Assessment of Intellectual Property Databases

Prepared by:

Washington Advisory Group

Prepared for:

Intellectual Capital Partnership Program
(ICAPP)
Office of Economic Development
The University System of Georgia

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For the Intellectual Capital Partnership Program (ICAPP)
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Summary

The use of intellectual property (IP) databases varies widely among institutions. IP databases (DB's) have two distinct purposes. One is aimed at IP management for pursuing patent prosecution and information internal to the institution. These DB's are referred to in this report as internal databases. The second purpose for a database is public access and marketing IP for potential commercialization by prospective licensees. These DB's are labeled as external databases.

DB's of both kinds are in wide use by universities and other organizations. Some organizations such as the National Aeronautics and Space Administration (NASA) provide extensive data online for prospective licensees as well as general information about projects and results, through an external database. On the other end of the spectrum, Massachusetts Institute of Technology (MIT) provides almost no information about its inventions. It encourages potential licensees to contact a licensing officer for further information and potential negotiation for a license. This study investigates current practice by universities in managing IP databases of both types including those for use in marketing IP for commercialization. For those people outside the institution, access to external databases is gained almost always through the institution's internet presence or site.

Both internal and external DB's can aid institutions' performance in commercializing research outcomes and inventions by faculty, research staff, and students. This function is recognized widely as a "public good" and catalyzes economic development both locally and regionally, even nationally and worldwide. The critical linkage in commercialization is that from laboratory to market. Universities widely are increasingly recognizing commercialization as a legitimate mission in addition to their classic objectives; namely, education and research. This addition requires unaccustomed attention to patents, copyrights, trademarks, and other intellectual property. This report focuses on the utility of intellectual property databases in commercialization.

The goals of this project are to:

1) Examine current practices of leading technological universities and private organizations in managing IP databases for internal use,
2) Examine the use of publicly available databases including those to be used as marketing tools for licensing inventions and informing potential licensees,
3) Assess the best software tools for both types of databases,
4) Use the findings of 1-3 above to formulate a set of recommendations for the University System of Georgia (USG) and particularly its research universities.

The results of the project indicate that:

1) External databases alone that are focused on licensing have minimal value for licensing prospects, but can have other important effects,
2) The most effective online external databases have a broader mission than licensing, including industrial liaison, fund raising, soliciting sponsored research, and raising the profile of the institution,
3) Available off-the-shelf software packages provide sufficient functionality and flexibility for research university's needs as anticipated at USG, especially for internal databases, but also external databases,
4) NASA provides an interesting role model of how an online external database can stimulate business prospects for USG, and has produced a full-featured software package, Technology Tracking System (*TechTracS*) available online. It is the recommended software for both internal and external databases.

Background and Methodology

WAG has been asked by the USG to investigate IP databases appropriate for managing and marketing IP owned or developed at USG institutions. This investigation is aimed at two matters:

1) The current and future roles of external databases in the licensing and commercialization function at USG institutions,
2) The best practices for internal access and management of IP data,
3) Private sector perceptions of these roles and practices.

Access to external databases from outside the institutions is usually achieved through the World Wide Web. In this context, WAG examined external databases as sources for: informing the public of the benefits of research, attracting industry to partner with USG institutions, and providing data to

legislators and funding agencies indicating the commercial and public value of IP.

In evaluating internal databases, we looked into the best practices of IP offices. These include the data needed and the software packages that address the purpose of the internal database, namely stewardship of IP and research activities. These matters were addressed after consultation with individuals in several universities as outlined below. Also utilized was the experience of WAG consultants who are familiar with corporate practices involving IP.

Information on current practices was gathered through conversations and reviews with leading universities and Government organizations including: Stanford, California Institute of Technology (Cal Tech), MIT, Harvard, Carnegie Mellon, NASA, the National Institutes of Health, and Georgia research institutions. Their websites also were consulted.

There are significant differences in the data made available to prospective licensees in external databases by these institutions. These range from nothing to clear descriptions that are written for non-lawyers. The use of IP data in internal databases has similarities among institutions. All schools are concerned with tracking certain key IP data. There are considerable differences in how universities arrived at their current practices, although the differences in the data available to licensing staff are relatively small.

In examining private reactions to IP databases provided by institutions, WAG conferred with both corporations and venture capital organizations. The latter proved to be much more heavily involved than private corporations. Accordingly, WAG relied on its experience with corporate innovators and concentrated interviews on active venture capitalists. There was little difference between corporate and venture usage of databases as resources for potential licenses.

Recommendations

1) As part of an IP marketing and management effort, IP databases of both types are essential components. However, they must be augmented by other elements designed to attract and inform both potential licensees and managers internal to the university. The USG universities should each adopt their own database software being careful to retain compatibility with the rest of the USG institutions (utilizing the same software would help). The USG should aid the current effort by the Georgia Technology Transfer Group (GTTG; see

Appendix A for description) to establish a compatible system-wide approach. The USG should provide funding of between $350-$500 thousand/year for 3 years to aid this effort.

