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Innovative Technology in Media Asset Management

By Tom Stone

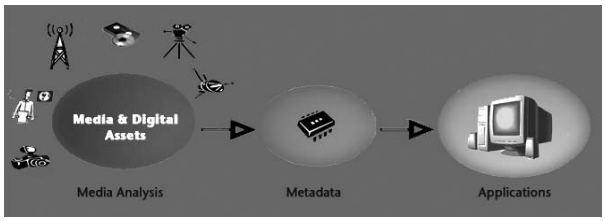
Anyone who has tried to find a telephone number sent in an e-mail message quite a long time ago knows it would appear hopelessly buried among thousands of saved e-mail messages. To circumvent the digital abyss, some opt for organizing e-mails by topic, date, source or other ways. The problem is that sorting e-mails by topic preempts finding anything by source. So, many people resort to just not sorting the data at all.

This is one tiny example of digital content search issues facing private business and government alike. Entire enterprises now face the same problem: how to manage digital content easily and affordably. Electronic data capture, distribution and server technologies are rapidly expanding the availability of up-to-the-minute information. Even if an enterprise is not managing digital media now, there is a good chance that it will be in the future as more information is encoded into digital media consisting of images, voice, voice-generated text, layered image composites, video and embedded hyperlinks.

With the help of the Google desktop or similar search engine, finding a telephone number in an old e-mail message takes seconds, as the engine searches an entire computer, including e-mail messages. But, that is just one needle in the haystack of a future full of search-engine-based media and digital asset management efficiencies to come. In the future, all data will be indexed, categorized, pre-processed and searchable, and digital media will represent every aspect of an enterprise from start to finish.

Because a majority of digital media content is not inherently searchable in nature (for example, a digital image is simply thousands of pixel values that say nothing about the picture itself), the value of digital media content takes on exciting dimensions when related searchable content attributes are added in the form of metadata. Metadata is data that describe or define the attributes of information and are typically embedded into the information itself. For example, metadata for a digital image might contain the date, time, location, subject, context, photographer and camera. The metadata attributes would be similar, but different, for a video clip or a voice recording.

Searchable metadata can be used to relate the content of different media and across time. For example, a company public relations announcement could be correlated with the company's minute-to-minute stock value, synchronized in time with a corresponding video clip from a popular afternoon business cable television show that mentioned the company to measure the resulting stock price bump or slump.



Uncovering unknown relationships between disparate media data can lead to powerful information and knowledge gains in areas as diverse as education, health care, human activities, law enforcement, defense intelligence and many other fields.

This technology is now at hand. In today's terrorism-heightened atmosphere, media management technology could aid airport security. For example, future terrorists could be those most critical of U.S. policies today. One way to identify these persons might be to correlate the probabilistic names derived daily from facial recognition technology operating on foreign news clips where the speaker uses antagonistic terms toward U.S. policies with a similar list of names derived from facial recognition technology at key points of entry into the country. Thus, authorities could be immediately alerted to the presence of someone with a documented anti-U.S. position upon entering the country.

The potential of data recording systems that include metadata creation and search capabilities will lead to the integration of network data recording with embedded media content analysis. Innovative technology to accomplish these goals is under development and being *delivered* today.

The remaining challenges are to continuously develop the machine understanding capabilities of media data, including all aspects of search, retrieval, visualization and summarization in both immediate and archival content. The objectives are to improve the dynamic extraction, summarization, visualization and presentation of digital media, automatically producing collages and auto-documentaries that summarize the numerous possible relationships between many disparate data types. ❑

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