

Capitalizing on Rich Media Business Information

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EXECUTIVE OVERVIEW

The composition of mainstream business information has changed and is no longer limited to data purely textual and numeric in nature. Web-based Internet applications have fueled the use of media – images, audio, video – in the quest for a richer user experience as well as a competitive edge on enterprise websites. Concurrently, media technology has matured and enabled mainstream business applications to integrate media data much more easily. But most important of all, was the growing realization that business information stored as media was of significant value to corporations and their customers. Thus integrating this media-based information into on-line applications became essential to capitalize on this value.

Examples of this trend can be found in many industries. An example familiar to everyone is banking where check and customer statement images are being scanned, digitized, and put on line so that customers can get at the information through web based applications. The actual image of a check, including balance and signature available to customers, complements the traditional monthly statement. Another familiar example is online real estate applications where web-based customers can view images of houses, neighborhoods, and the associated scanned specification sheets. In health care, traditional patient information records at hospitals and nursing homes are combined with doctors and nurse's notes, x-rays, and lab results. And in education, the use of scanned notes and digital video clips for remote learning is underway. The inherent business value stored in digital media is clearly evident in all of these examples.

THE CHALLENGES OF MEDIA ASSETS

Certainly multimedia adds value but it also brings challenges. Multimedia objects are large, unstructured and complex in nature, very different from traditional business data. Consequently both storage and network bandwidth costs can be prohibitive. Multimedia objects such as video can be very large in size, and can often dwarf storage capacities of small to medium-sized systems. Additionally, substantial bandwidth is required to deliver these large objects to a client in real time. Multimedia also comes in a bewildering array of formats that are forever evolving. Keeping up with new, *standard* formats is a challenge in its own right. An enormous archive of multimedia stored in an aging format is yet another problem. Finally, applications need to manage multimedia data in an integral fashion with

“business” data – for example, a picture of a car is associated with information on its model and price.

The conventional way to support multimedia data has been through the use of file-based specialty servers that have been designed to manage a single, special type of data. These systems support the formats and the rendition of the formats associated with the data, the administration of the system, the indexing and retrieval of the data, and the creation and analysis of the metadata associated with the data.

When only a small number of people need access to this information, the specialty server is a reasonable solution. The information or asset stored in these servers is important, but does not require constant availability. In many cases, only a few dozen people are affected by these systems. When product specifications or photos are part of an electronic commerce system such as one accessed through a web site, thousands of customers and prospects are affected.

A few brand managers or sales analysts may use a specialty server to manage advertising usage and royalty tracking of images. When those same images are used in an extranet for supply chain applications, they must be tied to price files, inventory systems, and distribution systems. The problem with specialty servers in this environment is:

- They require special administration and management.
- They require users to be trained on multiple systems.
- Integration with mainline business systems is costly, complex, and difficult to maintain.
- Application development requires special expertise and can be slow and cumbersome.
- They are not designed for large volumes of data and large numbers of simultaneous users.

The situation becomes even more complex when the information used in the applications includes many types of multimedia and other non-traditional data, as is typical in Internet applications. For each specialty server or file-based system, the underlying structure requires a separate management infrastructure. This can mean a separate index server for indexing and querying the datatype, a separate data loading facility to load the information, a separate language parser to manage the queries, and a separate set of utilities to back up, restore, and secure the data. With each additional type of information, the collection of *systems* becomes increasingly complex to administer and maintain, and application maintenance grows as new application development grinds to a halt.

HOW ORACLE MEETS THESE CHALLENGES

With the Oracle *interMedia* capabilities, it is now possible to manage media assets in an integrated fashion with associated business relational data and gain the benefits of security, transactional control, and storage for easy retrieval for reuse and repurposing. The integration of these capabilities with powerful desktop tools makes it possible to rapidly develop new, media rich applications that actively put these assets to work.

Let's examine some traditional application scenarios that demonstrate an array of media management tasks including:

- Media-rich, mission critical production application support;
- Collaboration in a business-to-business environment including media objects;
- Global distributed media access - anytime/anywhere;
- Amortization of media objects across multiple applications;
- Storage and delivery of a diversity of media types.