The GTTG should be recognized by the Chancellor's Office as a vital group leading USG commercialization of research efforts. GTTG should enjoy interaction with representatives of the Chancellor's Office through Academic Affairs and/or the Office of Economic Development. The Chancellor's Office should be represented on the GTTG and should designate an appropriate person to attend its meetings.

2) Recognize that IP operations at universities have a systems aspect with publications playing a central role. The USG institutions should each publish accounts of emerging proprietary technology. All four research institutions have such publications, but all could be expanded and directed toward potential licensees, research sponsors, or other sources of funds. When put on the web, there should be links to invention descriptions, which go beyond the U.S. Patent and Trademark Office (USPTO) entries. (Internal activities including industrial liaison, development office, sponsored research, and technology licensing require such an online publication.) Off-the-shelf software such as NASA's *TechTracS* has features required for operations of USG institutions. NASA makes this software available on request (see Appendix C).

3) Keeping the systems aspect in mind, the USG institutions should devote resources to:
   - Following the contacts and leads of inventors,
   - Satisfying the entrepreneurial desires of inventors and business innovators,
   - General marketing, recognizing that general marketing may be of lesser effectiveness than aiming at targets identified by inventors and innovators,
   - Collaborating with business schools to determine market sizes and accessibility.

4) Cultivate faculty gatekeepers* who are willing to be personal contacts for venture capitalists, investors, and commercial corporate interests. Encourage gatekeepers also to play the role of corporate relations manager. Gatekeepers and relation managers can influence technology decisions within industry. Such decisions could be to

* The term "gatekeeper" is used widely to describe a responsible individual designated to direct outside interests to appropriate inside activities and resources. Relationship managers often serve this purpose but also the specific function of cultivating relationships with designated commercial firms.

relocate a research facility to Georgia, or to fund research, or to make a gift, or to start a company around a license. Engaging research professors with contact persons in industry periodically to build a rapport would serve a major role in generating deals. Consulting with industry (as allowed by university administrations one day a week) has a large secondary value to the university because the professors who consult often gain influence in the firm's decision-making process. A program to promote building relationships is recommended, to be catalyzed by the technology transfer and licensing offices.

5) Adopt best practices that can lead to developing the necessary processes in IP creation and commercialization such as contracting, licensing, and collaboration across all levels of the institution. Develop an institutional memory of research that captures successes, failures, and commercialization outcomes for planning future activities. Also include a technology talent matrix for proposing, planning, and executing research. Such resources are essential in today's competitive world. These should be institutionalized and made available for use in operations and for setting policy.

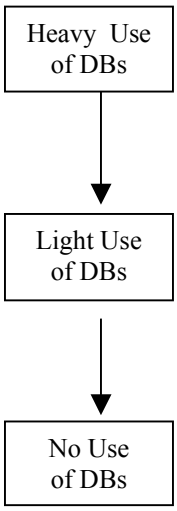
6) Before publishing information on emerging technologies, including publishing on the internet, recognize that publication of technical details and inventions can preclude granting of foreign patents if publication or disclosure precedes the issuing of the patent in the U.S. Legal review should be solicited and provide guidance before an institution publishes information on patents or copyrights.

External Use of IP Databases

There is considerable debate about the utility of external IP databases as indicated by current practices. On one end of the spectrum, NASA provides extensive data on its inventions in database records. In addition, NASA publishes general interest stories about its technology and how it can benefit industry. These online publications involve considerable time, effort and cost because the information provided is much more extensive than simple abstracts of inventions. On the other end of the spectrum is MIT's Technology Licensing Office, which gives no information about available technologies and forces prospective customers to contact a licensing officer. Other leading institutions fall between these extremes. Table I contrasts the content provided and marketing by the different institutions.

TABLE I

Range of External Database Content For Public Online Access



NASA CHOOSES TO INFORM THE PUBLIC WIDELY

- Extensive data about individual inventions
- General interest stories in publications
- Prospective beneficial applications for industry

CAL TECH, STANFORD, AND GEORGIA TECH

- Limited information online
- Some informative publications
- Not comprehensive

MIT CHOOSES NOT TO PUBLISH AN EXTERNAL DATABASE

- No database about inventions available on line
- Contact information only, aimed at Technology Licensing Office (TLO)
- Success achieved hinges on MIT's worldwide reputation and extensive publications (Technology Review, for example)
- Publishes exclusive monthly magazine only for 300 members of Industrial Liaison Program

The following provides detail on external databases for four major research universities and NASA reflecting their current practices. All except one of these have searchable databases online (external databases). Their effectiveness is variable and depends on the design of the access links, database organization, the database content, and the ingenuity of the searcher. The end result of an access attempt by a user should be a contact with the technology licensing office (TLO), supported by a research contact that is competent to advise on scientific or technical matters.

