

Establishing and Operating Technology Transfer Offices

Technology transfer is the process of converting scientific findings into useful products or services for society. A complex endeavor, it takes place in the broader context of innovation. Any country or institution can undertake health or agricultural innovation to varying degrees, but some developing countries that are more scientifically advanced are starting to reap the benefits of decades of investments in education, health research infrastructure, manufacturing and production capacity, and regulatory institutions. Increasingly referred to as **innovative developing countries**,¹ these countries are characterized by, among other things, sustained government support for research, the availability of venture capital, functioning regulatory systems, and an ability to partner with local and foreign public and private research organizations. All of this requires sound IP (intellectual property) management, which makes such partnerships more effective and allows technologies to be transferred not just in one direction but in more complex and valuable ways, to benefit more people.

Technology transfer is thus a rewarding process for research-based institutions and the people who make it happen. It leads to new products, services, and jobs. But it is also a multifaceted process with important policy, economic, and managerial ramifications. Discussing these aspects in detail, Nelsen,² who leads the Technology Licensing Office of the

Massachusetts Institute of Technology (M.I.T.) offers practical, timely advice about some of the most important policy and strategy imperatives for an institution starting up a technology transfer office (TTO) or intending to strengthen its current endeavors in technology transfer.

Viable strategies to set up and operate a **TTO must be firmly grounded in realistic economic expectations**. Technology transfer will not really make your university or research institution rich because building a robust technology transfer program will take sustained financial investment. It takes time (eight to ten years) to build an IP portfolio, establish contacts, and develop skills in technology transfer. And it may take up to two decades or more before a university technology transfer program (including entrepreneurial spinouts) substantially affects the local economy. The ultimate impact, however, may be very large—both economically and culturally—for the university, its graduates, and the wider community.

Successfully implementing these plans will require visible and sustained support—fiscal and otherwise—from senior administration to set the program's mission, policies, and priorities. Clear mandates will help technology transfer professionals choose among competing priorities and the ever-present trade-offs between business and academic values. IP ownership policies, the roles of researchers in interactions with industry,

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and other ground rules should be set up before the program begins because conflicts of interest, both real and perceived, are inevitable. For the same reason, clear policies and a well-understood review-and-appeal process need to be put in place early. Finally, **technology transfer is a talent-based business**. It is difficult to find people who can speak the two languages of academia and industry and who also have the creativity to craft agreements that meet the needs of both sides.

The chapter's conclusion discusses some technology transfer pitfalls caused by unrealistic expectations. It emphasizes the role of senior management in the evolution of the culture (which must begin with top-level administration), the need for transparent conflict-of-interest policies, and the importance of sufficient autonomy and infrastructure support for technology transfer officers. A TTO can create many benefits for the university, industry, and the surrounding community, but it requires carefully planned and consistent long-term financial and administrative support. And above all, **it requires TTO officers that are able—and willing—to take risks and university presidents to support them**.

Moving into the particulars of how to establish a TTO, Young³ stresses the importance of a strong mission statement, attention to staffing needs, and to the unique operating contexts of each institution. Based on a lifelong experience in establishing and running TTOs, with a chapter that provides many examples of TTO launches from around the globe (Australia, India, China, Japan, England, South Africa, Russia, and the United States), Young concludes that **efficient and effective TTOs possess the following key characteristics**:

- An articulated mission
- Transparent policies and procedures
- Entrepreneurial staffing and an entrepreneurial environment
- Customer-friendly relations with both internal and external constituents
- A highly supportive university administration and community
- Strong links to potential industry partners
- Access to risk, or venture, capital

Even so, there is no “right” way to set up an office, but success does require considering some specific issues, as discussed by Campbell.⁴ One of these issues is **establishing business processes at the outset**. Adequate attention should be paid to information management and realistically setting budgets. Offices tend to be either a department within the institution or a subsidiary company. Either way, accountability lines will need to be transparent. Like the preceding authors, Campbell also stresses that the **core element for successful technology transfer is people**. The TTO should be led by an individual who understands the details of running a business. It is also useful to have staff with experience working in the relevant business sectors. To be able to recognize new opportunities, the technology transfer manager needs to win the confidence of academics, which is why **it is helpful for the TTO to be embedded within the institution**. Likewise, staff should be exposed to both academics and business people.

