Ben Silverman and Howard T. Owens' Propagate (daily entertainment show *#WhatsHappening*), *The Verge* (weekly technology show *Circuit Breaker: The Verge's Gadget Show*), Stadium (a new digital sports network being formed by Silver Chalice and Sinclair Broadcast Group)[194][195][196] and the WNBA (weekly game).[191]

Usage

Twitter is ranked the eleventh most visited website by Alexa's web traffic analysis.[197] Daily user estimates vary as the company does not publish statistics on active accounts. A February 2009 Compete.com blog entry ranked Twitter as the third most used social network based on their count of 6 million unique monthly visitors and 55 million monthly visits.[41] In March 2009, a Nielsen.com blog ranked Twitter as the fastest-growing website in the Member Communities category for February 2009. Twitter had annual growth of 1,382 percent, increasing from 475,000 unique visitors in February 2008 to 7 million in February 2009. Twitter's annual growth rate decreased from 7.8 percent in 2015 to 3.4 percent in 2017.[198] An April 2017 statista.com blog entry ranked Twitter as the tenth most used social network based on their count of 319 million monthly visitors.[199]In 2009, Twitter had a monthly user retention rate of forty percent.[200]

Demographics

In 2009, Twitter was mainly used by older adults who might not have used other social sites before Twitter, said Jeremiah Owyang, an industry analyst studying social media. "Adults are just catching up to what teens have been doing for years," he said.[203] According to comScore only eleven percent of Twitter's users are aged twelve to seventeen.[203] comScore attributed this to Twitter's "early

Twitter.com Top5 Global Markets by Reach (%)[201][202]		
Country		Percent
Indonesia	Jun 2010 🟥	20.8%
	Dec 2010 🟥	19.0%
Brazil	Jun 🟨	20.5%

adopter period" when the social network first gained popularity in business settings and news outlets attracting primarily older users. However, comScore also stated in 2009 that Twitter had begun to "filter more into the mainstream", and "along with it came a culture of celebrity as Shaq, Britney Spears and Ashton Kutcher joined the ranks of the Twitterati".[204]

According to a study by Sysomos in June 2009, women make up a slightly larger Twitter demographic than men—fifty-three percent over forty-seven percent. It also stated that five percent of users accounted for seventy-five percent of all activity, and that New York City has more Twitter users than other cities.[205]

	2010 Dec	🟨	21.8%
Venezuela	2010 Jun	🟩	19.0%
	2010 Dec	🟩	21.1%
Netherlands	2010 Jun	🟧	17.7%
	2010 Dec	🟧	22.3%
Japan	2010 Jun	🟦	16.8%
	2010 Dec	🟦	20.0%

Note: Visitor age 15+, home and work locations. Excludes visitation from public computers such as Internet cafes or access from mobile phones or PDAs.

According to Quancast, twenty-seven million people in the US used Twitter as of September 3, 2009. Sixty-three percent of Twitter users are under thirty-five years old; sixty percent of Twitter users are Caucasian, but a higher than average (compared to other Internet properties) are African American/black (sixteen percent) and Hispanic (eleven percent); fifty-eight percent of Twitter users have a total household income of at least US$60,000.[206] The prevalence of African American Twitter usage and in many popular hashtags has been the subject of research studies.[207][208]

On September 7, 2011, Twitter announced that it has 100 million active users logging in at least once a month and 50 million active users every day.[209]

In an article published on January 6, 2012, Twitter was confirmed to be the biggest social media network in Japan, with Facebook following closely in second. comScore confirmed this, stating that Japan is the only country in the world where Twitter leads Facebook.[210]

On March 31, 2014, Twitter announced there were 255 million monthly active users (MAUs) and 198 million mobile MAUs.[211] In 2013, there were over 100 million users actively using Twitter daily and about 500 million Tweets every day,[212] with about 29% of users checking Twitter multiple times a day.[213]

In 2012, the country with the most active users on Twitter was the United States.[214]

Finances

Funding

Twitter raised over US$57 million from venture capitalist growth funding, although exact figures are not publicly disclosed. Twitter's first A round of funding was for an undisclosed amount that is rumored to have been between US$1 million and US$5 million.[215] Its second B round of funding in 2008 was for US$22 million[216] and its third C round of funding in 2009 was for US$35 million from Institutional Venture Partners and Benchmark Capital along with an undisclosed amount from other investors including Union Square Ventures, Spark Capital, and Insight Venture Partners.[215] Twitter is backed by Union Square Ventures, Digital Garage, Spark Capital, and Bezos Expeditions.[217]
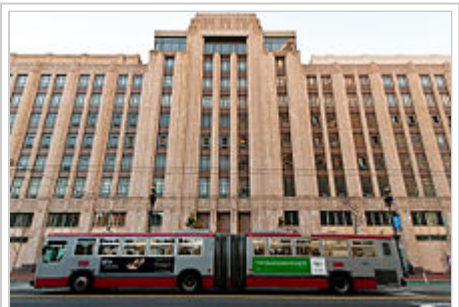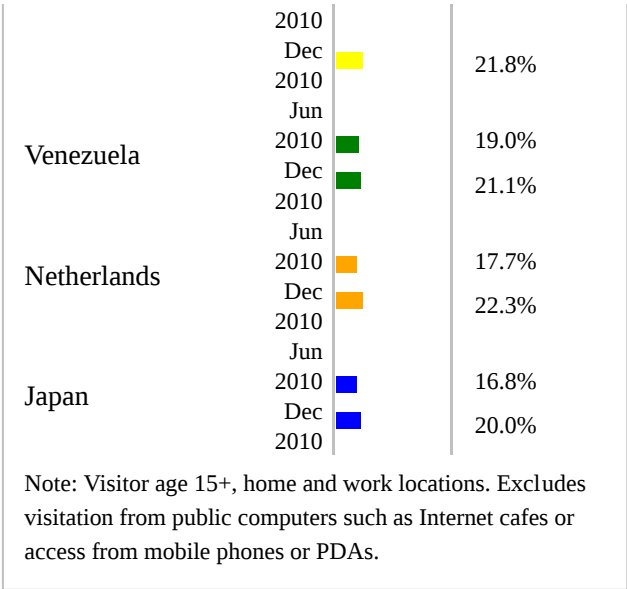
Twitter's San Francisco headquarters located at 1355 Market St.

