

# CD-I NEWS

Issued Monthly for the Consumer Electronics, Entertainment, Publishing, Information, and Education Industries

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## Philips and Sony Hold Seminar for CD-I Licensees

Philips and Sony presented technical details of the full-functional specifications for Compact Disc Interactive (CD-I) at licensee meetings held in New York on June 19 and in Tokyo on June 25.

Philips and Sony had formally announced their intention to develop a joint specification for CD-I in February 1986. At

that time the companies presented a general outline of the technology.

Preliminary specifications were issued in May 1986. The full functional specifications were released to the licensees in March 1987. Philips reported that it received more than 2,000 comments, questions and

(continued on page 2)





*CD-I can be used for shopping, Point-of-Purchase, and in the merchandising environment.*

## CD-I For Electronic Shopping

CD-I was a major topic of discussion at this year's annual Touche Ross conference on electronic shopping. The conference, "Electronic Shopping '87," was held at the Hyatt Regency Crystal City (Washington, D.C.) from May 19-22, 1987 and brought together nearly 500 retailers, telco managers, marketing executives, on-line service providers and videodisc designers, among others. A host of "new media" delivery systems were demonstrated and their utility debated within the expanding world of transactional shopping. Among the topics of discussion were cable shopping, point-of-purchase/point-of-information kiosks, video vending machines, videodisc catalogues, audiotex and voice recognition systems, couponing, satellite delivery and shelf-edge computers.

CD-I was spotlighted during the first day's morning workshop on hardware innovations. Over 125 conference attendees jammed the session to hear Bill Ford, Jr., president of Online Computer Systems, and Bert Gall,

Philips' U.S. CD-I liaison officer, discussed how CD-I can be used for shopping, POP and in the merchandizing environment. Bert Gall provided a detailed description of CD-I specifications, discussing how its text, graphics, audio and visual capabilities could be utilized. He stressed that because of CD-I's inherent ease of use, dictated by its intended role as a consumer appliance, consumers would find it user-friendly and — when CD-I is established in the home market — a familiar technology. Bill Ford described some of CD-I's technical characteristics and also demonstrated some of his company's videodisc and CD-ROM programs to suggest the scope of CD-I applications. While some in attendance had heard of CD-I, all were taken by Ford's demonstration. CD-I's enormous storage capacity, random access capability, high-quality audio and graphics and its attractive pricing added to its appeal. The panel was moderated by *CD-I News* Executive Editor David Rosen. ☐

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LINK Resources Corp.  
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New York, NY 10003  
Tel: (212) 627-1500  
Telex: 429328  
Telefax: (212) 620-3099

Haines Gaffner, Publisher

Andy Bose,  
Project Director

David Rosen,  
Executive Editor

Petra Gonsalves,  
Managing Editor

Nancy Di Paola,  
Marketing Manager

Ros Ruck,  
Production Manager

Natasha Thomsen,  
Technical Coordinator

Kramer Communications,  
Desktop Publishing

### ... CD-I Licensees (continued from page 1)

recommendations from licensees. These remarks and reactions were incorporated into the specifications and formed the basis of the subjects discussed at the licensee meeting

The new set of specifications gives content providers all the information necessary to begin designing and developing applications.

The CD-I standard specifications, developed by Philips and Sony, provide a complete format which allows interactive applications containing music and sound, speech, natural still and animated pictures, graphics, computer programs and computer data. It is an international system for the delivery of

multimedia applications to the consumer and institutional market.

CD-I players, available in the course of next year, will be easy-to-operate devices that will fit easily into any home entertainment or school/educational system. The player can be incorporated into a stereo system like a regular CD player and can be plugged into a TV like a VCR. Accessed by a simple remote control device, the CD-I player's built-in controller allows users a high degree of interactivity with each application. CD-I applications are expected to include such areas as entertainment, information, education and self-help. ☐

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## NEWS

## AIM Signs Agreement With Parker Brothers

*Parker Brothers is looking to explore the opportunities in new media formats. "CD-I looks like the next wave."*

American Interactive Media (AIM), the Philips-PolyGram joint venture founded to promote the creation of CD-I applications, announced that it has signed an agreement with Parker Brothers, the board game company. The agreement calls for both companies to explore the development of games for the CD-I format.

