

# MILLISECONDS MATTER

Understanding The Bloomberg Breaking News Team



**Bloomberg**  
NEWS



**Carnegie Mellon University**

# EXECUTIVE SUMMARY

## Bloomberg and Carnegie Mellon University

In today's financial news world, the company that can provide the quickest, most accurate, and most insightful breaking news offers the most value to their client. Bloomberg News is collaborating with Ascend, a team of five Masters of Human-Computer Interaction students at Carnegie Mellon University, for an 8-month Capstone Project. The goal of the project is to create novel design solutions that ensure their editors and reporters are able to deliver breaking news in the best manner possible.

## Research Process

We began our design process by gaining an understanding of the various parties involved within Breaking News and their complex workflows through three research trips to the New York City newsroom and multiple remote interviews with international teams within various global newsrooms. We also conducted a competitive analysis and an extensive literature review.

## Key Insights

- Teams use many different tools which frequently change, leading to difficulty in maintaining tools and defining best practices.
- Many different tools are available to team members, and it is not always clear what tools exist. Additionally, it is not always clear what features are available in various tools.
- Various members of each team have multiples ways to accomplish the same task, making it difficult to develop tools that meet the needs of every team, domestically and internationally.
- Structured systems are not available, meaning teammates aren't always aware of what tasks are accomplished by others.

## Visioning and Next Steps

Using these insights, we were able to generate 20 potential ideas that will allow the breaking news teams to release financial news efficiently and accurately. We selected four promising ideas and expounded upon them to create scenarios that demonstrate the potential value of each idea. In the following months, we will further assess the ideas, select the most impactful and iterate to provide a well thought out solution.

# PROJECT BACKGROUND

*Bloomberg L.P. is a financial software, data, and media company headquartered in New York City and founded by Michael Bloomberg in 1981. Bloomberg's core product is the Bloomberg Professional service, a platform that provides financial news and data, enables financial asset trading, and allows subscribers to communicate with one another.*

## THE CLIENT

Our team focused on the financial news component of Bloomberg, otherwise known as Bloomberg News. The Bloomberg News team was created in 1990 to provide fast, accurate news to the financial community. At the time, the organization was 6 people, but as of early 2015, the organization has grown to over 2,400 news professionals in 73 countries producing over 5,000 stories a day. Bloomberg News strives to be the first to report news 24 hours a day, 365 days a year with complete context, perspective, and accuracy.

## PROBLEM SPACE

Within Bloomberg News, the Breaking News beat has an important and challenging role providing users with fast and accurate market-moving financial news. Breaking News coverage is split into three teams: The Speed Desk, Bloomberg First Word, and Social Media. All teams alongside an intricate automation system share duties monitoring press wires, market data, websites, Twitter, emails, other news organizations, TV/Radio stations, teleconferences, and web events to report breaking financial news quickly and accurately. Our team was brought on to evaluate existing tools used by Breaking News and to streamline their current news monitoring and publishing workflows.

## MISSION STATEMENT

To increase the efficiency and speed of Bloomberg's Breaking News coverage by evaluating the existing processes and reimagining the tools that will be used by the breaking news teams of the future.

*The View from Bloomberg's  
Building in New York City*



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*Bloomberg's Building in New York City is filled with fish tanks and unique art.*



# ABOUT BREAKING NEWS

*Within the Bloomberg News organization, the Breaking News Team's role is to be the first to identify potential market-moving news and report it to their global client base quickly and accurately at all hours of the day. The team releases news in both individual headlines and short bullet points of key information, designed to be consumed rapidly by traders who can then directly perform an action based upon that news.*

*The team is comprised of a global network of reporters and automation systems that continuously monitor press wires, market data, websites, social media, emails, other news organizations, TV/Radio stations, teleconferences, and web events.*

**Top To Bottom:** *The Breaking News team is separated by assets classes, News editors are masters of multi-tasking watching multiple sources at once, Although the number of monitors Bloomberg employees use at once varies - editors typically use four.*

# BLOOMBERG NEWS

Bloomberg News produces over 5,000 stories a day from more than 150 bureaus in 73 countries with more than 2400 news professionals globally. Bloomberg News content is syndicated to more than 1,000 media outlets across 60+ countries.



A Japanese News Editor's desk, monitoring seven screens at once, which are blurred for proprietary reasons.

## Breaking News

Bloomberg News is a large operation with many teams including Bloomberg View, Bloomberg Television, Bloomberg Businessweek, Bloomberg Sports, Bloomberg Radio, and Bloomberg Breaking News. For this project, we worked with Bloomberg Breaking News, the division that focuses on quickly delivering accurate, market-moving financial news and insights.

## BLOOMBERG PROFESSIONAL

Bloomberg Professional (the terminal) is a \$20,000+ annual subscription service that provides over 300,000 users with up-to-date financial data news, chat functionality, and the ability to buy and sell financial assets. Bloomberg's software system is often paired with a proprietary keyboard which is optimized for speed. Users rarely use a mouse and become experts at commands and keyboard shortcuts that allow them to navigate between functions. Terminal functions are individual applications that handle one feature, like opening up a chat window or viewing a company's stock. The terminal is also used internally by the Breaking News team to distribute news. Our team's primary constraint is to work within the confines of the terminal to deliver a solution that will improve the process of delivering news to Bloomberg's users.



The Bloomberg Terminal is the platform that editors use to publish headlines and fills, and clients use to read them.

## THE IMPORTANCE OF SPEED

The importance of speed and accuracy to Bloomberg's clients cannot be understated. Consumers of Bloomberg's Breaking News include sales and traders, government officials, consultants, financial analysts, and a myriad of other employees in the business world. While all users of the Bloomberg Terminal care about the accuracy of breaking news, a core group of Breaking News readers care about the milliseconds in which the news is delivered. Algorithmic traders, who create formulas that make trades automatically based on the news, make up a substantive portion of this group and illustrate the fact that within the Bloomberg Breaking News world, milliseconds matter. Milliseconds are the difference between making and losing millions of dollars in a day for Bloomberg Breaking News consumers.





Breaking news editors in New York City monitor four screens filled with potential news sources as well as printed documents that have a list of the earnings releases for the day.

## Within Breaking News

The Breaking News team is placed in a unique situation, where both accuracy and speed are of utmost importance. In order to handle this responsibility, the Breaking News organization is split into three teams.

### SPEED DESK

The Speed Desk focuses on writing quick headlines that are shorter than 64 characters. As a unit, they are generally the first team to send out a headline to inform clients of breaking news. Their main focus is speed—the faster a headline gets sent out, the better. The Speed Desk primarily monitors the wires and their email inboxes for headline-able press releases or news. They are generally the market moving unit on the Breaking News team and have a steady workflow during the day that picks up during the afternoon rush when earnings are released.

### BLOOMBERG FIRST WORD

Bloomberg First Word (BFW) is split into six teams that specialize on specific asset classes: Equities, Foreign Exchange Rates (FX), Oil, Commodities, and Rates & Credits. Each BFW team writes fills and occasionally headlines. Fills are insights in bullet point form that are added to certain headlines—essentially the body of the story. BFW teams write headlines when they notice that an appropriate one has not been released. BFW teams which focus on slower-moving asset classes, like Rates & Credits, send out both headlines and fills.







### SOCIAL MEDIA

The Social Media team is responsible for monitoring social networks for news stories, primarily Twitter and the Chinese social network Weibo, writing appropriate headlines and fills based on those sources. Additionally, they have the responsibility of relaying social media posts with unverified information, such as rumors, which have the potential to move markets.

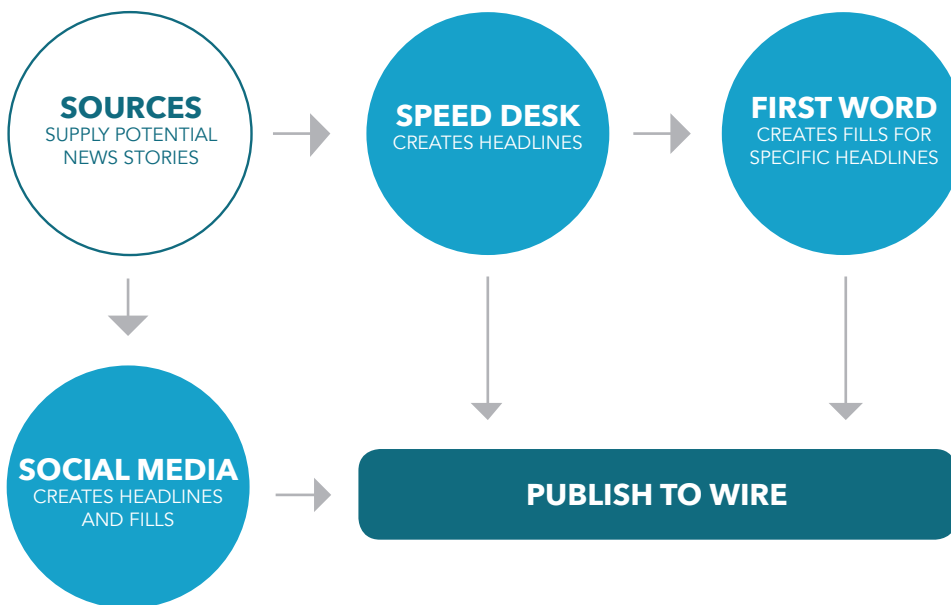


# PROCESS MAPS

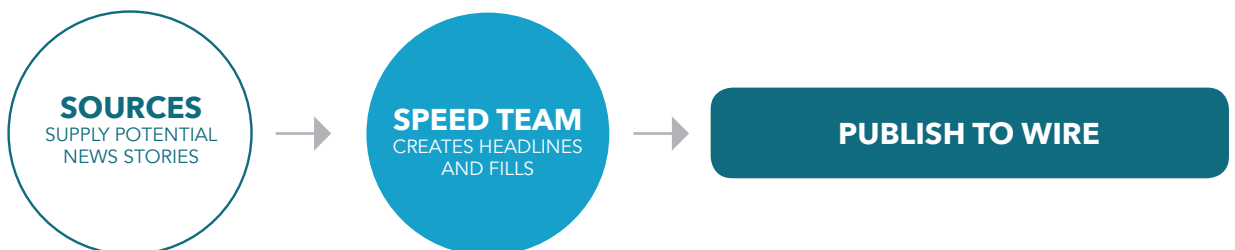
To better understand the various roles, teams, and offices in Bloomberg Breaking News, we illustrated the processes for writing headlines and fills based off of our research trips to New York City and our remote interviews with large international newsrooms. We used these process maps to compare the team's various processes and ensure that we are designing a solution that fits the needs for all members of the global team.