In May 2008, *The Industry Standard* remarked that Twitter's long-term viability is limited by a lack of revenue.[218] Twitter board member Todd Chaffee forecast that the company could profit from e-commerce, noting that users may want to buy items directly from Twitter since it already provides product recommendations and promotions.[219]

By March 2009 communications consultant Bill Douglass predicted in an interview that Twitter would be worth $1 billion within six months,[220] which came to pass when the company closed a financing round valuing it at $1 billion in September of that year.[221]

The company raised US$200 million in new venture capital in December 2010, at a valuation of approximately US$3.7 billion.[222] In March 2011, 35,000 Twitter shares sold for US$34.50 each on Sharespost, an implied valuation of US$7.8 billion.[223] In August 2010 Twitter announced a "significant" investment led by Digital Sky Technologies that, at US$800 million, was reported to be the largest venture round in history.[224]

In December 2011, the Saudi prince Alwaleed bin Talal invested $300 million in Twitter. The company was valued at $8.4 billion at the time.[225]

Revenue sources

In July 2009, some of Twitter's revenue and user growth documents were published on *TechCrunch* after being illegally obtained by Hacker Croll. The documents projected 2009 revenues of US$400,000 in the third quarter and US$4 million in the fourth quarter along with 25 million users by the end of the year. The projections for the end of 2013 were US$1.54 billion in revenue, US$111 million in net earnings, and 1 billion users.[226] No information about how Twitter planned to achieve those numbers was published. In response, Twitter co-founder Biz Stone published a blog post suggesting the possibility of legal action against the hacker.[227]

On April 13, 2010, Twitter announced plans to offer paid advertising for companies that would be able to purchase "promoted tweets" to appear in selective search results on the Twitter website, similar to Google Adwords' advertising model. As of April 13, Twitter announced it had already signed up a number of companies wishing to advertise, including Sony Pictures, Red Bull, Best Buy, and Starbucks.[228][229]

The company generated US$45 million in annual revenue in 2010, after beginning sales midway through that year; the company operated at a loss through most of 2010.[222]

Users' photos can generate royalty-free revenue for Twitter, and an agreement with World Entertainment News Network (WENN) was announced in May 2011.[230] In June 2011, Twitter announced that it would offer small businesses a self-service advertising system.[231] Twitter generated US$139.5 million in advertising sales during 2011.

The self-service advertising platform was launched in March 2012 to American Express card members and merchants in the U.S. on an invite-only basis. Twitter later reported that numerous small businesses and people who used the self-service tool provided feedback that indicated they were impressed by the feature.[232] To continue their advertising campaign, Twitter announced on March 20, 2012, that promoted tweets would be introduced to mobile devices.[233] In April 2013, Twitter announced that its Twitter Ads self-service platform, consisting of promoted tweets and promoted accounts, was available to all U.S. users without an invite.[232]

Twitter's financial revenue statistics for the first quarter of 2014 was reported as US$250 million.[211]

On August 3, 2016, Twitter launched Instant Unlock Card, a new feature that encourages people to tweet about a brand in order to earn rewards and utilize the social media network's conversational ads. The format itself consists of images or videos with call-to-action buttons and a customizable hashtag.[234]

Technology

Implementation

Twitter places great reliance on open-source software.[235] The Twitter Web interface uses the Ruby on Rails framework,[236] deployed on a performance enhanced Ruby Enterprise Edition implementation of Ruby.[237]

In the early days of Twitter, tweets were stored in MySQL databases that were temporally sharded (large databases were split based on time of posting). After the huge volume of tweets coming in caused problems reading from and writing to these databases, the company decided that the system needed re-engineering.[238]

As of April 6, 2011, Twitter engineers confirmed they had switched away from their Ruby on Rails search stack, to a Java server they call Blender.[9]

From Spring 2007 to 2008 the messages were handled by a Ruby persistent queue server called Starling,[239] but since 2009 implementation has been gradually replaced with software written in Scala.[240] The switch from Ruby to Scala and the JVM has given Twitter a performance boost from 200–300 requests per second per host to around 10,000–20,000 requests per second per host. This boost was greater than the 10x improvement that Twitter's engineers envisioned when starting the switch. The continued development of Twitter has also involved a switch from monolithic development of a single app to an architecture where different services are built independently and joined through remote procedure calls.[238]

Individual tweets are registered under unique IDs using software called snowflake, and geolocation data is added using 'Rockdove'. The URL shortner *t.co* then checks for a spam link and shortens the URL. Next, the tweets are stored in a MySQL database using Gizzard, and the user receives acknowledgement that the tweets were sent. Tweets are then sent to search engines via the Firehose API. The process itself is managed by FlockDB and takes an average of 350 ms.[235]

On August 16, 2013, Twitter's Vice President of Platform Engineering Raffi Krikorian shared in a blog post that the company's infrastructure handled almost 143,000 tweets per second during that week, setting a new record. Krikorian explained that Twitter achieved this record by blending its homegrown and open source technologies.[238][241]

The service's application programming interface (API) allows other web services and applications to integrate with Twitter.[242]

Interface

On April 30, 2009, Twitter adjusted its web interface, adding a search bar and a sidebar of "trending topics"— the most common phrases appearing in messages. Biz Stone explains that all messages are instantly indexed and that "with this newly launched feature, Twitter has become something unexpectedly important – a discovery engine for finding out what is happening right now."[243]

In March 2012, Twitter became available in Arabic, Farsi, Hebrew and Urdu, the first right-to-left language versions of the site. About 13,000 volunteers helped with translating the menu options.[244] In August 2012, beta support for Basque, Czech and Greek was added, making the site available in 33 different languages.[245]

Outages

When Twitter experiences an outage, users once saw the "fail whale" error message image created by Yiying Lu,[246] illustrating eight orange birds using a net to hoist a whale from the ocean captioned "Too many tweets! Please wait a moment and try again."[247] In a November 2013 WIRED interview Chris Fry, VP of Engineering

at that time, noted that the company had taken the "fail whale" out of production as the platform was now more stable.

