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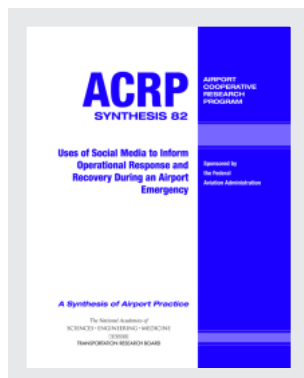
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AIRPORT COOPERATIVE RESEARCH PROGRAM

Uses of Social Media to Inform Operational Response and Recovery During an Airport Emergency

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A Synthesis of Airport Practice

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP SYNTHESIS 82

Uses of Social Media to Inform Operational Response and Recovery During an Airport Emergency

A Synthesis of Airport Practice

CONSULTANTS
James F. Smith
Smith-Woolwine, Inc.
Panacea, Florida
and
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The need for ACRP was identified in TRB Special Report 272: Airport Research Needs: Cooperative Solutions in 2003, based on a study sponsored by the Federal Aviation Administration (FAA).

ACRP carries out applied research on problems that are shared by airport operating agencies and not being adequately addressed by existing federal research programs. ACRP is modeled after the successful National Cooperative Highway Research Program (NCHRP) and Transit Cooperative Research Program (TCRP). ACRP undertakes research and other technical activities in various airport subject areas, including design, construction, legal, maintenance, operations, safety, policy, planning, human resources, and administration. ACRP provides a forum where airport operators can cooperatively address common operational problems.

ACRP was authorized in December 2003 as part of the Vision 100—Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), Airlines for America (A4A), and the Airport Consultants Council (ACC) as vital links to the airport community; (2) TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academy of Sciences formally initiating the program.

ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

Research problem statements for ACRP are solicited periodically but may be submitted to TRB by anyone at any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

Once selected, each ACRP project is assigned to an expert panel appointed by TRB. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including airport professionals, the intended users of the research products. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, ACRP project panels serve voluntarily without compensation.

Primary emphasis is placed on disseminating ACRP results to the intended users of the research: airport operating agencies, service providers, and academic institutions. ACRP produces a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties; industry associations may arrange for workshops, training aids, field visits, webinars, and other activities to ensure that results are implemented by airport industry practitioners.

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FOREWORD

Airport administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the airport industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire airport community, the Airport Cooperative Research Program authorized the Transportation Research Board to undertake a continuing project. This project, ACRP Project 11-03, "Synthesis of Information Related to Airport Practices," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an ACRP report series, *Synthesis of Airport Practice*.

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

By Gail R. Staba,
Senior Program Officer
Transportation
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Airports now use social media to enhance emergency management, initially as an outgoing tool to disseminate notifications, warnings, and public information associated with emergencies. Until recently, people had to wait for a credible news source to validate what was happening in the world around them, but now people turn to citizen journalists and their accounts, accurate or not, of what is unfolding for news, particularly in large-scale emergencies. Often, news outlets now get to an event after ordinary citizens and interview those citizens, who have already filmed, uploaded, and reported on the event.

Using social media for emergency management, airports glean information and intelligence from the stream of posts and messages passing through social media and then apply this information to enhance situational awareness and resource allocation decisions by emergency managers. Such uses raise the stakes for timeliness of data extraction and validation of the results, especially if the information is going to be used for resource allocation and other decision making. The timeliness aspect means that social media for emergency management must involve real-time or near real-time extraction processes, such as data scraping, social listening, and social monitoring. This synthesis of current airport practice documents recent experience and tools available for use by airport emergency managers.

Information in this study was acquired through a case example approach. Six organizations assessed how they have developed and used social media for emergency management systems, how this relates (if at all) to their overall use of social media, and the lessons that airports can learn from these case examples. The case examples consisted of three airports (Edmonton International Airport, Minneapolis-St. Paul International Airport, and Vancouver International Airport), one airline (Southwest Airlines), and two non-aviation organizations (the New York City Office of Emergency Management and the University of North Dakota Police Department). In addition, two cases are briefly described in which trained volunteers staff social listening needs when an emergency operations center is activated (the American Red Cross Digital Disaster Operations Center and the Florida State University Virtual Operations Support Team).

Dr. James F. Smith, of Smith-Woolwine, Inc., and Dr. Kim Kenville, of Kim Kenville Consulting, collected and synthesized the information and wrote the report. The members

of the topic panel are acknowledged on the preceding page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

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Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the web at www.trb.org) retains the color versions.

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USES OF SOCIAL MEDIA TO INFORM OPERATIONAL RESPONSE AND RECOVERY DURING AN AIRPORT EMERGENCY

SUMMARY

The power and reach of social media (SM) are unprecedented in scope and speed. The SM landscape is developing and evolving rapidly. It is difficult to measure SM's return on investment for today's organizations. However, whether the exact value is known, it is imperative that an organization evaluate the many opportunities that present themselves in the area of social media and adapt those that make sense for the organization. Until recently, people had to wait for a credible news source to validate what was happening in the world around them, but now they can turn to citizen journalists and their accounts, accurate or not, of what is unfolding. Oftentimes, news outlets now get to an event after ordinary citizens have used social media to document it and the outlets interview the citizens who already filmed, uploaded, and reported on the event.

Many organizations, including airports and airlines, began using SM for branding and for customer service–related inquiries as customers made comments via social media platforms about their experiences and complaints. Subsequently, some organizations began to use social media to enhance emergency management (SMEM), initially as an outgoing tool to disseminate notifications, warnings, and public information associated with emergencies. SM platforms offer many advantages for such uses. SMEM requires gleaning from the stream of posts and messages passing through social media information and intelligence that can be applied to situational awareness and resource allocation decisions by emergency managers. Such uses raise the stakes for timeliness of data extraction and results validation, especially if the information is going to be used for resource allocation and other decision making. The timeliness aspect means that SMEM must involve real-time or near real-time *extraction* processes such as data scraping, social listening, and social monitoring.

This synthesis uses a case example approach to examine how six organizations have developed and used SMEM systems, how this relates if at all to their overall use of SM, and the lessons that airports can learn. The six case examples are three airports (Edmonton International Airport, Minneapolis–Saint Paul International Airport, and Vancouver International Airport), one airline (Southwest Airlines), and two non-aviation organizations (the New York City Office of Emergency Management and the University of North Dakota Police Department). In addition, two cases are briefly described that use trained volunteers to stand up social listening functions when an emergency operations center is activated (the American Red Cross Digital Disaster Operations Center and the Florida State University Virtual Operations Support Team).

The following conclusions may be drawn from the case examples and the literature review:

- Having a clear vision of what the airport wishes to achieve through SMEM is the essential first step; everything else should follow.
- An airport with a social media presence and in-house experts can be ready and valuable to support emergency responders in any event.
- Growing social media and SMEM programs internally seems most beneficial. This process works best when an airport takes it on instead of outsourcing. The actual

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employees working for that entity can give it the time, knowledge, and care it needs to grow.
  – Most organizations utilize on-the-job training, as the SM landscape evolves quickly.
  – Rotating workers avoids SM burnout and empowers the employees so there is no appearance of being scripted or nonresponsive—timely is the name of the game. This applies when the program seeks to be interactive (i.e., have conversations) and even when the program uses pre-scripted responses in some situations.
• A designated SMEM champion can show the value of SM programs to the C-level in the organization. This requires determining what metrics to use to show the value of the SM presence and win more resources as needed.
  – Participation from other departments across the organization is key; this enables the SM presence to be valued by all and allows for resources to be shared.
  – Engaged employees ("evangelism" as the Los Angeles Fire Department and Southwest Airlines term it) will enhance overall employee morale. Seeing their organization's efforts in responding to or leading an issue will be a source of pride.
• Organizing and staffing one's SMEM on the basis of desired communication outcomes is far superior to starting from a technological or outside cultural standpoint. Those with experience in customer service and marketing can use social media analytical tools to provide decision-quality information and intelligence.
  – A thoughtful SM presence will build creditability for the organization.
  – Superior emergency management as enabled by SMEM will be viewed as part of an airport's overall superior reputation and customer service.
  – An effective SM and SMEM platform can serve the broader community (e.g., the Edmonton International Airport case example).
• Embedding the SMEM program into the airport's overall crisis communications strategic plan and SM program is productive.
• The public information officer and emergency managers need to develop a relationship that promotes information sharing and joint planning, training, drilling, and exercises.

The findings of this synthesis suggest that further research is needed on the following topics:
• A guidebook for the creation and maintenance of SMEM systems for airports of all types and sizes
• Model pre-scripted announcements, posts, and so forth for airports to use in SMEM notifications, warnings, and outgoing information
• Evaluation of current validation and verification systems for SM-derived information including automated systems
• Update of *ACRP Report 94* (*Integrating Web-Based Emergency Management Collaboration Software into Airport Operations—A Primer*) and ACRP current research project 16-04-03 (*Guidebook for Airport Emergency Operations Centers*) to account for display and use of SMEM inputs in emergency operations centers.

CHAPTER ONE

INTRODUCTION

AN AIRPORT EMERGENCY IN WHICH SOCIAL MEDIA WERE IMPORTANT: THE JFK GUNMAN SCARE

The rapidity, easy access, and unmoderated nature of social media create unique challenges for airport crisis/emergency management. Reports and visual imagery, even live streaming, can reach the public through social media platforms as fast or even faster than they reach dispatchers and first responders and typically much faster than they can reach the emergency operations center of an airport. Social media reports and images can create the sorts of confusion and chaos as was seen at John F. Kennedy International Airport (JFK) in August 2016.

On Sunday night, August 14, 2016, chaos erupted at JFK. Just after 9:30 p.m. EDT outside the security checkpoint at Terminal 8 there was a loud pop. Passengers and employees in the terminal panicked and began to self-evacuate out of the terminal (Santora 2016; WPIX-TV 2016). Several people called 911 to report gunshots (Wilson and Goldstein 2016). There was also a false report of a bomb. For a few minutes, the secure side of the terminal was unaware and unaffected, but word spread quickly via social media, and the airside of Terminal 8 panicked around 9 p.m. (Santora 2016; WPIX-TV 2016). Eventually, more than one hundred 911 calls were received. By 9:57 a 911 call came from Terminal 1, where the panic had spread, apparently as a result of Twitter™ and Facebook social media posts from passengers in Terminal 8 (Wilson and Goldstein 2016). [See Stack (2016) and Cleary (2016) for representative social media posts and tweets made during the incident.]

None of the entities involved at the airport—the airport itself, the Port Authority Police, TSA, the airlines, or any others—got ahead of social media to correct the reports online and prevent the panic in the crowds. The Port Authority of New York and New Jersey—the owner of the airport—issued its first public statement via Twitter at 11:00 p.m. According to social media posts and tweets by passengers in the terminals, traditional communications such as public address and verbal commands by law enforcement seemed insufficient to control the situation.

New York Governor Andrew Cuomo announced an interagency investigation to determine how communications and the coordination of the response broke down, and the executive director of the Port Authority of New York and New Jersey ordered an after action review that began on August 15, 2016 (Stepansky et al. 2016). The report to Governor Cuomo was issued by the John F. Kennedy International Airport Multi-Agency Security Review Team on November 16, 2016. The Review Team found that the existing security protocols "do not reflect the new, changing reality at airports," specifically that "the coordination and standard protocols for operations have not adjusted to the increased presence" of the number and variety of security forces present. Differing types and levels of training aggravate the problem. Although the Review Team addressed the state of heightened anxiety of passengers and security personnel and how it helped create overreaction and panic on August 14, its report did not mention social media's role. The Review Team made four recommendations:

1. Establish a single, unified operations center responsible for overseeing and directing security operations for the entire airport and facilitating shared communications. This recommendation addresses closed-circuit television, public address system announcements, and other internal communications but does not mention social media—neither social listening nor outgoing notifications and warnings.

2. Coordinate training with security stakeholders, specifically to include mass self-evacuation events.

3. Require a coordinated security and emergency training for all airport employees.

4. Develop a plan for mass evacuation at JFK. In this recommendation, the Review Team addresses the use of social media: the JFK mass evacuation plan "should anticipate the need to maintain communication with airport employees and the traveling public through the use of signage, social media and direct communication platforms." The recommendation does not say what should be communicated via social media beyond "ensuring that critical information is provided to the public throughout emergency situations."

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What were the consequences of the incident? Terminals 8 and 1 were totally disrupted for nearly 3 hours on one of the busiest travel days of the summer. Terminal 2 was disrupted to a lesser extent by self-evacuees from Terminal 1. Civilians were in the aircraft operating area. Security doors were opened. The rail line to the airport was shut down, and the Van Wyck Expressway that passes between Terminals 8 and 1 was shut down (Santora 2016). On the positive side, the airport and its partners learned lessons about communications problems including the effects of social media in an airport emergency.

The JFK false shooter report as well as other mistaken and real incidents show the unique challenges for airport crisis/emergency management that can be created by social media use by the public. The present study examines how airports can manage these challenges and can use social media to enhance emergency response and recovery as well as to protect the reputations of the airports.

HOW SOCIAL MEDIA ARE TRANSFORMING COMMUNICATIONS

Social media have become ubiquitous, having started as a product of the web pages and user groups on the Internet. The first social networking sites followed soon after the creation of web pages and user groups, and Facebook was launched in 2004. Dozens of other social media sites have followed and continue to be launched. Most web pages changed from static to dynamic in nature, with this change opening the door for modern interactive communications applications.

The popularity of social media was greatly enhanced by the introduction of the smartphone and its rapid acceptance by the public. A smartphone gave anyone immediate access to the Internet in a mobile form. Thus, social media with web pages, notifications, tweets, messages, and alerts became constant and real-time (pocketnow.com 2014). The combination of Web 2.0 social media offerings, smartphone convenience and mobility, and unlimited data plans on those phones led to an explosion of the popularity and usage of social media.

Figure 1 illustrates how popular the top five social media platforms are (Greenwood et al. 2016). The graph is based on the percentages of *online* adults who use each platform. Anderson and Perrin (2016) found that 87% of all U.S. adults use the Internet; 52% used the Internet in 2000.

Facebook remains the most popular social media platform

% of online adults who use ...

Note: 86% of Americans are currently internet users
Source: Survey conducted March 7-April 4, 2016.
"Social Media Update 2016"

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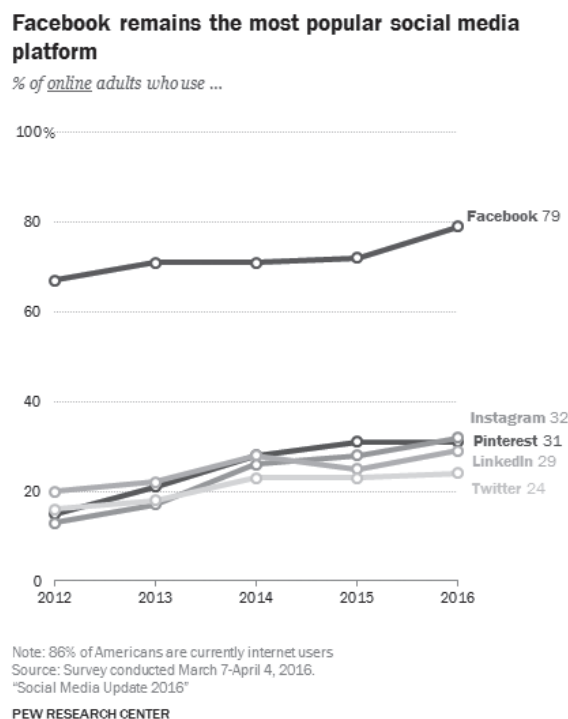
FIGURE 1 Social media sources of news for U.S. adults
(*Source*: Anderson and Perrin 2016).

According to a 2016 Pew Research Center survey (Gottfried and Shearer 2016), 62% of U.S. adults (18 years of age and older) get their news from the major social media sites, as shown in Figure 2.

Social media news use: Facebook leads the pack

% of U.S. adults who ...

Facebook — Use site 67%

Facebook — Get news on site 44%

YouTube 48 / 10

Twitter 16 / 9

Instagram 19 / 4

LinkedIn 20 / 4

Reddit 4 / 2

Snapchat 10 / 2

Tumblr 4 / 1

Vine 2
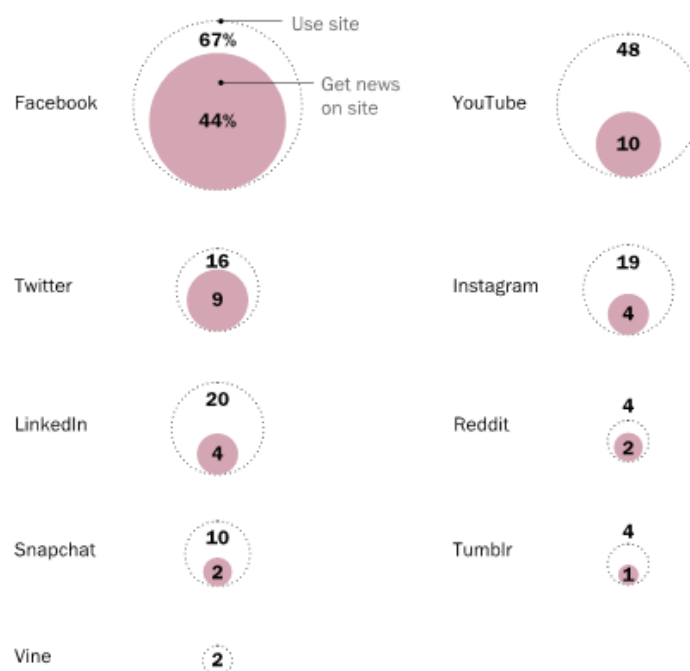
Source: Survey conducted Jan. 12-Feb. 8, 2016.
"News Use Across Social Media Platforms 2016"

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FIGURE 2 Schematic representation of use of SM-derived intelligence into emergency management process (*Source*: Gottfried and Shearer 2016).

If the entire population is analyzed to see which platforms are used by which age groups, a more complicated view emerges (Figure 3; Gottfried and Shearer 2016). In early 2016, 18- to 29-year-olds preferred Instagram, followed by Twitter and YouTube as news sources; 30- to 49-year-olds preferred LinkedIn, followed by Twitter and Facebook; 50- to 64-year-olds used LinkedIn, YouTube, and Facebook about equally; and adults 65 and older preferred LinkedIn.

The popularity of social media platforms can change rapidly, and teenagers seem to lead the waves of change. Figure 4 illustrates this. Snapchat and Instagram are the teens' current favored tools as of fall 2016 (Jaffray 2016), yet Snapchat did not even register in the 2016 Pew Survey of adult users (Figure 3). The trends in the demographics of social media use shown in Figures 1–4 mean that airports need to track both the audiences they wish to engage and the best platform(s) to reach them. What works today may be replaced quickly, with new platforms and changing preferences.