1. **Cal Tech** provides a direct link to "corporate connections" which points to the TLO. They present a database of inventions, but it comes across as a work in progress. The search engine failed in several attempts to find basic information, despite the fact that such inventions were in the database. Only very basic searches like "cancer" yielded any meaningful results. Jet Propulsion Lab (NASA-sponsored) patents were listed, but without any meaningful organization. Significantly, Cal Tech has an online magazine "Forefronts" which provides a good description of hot new areas. Forefronts is published quarterly. Address: http://www.caltech.edu - go to corporate connections link, then to featured technologies or start-ups.

2. **Stanford** – It is not easy to find the IP database from the home page. Searching on "inventions" will lead to useful sites, but most are geared

for internal Stanford use (e.g. disclosures from inventors). The inventions when found, are nicely categorized for easier searching. This feature is particularly useful in the life science fields. The data provided, however, is no more useful than that available on the US Patent and Trademark Office (PTO). Information is limited to that contained in the patent abstract, namely, keywords, inventors, and some diagrams. Stanford online publications do not include one dedicated to new inventions. Stanford's online IP database gives little information beyond what can be found by searching the US PTO. Address: http://otl.stanford.edu.

3. **NASA** – The home page links directly to the NASA Technology Portal, which links to "Commercial Technology." Several publications provide easy-to-understand summaries of NASA innovations. For example, "Tech Briefs" provides summaries of NASA technology that is available for licensing. The Tech Briefs provide useful information for potential licensors, but links to the licensing centers within NASA are lacking. In addition, NASA uses outside organizations, for example, the Center for Technology Commercialization ("CTC") for its "outreach" activities. The CTC home page does not provide a link to licensable technology. Thus NASA fails to capitalize on the potential benefits from having a very well thought out IP database and matching publications. Address: http://www.nasa.gov/ - go to NASA Technology Portal link or http://technology.gov/ - direct link to Technology Portal.

4. **MIT** – There is no easy link from the home page to licensing. Searching by both "inventions" and "licensing" fails to locate the Technology Licensing Office on the first page of matches. Match number 31 was the first that linked to the Technology Licensing Office! The TLO avoids listing inventions. A small list of inventions includes only 2 areas - advanced TV and optical communications. The database uses only the abstract from the patent. The web page tries to drive all interest to the licensing officers. Access to the officers is very difficult because they are almost always busy. Thus cold-call customers are often frustrated and delayed at best. MIT's Industrial Liaison Program publishes the "MIT Report" and sponsors yearly meetings providing updates on MIT technology and ongoing research. This information is very useful in finding technology of interest and pointing companies to potential research sponsorship, but is available only to members of the ILP. Therefore it does not provide general value to potential licensees. Address: http://www.mit.edu.

5. **Georgia Tech**[*] – The home page has a link to "Economic Development." Economic Development has a section dealing with "Latest News" which provides good stories on technology being applied to create jobs and wealth. However, the Economic Development section has no tie to licensing or sponsored research and therefore fails to provide the benefit for IP. Going back to the home page, a search for "inventions" fails to yield the licensing office until accessing 9th link which yields the Georgia Tech Research Corporation (GTRC), the holder of its patents. This link provides information about GTRC and licensing, but has no link to the OTL or an invention list. Prior links to the OTL are secure (for internal use only) and require a password. Thus it is difficult to find the OTL. Going back to the home page for the third time, a search on "technology licensing" yields the OTL and a "technology catalog." But the catalog is no more useful than a US PTO search. Address: http://www.gatech.edu - go to economic development link on home page.

Table 2 provides a rough summary of online database features at the above institutions.

TABLE 2

	CAL TECH	STANFORD	NASA	MIT	GA. TECH
Direct Access	**YES**	**NO**	**YES**	**NO**	**YES**
Effective Search	**NO**	**YES**	**YES**	**NO**	**NO**
Useful Content	**NO**	**NO**	**YES**	**NO**	**YES**
Link to Licensing Office	**YES**	**NO**	**NO**	**NO**	**NO**
Relevant Publications	**YES**	**NO**	**YES**	**YES**	**YES**
Overall Ranking (Existing Database Effectiveness 1-5)	**2**	**4**	**1**	**5**	**3**

Comments and Conclusions About Online External Databases

Among the institutional databases, NASA's IP database probably provides the greatest benefit to a business reader who is searching for licensing opportunities. The general interest articles in Tech Briefs are well written and motivate the reader to want to get to know NASA better. Cal Tech's Forefronts and MIT's Technology Review and MIT Report provide similar motivational material. Business readers of these publications are presented with clearly written descriptions of opportunities and would be inclined to build

[*] Georgia Tech is the only USG research university to have a an external database on line at this time (9/11/02). Others seem to be developing rapidly.

a relationship with the university. Most importantly, these publications provide meaningful information to industrial decision makers.

Nearly all of the actual invention databases (external databases) contain material that could be obtained by searching the US Patent and Trademark Office (PTO). A single search on the US PTO yields inventions from all sources and therefore is potentially more valuable than a search on only one university. However, the US PTO search yields exactly the language that is in the patents e.g. the patent Abstract. This information is not very useful as a marketing tool because most patent applications do not reveal the key economic driver. Business people want to know the size and structure of the market and the value of the patent relative to competitive approaches. This information, too, is difficult to obtain from a patent. However, Tech Briefs and the other publications cited above solve this problem by identifying the market and the economic and technology drivers.

