TECHNOLOGY TRANSFER FROM SMALL ORGANIZATIONS TO LARGE ORGANIZATIONS SOME EXAMPLES

HOMER O. BLAIR

I. ITEK'S BUSINESS
   A. COMMERCIAL (75%)
      1. EYEGLASS BUSINESS
      2. GRAPHICS BUSINESS
   B. GOVERNMENT BUSINESS (25%)
      1. OPTICAL SYSTEMS DIVISION
      2. APPLIED TECHNOLOGY DIVISION

II. ITEK'S GRAPHICS STRATEGY
   A. PRESENT BUSINESS
      1. CUSTOMERS
         A. INPLANT PUBLISHING
         B. SMALL PRINTERS
            1. NEWLY ISSUED U.S. PATENTS PRINTED ON ITEK EQUIPMENT
   B. FUTURE BUSINESS
      1. PHOTOTYPESETTING
         A. SALES TO SAME CUSTOMERS
         B. COULD BE MARKETED THROUGH SAME ORGANIZATION

III. HOW TO GET INTO PHOTYPESETTING BUSINESS
   A. TALKED TO PHOTOTYPESETTING COMPANIES ABOUT ITEK DISTRIBUTING THEIR PRODUCTS. NO INTEREST.
   B. IN DISCUSSIONS WITH OTHERS, HEARD OF TWO ENGINEERS WHO MIGHT BE INTERESTED IN DEVELOPING A PHOTOTYPESETTER FOR ITEK
   C. CONTACTED ENGINEERS WHO LEFT THEIR EMPLOYER, SET UP A SMALL COMPANY (D COMPANY) AND OBTAINED A RELEASE FROM THEIR EMPLOYER

IV. WHY DIDN'T ITEK HIRE THE ENGINEERS?
   A. ENGINEERS WANTED TO BE INDEPENDENT AND NOT BE EMPLOYEES
   B. ALSO THEY WERE PREPARED TO TAKE A RISK IF THERE WAS A POTENTIAL PAYOFF AVAILABLE
   C. ITEK DIVISION COULD NOT HAVE GOTTEN PERMISSION TO SET UP A R&D GROUP TO DEVELOP SUCH A NEW PRODUCT
   D. ARRANGEMENT ADOPTED APPEARED TO BE ABLE TO PROVIDE A REAL PRODUCT FASTER AND CHEAPER THAN IF ITEK DOING IT ITSELF

V. BUSINESS ARRANGEMENT
   A. FOUR PHASE DEVELOPMENT AGREEMENT
      1. DEVELOPMENT ITEMS SPECIFIED IN AGREEMENT
         A. LENGTH OF PHASES
         B. GENERAL GOALS OF PHASES
            1. SPECIFIC GOALS TO BE NEGOTIATED AT START OF EACH PHASE
         C. FINAL SPECIFICATIONS OF PRODUCT TO BE DEVELOPED
         D. MONEY TO BE SPENT IN EACH PHASE
         E. MONEY PAID MONTHLY AGAINST INVOICED SPECIFIED EXPENSES + OVERHEAD + SMALL PROFIT
         F. MONEY OVERRUNS AND UNDERRUNS COULD BE CHARGED AGAINST OR CREDITED TOWARD OTHER PHASES, IF POSSIBLE
         G. PERSONNEL SPECIFICATIONS
            1. WORK UNDER AGREEMENT TO BE UNDER FULL TIME DIRECTION OF G WHO SHALL ACT AS GENERAL MANAGER OF PROJECT
            2. SHALL HIRE A PART-TIME ADMINISTRATOR ACCEPTABLE TO ITEK TO MAINTAIN BOOKS AND RECORDS
      2. TERMINATION
         A. COULD BE TERMINATED BY ITEK ON 45 DAYS NOTICE
         B. RIGHTS OF PARTIES UPON TERMINATION WERE SET FORTH

I. INCLUDING, IF ITEK DECIDED NOT TO PROCEED WITH DEVELOPMENT OF SYSTEM, ITEK WILL BE REIMBURSED IN AN AMOUNT EQUAL TO 200% OF ALL PAYMENTS MADE BY ITEK TO D COMPANY