Corporations and other institutions can clearly see ways to use social media to establish brand identities, advertise products or services, and provide information to potential customers or clients. Initially, these uses involved outgoing messages from social media account holders. However, the interactive nature of Web 2.0 applications and the ability to create conversations led to additional commercial uses, such as complaint resolution and customer service surveys.

Once interactions and conversations were happening on social media via the Internet, corporations and new types of service providers realized that the information could be harvested and analyzed for such things as buyer preferences. If the analysis is done on databases of stored data, this is data mining. If it is done by capturing real-time or near real-time data passing through the sites, it is data scraping, which is roughly synonymous with social listening and social monitoring. Vendors set up programs to search the flow through social media of key words and phrases and/or the special subject indicators called hashtags, then extract everything containing those words, phrases, or hashtags. Some vendors provide this as a subscription service, delivering the analytical results to the user client. Others created software packages that are sold to or rented by the

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end users who then do their own capture and analysis of data. An alternative approach to social listening is to do it by geographically defined areas using the geodata encoded by locations on smartphones; this is called geofencing. Most modern social listening programs have dashboards that allow searching by both words and geographic areas.

Demographic profile of social networking site news users
% of news users of each site who are ...

	Facebook	YouTube	Twitter	Instagram	LinkedIn	All U.S. Adults
Male	43%	57%	47%	35%	56%	48%
Female	57	43	53	65	44	52
18-29	31	38	38	58	20	22
30-49	38	30	39	28	46	34
50-64	22	23	19	12	24	26
65+	8	9	3	2	11	19
High school or less	33	34	17	28	8	41
Some college	34	41	38	41	26	31
College degree	33	25	45	31	65	28
White, non-Hispanic	65	55	61	40	65	65
Non-white	34	44	38	57	34	35
Republican	22	21	19	14	23	25
Democrat	31	29	31	40	29	30
Independent	32	31	31	27	34	31

Note: "All U.S. Adults" figures based on non-institutionalized, 18 and older U.S. adults.
Source: Survey conducted Jan. 12-Feb. 8, 2016. Pew Research Center analysis of 2014 American Community Survey (IPUMS).
"News Use Across Social Media Platforms 2016"

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FIGURE 3 Sample EIA informational tweet (*Source*: Twitter.com/flyeia).
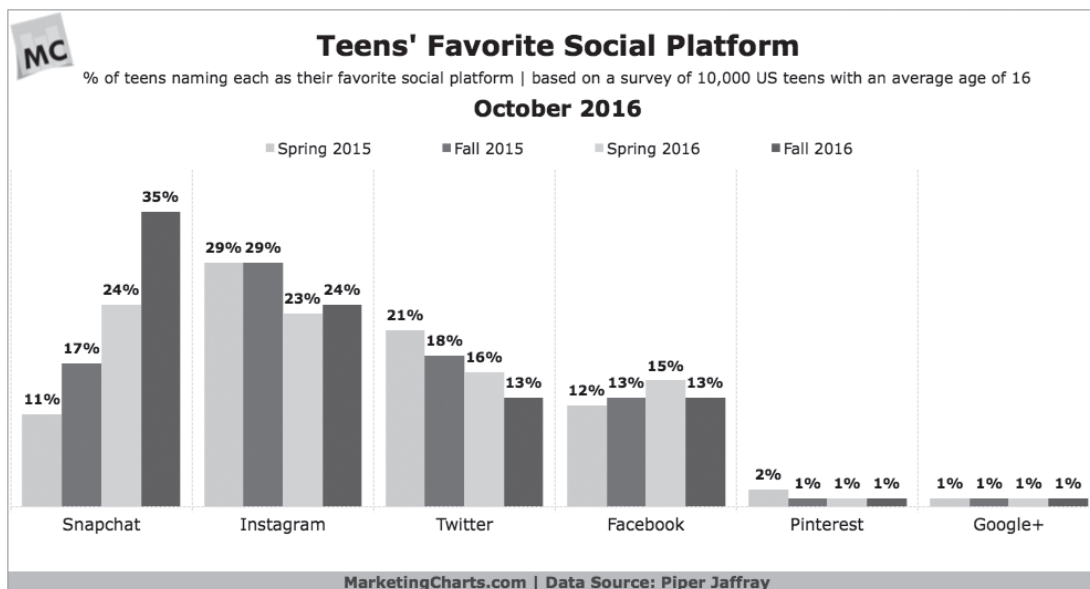
FIGURE 4 Sample conversation by EIA on Twitter (*Source*: Twitter.com/flyeia).

HOW SOCIAL MEDIA ARE BEING USED IN EMERGENCY MANAGEMENT

Emergency managers can use social media in five basic ways:

1. Disseminating emergency public information directly to the impacted public. This includes giving the public instructions and directions.

2. Owning the media space and shaping messages. This includes general messaging and the correction of misinformation.

3. Providing the incident commander or unified command with indicators and warning of a problem so they can initiate a response.

4. Providing the incident commander or unified command with information about an incident or victims beyond the incident commander's or unified command's direct view.

5. Providing command and control node (incident commander, unified command, or emergency operations center) with actionable information to allocate resources and shape response and recovery.

Information from social media can reach emergency managers through several routes:

- From social listening software or vendors;
- Via telephone, e-mail, or other communication from a citizen or member of the airport community who sees the social media post and contacts the airport or 911 directly;
- From an outgoing request for information—that is, crowdsourcing—that seeks information from the public; or
- By monitoring conversations on social media.

Social media allow the rapid creation of new bodies of information in ways that were not feasible before. Wikis enable to the co-creation of texts and images. Shared access document applications (e.g., Google Docs) allow real-time document management involving geographically dispersed participants. Storytelling is possible using photo sharing, video sharing, and live streaming applications (e.g., YouTube, Instagram, Vimeo, or Periscope). Social networking and microblogging platforms (e.g., Facebook, Twitter, or Snapchat) support conversation, information sharing, and news amplification.

Social media can produce a torrent of information quickly and cheaply. Emergency management, by its nature, needs every possible input to give the most immediate, most complete, most accurate picture of a situation. This makes social media—especially since many social media programs and the social listening software that harvest information from them can convey images and videos—a highly attractive new source of information for emergency managers. Information is needed during all stages of emergency management, but especially during response and recovery.

Social media for emergency management is already well established in many types of organizations. According to Holdeman (2016), "The train, boat, bus, airplane on social media has left the station and airport. Get on board if you are not already doing something in your emergency management program." Holdeman noted that the 2016 Washington Statewide Social Media Summit was attended by over 500 more people than the previous year's summit.

> Over the past five years, social media have impacted emergency management and disaster response in numerous ways. The emergency management professional must begin to accept this impact not as an arbitrary consequence of an uncontrolled disaster, but rather as a tool to help coordinate, manage and facilitate a safe and expected response during emergencies and disasters. (Crowe 2010, p. 409)

> Clearly, social media are changing the way people communicate not only in their day-to-day lives, but also during disasters that threaten public health. Engaging with and using emerging social media may well place the emergency-management community, including medical and public health professionals, in a better position to respond to disasters. The effectiveness of our public health emergency system relies on routine attention to preparedness, agility in responding to daily stresses and catastrophes, and the resilience that promotes rapid recovery. Social media can enhance each of these component efforts. (Merchant et al. 2011, p. 290)

White (2012) lays out a roadmap for the use of social media in an organization for emergency management. The chapters articulate the processes for why, what, and how to use social media in emergency management. White also lists examples of how social media can prove useful in the four phases of crises/disasters.

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According to White (2012) several challenges exist with social media. First, when aggregating information, it is important to direct information using hashtags, keywords, and other filters; however, the information needs to remain in one place. "One way to assist with this is to tightly couple the multiple sites together using another application" (p. 281). This is important during emergencies and when people need information that may or may not be posted at the location. A second challenge is stakeholder acceptance and involvement. "Social media are definitely transforming the way people exchange information and new employee positions will need to be developed to closely monitor incoming and outgoing information and organizations will need to be more responsible to the needs of the public during normal and emergency times" (White 2012, p. 283).

Social media are also becoming vital to recovery efforts after crises, when infrastructure must be rebuilt and stress management is critical. The extensive reach of social networks allows people who are recovering from disasters to rapidly connect with needed resources. Tweets and photographs linked to timelines and interactive maps can tell a cohesive story about a recovering community's capabilities and vulnerabilities in real time. Organizations such as Ushahidi have helped with recovery in Haiti by matching volunteer health care providers with distressed areas. Social media have been used in new ways to connect responders and people directly affected by such disasters as the Deepwater Horizon oil spill, flash floods in Australia, and an earthquake in New Zealand with medical and mental health services (Merchant et al. 2011).

In a case example of the Los Angeles Fire Department, using social media focused on several key findings, (1) there needs to be an "innovator" at the staff or public information officer (PIO) level who wants to develop the organization's social media acceptance, often referred to as "evangelism"; (2) interacting with more citizens requires leaving old media and embarking on new media platforms; (3) leveraging Twitter indicates an opportunity to "listen" to citizen issues and respond; and (4) organizations will still need to respond and utilize traditional media sources in *addition* to the newer social media platforms (Latonero and Shklovski 2011).

In June 2016, the Federal Emergency Management Agency (FEMA) stepped up its social media presence by launching its own application ("app") to educate the public on vital information to consider during an emergency. This app is not intended to replace the normal protocols but mainly to enhance resiliency among the public. The FEMA app contains preparedness information for different types of disasters, an interactive checklist for emergency kits, a section to plan emergency meeting locations, information on how to stay safe and recover after a disaster, and general ways the public can get involved before and after a disaster. The agency is also looking at ways to use social media to have conversations with communities affected by disasters. A major new feature of FEMA's new social media platform lets users receive information and submit disaster-related images to be publicly hosted on the FEMA website. The ability to upload pictures and receive data in almost-real time will be useful not only to the public, but also to first responders. "The public is a resource and often times the initial and first reports we get are people putting up information, from tweets, from Flickr," said Beth Freeman, FEMA Region VII Administrator. "Rather than waiting for that to come up, they would be doing that in the app that will allow it to be shared with other first responders." Authentication is a key component to the feature's success. FEMA knows that altered submissions may happen. That is why they geo-tag and moderate all submissions to make sure they are not altered or do not put anyone at risk.

The examples of organizations turning to social media to better communicate, respond, and promote resiliency among the public is ever-increasing. The importance and reliance that is being placed on social media is unprecedented. Members of the public want immediate information, and they also want to be among the first to witness, report, and add to the recovery of most critical situations. Organizations need to engage in this already-engaged group of consumers and work in tandem with this growing trend.

WHY AIRPORTS SHOULD TAKE SOCIAL MEDIA SERIOUSLY FOR EMERGENCY MANAGEMENT

The JFK example that opened this chapter shows what can happen if an airport and its partners do not use social media effectively. Many other airports have experienced similar problems that arose when social media spread real or false information to the public. The Vancouver International Airport case example in this report describes the consequences of a false social media report of a communicable disease on a plane that was still in flight. Social media posts had major impacts during the active shooter incident at Los Angeles International Airport in 2013 and the Zorro incident there in 2016. Photos posted by a just-evacuated passenger from Asiana flight 214 at San Francisco International Airport reached the Internet within 45 seconds of the plane coming to rest on the runway. These instances effectively illustrate why an airport *cannot* afford to take social media lightly, especially for emergency management.

Most airports have learned the value of social media for marketing and customer service including complaint resolution. The next step is for them to consider ways to apply their social media expertise to the informational needs of emergency management. De Magristris (2016) benchmarked the use of social media for emergencies at six international airports (Calgary, Halifax Stansfield, Toronto Pearson, Vancouver, Dallas Fort Worth, and Geneva) on behalf of Montreal Trudeau International Airport as it began to develop a social media for emergency management program. Each of those airports uses social media for emergency management; Vancouver International Airport is a case example in the present study and Toronto and Dallas Fort Worth were interviewed during the reconnaissance phase.

Before an airport can determine how to extract information from social media and use it to inform its emergency management functions, the airport needs to decide if the effort is worthwhile. The first thing the airport must do is decide *what it wants to know.* This is the area in which many fail. Actual communications and data needs must drive this decision, not technological innovation or cultural trendiness. Once the data needs have been identified, the airport can identify suitable data sources, such as social media.

If the airport identifies more than one social media data source, it will usually become necessary to integrate the data; that is, to put it into a homogeneous format that a processor can understand. There are various ways to process the data: purely manual, purely automatic, and hybrid. Purely manual means that people must look at data streams—for example, a Twitter feed—to find relevant information. A purely automatic system could, for example, group similar tweets into stories that can be viewed together. A hybrid system blends manual and automatic analysis for greater flexibility; that is, to learn analytical patterns from users that can then be applied to new incoming data. Which kind of system is appropriate for an airport depends on several factors, including the volume of data being handled and how many resources the organization is willing to devote. Exactly the same concerns apply to outgoing messages sent by an airport during emergencies.

The key to creating impact from the data is to move beyond the technology and set up the right organizational structures and processes to move relevant information from processing to decision making. Theoretically, the soundest approach is to analyze what is already in place, then selectively add information from social media and automate where necessary and/or possible. The idea is to let technology adapt to human workflows instead of just setting up a new system and expecting people to change their ways to use it. Complex web-based emergency coordination systems that are not practiced routinely usually lead to problems, as was documented in *ACRP Report 94* (IEM Inc. et al. 2013). Blindly assuming that social media can be used to enhance emergency management can be dangerous, diverting scarce resources from where they are needed most and exacerbating information overload, which leads to worse decisions and worse performance (D. Link, personal communication, Nov. 8, 2016).

This ACRP synthesis examines the full range of how airports and other organizations use their social media platforms and social listening to enhance responses to and recovery from airport emergencies. As previously noted, social listening, social monitoring, and data scraping are synonymous; social listening will be used throughout this report to indicate the extraction and analysis of actionable information in real time from social media.

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CHAPTER TWO

STUDY METHODOLOGY

SCOPE OF STUDY

The objective of this research is to compile experiences and effective practices on how, by whom, and where social media information is collected, analyzed, and disseminated to inform incident responders at airports. It seeks pertinent information from both aviation and non-aviation organizations. This final report presents data compiled from the six case examples and reports on existing practices, proven tools, and challenges to using social media to inform response and recovery. Audiences for this synthesis are incident first responders, airport operations and facility managers, those responsible for public information, and C-level leadership who will need to support and approve staffing and other resource commitments.

The application of social media data extraction and analytical methods to law enforcement and national security applications lies outside the scope of this study. The primary reason for this exclusion is that including intelligence and surveillance applications of social media as applied to airports would get into plans and procedures that are security-sensitive information and therefore impossible to include in a publicly accessible report. However, the all-hazards perspective espoused by all six case examples in this study means that criminal and terrorist threats may be detected through social media for emergency management (SMEM). In such cases, response will be led by the organization's law enforcement partners, with their emergency operations centers (EOCs) as liaisons.

METHODOLOGY

Early on, it was determined that a survey would not be utilized in the research effort. Fully realized SMEM programs with at least 2 years' experience were too uncommon or were too closely tied to law enforcement and intelligence agencies to allow for an adequate number of SMEM programs to survey for this study. The research team sought suitable case examples—non-law-enforcement organizations that have used SMEM for at least 2 years—from among airports and non-aviation examples.

Based on a preliminary literature review, direct contacts with candidate airports and other organizations, and discussions with experts in the field, more than 200 candidate entities were identified as potentially meeting the criteria and were contacted by telephone or e-mail. The candidate entities included airports, airlines, large shopping centers, large retailers, sports venues, state agencies, universities, public school systems, hospitals, and nursing homes. Approximately 20 entities were selected for further screening. Of these, eight were selected for fuller development for this study.

A questionnaire (Appendix A) was provided to each case example, and then a telephone interview was completed to clarify questionnaire answers and give the respondents an opportunity to expand on their organizational philosophy and intentions for the future. Six complete case studies were examined as well as two more limited cases that use a different approach:

1. Edmonton International Airport

2. Minneapolis–Saint Paul International Airport

3. New York City Office of Emergency Management

4. Southwest Airlines

5. University of North Dakota Police Department, which provides SMEM to the entire university

6. Vancouver International Airport

7. Two entities that use volunteers to stand up social listening operations ad hoc during emergencies

The eighth entity, a very large retail operation, completed the questionnaire and the interview but subsequently withdrew, saying that its social media operations and SMEM gave it a significant commercial competitive advantage and would therefore remain proprietary. The research team noticed that for-profit organizations are apparently less accustomed to sharing information on emergency procedures than are public entities and highly regulated entities such as an airline.

PREVALENCE OF CANADIAN AIRPORTS IN A SOCIAL MEDIA STUDY

During the interviews with the airports in Edmonton and Vancouver, the research team asked the airport managers why Canadian airports appear to be more advanced in use of social media (SM) in general and SMEM in particular. The managers suggested four possible reasons that this may be true:

- Canada is a very wired nation, so citizens and customers expect airports to communicate better through all available channels.
- Canada's geography and population distribution encourage telecommunications innovation, dependency, and early adoption. Internet and SM are just the latest manifestations.
- Canada's self-funding airport system forces/encourages greater airport engagement in the community.
- Early successes with SM have fed further use and innovation.

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CHAPTER THREE

CASE EXAMPLES

Six case examples are presented—three airports, one airline, one university, and a major city's emergency management agency. In addition, two short examples that use volunteers to do social listening on an ad hoc basis are described. In each case example, the main focus is on—

- Organizational changes made to manage the flow of actionable information to emergency managers,
- Methods of verification applied to convert raw information to actionable information,
- Software used,
- Practical considerations of adopting social media for emergency management, and
- Extraction of lessons learned and how they are applied.

The three airport case examples and the airline case example clearly capture the state of the art of airport social media today (December 2016): their focus, which has been on branding, customer service, notifications, warnings, and reputation management is beginning to shift toward the provision of actionable information to assist with command and control in emergency situations. This situation is nascent—the three airports used for case examples here plus Toronto Pearson International Airport are the leaders, all having 2 to 7 years' experience applying social media to emergency management. Perhaps the best indicator of an airport's progress toward adopting and using SMEM is the extent to which a joint information center (JIC) has become an important member of its EOC (M. Scott, personal communication, Dec. 7, 2016).

EDMONTON INTERNATIONAL AIRPORT AND EDMONTON REGIONAL AIRPORTS AUTHORITY

The Edmonton International Airport (EIA) served 7,981,076 passengers in 2015; fifth most in Canada and 51st in North America. If EIA were in the United States, it would be classified as a medium hub, falling somewhere between San Antonio International Airport and Cleveland Hopkins International Airport.

The EIA case example models four important options that an organization considering the development of an SMEM program needs to consider:

- How to leverage existing SM expertise in an airport's communications and public relationships to expand into SMEM,
- How to adjust the airport's organization to promote the flow of actionable information to the EOC,
- An effective method of verification, and
- How building acceptance of the airport's SM in general pays dividends in emergencies.