-  CALLER
-  SPEED EDITOR
-  BFW EDITOR
-  OTHER: SLOTTER
-  BREAKDOWN
-  COMMUNICATION BETWEEN TEAMS
-  WAIT/DELAY

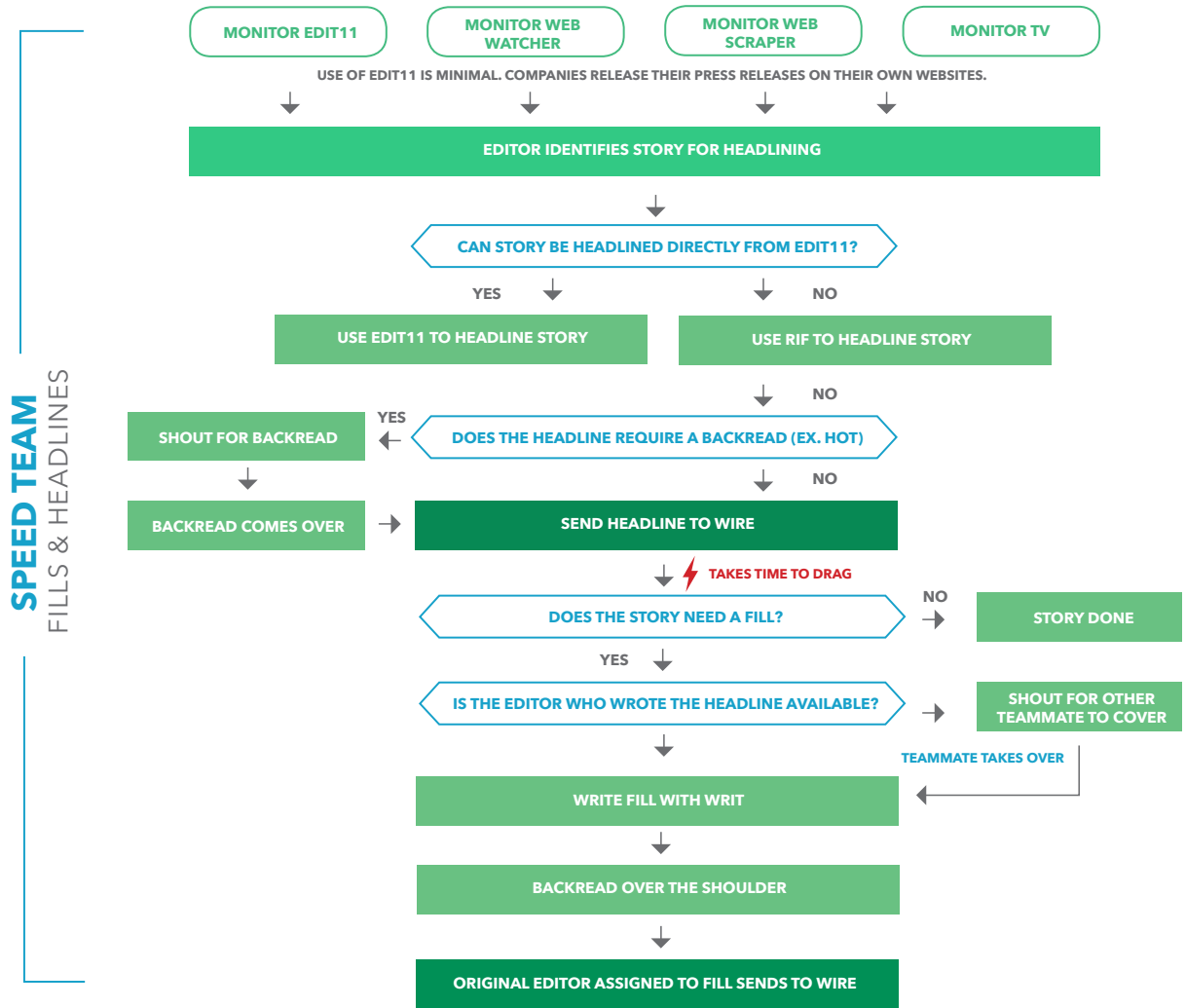
## New York & London Breaking News Teams



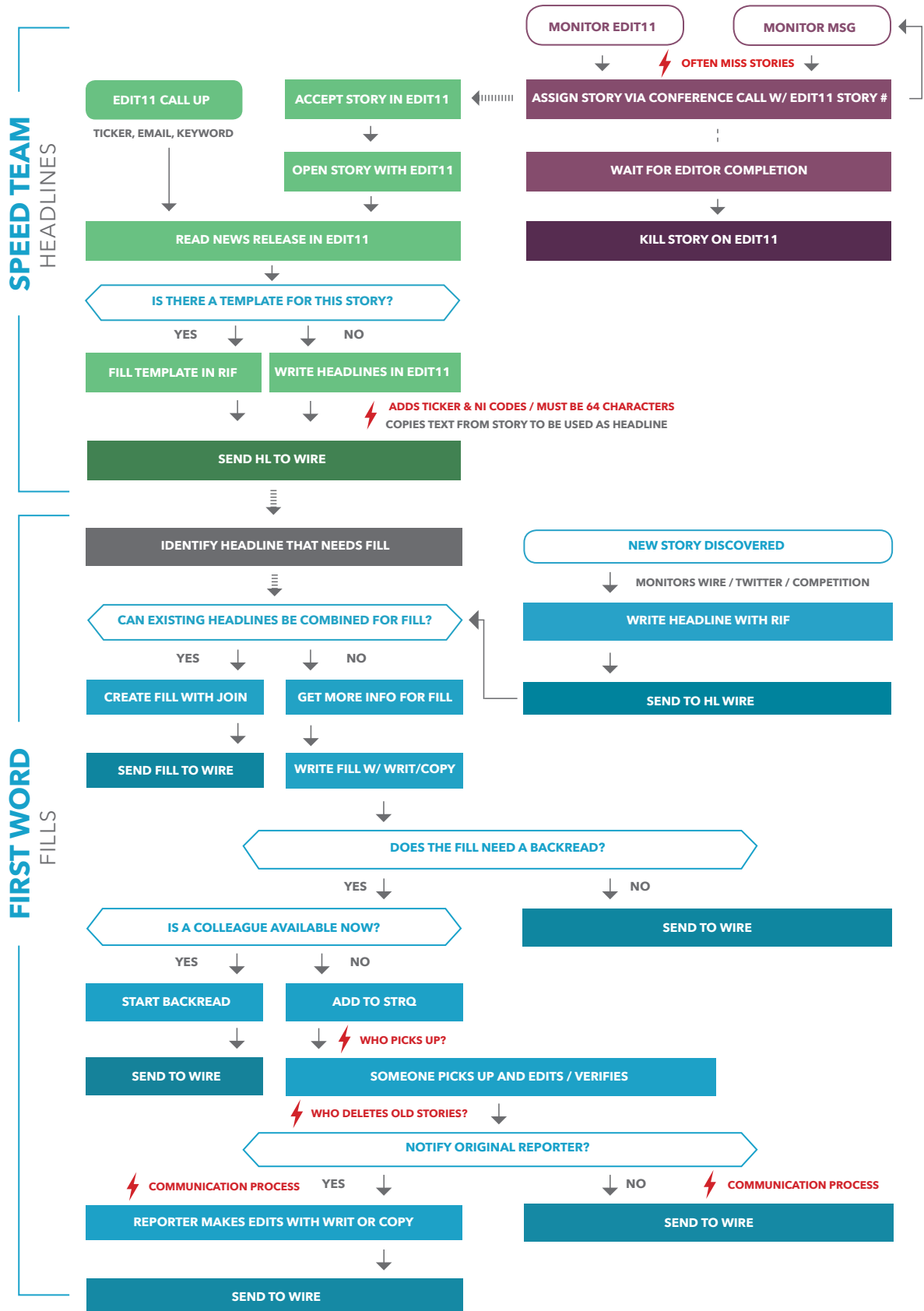
## Other International Breaking News Teams