A. AT A ROYALTY RATE OF 1% OF NET SALES ON SALES MADE BY D COMPANY

B. AT A RATE OF 25% OF WHAT D COMPANY RECEIVES FROM OTHERS IF D LICENSES OR SELLS RIGHTS IN SYSTEMS TO OTHERS

3. PATENT CLAUSES

A. ITEK OWNED ALL INVENTIONS MADE

B. ITEK MAKES ALL DECISIONS RE PATENT FILING AND PROSECUTION AT ITEK'S EXPENSE (10 ISSUED U.S. PATENTS AND 1 APPLICATION ALLOWED)

C. IF ITEK DOESN'T FILE U.S. OR FOREIGN PATENT APPLICATION, D COMPANY CAN DO SO, AT D'S EXPENSE WITH ITEK GETTING NON-EXCLUSIVE LICENSE

4. ROYALTY CLAUSES

A. D COMPANY GETS ROYALTIES ON SALES OF FIRST 10,000 (SYSTEMS SELL FOR 10-15K) SYSTEMS WHETHER OR NOT ANY PATENTS EVER ISSUE

B. ROYALTIES ARE PERCENTAGE OF NET SALES STARTING VERY LOW AND RISING AS MORE SYSTEMS ARE SOLD

I. ROYALTIES ARE STRUCTURED SO THAT WHEN ITEK HAS SOLD 10,000 SYSTEMS, EACH OF THE TWO ENGINEERS WILL HAVE RECEIVED 1 MILLION DOLLARS

C. IF

I. OTHER NON-SYSTEM PRODUCTS SOLD BY ITEK OR

II. SYSTEM PRODUCTS ARE SOLD AFTER THE FIRST 10,000 SYSTEMS

AND ARE COVERED BY THE CLAIMS OF AN ISSUED, AND NOT INVALIDATED U.S. PATENT OBTAINED BY ITEK UNDER THIS AGREEMENT, ITEK AGREES TO PAY A ROYALTY AT REASONABLE RATE

I. ROYALTY BETWEEN 1 AND 5%

II. IF CAN'T AGREE, ROYALTY WILL BE DETERMINED BY THREE-PERSON LES PANEL

D. ROYALTY PERIOD UNDER C. ABOVE
   I. STARTS UPON THE LATER OF
      A. ISSUE DATE OF U.S. PATENT INVOLVED OR
      B. DATE OF FIRST COMMERCIAL SALE OF EQUIPMENT INVOLVED
   II. ENDS ON THE EARLIER OF
      A. TEN YEARS FROM START OF ROYALTY PERIOD OR
      B. FIFTEEN YEARS FROM DATE OF AGREEMENT

E. ROYALTY PAYMENTS TO OTHERS
   I. IF ITEK MAKES ANY ROYALTY PAYMENT TO OTHERS BECAUSE OF INFRINGEMENT BY THE SYSTEM OF PATENTS OF OTHERS, ITEK MAY DEDUCT 50% OF PAYMENTS TO OTHERS AND 50% OF ITEK'S OUT-OF-POCKET COSTS RELATING THERETO
   II. D COMPANY HAS RIGHT TO PARTICIPATE IN SUCH NEGOTIATION OR LITIGATION, BUT ITEK HAS RIGHT TO MAKE FINAL DECISION.

TECHNOLOGY TRANSFER FROM SMALL ORGANIZATIONS TO LARGE ORGANIZATIONS AN EXAMPLE

HOMER O. BLAIR
VICE PRESIDENT,
PATENTS AND LICENSING
ITEK CORPORATION

Introduction

As you all know, it is sometimes quite difficult to transfer technology from a small organization to a large organization, often because of the different concepts and methods of operation each of the parties habitually uses and because of the differences in financial strength and marketing ability. Usually, if the new product idea has been conceptualized at the small organization, it does not have the assets or abilities to completely develop the product for manufacturing. Thus, it may very well seek some arrangement with a larger organization which has the necessary financial muscle to make some arrangement so that both parties can benefit from the new product.

I will give an example based on an actual situation to show that, by being creative and flexible, large corporations may very well be able to utilize some of the innovative concepts developed by individuals or very small companies in such a way that the

product is developed in a reasonable time and both parties receive substantial benefits.

Itek Corporation

In order to set the stage, I will briefly describe the business of Itek, as it is pertinent to the example which I am about to discuss.

Itek is a medium-sized, quite diversified corporation having about $300 million in annual sales. About 75% of these sales are in various commercial fields and about 25% are in high technology Government businesses where the U.S. and other Governments, including Japan, are our customers.