According to Sam Kjellman, Manager of New Ventures Research, Parker Brothers is looking to explore the opportunities in new media formats. "CD-I looks like the next wave," says Kjellman. "[It] combines the best of all the current forms of entertainment technology, audio, video, text and data into a single, interactive medium." The only games currently using multi-media technology are in arcades and are limited in their storyline and game participation. In addition, the hardware for arcade games is too expensive and cumbersome for home installation.

AIM's president, Dr. Bernard J. Luskin, said that Parker Brothers is the first game company to participate in the exploration of CD-I applications development. According to Luskin, Parker Brothers was chosen because of its history of success in developing games for new technologies.

Parker Brothers, based in Beverly, Massachusetts, is a subsidiary of Kenner Parker Toys, Inc. It is one of the country's leading game manufacturers with the sale of such established games as *Monopoly*, *Clue*, *Risk* and *Sorry* helping generate 1986 revenues of \$502.8 million. In addition to board games, the company produced one of the first and most successful handheld electronic games, *Merlin*, as well as a number of top-selling video games, including *The Empire Strikes Back* and *Frogger*.

Perhaps most important in terms of the future of multi-media entertainment is Parker

Brothers' "interactive" VCR game, *Clue*. Utilizing eighteen video-based mystery sequences, decks of playing cards and "fact sheets" to keep track of suspects, the game is ranked seventh on *Video Marketing's* top-100 prerecorded cassette all-time sales leaders. (*Video Marketing*, February 23, 1987; ranked behind such blockbuster hits as *Beverly Hills Cop*, *Indiana Jones*, *Raiders of the Lost Arc*, *Sleeping Beauty*, Jane Fonda's *Workout* and *Ghostbusters*.) *Video Marketing* estimates that *Clue*, released May 1985, has sold 800,000 units and generated \$19.2 million with a list price of \$39.95.

Parker Brothers has appointed Richard Blewett to head up CD-I product development and he will be "working 100 percent on CD-I." Blewett has worked in Parker Brothers video game division as a game designer and worked on creating the card-game version of the arcade game Q\*BERT. Previously, Blewett was a programmer with "Videotel," an on-line service in hotel rooms that links the hotel guest to a master computer to access hotel information, tourist information and video games. According to Kjellman, Blewett will be complemented by individual consultants on an as-needed basis. Such outside specialists will do specific project work, including program writing, graphics creation and visual production.

Presently, Parker Brothers is exploring CD-I capabilities in order to determine the most appropriate game to develop. According to a Parker Brothers spokesman, work with AIM involves the development of a CD-I game as well as a business agreement for the marketing and distribution of the game. Parker Brothers also announced that it is in discussion with AIM over the possibilities of converting prerecorded cassette titles to the Compact Disc-Video format. □

## An Even Sharper Picture Emerges from Philips

*Engineers in Philips' laboratories have developed a high resolution extension to the CD-I standard.*

N.D. Richards, a researcher at Philips Research Laboratories at Redhill, Surrey, presented a paper on "QHY—A High-Resolution Picture mode for CD-I" at the 1987 IEEE International Conference on Consumer Electronics held in Chicago, June 2-5, 1987.

Richards reported that engineers in Philips' British research laboratories have developed a high-resolution extension to the CD-I standard which dramatically improves picture quality. The system is called QHY (Quantised High Y). QHY is, in essence, a new method of coding the digital data from the disc to produce even clearer, more distinct photographic images on the screen.

High-resolution pictures can be produced in a number of ways, but what is unique about QHY is that it achieves superior pictures without the huge increase in both memory and loading times normally associated with studio quality images. Traditionally, increased resolution requires an increase in the number of picture elements or pixels on the screen: The more resolution desired, the more memory is required. The more memory used, the longer it takes to load the data from the disc to the screen. (*This is illustrated in the table on page 8.*)

The normal broadcast quality CD-I picture (the equivalent of current domestic TV receivers) uses about 100 Kbytes of RAM and takes 0.6 seconds to load onto a screen. Studio quality pictures can be produced by simply doubling up on the number of pixels horizontally and vertically, but this increases the amount of memory needed to 420 Kbytes per picture and increases the loading time to about three seconds. Not only does this drastically reduce the storage capacity of each disc, but it is far too slow for most applications. The QHY system, however, achieves studio quality resolutions with a 30% increase in RAM and only a marginal increase in loading time.