Table 1 presents the basic parameters of the SM and SMEM programs at EIA.

The Edmonton International Airport is strongly committed to using social media to serve its community and to promote communications between the airport and its customers, its tenants, and its neighbors. The city of Edmonton is highly wired, and the airport follows suit. When the airport moved to more results-based operations, efforts were made to improve all aspects of communications. EIA went into social media with limited professional experience with the specific technology, but with excellent skills in communications. By focusing on what works to enhance communications and customer service, rather than on what is trendy in technology, they have created a strong and credible foundational social media presence that benefits the airport. EIA is focused on customer service, which drives all other decisions, including uses of social media. The airport uses social media as a marketing driver and also sees SM as a community investment and branding tool. EIA still uses traditional communications tools such as press releases but is shifting to follow cultural trends.

TABLE 1

SM AND SMEM AT EDMONTON INTERNATIONAL AIRPORT (EIA)

Year Social Media Presence Began:	2009, began using metrics in 2012
Department:	Communications & Creative Services
Interviewee:	Heather Hamilton, Director of Public Affairs
Employees:	Four or five airport Communications staff have access to SM accounts, estimated; 75 full-time equivalents given to SM
Monitor:	Two to three key managers give approximately 18 hours per day to monitor Facebook, Instagram, and Twitter. More coverage during emergencies using volunteers (other airport staff informally watch and flag to the Communications team).
Extract/Analyze:	Self and subscribe to Meltwater Buzz. Have occasionally contracted some analytics through a consultant with social media expertise.
Software used for important notification or warning:	Twitter for short immediate things; a banner across top of EIA website for ongoing issues
Software for social listening:	Yes: Meltwater Buzz
Uses:	Marketing, Branding, Brand Protection, Customer Service, **Situational Awareness, Decision Making, Notifications, Warnings, Crowdsourcing, Joint Information Center (EOC/PIO), Resource Allocation**
Metrics:	Klout score, number of likes, followers, impressions, posts, tweets. Also review tone and content (manually as well as electronically given quality issues on electronic).
Policies:	In process (August 2016) of developing formal written policies
Training:	Primarily on the job. They have participated in more formal training, such as a course on Google Analytics, and training on the Meltwater Buzz software. The team also attended a half-day Google session. They also consult at times with informal communities of practice (i.e., other airports) on areas of common interest (for example, private transportation providers such as Uber).
After action review/improvement planning include SM aspects of incidents or exercises:	Absolutely

Source: Smith and Kenville data (2016).
Note: Items in bold are association with social media for emergency management, not just social media in general.

The airport's three-letter identifier is YEG; however, they do not "own" #YEG, which has come to be used widely as shorthand for the city of Edmonton and its region. The airport differentiates itself by using FlyEIA and is very aware of how powerful that is within the city, region, and country. The airport embraced this popularity when utilizing its own social media accounts.

EIA primarily uses Twitter (@FlyEIA), Facebook (/FlyEIA), and Instagram (@FlyEIA). The airport uses Twitter the most, but finds Facebook to be the most useful for in-depth interactions. The airport focuses on making its social media use interactive and on creating conversations with the public. See Figures 3 and 4 and note the EIA logo on each message.

A year ago the airport split the management responsibility for communications and social media. The manager of communications and creative services has primary responsibility for managing the airport's overall social media presence, and the director of public affairs has the primary responsibility for managing social media applied to emergency and issues management. These two people work closely together.

In order to make social media use more effective, EIA made several organizational changes. It clarified roles and controlled access to social media accounts with support from the airport's senior management. One unanticipated benefit of the increased use of social media for emergency management has been the breaking down of silos; for example, between public relations, operations, and emergency management.

The SM team has preformatted responses to recurring questions and comments. To be more precise, there is a generally standardized body of knowledge about the airport and its issues that the responding person uses in crafting the response in social media. During the business day, one employee is usually assigned the lead for responding to general comments. Outside of core hours, no airport employee is assigned to SM duty: all the employees who have access naturally administer the SM. The airport found that the ad hoc effort exceeded the level that could be scheduled. The team does not seem to suffer any SM fatigue from day to day and in fact finds SM activities quite gratifying.

Recently, during the Fort McMurray fires near Edmonton, the airport was able to transmit via Twitter ("tweet") requests for strollers, car seats, and water. With the solid network and trust the airport's SM presence has built, approximately 1,200

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strollers and car seats were brought to the dropoff points away from the airport that EIA announced on social media. The story of the Fort McMurray fire is told in EIA social media posts and tweets in Appendix D.

The airport has reduced SM employee engagement in evenings and off hours, which are covered collectively by the team on a voluntary basis. If issues arise, other employees will flag items and refer them to the director of public affairs. If the matter appears sensitive or controversial, or has the potential for escalation, it is sent to the director of public affairs. This two-pronged approach is very cohesive and works well for EIA. The airport's senior management and social media team are quite proud of their SM presence and the level of trust they have built within the airport, community, and country.

As of September 2016, EIA was in the process of writing a formal written policy for social media use including SMEM. The current practice is that the airport responds to comments and to factual tweets and Facebook posts. Only a limited number of people have access to the airport's social media accounts (that is, possess the passwords and are authorized to post). Anyone else wishing to post on behalf of the airport must go to the director of public affairs or the manager of communications and creative services for approval (see Figure 5).

FIGURE 5 A relationship-building conversation on Twitter (*Source*: Twitter.com/flyeia).

When the EOC is activated, the PIO who is stationed in the EOC manages incoming information from social media and outgoing offices, but the social listening and message sending happen outside the EOC in the airport's public information office. Outside the EOC, a senior communications advisor supports the PIO role. During an emergency, all airport communications (including social media) must go through the Public Information Office—all other pathways are cut off. The EOC uses SMEM for situational awareness, resource allocation, decision making, notifications, warnings, and crowdsourcing (H. Hamilton, personal communication, Aug. 24, 2016).

EIA played an active role in both SM and SMEM during the Fort McMurray fire in 2016. EIA's social media presence is so powerful that the airport willingly lends its social media platforms to other organizations that need to reach the public. During the Fort McMurray fire, government and other response organizations sent messages via EIA's Twitter and Facebook accounts. The airport views this as part of its commitment to the community (see Figures 6 and 7).

The primary SM metrics used by EIA are Klout™ software and advertising value per tweet. Klout (https://klout.com/corp/score) score tracks penetration and interaction on a range of zero to 100. EIA's score is 72. A score over 68 puts an organization in the top 5% in its market. EIA typically outperforms the city, mayor's office, and three out of the four major media outlets in Edmonton. The advertising value to EIA is $1,200 per tweet issued by the airport. EIA issues five to six original tweets per day and responds to many more.

EIA's subscription cost for analytical software is approximately $6,000 per year on a flat-rate contract. The staff cost is estimated to be $60,000 per year, based on .50 to .75 full-time equivalent (FTE) effort given to social media.

FIGURE 6 EIA lending its SM platform to another agency in an emergency, example 1 (*Source*: Twitter.com/flyeia).

FIGURE 7 EIA lending its SM platform to another agency in an emergency, example 2 (*Source*: Twitter.com/flyeia).

Lessons Learned: The lessons that EIA would like to share with organizations implementing social media programs are as follows (Only lessons pertinent to SMEM are listed here; lessons pertinent to SM use in general are listed in Appendix E. This is true of all six case examples.):

- Lead from a communications perspective, not from technology: have a message and a brand, and then learn how to use new tools.
- The stronger an airport's SM presence is, the more effective it will be in an emergency.
- Reorganization and breaking down silos will probably be needed to ensure the smooth flow of actionable information to the EOC.

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MINNEAPOLIS–SAINT PAUL INTERNATIONAL AIRPORT AND THE METROPOLITAN AIRPORTS COMMISSION

Minneapolis–Saint Paul International Airport (MSP) served 36,582,854 passengers in 2015; 16th most in the United States, 17th in North America, and 50th in the world. Its National Plan of Integrated Airport Systems category is large hub.

The MSP case example models three important issues for an organization considering the development of an SMEM program:

- How actionable information from SMEM can be applied to enhance emergency management in real time in an actual incident,
- The advantages of incorporating SM and SMEM in an airport's comprehensive crisis communications plan, and
- The importance of keeping up with changes in the uses of various SM platforms by the public.

Table 2 shows the basic parameters of the SM and SMEM programs at MSP.

TABLE 2
SM AND SMEM AT MINNEAPOLIS–SAINT PAUL INTERNATIONAL AIRPORT & METROPOLITAN AIRPORTS COMMISSION (MAC-MSP)

Year Social Media Presence Began:	2011
Department:	Public Affairs and Marketing
Interviewee:	Amanda Greene Guentzel, Manager Public Affairs and Marketing
Employees:	Eight in department and three assigned to social media
Monitor:	Three employees monitor in shift assignments Facebook, Instagram, and Twitter
Extract/Analyze:	Self, do not use contractor
Software used for important notifications and warnings:	Twitter—quick method, media typically sees it and picks up on it; airport website (mspairport.com)—reach potential same-day visitors
Software used for social listening:	Yes: Geofeedia, Tweet Archivist, Semantria, Hootsuite, Facebook Pages Manager
Uses:	Customer Service, **Situational Awareness, Joint Information Center (EOC/JIC)**
Metrics:	Number of likes, followers, impressions, posts, tweets
Policies:	No formal written policies
Training:	On the job
After action review/improvement planning include SM aspects of incidents or exercises:	"This is something we plan to start doing now that our social program has been exercised a couple of times and is incorporated into our crisis communication plan" (A. Greene Guentzel, e-mail, Dec. 23, 2016).

Source: Smith and Kenville data (2017).
Note: Items in bold are association with social media for emergency management, not just social media in general.

Social media are included in the Metropolitan Airports Commission/MSP comprehensive crisis communications plan. In August 2016, the plan was tested in a combined table top and functional exercise that stood up the airport's Joint Information Center and Joint Family Support Operations Center (JFSOC). The exercise was designed to simulate communication efforts between the airport's EOC, JIC, and JFSOC. The exercise was successful and produced several lessons learned. When the exercise began, the three centers were stood up, but it became apparent they were working independently when instead they needed to be able to work in concert to deliver a timely, unified message across all communication platforms (press releases, social media, etc.).

Previously, MSP had experience using SM to inform decision making in an emergency. On December 23, 2015, a Black Lives Matter demonstration was planned at the Mall of America, which is close to MSP. When it was determined that the protest could not be carried out at the mall, the demonstration organizers quickly decided to move it to the airport property. The MSP public affairs and marketing staff were monitoring social media and were able to alert the EOC to deploy the necessary staff and inform the traveling public that the airport was not closed; flights were on time, but the inbound roadway was experiencing congestion. In this incident, MSP's SMEM program used all five methods described in chapter one by which emergency managers can obtain and disseminate information using SM.

The airport firmly believes this social media effort aided in keeping the event peaceful. After the event, the airport received praise from the traveling public and media outlets for being able to accurately inform the public of the events affecting the airport, which is a high travel time for any airport. Major media outlets and citizen journalists were reporting

the airport was closed, but in fact, only the inbound roadway was. With the use of social media, the MSP team was able to communicate directly with the public that the airport was open though it was experiencing traffic issues, and for the public to be patient. This effort has enabled the airport to build a level of trust with the community and maintain its high standards of customer service while respecting freedom of speech and assembly.

The course of the incident on social media can be followed in the screen grabs shown in Figures 8–11.
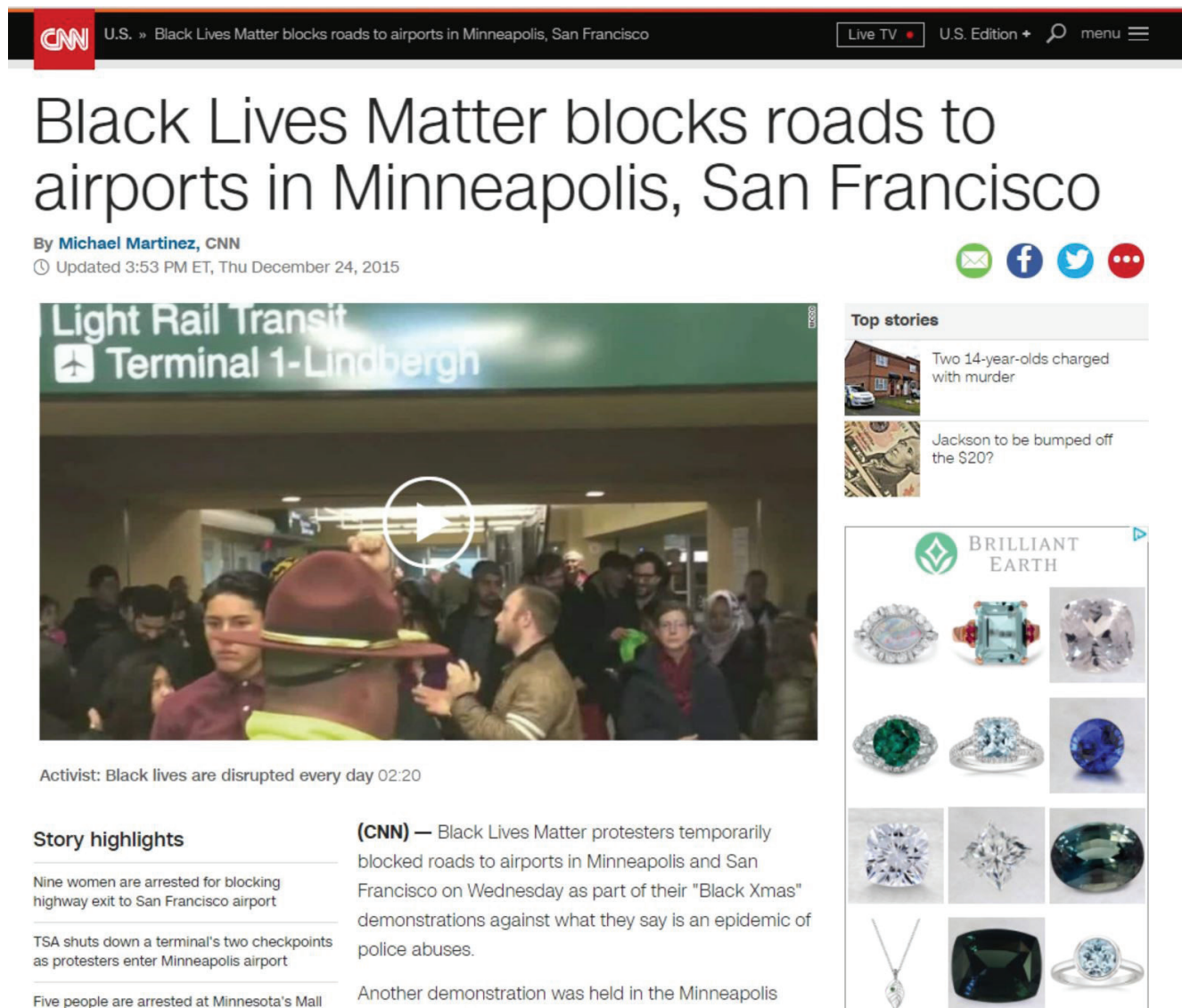
FIGURE 8 Black Lives Matter demonstrations at MSP (*Source*: CNN screen capture by Amanda Greene Guentzel, MAC/MSP).

The SM program at MSP has seen incremental increases in its budget and personnel since its inception, but the department is still small (three people) and budget expenditures have been utilized to upgrade technology and software subscriptions and agreements. Some benefits the airport has realized are the ability to receive more online compliments and the ability to respond more quickly to media relations issues. When asked if the airport has a social media policy, MSP's Director of Public Affairs A. Greene Guentzel responded, "Frankly, the way we attack the social beast changes so often that we've never had time." This is an important factor to think about when trying to develop specific policies regarding SM: technology, responses, and situations change so rapidly, an airport would be constantly updating its policy—if it chose to have one. This applies to all uses of SM including SMEM.

Currently, MSP measures the effectiveness of its SM program by the reach, which is the number of people who received an impression of a page post. "Reach might be less than impressions since one person can see multiple impressions. For

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FIGURE 9 MSP SMEM tweets during airport response to Black Lives Matter. demonstration (*Source*: Fox9 screen capture by Amanda Greene Guentzel, MAC/MSP).

example, if a person sees a Page update in News Feed and then sees that same update when a friend shares it that would represent a reach count of one. MSP's Facebook reach for the months of January–April 2016 for the airport was 17,946,863—which exceeds the total populations of Minnesota and its neighboring states (North Dakota, South Dakota, Wisconsin, Nebraska, and Iowa) combined" (A. Greene Guentzel, e-mail, Dec. 28, 2016). Training for social media employees is done in house and on the job; no formal training curriculum is utilized.

Lessons Learned: The lessons that MSP would like to share with organizations implementing social media programs are as follows:

• Keep up with algorithm changes because they can greatly inform your strategy;
• Spread the load of social media over numerous people: it's a heavy load for one person to handle 24/7, 365 days a year.

FIGURE 10 Black Lives Matter demonstrations at MSP: MSP tweets and CNN coverage (*Source*: CNN screen capture by Amanda Greene Guentzel, MAC/MSP).

NEW YORK CITY OFFICE OF EMERGENCY MANAGEMENT

New York City is America's largest city, with a population of more than 8.4 million in 2016. Approximately 325,000 municipal employees work for more than 50 agencies. The city occupies a critical position in the global financial, transportation, communications, information, commercial, fashion, and entertainment industries. It is the center of the Northeast Megalopolis that stretches from Virginia to New Hampshire and contains 17% of the U.S. population.

The New York City Office of Emergency Management (NYC OEM) handles approximately 200 incidents per day and chose not to identify any single incident as most typical or as the trigger for beginning SMEM (I. Tannebaum, personal communication, Nov. 25, 2016).

