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Innovations Affecting Us — DataPlay's High Density Disc and Agilent's Optical Switch Fabric

by **Norman Desmarais** (Phillips Memorial Library, Providence College, Providence, RI)
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The quest for increasingly high capacity storage devices seems insatiable. Yet, the computer industry continues to develop such storage devices while decreasing their size. **DataPlay Inc.** introduced the latest of these devices, called a **DataPlay disc**, on April 5 at the spring **Internet World**. The disc's creators say this new optical medium will have 500 megabytes of memory—about the same as a CD-ROM but it will be about the size of a quarter. It will be able to record and store information just like a computer floppy disk; but it will require a microoptical engine (reading device) that is expected to be incorporated into a variety of consumer electronic devices.

DataPlay's goal is to develop technology and products that will allow consumers easy access to all kinds of content whether downloaded off the Internet, prerecorded, or created by consumers. The company envisions the DataPlay disc for storing electronic books, digital images, audio, and multimedia presentations for use in e-book readers or computers, digital cameras, portable music players, and portable organizers or personal digital assistants (PDAs).

For example, a student can carry an entire semester's books on a single DataPlay disc. A family can take and store photos from an entire vacation. A music lover can carry several albums; or a gamer can carry the latest games.

DataPlay expects its products to fill the demand for easy access to electronic content, a demand driven by the proliferation of Web appliances. The company is pursuing strategic relationships with industry leaders in different market sectors who recognize the potential of DataPlay's technology to bring content and products to a wider audience. The company's chief executive is **Steve Volk**, a businessman and scientist who previously helped develop the 2.5-inch disk drive used in notebook computers and the 1.8-inch hard drive used to store data on portable PC cards.

DataPlay discs let customers download e-books from digital book Websites or go to a local bookstore to buy pre-recorded e-books. A single DataPlay disc can hold several e-books complete with multimedia features such as sound and pictures. One can even listen to an audio book on a DataPlay disc. By recording several titles on a disc, publishers can sell a single title and give consumers an option to buy other titles by the same author or on the same subject at a later

time. Upon payment, the reader can unlock the title and activate it.

DataPlay has also developed **ContentKey**, a tool that allows consumers to activate pre-recorded content on a DataPlay disc over the Internet without requiring them to download it. A reader just clicks on a book title to transfer it to an e-book reader. If one likes the book, he or she can just read it. One could activate another one of the author's titles instantly just by going online.

Because DataPlay discs are recordable, readers can highlight text and write notes in the margin—perfect for

textbooks, cookbooks, etc. They can even create and publish their own works on them or use them to store computer data, such as word processor files, spreadsheets, database data, or computer programs much like they use floppy disks. The disc's small size makes it very portable. It can easily fit in a shirt pocket for

later use with an e-book reader or PDA. Permanent recording technology means that readers don't have to keep transferring e-books from a PC to a memory card for use in a portable reader and back again.

Hardware manufacturers in the music and digital film industries have focused on "flash" memory. Flash memory is a solid-state storage medium enclosed in small, plastic cases; but it is expensive. Sixty-four megabytes can cost \$200. A DataPlay disc is inexpensive (\$5 to \$10 a disc retail) and can help address one of the biggest industry needs for portable digital audio players: expandable and affordable memory. It also offers ways for audiophiles to enhance the storage of their Rio players while spending far less money. Record labels could sell an album on the disc and embed five additional albums. Consumers could then have the option of paying for the other albums at a later date when the embedded music would be unlocked and activated.

Larry Kenswil, president of **eLabs' Universal Music Group** is very excited about this technology because of its versatility and portability. He believes that it will enhance consumers' experience with music because it opens a world of new possibilities for the recording, storing, and carrying of content. DataPlay discs are universal in that they let consumers download, record, and play any-

thing digital—books, photos, games, music, whatever—all on a single disc.

DataPlay's technology is compelling; but it will have to persuade makers of portable devices to make compatible hardware. The company will also have to persuade publishers, record labels, and other content creators to embrace the discs. It will also require its own reading device and have to compete with CD, CD-ROM, DVD, and online delivery formats.

DataPlay expects DataPlay discs containing prerecorded content to be available in early 2001 along with DataPlay-enabled consumer electronic devices. Blank DataPlay discs will be available at local stores to download Internet-published content and for use in DataPlay-enabled consumer electronic devices manufactured by major companies in the digital camera, digital music, PDA, and consumer electronics industries. Any or all of these appliances will be able to use a single prerecorded or blank DataPlay disc.

Another technology to watch is **Agilent Technologies' optical switch fabric** which promises to increase network bandwidth and speed data throughput. **Agilent Technologies** is a spinoff from **Hewlett-Packard**. Its optical switch fabric, which will be available next year for building all-optical networks, can handle 32 input and 32 output optical fibers on a chip the size of a dime. It uses bubble-jet printer technology and a vapor bubble to switch light signals from one optical fiber to another without first converting the signals to electrical impulses.