Like all good ideas, the principle behind QHY is fairly simple. Comparing high-resolution with a normal resolution CD-I picture, the only noticeable difference is in the sharper edges and areas of fine detail. This is where the extra pixels produce a cleaner, crisper outline. Most of the additional picture elements, though, are wasted, because they merely fill in blocks of color already adequately covered. QHY eliminates this wastage, by subtracting, pixel by pixel, normal from the high-resolution picture. In this way the redundant elements are removed, leaving only those crucial pixels forming the outline of each image. These are then coded, compressed down to around 30 Kbytes and added back into the normal picture to produce the QHY version.

Initially, high-resolution CD-I players will be more expensive than the basic model because QHY needs some extra integrated circuits and a high-resolution monitor. The first applications, therefore, are likely to be limited to professional, industrial and some educational uses where the increased cost is more acceptable.

Public applications using large display screens also require high-resolution standards. There is also a trend towards high quality display systems in domestic use. The Japanese, in particular, are keen to exploit this extension of the display capabilities both for the crisp display of their complex Kanji characters and for high definition television pictures in the home. It would be very surprising if QHY did not appear in second-generation consumer CD-I players within five years of launch.

It is also very likely that QHY data will be stored on all CD-I discs from the start, so that when consumers decide to upgrade, they will be able to use their existing collection of discs to produce high-resolution pictures. ☐

## The Future of Optical Storage

*Multifunction optical storage applications will take over the market.*

Speaking at the Technology Opportunity Conference, held in New York, June 9-11, Edward S. Rothchild, Chairman of Rothchild Consultants, a company specializing in marketing and consulting in the optical memory industry, and Jay Hassan, Laboratory Director, General Products Division, IBM, gave conference attendees their predictions on the future of Optical Storage. Rothchild began by giving an overview of the different forms of optical storage, and pointed out that there are four areas of optical storage with a large number of companies involved in each of the areas. Rothchild presented a chart which summarized the different types of optical recording and the companies involved (*see page 8*).

According to Rothchild, many people consider optical storage only "CD-ROM or videodisc." He reminded the audience that "CD-Audio is still the most successful application of optical storage ... 1.1 million videodisc players have been shipped and Mattel is going to be marketing a 12 cm. analog videodisc." Discussing the CD-ROM market, Rothchild pointed out that "CD-ROM has grown from two companies to ten in the last two years. This shows it is really taking off." He predicted that multifunction optical storage applications will take over the market.

A key indicator of market maturation, Rothchild pointed out, was that major companies have committed large sums to this industry. Philips and Dupont have committed \$500 million, 3M has committed in excess of \$250 million, Kodak, IBM, Xerox, RCA,

Thomson-CSF, Hitachi, Sony and other Japanese companies have made investments of over \$100 million each. According to Rothchild, the question is no longer "will optical storage become a major market application — but when?" Rothchild sees more joint ventures in the works with increasing international cooperation.

Jay Hassan gave the conference's keynote address. He stressed that optical storage is gaining attention today due to the advent of solid state semi-conductor lasers, coupled with the acceptance of CD-Audio and Video.

Looking down the road, Hassan sees optical storage being used for applications not currently being addressed. He sees some form of optical storage being used in point-of-purchase/point-of-sale functions to display products. "A display that gives the consumer the ability to interact will heighten the feeling of responsiveness." Hassan added, "kiosks in shopping centers seem to be ideally suited for this application." In the areas of education and training, Hassan saw some drawbacks to the approach currently being used. Each item must be completed before it becomes possible to move on to the next. With a larger storage capability and interactivity, optical programs can be tailored to the individual interest of each user.

