J11 Portable Document Format (PDF) Technology in 2011

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After attending this presentation, attendees will have a greater understanding of "Portable Document Format" (PDF) digital file technology in 2011, to include PDF history, basic PDF file structure, PDF technical applications, PDF file security, worldwide PDF use, and PDF technical features that forensic document examiner should consider when examining many contemporary questioned documents, particularly when related PDF files exist.

This presentation will impact the forensic science community by providing additional knowledge of contemporary PDF technology, specifically the potential application of PDF technology software features in determining the origin(s) and production method(s) used to create PDF-related questioned documents. The increased knowledge should enhance the thoroughness, accuracy, and overall efficacy of forensic document examiner during examinations of documents and materiel involving PDF technology.

Forensic document examinations most often involve disputes concerning the origin and genuineness of questioned documents. The proliferation of "Portable Document Format" (PDF) digital file technology documents today, particularly the expansion of PDF use in digital document archiving, suggests forensic document examiners will increasingly examine questioned documents that involve PDF technology. A review of PDF technology literature was performed and a summary of this information is provided. The summary includes an overview of PDF technology and related historical highpoints; a description of fundamental PDF file structure and the development of specialized PDF file subsets; developments up to the present concerning PDF document file security and related considerations; and

Adobe® Systems Inc., introduced the initial PDF technology in 1993. A chronology is given of the PDF technology significant points of evolution that followed through to today; of great significance was the adoption of PDF as an ISO standard by the International Organization for Standardization in July 2008. Also discussed are the specialized subsets of PDF files that were developed to meet the distinctive needs of respective customer groups: (1) PDF/X (2001) supports Graphic Designer/Print Professionals and Creative professionals; (2) PDF/A (since 2005) supports records managers, compliance managers, and archivists; (3) PDF/E (since 2008) supports architects, engineers, and the construction and manufacturing fields; (4) PDF/VT (since 2010) supports variable data/transactional printing (i.e., bank statements); (5) PDF/UA (begun in 2011) supports government and industry to meet disabled user needs; (6) PDF/H (since 2008) not a standard, but a best practices guide for Healthcare; (7) PAdES –standard for PDF digital signature security to meet European standards; and, (8) U3D—PDF technology supporting embedded 3D files for interactive and other 3D data. Finally, a summarization of PDF technology security considerations is related, including the recent warnings projected on an international level. Experimentation was conducted to identify PDF technology features having particular value to forensic document examiners for the examination of PDF-related questioned documents and their associated PDF files.

The initial experimentation tested whether PDF text and imaging materials could be accessed and acquired on the Internet. This initial experimentation confirmed the ease and simplicity involved in acquiring PDF materials from the Internet and further demonstrated the ease with which these items could be used to create fictitious documents. The fictitious PDF documents created, and other PDF materiels, were then tested to identify what types of information could be derived from PDF files by forensic document examiners using PDF software features readily available. The testing of these controlled/known PDF materiel identified features that forensic document examiners may employ during examinations of known/suspected PDF document files to determine the time(s), date(s) of PDF creation, and editing; method(s) employed in creating PDF documents, i.e., scanning printed documents versus software conversion of text or text and image combination files directly into PDF files; identification of various software programs used in the creation of PDF documents and sub-components; and the possibility of identifying individuals involved in creating and editing/altering PDF files and related documents. Experimentation confirmed that existing PDF software tools can be used productively for questioned document examinations by forensic document examiners operating at a "software user" level, and that it is not essential for forensic document examiners to transcend this somewhat "elementary" level of expertise in understanding PDF technology, to a deeper level of technical understanding, such as comprehending computer programming code.

PDF Files, PDF Archives, PDF Documents

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