Twitter had approximately ninety-eight percent uptime in 2007 (or about six full days of downtime).[248] The downtime was particularly noticeable during events popular with the technology industry such as the 2008 Macworld Conference & Expo keynote address.[249][250]

The Twitter fail whale error message.
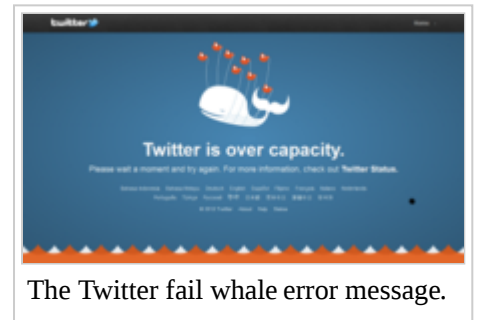
- May 2008: Twitter's new engineering team made architectural changes to deal with the scale of growth. Stability issues resulted in down time or temporary feature removal.
- August 2008: Twitter withdrew free SMS services from users in the United Kingdom[251] and for approximately five months instant messaging support via a XMPP bot was listed as being "temporarily unavailable".[252]
- October 10, 2008: Twitter's status blog announced that instant messaging (IM) service was no longer a temporary outage and needed to be revamped. It was announced that Twitter aims to return its IM service pending necessary major work.[253]
- June 12, 2009: In what was called a potential "Twitpocalypse", the unique numerical identifier associated with each tweet exceeded the limit of 32-bit signed integers (2,147,483,647 total messages).[254] While Twitter itself was not affected, some third-party clients could no longer access recent tweets. Patches were quickly released, though some iPhone applications had to wait for approval from the App Store.[255]
- June 25, 2009: Twitter ran slowly for some time after over 50,000 tweets on Michael Jackson's death were recorded in an hour.[256]
- August 6, 2009: Twitter and Facebook suffered from a denial-of-service attack, causing the Twitter website to go offline for several hours.[257] It was later confirmed that the attacks were directed at one pro-Georgian user around the anniversary of the 2008 South Ossetia War, rather than the sites themselves.[258]
- September 22, 2009: The identifier exceeded the limit for 32-bit *unsigned* integers (4,294,967,296 total messages) again breaking some third-party clients.[259]
- December 17, 2009: A hacking attack replaced the website's welcoming screen with an image of a green flag and the caption "This site has been hacked by Iranian Cyber Army" for nearly an hour. No connection between the hackers and Iran has been established.[260]
- June–July 2010: Twitter had a very high service rejection rate (10–20%) during the 2010 FIFA World Cup period, also, the response latency increased substantially.[261]
- November 2010: A number of accounts encountered a fault that resulted in them seeing the "fail whale" when they tried to log into their accounts. The accounts themselves were not locked out as account holders could still see their "mentions" page, and post from there, but the timeline and a number of other features were unavailable during this outage.
- June 21, 2012: The site was down for around one hour and forty minutes, with the cause being described by Twitter as a "cascading bug".[262]
- July 26, 2012: Twitter users in the UK could not post messages for part of the day in advance of the 2012 Summer Olympics.[263]
- March 2, 2014: During the 86th Academy Awards, Ellen DeGeneres posted a selfie of herself and other celebrities as seen on the telecast, which shut down Twitter for more than 20 minutes.[264]
- October 21, 2016: A denial-of-service attack affected several websites hosted by DNS provider Dyn, including Twitter. The attack lasted for approximately eleven hours.[265]

Privacy and security

Twitter messages are public, but users can also send private messages.[266] Information about who has chosen to follow an account and who a user has chosen to follow is also public, though accounts can be changed to "protected" which limits this information (and all tweets) to approved followers.[267] Twitter collects personally identifiable information about its users and shares it with third parties as specified in its privacy policy. The

service also reserves the right to sell this information as an asset if the company changes hands.[268] While Twitter displays no advertising, advertisers can target users based on their history of tweets and may quote tweets in ads[269] directed specifically to the user.

A security vulnerability was reported on April 7, 2007, by Nitesh Dhanjani and Rujith. Since Twitter used the phone number of the sender of an SMS message as authentication, malicious users could update someone else's status page by using SMS spoofing.[270] The vulnerability could be used if the spoofer knew the phone number registered to their victim's account. Within a few weeks of this discovery, Twitter introduced an optional personal identification number (PIN) that its users could use to authenticate their SMS-originating messages.[271]

On January 5, 2009, 33 high-profile Twitter accounts were compromised after a Twitter administrator's password was guessed by a dictionary attack.[272] Falsified tweets—including sexually explicit and drug-related messages—were sent from these accounts.[273]

Twitter launched the beta version of their "Verified Accounts" service on June 11, 2009, allowing famous or notable people to announce their Twitter account name. The home pages of these accounts display a badge indicating their status.[274]

In May 2010, a bug was discovered by İnci Sözlük that could allow a Twitter user to force others to follow them without the other users' consent or knowledge. For example, comedian Conan O'Brien's account, which had been set to follow only one person, was changed to receive nearly 200 malicious subscriptions.[275]

In response to Twitter's security breaches, the US Federal Trade Commission (FTC) brought charges against the service; the charges were settled on June 24, 2010. This was the first time the FTC had taken action against a social network for security lapses. The settlement requires Twitter to take a number of steps to secure users' private information, including maintenance of a "comprehensive information security program" to be independently audited biannually.[276]

On December 14, 2010, the United States Department of Justice issued a subpoena directing Twitter to provide information for accounts registered to or associated with WikiLeaks.[277] Twitter decided to notify its users and said in a statement, "... it's our policy to notify users about law enforcement and governmental requests for their information, unless we are prevented by law from doing so."[266]