The switch fabric will allow vendors to switch light directly without first converting it to electrical impulses. This will make it possible for service providers to sell high-bandwidth wavelengths to customers. Customers will then be able to put any traffic of any protocol at any bit rate onto a wavelength because the entire connection between points in the network will be optical. Conventional services, like frame relay and ATM, require customers to package data in the proper protocol before sending it. They must also transmit it at the rate of the service they have bought.

Agilent's technology uses tiny bubbles instead of the microscopic mirrors that **Lucent** uses in its all-optical switches. The bubbles receive light from optical fibers and divert it directly to any other fibers attached to the same switch fabric. A waveguide, which is a glass channel that confines the light, guides light from an incoming fiber through the switch fabric and directs it down a defined path. The light can also pass straight

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and pretty much anything else that affects libraries. Whilst on the subject of copyright, on 16 March 2000, the **Internal Market Council** took note of the state of work on the proposed directive, which is now moving from working party level to the **Permanent Representatives Committee**. The Council confirmed its intention of making all possible efforts to find a common position on 25 May, in Brussels.

Quite the most interesting and illuminating conference I have taken part in this year has been one entitled **Joined-Up Publishing: the significance of linking**. This was organised by **Helen Henderson** and **Sally Morris** for the **Association of Learned and Professional Society Publishers**, of which Sally is the Executive Secretary. **APLSP** always hold a one-day conference on the Friday preceding the **UK Serials Group Annual Conference**, and this year over 140 delegates were attracted by the subject. As far as I am aware, this is the first conference to tackle the subject from largely a publisher perspective, and was an outstanding success. Among the speakers from the USA were **Clifford Lynch** (CNI), **Helen Atkins** (ISI), **Kent Smith** (NLM) and **Christine Borgman** (UCLA), complemented by presentations from **IoPP** on their **Hypercite** and **STACKS** technology, **Academic Press** on **IDEAL**, **Norman Paskin** on **DOI** developments, and myself looking at copyright and commercial issues. I think the overall conclusion was that linking between journal articles was certainly in demand by readers, but that there were some important standards issues (concerning bibliographic citations, etc.) and commercial issues to be addressed. The slides of the presentations will be available on the **ALPSP** site at <http://www.alpssp.org.uk>. I see that the topic is also being discussed at the **Society for Scholarly Publishing** in Baltimore at the end of May, and I have the feeling that it is going to be one of the hot topics for the next year or so.

Learned Information, the **VNU** subsidiary which publishes *Information World Review* and organises the **Online Information** event each year has been cleaning out the stables. Their two library titles, *Online Information Review* and *The Electronic Library*

have been sold to **MCB University Press**. The Editor of *The Electronic Library* is **David Raitt** at <draitt@estec.esa.nl>. **Learned Information** also published *Knowledge Management* magazine and sponsored a **Knowledge Management** exhibition in London, and these have been sold to **Clive Snell**, who was the MD of **Learned Information**, but has now set up his own company, **Bizmedia Ltd**.

There are two main library-oriented exhibitions in the UK. In March, there was the **Internet Librarian International** and **Libtech 2000**, with a conference programme devised by **David Raitt** and **Jane Dysart**. A feature of the conference was the number of speakers from the USA, and delegate numbers were well up on 1999 at around 300. Alongside this conference in the Olympia exhibition complex in London was the **London Book Fair**. Although nothing like the scale of the **Frankfurt Book Fair**, it would still take a morning just to browse around the stands. I am always amazed at just how specialised many publishers are, and indeed just how many publishers there are. In an age of electronic access and the imminent arrival of the e-Book it is good to see that book publishing is still surviving. I am sure that there are some figures on it somewhere, but my sense is that smaller publishers have benefited from the arrival of **Amazon** and **Books OnLine**, as even the major London bookshops with in excess of 200,000 books cannot stock everything. To be able to identify and order specialised book titles through the Web-based services is, I feel, an important benefit.

If you are visiting the UK in June then try to include a visit to the **Library and Information Show** at the **National Exhibition Centre** in Birmingham on 6-8 June. This is the most general of the UK events, and attracts academic and public library professionals as well as corporate librarians. More details can be found on <http://www.lishow.co.uk>.

To move briefly on to Canada, the **Canadian Association of Research Libraries** has a new Website design, and is no longer a sub-site of the **University of Ottawa**. The URL is <http://www.carl-abrc.ca/index.htm>.

And finally, a piece of blatant promotion, which I hope the Editor will let through. I too was delighted to see the work of **Gordon Graham** honoured by *The Bookseller* (**ATG**,
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through the switch without being diverted. However, the switch temperature must be 65 degrees Celsius to work properly.

The bubble-jet heaters can set up a switch path in less than 10 milliseconds which is considerably faster than the 50-millisecond limit carriers set on acceptable network failures. Customer applications running across a network will not be able to detect a failure if the network

can be restored within 50 milliseconds; so the switch could be used to route traffic along an alternate path around a broken fiber.

The switch has no moving parts; so it is theoretically less susceptible to failure. However, micromirror optical switching technology is still young; and nobody knows how well it will stand up over the long term. It is also unclear how well the bubble-jet heaters will stand up when used continuously for months or years. This could be the case in certain switch configurations.

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