# DUBAI NEWSROOM WORKFLOW

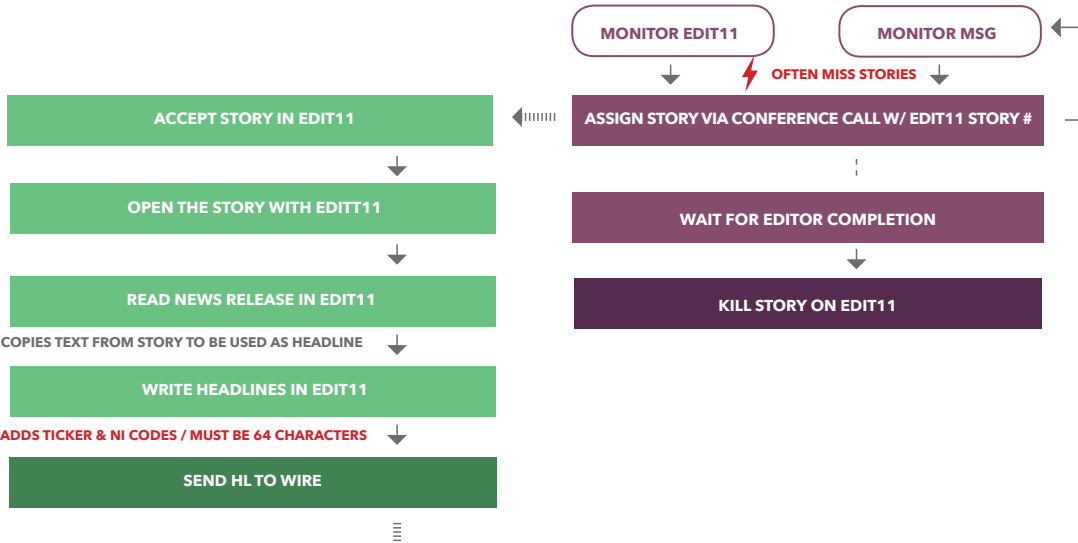


# LONDON NEWSROOM WORKFLOW

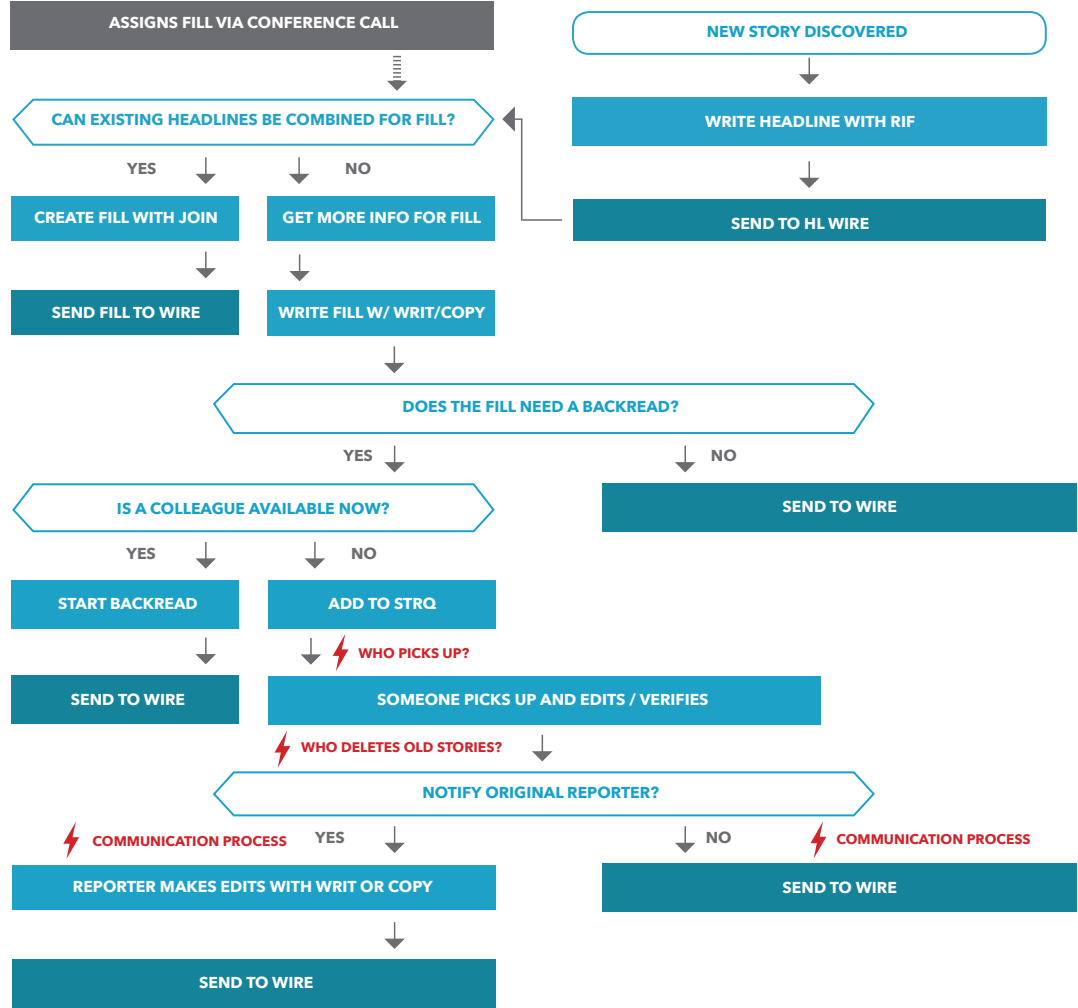


# NEW YORK CITY NEWSROOM WORKFLOW

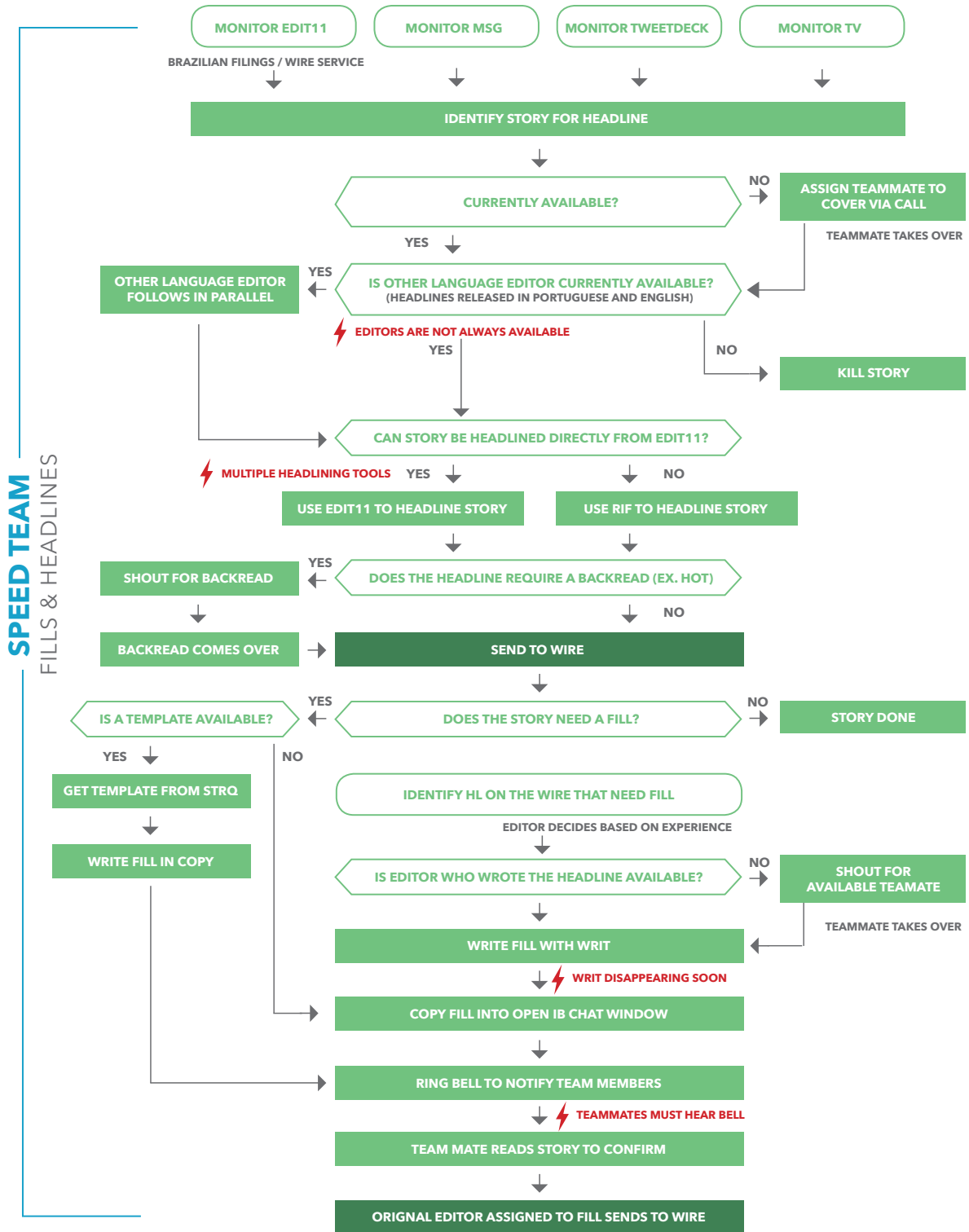
## SPEED TEAM HEADLINES



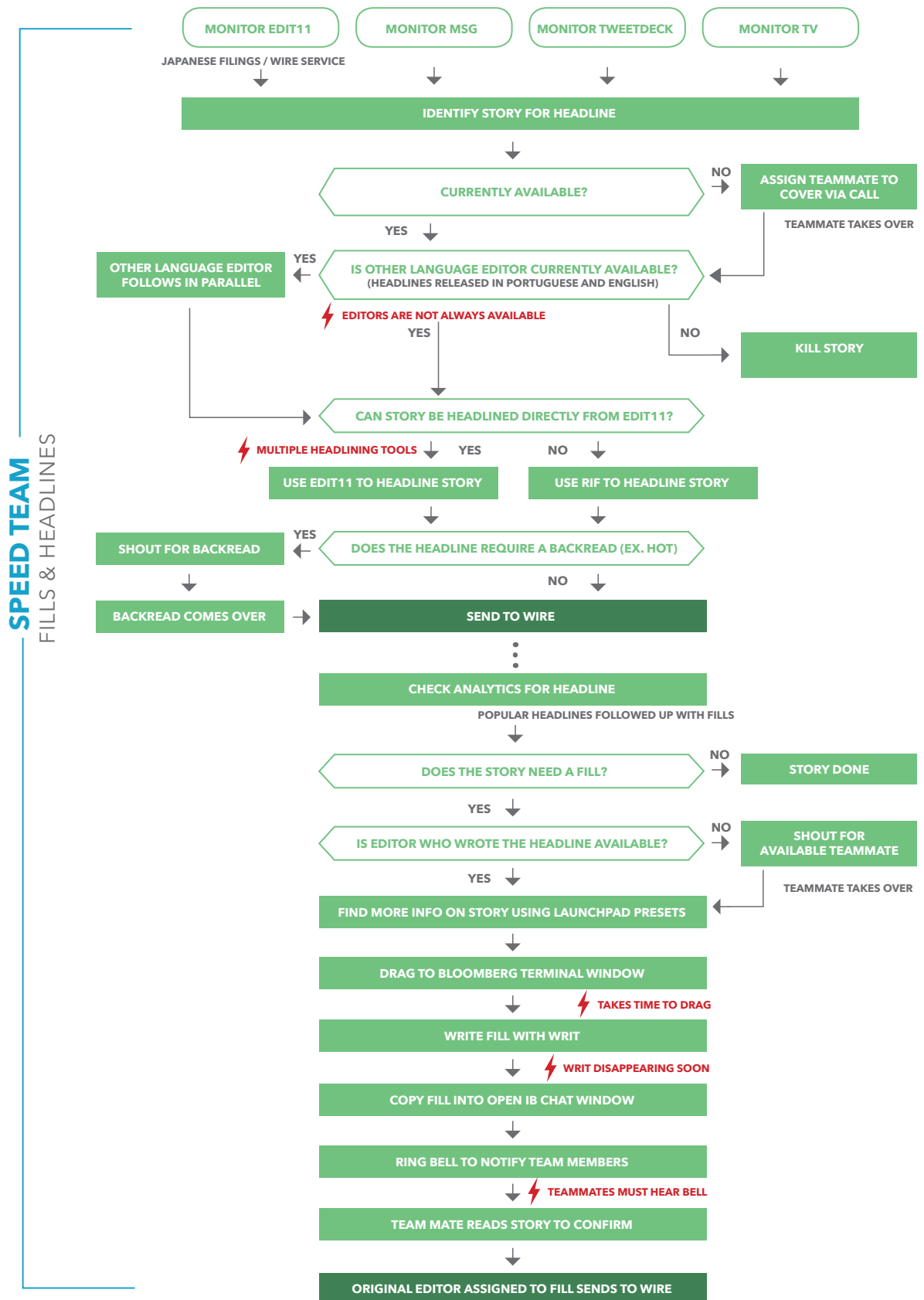
## FIRST WORD FILLS



# SAO PAULO NEWSROOM WORKFLOW



# TOKYO NEWSROOM WORKFLOW







# RESEARCH FINDINGS

*To gain a fresh perspective on our project, we evaluated and compared numerous productivity tools, content creation tools, and content curation tools based on usability and features. Furthermore, we interviewed employees from organizations similar to Breaking News which deal with the curation and distribution of large amounts of data under a time constraint.*