Campbell discusses several examples of TTO structures and policies based on her experience in the United Kingdom, in particular King's College London (KCL). She also shares useful lessons from Switzerland's experiences with Unitechra, a subsidiary nonprofit technology transfer company **jointly owned by the two universities of Bern and Zürich**. This model from a small, but highly innovative country (when the number of patents per capita is used as one measurement), is particularly relevant for developing countries with limited resources, where several institutions may consider establishing a joint TTO to ensure economies of scale and critical mass.

Fernandez,⁵ from **Chile**, develops a specific, yet potentially powerful model for establishing or improving technology transfer operations for universities and research institutes within developing countries. The model takes into account several key insights about technology transfer. Namely, there is a critical mass of R&D activity necessary to justify the costs of a fully functioning TTO. Some estimates would put this figure within the range of US\$100 to \$500 million in research expenditures annually. While it is uncommon for a single university within a developing country to attain a financial critical mass, a group of

universities together can attain it relatively easily. In addition, some of the typical functions of technology transfer are more easily scalable than others, and are thus more easily shared by a group of universities.

The model developed in this chapter essentially requires sharing the costs of technology transfer services among a consortium of universities, with an additional startup subsidy provided by government. **A “hub-and-spokes” configuration is proposed, which allows essential policy decisions and scalable functions to be moved to the center and keeps essential context-specific and unscalable functions on campuses at universities.** This also allows for a more efficient distribution of scarce resources and of key personnel who have the necessary skills, allowing a few experienced professionals to selectively, yet effectively, manage and mentor technology transfer staff across a range of institutions.

Fernandez openly points out the challenges of implementing such a model, emphasizing the need for articulated policies to be shared by all consortium members in at least three areas. These areas each represent potential points of real conflict within such multi-institutional systems. The first area is a clear **policy of ownership** that ensures that everyone involved in the process knows who bears ultimate responsibility for a given technology. The second is a clear policy on the **distribution of income** from commercialized technology. Such a policy should provide incentives that will elicit the cooperation and support needed from multiple players in the technology transfer process. This is also important so that realistic financial expectations are established, helping to avoid disputes that could threaten the viability of the system as a whole. The third area regards the **prevention and resolution of conflicts of interest**. Such a policy is important to maintaining the integrity of the university’s main educational and research functions amid increased commercial opportunities, so that any disputes that do arise can be resolved in a systematic and fair manner, likewise protecting the viability of the system.

An important feature of this model is that it does not lock in its participating member institutions; it is **open to competition**. As the economy

grows and member universities’ R&D activities increase, their local TTOs can take on more and more of the functions that had been delegated to the central office. A university would thus be able to “graduate” from the system as its own TTO becomes self-sustaining. Even prior to that, the central TTO may be relied on only if it provides effective management of technology transfer projects that member institutions cannot replicate themselves or obtain elsewhere cost effectively. If the centralized system fails to be competitive, the member institutions can simply elect to manage the commercialization of technologies in their own offices or through other more competitive channels.

Moving into the **organizational aspects** of establishing a TTO, Dodds and Somersalo⁶ review the specific requirements in terms of human infrastructure, physical infrastructure, and operational plans for the office. The latter is essential for defining office protocol for various topics: patents, trademarks, copyrights, and trade secrets; plant variety protection; contracts, agreements, and licenses; policy development; technology evaluation; invention marketing; conflict analysis; negotiation support; and strategy inputs. Importantly, any TTO must **emphasize the importance of confidentiality** in all its operations. Other wide-ranging organizational matters that need to be addressed early include; a coordinated *staffing plan* detailing authority, responsibilities, and work plans; a *staff employment handbook* that explains the ethical standards that employees must follow; a plan for addressing *governmental and state filing requirements*; a *tax plan* (including accounting standards and auditing); considerations to establish an *advisory panel*, and criteria for drawing on *external expertise* (such as consulting contracts, patent attorneys, general legal counsel, licensing specialists, marketing specialists, and database specialists).