Banking

One application typical to banking is check-clearing services to a number of geographically co-located commercial banks. One component of the application is a bad check handling system that must be able to handle a large volume of damaged and bad checks. Member banks fax in an image of a bad check along with a cover page describing the circumstances that is converted to text via OCR. The text cover page and the check images (both sides) are entered into an Oracle database. From there, they are distributed via workflow to workers who are trained to process them. Electronic transmission of check images and management in Oracle enables on-line processing and rapid resolution of literally thousands of bad checks each day. The ability to 'scale up' this application with more front end problem check and cover letter capture, and to scale up the back end processing with more problem resolution staff is vital to keeping the float that is held up to a minimum. In addition, recent changes to the law will allow banks to process checks based solely on their images avoiding the exchange of actual paper, saving even more money.

A second banking example is the management of customer currency adjustment slips coupled with customer access to this information over the web. One large bank alone has a back file of nearly 140 million scanned document images. With Oracle *interMedia*, the images can be bulk loaded quickly. Furthermore, automatic processing (format conversion and resizing of the images) results in even greater savings over manual techniques.

Real Estate

It is now common for local real estate firms to use a hosted system developed by an application provider. One large provider minimizes its cost by using Oracle as a

common platform for both the packaged application and the Application Service Provider deployment. This system hosts real estate applications for a number of competitive real estate agencies who post traditional data such as cost, description, and location, as well as media information such as photos of the property and surrounding area. The multi-branch real estate application uses Oracle to consolidate the management of business data with images, audio, and video content that significantly reduces cost and complexity for the various real estate agencies using the system.

Government/Public Sector

Government agencies have several applications that exploit media capabilities. One example is a U.S. state agency whose charter is to maintain the various roadways within the state. In order to do this in compliance with federal regulations involving federal highway grants, the state must maintain a road features inventory that contains a visual catalog of the condition of the various roadways. This State Road Features Inventory application includes a picture of every road way taken every 50 feet making it possible for agency workers to view the condition of roadways throughout the state, and to conduct a virtual drive of roadways examining conditions and signage as they go. Oracle 10g and *interMedia* made it possible for a **single** DBA to design, create, deploy, and maintain this 5-terabyte image management system, a substantial savings in time and money.

Communication of Events/Activities

Communication in general is a broader category that often utilizes rich media. Several web sites feature portals that communicate information rich in media related to various public relations stories and events. Again, by using Oracle, media content can be automatically processed in a quick and easy fashion so that the public receives the information in a timely fashion. The processing includes image format conversion, thumbnail generation, metadata extraction, indexing and loading, and does save considerable time over traditional client side, desktop tool methods.

One well-known museum possessing many rare art treasures also uses Oracle's media capabilities to its advantage. The museum needed a repository for digital images of these works that could serve several applications for catalogers, restorers, historians, and the general public. The museum reduced the time to process images by 90% using *interMedia* methods to bulk load and process image content compared to using client side tools.

Medicine

With the development and deployment of modern digital medical imaging devices such as CT's and MRI's has come an explosion of new digital images and the ensuing managerial headaches. Today, most such images are stored in a Picture Archive and Communications System (PACS) in close proximity to the modality

Driven by consolidation forces and that patients are shared by multiple health care providers across a geographic region, health care entities are moving to a more regional model. In this model, patient digital images are kept in a logically centralized fashion with access by participating clinics and hospitals. By rapid, shared access, health care institutions are realizing the dual goals of increased quality with decreased cost. Further still, as soon in social health care systems are efforts to deploy on a country wide basis.

In both of these cases, *interMedia* manages DICOM images in a safe, reliable, and scalable fashion.

CONCLUSION

Banking and finance, real estate, government, marketing, publishing, as well as traditional media rich broadcast and entertainment industries, are meeting the challenges and reaping the benefits of managing rich media content. There is growing recognition that the *interMedia* capabilities of Oracle Database 10g more than meets the challenges and provides benefits savings of time and money that can be measured. Oracle *interMedia* allows media content to benefit from proven advanced database technology services that have matured over the years.

For the first time, the security, administrative controls, performance, scalability, and open access of professionally managed enterprise information technology systems are available to media rich applications. *interMedia* adds the native datatype services, metadata management facilities, and operators to support the content and assets found in these applications. It enables Oracle Database 10g to manage image, audio, and video in an integrated fashion as first class data citizens along with other enterprise information. The benefit is that relational and media data remain in synchronization and can be managed in a secure, unified fashion. In addition to capitalizing on the business value of the information stored as media, Oracle *interMedia* provides immense productivity benefits that positively impacts the bottom line.



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