A "MouseOver" exploit occurred on September 21, 2010, when an XSS Worm became active on Twitter. When a user held the mouse cursor over blacked-out parts of a tweet, the worm within the script would automatically open links and re-post itself on the reader's account.[278] The exploit was then re-used to post pop-up ads and links to pornographic sites. The origin of the worm is unclear, but Pearce H. Delphin (known on Twitter as @zzap) and a Scandinavian developer, Magnus Holm, both claim to have modified a related exploit found by another user (possibly Masato Kinugawa) who was using it to create coloured Tweets.[279] Kinugawa, a Japanese developer, reported the XSS vulnerability to Twitter on August 14. Later, when he found it was exploitable again, he created the account 'RainbowTwtr' and used it to post coloured messages.[279] Delphin says he exposed the security flaw by tweeting a JavaScript function for "onMouseOver",[279] and Holm later created and posted the XSS Worm that automatically re-tweeted itself.[278] Security firm Sophos reported that the virus was spread by people doing it for "fun and games", but noted it could be exploited by cybercriminals.[278] Twitter issued a statement on their status blog at 13:50 UTC that "The exploit is fully patched."[278][280] Twitter representative Carolyn Penner said no charges would be pressed.[281]

In May 2011, a claimant known as "CTB" (subsequently identified as Ryan Giggs) in the case of *CTB v Twitter Inc., Persons Unknown* took legal action at the High Court of Justice in London against Twitter,[282] requesting that Twitter release details of account holders. This followed gossip posted on Twitter about Giggs' private life, causing conflict relating to privacy injunctions.[283][284] Tony Wang, the head of Twitter in Europe, said that

people who do "bad things" on the site would need to defend themselves under the laws of their own jurisdiction in the event of controversy, and that the site would hand over information about users to the authorities when it was legally required to do so.[285] He also suggested that Twitter would accede to a UK court order to divulge names of users responsible for "illegal activity" on the site.[286]

On May 29, 2011, it was reported that South Tyneside council in England had successfully taken legal action against Twitter in a court in California, forcing Twitter to reveal the details of five user accounts. The council was trying to discover the identity of a blogger called "Mr Monkey"[287] who allegedly posted libellous statements about three local councillors.[288]

On January 23, 2012, it was reported that Twitter would be acquiring Dasient, a startup that offers malware protection for businesses. Twitter announced plans to use Dasient to help remove hateful advertisers on the website.[289]

On January 26, 2012, Twitter began offering a feature which would allow tweets to be removed selectively by country. Twitter cited France and Germany as examples, where pro-Nazi content is illegal. Deleted tweets used to be removed in all countries.[290][291] The first use of the policy was to block the account of German neo-Nazi group Besseres Hannover on October 18, 2012.[292] The policy was used again the following day to remove anti-Semitic French tweets with the hashtag #unbonjuif ("a good Jew").[293]

On February 20, 2012, a third-party public-key encryption app (written in Python and partially funded by a grant from the Shuttleworth Foundation[294]) for private messaging in Twitter, CrypTweet, was released.[295]

On May 17, 2012, Twitter announced it would implement the "Do Not Track" privacy option, a cookie-blocking feature found in Mozilla's Firefox browser. The "Do Not Track" feature works only on sites that have agreed to the service.[296]

In August 2012, it was reported that there is a market in fake Twitter followers that are used to increase politicians' and celebrities' apparent popularity.[297] The black market for the fake followers, known as "bots", has been linked to "nearly every politically linked account from the White House to Congress to the 2016 campaign trail". In June 2014, *POLITICO* analyzed Twitter handles with the highest rates of fake followers: US President Barack Obama with 46.8 percent, Democratic National Committee Chairwoman Debbie Wasserman Schultz with 35.1 percent, and Senator John McCain with 23.6 percent. The culprits working to generate the fake followers, or "bots", include campaign workers or friends of political candidates. One site offers 1,000 fake followers for $20. The people creating the "bots" are often from Eastern Europe and Asia.[298][299] In 2013, two Italian researchers calculated 10 percent of total accounts on Twitter are "bots" however, other estimates have placed the figure even higher.[300]

In April 2013, Twitter warned news organizations around the world to secure their Twitter accounts after a number of high-profile hacks of official accounts, including those of the Associated Press and The Guardian.[301] In May 2013, Twitter announced a two-factor login verification as an added measure against hacking.[302]

In August 2013, Twitter announced plans to introduce a "report abuse" button for all versions of the site. A petition for making the process of complaining about harassment easier had collected over 100,000 signatures. The move followed the posting of abusive tweets, including rape and death threats to historian Mary Beard, British feminist campaigner Caroline Criado-Perez and the British MP Stella Creasy.[303][304][305] Three men were arrested under the Protection from Harassment Act 1997 in connection with the incidents.[306]

In August 2014, Twitter said that in certain cases it would delete pictures of people who had died after requests from family members and "authorized individuals". The move followed controversy over the sharing of images on Twitter showing the killing of American journalist James Foley.[307][308]

In December 2014 Twitter announced new reporting and blocking policies;[309][310][311][312] a blocking mechanism devised by Randi Harper, a target of GamerGate, also received notable coverage.[313][314][315]

In February 2015, in an internal Twitter memo, CEO Dick Costolo said he was 'frankly ashamed' at how poorly Twitter handled trolling and abuse, and admitted Twitter had lost users as a result.[316]

Per an updated terms of service and privacy policy, Twitter users outside of the United States are legally served by the Ireland-based Twitter International Company instead of Twitter Inc., effective May 18, 2015. The change make these users subject to Irish and European data protection laws.[317]

Open source

Twitter has a history of both using and releasing open source software while overcoming technical challenges of their service.[318] A page in their developer documentation thanks dozens of open source projects which they have used, from revision control software like Git to programming languages such as Ruby and Scala.[319] Software released as open source by the company includes the Gizzard Scala framework for creating distributed datastores, the distributed graph database FlockDB, the Finagle library for building asynchronous RPC servers and clients, the TwUI user interface framework for iOS, and the Bower client-side package manager.[320] The popular Twitter Bootstrap web design library was also started at Twitter and is the second most popular repository on GitHub.[321]

Innovators patent agreement

On April 17, 2012, Twitter announced it would implement an "Innovators Patent Agreement" which would obligate Twitter to only use its patents for defensive purposes. The agreement went into effect in 2012.[322]