The specific **organizational and administrative aspects** of a TTO are discussed by Hines,⁷ based on her experience at Stanford University’s Office of Technology Licensing. This chapter offers similar offices in developing countries a detailed outline of how an office can be structured in terms of personnel and human resources. The

structure consists of a director, seven licensing associates, eight licensing liaisons, one copyright licensing specialist, and the equivalent of eight and one-half administrative staff, in addition to other administrative staff and industrial contracts officers. Much action in such an office revolves around the important technology licensing associates who work with the inventors (professors, graduate students, and research staff) and with prospective licensees. In addition to providing a list of key personnel for a TTO's operation, the chapter also defines, and gives examples of complex cases, job descriptions, and a comprehensive list of standard operating procedures (for licensing agreements and for invention disclosures). Like the other authors in this section, Hines stresses the importance of a well-trained staff.

Continuing and practical training should be an integral part of any TTO's yearly work plan. For this, Pefle and Krattiger⁸ present a few focused case studies that can be incorporated into short courses in IP management. They stress the importance of **hands-on training programs** whereby participants play specific roles within difficult case studies tailor-made to serve the particular needs of the TTO or its staff. Such approaches allow participants to see how a specific professional role can affect the complex process of crafting beneficial and creative partnerships that lead to mutually beneficial solutions. Even for those not involved in deal making, this approach has great utility because it enables participants to view their respective tasks in a broader context, and thereby gain a perspective as to the challenges presented at various stages in the overall process.

Indeed, the **importance of building networks in the technology transfer and licensing community cannot be overstated**. To illustrate this, Hersey⁹ uses the experience of the Association of University Technology Managers (AUTM) as an extended case study of the building of dynamic, productive, and sustainable networks. Her chapter contains numerous lessons applicable anywhere. Networking among peers in any profession is generally understood to be beneficial, as it cements relationships between individual practitioners and helps build and strengthen the profession itself. By working through networks,

practitioners exchange ideas and experiences, forming best practices that become performance standards for both individuals and their institutions. Networks thereby contribute to IP management capacity building at both the individual and institutional levels, and this then feeds back to further support and expands the network.

As groups of like-minded, mission-driven professionals, networks can be formed at different geographical levels in order to serve various functions. This multilevel approach allows organizations to address different aspects of their respective missions. *Local networking* creates opportunities to work with colleagues in the immediate vicinity. *National networking* can be a mechanism for working with colleagues to encourage national legislation addressing intellectual property and technology transfer, as well as for designing and implementing systems for appropriate IP management, training, and education. *Regional networking* provides opportunities to work with neighboring countries in coordinated R&D endeavors and related IP management and technology transfer initiatives. Importantly, *international networking* will become increasingly important as globalization advances. Building networks with colleagues around the world will provide opportunities for many forms of technology transfer and IP management capacity building.

This is particularly relevant in the context of TTOs working with external patent counsel as developing countries increasingly wish to file patents in other jurisdictions. From a licensee point of view, having patent coverage in the more lucrative markets of the United States, Europe, and Japan may be a prerequisite for licensing a technology from a developing country. Similarly, if a patent is drafted poorly or does not provide adequate coverage for the technology, licensing opportunities may either be lost or significantly devalued. The costs associated with inadequately drafted patents can be significant, so it is important for a TTO to carefully select a patent attorney whose work will enhance the institution's prospects for obtaining optimal licensing arrangements.

Goldman¹⁰ reviews the **process of selecting, hiring, and interfacing with patent counsel**. Of course, central to this relationship is ensuring that

patent counsel can prepare and prosecute patent applications in a manner that achieves positive results in a cost-effective fashion. The chapter presents the steps in this complex process, and the responsibilities that both counsel and the TTO should assume. Patent attorneys can also provide general counseling, resolve inventorship issues, provide licensing and agreement support, and resolve disputes. By selecting a qualified patent attorney and developing a good working relationship, a TTO can develop a resource that will ease the workload and facilitate its missions. This choice of patent counsel is therefore essential for operating a viable TTO and should be approached thoughtfully. There are several factors that should be carefully considered and weighed:

- size of the attorney's firm¹¹
- scope of the attorney's legal experience and capabilities
- the attorney's experience with academic institutions
- the attorney's technological background
- the firm's location