Eyeglass Business

A major sector of our commercial business is what may be called the eyeglass business. Itek is third in the United States in this business following American Optical and Bausch & Lomb. Those of you who are patent lawyers may remember the old Univis antitrust case. We're Univis. Of course, we weren't Univis at that time. They did those bad things that were covered in the antitrust case before we acquired them.

In part of this operation, we buy glass blanks from someone such as Corning Glass and manufacture partially finished eyeglass lenses (finished on one side). In the United States, the lens manufacturer sells the partially finished glass lens to what is known as a wholesale laboratory which, in turn, will sell the completely finished lens to an optician, an optometrist or an ophthalmologist. We also have a number of wholesale laboratories.

Thus, we are selling both to ourselves and to completely unrelated laboratories.

We also buy the ingredients to make plastic lenses from PPG Industries, and we make partially finished plastic lenses which are also sold to wholesale laboratories. Of course, as part of our eyeglass manufacturing business, we make bifocals, trifocals and the progressively variable multi-focal lenses, without lines between the two or more different sections.

Itek also makes a wide variety of eyeglass frames, both in plastic and metal, as well as eyeglass cases. Also, we are probably the largest factor in what is known as the reading glass or magnifier market. These glasses can be bought in stores like Woolco, in all states except New York and Massachusetts. They are necessary when you reach a certain age and you find you are having trouble reading the fine print.

Business or Graphic Products

The other part of our commercial business is an outgrowth of what originally was the Photostat Corporation, which we acquired a number of years ago. Among other things, we make equipment known as offset platemakers. This equipment, which is really a big camera, takes a photograph of a document, an advertisement, or whatever you wish to copy, and makes a paper printing plate. This plate is used as a master on a printing press to make up to 10,000 copies. We also sell small printing presses to print copies from these paper printing plates.

Many of you have printing and publication operations in your companies. If you want a lot of copies made of something, your company will often use equipment made by Itek to do this. As a matter of fact, all newly issued U.S. patents are printed on Itek equipment.

Also, we make equipment known as camera-processors which are used in advertising and other publishing operations. In addition we make microfilm reader-printers primarily for the engineering drawing business. A fairly new part of our business is the phototypesetting business which will be the subject of my example.

Government Business

I will briefly mention our Government business which is composed of two parts. The first is very sophisticated optics and electro-optics. We make lenses and mirrors up to 100 inches in diameter which are used for aerial and space photography. For example, the pictures you saw sent back from the surface of Mars showing the rocks, both in black and white and color, were taken and transmitted on Itek electro-optical equipment. Also, the aerial photographs of the moon which were taken by the Apollo astronauts were taken on Itek optical equipment. You recall when the astronaut went outside of his capsule to recover this film.

The other part of our Government business is what is known as radar homing and warning. You place a small black box on a fighter airplane, fill it full of electronics, and it can tell the pilot whether someone has shot a missile at him or if someone is looking at him on radar and tell him what to do to get out of the way.

Phototypesetting

A few years ago the people in charge of our Graphics business, when working on their strategic plans, realized that most of their products were sold to two classes of customers. The first was the so-called inplant publishing which is done inhouse by corporations and the Government.

The other type of customer was the small printer that you see in all U.S. cities who can make photocopies of varying degrees of quality, and can print up brochures, catalogues, small publications, etc. for outside customers.

Our Graphics people were looking for new businesses and decided that there could be a useful market for Itek in certain aspects of the phototypesetting business. In phototypesetting you take the raw input material, which may be typewritten or handwritten or a mixture, and have someone typeset it by typing on a keyboard, something like a regular typewriter keyboard. Then, by some technique, obtain either a film or some other form, from which you can make a printing plate and from which you can have the final product printed.

Our people felt that there was an opportunity in both inplant publishing and small print shops for phototypesetters which might be less expensive and less complex than the large ones used in the newspaper or magazine fields, but would be more sophisticated than some of the small phototypesetters which were really quite rudimentary. Such a product, they felt, could be sold to the same customers that we already served and could be marketed and serviced through the same general organization.

How to Get Into the Phototypesetting Business

There was always the possibility of acquiring a company which had a phototypesetting line, but, upon investigation, this did not seem to be particularly attractive. Another possibility would be for Itek to distribute to our customers phototypesetters made by others. However, this did not work out.

In some of their discussions with others, our people heard of two engineers who might be interested in developing a phototypesetter for Itek. They contacted these engineers with the result that the engineers did set up a small company, which I will refer to as "D" Company.