URL shortener

t.co is a URL shortening service created by Twitter.[158] It is only available for links posted to Twitter and not available for general use.[158] All links posted to Twitter use a t.co wrapper.[323] Twitter hopes that the service will be able to protect users from malicious sites,[158] and will use it to track clicks on links within tweets.[158][324]

Having used the services of third parties TinyURL and bit.ly,[325] Twitter began experimenting with its own URL shortening service for private messages in March 2010 using the twt.tl domain,[323] before it purchased the t.co domain. The service was tested on the main site using the accounts @TwitterAPI, @rsarver and @raffi.[323] On September 2, 2010, an email from Twitter to users said they would be expanding the roll-out of the service to users. On June 7, 2011, Twitter announced that it was rolling out the feature.[159]

Integrated photo-sharing service

On June 1, 2011, Twitter announced its own integrated photo-sharing service that enables users to upload a photo and attach it to a Tweet right from Twitter.com.[326] Users now also have the ability to add pictures to Twitter's search by adding hashtags to the tweet.[327] Twitter also plans to provide photo galleries designed to gather and syndicate all photos that a user has uploaded on Twitter and third-party services such as TwitPic.[327]

Twitterbots

A Twitterbot is a computer program that automatically posts on Twitter, they are programmed to tweet, retweet, and follow other accounts. According to a recent report, there were 20 million, fewer than 5%, of accounts on Twitter that were fraudulent in 2013. These fake accounts are often used to build large follower populations quickly for advertisers, while others respond to tweets that include a certain word or phrase.[328] Twitter's wide-open application programming interface and cloud servers make it possible for twitterbots' existence within the social networking site.[329]

Developers

Twitter is recognized for having one of the most open and powerful developer APIs of any major technology company.[330] Developer interest in Twitter began immediately following its launch, prompting the company to release the first version of its public API in September 2006.[331] The API quickly became iconic as a reference implementation for public REST APIs and is widely cited in programming tutorials.[332]

From 2006 until 2010, Twitter's developer platform experienced strong growth and a highly favorable reputation. Developers built upon the public API to create the first Twitter mobile phone clients as well as the first URL shortener. Between 2010 and 2012, however, Twitter made a number of decisions that were received unfavorably by the developer community.[333] In 2010, Twitter mandated that all developers adopt OAuth authentication with just 9 weeks of notice.[334] Later that year, Twitter launched its own URL shortener, in direct competition with some of its most well-known 3rd-party developers.[335] And in 2012, Twitter introduced strict usage limits for its API, "completely crippling" some developers.[336] While these moves successfully increased the stability and security of the service, they were broadly perceived as hostile to developers, causing them to lose trust in the platform.[337]

In an effort to reset its relationship with developers, Twitter acquired Crashlytics on January 28, 2013 for over USD $100 million, its largest acquisition to date.[338] Founded by Jeff Seibert and Wayne Chang, Crashlytics had rapidly gained popularity as a tool to help mobile developers identify and fix bugs in their apps.[339] Twitter committed to continue supporting and expanding the service.[340]

In October 2014, Twitter announced Fabric, a suite of mobile developer tools built around Crashlytics.[341] Fabric brought together Crashlytics, Answers (mobile app analytics), Beta (mobile app distribution), Digits (mobile app identity and authentication services), MoPub, and TwitterKit (login with Twitter and Tweet display functionality) into a single, modular SDK, allowing developers to pick and choose which features they needed while guaranteeing ease of installation and compatibility. By building Fabric on top of Crashlytics, Twitter was able to take advantage of Crashlytics' large adoption and device footprint to rapidly scale usage of MoPub and TwitterKit. Fabric reached active distribution across 1 billion mobile devices just 8 months after its launch.[342]

In early 2016, Twitter announced that Fabric was installed on more than 2 billion active devices and used by more than 225,000 developers. Fabric is recognized as the #1 most popular crash reporting and also the #1 mobile analytics solution among the top 200 iOS apps, beating out Google Analytics, Flurry, and MixPanel.[343][344]

Society

Issues and controversies

Twitter has been used for a variety of purposes in many industries and scenarios. For example, it has been used to organize protests, sometimes referred to as "Twitter Revolutions",[346] which include April 2009 Moldovan parliamentary election protests, 2009 student protests in Austria, 2009 Gaza–Israel conflict, 2009 Iran green revolution, 2009 Toronto G20, 2010 Bolivarian Revolution, 2010 Germany Stuttgart21, 2011 Egypt Revolution

, 2011 England riots, 2011 US Occupy movement, 2011 Anti-austerity movement in Spain, 2011 Greece Aganaktismenoi movements, 2011 Italy Rome demonstration, 2011 Wisconsin labor protests, 2012 Gaza–Israel conflict, 2013 protests in Brazil, 2013 Gezi Park protests.[347] A result of the Iranian election protests saw the government of Iran block Twitter in censorship.[348]

Dorsey (left) said after a Twitter Town Hall with Barack Obama held in July 2011, that Twitter received over 110,000 #AskObama tweets.[345]

In August 2016, Twitter stated that it had banned 235,000 accounts over the past six months, bringing the overall number of suspended accounts to 360,000 accounts in the past year, for violating policies banning use of the platform to promote extremism.[349]

In February 2011, Paul Payack and Edward Peters wrote on *The Hill* that Twitter, and other social media, are a "strategic weapon ... which have the apparent ability to re-align the social order in real time, with little or no advanced warning."[350]

During the Arab Spring in early 2011, the number of hashtags mentioning the uprisings in Tunisia and Egypt increased.[351] A study by the Dubai School of Government found that only 0.26% of the Egyptian population, 0.1% of the Tunisian population and 0.04% of the Syrian population are active on Twitter.[352]

The service is also used as a form of civil disobedience: in 2010, users expressed outrage over the Twitter Joke Trial by copying a controversial joke about bombing an airport and attaching the hashtag #IAmSpartacus, a reference to the *Spartacus film* and a sign of solidarity and support to a man controversially prosecuted after posting a tweet joking about bombing an airport if they cancelled his flight. #IAmSpartacus became the number one trending topic on Twitter worldwide.[353]