After a patent attorney is selected, determining how work will be allocated is important. Generally, the less work that is sent to the attorney, the lower the TTO's legal fees. Still, the more work the TTO retains for itself, the less time its staff will have for other matters. Another critical aspect of the relationship between the patent attorney and the TTO is payment for services. The chapter presents several possible methods and schedules for payment, and also cautions against certain related practices. For example, a letter of retainer can, among other things, specify billing procedures, such as fixed fees, hourly billing rates, and equity combinations. Another feature of the retainer letter will be a specification of the bill content: an acceptable bill will include an indication of which attorney or attorneys worked on a particular project, the amount of time spent daily on that project, and what that work involved. This will make clear the services for which the TTO is being charged.

Dodds¹² considers a broader picture of **how to hire an IP lawyer without going bankrupt**. While the process can be complex and costly,

Dodds outlines various strategies for how TTOs can make the best use of attorneys. He points out the value of retaining an IP attorney, especially when a TTO is just getting established. A critical initial role of the lawyer should be to work closely with the TTO to develop an IP strategy that most effectively delivers benefits to the office. If your TTO strategy is ill conceived, all the remaining activities will be irrelevant.

Any emerging TTO will have a wide range of legal matters to be addressed. These include the types of IP protection to be provided, when to apply trademarks and copyright, how much to rely on trade secrets, the development of contracts and agreements, license reviews, and negotiations support. The lawyer can also be used to think in innovative ways about how to capture value from an IP portfolio.

Importantly, the legal relationship between a lawyer and a client is protected under a special set of legal rules that make up the concepts of **client confidentiality and legal privilege**. This umbrella of confidentiality and legal protection from disclosure is a very important part of the relationship. The importance of confidentiality and trust cannot be underestimated. Such confidentiality requires excellent record keeping.

Indeed, a TTO needs to have a **systematic way of managing agreements and many other forms of data** as the amount of data will increase significantly and year by year. Unfortunately, too many TTOs still try to accomplish this task with a paper filing system, which is cumbersome, slow, and inflexible. Above all, this type of system severely limits the ability to analyze data creatively. Using electronic systems, a manager can rapidly formulate questions that in a physical file environment would be unthinkable, due to the time required to locate, assemble, and analyze the information sets.

Electronic filing systems also provide shared communication links and can utilize advanced spreadsheet applications. The chapter by Sloman¹³ considers **the relative merits of spreadsheets, flat-file databases, and relational databases as TTO data management tools/systems**. It emphasizes the benefits of the latter, highlighting both their ability to transfer entire projects from one

manager to another with the click of a button and their unprecedented power to allow managers to look at data and business models in creative ways. Such a system requires less data entry and can be easier to maintain and audit. For all of these reasons, the relational database is frequently the preferred system.

The sooner a **functional contract management system** is implemented, the easier it will be to keep track of contracts and make the most of them, both for the organization and for its collaborators. Two chapters, one by Hamzaoui¹⁴ and one by Potter and Rynestad¹⁵ discuss the importance, design, and implementation of contract management systems from different, but equally pragmatic perspectives. Hamzaoui bases her chapter on the practices of the Whitehead Institute for Biomedical Research. Both chapters review the specific approaches for actually implementing a contract management system, including:

- accessibility (e.g., hard-copy filing, electronic filing, database systems)
- security (e.g., loss prevention, unauthorized access)
- resources for implementation
- personnel time, training, and management

The value of the proper management of contracts and agreements is usually only seen in its absence—lost deals, a poor reputation and, in the worst case, lawsuits. Early investments to prevent these sorts of problems are like any prophylactic measure and the savings will certainly be substantial.

Graciously, the Whitehead Institute agreed to make available, for free, their proprietary agreement management system, called *WIIPS*[™], through the online version of the *Handbook*.¹⁶ Users can download a fully functional version that they can also modify and adjust to their particular institutional needs. *WIIPS*[™] is a relational database designed to automate essential IP management and technology transfer functions. It simplifies record keeping and generates useful reports for technology disclosures, patent applications, joint invention agreements, licenses, and material transfer agreements. In addition, the system stores essential information on every

inventor, owner, and licensee who has interacted with a given TTO.

