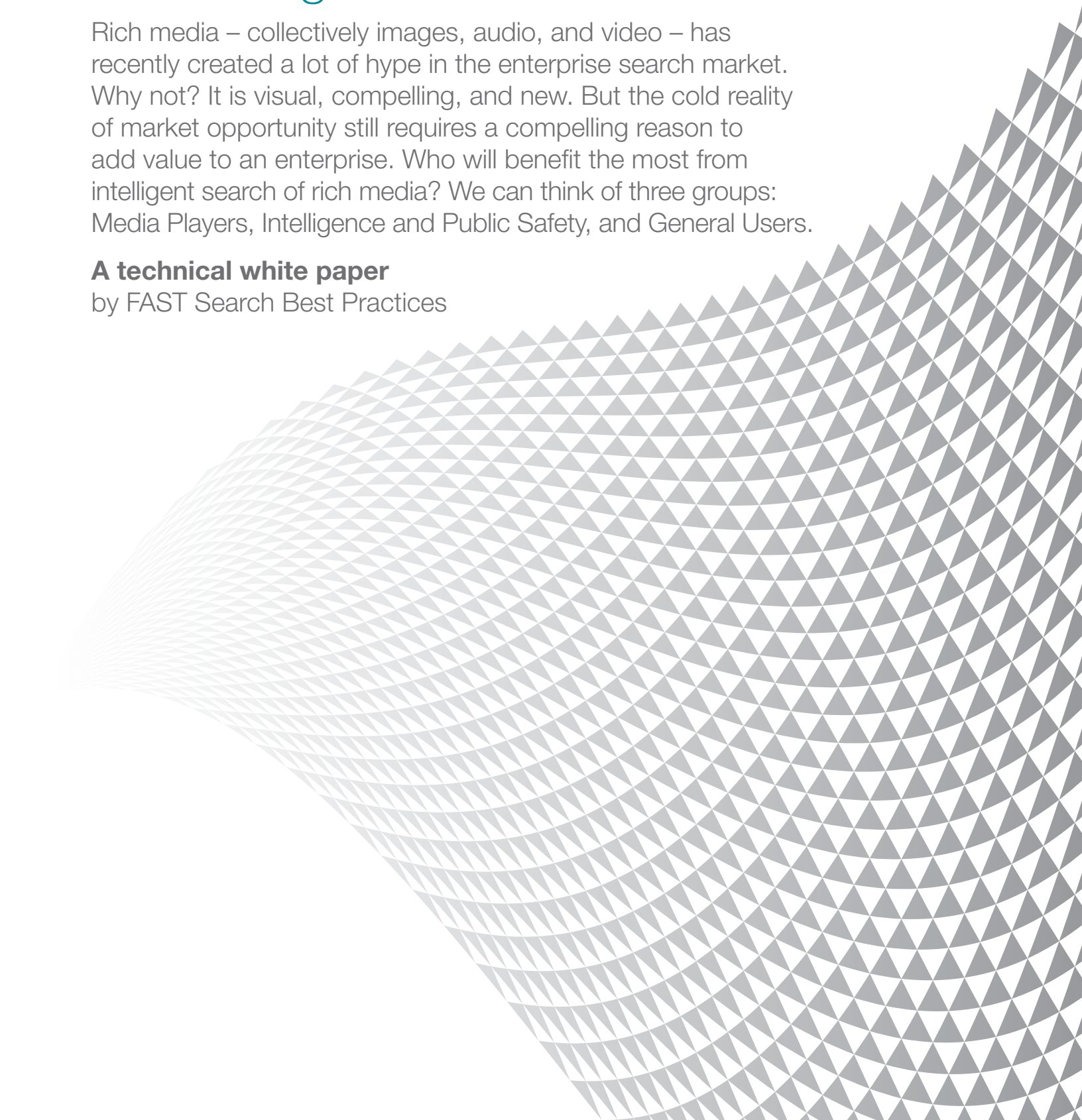


# Searching rich media

Rich media – collectively images, audio, and video – has recently created a lot of hype in the enterprise search market. Why not? It is visual, compelling, and new. But the cold reality of market opportunity still requires a compelling reason to add value to an enterprise. Who will benefit the most from intelligent search of rich media? We can think of three groups: Media Players, Intelligence and Public Safety, and General Users.

## **A technical white paper**

by FAST Search Best Practices



## Media Players

There is a clear revolution happening in the broadband, telecom, publishing, and media industries. Publishers are transitioning to online models, fundamentally changing how they monetize, to ward off the onslaught of Google, Yahoo, and Microsoft. Broadband and telecom companies are overlapping services to create “Triple Play” enterprises that provide integrated broadband, cable, and VoIP.