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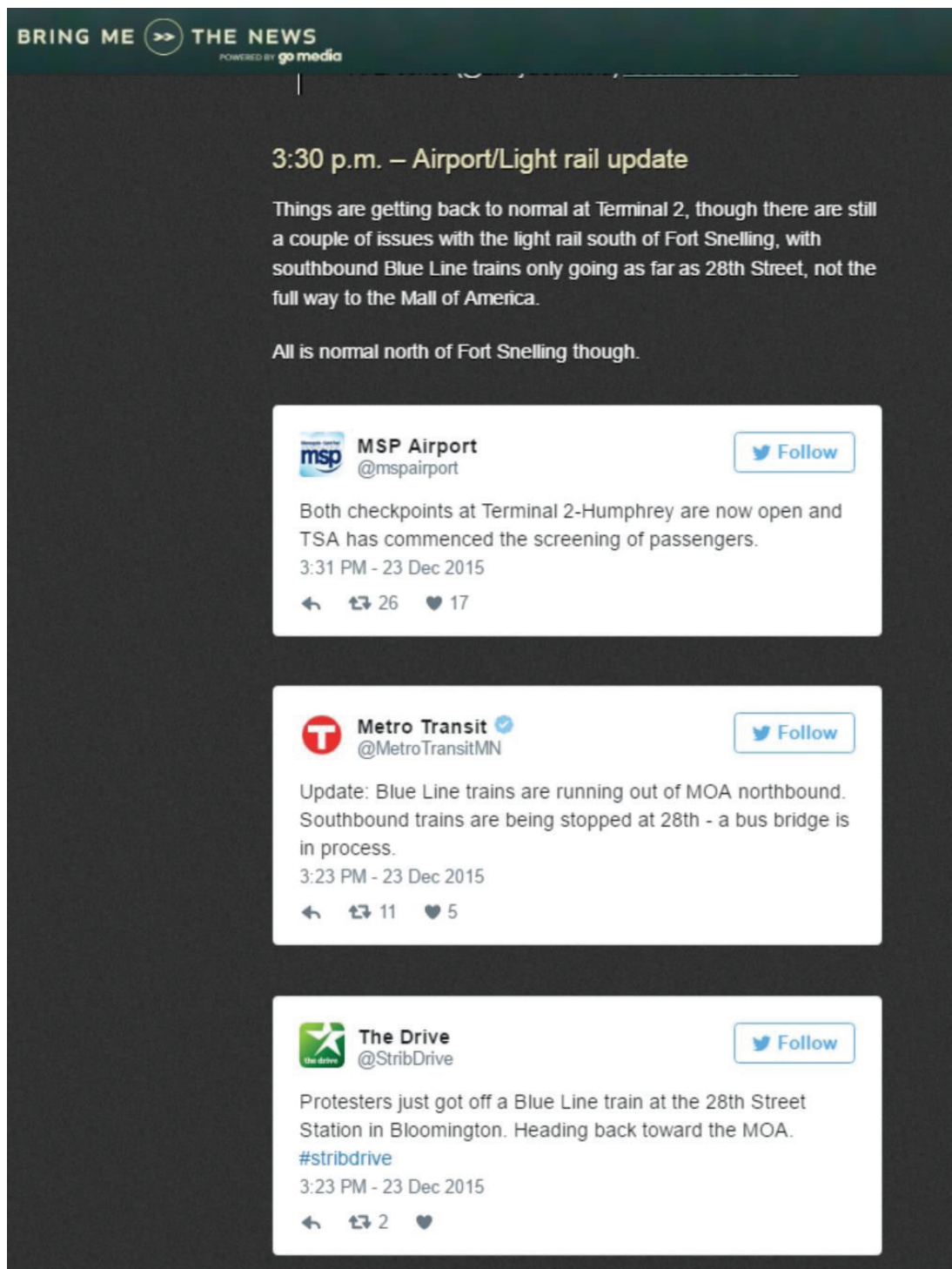
FIGURE 11 *Minneapolis Star–Tribune* retweet of MSP tweets at conclusion of Black Lives Matter demonstration at MSP (*Source*: StribeDrive screen capture by Amanda Greene Guentzel, MAC/MSP).

The NYC OEM case example models four important issues for an organization considering the development of an SMEM program:

- The decision to seek interactive conversations with the public or not to,
- The importance of close coordination with other responders and stakeholders,
- How to manage the flow of actionable information to the EOC, and
- A system for verification of information from SMEM.

Table 3 shows the basic parameters of the SM and SMEM programs at NYC OEM.

TABLE 3
SM AND SMEM AT NEW YORK CITY OFFICE OF EMERGENCY MANAGEMENT (NYC OEM)

Year Social Media Presence Began:	2011 for SMEM
Department:	Watch Command
Interviewee:	Ira Tannenbaum, Assistant Commissioner, Public/Private Initiatives
Employees:	10 FTE for social listening
Monitor:	Continuous social listening and social monitoring; no engagement/interaction sought
Extract/analyze:	In-house; do not use contractor or bundler
Software used for important notifications and warnings:	All of NYC OEM's social media platforms: Twitter, Facebook, YouTube, Instagram
Software used for social listening:	Dataminr
Uses:	Branding, **Situational Awareness, Resource Allocation, Decision Making, Notifications, Warnings, Crowdsourcing, limited use in After Action Reviews/Improvement Planning**
Metrics:	Track tweets, retweets, likes, and follows
Policies:	Written protocols and standard operating procedures
Training:	On-the-job training
After action review/improvement planning include SM aspects of incidents or exercises:	Always

Source: Smith and Kenville data (2017).
Note: Items in bold are association with social media for emergency management, not just social media in general.

NYC OEM has a powerful presence in the social media space. No specific incident triggered its interest in SMEM. Instead, the interest grew from technological developments, cultural changes, and the skills and interests of new hires, particularly young people.

OEM is unique among the six complete case examples in this study in that it operates SMEM without attempting to engage the public in conversations. The two main activities of NYC OEM in the SMEM realm are the collection of incoming situational information and intelligence and the dissemination of outgoing notifications and warnings. The advantages of this approach are clarifying the purpose, promoting the traditional response roles of 911 and 311, and enabling a relatively small staff for SM in OEM. By sticking to listening and monitoring, issues that might arise from an unanswered request for help over SM are avoided. Liability issues of this type were resolved for 911 long ago.

OEM maintains New York City's main SM outlet for information for citizens, the Twitter account NotifyNYC. OEM maintains this account on behalf of all city agencies that deal with emergency situations. Major city agencies' communications and operations center groups meet frequently and regularly to develop pre-scripted messages for all to use, with NotifyNYC being the city's main voice. NotifyNYC has more than 800,000 followers, which is nearly one out of 10 city residents. Having pre-scripted messages for most types of emergency situations allows quick notifications over NotifyNYC and other SM tools (Figures 12–14).

Control and responsibility for SM in OEM are split. The OEM director of watch command handles social listening and analysis operations, situational awareness, and outgoing warnings. All other SM functions belong to the OEM director of communications. The Watch Command space, which is staffed 24/7, is adjacent to the EOC. When the EOC stands up, a Watch Command representative is on the podium and is responsible for passing information from the Watch Command's SMEM sources to the EOC, which makes resource allocation and other decisions. When desired, information from SMEM can be displayed in the EOC but they are not routinely displayed. Verification and validation of incoming SM information is performed by the Watch Command SM monitoring group.

NYC OEM uses the Dataminr software package for which the city has a single contract that serves not just OEM but also the other city departments, including Fire Department of New York and New York Police Department. Dataminr was chosen after a 2-year procurement competition. The subscription cost is approximately $1 million per year; OEM's share is approximately $150,000. Each department applies Dataminr independently, having a dashboard that allows entry of key phrases and geofencing to scrape and display real-time data. Geofencing is the process of using a global positioning system or other locational information to include or exclude inputs from a social media platform.

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In reply to NYCEM - Notify NYC

Rashmi Gill @vivid_clicks · Oct 29
@NotifyNYC @FDNY I hope everyone made it out safely!

In reply to NYCEM - Notify NYC

The Quiet Car @TheQuietCar · Oct 29
This really is no joke @NotifyNYC @FDNY the toxic smelling smoke woke me up 3+ blocks away
Holy hell it's BAD
I can only imagine street side
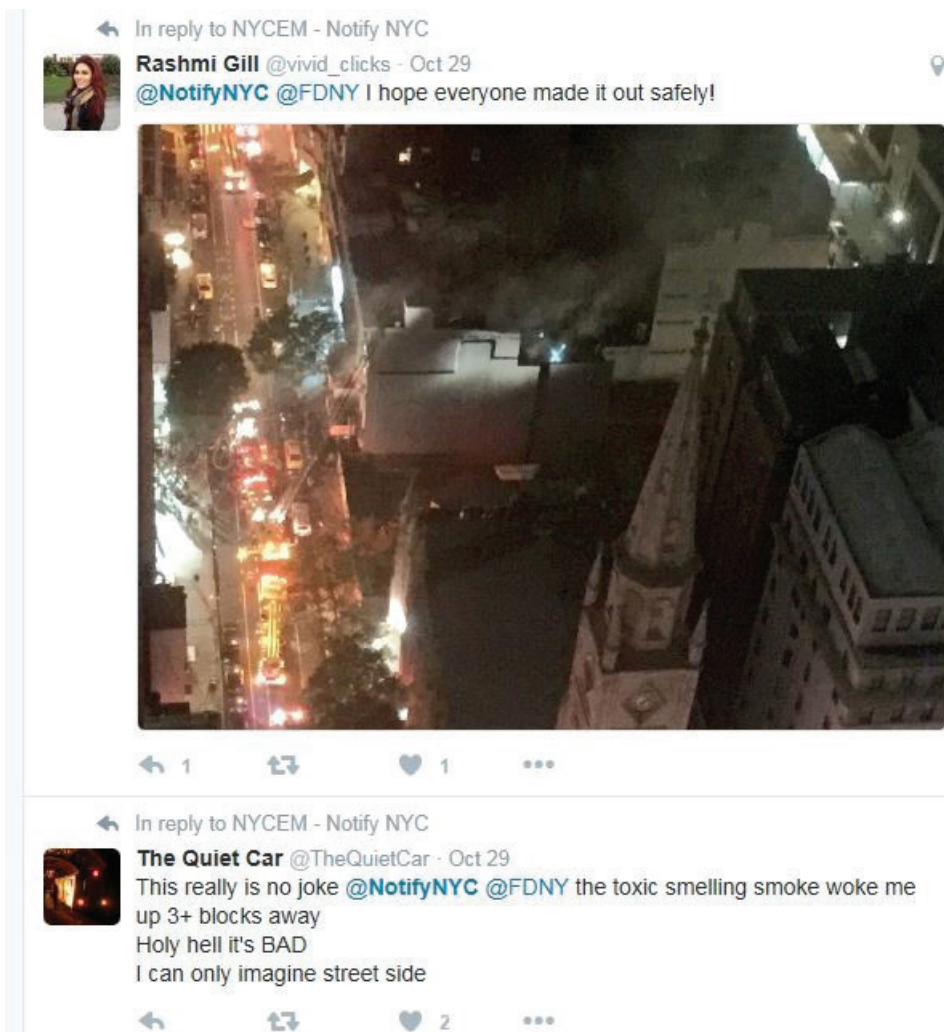
FIGURE 12 NYC OEM tweet (Source: Twitter.com).

NYC DOT @NYC_DOT · Nov 2
East Fordham Road Bridge over #GrandConcourse vehicuarl lane closures begin 11/7 (10PM-6AM) for milling & paving operations. @NotifyNYC

East Fordham Road Bridge

© 2016 Google Maps

**East Fordham Road
One Lane Closed
Beginning on or about Monday, November 7**
10:00 p.m. – 6:00 a.m.
No changes to bus routes or schedules.
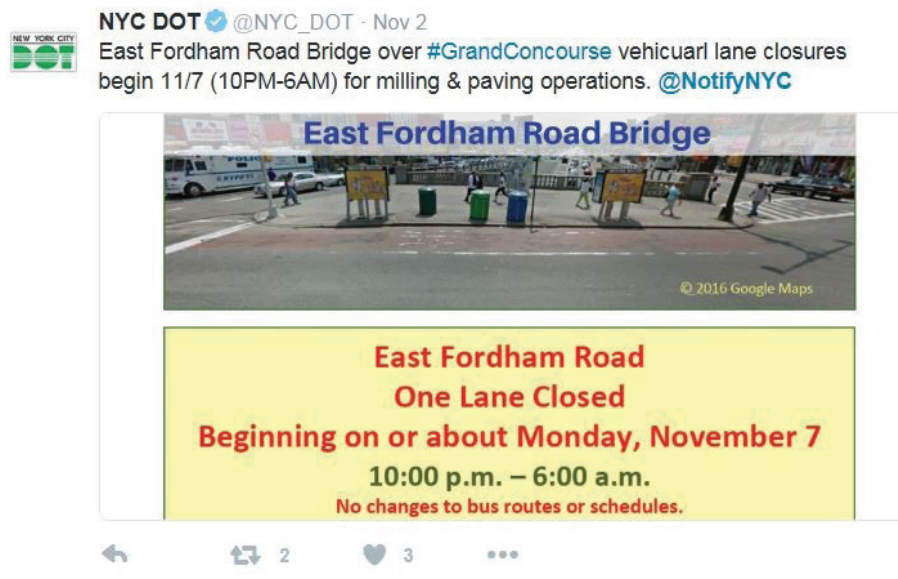
FIGURE 13 NotifyNYC tweet (*Source*: Twitter.com).
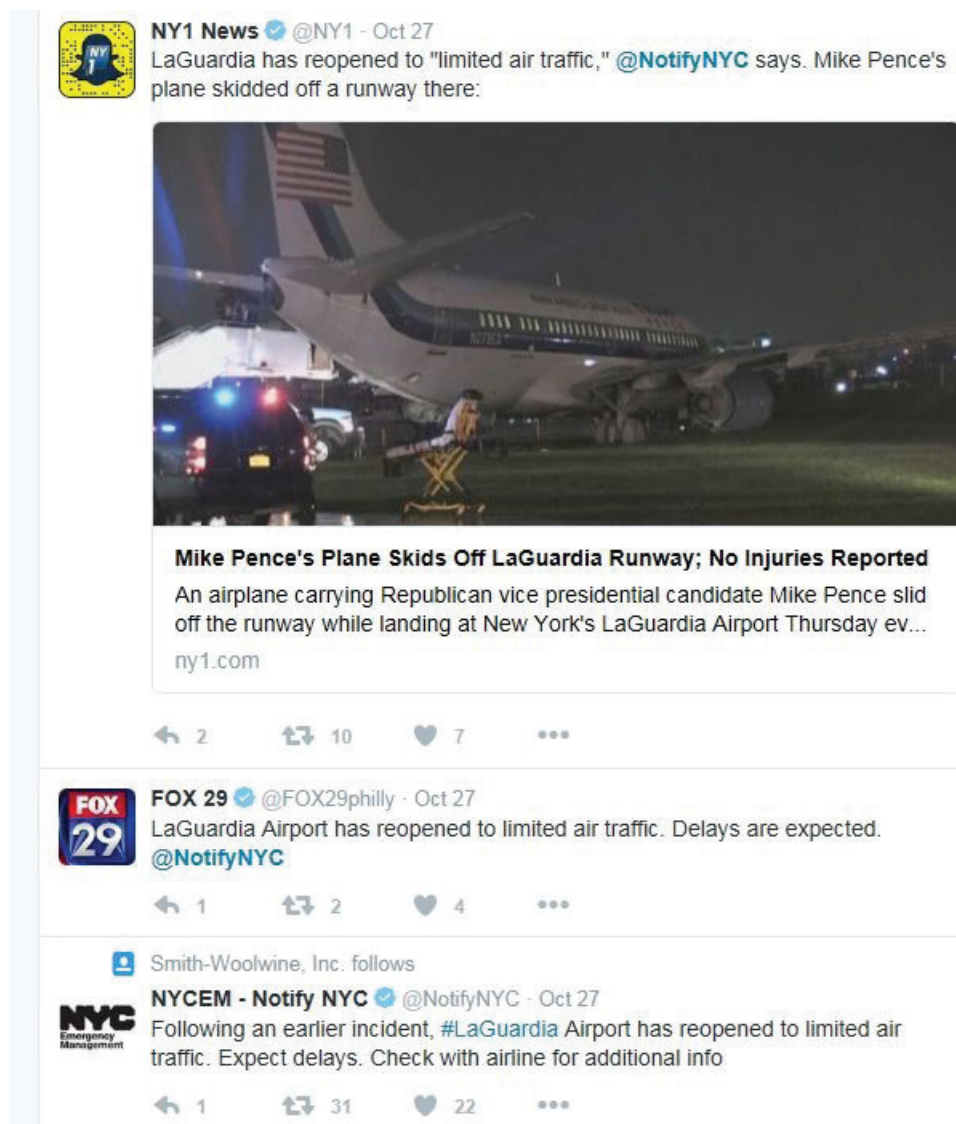
FIGURE 14 NYC OEM tweet and reactions (*Source*: Twitter.com).

OEM's total annual budget for SMEM is approximately $150,000 for their share of Dataminr and $500,000 for staff. This is approximately 1% of OEM's total annual budget of $50–60 million. The SMEM budget has grown slowly since 2011.

Lessons Learned: The lessons that NYC OEM would like to share with organizations implementing social media programs are as follows:

- Verification of information from SM is essential because of the minimal limits on what can be posted.
- Having pre-scripted messages for responses, notifications, and warnings is essential, both to ensure timeliness and to maintain consistency.
- Make thorough use of hashtags and other pointers to sources for further information for citizens, and make sure that the information sites pointed to are prepared.

SOUTHWEST AIRLINES

Southwest Airlines (SWA) carried more than 100,000,000 passengers in 2015, which makes it the largest U.S. airline in terms of number of passengers carried. The airline serves 101 airports in the United States and eight additional countries. Southwest has more than 53,000 employees. The company headquarters are in Dallas, Texas.

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The SWA case example models five important issues for an organization considering the development of an SMEM program:

- The choice of platform used for SMEM should match the severity of the incident.
- Superior emergency management coordination is part of superior customer service.
- A written policy for SMEM use is possible.
- Formal in-house training for SMEM use by employees is beneficial.
- Using the company logo on all outgoing SM posts and tweets including those for SMEM has value.

Table 4 shows the basic parameters of the SM and SMEM programs at Southwest Airlines.

TABLE 4

SM AND SMEM AT SOUTHWEST AIRLINES LISTENING CENTER

Year Social Media Presence Began:	2014
Department:	Social Business Team, which is embedded in Scheduling Operations and Control Center (SOC) and Customer Care
Interviewee:	Brooks Thomas, Social Business Advisor, Strategic Execution and Delivery
Employees:	31–45 in Listening Center (Customer Care + Social Business)
Monitor:	Self, do not use contractor, continuous—24/7/365
Extract/analyze:	Self, do not use contractor
Software for important notifications and warnings:	"It depends on the severity of the issue, but any time we have an important notification that warrants pro-activity, we will post it to Facebook and Twitter, as well as on our Southwest Community (forums and blog located at http://southwestaircommunity.com). As the severity or urgency of the situation increases (either in importance or by Customer volume regarding how many people are talking about it), we might expand to Instagram and LinkedIn."
	"Why? Facebook and Twitter earn the largest share of our audience. Longer-form messaging opportunities are available on our Southwest Community, since that is our own real estate and we can be more dynamic there. Further, we're able to post to the Community and use it as a link-back on the other channels. We expand our channel proactivity dependent on magnitude, because every channel becomes a Customer Service channel during a crisis" (B. Thomas, personal communication, Dec. 9, 2016).
Software for social listening:	Yes—proprietary
Uses:	Marketing, Branding, Reputation, Customer Service, Customer Response, Sale Items, **Situational Awareness, Justification of Resource Allocation, Decision Making, Notifications, Warnings,** Crisis Communication
Metrics:	The more data to quantify, the more buy-in from internal departments to allocate personnel and budget by showing the value of the information gathered via SM
Policies:	Company Social Media Policy (written)
Training:	Internal training program
After action review/improvement planning include SM aspects of incidents or exercises:	"Yes, social media is a vital cog in our crisis post-mortem meetings and during our quarterly and annual crisis drills" (B. Thomas, personal communication, Dec. 9, 2016).