Finally, the chapter by Pefile¹⁷ takes a broad view and considers the **mission of a TTO in the context of knowledge transfer**. Indeed, making money will always be a consideration when setting objectives, but technology transfer adds value in other important ways; as a resource to facilitate innovation for the public good and as a way to broker the exchange of knowledge between the business and public sectors for society's benefit. Transferring knowledge across such disciplines as the humanities, law, and social sciences is as important as transferring knowledge and technology across the applied sciences, and TTOs should be set up to have the flexibility to accomplish this broader knowledge-transfer objective.

An effective evaluation system should strengthen an institution's ability to maintain leadership across the frontiers of scientific knowledge. The evaluation system also will stimulate partnerships that promote investments in fundamental science and engineering, as well as the overall more-effective use of physical, human, and financial resources for social and economic benefit. Without a measurement process, institutions cannot justify their efforts in R&D, IP management, commercialization, and technology transfer in relation to their economic and social goals. Finally, Pefile calls upon all TTO managers to take the time to reflect upon their operations and ways in which they can be made more effective and beneficial for all. ■

All chapters refer to: *Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices*. 2007. A Krattiger, RT Mahoney, L Nelsen, JA Thomson, AB Bennett, K Satyanarayana, GD Graff, C Fernandez, and SP Kowalski (eds.). MIHR: Oxford, U.K., and PIPRA: Davis, U.S.A. Available online at www.ipHandbook.org. The online version contains for each chapter a detailed Editor's Summary, Implications, and Best Practices.

- 1 Morel CM, T Acharya, D Broun, A Dang, C Elias, NK Ganguly, CA Gardner, RK Gupta, J Haycock, AD Heher, PT Hotez, HE Kettler, GT Keusch, AF Krattiger, FT Kreutz, S Lall, K Lee, R Mahoney, A Martinez-Palomo, RA Mashelkar, SA Matlin, M Mzimba, J Oehler, FG Ridley, P Senanayake, P Singera and M Yun. 2005. Health Innovation Networks to Help Developing Countries

- Address Neglected Diseases. *Science* 309:401-404.
- 2 Chapter 6.1 by L Nelsen titled Ten Things Heads of Institutions Should Know about Setting Up a Technology Transfer Office, p. 537.
 - 3 Chapter 6.2 by TA Young titled Establishing a Technology Transfer Office, p. 545.
 - 4 Chapter 6.3 by AF Campbell titled How to Set Up a Technology Transfer Office: Experiences from Europe, p. 559.
 - 5 Chapter 6.4 by C Fernandez titled How to Set Up a Technology Transfer System in a Developing Country, p. 567.
 - 6 Chapter 6.5 by J Dodds and S Somersalo titled Practical Considerations for the Establishment of a Technology Transfer Office, p. 575.
 - 7 Chapter For 6.6 by S Hines titled Administration of a Large Technology Transfer Office, p. 581.
 - 8 Chapter 6.7 by S Pefile and A Krattiger titled Training Staff in IP Management, p. 597.
 - 9 Chapter 6.8 by K Hersey titled Building Networks: The National and International Experiences of AUTM, p. 617.
 - 10 Chapter 6.9 by ML Goldman titled How to Select and Work with Patent Counsel, p. 625.
 - 11 Due to its resources and personnel, a large law firm is generally able to handle most legal problems that confront a technology transfer office. On the other hand, smaller firms might have the advantage of lower cost, while still having attorneys with the skills needed to serve the technology transfer office.
 - 12 Chapter 6.10 by J Dodds titled How to Hire an IP Attorney and Not Go Bankrupt, p. 635.
 - 13 Chapter 6.11 RG Sloman titled Technology Transfer Data Management, p. 641.
 - 14 Chapter 6.12 by A Hamzaoui titled WIIPS™: Whitehead Institute Intellectual Property System (A Relational Database for IP Management and Technology Transfer) p. 649.
 - 15 Chapter 6.13 by R Potter and H Rygnestad titled Organizing and Managing Agreements and Contracts, p. 651.
 - 16 www.ipHandbook.org. In order to run the database, users must have access to Microsoft® Access® and a Windows XP (or higher) operating system. Users are authorized to copy and/or modify both the software and its user guide, as long as they acknowledge that the resulting product is based on WIIPS™.
 - 17 Chapter 6.14 by S Pefile titled Monitoring, Evaluating, and Assessing Impact, p. 659.



