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A major break is looming....

....over the long-standing, friendly and cooperative relationship between PSC and Symbol Technologies. This split was signalled on January 4 when PSC's announced that it had unilaterally "terminated talks with Symbol Technologies concerning the companies' respective intellectual property rights and positions for laser bar code reading devices."

The dispute centers around PSC's new miniature scan engine, which PSC maintains does not fall under its current licensing agreement with Symbol. In PSC statement, Chairman/CEO Mike Hone explained: "We believed it was important and appropriate to meet with Symbol, at their request, prior to the public announcement of our Minuet DI-1000 bar code reading engine, which is based on new, proprietary technology."

Until now, PSC has been one of the few seemingly contented licensees under Symbol's patents on hand-held laser scanners and miniaturized scan engines. Hone has readily admitted, in past conversations with *SCAN*, that PSC has prospered under this contractual arrangement. The company was able to establish itself as a viable competitor to Symbol largely by picking up many of the contracts that just "fell off Symbol's table."

Of this found business, PSC's most significant relationship has been with Telxon, which has been PSC's largest customer for the past five years. Telxon views Symbol as its major competitor for hand-held, scanner-integrated terminals; therefore, Telxon prefers to buy as much of its scanning components as possible from another source -- namely PSC.

On May 3, 1990, in a landmark court decision, Symbol's patents were strongly upheld in its suit against Opticon. Less than one month later, Symbol commenced legal action against PSC (then known as Photographic Sciences Corp), claiming infringement of their patents. PSC immediately countersued based on two of its own patents.

The two companies then entered into quiet negotiations -- which both sides characterized as "friendly." Nine months later, they emerged with a cross-licensing agreement which called for Symbol to receive royalty payments commencing in 1993 "on a sliding scale up to 15% over time,

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depending on the volume of PSC's sales of licensed hand-held laser scanner products" (*SCAN* Jun 90, Jul 90, Sep 90, Apr 91).

The contract marked an important milestone for both companies: the deal completed the roster of hand-held scanner manufacturers that Symbol wanted to license; and it gave PSC time to build its business without any overhanging threat of patent litigation.

But PSC is no longer the 110-pound weakling that it was five years ago. Annual sales in 1990 were $16 million; corporate revenues for 1995 are expected to approach a robust $85 million, with a major percentage of that total represented by hand-held scanners and scan engines. The company has divested itself of smaller, peripheral product lines and acquired LazerData last year, which added approximately $10 million in sales and a new line of large, high-performance, omnidirectional, industrial scanners.

PSC introduced its new DI-1000 scanner with a great deal of fanfare last October at SCAN-TECH 95. According to the company, this patented device is the forerunner of a radically new type of scan engine that "will revolutionize the bar code reading industry."

[In the DI-1000 (DI stands for Direct Illumination), the laser diode is mounted on a moving mirror and the entire assembly is mechanically swept to directly illuminate the bar code. This is accomplished using resonant metal flexural elements, eliminating motors. In other scanners, the laser diode is mounted in a fixed position and the laser light is bounced off an oscillating mirror.]

Symbol Technologies' public response to PSC's new product confirmed the wide chasm between the two companies on this issue. In a terse, half-page reply to PSC's press release -- which announced the breakoff in negotiations -- Symbol stated: "PSC's DI-1000 technology, which merely oscillates the laser, was developed and patented by Symbol in the late 1980s. Symbol holds three issued patents...and one allowed patent covering this technology, but we chose not to utilize it in our own products....Symbol also believes that substituting the DI-1000 for PSC's current scan engine will, moreover, result in infringement of unlicensed Symbol patents."

We discussed these developments with Stuart Itkin, PSC's VP Worldwide Marketing. "PSC was aware of the three Symbol patents cited in Symbol's reply, even before we filed for our patent," he said. "These Symbol patents are even referenced in the patents issued to us, and an independent patent counsel has advised us that we do not infringe on them."

Itkin described Symbol's basic patent portfolio as "old, outdated technology." "Symbol has built a 'patent fence' to keep others out," he explained, "but this works both ways -- it also keeps Symbol Technologies inside their own restrictive patents."

Itkin told *SCAN* that PSC expects to convert most of its product line to the new DI technology in the near future -- although previous models will still be supplied to those who prefer them. "PSC will offer non-onerous licensing agreements to other companies to manufacture products under our DI patents," Itkin continued. "We want to stimulate the market, open new applications, and

involve the more traditional product manufacturers in scanning technology. Many companies have been put off by the restrictive nature of the Symbol patents and agreements." Itkin characterized the royalties paid to Symbol by PSC and other licensees -- unofficially estimated at seven-and-one-half percent -- to be "onerous and inhibiting market growth."

