TRANSPARENCIES FOR UNIT 10

# MANAGEMENT OF TECHNOLOGY TRANSFER

# THE OPPORTUNITY

- Broad Concept of Technology
- Broad Concept of Transfer
- People Process
- Fragile, Complex
- Unmanageable
- Perceived Conflicts
  - With Lab/Agency Mission
  - With Research Management
  - With Personal Objectives
  - Of Philosophy
- Mandated

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# MANAGEMENT HANDLES

- Knowing You Have Something
- Knowing What You Have
- Knowing Its Value
- Knowing What to Do With It
- Knowing Who Needs It
- Knowing How to Move It

# PROGRAM BASICS

- The Patent Route
- The Non-Patent Route
- Dual Management
- Joint Management
- Cooperation

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# Unit 11

TITLE: ACTORS IN THE TRANSFER PROCESS

PURPOSE: This unit provides an overview of the various actors (or participants) in the technology transfer process.

OBJECTIVES: Upon completion of this unit, participants will:

- Be familiar with the major actors in the private and public sectors in accomplishing technology transfer
- Be familiar with the broad roles of each of the actors and their relationships to one another
- Have identified a primary technology transfer management challenge (i.e., establishing appropriate inter-organizational and intra-organizational communication channels)
- Reviewed a generalized example of the way in which innovation functions may be segmented in the private sector
- Observed appropriate entry points for laboratories
- Identified third-party participants that may be included in or influence the technology transfer process.

MATERIALS:

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| Transparency 11-1: | Actors in the Transfer Process |
| Transparency 11-2: | Government Transferor Participants |
| Transparency 11-3: | Private Sector Transferee Participants |
| Transparency 11-4: | Third-Party Participants |
| Transparency 11-5: | Multiple Firms in a Single Innovation Process |

REQUIRED READING: Chapter 4 (Mechanisms) in Frank Bradbury et al., eds. Transfer Processes in Technical Change, Sijthoff and Noordhoff, The Netherlands, 1978.

OPTIONAL READING:

1. Modesto A. Madique, "Entrepreneurs, Champions, and Technological Innovation," pages 562-581 in Michael L. Tushman and William L. Moore, eds., Readings in

## Unit 11

## ACTORS IN THE TRANSFER PROCESS

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Transparency 11-1: Actors in the Transfer Process

NOTE: PRESENT PURPOSE AND OBJECTIVES OF THIS UNIT.

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GOVERNMENT TRANSFEROR PARTICIPANTS

Let us begin by talking about the participants on the government side, the public sector side in the transfer of technology.

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Transparency 11-2: Government Transferor Participants

NOTE: THE TERMS TRANSFEROR AND TRANSFEREE ARE USED IN THIS UNIT AS A CONVENTIONAL WAY OF IDENTIFYING TRANSFER PARTICIPANTS. THE RESERVATIONS ABOUT THESE TERMS EXPRESSED IN UNIT 4 (TECHNOLOGY TRANSFER) SHOULD BE KEPT IN MIND.

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This list is general and by no means complete. Many people will be involved at some time (e.g., personnel), but these are the main participants. Everyone in the organization is fundamentally involved in one way or another in technology transfer, or at least is potentially involved.

The champion is included as an actor because the technology that is available for transfer is usually nurtured and "moved" through the organization by an individual. Working between sectors, a champion is usually required on the supply side (i.e., government), as well as on the demand side (i.e., a firm).

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NOTE: SEE UNIT 5 (KEY IMPLEMENTATION CONCEPTS) ON THE ROLE OF THE CHAMPION.

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The technology manager or the ORTA is the general champion for all technology in the lab with transfer potential, but as a practical matter they can't be champions of every technology. There are too many. One just can't develop the enthusiasm or the knowledge, and it is one

- Disseminating information on Federally owned or originated technology
- Cooperating with and assisting NTIS, FLC, and other Federal technology transfer organizations
- Participating in, stimulating, and facilitating technology transfer efforts in cooperation with regional, state, or local jurisdictions.

On a more informal basis, the ORTA may need to generate the enthusiasm and grassroots support within the laboratory that is critical to effective technology transfer efforts.

Laboratory directors have management decision responsibilities in integrating technology transfer activities into the lab's operations. Without the support of the director, transfer efforts can be difficult if not impossible. The director can best facilitate transfer efforts by clearly defining the lab's policy concerning technology transfer and disseminating the policy to all personnel.

The lab director is the lab's technology manager, with ultimate authority over technological activities concerned with primary mission functions and the secondary mission of technology transfer. The director will need to make final decisions on such things as laboratory strategy with respect to the transfer of technologies and the pursuit, funding, and time and personnel allocations with respect to cooperative R&D agreements.

The director also needs to support ORTA functions and responsibilities with respect to external problems such as those that will be encountered in negotiations with private firms. Regarding laboratory relations with private sector firms, the company's management will want to be assured of the lab director's commitment to the transfer effort.

Attorneys function in several areas: performing patent searches, obtaining patents, and drafting legal agreements such as licenses or cooperative R&D agreements. In some cases, attorneys may be used to negotiate the terms of a license or another legal agreement, but this is not always required. It is perfectly possible to rely on the advice of an attorney, with negotiations conducted by laboratory personnel (e.g., ORTA staff, lab director, champion, or broker).

identified here because it is a growing practice for the private sector to engage brokers or agents to assist in transferring a technology (either in or out of a firm).