As the engineers were previously employed, they obtained a suitable release from their former employer so there would be no problems about any inventions or products which they would develop for Itek.

Reasons for the Structure of the Arrangement

In initial discussions with the engineers the possibility of Itek hiring the engineers and setting up a research lab to develop the product was considered. However, the engineers wanted to be independent and did not want to be employed in any organization, if at all possible. They were prepared to work very hard and to take a significant risk if there was a potential payoff later rather than work under a regular R&D type contract where they would make their money only from profit on the contract.

At this time in Itek's history, Itek had just decided to discontinue its corporate research and have the various divisions do any necessary R&D. Also, Itek's earnings picture was such that a new President had just come to Itek. For these and other reasons, division management felt that they could not get permission to set up a new internal R&D group to develop a new product which might pay off at some indefinite time in the future, particularly inasmuch as Itek had no particular skills in the phototypesetting area and would have to hire a number of people from outside in order to staff such an R&D group.

On balance, the arrangement which I will discuss, and which was adopted, appeared to be able to provide a real product, faster and cheaper than if Itek did it itself.

The Agreement

After a considerable amount of discussion, negotiation, etc. the following business arrangement was developed. A development program was established which was to take place in four phases. The items specified in the agreement were the length of the phases in months as well as the general goals of the phases. However, the specific goals of each phase would be negotiated at the start of that phase. The total money to be spent in each phase was specified and the final specification of the product to be developed were set forth in as much detail as was available at that time.

The money was to be paid monthly against invoice-specified expenses plus certain percentages for overhead and a very small

profit. In each phase money overruns or underruns could be charged against or credited toward other phases.

The ultimate goal was the construction and design of two prototype phototypesetters together with drawings suitable to be used as manufacturing drawings. The prototypes were to be tested so that manufacturing could then take place.

It was specified in the agreement that all work under this agreement was to be under full-time direction of one of the engineers who would act as a general manager of the project. D Company was also required to hire a part-time administrator, who was acceptable to Itek, to maintain books and records and do other administrative jobs.

Termination Provisions

One of the major pointswhich made this agreement attractive to Itek's Board of Directors at that time was that the agreement could be terminated by Itek on 45 days notice. Thus, if the project didn't work out, there were no obligations other than the 45-day notice and whatever close-down work needed to be done during that period of time. There were no facilities to shut down, no equipment to sell, no employees to lay off or transfer and none of the usual problems you have in turning off one of your own operations, if it was not successful.

Of course, as is usually the case in documents negotiated by lawyers, particularly U.S. lawyers, there was a substantial amount of space taken up specifying the rights of various parties if the agreement was terminated before completion of the project.

Fortunately, the project was not terminated and it was completed successfully.

One item that should be noted in this regard is that if Itek decided not to proceed with the complete development of the system, Itek would be reimbursed by D Company in an amount equal to 200% of all payments made by Itek to D Company. This money would be obtained from a royalty rate of 1% of net sales made by D Company and/or at a rate of 25% of whatever D Company received from others if D Company decided to license or sell its rights in the system. Of course, if D Company did nothing, Itek would not receive any money back.

Inventions and Proprietary Data

The agreement also included clauses relating to inventions and data. Itek would own all the data, drawings, etc. and inventions, whether patentable or not, which were either owned by D Company at the time of the agreement or which were conceived or reduced to practice during the period of the agreement and which related to the subject matter of the agreement.

Itek would make all decisions with respect to filing patent applications and prosecuting the patent applications as well as maintaining them in non-U.S. (and Canada) countries. This would be done at Itek's expense. If Itek decided not to file a U.S. or foreign patent application on any particular invention, D Company could do so at their expense, with Itek receiving a non-exclusive, royalty-free license.

As a matter of interest, Itek presently has ten issued U.S. patents, which grew out of this project, and one U.S. patent application, which has been allowed.

Benefits to D Company

Now, what would D Company and the two engineers get out of all of this? First, D Company would get royalties on sales of the first 10,000 phototypesetting systems sold by Itek which grew out of this development, whether or not any patents ever issued on any parts of the system. These systems sell for between $10,000 and $15,000, so you can see we are talking about a product having between $100 and $150 million of sales for the first 10,000 systems.

