B12   Calibration and Validation of Videographic Visibility Presentations

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The goal of this presentation is to review the history and current status of calibration and validation techniques for forensic visibility presentations. Attendees will learn what steps can be taken to ensure a technically defensible approach to capturing and presenting scene visibility tests, as well as, the results of a study that can support the use of such tests.

This presentation will impact the forensic science community by presenting details of the findings as well as recommendations for forensic applications of videographic visibility tests. These results add to the technical foundation for introduction of such images in courtroom settings.

In order to capture and demonstrate visibility of crucial aspects of an accident scene or reenactment for forensic purposes, there must be some means of ensuring that the final image corresponds in a known way to the original viewing conditions. Careful photographic or videographic capture, e.g., from a known position of interest and with lighting similar to the time of the incident, is an essential first step, but it is also necessary to have a procedure for calibrating and validating the image.

Throughout the past several decades, there have been two primary approaches used for such calibration and validation. One involves direct comparison of an image with the scene itself; the use of Polaroid® photos for this purpose has largely given way to viewing static video images on a monitor. In this approach, one or more viewers compare what they see in the scene ahead to what is visible in the photos or monitor, and select photos or adjust the images to match crucial aspects of scene visibility. The other common approach involves the use of stimuli introduced into the scene, generally contrast charts; viewers record their observations of the charts at the scene, and then later select or adjust final images to provide the same level of chart visibility as at the scene.

Further validation of the final images can be obtained by comparing what a group of viewers detect and notice in the scene to what they detect and notice in the images. In forensic applications, it is usually not practical to have more than a few people involved in a site visibility test. This presentation will describe a study conducted specifically to determine the success of current videographic calibration and validation techniques. Test subjects were brought to view a night roadway scene (not as part of any collision investigation), and were interviewed in order to determine what aspects of the scene they found visible. Later, subjects viewed an HD videographic presentation of the scene that had been calibrated by adjustment of the monitor at the scene and validated based on observations of a contrast test chart. Comparison of scene and videographic visibility results demonstrated the utility of the techniques.

Details of the findings as well as recommendations for forensic applications of videographic visibility tests will be presented. These results add to the technical foundation for introduction of such images in courtroom settings.

Visibility, Videography, Contrast Detection