Source: Smith and Kenville data (2017).
Note: Items in bold are association with social media for emergency management, not just social media in general.

Southwest Airlines indicated it was the first airline to fully integrate its social media listening center into its network operations control. The social media department at SWA began with three employees in 2007 and has grown to include between 31 and 45 employees utilized by several departments within the airline. As the value of working with social media has become known throughout the company, it has enabled the team to grow its department by operating a hub-and-spoke model that connects the Social Business Team with existing departments within the airline. The airline prides itself on being on the "cutting edge of customer service" (B. Thomas, personal communication, July 2016).

Figure 15 shows how SWA retweeted a user-submitted image regarding the dedication of its Baltimore mechanics and the tweet received 1,100 "likes."

FIGURE 15 Southwest tweet illustrates use of SM for human interest to build public interest and credibility of site (*Source*: Twitter.com/SouthwestAir).

On a daily basis, the Southwest Airlines SM group responds to customer inquiries via social media and tries to populate SWA sites with a positive tone. In a micro sense, group members will answer typical "taxiing to gate" chatter. In a full-scale incident such as the recent alleged active shooter at Dallas Love Field, the airline focused its SM listening and was able to assist law enforcement and the airport, stay abreast of the incident, and provide timely information to customers by using its social media presence. Southwest also uses its total SM platform to communicate travel advisories (Figure 16).

FIGURE 16 A travel advisory tweet from SWA (*Source*: Twitter.com/SouthwestAir).

Recently, SWA had an engine issue, and did not shy away from posting what it could on its Facebook page. As Figure 17 shows, 2,200 people responded, along with more than 180 shares (as of September 1, 2016). Candid posts such as this also build credibility that will benefit the company in a serious emergency.
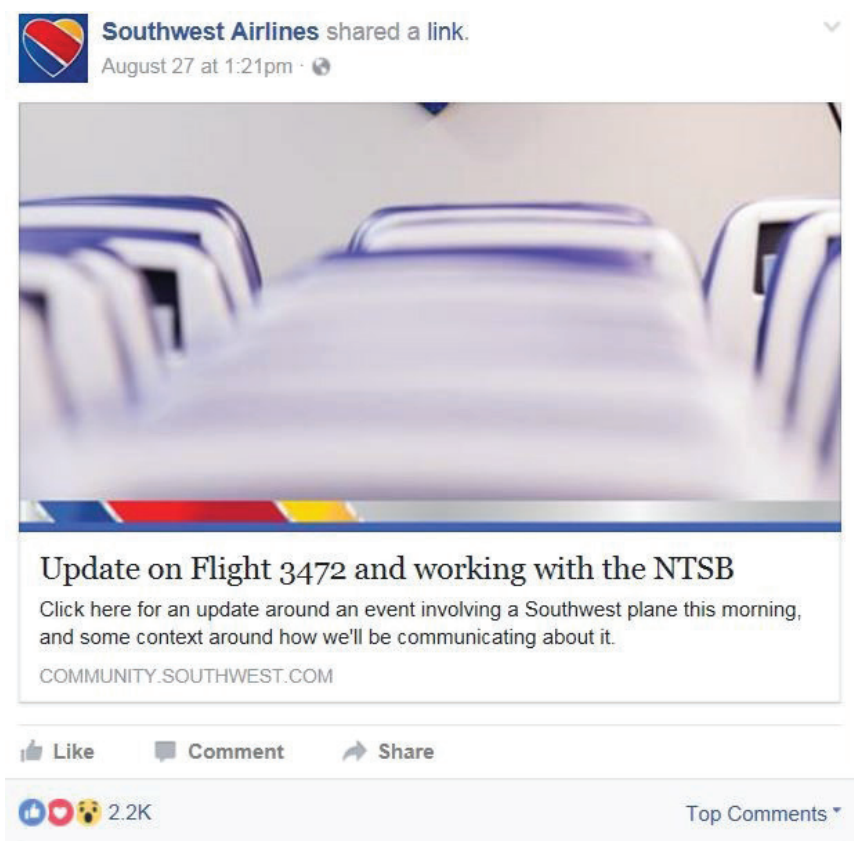
FIGURE 17 SWA Facebook post on engine issue (*Source*: www.facebook.com/ SouthwestAir).

Southwest has developed an internal computer-based training module for employees (ramp, gate, pilots, etc.) who would like to use social media to further engage with the airline's customers. The airline has created social media professionals by identifying gifted amateur SM practitioners within the company.

Lessons Learned: The lessons that Southwest Airlines would like to share with organizations implementing social media programs are as follows:

- Master one space at a time,
- Temper expectations, and
- Use training and feedback to maintain consistency of message and spur employee evangelism.

UNIVERSITY OF NORTH DAKOTA POLICE DEPARTMENT

The University of North Dakota (UND), in Grand Forks, has nearly 15,000 students and offers more than 3,000 courses in more than 225 fields of study. UND's faculty has approximately 650 members and the university is the second largest employer in the state of North Dakota. The UND Police Department provides SMEM services to the entire university, not just relating to law enforcement–related incidents.

The UND case example models three important issues for an organization considering the development of an SMEM program:

- An SMEM program can be scalable to fit a wide range of incidents.
- A strong day-to-day SM presence will pay off in an emergency.
- SMEM is ultimately about communicating with people.

Table 5 shows the basic parameters of the SM and SMEM programs at UND.

TABLE 5
SM AND SMEM AT UNIVERSITY OF NORTH DAKOTA DEPARTMENT OF PUBLIC SAFETY/UNIVERSITY POLICE DEPARTMENT

Year Social Media Began:	2013
Department:	Department of Public Safety/University Police Department (UPD)
Interviewee:	Sgt. Daniel Weigel
Employees:	3–5 employees; (Operations Center + 1 police officer)
Monitor:	24/7 by University Emergency Mgmt. Ops. Center plus UPD daily monitor
Extract/analyze:	Self
Software used for important notifications and warnings:	"We would utilize both Facebook and Twitter for an important notification or warning. We would use our Sprout Social Media Management Software to issue the warning because of the fact that you can issue it through both Facebook and Twitter at the same time thus saving us time in getting the notification out to the public" (D. Weigel, personal communication, Dec. 26, 2016).
Software used for social listening:	HootSuite
Uses:	**Situational Awareness, Resource Allocation, Decision Making, Investigations, Warnings, Crowdsourcing,** Information Requests, After Action Reviews/Improvement Planning
Metrics:	Number of followers, likes, impressions, profile clicks—working for quality interactions with students, faculty, and staff
Policies:	Written policy (Appendix B)
Training:	Self-taught, on the job. Currently provides social media training for North Dakota Law Enforcement Officials (Appendix C)
After action review/improvement planning include SM aspects of incidents or exercises:	Yes

Source: Smith and Kenville data (2017).
Note: Items in bold are association with social media for emergency management, not just social media in general.

The UND Department of Public Safety (DPS) and University Police Department (UPD) jointly utilize social media platforms along with the University's Public Affairs unit. Primary responsibility for utilization of social media for emergency management lies with the DPS and UPD. At any given time, there are three to five personnel utilizing, viewing, and responding to social media on campus. The main location for monitoring is in the University's Emergency Management Operations Center, which is staffed 24/7.

The public safety and police units began social media implementation when the current Chief of Police was hired in 2013. Since then, social media use for the joint departments has grown and a senior sergeant at UPD is currently the officer in charge of monitoring, analyzing, and responding to social media for public safety issues. The budget implications have been minimal to date, as no additional employees have been brought on board to manage social media for the department. Overall, the effort devoted to UND's SM initiative is likely 1 FTE. As the program has grown, it has been helpful to assign a particular staff person to monitor SM for DPS so that there is ongoing, predictable coverage. The majority of software used is freeware so the budgetary impact has been minimal to date.

UPD have made positive inroads with the students on campus. The department makes positive, informative posts and measures its successes by the number of retweets, likes, and followers. To have students follow the campus police is a success in itself. The idea is that if a student is following the campus police, he or she is more likely to trust the department and can ask for assistance very quickly, which may in turn help avoid the need for a larger response.

An example of positive engagement was #bestcopsaround, started by the sergeant to engage the students of UND and community of Grand Forks. Figures 18–20 are screenshot examples from Twitter of how the students and community interact with the Police department in a positive atmosphere.

In the future, the University Police Department would like to have a full-time position dedicated to SM/public information for the department so it can have a larger, more impactful presence on campus and within the Grand Forks community.

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FIGURE 18 Community-building conversation on Twitter by UND Police
Department (*Source*: Twitter.com/bestcopsaround).
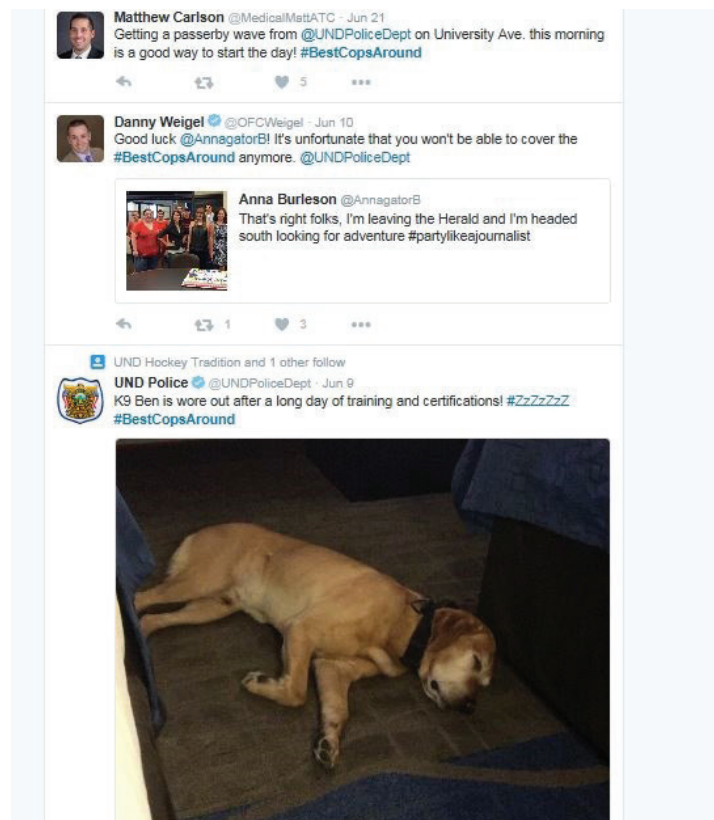
FIGURE 19 Relationship-building conversation on Twitter by UND
Police Department (*Source*: Twitter.com/bestcopsaround).

FIGURE 20 Conversation on Twitter by UND Police Department (*Source*: Twitter.com/bestcopsaround).

Lessons Learned: Lessons that UND would like to share with organizations implementing social media programs are as follows:

- The people you serve are changing so you need to change with them;
- Accept changing technology and communication styles;
- Be social: interact with people to "humanize" your organization/entity;
- A strong day-to-day SM presence will pay off in an emergency.

VANCOUVER INTERNATIONAL AIRPORT

Vancouver International Airport (YVR) served 20,315,978 passengers in 2015; second most in Canada, 28th in North America, and 95th in the world. If it were in the United States, it would be classified as a large hub, falling between Washington Dulles International Airport and San Diego International Airport.

The YVR case example models five important issues for an organization considering the development of an SMEM program:

- How an airport can apply actionable information from SMEM for the full range of emergency management purposes: situational awareness, resource allocation, as one input to decision making, investigations, notifications, and warnings;
- The importance of after action reviews and improvement planning;
- The importance of social media delivering the same level of customer care online that a customer would get in person;
- The importance of correcting misinformation immediately; and
- How to match airport organization to flow pathways for actionable information.

Table 6 shows the basic parameters of the SM and SMEM programs at YVR.

In 2009 YVR began systematic development and use of social media. Preparation for the 2010 Winter Olympics triggered a massive examination of YVR's approach to social media and SM uses for emergency management. Additionally, in January 2009 the Vancouver area experienced a massive snowstorm that affected the airport's operations and required a broader use of social media to manage traffic, passenger, and access information on a broader basis than the Monday–Friday, 9–5 model (see Figure 21). Shortly after that, a plane arrived at YVR in the middle of the night that was rumored to have sick people on it. The press, which does work 24/7, got hold of the story and began creating an emergency regarding a quarantined plane.

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This was all misinformation but because YVR was not actively monitoring its SMEM system 24/7, the story intensified before the airport engaged. The airport's senior management and communications staff had to spend the better part of the next day trying to correct misinformation and rebuild the airport's reputation. After that incident, the 24/7 model, which blends Communications and Operations resources for nonstop monitoring, was put in place and it continues today. One unanticipated benefit of the increased use of social media for emergency management has been the breaking down of silos; for example, between public relations, operations, and emergency management.

TABLE 6

SM AND SMEM AT VANCOUVER INTERNATIONAL AIRPORT (YVR) AND VANCOUVER AIRPORT AUTHORITY

Year Social Media Presence Began:	Began limited managing and monitoring social media during working hours around 2001 and became increasingly active after starting Twitter account in 2009. A number of events in 2009 caused YVR to examine its use of SM in general and SMEM in particular.
Department:	Marketing & Communications
Interviewees:	Steve Hankinson, Vice President for Operations and Maintenance; Robyn McVicker, Director, Marketing & Communications; Cal Currie, Emergency Manager
Employees:	One full-time Communications Specialist position dedicated 100% to social media strategy, leadership, execution, and monitoring supported by Manager, Communications and Director, Marketing & Communications
	Five full-time Communications Specialists and Senior Communications Specialists, all trained in social media. These positions support monitoring, uploading, and content development, and they are trained to lead in a crisis.
Monitor:	24/7/365. The Communications Specialists monitor social media during normal workdays. From 5 p.m. to 7 a.m. and on weekends, a team of Operations Assistants working in the Integrated Operations Centre are tasked with monitoring social media and responding on Twitter in line with training and pre-formatted messaging provided by Communications. An on-call media relations team member is contacted in emergencies or with questions.
Extract/analyze:	Self and use software tools for support
Software used for important notification or warning:	Everbridge to EM partners; all social media platforms to public (Twitter, Facebook, Instagram)
Software used for social listening:	Hootsuite (real time), Meltwater, Media Miser (monitoring and analytics), Google Analytics
Uses:	Marketing, Branding, Brand Protection, Reputation Monitoring and Protection, Customer Service—Complaints, Customer Service—Answering Questions, Customer Service—Wayfaring, Customer Service—Special Sales Promotions (especially on Chinese media), **Situational Awareness, Resource Allocation, Decision Making, Investigations**—Accidents, Liability, Safety, Investigations—Loss Prevention (reactive only), **Notifications, Warnings,** Information Requests
Metrics:	Number of likes, followers, impressions, posts, tweets, retweets, benchmarking against other airports, Google Analytics, click-throughs for campaign tracking and media management
Policies:	No written policy
Training:	On the job
After action review/improvement planning include SM aspects of incidents or exercises:	"As a rule we do not. The after action reports or improvements include detailed information and potentially sensitive data that require specific handling. After action are context sensitive and generally detailed knowledge about airport operations and regulation are prerequisites to receiving after action reports. Therefore, social media is not used" (S. Hankinson, personal communications, Dec. 12, 2016).

Source: Smith and Kenville data (2017).
Note: Items in bold are association with social media for emergency management, not just social media in general.

The main organizational changes that YVR has made to make social media use more effective deal with resourcing. "We have been lucky that the organization understands the impact, opportunity and threat that social media poses and provides the resources necessary to develop a system for monitoring and response—for example—operations monitors social media after hours and on weekends—taking first call/comment and escalating to the Communications on-call person as needed" (R. McVicker, interview, Aug. 18, 2016).

Social media programs for all uses at YVR make up 2%–5% of the total marketing and communications budget not including labor. The social media cost has grown significantly since 2009. Part of the growth has been caused by YVR's role as a major port of entry for international flights. Currently, YVR is served by more mainland Chinese carriers than any other North American airport. In order to have a voice in the Chinese media and deal with the challenges the time difference creates for immediate response, YVR in 2015 hired an organization to monitor social media 24/7 in China and provide the same level of response in Chinese social media in the Chinese language as YVR provides in the western media.
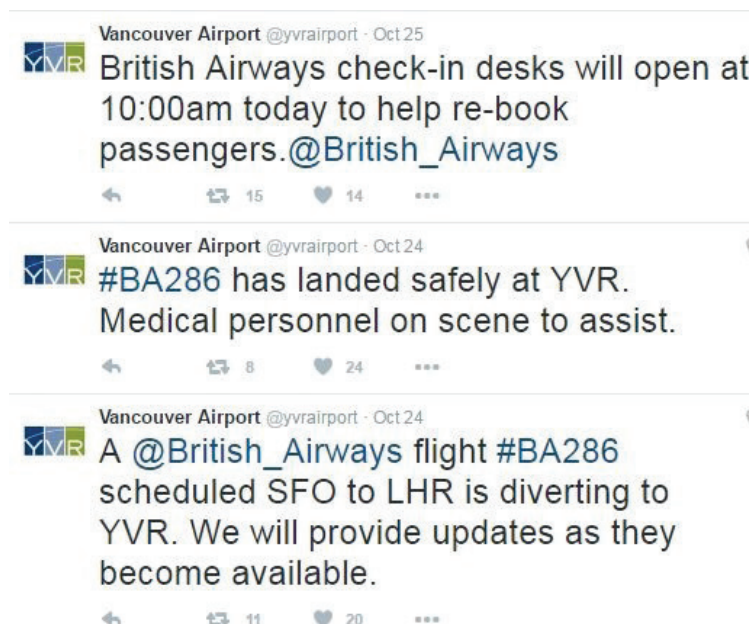
FIGURE 21 YVR SMEM tweets in aftermath of medical diversion (*Source*: Twitter.com/yvrairport).