The royalties paid were a percentage of net sales, starting at a very low royalty and rising as more systems were sold. Royalties increased with sales because Itek would be able to make more profit on the products as Itek got more experienced at manufacturing and marketing them. Thus, Itek would be in a better position to pay higher royalties as time went on.

These royalties were calculated so that when Itek had sold the first 10,000 systems each of the two engineers would have received about $1 million in royalties. This has not yet occurred, but it will happen in the not too distant future.

If other products, which were not included in the definition of the system, were sold by Itek or, if systems were sold by Itek after the first 10,000 systems, and if either of these categories of products were covered by the claims of an issued, and not invalidated, U.S. patent obtained by Itek under this agreement, Itek

agreed to pay a royalty at a reasonable rate depending on the coverage of the claims involved and their importance to the product being sold at that time.

This royalty would be between 1% of the effective net selling price of the portion of the system covered by the claim and 5% of the net selling price of the entire system.

If Itek and D Company cannot agree on the royalty at that time, there is set forth what is hopefully a simple mechanism for deciding the royalty rate. Itek and D Company would each select one member of the Licensing Executives Society (LES) and those two members would then in turn select a third LES member. The three LES members would decide the royalty within the above limits, based on all the facts, with Itek and D Company sharing the cost of the panel. Inasmuch as the only item to be decided is the royalty rate, this seemed to be a comparatively simple arrangement with which both parties could live.

The royalty periods involved in these royalties were specified in the agreement as starting upon the later of the issue date of the U.S. patent involved or the date of the first commercial sale of the equipment involved. The royalty period would end on the earlier of ten years from the start of the royalty period or fifteen years from the date of the agreement.

It should be noted that the royalties are to be calculated, and the various dates involved are based, on U.S. patents, even though the product itself might be made anywhere in the world and

might, or might not, be covered by non-U.S. patents. Thus, technically, the product might not be infringing the claims of any patents where it was made, used or sold. Keep in mind, however, that the original concept was that the inventors would receive royalties on the first 10,000 systems whether or not any patents ever issued.

Both parties felt that Itek would have no conflict in deciding where it should get patents and which U.S. or non-U.S. patents it should obtain and maintain under such an arrangement. It would be of more benefit to Itek to have the best patent position possible to fight off competitors than to deliberately not issue certain patents merely in order to avoid payment of reasonable royalties to the engineers involved. So far this has proved to be true. The engineers and Itek agree it has worked well from that aspect.

Inasmuch as one or both of the engineers are inventors of all the patents involved, it is very easy to keep them aware of what is going on in the patent situation, both in the U.S. and foreign countries.

Payments to Others for Patent Infringement

The agreement also provides that if Itek should be required to make any royalty payments to others, because of infringement of patents of others by the system, Itek may deduct 50% of the payments to others and 50% of Itek's out-of-pocket costs relating to any negotiations, etc. Keep in mind this does not include Itek's internal costs. It is specified in the agreement that D Company has the right to participate in any negotiations or litigation at their expense, but Itek has the right to make the final decision.

How Did the Arrangement Work

Thus, the arrangement I have described is a mechanism for a company like Itek to obtain the development of a new product at a comparatively low initial cost and in a comparatively short time. As a matter of fact, both these engineers worked 7 days a week, more than 12 hours a day many times, sometimes sleeping near their desks at night in order to spend as much time on the project as possible. They had a strong incentive to complete the work as soon as possible and do as good a job as possible because, although their costs were being paid for, they were not really making any significant profit.

As might be expected during the development, there were some cost overruns, which were approved by Itek at the time they were undertaken. These cost overruns are handled as follows. After 5,000 systems have been sold, the royalty rate goes from one rate to a higher rate. Itek will withhold the difference between the lower rate and the higher rate until such time as they have recovered the money from the cost overrun. The royalties after that time will be paid at the higher rate.

This product was developed very close to the time specified and, even with the cost overruns, a small amount of money was spent compared to what it would have cost Itek to develop it itself, if it had had the ability to do so. The product is being sold in the U.S. and a number of countries in the world and is quite successful.

My Department, called the Patents and Licensing Department, is somewhat unusual among Corporate Departments in that we obtain the pertinent sales data on which we pay royalties from the divisions involved. We then pay the royalties through our Department and receive royalties from others through our Department. These royalties are charged or credited to the various divisions involved. This permits me to make sure that the proper amounts of royalties are being paid and, in this particular case, the two engineers are very happy with the royalties received from Itek on this development.