Hassan concluded by predicting that existing access and data rate limitations will be overcome during the 1990's, and business opportunities in the optical memory area should grow. ☐

## INTERVIEW

## TAKESHI YOSHIZAKI,

*Interviewed by Jim Parker*

**CD-I News:** Could you describe your background, particularly in multimedia prior to joining High Tech Lab?

**TY:** Prior to becoming president of HighTech Lab, I worked for ten years at the ASCII Corporation, a Japanese version of Microsoft, a company with which ASCII has maintained close relations for years.

At ASCII, I was the chief editor of *ASCII*, a magazine aimed at a somewhat technically sophisticated audience. Being an editor opens doors to numerous areas and, as I gained experience, I became increasingly interested in low-end consumer products. I then started *Login*, a magazine targeted to users.

As time went by, I became more aware that computer software was limited to simple applications and would soon lose its aura of respectability achieved in computer-aided instruction. Something was needed that could provide good graphics, music, had large capacity, could be accessed by with a computer and was inexpensive. With this as a goal, I established an R&D section at ASCII.

In 1983 we began development of a very ambitious piece of interactive multimedia software called *StarFighter*. Based on the Laserdisc, *StarFighter* was the result of a joint effort between a wide variety of media companies, including Nippon Gakki, Yokohama Cinema Laboratories, Animation Staff Room, Fuji Photo Film and Phonogeniz Studio. *StarFighter* is a fully interactive game that offers the player superimposed video with 30 minutes of full computer graphics along with music and narration. The plot sets the player in the Galactic Era, where as commander of the *StarFighter*, he attempts to save the Solar System from destruction by the Orphe, a run-amok, gigantic, unmanned fortress. The full story contains within it ten difficult games, or chapters if you wish, through which the player maneuvers to a hopefully successful ending.

**CD-I News:** What were some of the problems faced during the creation of *StarFighter*?

**TY:** The *StarFighter* project was viewed from the beginning as an opportunity to test the multimedia concept and user reaction. At first we expected the project to take eight months, but it ended up taking a full year. Some of the problems that arose were quite unexpected. For example, communications between the technicians and artists of different media were sometimes difficult due to the use of vocabulary which, though being the same, had or implied completely different meanings in each field. We expected few problem with audio and video components but found that this was optimistic once we got into sound effects and music. Among the technical problems we faced concerned the differences in bias standards for video and music.

**CD-I News:** What was the response of the market to *StarFighter*?

**TY:** User reaction was extremely positive. The full use of *StarFighter* required that the user have a video interface MSX and a laserdisc player. There were five to eight thousand of these on the market when *StarFighter* was released. In spite of this, more than 20,000 games were sold.

**CD-I News:** How do you explain this?

**TY:** The novelty of the product and the quality of the music and the graphics was of sufficient quality that users who did not have the interface but did have a laser player and TV found it worth purchasing. Even though the music and graphics were coded and thus could not be heard evenly as music shifted from one song to another or viewed evenly when the graphic scene shifted when played as a normal laser disc, the games were popular.

**CD-I News:** Why wasn't additional software made?

**TY:** The market underwent a large change at this time. Nintendo released a family computer which provided basically the same capabilities that the more expensive computers were offering. At first it would appear that the decreased price would seem to open a whole new market, but it actually closed the market as buyers of the lower-end Nintendo family

WORLD  
REPORT

## Ricoh Shows Interactive CD-ROM at 64th Business Show at Harumi

*Ricoh has been placing increased emphasis on the development of optical products.*

Ricoh Company, Ltd., a manufacturer of office automation equipment and a leading producer of copiers, has been placing increased emphasis on the development of optical products. Although not "committed" to the compact disc medium — neither CD-ROM nor CD-I — company interest in the optical area is due to a decision made in the fall of 1986 that the creation of an experimental CD-ROM application was necessary to determine future decisions concerning optical media. Since the implementation of such a multimedia project required the participation of people from diverse backgrounds, a search was undertaken for individuals and companies having a similar interest in CD-based media. The team is comprised of such people and companies as Professor Naomi Kuratani of Osaka University of Foreign Studies, M.P. Technology, Ricoh System Development Co. and Victor Company of Japan, Ltd.; all are contributing time and money to the project.

