

Licensing Second-Source Suppliers

The origins, characteristics of unique licensing phenomenon in microelectronics industry

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Rarely does a week go by in Silicone Valley, U.S.A. without the announcement of a second-source licensing agreement between semiconductor manufacturers. Indeed, the negotiation and administration of such agreements constitutes a significant activity for every major member of the industry.

A supplier that develops a new microelectronic product is usually referred to as the "original source." A "second-source" supplier is any other manufacturer that markets an interchangeable product, that is one having the same form, fit and function. The second-source supplier may be licensed under the original supplier's patents or know-how, or may be unlicensed. Licensing arrangements usually involve a cross-license back from the second source supplier to the original supplier.

This paper will explore the origins and characteristics of this unique licensing phenomenon.

PATENT CROSS-LICENSES

As the semiconductor industry moved in the direction of integrated circuits or microelectronics in the 1960s, the significant patents were made generally available on a cross-license basis. The impetus came from the compulsory licensing provisions of the 1956 antitrust consent decree entered into between the United States Department of Justice and Western Electric and continued in the policies of microelectronics pioneers Texas Instruments and Fairchild Camera. The poor judicial batting average for patents in that era played an important role in the adoption of such policies.

Thus the stage was set for an industry in which the introduction of new products predictably brought forward second-source suppliers.

Under the usual patent agreement, the second-source supplier develops a competing product with its own technology. The royalties are negotiated on the basis of the relative research effort of the cross-licensing parties with the stronger party generally receiving a royalty-free license.

The mobility of technical personnel between companies and into new companies continues to be a salient char-

acteristic of the industry. Accordingly, a level of expertise is established that facilitates independent development of second-source products. In this environment, royalty payments are rather modest.

The political climate of the last two years has been marked by legislative initiatives to protect U.S. innovation as a key ingredient in maintaining international competitiveness. Several of these will be discussed. One is the establishment of a single court of appeals for patent infringement cases which is expected to restore the respectability of the meritorious patentable invention. But what of the many important microelectronics product innovations that are not susceptible of adequate patent protection?

KNOW-HOW LICENSING BY DEFAULT

The better part of valor has often been to share unpatented technology with a prospective second-source supplier. For one thing, the opportunity to collect a fee and obtain cross-license rights can rapidly pass by after the prospective supplier legally obtains a sample of the original supplier's product. This may become less of a Hobson's choice in view of recent developments in state trade secret protection and the enactment of the U.S. Semiconductor Chip Protection Act of 1984.

Ex-employees have been successful in thwarting trade secret claims when the original products of their former employers are placed on sale. The product if unpatented can then be copied by anyone who obtains a sample and dissects it. The Uniform Trade Secret Act adopted or in the process of adoption by several states, including California effective January 1, 1985, makes it clear that ex-employees are prohibited from enjoying a head-start advantage resulting from their prior knowledge. In practice, of course, it may be difficult to quantify the prohibited head start in terms of time or dollars.

On the U.S. Federal front, the Chip Protection Act attempts to prohibit the practice of dissecting a chip to reproduce the masks that are used as tooling for producing a competitive product, while permitting the practice of using the dissection information in the independent development of an equally competitive product. Pejoratively, the prohibited practice is denoted as "piracy" while the permitted practice is denoted as "reverse engineering." The legislative history expresses confidence that, like pornography, the courts will be able to recognize piracy when they see it. But will they?

Invariably, product simulators will not use an exact copy of the mask pattern imprinted on the original product. At a minimum, adjustments are required to account for subtle differences in the process used by each manufacturer. The proponents of the act suggest that

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legitimate reverse engineering will leave a paper trail evidencing independent effort, including computer simulations and time records (House Report 98-781, P. 28). Hopefully, copiers will not be rewarded more for their ability to generate a paper trail than for their technical contributions.

Even with improved protection of both patented and unpatented technology, significant market factors "militate" against the original designer of a microelectronic product establishing itself as a sole source. This is somewhat of a pun since it was in "military" procurement that the practice of customer-required second sourcing started. Now most significant computer and other O.E.M. customers demand that a second source be established, including frequently the customer's own in-house semiconductor facility.

So, historically, second-source licensing policies were reactive, a reluctant move in the face of certain copying and customer demand. Recently, however, such policies have taken a more positive turn.

KNOW-HOW LICENSING BY DESIGN

As microelectronic products are used in more sophisticated data processing and telecommunications applications, manufacturers have recognized the commercial advantages of joint-development programs. Such programs accelerate the acceptance of new designs as industry standards by responding to a broad range of applications with appropriate configurations and peripheral devices.

The U.S. antitrust environment for cooperation between competitors has improved greatly, beginning with policies of Assistant Attorney General William Baxter in the first Reagan administration and culminating in the National Cooperative Research Act of 1984. However, the Research Act is just what the name implies. It encourages cooperation in technical development through the prototype stage. But it leaves intact the presumptive illegality of joint-production and marketing efforts. These are the bounds within which even the most enthusiastic togetherness must be contained.

The benefits of cooperative development are realized only when both parties participate actively. Therefore, the licensing agreements emphasize technical contribution over cash payment. Economic value is found in sharing the rapidly escalating costs of new product development,

paced by greater software development and maintenance requirements and the price of advanced technology fabrication equipment.

In effect a matrix of technology transfer is developed such that over the period of cooperation, product designs of equivalent technical complexity are contributed by each party. It is contemplated that each party will be a second-source supplier for the products developed by the other party. Typically, running royalties are paid on the second-sourced products and procedures are adopted to insure a continuing exchange of information on product improvements.

The pattern in the industry has favored nonexclusive licensing. Each party is free to grant additional licenses for the products developed by it, but restrictions are placed on sublicensing the products developed by the other party.

The parties tend to protect their individual competitive advantages to the extent consistent with the interchangeability of parts in the product family. Accordingly, there may be excluded from the technical exchange obligations such items as the detailed wafer processing steps, and improvements in yield, material utilization and other cost-saving measures.

To illustrate the extent of technical cooperation through second-source licensing, a 1981 report by Dataquest of San Jose, California, identifies an original source for each of five new 16-bit microprocessor designs together with 23 suppliers that second source one or more of these designs. A study entitled Transnational Corporations in the International Semiconductor Industry to be published this year by the United Nations concludes that second-source agreements are in fact the most prevalent form of non-equity linkage between corporations in the industry. The study also asserts that the technological leadership resides in the United States in view of the fact that a U.S.-based corporation is one of the parties to almost all of the agreements.

CONCLUSION

Second-source licensing has been a way of life from the very beginnings of the microelectronics industry. Adopted reluctantly at first, it now provides a cornerstone for the competitive vigor with which the industry responds to its endemic rapid rate of innovation and technological change.