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CPXe as a Web Services Business Framework for Printing Digital Photographs

Choreographing E-Business Environments for
Distributed Photofinishing

By Geoffrey E. Bock



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NETTING IT OUT

On June 17, 2002, the International Imaging Industry Association (I3A), an industry consortium that includes Kodak, HP, and Fujifilm, announced the Common Picture eXchange Environment (CPXe), a Web Services business framework designed to making printing digital images as convenient as using film. Relying on SOAP, XML, and UDDI, CPXe is designed to build an end-to-end e-business environment for linking consumers who take digital photographs with photofinishers who produce high-quality prints.

CPXe is only one of a number of initiatives that Kodak is backing for creating and distributing digital assets within electronic environments. The company is intent on becoming a major technology provider in the rapidly emerging infoimaging marketplace.

We believe that CPXe illustrates the business benefits of a Web Services business framework for managing content on the Web and for fostering network-enabled, distributed business processes that deliver added-value services to customers.

WHEN A PICTURE IS WORTH A THOUSAND WORDS

An Industry-Wide Initiative

On June 17, 2002, the International Imaging Industry Association (I3A) announced the Common

Picture eXchange Environment (CPXe), a Web Services business framework designed to make printing digital images as convenient as using film. As an industry consortium, I3A members have a significant interest in building a common (and open) enabling infrastructure for supporting the emerging digital imaging marketplace. Eastman Kodak, HP, and Fujifilm have led the CPXe effort within the I3A.

CPXe will enable the transmission and printing of digital images among digital cameras, PCs, desktop software, Internet services, photo kiosks, digital minilabs, and photofinishers—regardless of the types of digital cameras, desktop hardware, or operating systems. CPXe will allow consumers using any digital camera or device to upload, download, and order prints of digital pictures at any retail location with any type of photofinishing equipment used by the retailer.

For instance, in the not too distant future, once we have selected our 10 favorite digital pictures from our daughter's first birthday party, we will be able to go online and, using a Web browser, have a set printed at any one of a number of local photofinishing firms in our neighborhood. We will also be able to find a photofinisher online who will print a bound album (at an affordable cost) and ship it to the proud grandparents.

Relying on SOAP, XML, and UDDI

CPXe relies on SOAP and XML for describing the exchange of digitized image content, and registers its service-access descriptions in a UDDI directory. The I3A initiative is designed to make it easy for camera manufacturers to build connections to CPXe-compliant service providers and for customers to connect to photofinishers who will produce high-