The subject of this disc is a type of educational program, Test Of English for International Communication (TOEIC), used for teaching and testing English language students. As it turned out, the choice of program material proved to be successful since it was familiar to most Japanese businessmen and women, thus enabling them to use the program's interactivity easily and naturally. The software is supplied on a normal 5" CD-ROM disc and operates on an audio CD-ROM player and IBM PC or IBM-compatible computer. The quality of picture reproduction was of video level and, judging from viewers' response, was quite sufficient for the topic matter presented, according to Mr. Yoshinobu Satake, Ricoh's Manager of New Business Development, Corporate Planning/Technology.

Ricoh's CD-ROM demonstration at the Harumi Business Show was not a full

demonstration in that only the first mode of proposed three modes—test, learning and game—were completed by the time the show took place three months after actual work began on the project. (It took about three months to set up before actual work began.) Ongoing work on the disc is continuing.

The first mode simulates TOEIC Part I and provides the user with 40 visual situations that are accessed at random. A picture is displayed which the user is required to identify. For example, the viewer, seeing a bearded man reclining on a chair, is asked a combination of four questions or statements — the sequence of which are randomly picked — concerning the picture. The user is then asked to select which answer is not correct. If the correct response is given, the player goes on to the next problem. If the response is incorrect, the mistake is explained in one of several ways, such as picturing a bear instead of a beard on the screen and repeating the two pronunciations for user recognition and repetition. The student then has the chance to reconsider the question, stop, or go to the next part.

Neither the second nor third mode have been completed. However, the second mode is designed to provide information concerning content, pronunciation, writing and illustrations concerning the individual questions. The third will be a game mode in which users maneuver their way through a maze by successfully answering questions within a certain time period.

The reaction of viewers at the show was positive. Of the 450,000 who attended the show, Satake estimates that some 40,000 passed by the display and that there were some 3,000 requests for the sample brochure explaining the system — a response that Satake finds quite satisfying. ☐

## CD-I and the Media

CD-I is "hot news  
in the computer  
industry"

Stan Cornyn, President of the Record Group, a Los Angeles-based CD-I applications development firm, explored the future of CD-I and how the record industry should be getting involved with this new medium. Cornyn's remarks came during his keynote presentation at the International Music and Media conference, held in Montreux, France. Over 600 registrants, representing the record industry, radio and television stations and advertising and marketing companies, were on hand to hear Cornyn's remarks.

Cornyn outlined the evolution of CD-I. "Oddly enough," said Cornyn "[CD-I] was invented out of the record business. There is an irony to that, because the record business today is damn near asleep when it comes to CD-I."

He added: "CD-I realized that the digits on the digital discs could perform not only sound but also pictures ... the tinkerers and inventors pushed forward, and added to the new CD's other things: the good things that a computer could do with digital data. This meant using CD's as CD-ROM storage, adding world standards for video and audio real-time files, plus a standardized operating system built into the player-disc system. [This is how] this new form of CD with long-play and graphics and interactive characteristics was born. Its new attributes were lumped together under a new term: 'CD-Interactive'."

Cornyn pointed out that while CD-I has its roots in the record industry, today it is "hot news in the computer industry." He chastized those in the audience that it is the computer industry that hosts shows about CD-I and holds conventions about it. These conventions attract people from the computer industry — but people from the record or video business are notably absent. Cornyn said he could not understand this: "CDs have been our industry's gift certificate for a big future ... a whole future business just handed to us ... it's like we were given a gift certificate for a whole new wardrobe of clothes, and we traded the whole thing in for a necktie."

In Cornyn's view, CD-I users will "have to buy a new player. But all your existing CD's will play on this new player. These players will

be available a year from now. They'll cost about \$1,000 at first, but then go down to \$500. CD-I is played at several bandwidths, the top two or three of which are largely indistinguishable. But other bandwidths allow two hours of stereo, and four hours and eight hours."

"Pictures will come through on your TV — CD-I hooks up to existing home equipment, as the Atari Games systems did. Pictures with better-than-TV quality. They change about once a second, with dissolves and fades and cuts all possible. Animation, too. Full motion video is coming. Programs are controlled by a joy stick or a mouse. Typewriter keyboards are optional. These control a built-in, world-standardized computer system. So CD-I titles play the same way in every country in the world."