During normal operations, staff in YVR's Integrated Operations Centre have the Hootsuite social listening software up monitoring all social media feeds, primarily Twitter and Facebook. When an incident is occurring and the EOC is activated, a Communications team member is stationed in the EOC. The Communications team member will have Hootsuite active on his or her mobile phone and laptop. The EOC shift supervisor can elect (and usually does) to put Hootsuite on the video board in the EOC. The Communications person will set up specific threads and searches to track the specific incident. If the incident is of a medium to major level, the Communications Operations Centre (COC) is also activated and staff are pulled in to support the response using traditional media (e.g., press releases, press conferences) and social media. In the COC a large video board shows social media live. Figure 22 illustrates outputs from the COC during an emergency.

FIGURE 22 YVR customer service information tweet (*Source*: Twitter.com/yvrairport).

Social media inputs to the EOC—that is, SMEM—are used to varying degrees, depending on the type of use:

1. Fully used for situational awareness,

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2. Used for resource allocation with respect to road access and traffic coordination,

3. Used as one input to decision making,

4. Used for investigations under the direction of Communications, and

5. Fully used for notifications, warnings, after action reviews and improvement planning.

Communications will identify and share all direct feeds with Operations as necessary; however, Communications retains the role of responding publicly, or deciding not to respond, and determining the message. Message discipline is thereby maintained.

YVR seeks to make social networking a 100% interactive process with the public. "[Social media] is only as successful as your online community is engaged. We need a two-way conversation. Typically what will happen is someone will make a comment, complaint or question on social and we will respond publicly and then direct them to a direct message approach so we can manage their question/concern personally. At first, YVR began using social media for listening, then we moved to speaking then we moved to a two-way conversation." The bottom line for YVR for social media is, "The philosophy that drives our approach to social media is that an individual will get the same level of care online, that they would in person in the terminal. A huge task but clear requirement." Figure 23 illustrates this level of care.
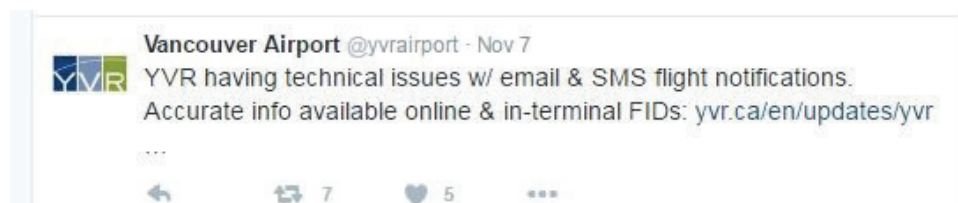
FIGURE 23 Using SM as part of a comprehensive communications system (*Source*: Twitter. com/yvrairport).

During the interview, the airport managers and research team considered why Canadian airports appear to be more advanced in use of social media in general and SMEM in particular. YVR's managers suggested four possible reasons that this may be true:

1. Canada is a more wired nation, so citizens and customers expect airports to communicate better through all available channels.

2. Canada's geography and population distribution encourage telecommunications innovation, dependency, and early adoption. Internet and SM are just the latest manifestations.

3. Canada's self-funding airport system forces/encourages greater airport engagement in the community.

4. Early successes with SM have fed further use and innovation.

When asked if YVR's social media and SMEM strategy was driven by technological change or by customer service culture, the airport answered emphatically that customer service drives everything; however, customer choices in communications technology cause airport choices in communications methods including social media platforms (Figure 23).

Concerning barriers encountered in using social media at the airport, YVR noted two. "The primary barrier will always be resourcing—how to effectively manage social media 24/7. Secondly, it's about assessing and dealing with new tools. We will not join a tool and have a presence unless we can monitor and manage it at our desired 24/7 level. For the past few years, we have studied and identified which new channels to join, and have developed a solid management plan before joining and making our presence known."

YVR was unable to provide metrics purely for SMEM, but it does track metrics for its overall social media program:

• Number 1 airport in Canada on Twitter

- Number 2 airport in North America on Twitter (behind only Los Angeles International Airport)
- Number 1 in Canada and top 10 worldwide for airports on Instagram
- Number 2 airport in Canada on Facebook
- First North American airport on Weibo in China
- In terms of impressions, one of the top brands in British Columbia
- In 2015, 10.5 million impressions of YVR-produced content on Twitter.

Figure 24 illustrates the reach and level of penetration of YVR's SM programs.

FIGURE 24 An airport's SM program's reach and penetration (*Source*: Twitter.com/yvrairport).

Lessons Learned: The lessons that YVR would like to share with organizations implementing social media programs are as follows:

- Correct misinformation immediately.
- Resource (support) your desired level of involvement in social media adequately.
- The 24/7 model that blends Communications and Operations resources for nonstop monitoring of social media is essential. "Build community, build trust, and build credibility."
- Social media should be made as interactive as possible—build community, build trust.
- Strict message discipline is essential for SM including SMEM.

USING VOLUNTEERS FOR AD HOC SOCIAL LISTENING DURING EMERGENCIES

In addition to the six full case examples, the research team found two examples of organizations that use trained volunteers for social listening operations that stand up only during emergencies: the American Red Cross Digital Disaster Operations Center (DigiDOC) and the state of Florida Department of Emergency Management (FDEM) and its partner the Florida State University Virtual Operations Support Team (FSU.VOST). These two examples illustrate—

1. Standing up SM monitoring only during emergencies,

2. The role of volunteers, and

3. Pros and cons of corporate or other outside partnerships in SMEM.

AMERICAN RED CROSS DIGITAL DISASTER OPERATIONS CENTER

Working with Dell Corporation, the American Red Cross developed its Digital Disaster Operations Center during 2010–2012. Dell contributed the software (Radian6, now SalesForce Social Cloud), and the Red Cross established the volunteer program to stand up during a disaster. "The use of social media during disasters has grown exponentially in recent years, and this partnership with Dell will enable us to better understand and anticipate disaster needs and help connect people with the resources they need during emergencies," said Gail J. McGovern, president and CEO of the Red Cross. "Our goal is to become a social liaison for people, families and communities to support one another before, during and after disasters" (American Red Cross 2012). Specifically, the Digital Disaster Operations Center was intended to help the Red Cross—

- Source additional information from affected areas during emergencies to better serve those who need help;
- Spot trends and better anticipate the public's needs; and
- Connect people with the resources they need, like food, water, shelter, or even emotional support.

In conjunction with the Digital Disaster Operations Center, the Red Cross also announced the creation of a Digital Volunteer Program. Volunteers from across the country will be trained to respond online to questions from the public, distribute critical information, and provide comfort and reassurance during emergencies. The digital volunteers will play a critical role

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in working to verify and curate an incredible volume of data during disasters, notifying Digital Disaster Operations Center staff of online trends and situational information that can inform disaster-response efforts. Equally important, they will engage with people affected by disasters, providing them with critical safety information, resources, and comforting messages. Published accounts did not give any details of the nature of the training of the volunteers.

There was no mention of the DigiDOC from 2012 until 2016 when RedCrossNorthTexas blogged on October 7, 2016, that it had launched its Dallas Digital Disaster Operations Center in response to Hurricane Matthew (American Red Cross North Texas Chapter 2016). The blog entry did not specify what software was used but did clearly state that trained volunteers manned the Dallas Digital Disaster Operations Center.

FLORIDA STATE UNIVERSITY VIRTUAL OPERATIONS SUPPORT TEAM

The Florida Department of Emergency Management has an arrangement with the Graduate Program in Emergency Management & Homeland Security at Florida State University so that when the state EOC in Tallahassee stands up for an emergency, the Florida State University Virtual Operations Support Team will be activated if requested by FDEM (D. Merrick, personal communication, May 31, 2016; FSU 2016). In addition to course work, graduate students receive training in social listening. FSU.VOST operates in a space at FSU, not at the state EOC. However, FSU.VOST coordinates closely with the EOC and is viewed by FDEM as a success, a force multiplier, and a low-cost solution. FSU values the experience and connections that its graduate students gain.

USE OF VOLUNTEERS FOR EMERGENCY DUTIES BY AIRPORTS

Airports such as Reno–Tahoe International Airport, Mason City Municipal Airport, and Asheville Regional Airport depend on trained volunteers for important duties sometimes including emergency functions (IEM et al. 2014). For example, the Community Emergency Response Team at Reno–Tahoe International Airport could, with appropriate training, assist with the flood of calls, e-mails, and social media posts from all over the world (M. Scott, personal communication, Dec. 7, 2016). The two examples, especially FSU.VOST, may suggest a solution for airports, especially smaller airports.

PRICES OF SOCIAL LISTENING SOFTWARE

As noted in the case examples, annual subscriptions for social listening (data scraping) software can be expensive, with examples of $6,000 per year at EIA and $150,000 per year at NYC OEM. However, much more economical options are emerging with much lower purchase or subscription costs. For most airports, assuming up to three users at each airport, representative current costs (December 2016) are $120–$600 per year (Zoho), $420 per year (Hootsuite), and $1,188–$2,388 per year (agora pulse). These are software subscription prices and do not include training costs or staff time to manage and use the software. However, the three sample programs all assert extreme user friendliness on their websites.

What these prices mean is that social listening is financially feasible for any public use airport regardless of its type or size.

IMPORTANCE OF VERIFIED ACCOUNTS AND RECOGNIZABLE LOGOS

In order to reduce the chance of authorized persons misusing an airport's social media platforms, airports need to have a verified account on each platform used. Furthermore, a recognizable logo needs to be used (J. Valadez, personal communication, Dec. 7, 2016). The importance of these two safeguards cannot be overstated. During the November 1, 2013, active shooter incident at Los Angeles International Airport, the airport discovered that it had not claimed the @LAXAirport twitter handle and had to create a new account (@LAX_Official) on the fly to control the message (M. Grady 2015).

CHAPTER FOUR

FINDINGS, CONCLUSIONS, AND FURTHER RESEARCH

PROFILES OF SOCIAL MEDIA FOR EMERGENCY MANAGEMENT PROGRAMS

The key characteristics of the six case examples are illustrated in Table 7. Examination of the patterns in the table suggests that social media for emergency management (SMEM) programs that are believed by their owners to be successful have highly similar features. The six organizations in the case examples have nearly identical profiles. The few isolated differences result from the stage of maturity of a program or from restrictions placed on the program. An example of the first is Minneapolis–Saint Paul International Airport's (MSP's) relatively limited range of uses of information from social media (SM), which apparently results from the newness of that airport's SMEM program. Nevertheless, the #BlackLivesMatter experience recounted in the case example suggests that the airport has used SMEM inputs for decision making and resource allocation although MSP did not note such uses on the survey. As an example of continually deepening the use of SM, MSP used it almost exclusively as the focal point of its 2016 emergency exercise of integrating its SM into the joint information center and emergency operations center (EOC) during an emergency.

An example of the second is the decision by the New York City Office of Emergency Management (NYC OEM) not to seek conversations in its SMEM channels. This preempts crowdsourcing. The choice results from a desire to avoid the creation of new liability issues and to avoid undercutting existing pathways such as 911 for requesting aid and reporting emergencies.

There is a strong preference for buying or subscribing to social listening software and running it in house. The six successful programs appear to have the same persons running the software and doing human evaluation of the outputs. "Running" the software means setting the search or alert criteria in the software and deciding which information to pass to the EOC and decision makers.

The staff sizes in the case examples are consistently small, except for Southwest Airlines (SWA). However, the staff estimates for the other five programs are for SMEM whereas the SWA estimate is for the airline's total SM program including SMEM, branding, brand protection, and customer service. The size of SWA's program approximates that of two other large corporations for which partial information was obtained but not approved for use in this study. The SMEM staffs for the other five programs are small because their total staffs are so much smaller than SWA's 53,000 employees, and their communications staffs are cross-trained to move into SMEM roles during events. Approximately 0.08% of SWA's total employees are in the SM unit; as are 0.46% of MSP's total employees (three of 650).

Most of the programs use on-the-job training, which is reasonable given the relatively small staff sizes and the unlikelihood of cohorts of new hires to take a formal course. However, the American Red Cross trains its volunteers and the University of North Dakota (UND) has a formal training class (internally developed) for police officers and communications staffers who perform their SMEM functions. The UND lesson plan is reproduced as Appendix C. The recommendations made in FEMA course IS-042 are reproduced as part of Appendix F to this report.

The costs of the programs are not shown in Table 7, as directly comparable data were not collected from every cases. The costs seem to range from near zero for the American Red Cross (software and social listening services are donated and Digital Disaster Operations Centers use volunteer labor) to approximately $650,000 per year for NYC OEM [$150,000 for the department's share of the city's subscription to the social listening software plus 10 full-time equivalents (FTE)]. For comparison, Edmonton International Airport's (EIA's) annual cost for SMEM is approximately $66,000 ($6,000 for software and social listening services subscription plus $60,000 for 0.50–0.75 FTE for SMEM). As a rule of thumb, a fully realized SMEM program appears likely to cost about 1% of an organization's total annual operations budget. An airport can avail itself of one of the less expensive software programs or obtain SMEM services from its city, county, or a regional organization.

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TABLE 7
SELF-REPORTED CHARACTERISTICS OF SMEM PROGRAMS AT CASE EXAMPLE ORGANIZATIONS

	EIA	MSP	NYC	SWA	UND	YVR
SMEM used for notifications						
SMEM used for warnings						
SMEM used for situational awareness						
SMEM used for resource allocation						
SMEM used for decision making						
SMEM used for investigations						
SMEM uses crowdsourcing (outgoing request for information)						
Has written policy governing SMEM program, its use, and its control	Under development					
Clearly stated goals for SMEM program						
Clearly assigned responsibility for control and maintenance of SMEM						
SMEM integrated with organization's overall SM program			Partly			
SMEM part of organization's comprehensive crisis communications plan						
Tight control over outgoing messages						
Use of pre-scripted messages	Partly					
Organization seeks engagement ("conversations") through SMEM						
Uses social listening/social monitoring						
Uses social listening based on key words, key phrases, hashtags						
Uses geofencing				?		
Uses commercially available software						
Runs social listening for self (in house)						
Subscribes to data-bundling service						
Monitors 24/7/365						
Stands up only for disasters						
Dedicated staffing						
Staff size (FTE) (employees) for SM (all SM, not just SMEM)	0.75	3	10	31-45	3-5	6
Formal training program for SMEM staff						
On-the-job training for SMEM staff						
Uses trained volunteers	To surge					
Uses automated analysis						
Uses human analysis						
Uses hybrid analysis						
SMEM inputs used in EOC						
Communications group (SM/SMEM) representative in EOC when EOC stands up						
Automated direct display of SMEM inputs in EOC	On demand	On demand	On demand	On demand	On demand	On demand
Human-selected display in EOC	On demand	On demand	On demand	On demand	On demand	On demand
Automated decision making in EOC or elsewhere based on SMEM inputs						
Organization happy with its SMEM						

Source: Smith and Kenville data.
Note: grey = yes; light grey = qualified yes; medium grey/? = unstated but probably yes; black = no.

CHALLENGES

Four challenges came up in the case examples and in the literature:

1. Gaining senior management support for allocating resources to SMEM;

2. Gaining support among emergency managers and other first responders for use of SMEM, particularly the application of information from SMEM to resource allocation and decision making (a cultural shift for most emergency management personnel to rely on SM inputs);

3. Validation and verification of incoming information from social listening; and

4. Choosing the right software packages for social listening and analysis and deciding which social media streams to listen to.

With regard to gaining senior management support, the consensus of the case examples is that support from senior management is essential to adequately resourcing SMEM and that nothing is as convincing as success. Since most of them had already had success using SM for branding, brand protection, and customer service, building SMEM onto the general SM program pre-sells SMEM with senior management. Once SMEM is activated, it impresses senior management by producing results at a very low cost. The case examples point out that SMEM applications of their SM platforms increase the power and reach of the organizations' overall presence in the media space and with the public. Once begun, SMEM is self-reinforcing.

Winning over emergency managers and other first responders requires patience and modesty on the part of SMEM practitioners. Information from SMEM is just another information stream. It needs to be moderated to avoid overloading decision makers and staff in the EOC. The case examples have given this moderating function to communications professionals who typically have a presence (in person or with an on-demand display) in the EOC. Effective programs use manual evaluation or hybrid evaluation of the SMEM inputs.

Social media have power because they are open for anyone to upload posts, images, or videos. This is also the biggest shortcoming of social media as an SMEM tool. The outputs of social listening software, at least at the present state of development, need human efforts to verify and validate. Such human efforts appear to be facilitated by visual or graphic presentation of SMEM outputs rather than text or written outputs.

There is a wide range of commercially available software available for social listening. Airports can work with vendors to find programs that fit their needs and budgets. The choice of what is most appropriate goes back to the airport's goal in applying social media to emergency management.

CONCLUSIONS

Assuming these foundational principles,

- The influence of social media is still increasing, which means the potential usefulness of SMEM is also increasing; and
- Applying information gained through social listening and analysis of social media for emergency management can benefit airports, but the staffing and other cost concerns may limit the applicability to small airports (the smallest organization in this study is the equivalent of a medium hub airport),

the following conclusions may be drawn from the case examples and the literature review:

1. Having a clear vision of what the airport wishes to achieve through SMEM is the essential first step; everything else should follow.

2. An airport with a social media presence and in-house experts can be ready and valuable to support emergency responders in any event.

3. Growing social media and SMEM programs internally seems most beneficial. This process works best when an airport does SMEM for itself rather than outsourcing part of all of its SMEM program. The employees working for that entity can give it the time, knowledge, and care it needs to grow.
   – Most organizations utilize on-the-job training, as the SM landscape evolves quickly.
   – Rotating workers avoids SM burnout and empowers the employees so there is no appearance of being scripted or nonresponsive—timely is the name of the game. This applies when the program seeks to be interactive (i.e., have conversations) and even when the program uses pre-scripted responses in some situations.

4. A designated SMEM champion can show the value of SM programs to the C-level in the organization. This requires determining what metrics will be utilized to show the value of the SM presence and win more resources as needed.
   – Participation from other departments across the organization is key; this enables the SM presence to be valued by all and allows for resources to be shared.
   – Engaged employees ("evangelism" as the Los Angeles Fire Department and Southwest Airlines term it) will enhance overall employee morale. Seeing their organization's efforts in responding to or leading an issue will be a source of pride.

5. Organizing and staffing one's SMEM on the basis of desired communication outcomes is far superior to starting from a technological or outside cultural standpoint. Those with experience in customer service and marketing can use SM and SMEM analytical tools to provide decision-quality information and actionable intelligence.
   – A thoughtful SM presence will build creditability for the organization.
   – Superior emergency management as enabled by SMEM will be viewed as part of an airport's overall superior reputation and customer service.
   – An effective SM and SMEM platform can serve the broader community (e.g., the EIA case example).

6. Embedding the SMEM program into the airport's overall crisis communications strategic plan and SM program is productive.

7. The public information officer and emergency managers need to develop a relationship that promotes information sharing and joint planning, training, drilling, and exercises.

