P1.4 VISITVIEW® AS A BRIEFING TOOL FOR HIGH IMPACT WEATHER EVENTS

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1. INTRODUCTION

Communication is the fundamental key for the success or failure of forecasting, planning for, and reacting to high impact weather events. There are many different ways weather data, forecasts, and statements (e.g., watches, warnings, advisories) can be communicated. High speed communications via the Internet, satellite, and cellular technology lead to expectations of near instantaneous, continually-updated information involving multiple senses (i.e., visual and audio).

The National Weather Service (NWS) Southern Region Headquarters developed a Regional Operations Center (ROC) in 2000 to serve as a focal point for conducting high impact weather briefings via conference call for the State of Texas Governor's Division of Emergency Management (DEM). High impact weather remains ill-defined, but in this context it means forecasts of major winter storms, severe weather outbreaks, widespread flash or river flooding, extreme wildfire, and land-falling tropical cyclones in Texas. The goal of these briefings is to enhance the readiness and response capability of state and local emergency management officials to potential or impending high impact weather events.

The briefings were deemed a success by the DEM from the start. However, as more regional and local emergency mangers, elected officials, and disaster relief agencies joined the briefings, it became apparent that the lack of a visual component greatly hampered the understanding of those being briefed, and considerably lengthened the briefings as information had to be explained or clarified multiple times. Clearly, significant change and improvement to the DEM weather briefings was necessary for them to remain a viable and effective means for communicating high impact weather risk to the DEM , regional, and local officials.

2. THE VISITVIEW® SOFTWARE

Around the time the DEM briefings were becoming unwieldy, Mostek et al., (2004) published an article on the success of the VISITview® software in training and collaboration between groups (typically an instructor and multiple students) separated by long distances. In fact, use of the VISITview® software platform was deemed a success not only from anecdotal comments, but from user surveys, and from the sheer number of locations, training sessions, and total certificates of completed training between 1999 and 2003.

Given the success of the VISITview® software and emerging problems with the DEM briefings, it seemed VISITview® might be a potential solution – not only for increasing the understanding of high impact weather by the DEM and local officials – but also in shortening the length by reducing the miscommunication that resulted from audio-only briefings.

One major hurdle to overcome is that the typical VISITview® training session involves downloading of the lesson beforehand by the local training facilitators. The graphics and animations of the VISITview® lessons are quite large (e.g., 10-30 MB), requiring long download times, even for broadband or better Internet connections. Moreover, the lessons have to be unzipped and set-up, and use of VISITview® requires some minimal training.

Fortunately, there is a solution, as Web-based, real-time collaboration demonstrations are available on the VISITview® Home Page: http://www.ssec.wisc.edu/VISITview. These real-time collaborations only require an Internet connection, browsing software (e.g., Internet Explorer®), installation of runtime Java™ Technology, and Internet Port 1631 to be enabled through firewalls. The Java™ requirement is usually a null condition, as many Internet users already have it installed for other applications, and those using NWS websites already have it installed to view radar data. The requirement for Port 1631 (which is registered for the VISITview® protocol) to be enabled is usually not a problem. To date, only one entity with extreme security requirements has been unable to enable Port 1631.

Customization for the DEM weather briefings involved setting up a host server (in this case, simply creating a directory on a server already hosting NWS products), installing the appropriate Java™ Runtime Environment, and installing the VISITview® software. This is very straightforward, with detailed instructions and support from the VISITview® home page.

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Once the server for the DEM weather briefings was set up, it was successfully tested and demonstrated at DEM headquarters in May, 2005. NWS Weather Forecast Office (WFO) Austin/San Antonio further refined the process by conducting briefings for local emergency managers from June through September, 2005, and the final configuration and implementation for the DEM briefings was completed in May, 2006.

3. COMPONENTS OF DEM BRIEFINGS

The fundamental issues for any briefing are to determine what should be presented, and in what order. Since the DEM briefings can potentially cover a wide range of high impact weather events (i.e., from blizzards to land-falling tropical cyclones), there cannot be a standard set of graphics or order of presentation sufficient for all high impact events. However, there are common themes for each event that have led to a nearly standardized set of graphics and order of presentation, which is especially applicable to the most common high impact event of combined severe convection and flash flooding. The typical graphics and order of presentation are shown in Table 1.