Georgia Tech's "Latest News" in the Economic Development home page is a good first step. The stories are well written and would motivate interest. Latest News does not tie to inventions as NASA's Tech Brief does. However, NASA fails to drive readers to the licensing office even though it couples nicely with inventions.

Many of Georgia Tech's programs would benefit from broadening Latest News to be more like a Tech Brief publication. Areas that could use such a publication include industrial liaison, funded research programs/centers, development/fund-raising efforts and the licensing office. The economic justification is likely driven not by the licensing office, but by the other three activities. It would be a mistake not to tie the database to the licensing office. Clearly, NASA started Tech Briefs for what it perceived as more important reasons than increasing licensing, but it coupled Tech Briefs nicely with inventions (although weakly to the licensing office). MIT's "MIT Report" lacks the integration with the licensing office and therefore few readers would make the jump to think about licensing.

Conclusions

None of the above database systems (external databases) for intellectual property and their licensing are designed to communicate effectively to potential industrial licensees. However, a redesign of access links, search engines, and content along with relevant publications and industrial relations activities, could cure the problems found in WAG's survey.

The overall conclusion is that IP databases in order to be effective must be augmented by publications, industrial liaison programs, and management of

corporate relations (by faculty members as representatives of corporate interests on campus), and links to experts who can provide answers to scientific or technical queries (see Recommendations 1, 2, and 4).

Use of IP Internal Databases

Beyond the external databases referred to above, institutions often have databases for internal management. These internal databases are not ordinarily placed on the public internet, but provide information required for management purposes by licensing and contract staff, as well as other administrators.

Internal databases are often the first effort when an institution begins to catalog its IP. Online access can be added later. However, internal databases are valuable in their own right to monitor processing IP through the USPTO and eventually into the hands of the licensee. The university licensing office requires data on the status of disclosures, patent filings, licenses in force, rights of interested parties, and other matters which define the status of cases involving IP. The financial office has need for information on royalties due, payments owed to inventors, status of research contracts, and other matters. Table 3 lists the most prominent of these relevant data.

TABLE 3

Internal Database Records Required

Patent and copyright filings
Patents granted and copyrights held
Rights held by interested parties
Payments to be made and received
IP available for licensing or sale
Data newly entered into the database
Events management; data specifying contract compliance, IP prosecution, and critical date reminders.

A more extensive listing of features and comparisons of available database systems for internal use are given in Appendices B and C.

Profile of USG Research University Internal Databases for Stewardship

There are four research universities in the USG. All have ambitions to commercialize their research outcomes to provide social and financial benefits to Georgia and the nation. All four intend to utilize databases of both kinds in this pursuit. They see that external databases, are a critical element

for relations with commercial industry. At the moment, however, only Georgia Tech has a well-developed, comprehensive external database, as described earlier in this report. It, too, could benefit from some revisions and augmentation. The section describing Georgia Tech's IP situation is on page 7 of this report. The situation at UGA, MCG, and Georgia State is addressed below. The latter three are focusing on their internal management needs as a prerequisite to further development of their IP and licensing activities.

1. **University of Georgia (UGA) -** UGA has a developed internal IP database used for managing the relevant affairs for UGA. It is not at present a searchable, online database, but such a resource may be created later. However, there are doubts at USG that a external database system will be a viable marketing tool. The issue is being studied. Meanwhile, UGA is considering adopting a system, KSS* (Knowledge Sharing System) based on NASA's TechTracS software. UGA is also considering Deals DB* and its successor, Inteum C/S.

2. **Georgia State University (GSU)** – GSU's efforts in IP are still embryonic, but GSU is quite active. So far, effective efforts are underway to collect and codify the scattered IP-eligible work in entrepreneurial and patentable research at GSU. Results will lead to an internal tracking IP database for effective management purposes, and finally to one that can be accessed by outside interests. These activities are vigorous and progressing: no selection yet made of software for compilation of data or for a searchable database. Selections will be made in due time. Deals DB or its successor Inteum are being considered.

3. **Medical College of Georgia (MCG)** – MCG has begun to catalog its IP, at present primarily to manage patents and other IP related matters. MCG is a member of an informal grouping of patent and licensing officers from Georgia institutions who meet from time-to-time to discuss management and technology transfer matters. MCG is aiming at a standard format for their patent and IP information so that a statewide database can be achieved. This is intended to eventually be a searchable DB and a resource for potential licensees, and can provide a statewide searchable compilation of technologies available in the USG and so can become a marketing tool and information source for interested parties.

* Deals and KSS are commercial products specifically intended for IP management purposes. KSS includes an enabler for data exchange. Details about these and other software systems are presented in Appendix C.