On the same day that PSC revealed that it had broken off negotiations with Symbol, the company made two additional related announcements:

1. "PSC reported today that it has booked orders in excess of one hundred thousand units of its DI-1000 bar code reader product family from Telxon, Data General and ITS for applications ranging from hand-held bar code readers to portable hand-held computing devices."

   Revenues from these orders are estimated at $20-to-$30 million. According to Itkin, small shipments are already under way and PSC is now "ramping up production and will be shipping tens of thousands of units per week" in the near future. (Since Data General and ITS are not major players in the scanner-integrated terminal market, we assume that the bulk of the booked orders are from Telxon.)

2. Buried in the same good-news announcement about the DI-1000 orders was a less-optimistic statement from CEO Mike Hone: "Fourth quarter revenues," he revealed, "will be approximately $3 million less than planned and earnings will be approximately at a break-even level." Hone attributed this reduction in revenues and earnings to "product transition issues primarily relating to our new DI-1000 bar code reading engine."

   [There were already negative indications about these operating results in the company's third quarter financial report. Although sales for nine months had increased a healthy 53% over last year, gross profit margins in the third quarter had dropped almost 6%.]

To learn more about Symbol's reaction to this turn of events, we spoke with Symbol's Chairman/CEO Jerry Swartz on January 11. "We were surprised by the sudden breakoff in negotiations with PSC," Swartz conceded. "Our relations with PSC have always been good and we thought these meetings, which have been going on for some time, would continue."

Swartz is unequivocally certain that the DI-1000 technology has not avoided Symbol's patents. "PSC's claim that just substituting a new type of scan engine for an old one gets around Symbol's entire matrix of two hundred patents covering hand-held laser scanners and scanner-integrated terminals will not hold up," he stated.

But Swartz placed even greater importance on product performance than on the patents. "PSC's DI-1000 is inferior in performance to Symbol's scan engines," he insisted, "particularly when compared to the new SC 1200 that we are introducing next week at the National Retail Federation Show in New York. The SC 1200 has no moving parts and features outstanding scanning capabilities. Our examination of the DI-1000 indicates that it has trouble reading a UPC bar code at a distance of less than three inches, that it has vibration problems, and that there are difficulties with marginal color contrast symbols in ambient light."

Swartz pointed out that PSC's royalties do not represent a significant or material part of Symbol's revenues. He noted, however, that these licensing payments could be a significant cost factor to PSC -- since that company's revenues are heavily dependent on licensed hand-held laser scanners and scan engines.

[Symbol does not separately break out royalty revenues -- which are included in total sales -- in its financial statements.

Our best estimates, based on discussions with licensees and other knowledgeable industry followers, is that royalty income to Symbol exceeds $25 million each year. These licensing fees may not seem like a very large factor when compared to Symbol's total corporate revenues -- which exceeded $550 million in 1995 -- but since most of the royalty income drops right to the bottom line, any dramatic change in that revenue stream could materially impact earnings.

SCAN has learned that, in 1995, PSC paid Symbol about $5 million in licensing fees. Swartz told *SCAN* that other companies -- particularly manufacturers of scanner-integrated terminals such as Telxon and Norand -- are larger contributors to Symbol's royalty income.]

Comment

It is much too early to assess the significance of PSC's new DI product group on either PSC or Symbol. Many observers at SCAN-TECH 95 considered the DI-1000 to be one of the most important new product introductions of the show. We concurred in our own appraisal (SCAN Dec 95).

In the final analysis, the marketplace will determines the outcome of this dispute. To be successful, products using the DI-1000 concept will have to outperform the Symbol Technologies' scan engines -- regardless of whose patent position prevails. Ultimately, the payment or non-payment of royalties will be relegated to an important and interesting sideshow.

Right now, PSC is betting the ranch on what it considers to be the superior technology of its DI-1000; at the same time, PSC is trying to disengage itself from what it perceives to be the onerous royalty payments to Symbol.

Unfortunately, the positions of the two companies seem to have hardened.

On January 12, Mike Hone told SCAN: "PSC has been working on the DI concept for eight years and we have invested $5 million in its development. We are confident the DI-1000 does not infringe on Symbol's patents -- and we are not afraid to have this decided in a courtroom."

Swartz commented: "Symbol's won-lost record in litigation is twelve to zero. We are battle-hardened in court. Our patents have always been adjudicated in our favor."

With the acquisition....

....of Barcodes (Pty) Ltd, South Africa, Symbol Technologies has established a new, wholly-owned subsidiary, which it has renamed Symbol Technologies Africa.