FOR GOVERNMENT POLICYMAKERS

- ✓ Technology transfer is the process of converting scientific findings into useful products or services for society. Hence **encouraging public institutions and private sector enterprises** to work together is an important element in any national strategy aimed at strengthening innovation.
- ✓ In the increasingly interlinked and globalized worlds of science, technology, and commerce, such collaborations should **extend beyond national borders**, as success will increasingly be measured by the ability to form dynamic, integrated, and mutually beneficial networks that span countries and institutions.
- ✓ Government policies and laws regarding technology transfer ought to be **flexible** so that each institution can shape its approach according to its own culture, mission, and context.
- ✓ Laws regarding **IP ownership** are essential for successful technology transfer.
- ✓ National institutions often require **governmental encouragement and sustained funding** to develop technology transfer offices (TTOs), as well as IP policies (conflict of interest management, allocation of revenues, and so forth).
- ✓ Viable strategies to set up and operate a **TTO must be firmly grounded in realistic economic expectations**. Technology transfer will not make any institution rich because building a robust technology transfer program will take sustained financial investment. It takes time (ten years or more) to build an IP portfolio, establish contacts, and develop skills in technology transfer. And it may take up to two decades or more before a university technology transfer program (including entrepreneurial spinouts) substantially affects the local economy.
- ✓ A certain **critical mass of R&D activity is necessary to justify the costs of a fully functioning TTO**. Some estimates would put this figure within the range of US\$100 to \$500 million in research expenditures annually.
- ✓ Several alternative models to an institutional TTO can be successful. **Costs can be shared among a consortium of universities or research institutions**. Such hub-and-spokes configurations allow essential policy decisions and scalable functions to be moved to the center, while keeping essential context-specific and unscalable functions embedded within individual institutions. This allows for a more efficient distribution of scarce resources and of key personnel who have the necessary skills, allowing a few experienced professionals to selectively, yet effectively, manage and mentor technology transfer staff across multiple institutions.
- ✓ Recognizing that **technology transfer is a talent-based business**, the importance of building networks in the technology transfer and licensing community cannot be overstated. Governments should encourage the creation and operation of national technology transfer associations that concurrently build international linkages.

Given that IP management is heavily context specific, these Key Implications and Best Practices are intended as starting points to be adapted to specific needs and circumstances.



FOR SENIOR MANAGEMENT

(UNIVERSITY PRESIDENT, R&D MANAGER, ETC.)

- ✓ Successfully establishing and operating a technology transfer office (TTO) will require **visible and sustained support—financial and otherwise—from senior administration**, which can set the program’s mission, policies, and priorities. Clear mandates will help technology transfer professionals choose among competing priorities.
- ✓ A TTO can create many benefits for the university, industry, and the surrounding community, but it requires carefully planned and consistent long-term financial and administrative support. And above all, **it requires TTO officers able—and willing—to take risks and senior management to back them.**
- ✓ Efficient and effective TTOs must have an articulated TTO mission, transparent TTO policies and procedures, entrepreneurial staffing and an entrepreneurial environment, customer-friendly relations between TTO staff and internal and external constituents, a **highly supportive administration**, strong TTO links to potential industry partners, and TTO access to risk, or venture, capital.
- ✓ The **core element for successful technology transfer is people.** The TTO should be led by an individual who understands the details of running a business. Additionally, staff members with experience working in the relevant business sector are required.
- ✓ An important factor for a successful TTO is **the institution’s entrepreneurial culture.**
- ✓ Strategies to set up and operate a **TTO must be firmly grounded in realistic economic expectations.** Technology transfer will not make any institution rich because building a robust program will take sustained financial investment. It takes time (ten+ years) to build an IP portfolio, establish contacts, and develop skills in technology transfer.
- ✓ **A critical mass of R&D activity is necessary to justify the costs of a fully functioning TTO.** Some estimates would put this figure within the range of US\$100 to \$500 million in research expenditures annually.
- ✓ Several alternative models to an institutional TTO can be successful. **Costs can be shared among a consortium of universities or research institutions.** Such hub-and-spokes configurations allow essential policy decisions and scalable functions to be moved to the center, while keeping essential context-specific and unscalable functions embedded within individual institutions.
- ✓ Implementing a consortium model of a TTO across institutions presents many challenges. These can be managed with clearly articulated policies of **ownership**, the **distribution of income** from commercialized technology, and mechanisms for the **prevention and resolution of conflicts of interest.**
- ✓ An important feature of this model is to **allow for a certain level of competition**, a locally embedded TTO officer, and an evolution of the model. As the member institution’s R&D activities increase, local TTOs can take on more and more of the functions that had been delegated to the central office.