Imagine an integrated medium for entertainment, communication, and high-speed Internet access, all with cable as well as online accessibility. What can be accomplished here with intelligent, contextual access to this content? Users can find segments of media, not just by using the usual meta-data that it has been carrying around for years (that’s easy stuff), but through auto-recognized video patterns and extracted facts and concepts derived from its translated-to-text audio content. Major broadband players in all major sectors of the global market are leading the charge.

How about integrated online directories that provide content on the Web and in the media industry? TV Guide is an example. Or rich media search optimized and tuned for the mobile market? Amp’d is a new company that provides a complete media content platform for the teenage market. Imagine automatic close-captioning without the need for a silent editor, or the confluence of voice activated search and satellite radio. Imagine the application of sentiment analysis on directly translated audio. The size of this market is huge and is already bearing fruit for intelligent rich media search capabilities.

## Intelligence and Public Safety

In our current security-aware climate, public safety is more often than not at the forefront of awareness in our general day-to-day lives. And those of us in the technology industry know exactly how important access to knowledge is – “knowledge is power” is still the mantra of the day. The Intelligence community knows this; it also knows that “the other side” is much more adept with communications and media access than it used to be.

Why not use this to their advantage? It would be surprising if they were not already monitoring interesting

broadcasts (like Aljazeera) for key terms and other information, but are they relating the content to other media sources? Other data sources? Imagine inter-relating public media streams, news content, textual information tapped from modem communication lines, and banking transaction patterns to uncover financiers of terrorism. Imagine monitoring border crossing statistics in real time and relating it to visa and immigration data to discover discrepancies at point of entry or exit. Media is involved here too in the photographing of license plates.

Not all media monitoring has to do with terrorism. National and international police agencies use media search to ferret out child pornography rings inter-relating intelligent image comparisons (e.g. flesh tone analysis, “more like this” matching) with patterns in Web site content and terminology. Imagine using similar capabilities to uncover black market trading, illegal manufacturing and distribution of knock-offs (e.g. high fashion), drug trafficking. At the local level, police departments can inter-relate pictures taken at the scene, audio interviews and transcripts, video monitoring from security cameras, and information drawn for other departments (e.g. Health) to build cases (or for the legal defense community to disprove them).

## General Users

In general, rich media has become more pervasive in all aspects of our lives, private and corporate. Rich media search is used for many organizations to monitor Intellectual Property (IP) theft; if the IP is media (e.g. images of celebrities), then the search must be intelligent enough to look for copies that constitute legal theft. Imagine rich media search for quality control on a complex assembly line that produces images and video from specialized lines. Imagine rich media search in corporate litigation to prove or disprove a case. Imagine the same in examination of evidence.

And then there is the desktop. Some organizations require monitoring of corporate citizens’ desktops for illegal, non-compliant, or offensive material (often media). There are the online sites that provide media centers for personal media: home movies, images, and audio. Imagine intelligent search for these libraries of content.

# The Mechanics of Rich Media Search

Rich media search requires a best-of-breed strategy that brings together the richness of intelligent media access and connectivity with intelligent understanding of text. When researching a rich media search solution, one should consider the following media search capabilities: Speech-to-text translation performance – it should be as close to real-time as possible (within a few seconds), and require minimal implementation effort to get it there. For recording and alignment accuracy, there should be time stamps at the word level and SMPTE time code alignment.

## Speech-to-text conversion accuracy

DARPA provides a good guideline with its EARS targets.

## Speaker recognition and segmentation

The system can identify speakers as distinct from each other.

## Tuning through topical dictionaries

Most subjects (e.g. sports) have their own specialized vernacular.

## Multiple language support

Support for multiple languages (including Arabic and Chinese) and a language framework for creating new converters quickly.



## Multiple sourcing pipelines

Including wideband digital satellite, cable, and telephony.

## Intelligent video pattern tagging

e.g. scene changes, number of people, SMPTE time codes, and a framework for creating custom tags.

## Contextual precision

For scene isolation and location.

## Natural language based alerting

In real time from audio/video streams.

## Contextually intelligent media navigators

e.g. speakers, locations, concepts.

## Simple media connection workflow

A non-technical UI for attaching to media streams, for example defining the capture parameters (timing, etc.) and extracting thumbnail images for the website (see Figure for example).

Remember that all media is eventually converted to raw text or text as descriptors in derived meta-tags or properties, so the picture is not complete without the intelligence, performance, scalability, and flexibility of a true enterprise search platform. This includes, for instance, the ability to identify associative patterns through on-the-fly regression analysis and then using them to trigger events or warnings. This is perhaps the most promising and powerful use of an integrated rich media search platform. And it is not speculative, for all of the examples we proposed in this article are actually in use today.

### About FAST SBP™ (Search Best Practices)

SBP consulting is a highly focused transfer of search knowledge and experience from FAST to its prospects and customers. SBP workshops aim to help enterprises realize the full potential of search, by creating optimal strategic, functional and technical roadmaps, delivered in the form of business model, solution and architecture designs.

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