Digital Photo Opportunities Develop via Web Services

Kodak is spearheading an effort to produce a digital photography standard and meet consumer demands for easy digital photo printing services. Companies can learn from its use of Web services and involvement in standards.

Core Topic
Internet Platforms and Web Services: Web Services

Key Issue
How will Web services create new, and transform current, business and consumer-facing applications through 2008?

The photography industry must deal with challenges and opportunities as consumers switch to digital cameras. Different types of digital photography software do not interoperate and many consumers find it difficult to print digital photographs. Although many camera manufacturers have alliances with online photo services such as Shutterfly.com or Ofoto.com, each brand is technologically inconsistent — no interoperability is possible from one brand to another, and there is no common mechanism for transferring digital images or order and commerce information.

To deal with the challenges arising from the digitalization of data in an analog world, industry participants have started an initiative within the International Imaging Industry Association (I3A) — the Common Picture Exchange Environment (CPXe). CPXe defines a new Web-services-based system architecture and interoperability specifications, and a new online directory of photo services — Picture Services Network (PSN) — will be launched soon in the United States. Although the PSN directory will be hosted initially in the United States, companies anywhere in the world can register with it and make their services available to consumers via CPXe-compliant applications.

The CPXe initiative must address both the lack of digital photography standards and the lack of consumer awareness and understanding of the printing options available. Although consumers want to print their photos, they have difficulty finding services either online or in shops. Therefore, fewer digital images are printed. For digital printing to thrive, the process needs to be as easy for the consumer as it is for analog film printing. There is a market opportunity for companies to offer digital printing services

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Connecting consumers to back-end services can be an integration nightmare in almost any industry. Web services — loosely coupled software components (see Note 1) — can ease and lower the cost of this integration. Web services were expected to have consumer appeal, yet few consumer applications have materialized. The CPXe Initiative Group includes Eastman Kodak Company, Fujifilm, Hewlett-Packard, Konica, Olympus, Silverwire and many others, and could lead to one of the most ambitious applications of Web services. These companies represent a strong voice within the digital photography industry. The digital camera manufacturers involved control over half the digital camera market in the United States. Players such as Nikon and Sony are conspicuously absent, though Sony has been the leading seller of digital cameras in the United States for the last few years.

Problem: Many of the technical challenges spring from the lack of standardized programmatic interfaces. Camera manufacturers ship software with their cameras. But with so many kinds of camera using several different types of software, customers and users cannot find suitable service providers to order prints. This lack of interoperability has prevented many photo shops and other businesses from cashing in on the potentially lucrative digital photo printing opportunity. For example, some digital camera makers direct users to a particular online service, but the retailers that sell the cameras want to direct users to their online printing service. If manufacturers agreed to this, they would have to develop separate stock-keeping units for every retailer they do business with.

Consumer behavior within the digital camera market is still evolving, but relatively few digital prints are being output. Most of these are printed on domestic inkjet, all-in-one or dedicated photo printers. This may not be the most cost-effective way to output digital prints, and does not appeal to the mainstream user, but the longer consumers follow this process, the more comfortable they will become with it.

Technology can allow suppliers to create an online directory of photo services, but the bigger business issue is controlling customer behavior and the revenue stream. Margins on digital cameras are slim, with profits coming after the sale from downstream services like photo printing and the supplies revenue that it generates. Camera companies are trying to lock in those profits by creating their own online directories.

The CPXe initiative emphasizes the benefits that can result from interoperability. For CPXe to be successful, it must provide clear value and wide availability to the user. This means getting the big players that are not involved (such as Sony and Nikon) to

participate, and getting large retailers such as Best Buy, Wal-mart and CVS to commit to the program. Kodak has included a precursor to PSN in its current EasyShare software and has several retailers listed as service providers. The company plans to use the PSN directory once the service is available at the end of June 2003.

Objective: CPXe aims to encourage new business for digital camera manufacturers and online and retail photo shops by:

- Simplifying the process of finding and using Internet-based photo services for both businesses and consumers.