Barcodes (with offices in Johannesburg, Cape Town and Durban) -- Africa's largest and oldest supplier of bar code products and services -- has been a Symbol distributor for thirteen years. Carlos Ferraz, Barcodes' managing director, will continue in that role under the new ownership and the Barcodes reseller agreements with Zebra and Accu-Sort will remain in place.

> [The purchase of Barcodes may have been a partly-defensive move by Symbol. *SCAN* has learned that Peak Technologies -- which has been rapidly expanding in Europe this past year with three quick acquisitions -- was preparing to extend its reach to Africa and had tendered an offer to buy Barcodes. Symbol did not want to lose control over its most important reseller in that region and stepped in and made the acquisition.]

To salvage and rejuvenate....

....the struggling QR program, AIM/US and VICS have launched their new IQ 1996 conference. A glossary will help to understand the history of this important program and to appreciate the new efforts to bring it back from the near-dead:

> **VICS**: The Voluntary Interindustry Commerce Standards committee (better known for its achievements than its choice of name) was formed in 1986 when US manufacturers of textiles and apparel became alarmed at their dramatic losses of business to offshore suppliers.
>
> VICS was created to promote "a more timely and accurate flow of product information between distributors and manufacturers of apparel, textiles and fabrics [to] significantly improve the competitive position of domestic participants in these industries."
>
> In order to achieve these goals, the VICS committee made two momentous decisions that would dramatically affect the (non-grocery) retail industry: 1. The UPC code and symbol was adopted for product identification; 2. EDI was designated as the preferred means of communication between trading partners.
>
> **QR**: In 1989, VICS teamed up with AIM -- the Automatic Identification Manufacturers trade association -- to launch the first Quick Response conference, which was held in Dallas. QR was defined as "an interindustry program among retailers, their suppliers (including apparel and textile manufacturers), and motor freight firms to achieve faster movement of the right information and products through the merchandising and production pipelines." The subsequent annual QR conferences -- which included limited vendor exhibits -- grew in attendance and interest for a few years, but then dwindled in 1993 and 1994.
>
> **IQ 1996**: In an effort to rekindle enthusiasm in the lagging QR program, AIM and VICS plan to assemble the nation's top retailers, consumer goods manufacturers and distributors for a conference on "Intelligent Business

Strategies" in Chicago (March 18-20, 1996). Dubbed IQ 1996, AIM announced that the redesigned three-day event "will mark a distinct departure from the technology-driven sessions of the past."

On March 19, in the midst of IQ 1996, a heavily promoted "IQ Vision Summit" will be held. This very exclusive one-day session will be the conference's main event, open by invitation only to presidents and CEOs of America's top companies. According to AIM: "The IQ Vision Summit will feature a blue ribbon panel of the nation's foremost marketing, business and retail leaders in front of an equally impressive audience of executive management."

Participating on the dais at the IQ Vision Summit (in alphabetic order, so as not to offend any of the stars) will be: Bill Fields/Executive VP, Wal-Mart; Bill Gates/CEO, Microsoft; Joe Haggar/CEO, Haggar Clothing; Mike Hone/CEO, PSC; Mackey McDonald/President, VF Corp; Bob Meyerson/CEO, Telxon; Bob Rockey/President, Levi Strauss; Jerry Swartz/CEO, Symbol Technologies; and Steve Watson/CEO, Dayton-Hudson. Moderated by Arthur Miller, President Emeritus of Harvard University, the panelists will participate in "an open exchange forum dedicated to defining a futuristic view of American business strategy."

Although invitations to the three-day general conference at IQ 1996 will go out to all levels of management and staff participating in the manufacturing/retail supply chain, the Vision Summit will be held behind "closed doors" and attendance will be restricted to three hundred presidents and CEOs of "major retail and industry giants, corporate strategists, visionary leaders, and authorities in business, manufacturing, consulting and information technology....No other attendance will be permitted."

IQ 1996 is an ambitious and valiant attempt to duplicate the successful VICS launch on June 24, 1986. At that time, Roger Milikin and Sam Walton fired up the CEOs of leading retailers and textile manufacturers to override the timid National Retail Merchants Association which was resisting the adoption of the new UPC/EDI technologies. Ten years later, the goal will be to enlist the active endorsement and support of current corporate captains to expand the industry's participation in the program first laid out by those courageous visionaries. Meanwhile, IQ 1996 will continue the effort to educate middle managers on how best to implement the fully developed and proven ADC technology.

The most recent estimates....

....of the size and rate of growth of the US consumption of bar code products were released by Venture Development Corporation (Natick, MA) on November 22.