There is an informal group, the Georgia Technology Transfer Group (GTTG)[**], which aims to improve technology transfer and related objectives across the State. GTTG includes UGA, GT, MCG, GSU, Emory, Clark U., and the Center for Disease Control. This group has been considering standards for database entries describing holdings across the Georgia universities and institutions. This objective would permit merging the institutions' databases into a single entity that can be downloaded for use statewide.

Conclusion

This approach, namely merging USG internal DB's, is highly recommended by WAG with the thought that this would be an inexpensive contribution to economic development in Georgia. A suggestion has been made that USG should support this effort at the level of $350-$500 thousand a year divided between the USG institutions for a period of 3 years to accelerate the technology transfer effort. WAG supports this suggestion. See Appendix A for information on GTTG, its composition, and its objectives. Also see Recommendation 1.

The Larger Picture of Complete IP Marketing Resources Including Databases

WAG agrees that in order for databases to be effective, they must be augmented by publications, industrial liaison, and corporate relations managers. That experience points to the central role for "gatekeepers", as entry points for outside commercial interests.

Over the years WAG Principals and their consultant have conducted extensive interviews with entrepreneurs, venture capitalists and intrapreneurs (innovators within larger firms) to determine how they obtained access to intellectual property. These contacts were supplemented with ten interviews conducted for this survey. *Most of the ten people interviewed are venture capitalists who have closed licensing deals with universities within the last two years. These interviews found that none of the ten people have ever searched an intellectual property database. All read extensively about innovations. Publications that were mentioned included: Scientific American, Science, Nature, Technology Review, The MIT Report, NASA's Technology Briefs, and Science News.* One venture capitalist described his business as being a mile wide and an inch deep in technology - with the ability to dig down a 100 yards when examining a potential deal. The venture capitalists that

[**] See Appendix A for description.

focus on biotechnology read Nature, while those whose focus is on telecom, software, and internet read Technology Review.

Venture capitalists however believe in direct contact. They visit universities regularly, and have science advisors (gatekeepers) who lead them to interesting work. When asked where deals were found, over 90% of VC's were referred through personal contacts. These are "gatekeepers" for new venture deals. Typically the gatekeeper is someone who has previously made money for a venture firm on a prior deal and has excellent technology credentials. For example, Prof. Robert Langer, the pioneer of sustained drug release, is on several venture advisory boards and is viewed as the acid test of the quality of technology in much of the biotech field. If Langer is excited about a technology, venture firms will move aggressively to fund the deal. Other gatekeepers include the presidents and chief technology officers of corporations backed by venture investment. Referrals from these people are taken very seriously. Often these presidents and chief technology officers move into venture capital as their next career, (e.g. Vinod Khosla at Kleiner Perkins and William Kaiser at Graylock both moved from venture-funded operating companies; namely, Sun Microsystems and Apollo, to the venture fund).

There are gatekeepers inside corporations as well, often lodged in research and development, or technology centers. Most ideas brought into a firm from the outside are filtered by a small number of people. These people are often senior technologists who have prior success for the firm and fill the role of gatekeeper. Gatekeepers are characterized by both extensive reading about trends in technology and personal contacts with the leaders in relevant technology fields. Thus they behave similarly to venture capitalists.

Conclusion (see Recommendations 2 and 4)

A prime conclusion from these observations is that personal contacts and the general scientific literature play a more critical role in commercialization than invention databases. However, there could be a chicken and egg problem here because WAG was unable to find a university with an excellent, "compleat" external IP database. So marketing IP is a complex process involving databases augmented by the other tools which have been mentioned. A list in order of importance is tabulated in Table 4. None of these should be ignored.

TABLE 4

UNIVERSITY-PROVIDED TOOLS TO ENCOURAGE COMMERCIALIZATION OF IP
(in order of importance)

1. Publications devoted to new inventions and technology
2. Faculty corporate-relations managers who make regular industrial contacts
3. Regular contacts with financial and corporate gatekeepers (venture capitalists, corporate technologists, well-read experts, personal contacts)
4. Invention Databases Online (external databases) with well designed access and significant content beyond that available online from USPTO.

Best Practices

IP licensing often spins out of personal connections and trust through industrial contacts of inventors or faculty members. If a professor is a consultant to a company, that company will tend to give greater value to the professor's inventions. Similarly, companies that fund research at the university have built personal trust with certain faculty members. The best practices among licensing officers includes using the connections of the faculty/inventors to find and contact targets for license agreements.

Inventors from the institution itself can become customers for licensing. Many university technologies are suitable for startup companies, and faculty or student inventors are usually involved in the creation of these start ups. The most effective licensing officers often develop connections with the venture capital community and financial "angels" to support entrepreneurial activities of the faculty and staff.

If licensing offices are to optimize the performance of marketing investments, they should devote resources

1. to following the contacts and leads of the inventors,

2. to examining the entrepreneurial desires of inventors

3. to general marketing of inventions.

4. to join with schools of management or business to identify fertile markets for inventions and their supporting IP.