FURTHER RESEARCH

The findings of this synthesis suggest that further research is needed on the following topics:

- A guidebook for the creation and maintenance of social media for emergency management systems for airports of all types and sizes;
- Model pre-scripted announcements, posts, and so forth for airports to use in SMEM notifications, warnings, and outgoing information;
- Evaluation of current validation and verification systems for SM-derived information including automated systems; and
- Update of *ACRP Report 94* (*Integrating Web-Based Emergency Management Collaboration Software into Airport Operations—A Primer*) and ACRP current research project 16-04-03 (*Guidebook for Airport Emergency Operations Centers*) to account for display and use of SMEM inputs in emergency operations centers.

GLOSSARY

App	An application—a self-contained program or piece of software designed to fulfill a particular purpose—especially as downloaded by a user to a mobile device
Data harvesting	A synonym for data scraping
Data mining	The practice of examining large databases in order to generate new information. Since data mining works on databases, it is generally not considered to be real time.
Data scraping	The real-time extraction of data from human-readable output coming from other programs including websites
Dataminr	A software tool for data scraping
Engagement	The process of interacting with and reaching out to users of social media for organizational purposes
Geofencing	A technology that defines a virtual boundary around a real-world geographical area
Hashtag	A word or phrase preceded by a hash or pound sign (#) and used to identify messages on a specific topic on social media sites such as Twitter
Klout	A website that uses social media analytics to rates its users according to online social influence
Resource allocation	The process of assigning and managing assets in a manner that supports an organization's goals
Situational awareness	The ability to identify, process, and comprehend the critical elements of information about what is happening
Social listening; social media listening	The practice of actively listening to and seeking to understand online conversations about a specific phrase, word, or brand, and then leveraging them to discover opportunities or create content for those audiences
Social media	Websites and applications that enable users to create and share content or to participate in social networking
Social media analytics	Measuring baseline metrics such as number of mentions, retweets, or projected impressions for a collection of online conversations about a specific subject or topic
Social media intelligence	The quantitative and qualitative analysis of an aggregate collection of conversations, the purpose of which is to support better decision making and provide deep understanding of a topic or incident
Social monitoring; social media monitoring	The practice of monitoring online conversations about a specific phrase, word, or brand
Web 2.0	The second stage of development of the World Wide Web, characterized especially by the change from static web pages to dynamic or user-generated content and the growth of social media
Wiki	A website that allows collaborative editing of its content and structure by its users

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ACRONYMS

COC	Communications Operations Centre
DigiDOC	Digital Disaster Operations Center
DPS	Department of Public Safety
EIA	Edmonton International Airport
EOC	Emergency operations center
FDEM	Florida Department of Emergency Management
FEMA	Federal Emergency Management Agency
FSU.VOST	Florida State University Virtual Operations Support Team
FTE	Full-time equivalent
JFK	John F. Kennedy International Airport
JFSOC	Joint Family Support Operations Center
JIC	Joint information center
MSP	Minneapolis–Saint Paul International Airport
NYC OEM	New York City Office of Emergency Management
PIO	Public information officer
SM	Social media
SMEM	Social media applied to emergency management; social media for emergency management
SWA	Southwest Airlines
UND	University of North Dakota
UPD	University Police Department
YVR	Vancouver International Airport

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APPENDIX A

Case Example Interview Script

Social Media for Emergency Management Questionnaire

Your organization has been chosen as one of the case examples of exemplary use of social media for emergency management and/or operations. This questionnaire will be used as the foundation for the case example interviews that will appear in the final report for the Airport Cooperative Research Program (ACRP) Synthesis 04-18: *Uses of Social Media to Inform Operational Response and Recovery During an Airport Emergency* (*SM4EM for Airports*).

Please fill this questionnaire out to the best of your ability. At any point that you do not feel comfortable answering a question, you may leave it blank or simply put "SSI" (security sensitive information).

Upon receiving this completed questionnaire back from you, Jim Smith and Kim Kenville will schedule a teleconference with you and your social media (SM) team to visit about "how you use SM inputs to inform decision making and generate outputs." Thank you in advance; we appreciate your involvement with our project.

[Note: Although the primary focus of this synthesis is social media for emergency management (SMEM), if your main operational use of SM is for non-emergency operations, please read "SMEM" as it would have meaning for your organization.]

1. Name of person interviewed _____

2. Title _____

3. Contact info: _____

    a. Phone _____

    b. E-mail _____

4. Organization name _____

5. Organization acronym or short name _____

6. Type of organization

    a. Airport

    b. Retailer

    c. University

    d. Local government

    e. Non-government organization

    f. Other

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7. What position title in your organization has primary responsibility for managing your overall SM system?

8. What position title in your organization has primary responsibility for managing your SMEM (for emergency situations)?

9. Approximately how many employees do you have in the area of social media for your organization?

10. What year did your organization begin to consider a process to monitor SM?

11. Was there a particular event or concern which triggered the decision to install SM analytics/processes?

12. If you answered yes to #11 what was it, and how did the event affect your organization's operation or reputation?

13. When did your system go operational?

14. For what purposes do you use information, intelligence, or data from social media? (Please mark all that apply.)

   a. Marketing

   b. Branding

   c. Brand protection

   d. Reputation monitoring and/or protection

   e. Customer service—complaints

   f. Customer service—answering questions

   g. Customer service—wayfaring

   h. Customer service—special sales items, items on coupons

   i. Situational awareness

   j. Resource allocation

   k. Decision making

   l. Investigations—accidents, liability, safety

   m. Investigations—loss prevention

   n. Notifications—facility status, operating hours

   o. Warnings

   p. Information requests

   q. Other (please describe):

15. Do you extract/analyze SM on your own?

16. Do you own (purchase) software for SM monitoring, mining, scraping, listening, trending analysis, or other purposes?

17. If so, which software(s) do you use?

18. Do you subscribe to an SM service or bundler for monitoring, mining, scraping, listening, trending analysis, or other purposes? If so, which one(s)?

19. What do you call the unit or location in your organization that processes SM for operational use?

20. Does your emergency operations center (EOC/Command Center) get direct feeds of SMEM information?

   a. Can you describe the process?

21. Does the EOC (or your equivalent) serving you and/or your first responders (or your equivalent) actually use SMEM information for:

   a. Situational awareness

   b. Resource allocation

   c. Decision making

   d. Investigations

   e. Notifications

   f. Warnings

   g. Crowdsourcing

   h. Information requests

   i. After action reviews and improvement planning

   j. Other purposes (please describe):

22. To what extent do you try to make SM an interactive process with the public—i.e., make it into a "conversation"?

23. What organizational changes have you found to be necessary to make SM use effective?

24. Who has the primary responsibility for the SM use system?

25. Who, or what department, has the primary responsibility for the SMEM system?

26. Of your total annual operating budget, what percentage is the total estimated annual cost of your SM (all purposes) program?

   a. How has this changed (±) since inception?

27. What benefits have you realized?

   a. Documented

   b. Impressions

28. What barriers or problems have you encountered and how were they resolved?

29. What metrics do you use for the effectiveness of your SM program?

30. What metrics do you use for the effectiveness of your SMEM program?

31. What are your three most important lessons learned from your experience using SM?

32. What documents, plans, reports, or graphics can you share with us that will illustrate the most important features of your SM and SMEM systems?

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Thank you for your participation.

Please e-mail this questionnaire to Dr. Jim Smith jfsmith@swva.net and cc Dr. Kim Kenville kimkenville@gmail.com. We will email you within a week to schedule a conference call.

APPENDIX B

Social Media Use Policy—University of North Dakota

University of North Dakota Police Department

Policy Manual

Department Use of Social Media - 1

Adoption Date: 2016/08/01

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Department Use of Social Media

389.1 PURPOSE AND SCOPE

This policy provides guidelines to ensure that any use of social media on behalf of the Department is consistent with the department mission.

This policy does not address all aspects of social media use. Specifically, it does not address:

- Personal use of social media by department members (see the Employee Speech, Expression and Social Networking Policy).
- Use of social media in personnel processes (see the Recruitment and Selection Policy).
- Use of social media as part of a criminal investigation, other than disseminating information to the public on behalf of this department (see the Investigation and Prosecution Policy).

389.1.1 DEFINITIONS

Definitions related to this policy include:

Social media—Any of a wide array of Internet-based tools and platforms that allow for the sharing of information, such as the department website or social networking services.

389.2 POLICY

The University of North Dakota Police Department may use social media as a method of effectively informing the public about department services, issues, investigations and other relevant events.

Department members shall ensure that the use or access of social media is done in a manner that protects the constitutional rights of all.

389.3 AUTHORIZED USERS

Only members authorized by the Associate Vice President for Public Safety and Chief of Police or the authorized designee may utilize social media on behalf of the Department. Authorized members shall use only department-approved equipment during the normal course of duties to post and monitor department-related social media, unless they are specifically authorized to do otherwise by their supervisors.

The Associate Vice President for Public Safety and Chief of Police may develop specific guidelines identifying the type of content that may be posted. Any content that does not strictly conform to the guidelines should be approved by a supervisor prior to posting.

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Requests to post information over department social media by members who are not authorized to post should be made through the member's chain of command.

389.4 AUTHORIZED CONTENT

Only content that is appropriate for public release, that supports the department mission and conforms to all department policies regarding the release of information may be posted.

Examples of appropriate content include:

(a) Announcements.

(b) Tips and information related to crime prevention.

(c) Investigative requests for information.

(d) Requests that ask the community to engage in projects that are relevant to the department mission.

(e) Real-time safety information that is related to in-progress crimes, geographical warnings or disaster information.

(f) Traffic information.

(g) Press releases.

(h) Recruitment of personnel.

389.4.1 INCIDENT-SPECIFIC USE

In instances of active incidents in which speed, accuracy and frequent updates are paramount (e.g., crime alerts, public safety information, traffic issues), the Public Information Officer or the authorized designee will be responsible for the compilation of information to be released, subject to the approval of the Incident Commander.

389.5 PROHIBITED CONTENT

Content that is prohibited from posting includes, but is not limited to:

(a) Content that is abusive, discriminatory, inflammatory or sexually explicit.

(b) Any information that violates individual rights, including confidentiality and/or privacy rights and those provided under state, federal or local laws.

(c) Any information that could compromise an ongoing investigation.

(d) Any information that could tend to compromise or damage the mission, function, reputation or professionalism of the University of North Dakota Police Department or its members.

(e) Any information that could compromise the safety and security of department operations, members of the Department, victims, suspects or the public.

(f) Any content posted for personal use.

(g) Any content that has not been properly authorized by this policy or a supervisor.

Any member who becomes aware of content on this department's social media site that he/she believes is unauthorized or inappropriate should promptly report such content to a supervisor. The supervisor will ensure its removal from public view and investigate the cause of the entry.

389.5.1 PUBLIC POSTING PROHIBITED

Department social media sites shall be designed and maintained to prevent posting of content by the public.

The Department may provide a method for members of the public to contact department members directly.

389.6 MONITORING CONTENT

The Associate Vice President for Public Safety and Chief of Police will appoint a supervisor to review, at least annually, the use of department social media and report back on, at a minimum, the resources being used, the effectiveness of the content, any unauthorized or inappropriate content and the resolution of any issues.

389.7 RETENTION OF RECORDS

The Administrative Services Section Commander should work with the Custodian of Records to establish a method of ensuring that public records generated in the process of social media use are retained in accordance with established records retention schedules.

389.8 TRAINING

Authorized members should receive training that, at a minimum, addresses legal issues concerning the appropriate use of social media sites, as well as privacy, civil rights, dissemination and retention of information posted on department sites.

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APPENDIX C

University of North Dakota Media Relations/Social Media in Policing Lesson Plan

Title: Media Relations/Social Media in Policing

Lesson Purpose: To provide the participant with the knowledge, skills, and materials to effectively interact with the News Media and integrate Social Media into their Law Enforcement Agency.

Instructor: Sgt. Danny Weigel has served with the University of North Dakota (UND) Police Department for the past (4) four years in both investigations, patrol operations, and as a member of the Grand Forks Regional SWAT Team. Over the past year and a half Sgt. Weigel has successfully implemented a successful social media platform which includes (3) Twitter accounts, Facebook, and Instagram all for the University of North Dakota Police Department. The UND Police Department has had posts go "viral" and reach over 100,000 people on Facebook. During that time Sgt. Weigel, along with support from Chief of Police Eric Plummer have implemented a successful Public Information Officer Position to successfully house all media inquiries for the UND Police Department. During Sgt. Weigel's tenure as the Public Information Officer, he has had the opportunity to deal with unique situations such as an officer involved shooting and national news stories from local investigations, which all presented their own unique set of circumstances. Sgt. Weigel has a passion for training and assisting other law enforcement agencies throughout the area to help them implement a successful social media and news media program.

Training Objectives: At the end of this block of instruction, the participant will be able to achieve the following objectives in accordance with information received during the instructional period:

1. Discuss the role of the news media and its importance in law enforcement.

2. Discuss the importance of relationships with reporters.

3. Describe the process of communicating media releases with the news media outlets.

4. Discuss how to develop a news release.

5. Discuss trends in technology with news media.

6. Discuss the major steps to take when a crisis strikes your community.

7. Explore social media and its role in law enforcement.

8. Prepare for a news conference and where to host it.

9. Identify the benefits of being proactive when it comes to the media and law enforcement.

Students: North Dakota Licensed Law Enforcement Officers.

Student Equipment: Note taking capability.

Hours: Twelve (12)—Minimum—Actual time may vary depending on presenter, student participation, and questions. Training time will alternate between classroom instruction and practical exercises. Instruction may occur over several days or weeks as time permits.

Instructional Method: Lecture

     Demonstrations

     Practical Exercises

Materials Required: PIO Boot Camp Text Book

    Classroom

    Tables

    Technology capabilities

Lesson plan

PowerPoint

Prepared by: Sergeant Danny Weigel

Instructor # 4127

Certified Master Public Information Officer

Chris Ryan's PIO Boot Camp

Las Vegas, Nevada

Reference: PIO Boot Camp Text Book

SMILE Conn Training Course

Date Prepared: November 2014; October 2015 Edited

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APPENDIX D

Story of a Disaster as Told by an Airport's Social Media

"When you're responding to a crisis, when speed is of the essence, and other systems are disrupted, social media can be incredibly powerful. With social media, you can quickly join forces with other responders, speak directly to the public and the media, and deliver clear, coordinate and cohesive message to people who need help, and people who have help to offer," said Tom Ruth, president and CEO of Edmonton International Airport (H. Hamilton, e-mail, Nov. 18, 2016).

As noted in chapter three, Edmonton International Airport (EIA) used its social media capabilities to support, assist, and publicize what was happening when wildfires forced the evacuation of the city of Fort McMurray, which is 290 mi (470 km) north of Edmonton in Alberta. Evacuations and flight disruptions began in early May and residents could not begin returning to Fort McMurray until mid-June. EIA provided the following social media screen captures that tell the story including evacuations, incoming firefighters, returning evacuees, gathering aid, and providing information. The accompanying timeline was compiled from the EIA social media posts, Kohut (2016), and Phillips (2016), supplemented by the Wikipedia entry "2016 Fort McMurray Wildfire."

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages
April 1–30: 329 wildfires in Alberta, all but two contained	
Sunday, May 1: Horse Creek Fire breaks containment and evacuations begin in nearby small communities	

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	You Retweeted **FortMcMurray Airport** @FlyYMM · May 3 Due to the fires in Fort McMurray some flight leaving #YMM have been cancelled. Pls check with your airline for status updates. #YMMfire ↩ ↻ 39 ♥ 6 ••• You Retweeted **FortMcMurray Airport** @FlyYMM · May 3 Please confirm flight status with your airline before heading to the airport. #YMM #YMMfire ↩ ↻ 24 ♥ 4 ••• **EIA** @FlyEIA · May 3 Our thoughts are with friends and colleagues in #FortMcMurray. Be as safe as you can. #ymm #ymmfire #yeg. ↩ ↻ 12 ♥ 20 ılı ••• **EIA** @FlyEIA · May 3 .@AirCanada has issued a travel advisory for Ft McMurray. Please contact your airline re flights. aircanada.com/en/travelinfo/... #ymm #ymmfire ↩ ↻ 11 ♥ 3 ılı ••• **EIA** @FlyEIA · May 3 .@WestJet has issued a travel advisory for Fort McMurray: westjet.com/guest/en/trave... Consult your airline re schedule changes #ymm #ymmfire ↩ ↻ 7 ♥ 2 ılı •••
Monday, May 2: fire now 1,350 hectares; wind blowing away from Fort McMurray	
Tuesday, May 3: fire jumps Horse River; weather very hot; fire jumps Athabasca River and heads toward NW part of Fort McMurray	
Tuesday, May 3, 6:00 p.m.: residents told to leave city; traffic jam on roads headed north and south	

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Tuesday, May 3, 11:30 p.m.: 60,000 residents have evacuated and emergency shelter has opened in Edmonton	
Wednesday, May 4: fire now 10,000 hectares in size; high temperature and strong winds; Provincial State of Emergency declared; Public Safety Canada activates International Charter Space and Major Disasters to obtain space imagery from 15 space agencies	↩ ⟲ 60 ♥ 76 ☐ ••• You Retweeted **FortMcMurray Airport** @FlyYMM · May 4 5/4 07:33 - inbound flights suspended. check with your airline for details and updates. ↩ ⟲ 23 ♥ 6 ••• You Retweeted **FortMcMurray Airport** @FlyYMM · May 4 5/4 07:16 - airport is operational. Please check with your airline for flight status and booking info before coming to the airport. ↩ ⟲ 14 ♥ 5 ••• ↩ In reply to The ONE - 93.1 FM **EIA** @FlyEIA · May 4 @931TheOne We appreciate your support in moving promptly through this area so those in need can get help as quickly as possible #ymmfire ↩ ⟲ ♥ ☐ ••• ↩ In reply to up! 99.3 **EIA** @FlyEIA · May 3 .@up993 As information is known, Health Link (811) will be the place for family members to find out information on their loved ones. ↩ ⟲ 7 ♥ 1 ☐ ••• You Retweeted **AHS Communications** @AHS_media · May 3 Once patients have been relocated, best info for loved ones will be Health Link (811). #ymmfire ↩ ⟲ 95 ♥ 26 ••• **EIA** @FlyEIA · May 3 .@jinxfatkitty As information is known, Health Link (811) will be the place for family members to find out information on their loved ones.