[VDC defines the US consumption of bar code products, services and software as the "sum of the total shipments by US vendors to customers within the US and imports of non-US vendors to customers within the US."]

Based on the VDC projections for 1995 and its forecast of the annual rate of growth for the next four years, we compiled the following product breakdown:

US Consumption of Bar Code Products
(All $ figures in millions)

Product Group	1995 $	1995 % Total	1999 $	1999 % Total	1994-99 Annual % Growth
Hand-Held Scanners	$344	11.0%	$575	10.9%	13.7%
Stationary Scanners (POS)	331	10.6	462	8.7	8.7
Data Collection Terminals	570	18.2	1230	23.2	21.2
Printers	546	17.4	872	16.5	12.4
Consumables	657	21.0	1056	20.0	12.6
Services	278	8.9	449	8.5	12.8
Software	231	7.4	415	7.8	15.8
Other	177	5.6	242	4.6	8.2
Total	3133	100.0	5301	100.0	14.0

VDC believes that retail Point-of-Sale "Stationary Scanners" will achieve the slowest growth rate (8.7%) of all product groups. The research company attributes this relatively low rate of increase to "a large installed base of stationary POS scanners [which] will stunt the demand from the retail sector." By contrast, VDC projects that Data Collection Terminals will experience the largest growth rate through the end of the decade. The largest industry segment will remain the combined product grouping of printers and consumables.

Earlier this year, VDC had projected that European consumption of bar code products in 1999 will reach $3.3 billion (*SCAN* April 1995). Adding in estimates for the rest of the world, VDC thus anticipates a $10 billion-plus market at the turn of the century.

Comment

While we report these data to keep our readers apprised of the latest market research in the industry, we also feel compelled to offer our usual caveat: Projections of product sales or consumption into the future should be treated carefully. Even among other purveyors of market research data -- such as Frost & Sullivan -- there are wide discrepancies in the assessments of current market size, not to mention future growth.

We feel comfortable, nevertheless, accepting the uniform prediction from all sources that there will be continuing healthy growth in the sale and consumption of ADC products and services.

Whatever happened to....

....Supertags, the radio-frequency identification (RFID) system that CSIR -- its South African developer -- promised would soon replace UPC/EAN bar coding (*SCAN* Feb 94)?

Supertag, unveiled in early 1994, was described as a single integrated circuit chip capable of broadcasting its identity number despite possible

interference from other tags in the vicinity. CSIR optimistically predicted: "The entire contents of a supermarket trolley [can be accurately read] in a second without the need for unpacking, and stock taking could be a simple act of passing a scanner over the shelves to document the entire contents of a store within minutes."

The extravagant claims that Supertags would replace UPC/EAN bar codes were quickly refuted (*SCAN* Apr 94). Thereafter, the efforts of CSIR -- and its licensing agent, British Technology Group (BTG) -- were more properly directed toward developing applications that would better utilize Supertag's unique RFID qualities; e.g., the ability to read multiple tags at one pass and to be "turned off" temporarily for one-to-four hours.

Four Supertag licenses have been issued so far:

- The first South African company to be licensed is SuperSensor Ltd (Cape Town), a new subsidiary of the privately-held Fintrust Group. SuperSensor was specifically established to pursue the commercialization of Supertags and will be marketing electronic item identification systems. The new licensee claims to have identified a wide range of companies in South Africa and other countries with stock management and distribution requirements which could benefit from Supertags, including deterrence and detection of theft, speeding up stock-taking procedures, and accelerating product handling.

- A consortium of four Japanese companies, led by Seika Corporation, has been licensed to develop all of the components needed for commercial Supertag systems. Seika will undertake sales and marketing activities; Oki Electric Industry Company will design the silicon chip; Miyake will manufacture the anti-theft tags; and Takaya will produce the radio antennas and readers. The consortium believes the first applications will focus on distribution logistics, including: baggage handling at airports, parcel delivery services, self-service libraries, and the transport of livestock.

- Semaphore Asset Management Systems (Toronto, Canada) has been licensed to develop asset management, inventory control and warehouse applications based on Supertag technology.

- The most recent licensee -- announced by BTG on November 7, 1995 -- is France-based Gemplus Electronics. Gemplus, formed in 1988, is the world's leading supplier of "smart cards" with 35% of the world market. Last year, Gemplus acquired US-based Datacard's plastic cards and service bureau operations in the US and Europe.

  Gemplus, with manufacturing, services and sales facilities in nineteen countries, had 1994 revenues of more than $200 million. The company has current market applications in banking, pay phones, mobile communications, healthcare, transportation and identification. According to Gemplus CEO J.P. Gloton: "The first Supertag products will be available in 1997."

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