*We also conducted 26 contextual inquiries and fly-on-the-wall observations within the New York City newsroom, where the Breaking News team is headquartered. Additionally, we engaged in 14 remote interviews with global breaking news teams to identify the key differences between the New York City newsroom and the global newsrooms.*

**Top to Bottom:** *Kaitlyn and Stephen aggregating their contextual inquiry notes, During a three hour client meeting we discussed five assumption prototypes, Our affinity diagram took 30 hours to create.*

# COMPETITIVE ANALYSIS

To draw inspiration for our design solution, we explored commercial tools with similar usage to those of the Breaking News team. We looked into 5 curation tools, 9 content creation tools, and 12 productivity tools. We created a set of usability and learnability criteria to evaluate competitors' products in each of the categories and find what makes them effective.

PRODUCTIVITY TOOLS	Criteria																		
	View My Tasks	View Others' Tasks	View Completed Tasks	Scheduling Tasks	Prioritizing Tasks	Type of Tasks	Administrative Rights	Links to Documents	Master Task List	Mark Task as Complete	Ease of Use	Speed	Learnability	Clean Interface	Actionable	Alerts	Filesharing	Team Communication	Task Assignment
Asana	○	○	○	●	○	●	○	○	○	●	○	●	○	○	●	○	○	○	○
Basecamp	●	●	●	●	●	○	○	○	○	●	●	●	○	●	●	●	○	○	○
Droptask	●	●	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○
Flow	●	●	●	○	○	●	●	●	●	○	○	○	○	○	○	○	○	○	○
Google Inbox	○	-	○	○	○	-	○	○	○	○	○	○	○	○	○	○	○	○	○
Hi-Task	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Producteev	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Remember the Milk	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Teamwork.com	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TeuxDeux	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Trello	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Wunderlist	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## RELEVANCE TO BREAKING NEWS

The complex workflow and interdependence of the breaking news teams calls for a way to manage tasks and stay in the loop with each other's progress and updates. Currently the teams utilize a range of terminal tools like *STRQ*, *BRD*, *AGEN*, *FYI*, *MSG*, *APPT*, and *IB* to assign tasks and coordinate with each other. Exploring and evaluating productivity tools, we found essential features that made for effective task management within a team.

## KEY FEATURES TO CONSIDER:

- Visibility of personal tasks and progress
- Visibility of teammates' tasks and progress
- Notification of relevant updates and changes
- At-a-glance overview on the homepage
- Toggle between multiple views
- Timezone settings
- Multi-platform alerts

## CONTENT CREATION TOOLS

	New Document (Speed)	Saving Document (Speed)	Text Formatting Options	Embedding Media	Collaboration	Space Restriction	Spellcheck	Autocomplete	Flexibility	Track Changes	Learnability	Ease of Use	Actionability	Preview Ability
Box Notes	●	●	◐	○	●	●	○	○	○	◐	●	●	○	◐
Google Docs	●	●	●	◐	●	●	◐	○	●	●	●	●	●	●
iMessage	●	○	○	●	○	◐	◐	○	○	○	●	●	○	●
Mac Pages	●	●	●	◐	○	●	◐	○	●	◐	●	●	●	◐
Microsoft Word	●	●	●	◐	○	●	●	○	●	●	●	●	●	●
Sublime	●	●	○	◐	○	●	●	○	○	○	●	●	○	●
Tumblr	●	○	◐	◐	○	●	○	○	◐	○	●	●	●	◐
Wordpress	●	◐	○	●	◐	●	●	○	◐	●	●	●	◐	●
XCode	●	◐	◐	◐	◐	●	◐	●	●	◐	○	◐	●	◐

## RELEVANCE TO BREAKING NEWS

Headlines and fills are the two main types of contents produced by the breaking news team. The primary tools to generate this content includes *Edit11*, *WRIT*, *COPY*, and *RIF*. By looking at external content creation tools we found what the best practices are for an effective tool.

## KEY FEATURES TO CONSIDER:

- Autosave
- Easy access to formatting tools
- Embedding media and links
- Multi-language capabilities
- Scheduling publish time
- Collaboration features
- Track changes capability

## CONTENT CURATION TOOLS

	Amount of Data	Customization	Presentation	Information Hierarchy	Alerts	Learnability	Ease of Use	Speed	Clean Interface	Actionability
Circa News	●	●	●	●	●	○	◐	●	●	●
Dataminr	●	◐	●	●	●	-	-	●	●	○
Flipboard	●	●	○	◐	◐	◐	●	●	◐	◐
LinkedIn Pulse	●	◐	◐	○	○	●	●	◐	◐	●
TweetDeck	○	●	◐	◐	●	◐	●	●	●	●

## KEY FEATURES TO CONSIDER:

- Personalized content
- Identifies and suggests relevant content
- Displayed for quick consumption
- Ability to filter through content
- Multi-platform alerts
- Bundled stories
- Shareable to multiple platforms

## CONTENT CURATION TOOLS

Bloomberg breaking news editors and reporters are bombarded with news from a myriad of sources including websites, wires, TV, Twitter, and personal contacts. They currently use *Edit11*, *NQUE*, *NLRT*, *TWT*, and *TweetDeck* to monitor, collect, and be notified of new information. We looked into content curation tools to gain insight into what makes a great content curation tool for the breaking news team's purposes.

# ANALOGOUS DOMAINS

*In order to help inspire unique design ideas, we interviewed employees of organizations that deal with large amounts, learning more about the workflows and methods they use. Similar to Breaking News, we were particularly interested in workflows which require team members to gather, manage, coordinate, and distribute large amounts of critical information in a timely manner.*

## U.S. MILITARY

We interviewed a former soldier who held the positions of private, specialist, and staff sergeant in the US military. Our interview was structured around how information was communicated between the different branches of the military, how work was coordinated, and how to evaluate information.

*"It's important everyone knows the overall mission objective so they're free to do whatever is necessary to get the objective done."*

US Military Staff Sergeant

## URGENT CARE NURSES

People in this specialized occupation use their advanced skill sets to care for critically-ill patients and those at high risk for life-threatening health complications. Each nurse is responsible for multiple patients per day. Their responsibilities range from administrative duties, walking patients to the bathroom, analyzing lab results and vital signs, creating interventions plans, all the way up to administering medication and performing neuro-assessments. We interviewed two urgent care nurses about their workflow and how they deal with information in the workplace.

*"You have to prioritize information told to you by a patient over things like monitors. A heart monitor may look like the person doesn't have a heart rate, but really the monitor may just have been accidentally removed."*

Emergency Room Nurse

## CROWDFORGE

CrowdForge is a framework and toolkit for crowdsourcing complex tasks such as writing articles with the use of Amazon's Mechanical Turk workers. Crowdforge was created by an HCI faculty member and student that was trying to write articles to synthesize information from various sources. A task (e.g. write an article about the Cold War) is broken down into an outlined structure with specified required pieces that are then assigned to multiple workers whose writings are combined.

*"Splitting a story up between multiple individuals has shown similar effectiveness and consistencies as one person doing the task, allowing for less burden on individuals."*

Founder - CrowdForge

## NATIONAL WEATHER SERVICE

The National Weather Service is responsible for monitoring and issuing weather warnings to residents of western Pennsylvania and neighboring areas. The team consists of 26 people (10 forecasters, 4 managers, 12 more employees) who constantly monitor data from radar, satellite, surface observations, weather balloons, and computer models. We interviewed the science and operations officer regarding the team's workflow and responsibilities.

*"Before a large weather event occurs, we assign roles to our team members and prepare templates to use for short and long warnings."*

NWS Science & Operations Officer



*Like the Bloomberg News' workflow, the military assesses information using their intuition and past experiences.*

## What We Learned

### **Use your intuition, knowledge, and past experience to assess the validity of information.**

If a piece of information seems off, validate it using other sources. Make sure that inaccurate information is not propagated or disseminated.

### **Be aware of all of your team members' tasks and responsibilities at all times.**

In all of the occupations and organizations researched (with the exception of CrowdForge) it is essential to have a grasp on what is going on outside of your personal responsibilities so that things do not overlap and the workflow does not get hindered.

### **Trust your teammates in order to work effectively and efficiently.**

In order for a team to function, there has to be enough trust in each member's ability to do their part correctly and provide accurate information. In the military, as well as other organizations, it is not always possible to verify every piece of information. In relation to CrowdForge, there is a need to trust in the crowds ability to produce quality work.

### **Give succinct updates that contain all necessary information.**

In the military, color codes (red, yellow, green) were used to denote status of manpower, ammunition, and supplies. In three words, a lot of information is conveyed in an efficient manner. The National Weather Service announcements are short, straightforward, and templated for efficient and quick release.

### **Be sure to plan ahead to successfully complete tasks.**

The first stage of CrowdForge is to make the structure of the article, which is crucial to its completion. For soldiers, urgent care nurses and the national weather service, planning can make the difference between life and death.