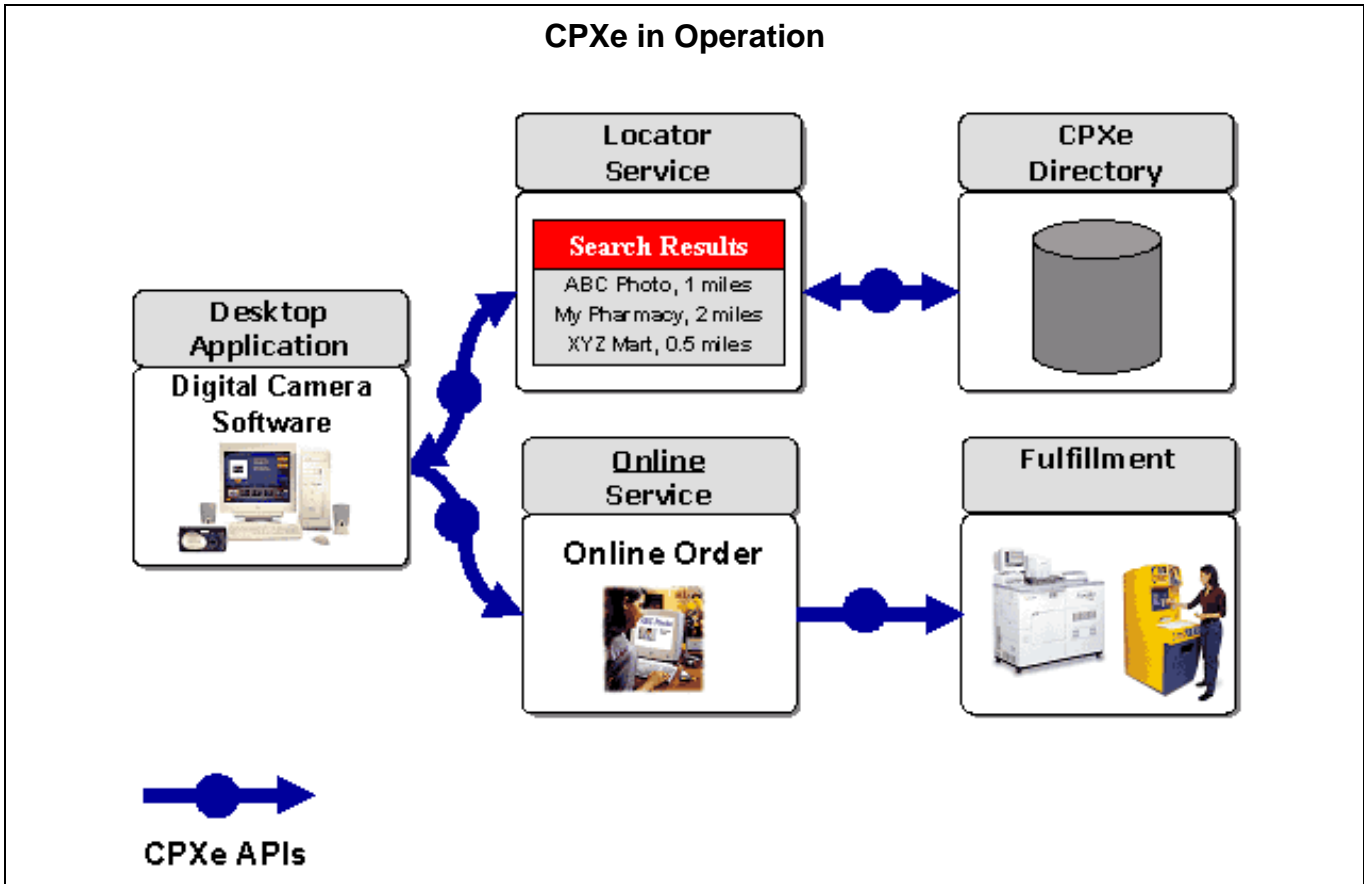


Illustration 1. CPXe provides a Web Services business framework for linking customers to photofinishers. An end user uses a desktop application to access a provider locator service and then to upload digital images to a provider for printing and fulfillment.

resolution, photographic-quality prints of their digital pictures. The industry consortium will support and manage the directory of service providers.

To continue our example, as the parents of a one year old, we will connect to the Internet (either directly from our digital camera or through an intermediate Webtop), check a Web-based directory of photofinishers, find one that is offering the services we want, and then electronically send our order to its printing process (see Illustration 1). Photofinishers themselves can decide how much information about their services they disclose through the common directory. For instance, CPXe allows for companies to publish pricing information, but it does not require them to do so.

As a result, CPXe standardizes the Internet-centric protocols and the underlying business processes for digitized photofinishing. It includes component interfaces to access:

- Locator Services
- Fulfillment Access Services
- Storage Services
- Financial and Tracking Services

Over time, CPXe may eventually replace the vendor-specific mechanisms used by existing consumer-oriented e-business services such as Ofoto, Shutterfly, and NikonNet.

Moreover, as this Web Services business framework matures, we expect that CPXe will have an impact on the distribution of royalty-free and professional stock photography, operated by such firms as Getty Images and Corbus. And CPXe may well lead to entirely new kinds of Web-based business services that most of us have not yet been able to imagine.