And, of course, you have entrepreneurs. In many private sector enterprises (the smaller ones particularly), the champion and the entrepreneur may be the same person. In this case, the first and last element on the list would be the same. This is one of the hallmarks of entrepreneurship in smaller enterprises. Indeed, if the entrepreneur does not become a champion for the technology at some point, it is very likely that the technology will not be exploited successfully, and certainly not fully.

In some cases, it may be that laboratory staff may become entrepreneurs. This can be a very important and effective form of transfer.

There are many parallel channels of professional communication between the public and private sectors such as technical staff, bench scientists, engineers, and legal staff. Professional organizations and meetings can be used by these professionals as forums for technology transfer--as occasions to meet and discuss transfer opportunities.

ORTAs and other laboratory personnel have an enormous responsibility to communicate with their peers as a method of generating technology transfer opportunities. This is essentially a marketing function for laboratories, making people aware of your interest as well as what you have.

We are also talking about communication channels between and among these participants, or actors. In the private sector, communication channels have been created between functions. Comparable formal channels do not generally exist in the public sector to facilitate technology transfer. So, in many cases, coordination of activities and communication may necessarily be informal or may need to be structured.

It is a great challenge to laboratory management (maybe the biggest challenge) to establish communications in channels where government generally does not have an organization or responsibility parallel that to found in the private sector. Otherwise, potential transfers may not occur.

the same time. But, financial institutions do play a role, and often the financing will be crucial to a successful transfer.

Some governmental entities also serve as third-party participants. This category includes such entities as Congress, the Office of Special Trade Representatives, the Office of Science and Technology Policy at the White House, and DOD and the Department of Commerce in their export licensing activities.

Lastly, prominent research universities are also increasing their technology transfer efforts. Joining with universities as partners presents additional technology transfer opportunities for Federal laboratories.

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HOW DO THE PARTICIPANTS FEEL ABOUT THIRD-PARTY PARTICIPANTS? NOTE: IF THE OPTIONAL READING BY FAWCETT HAS BEEN USED, THIS SHOULD SERVE AS A BASIS OF DISCUSSION.

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SEGMENTED INNOVATION

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Transparency 11-5: Multiple Firms in a Single Innovation Process

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Let us now turn our attention to the fact that in the private sector it is possible to have multiple enterprises engaged in a single process of innovation. A hypothetical case is illustrated in this diagram.

With respect to the initial stage of innovation, for example, there are independent inventors, invention companies (companies that do nothing but turn out inventions), and companies that buy patents and other forms of invention and do nothing more than license them to others. In our hypothetical construct of a segmented innovation process, we have assigned the inventive job to Firm A, which is represented by the small box on top.

In the second box--the biggest dotted line box on the chart--we find a second enterprise called Firm B that is engaged in development and production work.

critical for Federal laboratories to provide actors and attendant management structures (formal or informal) that parallel the private sector actors and structures involved in transfer efforts.

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NOTE: INDIVIDUAL FIRMS OFTEN RELY ON EXTERNAL SOURCES TO PROVIDE CERTAIN SEGMENTS, OR COMPONENTS, OF THE INNOVATION PROCESS. FEDERAL LABORATORIES ARE AN OBVIOUS POTENTIAL SOURCE OF MANY OF THE COMPONENTS OF THE PROCESS.

ASK PARTICIPANTS TO IDENTIFY IN THE DIAGRAM THE AREAS (I.E., SMALL BOXES) IN WHICH THE LABORATORY CAN BEST CONTRIBUTE TO THE INNOVATION PROCESS. SHADE THESE AREAS IN WITH A MARKER ON THE TRANSPARENCY.

ASK FOR SUGGESTIONS ON AREAS OUTSIDE THE BOXES THAT CAN BE ADDED. SOME EXAMPLES MIGHT INCLUDE: COOPERATIVE RESEARCH OUTSIDE OF BLOCK "A" THAT LEADS TO CONCEPTION AND INVENTION AND POSSIBLY THROUGH PROTOTYPE; TECHNICAL ASSISTANCE ON A COOPERATIVE ARRANGEMENT IN THE FIRST PRODUCTION PHASE; USER FACILITIES FOR INVENTION, PRELIMINARY ENGINEERING, PROTOTYPE BOXES, ETC.

NOTE: USE THIS EXERCISE TO GENERATE DISCUSSION ABOUT GENERAL AND SPECIFIC OPPORTUNITIES FOR LABORATORIES TO PARTICIPATE.

NOTE: REMOVE THE TRANSPARENCY AND ASK THE PARTICIPANTS WHETHER THEY HAVE ANY FINAL COMMENTS ON ACTORS IN THE CONTEXT OF THE REQUIRED READING BY BRADBURY.

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TRANSPARENCIES FOR UNIT 11

# ACTORS IN THE TRANSFER PROCESS

# GOVERNMENT TRANSFEROR PARTICIPANTS

## DIRECT

- CHAMPION
- BENCH SCIENTIST/ENGINEER
- DEPARTMENT/PROGRAM MANAGER
- ORTA
- LABORATORY DIRECTOR
- ATTORNEYS

## INDIRECT

- AGENCY MANAGEMENT
- U.S. DEPARTMENT OF COMMERCE (Includes CUFT)
- FEDERAL LABORATORY CONSORTIUM

# THIRD-PARTY PARTICIPANTS

- REGULATORS
- BROKERS AND AGENTS
- CONSULTANTS
- FINANCIAL INSTITUTIONS
- OTHER GOVERNMENTAL ENTITIES
  (e.g., Congress, OSTR, OSTP, DOD/DOC Export Licensing)
- UNIVERSITIES

# MULTIPLE FIRMS IN A SINGLE INNOVATION PROCESS