### **Find a balance between alerting users to information or requiring them to actively seek it out.**

For urgent care nurses, it is important to keep constant watch over the patient's current condition, but equally as important to gather new updates to inform treatment and prevention plans. During extreme weather conditions, the National Weather Service must monitor current conditions while seeking updates on weather predictions and patterns.

# NEW YORK CITY NEWSROOM

*In order to gain a full understanding of the complex workflow and processes of the Bloomberg Breaking News Team we had to observe their work where it happens. We began by visiting Bloomberg News' office in New York City, which is the home base for the Breaking News team and where the highest volume of news is released.*

## Research Methods

### CONTEXTUAL INQUIRIES

We immersed ourselves in the natural work environment and asked questions as work was occurring to understand our users' tacit knowledge and uncover their underlying work structure. We conducted a total of 26 contextual inquiries over three research trips with editors, reporters, managing editors, and team leaders from the Speed Desk, Bloomberg First Word, and Bloomberg News reporters. These interviews allowed us to understand their various workflows and tools to uncover the different needs across teams.

### FLY-ON-THE-WALL OBSERVATION

Due to the ongoing and intensive nature of breaking news, at times it became inappropriate for us to interrupt someone while they were working. An example of this was during the Speed Desk 4 o'clock rush when a massive amount of earning reports were released. During this time, we observed the Speed Desk and took copious amounts of notes without interrupting them.

## PARTICIPANTS

**26** TOTAL

- 9 BFW Editors
- 4 BFW Reporters
- 5 Speed Desk Editors
- 3 Social Media Editors
- 1 BFW Global Managing Editor
- 1 Speed Desk Managing Editor
- 1 Head of News Development
- 1 Senior Executive Director
- 1 R&D Team Lead

*US news editors are on a conference call from the minute they get into the office until they leave.*



# The NYC Speed Team

## WORKFLOW

The Speed Desk team is in constant communication via a conference call where the caller assigns stories to cover to the different snipers and divers. The team follows a very fast-paced work environment where editors are highly focused on identifying market moving information and relaying it to their customers in a digestible fashion.

Work roles rotate several times a day depending on the volume of news and it can change as frequent as every 30 minutes for callers. The primary tool within the Speed Desk for headlining is *Edit11*, which offers an efficient way for editors to review information from multiple press wires in a single screen and publish headlines with the use of efficient keyboard and mouse interactions. The Speed Desk editors also constantly monitor their email (*MSG*) looking for market-moving information from government agencies, companies, and Bloomberg News reporters. When the source of information is not integrated into *Edit11*, the Speed Desk uses the general-purpose *RIF* to write headlines.

## THE RUSH

During times of high volume of press releases or news, the Speed Desk follows a more refined structure that allows them to efficiently divide the work among editors and publish headlines expeditiously. The rush time generally occurs before and after market hours at 7am and 4pm, respectively.

Prior to the rush, the Speed Desk generates a list of companies expected to release earning reports that day along with key numbers and information they know they should be aware of for each company. Two editors often serve as callers during rushes to ensure all news and releases are assigned to divers and snipers in a timely manner.

# The NYC First Word Team

## WORKFLOW

The First Word team in New York City is subdivided into teams based on asset classes. Larger teams have a standardized team structure with a slotter role that assigns stories to other editors through a conference call, while smaller teams have a less structured workflow and rely on in-person communication. The workflows of the different First Word teams vary depending on their sources of information and the type of news stories they cover. They also use different tools within the Bloomberg Terminal to validate information and track the progress of a story. Regardless of the asset group, First Word mainly uses *COPY* and *WRIT* to write and publish fills to the wire.

## ROLES

The Speed Desk in New York City releases headlines with three different roles:

### CALLERS

Monitors wires and assigns work to editors.

### DIVERS

Reads releases in depth and writes headlines based on secondary figures and unexpected data.

### SNIPERS

Writes headlines based on predefined figures. The efficiency of Bloomberg News depends on the speed of snipers.

“*Milliseconds Matter*”

News Development Project Manager:  
New York Newsroom

“*We pick up the stories and leave the mess for First Word*”

Speed Team Manager:  
New York Newsroom

# INTERNATIONAL NEWSROOMS

To ensure that the solution we design can be implemented on an international level, we conducted remote interviews over the phone with editors and reporters from international Bloomberg offices worldwide.

## Research Methods

### REMOTE INTERVIEWS

We conducted a series of remote interviews over the phone with editors and reporters from larger Bloomberg newsrooms around the world, including Hong Kong, London, Mexico City, Milan, Sao Paulo, Singapore, Stockholm, and Tokyo. We focused on learning the individualized workflows of each team, to see how they differ from what we directly witnessed in the New York City Office.

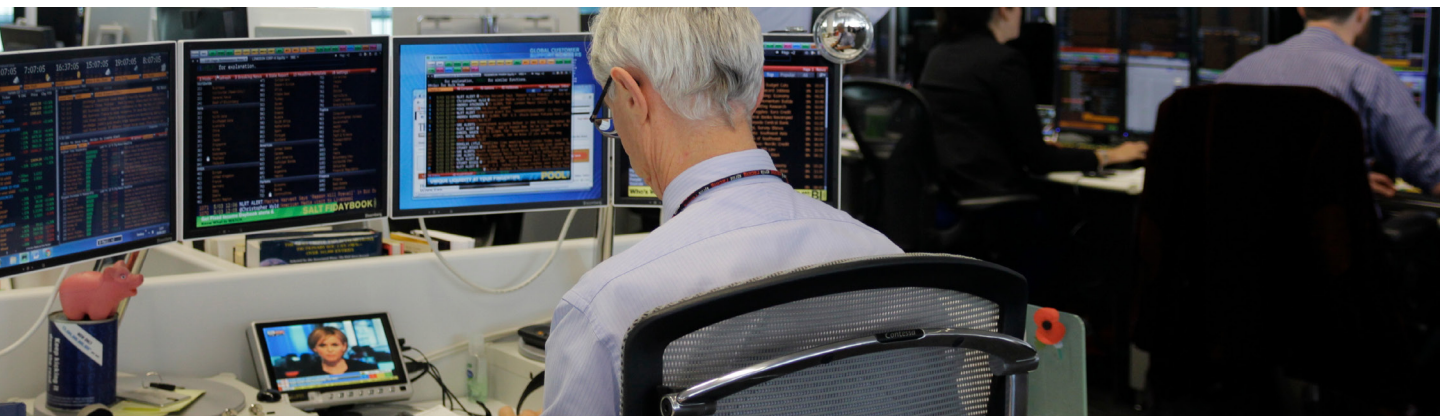
### PARTICIPANTS

**14** TOTAL

- 7 Speed Desk Editors
- 3 Speed Desk Managing Editors
- 3 BFW Editors
- 1 Social Media Editor



*Editors in the London Newsroom primarily use horizontal monitors instead of the vertical ones used in New York City.*





# New York City vs. International Teams

Bloomberg News international offices differ from Bloomberg's New York Headquarters in team size, workflow, and tools that they prefer. Smaller newsrooms depend on a handful of editors that are responsible of generating headlines, publishing fills, and monitoring social media. Communication within these smaller teams relies on personal proximity instead of messaging tools. While New York City's newsroom is self-contained, international newsrooms are more likely to collaborate with each other. For example, international newsrooms communicate with each other throughout the day for language translations and support during times of high volume news.

## Key Differences Between International Newsrooms and The New York Newsroom

Location	International Newsrooms	New York Newsroom
London	Speed Desk is divided into two roles: caller and editor	Speed Desk is divided into three roles; one caller and multiple snipers / divers ( <i>two callers are often needed during rush times</i> )
London	Some stories pre-assigned, with team members using <i>Edit11</i> to auto-open releases based on ticker/email/keyword	Caller assigns all stories through the conference call
London	Email lists are integrated into <i>Edit11</i> through <i>NQUE</i>	Email lists are monitored independently of <i>Edit11</i>
Sao Paulo, Tokyo	Two teams work in tandem to publish stories in two languages	All stories are published in English
Dubai, Milan, Mexico City, Hong Kong, Sao Paulo, Singapore, Stockholm, Tokyo	Speed Desk is responsible for writing both headlines and fills	Speed Desk team is responsible for writing headlines, while the First Word team is responsible for writing fills
London, Mexico City, Sao Paulo, Tokyo	Instant messaging ( <i>IB</i> ) is used to complete virtual back-reads	In-person, over-the-shoulder backreads
Dubai, Mexico City, Milan, Sao Paulo, Tokyo	Most stories are received through traditional media and social media is not extensively monitored	Social media is extensively monitored, requiring a dedicated team
Milan	External hardware is used to monitor Italian earnings releases	The Bloomberg Terminal is used to monitor all releases
Mexico City	More trust is placed in automated due to a smaller number of automation rules	Less trust placed in automations due to a larger number of automation rules
Mexico City, Milan, Sao Paulo, Tokyo	Speed Desk primarily uses <i>RIF</i> to publish headlines	Speed Desk primarily uses <i>Edit11</i> to publish headlines
Dubai	TV news channels are a primary source of information	TV news channels are a supplementary source of information
London, Tokyo	Headlines are often written with <i>RIF</i> templates to expedite expected stories	Headlines are written manually for expected stories

# NEWSROOMS OF THE FUTURE

*Imagine how newsrooms will look in one year, five years, ten years, or more. To ensure our design solution is not short-lived, and to create a roadmap for implementing our design, our team looked at various technologies and trends that will shape the distribution of financial news in the future.*

## SOCIAL MEDIA

Outlets like Twitter and Weibo, the Chinese social media platform, are expanding rapidly as sources for potentially market-moving breaking news. Additionally, many companies are now releasing earnings reports on their websites and linking to them from their Twitter accounts prior to the press release being available on traditional wire services.

Social media is expanding as a source for breaking news. In 2014, one in ten users reported they shared original content that contributed to a news story through their own social media accounts. Projections show that in the future news will first break by anyone on scene with internet access, which will force reporter's roles to evolve into an analyst role that is able to examine and dissect the news, as well as to offer critical analyses. While news may first break on social media, the general public will not consider it reliable news until confirmed by a mainstream outlet. Additionally, tools such as the MIT Media Lab's Rumor Gauge are being developed to verify the truth of information put forth on social media by analyzing the language used, the time it took to go viral, and the profile of the author.