The graphics used and order or presentation generally flow from short-term hazards with significant potential to save lives, but only minor potential for property protection, to long-term hazards with significant potential to mitigate property damage, but minor potential to save lives. In other words, preparatory actions for short-term hazards such as severe convection (hail, wind, tornadoes) are mainly focused on saving lives (e.g., by taking proper shelter), but offer little in way of property mitigation due to the brief lifetime and general unpredictability of the exact timing and location of the events.

TABLE 1. Typical graphics and order of presentation for DEM high impact weather briefings

1. Satellite or radar image of the past few hours
2. NOAA/NCEP Storm Prediction Center Day 1 Convective Outlook
3. NOAA/NCEP Hydrometeorological Prediction Center Excessive Rainfall Outlook
4. NOAA/NWS West Gulf River Forecast Center Day 1 and 2 Rainfall Outlooks
5. Watches/Warnings/Advisories in Effect
6. Status of Rivers

In contrast, long-term hazards such as extreme wildfire and river flooding may take days, and in some cases weeks to develop. Preparatory actions to mitigate property damage can have a significant impact (e.g., opening dam flood gates to increase holding capacity for an approaching flood wave), whereas saving lives is a minor benefit, since the time required for the event to develop generally provides ample notice.

The typical DEM briefing starts with the ROC Duty Officer providing a general overview tied to the graphics included. This is then followed with specific information added by local WFOs and the NWS West Gulf River Forecast Center (WGRFC) with regard to impacts in their areas of responsibility. Questions can be (and are) asked at any time during the briefing, and the ROC Duty Officer actively solicits questions after his/her briefing, and after each WFO/WGRFC briefing.

4. EFFECTIVE VISITVIEW® BRIEFINGS

In addition to the general graphics and order of presentation developed for the DEM briefings, a number of technical tips and reminders have been developed to maximize the effectiveness of communication.

4.1 Everything must be an image file

Anything that is to be shown must be an image file, specifically in the .jpg, .gif, or .png formats. If the ROC Duty Officer or a WFO desires to show something that is not an image file (e.g., a webpage or text product), it must be converted to an image file, usually through a screen capture, then pasted into a graphics program, and saved as a .jpg, .gif, or .png file.

4.2 All images should be the same size

Unfortunately, many images used in briefings originate from different sources and are usually different sizes. The VISITview® images should all be the same size, otherwise portions of larger images will be cropped, sometimes obscuring the feature of interest. The best way to prevent this problem is to paste the images onto a common PowerPoint® slide background. Placement of features that remain on every slide (e.g. NOAA/NWS and DEM logos, date/time of the briefing) can be used as corner points for images from the original sources to be inserted and re-sized within. In addition to ensuring all images are not cropped, use of a standard background also creates a professional appearance; allows helpful titles, web addresses, and other information to be easily added, and allows a common framework for multiple contributors to the briefing. Finally, use of a common background facilitates saving the briefing for later review through the web page creation feature of PowerPoint®. This allows those being briefed to review the graphics at a later time, or use the images to brief others within their organizations.

4.3 Placing the images in VISITview®

The best way to learn how to prepare briefings is through the on-line, step-by-step tutorial available at the VISITview® home page. It takes about one hour to learn how to make a briefing. The time consuming nature of creating each briefing from scratch can be avoided by using a standard set of images for each briefing. This limits the preparation steps to only gathering the original source images, placing them on the standard background slides, then saving the slides as new images and uploading them to the server via an automatic script.

Each image should have a page label, which helps refer to slides during the briefings. Second, having a Web page to refer to in the linked text Uniform Resource Locator (URL) allows participants to click on the "Show URL" button within VISITview®, which opens a web page designated by the briefer. This is a great way to introduce products and services, as well as increase the knowledge level of the

4.4 Animations

Animations take very long to load. One way to minimize the impact is to load animations on the first slide, as part of the introduction. This gives participants verifying information such as the title, date, time, etc., but also provides a pre-briefing by allowing them to view the animation before the actual briefing starts.