Institutions may conclude that the third activity is too low on the priority list and resources are too scarce to invest in general, non-targeted marketing using databases which must continuously be updated. Furthermore, many licensing officers say that much of their licensing occurs before patents have issued. Premature publishing of a database of inventions risks giving away information that could damage foreign patent filings. So publishing an IP database on the internet risks diminishing the value of the intellectual property unless care is taken to publish only after patents have been issued in the U.S.

Best and most appropriate practices, including the sharing of meaningful information through the use of database tools have begun to emerge. Among the organizations effectively managing large amounts of intellectual property data in a collaborative manner are the National Institute of Health and Carnegie Mellon University. These institutions are employing knowledge management and collaborative workflow to deliver improved intellectual property management results to multiple constituencies. In the process, control of crucial data elements has been enhanced.

As competition for research increases, two emerging trends and resulting best practices have become clear. The development of an institutional memory of research efforts that captures successes, failures, and commercialization outcomes is now essential to the enterprise. A logical follow-on to the institutional research memory is a scientific talent matrix for marketing, proposals, and collaborative research efforts. Those institutions that effectively compete are employing tools to out-manage the competition. *These tools and resources should be institutionalized and made available for use in operations and for setting policy*

The evolving needs of intellectual property management indicate the requirement that any tool, for example an institutional memory, be adaptable to changing business needs and if possible containable in a single database platform. Such a structure, emerging as a best practice, allows for greater quality control and fewer inconsistencies or potential for disruptions during inevitable growth and change..

A final best practice is rapid access to data from multiple locations, along with robust query and reporting capabilities that allow intellectual property management professionals to respond immediately to breaking situations and information needs.

Conclusion

In summary the off-the-shelf databases provide a significant head start, but do not provide 100% of the functionality needed by the typical licensing office. A program developed by NASA, TechTracS, comes the closest to needed functionality (see Recommendations 4, 5,and 6).

Appendix A

Georgia Technology Transfer Group

An informal organization consisting of the Technology Transfer Directors at the Georgia Research Universities*

Objective:

- Enhance the efficiency and effectiveness of each office and the state's efforts at economic development through improved communication, sharing of experiences, and coordination of initiatives and programs
- Function as a convenient mechanism for the dissemination of information related to intellectual property and commercialization
- Serve as a resource on technology transfer issues for USG institutions without a formal technology transfer office

Format: The consortium meets 2 to 3 times per year at locations around the state (each office hosts a meeting at their convenience). A meeting of 2-3 hours includes updates on each program, news from the state (GRA, ATDC, ICAPP, SBIR, TDCs, DITT, etc), news from a national perspective (LES, AUTM, etc.), questions to the membership regarding challenges and opportunities, and a tour of the host facility.

Possible Goals:

- A statewide "Technology Available Catalog"
- Consideration of a regional AUTM meeting in GA
- Enhancing visibility of GA as a generator of technology
- Common website with linkages to each organization

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October 30, 2001

***Georgia Institute of Technology**
***Georgia State University**
***Medical College of Georgia**
and
***University of Georgia**

***Clark Atlanta University**
***Emory University**
***Potential additions, for example, Mercer**

Morehouse Medical

Georgia Research Institution's Technology Transfer Officers
And Founding Members of
Georgia Technology Transfer Group ("GTTG")

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Appendix B

MANAGING THE IP AND LICENSING OFFICE AND SOFTWARE TO SUPPORT INTERNAL DATABASE FUNCTIONS.

Database Elements and Structure

Review of the appropriate database structure and elements has indicated a trend in technology transfer (and intellectual property management) organizations toward a robust collaborative structure based upon relational elements that allow uniform data access across an anticipated intellectual property life cycle. Information being managed and data being tracked in technology transfer can be broken up into logical life-cycle elements with basic data field indications that include, but are not limited to the following:

-Sponsored Research Knowledge Base

Sponsor ID
Sponsor Percentage
Sponsor Notification
Sponsor Election
Sponsor Project Number
Funding Type
Funding Percentage

Various organizations have included fields that allow for tracking of sponsor decisions including indication to pursue or decline patent protection, and the whether they accept or decline license rights. Management of CRADA (cooperative research and development agreements) and MTA's (materials transfer agreements) should also be included in this module functionality.

-Disclosure Management

Invention ID
Invention Type
Inventor (including Inventor %)
Open Date
Closed Date
Publication Date
Invention Description
Invention Title
Oral Disclosure Date
Technology Transfer Officer (primary)
Technology Transfer Officer (secondary)
Invention Attorney
Invention Law Firm

Other organization data elements may be included in disclosure management that conforms to the business rules and requirements of the specific institution.