Another case of civil disobedience happened in the 2011 British privacy injunction debate, where several celebrities who had taken out anonymized injunctions were identified by thousands of users in protest to traditional journalism being censored.[354]

The Boston Police tweeted news of the arrest of Boston Marathon bombing suspect Dzhokhar Tsarnaev.[355]

Twitter has been used by Somalia's al-Shabaab rebels, who had their accounts suspended after they used the site to claim responsibility for an attack on the Westgate Shopping Mall in Nairobi in September 2013.[356][357]

In January 2016, Twitter was sued by the widow of a U.S. man killed in the Amman shooting attack, claiming that allowing the Islamic State of Iraq and the Levant (ISIL) to continually use the platform, including direct messages in particular,[358] constituted the provision of material support to a terrorist organization, which is illegal under U.S. federal law. Twitter disputed the claim, stating that "violent threats and the promotion of terrorism deserve no place on Twitter and, like other social networks, our rules make that clear."[359][360] The lawsuit was dismissed by the United States District Court for the Northern District of California, upholding the Section 230 safe harbor which dictates that the operators of an interactive computer service are not liable for the content published by its users.[360][361] The lawsuit was revised in August 2016, providing comparisons to other telecommunications devices.[358]

On May 31, 2016, Twitter suspended multiple parody accounts that satirized Russian politics, sparking protests and raising questions about where the company stands on freedom of speech.[362] Following public outcry, Twitter restored the accounts the next day without explaining why the accounts had been suspended.[363] The same day, Twitter, along with Facebook, Google, and Microsoft, jointly agreed to a European Union code of conduct obligating them to review "[the] majority of valid notifications for removal of illegal hate speech" posted on their services within 24 hours.[364]

In July 2016, Twitter removed the account of technology editor Milo Yiannopoulos of Breitbart News, citing racist[365] abuse against *Ghostbusters* actress Leslie Jones.[366] Yiannopoulos, however, felt he was banned for being a gay conservative.[367] This was followed in November 2016 by the suspension of high-profile "white supremacy movement" user account of the white supremacist[368] Richard B. Spencer, his National Policy Institute account and his account, RadixJournal.[366]

On December 10, 2016, white supremacist Richard B. Spencer's personal Twitter account was re-instated.[369]

Censorship

Twitter is banned completely in Iran, China and North Korea,[370] and has been intermittently blocked in numerous countries including Egypt, Iraq, Turkey and Venezuela on different bases.[371][372][373][374] In 2016, Twitter cooperated with the Israeli government to remove certain content originating outside Israel from tweets seen in Israel.[375]

Twitter Trust & Safety Council

On February 9, 2016, Twitter announced the creation of the "Twitter Trust & Safety Council".[376] The stated aim of this council is "...to ensure that people feel safe expressing themselves on Twitter". The 50 "Inaugural Members" of the council that were named in the announcement consisted almost entirely of persons or progressive organizations who have advocated the censorship of hate speech on the Internet.[377]

Trending topics

After claims in the media that the hashtags #wikileaks and #occupywallstreet were being censored because they did not show up on the site's list of trending topics, Twitter responded by stating that it does not censor hashtags unless they contain obscenities.[378][379][380]

In 2016, at the same time as Twitter executives paid to attend a political fundraiser by Hillary Clinton, the Twitter platform banned a pro-Bernie Sanders account that had started a hashtag critical of Clinton's fundraising from wealthy donors.[381]

Impact

Instant, short, and frequent communication

In May 2008, *The Wall Street Journal* wrote that social networking services such as Twitter "elicit mixed feelings in the technology-savvy people who have been their early adopters. Fans say they are a good way to keep in touch with busy friends. But some users are starting to feel 'too' connected, as they grapple with check-in messages at odd hours, higher cellphone bills and the need to tell acquaintances to stop announcing what they're having for dinner."[382] The following year, John C. Dvorak described Twitter as "the new CB radio".[383]

Emergency use

A practical use for Twitter's real-time functionality is as an effective *de facto* emergency communication system for breaking news. It was neither intended nor designed for high-performance communication, but the idea that it could be used for emergency communication was not lost on the creators, who knew that the service could have wide-reaching effects early on when the company used it to communicate during earthquakes.[384]

Another practical use that is being studied is Twitter's ability to track epidemics and how they spread.[385]

In addition, Twitter has acted as a sensor for automatic response to natural disasters such as bush fires.[386][387]

Education

Twitter has been adopted as a communication and learning tool in educational and research[388] settings mostly in colleges and universities.[389][390] It has been used as a backchannel to promote student interactions, especially in large-lecture courses.[391] Research has found that using Twitter in college courses helps students communicate with each other and faculty, promotes informal learning, allows shy students a forum for increased participation, increases student engagement, and improves overall course grades.[392][393][394]

Public figures

Tech writer Bruce Sterling commented in 2007 that using Twitter for "literate communication" is "about as likely as firing up a CB radio and hearing some guy recite the *Iliad*".[395] In September 2008, the journalist Clive Thompson mused in a *New York Times Magazine* editorial that the service had expanded narcissism into "a new, supermetabolic extreme—the ultimate expression of a generation of celebrity-addled youths who believe their every utterance is fascinating and ought to be shared with the world".[396] One of the earliest documented forms of celebrity-related Twitter-like disclosures dates from 1980, when real estate mogul William Desmond Ryan made round-the-clock press releases about his relationship with comedian Phyllis Diller, even revealing what she was making him for dinner on a nightly basis.[397] Conversely, *Vancouver Sun* columnist Steve Dotto opined that part of Twitter's appeal is the challenge of trying to publish such messages in tight constraints,[398] and Jonathan Zittrain, professor of Internet law at Harvard Law School, said that "the qualities that make Twitter seem inane and half-baked are what makes it so powerful."[399]

The novelist Rick Moody wrote a short story for Electric Literature called "Some Contemporary Characters," composed entirely of tweets.[400]