4.5 Uploading the briefing and activating the server

VISITview® creates a .zip file of the briefing slides, which is then saved to a public server and unzipped. The VISITview® web server must be activated prior to the briefing; a simple one line Java™ command. The web server should be activated at least 15 minutes prior to the start of the call. Many participants dial in early, and will quickly become frustrated and complain if the web server is not running.

5. CONDUCTING THE DEM BRIEFING

There are special considerations the briefer should note for the VISITview® software to be most effective. The primary goal is to have all participants feel comfortable with the collaboration tools of VISITview®. Most NWS employees are familiar with the pointer tool, drawing tool, and question mark protocol from teletraining sessions. The "Show URL" tool is sometimes used during teletraining, but has increased importance in supplying information to emergency managers during high impact weather briefings.

These tools are discussed below. The lead briefer should spend 1-2 minutes reviewing these tools at the start of each briefing. This is equivalent to the safety instructions on commercial airline flights. Although most travelers have heard them many times, there is always the potential of a new airplane traveler, hence the need to state the safety instructions. Similarly, there could be emergency managers, county officials, etc., new to the briefing, who would benefit from a brief review of the tools and protocols.

5.1 The Pointer Tool

The pointer tool is a large red arrow designed to highlight a specific portion of the image. The pointer tool is engaged by a single left mouse button click anywhere in the image.

5.2 The Drawing Tool

The drawing tool is designed to enclose an area of the image, produce free-hand text, or to draw images. The drawing tool is engages by click and hold on the left mouse button, which is released when finished. This is analogous to using a chalkboard.

5.3 The Question Mark Protocol

Similar to its use teletraining to indicate a participant question, the briefer should explain and demonstrate the question mark protocol with the drawing tool. Using a different color also allows VISITview®'s color change capability to be explained.

5.4 Show URL

The Show URL button can be clicked by participants to launch their Web browser to a page specified by the briefer. This feature allows participants to review material after the conference call is complete, self-brief for future events, and maintain links to the latest products and services. The briefer should strive to have at least one URL associated with every slide in the briefing, and mention this capability.

6. RESULTS

No formal surveys or objective means of assessing the improvement in the quality of communication are available, since the number and types of participants varies from briefing to briefing. That said, the following anecdotal observations have been noted by the DEM, NWS Southern Region Headquarters, and WFOs:

1. The length of briefings has been reduced. Before VISITview®, briefings routinely exceeded 30 minutes, and information was often repeated since graphics were not available. Since VISITview® was incorporated into the briefings, the length has been reduced to 15-20 minutes, allowing DEM additional time to address preparedness, response, and recovery efforts.

2. The DEM has demonstrated an increased understanding of meteorology and forecast uncertainty. Prior to using VISITview®, most questions asked by DEM were clarifications of threat area and timing, again due to the lack of graphics. Since VISITview® was employed, the earlier questions have ceased, replaced by more advanced questions on model uncertainty, most-likely and worst-case scenarios, and summarization of briefing high points to check for communication accuracy.

3. The DEM has repeatedly expressed thanks for the briefings, and the efforts to improve them through adding graphics via VISITview®.

7. CONCLUSION

Implementation of graphics and animations via VISITview® for DEM high impact weather briefings has made a significant positive difference in the quality of information transfer, as anecdotally measured by a reduction in the length of briefings, and by the higher level of questions from the DEM and emergency managers to the NWS representatives conducting the briefing.

High quality communication is essential for the best mitigation outcomes for saving lives and property during high impact weather events. High quality communication can be defined as quick, concise, clear, and with a advanced level of understanding and trust among the parties involved. VISITview® is clearly a tool to help facilitate high quality communication, and is recommended for weather briefings.

8. ACKNOWLEDGEMENTS

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9. REFERENCES

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