-IP Prosecution Management

IP Status
IP Category (patent, copyright, trademark)
IP Serial Number
IP File Date
IP Type (foreign or domestic)
IP Reference Number
IP Title
IP Patent Number
IP Issue Date
IP Expiration Date
IP Registration Number
IP Territory
Country
Reference Numbers
    U.S. Serial
    U.S. Patent
Designated Countries
International Class
U.S. Class
Priority Date
Joint Owner

-License Agreement Management

Agreement Number
Effective Date
Termination Date
Licensee
IP Number (s)
Field of Use
Geographic Territory
Due Diligence Terms
    Financial
    Non-Financial

-Financial Management

Drawing from data elements contained in Disclosure, IP Management, and License Management, organizations are effectively managing all financial aspects of the organization. Accounts payable, accounts receivable and royalty share calculations are among the functions performed by the technology transfer offices. Most offices also demand detailed tracking and attribution of patent prosecution and marketing costs.

-Contacts Coordination and Management

It is generally found that marketing and associated contacts coordination are requirements of a technology transfer management system. This allows the

technology transfer professionals to share contact information in a collaborative manner, as well as manage their own due diligence and marketing matters.

-Reports Management

A robust intellectual property management system must contain a standard reports management function that can be readily adapted to suit the business needs of the office. Since intellectual property management and technology transfer efforts have multiple constituencies and at times unforeseen demands for information the report function must also necessarily contain an intuitive ad-hoc report construction capability. Reporting information regarding patent prosecution, licensing efforts and success metrics, among others must be part of the functionality of any good system.

-Search Capabilities

Simple and complex search capabilities should be incorporated as part of an intellectual property management system. Simple keyword searches along with more complex Boolean searches are imperative functions that will allow immediate access to data without the necessity of report construction. Such capabilities allow for precise location of data when deadlines or constituency demands dictate.

-Events Management

Reminders of relevant dates that allow for prompt follow-up must be included in the management system. The events management module should allow for proper monitoring of patent prosecution and contain automated reminders of the crucial dates. Complete detailed docket information can be contained in stand-alone programs such as CPA, with data populated to a contacts coordination format. Additionally, marketing and contacts due diligence reminders should be contained in the system that will allow for complex collaborative management of intellectual property matters.

-Email, and Attachment Management

Provision for the inclusion of attachments such as email correspondence, drawings and data files are essential to intellectual property management and must be present in any good system. Access to these documents should be incorporated across the database module functions and allow for inclusion in each segment.

-General Capabilities

The ability to customize the application to fit business rules of the organization should be considered an essential element of any intellectual property management system. In addition, many organizations find that web access for an increasingly mobile workforce an important feature.

However, by far the most important non-core function that an intellectual property database is called upon to provide is as a core competency or expertise listing when attracting sponsored or collaborative research funding. In essence, the data become a qualifications summary for the scientific personnel of the institution.

Finally, some institutions find inclusion of publishing or marketing a useful extension of the intellectual property management system.

Appendix C

Intellectual Property Management Systems

1. Database Access Needs

   Distributed access, application of rules and roles and secure access on a needs basis to read and write to the database are basic requirements of any multi-user intellectual property management system. It is also important that the database allow access to information by inventors, institution executives and concerned individuals to the process. Since much of the research and resulting innovation are as a result of sponsored research this entails access to data, usually in the form of standardized reports, by outside organizations. Proper construction of firewalls containing sensitive information, the establishment of anti-intrusion mechanisms and the development of data release protocols are absolutes in intellectual property management.

2. Database Options

   In house developed systems include those being used at Stanford University, Harvard University Columbia University and M.I.T. Each of these offices undertook customized systems development because there were no good alternatives on the market at the time when database management became a crucial issue. Each office was able to bring to bear substantial resources from within the university and through external developers. In addition, these organizations committed to supporting and upgrading the core application from internal resources. Clearly, such a commitment of time and resources is not appropriate for all organizations, particularly those with a distributed campus system. In these circumstances a scalable and supportable off the shelf product would appear to be the better choice. Current full featured intellectual property management packages on the market provide much of the custom built capabilities and also shift the burden of support and upgrade outside of the institution.

   Five different Property Managements Systems were reviewed. These systems were:

   InfoEd
   D.E.A.L.S.
   A.I.M.S. Pro
   TechTracS
   IpMaster

   The following describes background and user information plus contact information for each.

InfoEd (http://www.infoed.org/links.stm) was developed at the Research Foundation of State University of New York in 1991. InfoEd indicates that they provide more than 11 modules that take clients from the investigation of funding sources through technology transfer and clinical trials. The company lists the following modules: Proposal Development, Proposal Tracking, Human Subjects, Lab Animals, Hazardous Materials, Protocol Development, Project Management, Technology Transfer, Clinical Trials Management and SPINPlus, which includes SPIN funding opportunities, GENIUS ™ global profiles and SMARTS ™, InfoEd's matching "alert" service.

It has been generally found that current clients lack effective capability to query the database, share information collaboratively, produce useful reports, manage financials concisely, or monitor marketing efforts.

D.E.A.L.S. (http://inteum.com/) is a relational information management system for the management of intellectual property and technology licensing. Inteum indicates that the features of the D.E.A.L.S. database include:

- Contacts
- Technologies
- Companies
- Patent Prosecution
- Patent Docketing
- Agreements
- Revenue Tracking and Asset Management
- Cooperative Research and Development Agreements
- Expenses
- Reimbursements
- Invention Reporting
- License Compliance

Inteum offers a full range of products and services, from on-site training to comprehensive report libraries with more than 170 fully documented Management Reports that can be used as-is or customized.