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

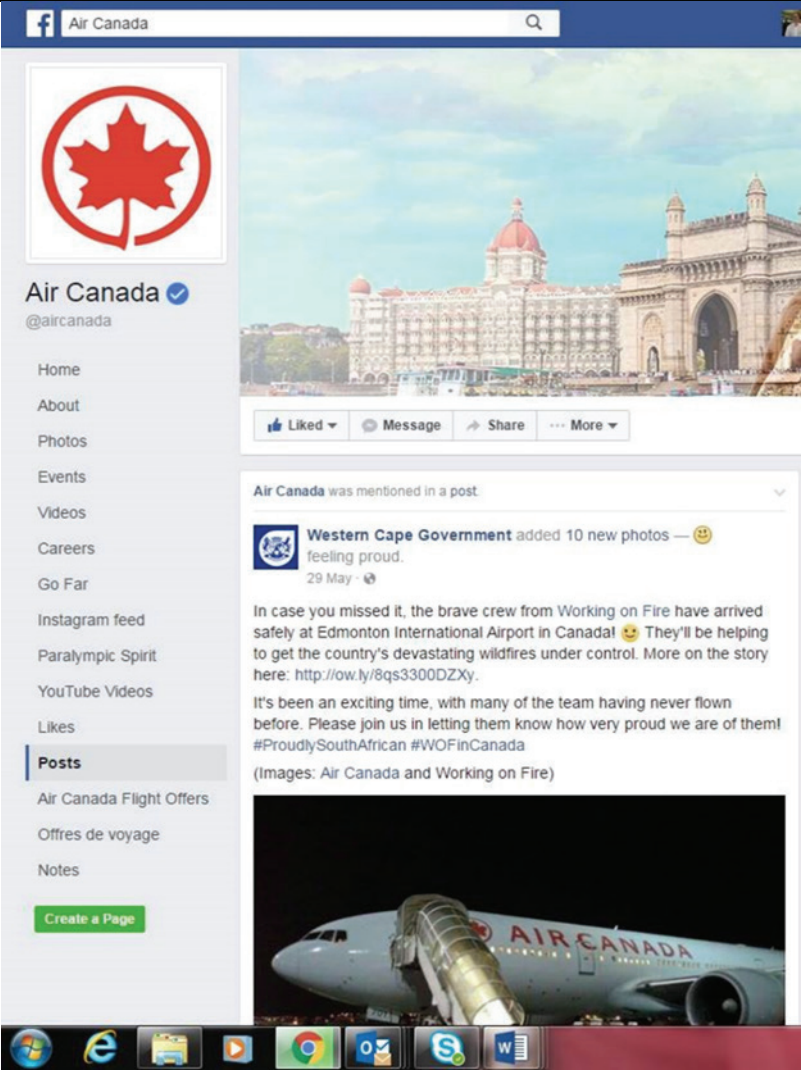| Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	You Retweeted **City of Edmonton** @CityofEdmonton · May 4 Edmonton Emergency Relief Services is accepting diapers, baby wipes, new toiletries, NEW socks & underwear at 10255 104th Street #ymmfire 409 202 **You Retweeted** **FortMcMurray Airport** @FlyYMM · May 4 16/05/04 11:30 As of 11:30 am all commercial flights in and out of Fort McMurray International Airport are suspended #YMM #YMMfire 105 8 **You Retweeted** **Air Canada** @AirCanada · May 4 Travel Alert – May 4-5-6: Fort McMurray (YMM). Details, Flight Status & rebook online. Change fees waived: aircanada.com. 40 20 **You Retweeted** **Air Canada** @AirCanada · May 4 Avis aux voyageurs – 4-5-6 mai: Fort McMurray (YMM). Infos, état des vols, modifs de réserv sans frais: aircanada.com. 6 2 In reply to Tom L **EIA** @FlyEIA · May 4 @ps92264 @Northlands Thanks for your concern Thomas. 1 **EIA** @FlyEIA · May 4 Fort McMurray Evacuees northlands.com/fort-mcmurray-... via @@Northlands #YEG #YMMfire 4 2

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	EIA @FlyEIA · May 4 If you're picking up arriving passengers at EIA, please avoid congestion using our free cell phone @jetSet_Parking ↩ ↻ 9 ♥ 5 � ••• ↩ In reply to @YegTomBraid EIA @FlyEIA · May 4 @YegTomBraid We are always busy at this time but some early arrivals of regularly scheduled flights are making it a little busier. ↩ ↻ 1 ♥ 1 ili ••• You Retweeted Don Iveson @doniveson · May 4 Just welcomed some #ymmfire evacuees at the airport. So grateful to the @FlyEIA team for the compassion and warm welcome they're offering. ↩ ↻ 44 ♥ 211 ••• ↩ In reply to Oil Country Towing EIA @FlyEIA · May 4 @oilcountrytowin Our fellow Albertans are warm-hearted! @AB_EmergAlert & @RedCrossCanada are key responders. Please check with them. Thx ↩ ↻ 1 ♥ 2 ili •••

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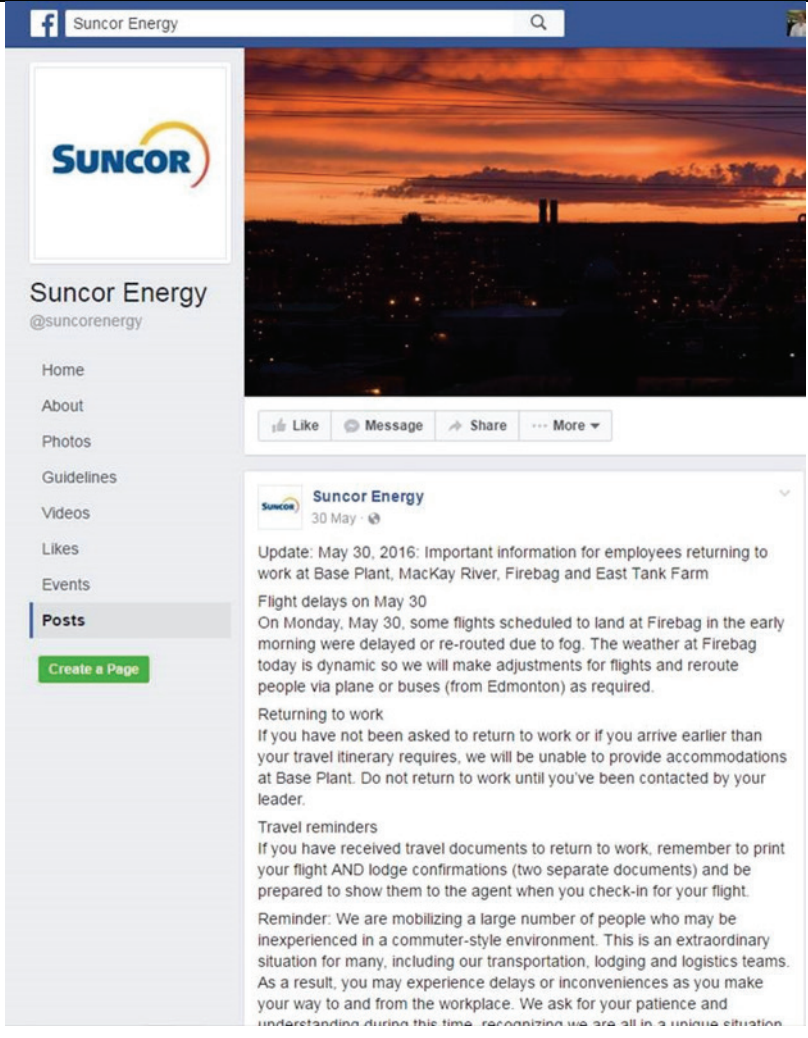| Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Thursday, May 5: more than 1,100 firefighters, 145 helicopters, and 22 air tankers battling fires; fire moving SE of city and covers 85,000 hectares	**EIA** @FlyEIA · May 5 Fantastic @WestJet effort for #Ymmfire evacuees (#yeg flights, food, resources). #AlbertaStrong 17 37 **EIA** @FlyEIA · May 5 Big @AirCanada 777 plane & extra #yeg staff helped #ymmfire evacuees find safe haven. #grateful. Thans for stepping up! #YEG 48 75 In reply to MediaListCanada **EIA** @FlyEIA · May 5 @MediaListCanada Call 780-884-2966. In reply to MediaListCanada **EIA** @FlyEIA · May 5 @MediaListCanada messaged In reply to @YegTomBraid **EIA** @FlyEIA · May 5 @YegTomBraid Thanks Tom. Duly noted. In reply to Mike Modney **EIA** @FlyEIA · May 5 @mikemodney He can stay free for a week.

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

64

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Friday, May 6: fire is 101,000 hectares; damage assessment begins in city neighborhoods; new fire starts NE of city	

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	EIA @FlyEIA · May 6 — EIA staff are greeting evacuees, providing food/water & info including: busing to @Northlands & booking flights #ymm
	EIA @FlyEIA · May 6 — We have an evacuee room dedicated to victims' services. food, water, blankets, pillows & flight information support

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	EIA @FlyEIA · May 6 Loading up for one of the Hercules flights. #ymmfire 1/2 ↩ ⟲ 17 ♥ 38 �ᵢₗᵢ ··· ↩ In reply to Aimee Robb EIA @FlyEIA · May 6 @AimeeRobb @ctvedmonton Hi. You can contact the Edmonton Relief Centre @ 780-428-4520. They are coordinating volunteers for their efforts. ↩ ⟲ ♥ 1 ⬟ ···

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Saturday, May 7: oil operations north of city shut down, costing provincial economy $70 million per day	

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	You Retweeted **Dwayne Nemlander** @biggbusdriver · May 7 Sitting at @FlyEIA waiting for evacuees to come in from#fmmfire and take them to Expo centre

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Sunday, May 8: continued firefighting but advanced damage assessment; gas and electric utilities restoring service to affected parts of grid	You Retweeted Canadian North @CanadianNorth · May 8 Another nice picture shared on FB by our team member Heidi. We're proud to serve #YMM! #AlbertaStrong After flying evacuees out of YMM; pilot stops to make sure the 4 legged evacuees are ok, and offers them all a drink of water before they are reunited with their owners. 69 156

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	In reply to Shelley Weber EIA @FlyEIA · May 8 @WeberVIP @RachelNotley We understand relief is available @Northlands, accessible by free shuttle, and by bus & LRT MONTON EMERGENCY / ing our community since **Home** Helping our community since 1986 Find out more below eerss.org ↩ ⟲ 1 ♥ 1 ıİı ••• EIA @FlyEIA · May 8 Beloved pets flown out of oilsands camps… **Beloved pets flown out of oilsands camps by Canadian North** Nineteen dogs, 5 cats and 2 turtles mingled with human passengers in a memorable, teary flight taking evacuees from a Fort McMurray-area oil… cbc.ca ↩ ⟲ 10 ♥ 15 ıİı •••
Monday, May 9: 13 reception centers open in Alberta	You Retweeted **Alberta Government** @YourAlberta · May 9 All #ymmfire evacuees eligible for debit cards, incl out of AB. Details to come this week. More $ assistance info on **Emergency updates** Updates on provincial emergencies and recovery information in Alberta. alberta.ca ↩ ⟲ 86 ♥ 33 ••• You Retweeted **Ryan Jespersen** @ryanjespersen · May 10 Albertans donated 1,000+ car seats, booster seats, and strollers to #ymmfire evacuees arriving @FlyEIA. #yeg #ymm #AlbertaStrong #ymmstrong ↩ ⟲ 10 ♥ 36 •••

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Tuesday, May 10: fire mostly controlled in Fort McMurray	

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Friday, May 13: Prime Minister Trudeau visits and names special committee to coordinate recovery	You Retweeted Briar Stewart @briarstewart · May 12 @FlyEIA says it received 325 flights during #ymmfire evacuation. It was airport's longest and busiest emergency operation ever #cbc. ↩ ⟲ 7 ♥ 15 ••• You Retweeted Lawnmower Hospital @lawnmowerhosp · May 11 More firefighters coming into @FlyEIA to help #ymmfire Wow... chills. Thank you. ↩ ⟲ 11 ♥ 20 ••• EIA @FlyEIA · May 13 News Release - New warehouse centralizes Fort McMurray donations : mailoutinteractive.com/Industry/View.... #ymmfire ↩ ⟲ 5 ♥ 1 ili ••• EIA @FlyEIA · May 14 EIA is expecting elevated traffic over the next few days. Please arrive 2 hours early for domestic flight & 3 hours for international #yeg ↩ ⟲ 10 ♥ 1 ili ••• You Retweeted Adam MacVicar @AdamMacVic · May 13 Coming up at 6: Enhanced EI; Wildfire Update; @FlyEIA evac operations; Tide coming to #Leduc; and the Energy report! @931TheOne #LeducCounty ↩ ⟲ 2 ♥ •••

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	In reply to Erin Bezovie EIA @FlyEIA · May 14 @Ebezo @KelseyCTV Some workers evacuated by #ymmfire are returning, plus regular seasonal increase with start of summer. EIA @FlyEIA · May 14 The @CanadianPM paused to thank @FlyEIA firefighters in #yeg for their supporting role in the #ymmfire evacuation. Justin Trudeau 22 58
Saturday, May 15: fire covers 251,000 hectares	EIA @FlyEIA · May 16 EIA is expecting elevated traffic over the next few days. Please arrive 2 hours early for domestic flight & 3 hours for international #yeg 25 10 In reply to ryan EIA @FlyEIA · May 15 @ryan505 Volume higher as Ft McMurray workers return to camps. Pls arrive at usual recommended time so @catsa_gc can get you through on time 1

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Friday, May 21: fire covers 50,443 hectares (1,246,510 acres)	(1/2) You Retweeted **Bin Lau** @thebinster · May 26 #ymmfire evacuees can always count on #yeg to be there: @doniveson eedition.edmontonexaminer.com/doc/Edmonton-E... #yegcc #ableg #ymmhelps You, Edmonton Examiner, Melissa Blake and 6 others **HELPING OUR FRIENDS TO THE NORTH** Ongoing support will be needed for Fort McMurray/Wood Buffalo evacuees ⟲ 2 ♥ 5 You Retweeted **FortMcMurray Airport** @FlyYMM · May 25 The 1st flight of US firefighters has arrived @ #ymm to help battle the #ymmfire. It's inspiring to see the support! ⟲ 138 ♥ 221

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Monday, June 6: 70% of the Horse Creek Fire ("The Beast") contained by firefighters from around the world	

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Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

88

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Wednesday, June 8: first access allowed by residents of some neighborhoods	EIA @FlyEIA · Jun 8 This @AirCanada 777 carries 400+ so #ymmfire evacuees can head to #yeg & get home when #ymm airport opens (June 10) ↩ ⟲ 15 ♥ 29 ılı •••
	EIA @FlyEIA · Jun 10 These two @WestJet attendants are nothing but smiles as the first flight back to #ymm is about to board. #ymmstrong 👤 FortMcMurray Airport and WestJet ↩ ⟲ 8 ♥ 38 ılı •••

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
Monday, July 4: fire declared under control but continues to smolder in soil and deep moss	

90

Dates and Events	Edmonton International Airport (EIA) Social Media Messages

Dates and Events	Edmonton International Airport (EIA) Social Media Messages
	EIA @FlyEIA · Aug 24 One of many messages of support for those returning home. We're with you Fort McMurray! #ymmstrong #yeg #ymm We're with you Fo ...usands of Fort McMurray citizens make their way back home and start to... Thinking About You guys! From Tim Hicks + crew 8 18

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APPENDIX E

Advice on General Use of Social Media

The advice on the general use of social media in this appendix comes from the case example interviews and from the National Association of State Chief Information Officers (NASCIO).

NASCIO guidance (quoted in White 2012):

- Gain comprehensive awareness of existing use and social media tool capabilities.
- Develop documented strategy and goals that establish a policy floor for administering social media.
- Establish a multidisciplinary team that includes business, technology, policy, legal, records, and accessibility stakeholders.
- Confer with your state attorney general to establish mutual understanding of legal issues pertaining to social media.
- Know the risk of mediating steps associated with social media use.
- Be ready for outages, with the understanding that free services carry no concrete guarantees of reliability.
- Continuously monitor terms of service modifications by social media providers, especially when these impact privacy.
- Anticipate the provider business models may change without warning—are you prepared to pay for what is currently free?
- Carefully consider branding and representation on multiple social media platforms. Are they consistent and enhancing enterprise marketing strategies?
- Get started on policy, guidelines, and standards and expect to update these iteratively as new opportunities arise.
- Use metrics to link analytics and strategic intent. The private sector does this very purposively and with great sophistication; leading states are adopting this strategy.
- Expect surprises.

Advice from Edmonton International Airport:

- Lead from customer service expertise. Promptness, acknowledgment, owning the problem, and following up are essential; without them, social media can become a negative.
- Maintaining a conversation and building the brand on social media gives "street credibility" when the airport needs it. The perception that "the airport is a cool, community-minded place" is powerful.
- Social media use is good for employee morale. It can make employees proud, and they will flag interesting things in the airport. Social media can make the airport's employees into ambassadors and help elevate their status in the community.
- Keep social media integrated with all of the airport's strategies, using social media to achieve business goals.
- Partnerships are important (tenants, city, surrounding areas).
- Use social media to report innovations and improvements at the airport (e.g., snow removal techniques) as it tends to make the public appreciate the airport and employees proud of their place of employment.

Advice from Minneapolis–Saint Paul International Airport:

- Don't be afraid to experiment, you don't know which posts will perform well.

Advice from Southwest Airlines:

- Use the right platform to reach the right audience and to match the severity of the incident.
- Don't chase each "hot" new thing continuously.

Advice from Vancouver International Airport:

- Commit and deliver at your brand level at all times. Social media must deliver the same level of customer care online that a customer would get in person.
- Customer choices of communications technology cause airport choices of communications methods, including social media channels.

APPENDIX F

Common Steps for Adopting the Use of Social Media into Emergency Management

(*Source*: FEMA EMI, 2012, Independent Study Course IS-042, Social Media in Emergency Management, Lesson 3.)

1. Focus first on the outcome you wish to achieve.

2. Be prepared to adapt how you engage your audience.

3. Choose a few tools and develop them well.

4. Create a trial account before creating an official one.

5. Establish a support structure.

6. Develop a mentorship and demonstrations from experienced users.

7. Establish news feeds (RSS) so folks get steady posts from you without having to search.

8. Leverage partners and volunteers.

9. Make people available to answer questions.

10. Trust the public, the community's most wired citizens.

11. Develop a strategy.

    a. Form a SM committee to support its use.

    b. Set goals: identify audience; explain benefits to be derived from SM use and what risks will be mitigated.

    c. Develop simple metrics for evaluating the benefits, some qualitative & some quantitative.

    d. Define an "online persona" for your online presence.

    e. Establish practical and transparent reporting and analysis processes, and track progress to measure program success.

    f. Set expectations, including some room for mistakes.

    g. Ensure legal language is included where needed.

    h. Make sure that promises are kept.

    i. Integrate SM into organization's business: website, operations, exercises, and plans; continuously improve on its use in after action reviews and improvement plans (FEMA 2012).

Abbreviations used without definitions in TRB publications:

A4A	Airlines for America
AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation

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ISBN: 978-0-309-39006-4

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