In 2009, Nielsen Online reported that Twitter had a user-retention rate of forty percent. Many people stop using the service after a month; therefore the site may potentially reach only about ten percent of all Internet users.[401] In 2009, Twitter won the "Breakout of the Year" Webby Award.[402][403] During a February 2009 discussion on National Public Radio's *Weekend Edition*, the journalist Daniel Schorr stated that Twitter accounts of events lacked rigorous fact-checking and other editorial improvements. In response, Andy Carvin gave Schorr two examples of breaking news stories that played out on Twitter and said users wanted first-hand accounts and sometimes debunked stories.[404] On November 29, 2009 Twitter was named the Word of the Year by the Global Language Monitor, declaring it "a new form of social interaction".[405] *Time* magazine acknowledged its growing level of influence in its 2010 Time 100; to determine the influence of people, it used a formula based on famous social networking sites, Twitter and Facebook. The list ranges from Barack Obama and Oprah Winfrey to Lady Gaga and Ashton Kutcher.[406][407] The U.S. government, seeing social media's role in the 2010 Arab Spring revolts, covertly developed a Cuban alternative to Twitter called ZunZuneo as part of a long-term strategy to "stir unrest". The service was active from 2010 to 2012.[408]

During the 2012 Summer Olympics opening ceremony, in which he appeared at the London Olympic Stadium in person,[409] Sir Tim Berners-Lee, the founder of the World Wide Web, tweeted "This is for everyone",[410] which was instantly spelled out in LCD lights attached to the chairs of the 80,000 people in the audience.[409]

World leaders

World leaders and their diplomats have taken note of Twitter's rapid expansion and have been increasingly utilizing Twitter diplomacy, the use of Twitter to engage with foreign publics and their own citizens. US Ambassador to Russia, Michael A. McFaul has been attributed as a pioneer of international Twitter diplomacy.

He used Twitter after becoming ambassador in 2011, posting in English and Russian.[411] On October 24, 2014, Queen Elizabeth II sent her first tweet to mark the opening of the London Science Museum's Information Age exhibition.[412] A 2013 study by website Twiplomacy found that 153 of the 193 countries represented at the United Nations had established government Twitter accounts.[413] The same study also found that those accounts amounted to 505 Twitter handles used by world leaders and their foreign ministers, with their tweets able to reach a combined audience of over 106 million followers.[413]

According to an analysis of accounts, the heads of state of 125 countries and 139 other leading politicians have Twitter accounts that have between them sent more than 350,000 tweets and have almost 52 million followers. However, only 30 of these do their own tweeting, more than 80 do not subscribe to other politicians and many do not follow any accounts.[414]

Religion

More than twenty Roman Catholic cardinals manage active Twitter accounts,[415] nine of whom were cardinal electors for the 2013 Papal conclave.[416] Pope Benedict XVI's Twitter account was set up in 2012. As of April 2016, his successor, Pope Francis, has 9.06 million followers of his Twitter account (@Pontifex).[417] In 2014, astrophysicist Neil DeGrasse Tyson caused a controversy among conservative Christians with a Christmas tweet celebrating the birth of Isaac Newton.[418]

Twitterbot effect

Twitterbots are capable of influencing public opinion about culture, products and political agendas by automatically generating mass amounts of tweets through imitating human communication.[419] The New York Times states, "They have sleep-wake cycles so their fakery is more convincing, making them less prone to repetitive patterns that flag them as mere programs."[420] The tweets generated vary anywhere from a simple automated response to content creation and information sharing, all of which depends on the intention of the person purchasing or creating the bot. The social implications these Twitterbots potentially have on human perception are sizeable according to a study published by the ScienceDirect Journal. Looking at the Computers as Social Actors (CASA) paradigm, the journal notes, "people exhibit remarkable social reactions to computers and other media, treating them as if they were real people or real places." The study concluded that Twitterbots were viewed as credible and competent in communication and interaction making them suitable for transmitting information in the social media sphere.[421] While the technological advances have enabled the ability of successful Human-Computer Interaction, the implications are questioned due to the appearance of both benign and malicious bots in the Twitter realm. Benign Twitterbots may generate creative content and relevant product updates whereas malicious bots can make unpopular people seem popular, push irrelevant products on users and spread misinformation, spam and/or slander.[422]

In addition to content generating bots, users can purchase followers, favorites, retweets and comments on various websites that cater to expanding a user's image through accumulation of followers. With more followers, users' profiles gain more attention, thus increasing their popularity.[423] Generating Web traffic is a valuable commodity for both individuals and businesses because it indicates notability.[424] With Twitterbots, users are able to create the illusion of "buzz" on their site by obtaining followers from services such as Swenzy and underground suppliers who operate bot farms or click farms.[419][424] The companies that facilitate this service create fake Twitter accounts that follow a number of people, some of these Twitter accounts may even post fake tweets to make it seem like they are real. This practice of obtaining mass amounts of twitterbots as followers is not permitted on Twitter.[425] The emphasis on followers and likes as a measure of social capital has urged people to extend their circle to weak and latent ties to promote the idea of popularity for celebrities,

politicians, musicians, public figures, and companies alike.[426] According to *The New York Times*, bots amass significant influence and have been noted to sway elections, influence the stock market, public appeal, and attack governments.[427]

GCHQ

According to documents leaked by Edward Snowden and published in July 2014, the United Kingdom's GCHQ has a tool named BIRDSONG for "automated posting of Twitter updates", and a tool named BIRDSTRIKE for "Twitter monitoring and profile collection".[428][429]

Television

Twitter is also increasingly used for making TV more interactive and social.[430] This effect is sometimes referred to as the second screen, "virtual watercooler" or social television—the practice has been called "chatterboxing".[431] Twitter has been successfully used to encourage people to watch live TV events, such as the Oscars, the Super Bowl[432] and the MTV Video Music Awards; however this strategy has proven less effective with regularly scheduled TV shows.[433] Such direct cross-promotions have been banned from French television due to regulations against secret advertising.[434]