In the past distributed access to data has been a problem with the D.E.A.L.S. package as has been the management of financials and the ability to construct reports or query the data in a real-time fashion. However, the company has indicated that the new Inteum C/S product offering will address many of these issues.

However, there does not appear at present to be sufficient product experience to verify the added functionality. In addition, D.E.A.L.S. does not appear to have a direct capacity to develop an expertise listing across the enterprise.

A.I.M.S. Pro (http://www.knowligent.com) Knowligent was founded in 1996 by researchers at Cambridge University to perform research and training in management of technology innovation. According to company information the product provides a modular IP-life cycle approach to the management of intellectual property and has recently added new capabilities to its product offering. Beginning with the original license management core product, AimsPro, Knowligent now offers other management modules under the product umbrella "innovation portfolio". These modules are:

-*Research Portfolio* offers access and management of intellectual property in portfolio groupings. The module allows evaluation and tracking of intellectual property progress.

-*Innovation Portfolio* provides electronic document, text and voice notes management that can be included with each intellectual property record throughout the system. It is through the *Innovation Portfolio* that Knowligent allows for the association of invention disclosures, patent prosecution, and agreements monitoring. According to the company, this module also allows for contacts and accounts management.

-*Research Notebook* provides distributed electronic documentation for researchers and teams that make intellectual property elements transparent across the enterprise according to the Knowligent product representations.

-*Electronic Witness* provides for remote witness and certification for the purpose of securing intellectual property within the enterprise and in conjunction with the *Research Notebook*.

Finally, the company has begun work on an intellectual property blue book (ipbluebook) that will allow for simple valuation of intellectual property.

While it would appear that Knowligent has good life cycle product inclusion, some of the elements do not, at present, appear to be fully functional.

TechTracS (http://www.knowledgesharing.com) The Technology Tracking System (TechTracS) was developed at NASA and appears to be the most fully functional intellectual property package on the market. Company information indicates the following product features:

- Disclosure Management
- Patent Management
- Agreement Management
- Financial Management
- Marketing leads processing
- Commercialization activities
- Reports Management
- Events Management
- Partnerships tracking and processing
- Awards
- Success story processing
- Metrics collection and reporting
- Calendar Management
- Attachment Management
- Expertise Matrix

The approach to intellectual property management is from a knowledge-sharing perspective, across the entire intellectual property life cycle. The purpose of a knowledge sharing system is to convert individual or local knowledge into enterprise knowledge that can be easily managed and effectively utilized to achieve an organization's strategic goals. Influenced by its association with NASA, the package functionality begins with the proper capture of sponsored research elements at one end of the spectrum and allows for the publishing of intellectual property for licensing to online listings or other organization specific commercialization platforms at the other end of the spectrum.

At each level of the TechTracS package the client is able to customize functionality to suit business rules and requirements utilizing the process automation manager. In addition TechTracS allows for web-based functionality and synchronization with ODBC compliant databases including Oracle, Sybase, MS SQL and People Soft. Therefore the ability to interface with other necessary and legacy applications in an institutional setting is greatly enhanced.

Multi-tiered data access and security are built in elements to the TechTracS product and allow for a scalable installation to a multi institutional site and workflow architecture.

TechTracS is currently developing an Oracle based version of their product that will place them in direct compatibility with the major relational database provider.

IpMaster (http://www.masdata.com/)

IpMaster is a product of Master Data Center, Inc. Master Data is the premier provider of intellectual property software in the world. The primary focus of the software offering is the patent and trademark docketing module IpMaster. *IpMaster*'s principal function is to track intellectual property and docket events through a standard database interface. Rules associated with the database comply with intellectual property laws of the various countries and treaties around the world. The product also allows for customization including scripting. The client may construct both standard reports utilizing a "click-and-run" forms based reporting tool and ad-hoc SQL reports queries to the data. IpMaster has an automated annuity payment feature, which is an essential part of *IpMaster*'s appeal.

IpMaster is capable of complex records management, employing client data objects, business logic and data access objects. This then allows for multi-tier data access.

Optional features of IpMaster include Web Access, IP Forms, Invention Disclosure Module, Annuity Budgeting Module and General IP Matters. Contained under the General IP Matters feature, the company indicates that the customer may customize module to keep track of such matters as conflicts (infringement, oppositions), licenses/agreements, litigation and project management.

While IpMaster contains many of the features that a full life-cycle product would require, the primary focus is upon the docketing and automatic annuity payment functions. Much of the real business of technology transfer and licensing, including collaborative work, is contained under the "General IP Matters" heading and requires much investment in time to design and customize rules and functions to fit the organization. There does not appear to be any real capability to manage attachments or to incorporate marketing efforts and calendar functions, nor any robust consideration of financial management beyond annuity budgeting and payments.