### WHAT WE LEARNED

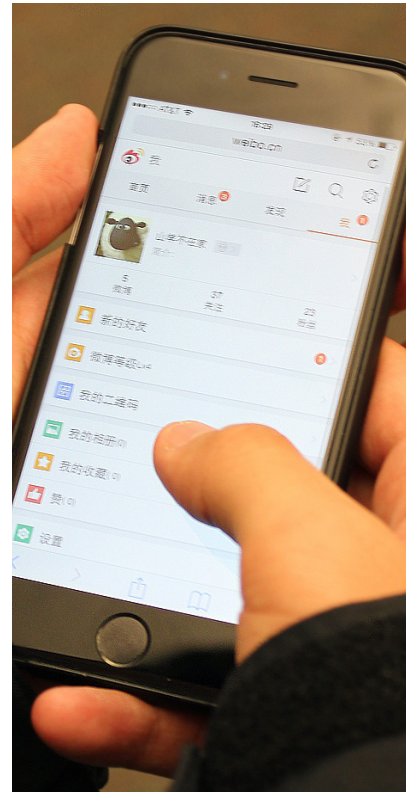
*As social media becomes more popular for distributing news, trade-offs between accuracy and speed must be made. It is of utmost importance to ensure editors are privy to as much information as possible about social media posts before creating a headline based off of information shared within it.*

## DIRECT DELIVERY

Currently, a majority of the market-moving news distributed by Bloomberg is received through wire services where corporations pay a service to share their press releases. Through conversations with both PR professionals and Bloomberg reporters we have found that market-moving news is increasingly found directly on corporate websites, social media, or through messages directly sent to interested reporters.

### WHAT WE LEARNED

*With the decentralization of news sources, newsrooms must evolve to monitor an ever-increasing number of outlets where news may break. With an increased reliance on web scrapers and bots that can scour multiple sources at once, the role of the editor will transform. No longer will editors be required to spend the majority of their day monitoring feeds and seeking out news stories, instead their role will be to approve the accuracy and quality of stories presented to them by automated tools.*



*The Chinese language social media site, Weibo, has grown in popularity so much that Bloomberg reporters monitor it for financial news.*



*A sea of terminals monitored by traders, millions of dollars hinge on their decisions.*

## NATURAL LANGUAGE PROCESSING

Currently, extensive attention is being placed on the research of Natural Language Processing (NLP). This research is primarily focusing on allowing automated bots to parse entire bodies of financial news, detect the sentiment of the news, and in turn predict how the market will react. Accuracy is currently at 59% for negative sentiments and 50% for positive sentiments. The ability for automations to parse natural language would be at competitive edge for companies like Bloomberg. Although this is a huge task that may not be tackled immediately, starting the process is recommended. Furthermore, although automated sentiment-analysis is still far from perfect, it is something that computers may be able to do in the future.

### WHAT WE LEARNED

*Developing a natural language sentiment analysis system is key for the newsroom of the future. Not only should automation be able to extract key numbers and estimates, but it should also provide insight into a story's market-moving potential based on its sentiment.*

## HUMANS AS MANAGERS OF AUTOMATED TASKS

As technologies like natural language processing and machine learning systems expand and become more accessible, the role of humans will shift into a more managerial role. These advances would allow many daily responsibilities currently handled by humans to be automated. Humans will be responsible for delegating tasks to computers and making sure all tasks have been completed, as opposed to completing the tasks themselves. Examples of this are machine learning systems, like IBM's Watson, which require a human assistance as every new system needs to be "taught." The role of humans in newsrooms of the future will be to train these systems to automate both content curation and creation, and to ensure they are accurate and reliable.

### WHAT WE LEARNED

*To transition to a newsroom where more tasks are automated, accuracy levels for both automated content as well as human-generated content must be gathered and analyzed. Once the accuracy of automations exceeds or matches the accuracy of humans, the human can then transition to a supervisory role.*



*IBM's Watson is a question "answering" supercomputer that combines artificial intelligence and natural language processing. It operates at 80 teraflops and has beaten two of the top players at Jeopardy!.*



# PROBLEMS & OPPORTUNITIES

*We consolidated our findings from field research by creating an affinity diagram, process maps, and a flow model. We used these methods to uncover recurring themes throughout our research, which resulted in four key findings. In the following pages, we present the findings and their associated breakdowns, a description of the evidence we found, and opportunities to address them.*

**1** *Teams use disparate tools*

**2** *Teams need a better awareness of tools*

**3** *Teams lack standardized workflows*

**4** *Teams need better communication and collaboration*

**Top To Bottom:** *Editors occasionally monitor stock prices to gauge the market reaction of their stories, a news editor in London, Ascend in Pittsburgh teleconferencing with our client in New York City for our kick-off meeting.*

# 1

## TEAMS USE DISPARATE TOOLS

*Teams use many different tools which frequently change, leading to difficulty in maintaining tools and defining best practices.*

### LITERATURE REVIEW

Having multiple tools requires context-switching whenever someone needs to switch from one tool to the next.

It has been shown that user performance when resuming a previous task after attending to an interruption is better when the interruption is expected. It is also important to be able to pause a workflow and receive a progress report on what was missed during the pause period. (McFarlane & Latorella, 2009)

### Problems

**Within the Bloomberg terminal, the Breaking News team has access to several tools which perform the same task, requiring editors and development teams to learn and maintain multiple tools.** To headline, editors can use *Edit11*, *RIF*, or any number of *RIF* derivations. For creating fills, the team can use *WRIT*, *COPY*, or *JOIN*. This causes problems in trying to create best practices for the newsroom since there are multiple ways to complete each task. Additionally, there are a lot of tools that are being not being used in the way they were originally intended to be used. For example, *STRQ* is used for templates, assignments, and requesting backreads for stories, but it's intended purpose was to show the status of a story. This tool was not designed with those functions in mind and is not optimal for many of them. Additionally, as tools are updated, functionality may be added to one tool but not others making it necessary for editors to continue using multiple tools for the same job.

**Each Bloomberg terminal function is designed for one task, so multiple tools must be used to accomplish the editors' workflows.** For monitoring social media, teams use *EPLUS*. For writing headlines that come from wires, teams use *Edit11*. For headlines coming from reporters or emails, they use *RIF*. To write fills, they use *WRIT* or *COPY*. To check team messages, they use *NQUE*, but for personal emails, they use *MSG*. To request a second opinion on their stories, they may use *STRQ*. This leads to inefficiencies as people move from one function to another to try to get work done. It also leads to inconsistent workflows and prevents the organization from determining a standard, optimized way of doing their jobs.

*“ I don't know what WRIT is because I don't want to know what WRIT is. I want to use what I know works. ”*

News Editor: Hong Kong Newsroom



*The New York City Newsroom is filled with rows of editors creating headlines and fills.*

## Opportunities

**Design a singular tool which can be customized by individual users based on job roles and preferences.**

The tool could contain modules specific to functions needed by the news team, such as writing fills, writing headlines, monitoring social media, or requesting back-reads. This will allow users to perform work in one tool without being overwhelmed with functionality they don't need. Each module can define the best practices for that task, but will still allow customization for the editor's needs. It will also help to extend the tool to new capabilities that might be needed in the future.

**Create a standard tool for all functions needed by the breaking news team.**

Combining all of the functions used by the breaking news team into one tool will eliminate the problem of having multiple tools that perform the same function. It will also eliminate the need for users to learn multiple tools. In designing this solution, best practices can be established and implemented in the tool allowing users to work in the most efficient way possible. The most prominent trade-off would be that a lot of the offices would be required to switch from their current workflow to a new one. However, the benefit of having one centralized point for improving all workflows and software outweighs this trade-off.

**Consolidate redundant tools into a single tool per task.**

Determine the functionality used for each task, such as headlining, writing fills, or monitoring news, and create one tool for each of those that has all of the necessary functionality to complete that task. Keeping the tools separate will follow the established practices set by Bloomberg to have one job per tool. However, having one tool for each job will enforce everyone to use the same tool and will encourage knowledge sharing of best practices within groups. It will also increase efficiency when adding new features because they will only have to be added to one tool.

**Improve automations to eliminate the need for humans to headline.**

By improving the quality of automated headlines, editors will be required to manage content created by automations instead of creating it themselves. As technology improves, automations will handle more of the content creation and humans will transition to a completely supervisory role. To facilitate this shift, effort needs to be put into creating tools that will give editors visibility in to what is being created by automations and allows employees to control what automations are running.

**Develop a style guide to create a cohesive experience for all tools.**

A set of guidelines for the appearance and user experience that can be applied to existing tools will allow users to easily switch between tools without having to learn to use each one separately. This will also allow new tools to be adopted quickly because users will already understand the interface.

# 2

## TEAMS NEED BETTER AWARENESS OF TOOLS

*Many different tools are available to team members, and it is not always clear what tools exist. Additionally, it is not always clear what features are available in various tools.*

### LITERATURE REVIEW

With many complex tools, it's important that users are trained on how to use them. There are two types of knowledge:

Tacit knowledge is knowledge you have that's subconscious and you just can do it, like riding a bicycle. Tacit knowledge needs to be shared by in person training (Smith, 2001).

Explicit knowledge is knowledge you find in books, classes, and training. Explicit knowledge needs to be codified, aggregated, and shared digitally (Smith, 2001).

Tools designed to facilitate sharing information online have been shown to increase knowledge collecting but not to increase knowledge donation. Management facilitation of knowledge sharing can increase people's motivation to share, so it is important for management to take an active role in encouraging employee to employee training in organizations (Lin, 2007).

### Problems

**Tools at Bloomberg are frequently changing, making it difficult for members of the news team to keep up with the full extent of tool functionality available.** Bloomberg regularly develops new tools and revises the current tools. While this is a good thing to keep the tools up to date, many of the users are not aware of the features that are added and therefore don't get the full benefit out of them. Additionally, tools are rolled out to the live production environment and editors are afraid to try new features for fear that they might accidentally send test stories to the live wire. This prevents team members from discovering many of the features that are available to help them with their work.

**There are currently no structured ways to ask questions or seek help to learn tools, so news team members frequently do not know the best ways to use their tools.** Many of the training resources are sparse and not kept up to date. Breaking News team hires complete a two week crash course in how to use the tools, after which they must rely on their fellow teammates for continued instruction. When tools are updated, messages are sent out outlining the new features, but they are not always seen. This puts additional burden on teammates to provide one-off training and prevents employees from learning the full potential of their tools.