- Helping consumers to find and use printing and other photo services from their home or office.

- Allowing consumers to get quality digital prints from their favorite retailer as conveniently as they can with film, but with the preview advantages of digital.

- Helping online and retail service providers to market to any digital camera consumer, regardless of the camera's manufacturer.

Approach: The I3A's CPXe initiative is intended to create an open environment in which imaging devices can seamlessly exchange digital images or order and commerce information among any networked imaging applications and services, regardless of manufacturer, service provider or geography.

The I3A and CPXe Initiative Group have:

- Defined a new Web-services-based system architecture for the digital photography industry.

- Published a suite of technical specifications to allow compliant applications and services to easily find and seamlessly interoperate with one another.

- Created PSN as a new, not-for-profit subsidiary of I3A. PSN will autonomously operate a global, online directory of photo services. PSN participation is open to any company. The not-for-profit nature of PSN will give the industry a cost-effective way to market and locate CPXe-compliant services anywhere in the world.

CPXe adopters will:

- Develop and market CPXe-compliant services, like online printing or smart locator services that interact with the PSN directory service to help consumers find services of interest quickly and easily.

- Develop and market CPXe-compliant applications, such as desktop software that ships with digital cameras or can be downloaded from photo Web sites and portals to cell phones or other mobile devices.

- List compliant applications and services with the PSN directory service, making it easy for consumers and other business to locate them.

Companies may implement CPXe specifications, but choose not to list the applications or services with PSN.

CPXe takes advantage of existing standards — including Web services — for service discovery, description, transport and environment. These standards include:

- Extensible Markup Language (XML)

- Simple Object Access Protocol (SOAP)

- Web Services Description Language (WSDL)

- Universal Description, Discovery, Integration (UDDI)

PSN chose AT&T and Systinet to provide and host the UDDI application to build the directory, which is scheduled to go live by the end of June 2003. It is likely that companies will begin listing the first CPXe-compliant services and applications by 4Q03. This use of UDDI, one of the first actual uses of the technology, essentially makes a private UDDI (owned and run by PSN) accessible to the public for read-only access. The participation of multiple enterprises in this organization is a good example of how organizations can benefit by participating in relevant standards setting processes (see "ROI From Standards Body Participation Is Multifaceted," TG-19-8728).

Results: Although it is still early, the I3A, CPXe Initiative Group and their member companies are better positioned for the future and have created an infrastructure that allows services to be listed. Businesses and consumers can find and access those services. The consortium expects to have more charter member companies, and add additional products and services in the future.

Critical Success Factors/Lessons Learned: The CPXe initiative started out as a broad vision but found that more detailed communication of its objectives is necessary. Success will take time, and sustained industry cooperation will be needed for participants to execute on this initiative.

CPXe also learnt that although security via Secure Sockets Layer is enough for business-to-consumer transactions, future CPXe extensions for business-to-business transactions will require

more sophisticated security mechanisms to ensure authentication, authorization and nonrepudiation among trading partners. Opportunities for service providers will be significant because they can charge acquisition fees and transaction-processing fees, as banks do with automated teller machines. Opportunities will also be available for companies to automate the coupling and dynamic coupling of businesses.

Bottom Line: Web services, including Universal Description, Discovery, Integration (UDDI), are beginning to open opportunities for businesses that adopt services that comply with the Common Picture Exchange Environment. These services will enable businesses to reduce the cost of integrating different digital photography products. Companies can benefit from implementing service-oriented architectures to provide a platform for innovation and lessen their need to focus on mundane IT tasks. Instead, they can focus on new products and services. Companies should begin to evaluate the role UDDI may play in their businesses and should consider becoming active in relevant standards activities, which can help further business goals.

Acronym Key

CPXe	Common Picture Exchange Environment
I3A	International Imaging Industry Association
PSN	Picture Services Network
SOAP	Simple Object Access Protocol
UDDI	Universal Description, Discovery, Integration
WSDL	Web Services Description Language
XML	Extensible Markup Language