IMPLICATIONS FOR MANAGING CONTENT ON THE WEB

How a Web Services Business Framework Transforms Customer Experiences

CPXe, in fact, is a good example of how a Web Services business framework promises to transform customer experiences for managing content on the Web and thus create an adaptive business process environment. Following the criteria we have described in “The Anatomy of Web Services¹,” CPXe specifies the business-related services for consumers to communicate with a range of photofinishing providers across the Web for such activities as discovery, provisioning, transactions, billing, and the like.

Then there is the question of how to deliver value by creating compelling customer experiences based on industry-standard protocols and services. As we witnessed in the run-up to the Windows XP announcement in 2001, an industry battle is brewing between Microsoft (which has its own ambitions for managing digital photography experiences) and Kodak. A widely-accepted Web Services business framework which describes the core business processes for photofinishing services could provide the common ground for defusing this skirmish.

Of course, there is always a gap between announcing a standard and building a profitable business. CPXe is not slated to be completed until the end of 2002, and there will invariably be some technology fine-tuning in the process as developers begin to use it. We certainly do not want to minimize the challenges that photofinishing firms confront as they digitize their operations, nor that technology providers face as they develop the hardware and software environments that utilize CPXe. Fulfilling the promise of linking consumers who are using digital cameras and desktop software to a range of

high-quality photographic printing and production facilities will require ongoing investment.

But what counts in this instance is the vision of a common good. With the accelerating growth in sales of digital cameras, the photofinishing industry is facing a strategic inflection point. Connecting to the Internet and integrating photofinishing solutions into a completely digital content storage, organization, and distribution environment, is the way for these firms to capture renewed growth in the long run.

Kodak as a Technology Provider

This Web Services business framework is only the beginning of the story. From a company perspective,

CPXe illustrates how Kodak, as a key player in the photography industry, is adapting to the digital revolution. CPXe is only one of a number of investments that we expect the company to make in the months and years ahead.

Through its “Infoimaging@Kodak” initiative, Kodak has announced its intentions to become a major technology provider in digital-imaging solutions for the Internet economy.

Kodak estimates that Info-imaging represents a \$225 billion industry, created by the convergence of imaging and information technology. Kodak is focusing on:

- Devices, such as printers, scanners, flat-panel displays, digital cameras, and PDAs
- Infrastructure, such as imaging software, broadband services, and imaging protocols—in addition to photofinishing networks
- Services and media, such as inkjet paper and inkjet printers, document preservation, and image-enabled e-commerce

Using its considerable patent portfolio, Kodak is pursuing business opportunities in all three market sectors. It believes that it already has patents for significantly improving the quality and clarity of digital color images, both when displayed electronically

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¹ Published May 16, 2002, <http://www.psgroup.com/doc/products/2002/5/TL5-16-02CC/TL5-16-02CC.asp>.

and when printed. Kodak is launching a series of joint ventures with other firms (such as Sanyo for next-generation flat panel displays and HP for high-resolution color printing) to productize its advanced technologies.

Kodak is also making ongoing investments in strategic software technologies for facilitating the storage and distribution of digital images within Internet-scale network environments. Kodak's contribution to CPXe is just one example of a set of innovations that we expect the company to introduce.

Consequences of Digital Convergence

Finally, as a Web Services business framework, CPXe illustrates the consequences (and business benefits) of digital convergence for managing content on the Web. The images we view are first and foremost digital assets. We expect to store and distribute them digitally.

A Web Services business framework defines the key components of the underlying value chain that support the digital connections. As a viable business proposition, a Web Services business framework describes what we need to do when we want to find various service providers on the Web as well as what one (or more) network-enabled businesses do when they want to offer us their services. When successful, these frameworks describe end-to-end business processes that satisfy our needs.

What counts are the relationships among the several parties and the methods of communicating essential information for doing business. A Web Services business framework such as CPXe is not simply a defined set of software protocols—although the framework certainly needs to specify the syntax and semantics of any automated information interchange. Rather, the framework also identifies and choreographs specific business processes—how independent firms can structure their relationships, interactions, and information exchanges over the network and deliver value to their customers.

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