“ *Edit11 has a very high learning curve* ”

Team Leader: Tokyo Newsroom

“ *[Learning tools] is like trial by fire with the terminal* ”

News Editor: Hong Kong Newsroom





*Newsroom editors in London offering assistance on a backread for an important headline.*

## Opportunities

### Create a dedicated Breaking News training team.

Bloomberg Breaking News has editors and managers with a wide range of skill sets that can help one another, but the team lacks a formal in-person training process. A formal training team can ensure that in-person training and knowledge sharing through technological solutions occurs while serving as a liaison between the tool development and Breaking News teams.

### Develop a tool to encourage knowledge sharing

With a new Bloomberg tool that allows for knowledge sharing, employees can gain knowledge by answering questions, receiving relevant answers, and reviewing functions and workflow tips. In order to encourage knowledge donating, evangelists or a dedicated training team need to contribute and compel others to contribute their knowledge.

### Allow for users to experiment with new tools and functions in a test environment.

The Breaking News team utilizes tools that were created to write and release stories to Bloomberg users quickly. While that is beneficial for editors who want to efficiently publish stories, it makes it difficult for team members to learn the tools without fear of making a detrimental mistake and accidentally releasing a headline or a fill unintentionally. With that in mind, create a “test” or “try-it-out” environment where editors and managers can learn the tool, test out the buttons and keyboard functions, and practice through their workflows to gain a better understanding of the tool without any potential downsides.

### Add an onboarding process for new tools and new tool features.

Although there are many Breaking News terminal tools with multiple features, the primary way editors and managers on the Breaking News team find out about them is through update emails. Unfortunately, this means that whenever a new tool or tool feature is developed, editors and managers that miss the email do not adopt the new tool or feature into their workflow. Instead, by funneling users through a guided onboarding process when a tool update or release occurs, we can ensure that users are privy to its new capabilities.

### Incentivize evangelists on each team.

Within the Speed Desk, BFW, and Social Media teams, there should be technology and workflow optimization evangelists. Unfortunately, they are not provided with the best support to share their knowledge with others, but when they are able to share, they provide substantive help to their colleagues. Bloomberg Breaking News should actively identify and assist technology and workflow optimization evangelists within each team and aid them in sharing their knowledge.

# 3

## TEAMS LACK STANDARDIZED WORKFLOWS

*Various members of each team have multiples ways to accomplish the same task, making it difficult to develop tools that meet the needs of every team, domestically and internationally.*

### LITERATURE REVIEW

Employees each have their own workflows and their toolsets need to facilitate that. Academic literature advocates for personalized workflows.

Users interact with interfaces in a unique manner, meaning a one-size fits all approach isn't useful. However, tools must allow users to move through levels of complexity as they become more comfortable with the idea and process of setting preferences (Ayotte, Vass, Mitchell, & Treviranus, 2014). This means allowing users to try things out in a safe and enjoyable way rather than putting the user in a position of being evaluated or having their preferences prescribed to them.

### Problems

**The Bloomberg Breaking News team workflows vary greatly from bureau to bureau, making it difficult to develop tools that meet the needs of all of the global teams.**

Larger newsrooms handle a higher volume of news stories, requiring separate teams to create headlines (Speed Desk) and fills (BFW). Lower volume offices on the other hand may combine responsibilities into a single team that in turn handles both headlines and fills. They also have different news sources they are covering. Some newsrooms are covering regulated wires while others are more dependent on reporters and local news sources. Social media is closely monitored in the United States and China but is less important in other countries. Additionally, many international offices are required to write headlines in multiple languages, which presents many of its own challenges. Because of all of these differences, the process of writing news stories varies across newsrooms. However, the tools do not currently provide ways for individual newsrooms to customize them to their specific needs. The tools are designed either for the general case or for a specific situation in a single office. This presents challenges for bureaus that have different workflows and needs.

“ *We build tools. The tools work really well, but we don't build workflows.* ”

News Team R&D Manager: New York City

“ *The workflow in Latin America is very different from the US. Edit11 in NYC is incredible, but it doesn't work for us.* ”

Speed Desk Editor: Sao Paulo Newsroom



*A Newsroom editor in London performing a backread.*

## Opportunities

### **Acclimate users to new tools and workflows with a software wizard.**

Learning new tools and a new workflow is a challenging process, especially when attempting to standardize the workflows of teams on a global scale. A software wizard that users through the initial setup of their settings and personalization, as well as provides suggestions for the next step in their workflow, can help ease this transition. This digital assistant would be a temporary guide for users when they're still getting used to a new tool/workflow and when changes or updates are made to the workflow. In addition to making the learning process less stressful for users, this feature could help in the execution of a standardized workflow even when changes to tools occur.

### **Implement standardized workflows using a modularized framework and packages.**

Currently, each breaking news team has its own workflow which is further customized by the individual member of the team. However, creating one tool that serves multiple teams' needs will result in a bloated list of features and a confusing tool. A modularized framework with preset packages for each team (e.g. Social Media, First Word, or Speed Desk package) will standardize the workflow of each team, while still being flexible enough to accommodate the needs of different teams and different newsrooms. Additionally, updating and changing modules will not require the entire framework to be overhauled.

### **Reinforce best practices for workflows through ongoing training.**

At the moment, there is no formal training for team workflows for the breaking news teams. Once a standardized workflow is established for each team, it is important to provide ongoing, in-person training for best practices. Training would be more beneficial and effective if it was continuously done rather than only during the on-boarding process.

### **Further integrate automated tasks into the breaking news workflow.**

To begin moving into the future where humans become supervisors and trainers of computers and automations, a possible next step is to begin the human-automation relationship. Users should be made aware of the role of automations in their specific workflows and be given access to customize those specific automations. By getting users more involved in the creation and management of automations, they will become aware of what tasks in their workflow they can rely on automations to complete. Moreover, the automations system can become a notable part of the standardized workflow rather than staying behind-the-scenes where some users may not utilize it to its full potential.

# 4

## TEAMS NEED BETTER COMMUNICATION & COLLABORATION

*Structured systems are not available, meaning teammates aren't always aware of what tasks are accomplished by others.*

### LITERATURE REVIEW

Communication is critical in organizations; however, the best form of communication varies based on the circumstance.

When tasks are tightly coupled, it requires employees to communicate frequently. At the beginning of projects, structured communication through task assignment and group emails is most useful. However, as the project becomes more involved and the dependencies are less obvious, more organic communication becomes necessary through mediums like email, phone calls, or instant message. (Neale, Carroll, & Rosson, 2004)

Effective communication means providing context as well as information. Employees that are more aware of their counterparts' contexts, do not need as much active coordination (Nardi, Whittaker, & Bradner, 2000).

### Problems

**The Bloomberg news team has many communication tools that they use each day causing additional overhead as they move from one tool to the next.** Some of the tools they use include *IB, MSG, NQUE, STRO*, telephones, and in person communication. In addition to communicating with other members on their teams, they talk to internal reporters and outside sources to get information for headlines. They also communicate within their own teams and with other teams in their bureau to coordinate work. Throughout their day they need to work with other team members to get a second opinion for their work and to discuss possible stories that could be expected later that day or the next day. Additionally, they must provide a hand off of the stories they are currently monitoring to other bureaus at the end of their day.

**The news team does not have good visibility into the work of others without directly asking them for their statuses, thus requiring them to perform additional tasks to coordinate.** Poor visibility necessitates that they be in constant, active communication with each other, which can be an additional burden to the team. Communication and coordination are critical to ensure that important news is not missed and that quality is maintained. They also do not have systems in place to see what stories are being created by automations. Thus, they frequently work as if the automated stories do not exist and duplicate the work.

“ *Not being able to see what the other teams are doing is always causing problems* ”

Bloomberg First Word Editor: New York Newsroom

“ *There is no way of telling everyone what has been decided.* ”

Bloomberg First Word Editor: New York Newsroom



*Occasionally tips and techniques are shared between editors in all hands meetings.*

## Opportunities

### Offer visibility of teammates' working statuses

While smaller international newsrooms have the advantage of effective team coordination through in-person communication, a larger newsroom like New York City cannot rely on in-person communication alone. Offering users real-time status updates of what their teammates are working will better inform task assignment and improve coordination within and between teams.

### Incorporate collaboration features into tools to streamline workflow.

Breaking News editors have a set of specific tasks which require support, such as back-reads, requesting information from reporters, or headline suggestions during earnings calls. Editors currently rely on instant messaging (*IB*) and email (*MSG*) for these tasks, but it is often inefficient as these platforms are buried with other messages and don't provide the additional context needed. A dedicated, standardized communication medium for each task would prevent editors from needing to break their workflow to scan through emails and would provide additional context to increase the speed (such as embedded *NI* codes when receiving headline suggestions from reporters).

### Track coverage of news stories across teams across teams

Coordinating tasks between teams can be challenging. The Speed Desk and First Word teams often cover the same news stories with different levels of depth. A lack of communication between teams can lead to stories not being fully covered. A consolidated system where news stories can be tracked from headline to fill may prevent stories from being missed or duplicated. The system would also allow users to visualize the status and statistics of news stories at any given time.

### Improve visibility of automated tasks

Automated headline creation systems increase the speed of coverage, but can lead to inefficiencies due to duplication of work. Editors would benefit from knowing what headlines are currently being automated, the status of automations, and being notified when an automated headline has been published. Increased visibility would give editors confidence in the automations and allow them to focus on tasks that currently cannot be automated.

### Provide additional context to social media streams.

The Social Media team focuses on monitoring social media platforms to identify market-moving news, but before publishing they must validate the source, check for accuracy, and ensure the story has not already been covered by Bloomberg. Giving editors supplementary context on every social media post can increase productivity, and reduce the time it takes to validate information. Context could include related stories on the Bloomberg terminal, wire subscriptions, or external information.

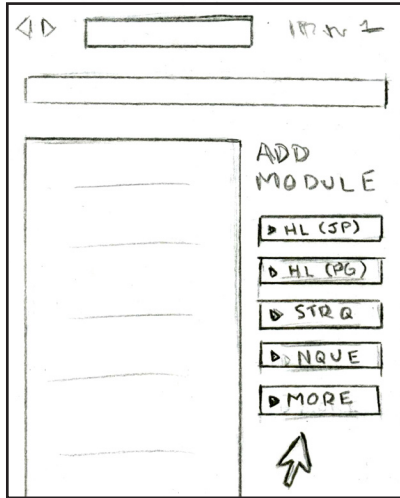
# VISIONING SCENARIOS

We selected four promising ideas from all the opportunities we identified for each finding. Visual scenarios were drawn to further explore each idea and the value they would provide to the Breaking News team.