What alarmed Cornyn "is that the *media* industries — particularly the record business — *could* benefit from all the upside of this new product, but probably won't. So too, might the owners of television programs, who haven't a clue about publishing on CD-I.

"... There is terrifying ignorance about this new standard." Cornyn continued: "The industries [represented] in this room — which make music and video programs — have a heritage of spending roughly \$12 a year on technical R&D ... that's supposed to come from Japan or somewhere. Partly it's not our fault ... it's the fault of that letter ... that 'I'. For interactive. Who knows [what] interactive [is]. Music is meant to be linear, to run from front to back, without rearrangement."

He went on to tell his colleagues, "what's been overlooked is that our belief continues to be that the programs sold in CD-I will be 3:1 linear — *not* interactive. For every interactive CD-I, there will be three linear CD-I titles. There are vast resources of ready-to-sell material sitting in the vaults of record and television companies, and those companies are largely unconscious of that fact."

Cornyn warned the industry: "Here comes CD-I in mid-'88, and the computer industry is grabbing it." ☐



## SIG Meeting in San Francisco (Continued)

As reported in the June issue of *CD-I News*, the CD-I Special Interest Group (SIG) held a second meeting in San Francisco after the Online "CD-I — The Future" conference.

The meeting included a panel session during which Steve Shinbori (Sony), Patrice Peiret (Thomson), Bjoern Bluethgen (Philips/Dupont), Robert Friedman (OptImage), Mark Dillon (A.I.M.), Richard Bruno (Philips), Jeff Steinwedel (Activision), Laura Buddine (Tiger Media) and Greg Riker (Electronic Arts) gave SIG members updates on their company plans.

The questions that were asked reflected the hopes and fears that exist concerning CD-I and the problems as perceived by those who are not "insiders," i.e., Philips, Sony, Matsushita, A.I.M., etc.

One participant asked the panel, "I have some hard rock musician friends who are extremely interested in the medium of CD-I. Who should be approached to see how they can be helped?"

A panelist said that for those interested in producing material for CD-I, one should look for financial assistance from nontraditional sources — for example, advertising agencies. Besides just being an entertainment medium, CD-I offers advertisers means to market products that can be targeted to strategic market segments, e.g., the buyers of hard rock. CD-I albums would be a viable audience for one product, while the buyer of classical music could be traded for another. Such media vehicles should be attractive to agencies and provide a new source of financial backing for CD-I projects.

Bob Friedman offered the following step-by-step advice on how aspiring independent developers and material providers should proceed with a CD-I project:

1. A design strategy should be undertaken that carefully considers the subject matter of the intended work, the concepts that led to its choosing and the markets that the work is intended for. A narrative script and preliminary storyboards for the work should then be undertaken.
2. Working with a CD-I production company, a

preliminary flowchart should be created that describes what percentages of the CD-I title would be devoted to audio, video, graphics, animation, etc. A description of the intended interactivity and the basic programming structure needed for the title should also be described.

3. The type of images to be used in the title should be thoroughly investigated. Selection could greatly influence the cost of the project depending on the complexity of the material selected. The quality of imagery and audio should also be defined. The developer or material provider would be responsible for the procurement of audio and visual content for the project, along with the appropriate rights and permissions for that material.
4. On completion of these steps, the project could then be given to a studio production company like OptImage or copublisher like A.I.M., who would then come up with detailed specifications concerning such items as materials and production time required, and would provide the developer or material provider with a cost estimate for the project.
5. The material provider would then have to make a decision concerning the viability of the project.
6. If the developer or material provider wishes to proceed with their project, and business arrangements are concluded, the production or copublishing company would then proceed with the editing and input of image and audio, text and narration, and the creation of the programming necessary for desired interactivity.

Another question was asked concerning copyrights. The use of images, graphics and pictures in CD-I presents a new area for those in the computer field. It was pointed out that this could become one area in which a person with expertise could create a very profitable business by providing information concerning the rights of material as relates to CD-I.

By the time the Special Interest Group meeting had broken up, it had become clear that interest in CD-I was as strong as ever. Considerations that weighed heavily among SIG members concerned the timely supply and dissemination of CD-I and chip prototypes to those who were interested in software production, but are stymied by the lack of such. □

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