E28 Visualization of Mobile Evidence: Timelines, Maps, and Social Graphs

John J. Carney, JD*, 1442 Osceola Ave, St. Paul, MN 55105; and James C. Austad, JD*, 816 W St Germain St, Ste 410, St. Cloud, MN 56301

After attending this presentation, attendees will understand the advantages of using software to visualize forensics data and "see" patterns and relationships in the digital contents of mobile devices. In doing so, data is elevated into information, or even knowledge, that attorneys can use with their clients for decision making, for strategy formulation, and for taking meaningful action in a legal, investigative, or corporate context. The presentation will include technical information on software bridges that span leading mobile forensic examination tools and popular timeline, mapping, and investigative software packages used by attorneys and investigators today. Evidence visualizations created by this technology will be briefly demonstrated for the audience.

This presentation will impact the forensic community by proposing new evidence visualization techniques available to both criminal justice attorneys and civil litigators that have the potential to contribute greatly to just legal outcomes in and out of the courtroom. Many trials today, whether in federal or state court, involve showings of complex factual information produced as digital evidence. But how can justice be served if the trier of fact cannot understand the evidence and the story it can tell? Therefore, it is imperative that complex digital evidence be presented in such a way as to be relatively straightforward for the judge or jury to understand. The visualization of digital evidence is one technique to provide that understanding cost effectively.

Digital evidence is usually presented today as narrative and numbers accompanied by a stream of bits and bytes in computer forensic reports that are at best sorted into buckets of similar items. For example, mobile phone evidence is presented such that call logs appear in one section split into inbound, outbound, and missed calls. Text messages appear elsewhere split into inbound and outbound messages. The phone's address book appears yet somewhere else. This primitive and fragmented approach at production hides or makes opaque the evidence story that attorneys desperately need to develop a theory of the case for presentation to juries to win at trial. Technically, forensics data is made available to attorneys and their clients, but often this evidence is so difficult to interpret and understand that they derive little, if any, value from it. Why? Because many digital forensic examiners report their findings one-dimensionally and out of context. Unfortunately, legal professionals, who are not technologists, cannot relate to it. They miss the substance and the importance of the evidence's meaning and its ability to tell the story of the case.

The hypothesis or proposition of this presentation is that forensic information must be visual in order to be optimally useful and valuable to attorneys and the clients they serve. It puts forward the idea of using software to visualize forensics data and "see" patterns and relationships in the digital contents of mobile devices. In so doing data is elevated into information, or even knowledge, that attorneys can use with their clients for decision making, for strategy formulation, and for taking meaningful action in a legal, investigative, or corporate context. Attorneys, investigators, forensic accountants, and others most effectively perform their work with timelines and maps, not data streams. They map and chart factual information like events, actions, incidents, messages, calls, and so forth.

This presentation will show how digital forensic examiners can put meaningful evidence to use with attorneys, opposing counsel, judges, juries, and their own legal teams. The focus is on how meaning can be mined from forensics data cost effectively using software automation. It will include technical information on software bridges that span leading mobile forensic examination tools and popular timeline, mapping, and investigative software packages used by attorneys and investigators today. Evidence visualizations created by this technology will be briefly demonstrated for the audience.

Furthermore, visualization capabilities have as much evidentiary value earlier in the legal process as they do at trial in the courtroom. Depositions, motion practice, and pre-trial hearings present excellent opportunities for sharing and communicating the meaning of forensic data. So do settlement conferences. Why? Today so few cases actually go to trial. The legal community knows that less than 10% of cases at the federal level are tried. Many are subject to decision by plea bargains, settlement conferences, arbitration, and even mediation. Yes, the majority of cases today are settled on or before the courthouse steps. Modern evidence visualization techniques can tell the story of the case and contribute great value to justice in and out of the courtroom.

Visualization, Mobile, Evidence