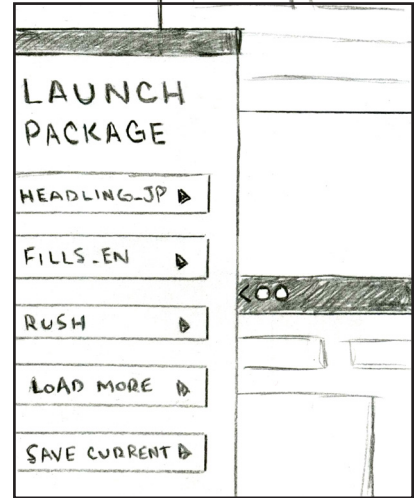
## Implement standardized workflows using a modularized framework and packages.



Alex, an editor in the Tokyo Newsroom, is having trouble sending a headline in both English and Japanese due to character limits.

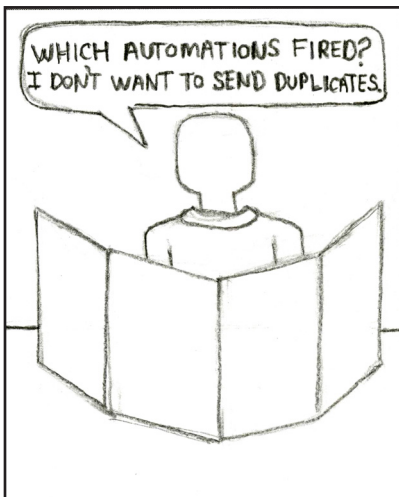


A modular framework has recently been implemented that Alex uses to add a Japanese language module to his headlining tool.

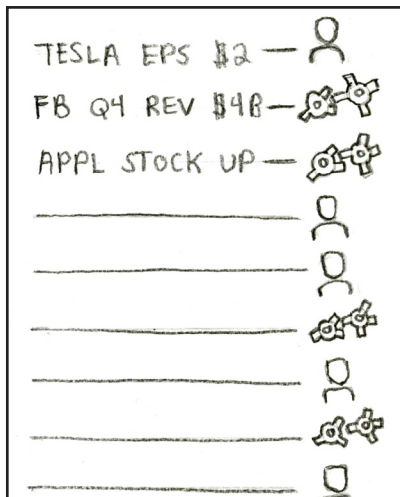


Alex is able to follow the standardized headlining workflow which is customized to his needs. Switching between languages is no longer an issue when writing headlines.

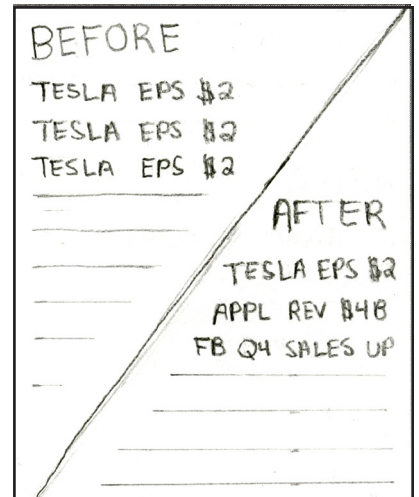
## Improve visibility of automated tasks.



Emily, a Speed Desk editor, is unsure if a headline has been automated, so she decides to create her own headline.



Now, there are indicators that clearly show Emily which headlines have been automated.



Emily can now focus on headlines that she is confident automations have not covered. Headlines are no longer duplicated.

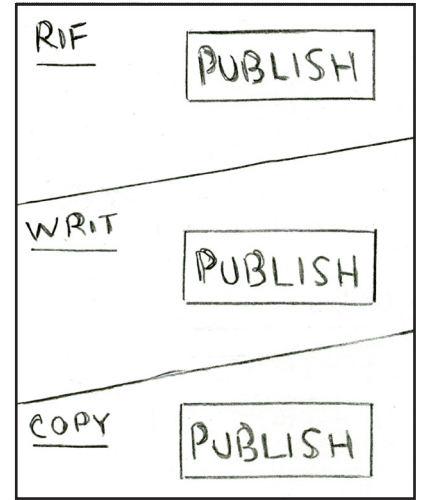
## Develop a Style Guide to create a cohesive experience for all tools.



Ernie, a Speed Desk editor, is sending headlines using three tools. He is frustrated because each of the tools have different methods for publishing.



The development team has recently implemented a usability guide for creating tools. All of the tools are now standardized.

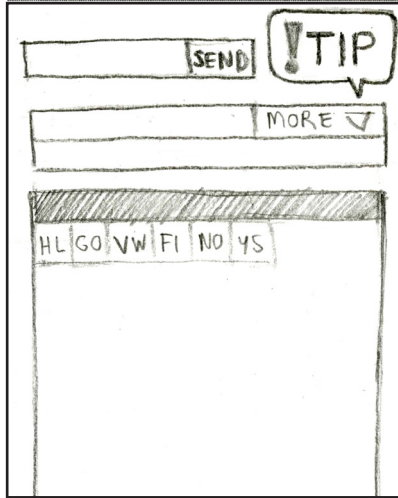


Ernie is now able to easily switch between each tool he needs to use. He quickly publishes all of his market-moving headlines.

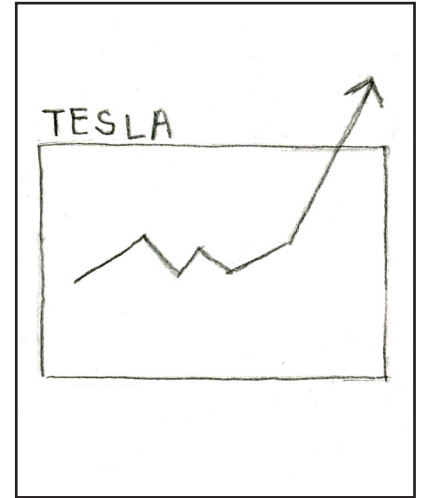
## Add an onboarding process for new tools and new tool features.



Chris, a First Word Editor missed an email about the update to the COPY function and can't publish his story because the tool has dramatically changed from the last time he used it.



The new onboarding feature guides Chris through the recent changes of the terminal's WRIT function.



Thanks to the new onboarding feature, Chris is able to quickly learn the new features of COPY, and is able to quickly publish his story that moved Tesla's stock by millions of dollars.





# NEXT STEPS & CREDITS

*Following our research phase, we will be relocating to New York City where we will be working out of Bloomberg's headquarters. Over the course of the summer, we will select a vision to pursue and design an application that will improve the speed and accuracy of the Bloomberg Breaking News team.*

*During our iterative design process, we will conduct various user feedback sessions, including heuristic evaluations, guerrilla testing, and speed tests to continue to improve our prototype. As we iterate, we will design our solution with input from the various stakeholders, especially that of the editors and managers on the Breaking News team. At the end of the summer, we will present our final prototype to the Breaking News team and transition its implementation to the development team.*

**Top to Bottom:** *The usability lab at the NYC headquarters where we will test prototypes as part of the iterative design process, A view of the Bloomberg Tower in New York City accommodates approximately 4,000 employees, The state of the art usability lab which is equipped with eyetracking technology.*

# OUR TEAM: ASCEND



## Stephen Cook

[designbysteve.com](http://designbysteve.com)

Stephen earned a Bachelors of Fine Arts in 2005 from the Maryland Institute College of Art where he specialized in traditional photography techniques. Prior to attending Carnegie Mellon University, Stephen spent five years at Boost Creative, a creative shop in Southwest Florida specializing in corporate branding, print design, and web design/development.



## Kaitlyn Sparks

[kaitlynsparks.com](http://kaitlynsparks.com)

Originating from Georgia, Kaitlyn moved to Nashville, Tennessee to attend Vanderbilt University where she earned a bachelor's degree with a double major in Computer Science and Psychology. After graduation, Kaitlyn worked at Asurion as a program manager and a software developer.



## Mohammed Abid

[mohammedabid.com](http://mohammedabid.com)

Mohammed graduated from Stanford University with a bachelors degree in Economics in 2013. After working as a financial analyst at Apple for a year, Mohammed transitioned to the design field by acting as both a user experience designer for a project at the Stanford d.school and a graphic design intern for Tesla Motors.



## Cindy Saroha

[cindysaroha.com](http://cindysaroha.com)

Originally from Indonesia, Cindy moved to the United States in 2009 to attend the University of San Francisco (USF) and earned a Bachelor's in Psychology. While at USF, she gained professional experience as a research affiliate for the Twins, Adoptees, Peers, and Siblings (TAPS) Lab.



## Tofi Buzali

[tofibuzali.com](http://tofibuzali.com)

Tofi grew up in Mexico City, where he studied Telecommunications and Electronic Systems at Tec de Monterrey. Tofi has experience in software development, with professional experience working at the mobile payments startup PayClip.



# CREDITS & THANKS

*This project acts as our capstone for the Masters of Human-Computer Interaction program at Carnegie Mellon University. Projects are supervised by faculty mentors who guide students through the process of working with industry partners on real-world projects.*

## OUR CLIENT

We would like to thank Koray Oncel, the CIO of Bloomberg News, and Andrew Milne, a news development product manager, for providing us the opportunity to work closely with them to understand their process, and imagine what a newsroom of the future will look like. It has been a tremendous learning experience.

## OUR MENTORS

Special thanks to our faculty mentors at Carnegie Mellon University: Karen Berntsen and Jason Hong for their invaluable input during the research portion of our project. We would also like to thank our mentors from the Bloomberg UX team, Linda Le and Kelsey Lee, for their guidance throughout the process.

## OUR PARTICIPANTS

We would like to express our gratitude to all of the members of the Speed Desk and BFW breaking news teams across the globe who have been so helpful and willing to take a moment from their busy days to share their knowledge of the processes they follow to create and distribute news.

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“ I don't care about *Aunt Agatha*, I'm more worried about her niece who trades exotic derivatives. ”

*NYC Managing Editor*