In December 2012, Twitter and Nielsen entered a multi-year agreement to produce social TV ratings, which are expected to be commercially available for the fall 2013 season as the Nielsen Twitter TV Rating.[435][436] *Advertising Age* said Twitter had become the new *TV Guide*.[437] Then in February 2013, Twitter acquired Bluefin Labs for an estimated US$50 million to $100 million. Founded in 2008 at the MIT Media Lab, Bluefin is a data miner whose analysis tells which brands (e.g., TV shows and companies) are chatted about the most in social media.[435][436][438] MIT *Technology Review* said that Bluefin gives Twitter part of the US$72 billion television advertising market.[439]

In May 2013, it launched Twitter Amplify—an advertising product for media and consumer brands.[440] With Amplify, Twitter runs video highlights from major live broadcasts, with advertisers' names and messages playing before the clip.[441] In October 2013, Comcast announced that it had partnered with Twitter to implement its "See It" feature within the service, allowing posts promoting programs on selected NBCUniversal channels to contain direct links to TV Everywhere streaming to the program. On launch, the concept was limited to NBCUniversal channels and Xfinity cable television subscribers.[442]

In an attempt to compete with Twitter's leadership in TV, Facebook introduced a number of features in 2013 to drive conversation about TV including hashtags, verified profiles and embeddable posts. It also opened up new data visualization APIs for TV news and other media outlets, enabling them to search for a word and see a firehose of public posts that mention it as well as show how many people mentioned a word in both public and private posts during a set time frame, with a demographic breakdown of the age, gender, and location of these people.[443] In January 2014, Facebook announced a partnership with UK-based social TV analytics company SecondSync which saw the social network make its social TV available outside the company for the first time. Facebook struck the partnership to help marketers understand how people are using the social network to talk about topics such as TV.[444] However, Twitter responded by acquiring SecondSync and Parisian social TV firm Mesagraph three months later. These acquisitions, as well as a partnership with research company Kantar (which it had been working with to develop a suite of analytics tools for the British TV industry since August 2013) strengthened Twitter's dominance of the "second screen" – TV viewers using tablets and smartphones to share their TV experience on social media. With the additional analytic tools, Twitter was able to improve the firm's offering to advertisers, allowing them to, for instance, only promote a tweet onto the timelines of users who were watching a certain programme.[445]

By February 2014, all four major U.S. TV networks had signed up to the Amplify program, bringing a variety of premium TV content onto the social platform in the form of in-tweet real-time video clips.[446] In March 2014, ITV became the first major broadcaster in the UK to sign up to Twitter Amplify[447] and Twitter introduced one-tap video playback across its mobile apps to further enhance the consumer experience.[448]

In June 2014, Twitter acquired its Amplify partner in the U.S., SnappyT,.[449] In Europe, Twitter's Amplify partner is London-based Grabyo, which has also struck numerous deals with broadcasters and rights holders[73] to share video content across Facebook and Twitter.[450]

Statistics

Most popular accounts

As of June 8, 2017, the ten Twitter accounts with the most followers were:[451]

1. Katy Perry: 99,720,962
2. Justin Bieber: 96,314,286
3. Barack Obama: 90,262,348
4. Taylor Swift: 84,846,496
5. Rihanna: 73,803,664
6. Ellen DeGeneres: 69,644,515
7. YouTube: 68,610,512
8. Lady Gaga: 66,912,606
9. Justin Timberlake: 61,090,760
10. Twitter: 60,921,422

Oldest accounts

The oldest Twitter accounts are 14 accounts which became active on March 21, 2006, all belonging to Twitter employees at the time and including **@jack** (Jack Dorsey), **@biz** (Biz Stone), and **@noah** (Noah Glass).[452]

Record tweets

A selfie orchestrated by 86th Academy Awards host Ellen DeGeneres during the March 2, 2014 broadcast was at the time the most retweeted image ever.[264][453] DeGeneres said she wanted to homage Meryl Streep's record 17 Oscar nominations by setting a new record with her, and invited other Oscar celebrities to join them. The resulting photo of twelve celebrities broke the previous retweet record within forty minutes, and was retweeted over 1.8 million times in the first hour.[454][455][456] By the end of the ceremony it had been retweeted over 2 million times; less than 24 hours later, it had been retweeted over 2.8 million times.[453][454] As of 18 March 2014, it has been retweeted over 3.4 million times.[453] The group selfie effort was parodied by Lego, and Matt Groening with The Simpsons.[457][458] It beat the previous record, 778,801, which was held by Barack Obama, following his victory in the 2012 presidential election.[456][459][460] On May 9, 2017, Ellen's record was broken by Carter Wilkerson (@carterjwm) by collecting nearly 3.5 million retweets in a little over a month.[461]

According to the Guinness World Records, the fastest pace to a million followers was set by actor Robert Downey Jr. in 23 hours and 22 minutes in April 2014.[462] This record was later broken by Caitlyn Jenner, who joined the site on June 1, 2015 and amassed a million followers in just 4 hours and 3 minutes.

The most tweeted moment in the history of Twitter was during the airing of *Castle in the Sky* on August 2, 2013, when fans tweeted the word "balse" at the exact time that it played in the movie. There was a global peak of 143,199 tweets in one second, beating the previous record of 33,388.[463]

With over 41 million tweets,[464] the most discussed topic ever on Twitter was the "#ALDubEBTamangPanahon" of AlDub on October 24, 2015 during the sold out special concert presentation of the Kalyeserye segment of the noontime show *Eat Bulaga*[465] entitled *Eat Bulaga: Sa Tamang Panahon* held at the Philippine Arena, the world's largest indoor arena located in Bulacan, Philippines. The said event was attended by over 55,000 fans.

With over 35.6 million tweets, the most discussed sports game ever on Twitter was the 2014 FIFA World Cup semi-final between Brazil and Germany on July 8, 2014.[466]

On the day of the 2016 U.S. presidential election, Twitter proved to be the largest source of breaking news, with over 40 million tweets sent that day.[18]

See also

- Ambient awareness
- Comparison of microblogging services
- List of mergers and acquisitions by Twitter
- List of virtual communities with more than 100 million users
- Twitterature
- Twitter usage—How various people and organizations use Twitter
- Timeline of social media

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Further reading

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External links

- Official website (Mobile)