Given that IP management is heavily context specific, these Key Implications and Best Practices are intended as starting points to be adapted to specific needs and circumstances.



FOR SCIENTISTS

- ✓ Your power to **shape institutional policy** should not be underestimated, especially in the ways that the fruits of your research can be made to increase economic development and benefit humanity.
- ✓ Know your institutional **conflict of interest policy**. Most conflict of interest issues arise when procedures are not properly followed.
- ✓ Work with your TTO to ensure that your institution's **disclosure of information** form is simple and easy for you to use.
- ✓ Understand why you might benefit from **engaging in technology transfer** and what you want to get out of the relationship with the TTO.
- ✓ A national or regional consortium of universities to develop a technology transfer system could be beneficial to you and your colleagues because it would be more cost effective and would have **greater latitude and leverage** in exploiting commercialization opportunities than would a single campus office.
- ✓ Establishing **networks** among colleagues will increase your awareness of opportunities and also help you understand the broader implications of your research.
- ✓ Keep your TTO informed about your networking activities, particularly if there is a possibility of **shared research endeavors**. These collaborative research projects often form the foundation of networks for technology transfer and licensing opportunities.

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FOR TECHNOLOGY TRANSFER OFFICERS

- ✓ You have a duty to ensure that senior management understands that a successful technology transfer office (TTO) requires **visible and sustained support, financial and otherwise**. Work with senior management on the definition of clear mandates that will help you choose among competing priorities and the ever-present trade-offs between business and academic values.
- ✓ Above all, ensure that senior management knows that **it requires TTO officers who are able and willing to take risk and senior management to support you**.
- ✓ Efficient and effective TTOs must have an articulated TTO mission, transparent TTO policies and procedures, entrepreneurial staffing and an entrepreneurial environment, customer-friendly relations between TTO staff and internal and external constituents, a **highly supportive administration**, strong TTO links to potential industry partners, and TTO access to risk, or venture, capital.
- ✓ One of the most important factors for a successful TTO is **the institution's entrepreneurial culture**. This is determined most often by the attitude and degree of support from senior management.
- ✓ A TTO must **emphasize the importance of confidentiality** in all its operations.
- ✓ Any TTO needs to have, from the outset, **a systematic way of managing agreements and many other forms of data** as the amount of data will increase significantly and year by year. The sooner a functional contract-management system is implemented, the easier it will be to keep track of contracts and make the most of them, both for the organization and for its collaborators.
- ✓ The Whitehead Institute's **proprietary agreement management system** (called *WIIPS™*) may constitute a viable software option for emerging and established TTOs. *WIIPS™* **can be downloaded for free** from the online version of the *Handbook*.
- ✓ The importance of continued **hands-on training programs** of TTO staff cannot be overstated.
- ✓ Similarly, the **importance of building networks in the technology transfer and licensing community is critical**. By working through networks, practitioners exchange ideas and experiences, forming best practices that become performance standards for both individuals and their institutions.
- ✓ When **recruiting personnel** to staff your office, consider key qualifications. The importance of having the best professionals working for you cannot be overstated. Staffing can have a significant impact on the success of your office.
- ✓ Any TTO will have a wide range of legal matters to be addressed, and procedures for **working with external patent counsel and general counsel** should be well established. Make sure you are in, and stay in, the driver's seat.

Given that IP management is heavily context specific, these Key Implications and Best Practices are intended as starting points to be adapted to specific needs and circumstances.

