State Sponsored Innovation Assistance Programs

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I. INTRODUCTION

This report is designed to provide background education on innovation assistance programs. The primary focus of the report is on state programs that encourage and assist innovation. Federal and private programs will be examined in Section II to the extent that such programs provide innovation assistance services. The information in this section will be reexamined in Sections III and IV to explore how a state sponsored program can take advantage of existing federal and private programs to better serve their clientele.

Section III will examine the various methods a state can use to assist inventors through the innovation process. This portion of the report will not examine these programs in any specific embodiment, but will examine them conceptually. Section IV will examine the few significant existing state programs that assist inventors in the innovation process. Each of these state programs use a different methodology to help their clients. These programs will be examined to see how their methods assist innovators. The focus will be on the merits and problems of each

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program.

Throughout this report, the term innovation will be used frequently. Innovation is defined as the process of taking an idea from conception to commercialization. Invention is defined as the conception of a new idea. Most sources agree that inventors do not have a problem with the invention or conception aspect of innovation.[2] Instead, where most inventors have problems are in the stages of innovation after conception.[3] All innovation assistance programs focus on helping the inventor through the entire innovation process, not merely the invention process. The means they have chosen to solve this problem varies with every state program. While several states call their program an Inventors' Assistance Program, they would be more accurately titled Innovation Assistance Programs.

One inherent problem in analyzing innovation assistance programs is measuring their success. The innovative process is subject to numerous variables that are beyond the control of the innovator and an innovation assistance program. To measure the success of a program, the impossible task of accounting for these variables must be accomplished. Consequently, measuring the success of an innovation assistance program does not seem

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[2]See e.g. State of Oklahoma, Inventors Assistance Program Annual Report, 3 (1991).

[3]Id.

possible through the use of empirical data.[4] Throughout this report, I have reported each program's assessment of their own successes and failures using their criteria. I have not attempted to provide any independent or empirical measurement of success.

Since this report is designed to provide information on the various forms of innovation assistance, it attempts to remain neutral in its approach. This report is not intended to lobby for any particular form of innovation assistance over any other form. It will detail the perceived advantages and drawbacks of each plan and program. The basic premise of the report is that an innovation assistance program can be a valuable asset for a state. At the time this report was being prepared, another party was drafting proposed legislation for an Inventors' Assistance Act for submission to the New Hampshire Legislature. This report has attempted to be as uninfluenced as possible by the contents of the proposed legislation.

II. FEDERAL AND PRIVATE PROGRAMS

A. FEDERAL PROGRAMS

The federal government provides grant funding for business to research and commercialize new products. The primary program that provides funding for small businesses is the Small Business Innovation Research (SBIR) program. The Department of Energy

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[4]See e.g. Bernard, State Inventor Assistance Organizations and Patents Issued: No Correlation Yet, 21 Inventor Assistance Program News 1 (1991).

also sponsors the Energy-Related Inventions Program (ERIP) that provides services and some grant funding to independent inventors and small businesses. This section will analyze both of these programs to examine their advantages and limitations.

Congress has recently reauthorized the SBIR Program.[5] This program requires agencies of the federal government with extramural research and development budgets in excess of $100,000,000 to allocate a fixed percentage of their research and development budgets for awards to small businesses.[6] The SBIR program provides the lion's share of federal research money for small businesses. Within the SBIR program, the Department of Defense provides nearly half the grant funding available.[7] Grant funding is available in a variety of technology areas, with information processing, biotechnology and optical/laser technology being the most highly funded.[8]

SBIR grants are awarded after a competitive grant process.[9] Those agencies that participate in the program publish a

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[5]PL 102-564, to be codified at 15 U.S.C.A. § 638.

[6]For purposes of the SBIR program, a small business is one that employs fewer than 500 employees. 13 C.F.R. § 121.120(2)(a) (1992).

[7]Based upon data presented in Office of Innovation, Research and Technology, Small Business Innovation Development Act 1992 Annual Report, 10 (1992).

[8]Office of Innovation, Research and Technology, Small Business Innovation Development Act 1992 Annual Report, 35-44 (1992).

[9]15 U.S.C.A. § 638(K) (West Supp. 1992).

solicitation listing topics for which they require research.[10] The agencies then solicit proposals from small business for phase I funding.[11]

Phase I research is designed to examine the technical feasibility of the research and is scheduled to last up to six months.[12] The maximum phase I funding was increased from $50,000 to $100,000 in the reauthorization.[13] If the phase I research is completed successfully, the agency will accept a proposal from the phase I awardee for phase II funding.[14] Only 40% of phase II applicants receive funding for continued research.[15]

Phase II funding is for continuing research, but the focus of the research begins to shift to prototype development and commercial market assessment.[16] The gap between the end of phase I and the beginning of phase II funding is between four

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[10]15 U.S.C.A. § 638(g)(2) (West Supp. 1992).

[11]PL 102-564 § 103(d), to be codified at 15 U.S.C.A. § 638(g)(4).

[12]15 U.S.C.A. § 638(e)(3)(A) (West Supp. 1992).

[13]PL 102-564 § 103(f)(4), to be codified at 15 U.S.C.A. § 638(j)(2)(D).

[14]PL 103-564 § 103(a)(2), to be codified at 15 U.S.C.A. § 638(e)(4)(B).

[15]Office of Innovation, Research and Technology, Small Business Innovation Development Act 1992 Annual Report, 13 (1992).

[16]PL 103-564 § 103(a)(2), to be codified at 15 U.S.C.A. § 638(e)(4)(B).

months and a year.[17] The maximum phase II funding has been increased from $500,000 to $750,000 with the reauthorization.[18] The phase II award normally lasts up to two years.[19]

One of the goals of the SBIR program is the commercialization of the funded research.[20] Commercialization is intended to occur during phase III of the project.[21] The SBIR program does not supply any funding for phase III, instead, the funding is expected to come from non-SBIR sources.[22] If a company has managed to bring their research into phase III, the government believes that the concept is sufficiently developed to be financed by traditional sources of venture capital. Between one quarter and one third of all phase II awardees achieve commercial sales within six years of receiving phase II funding.[23]

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[17]Lecture by Ann Eskesen, President of Innovation Development Institute, at New Hampshire Small Business Development Center SBIR Conference (December 2, 1992).

[18]PL 102-564 § 103(f)(4), to be codified at 15 U.S.C.A. § 638(j)(2)(D).

[19]Office of Innovation, Research and Technology, Small Business Innovation Development Act 1992 Annual Report, 8 (1992).

[20]PL-564 §§ 102(a)(5)-(6), PL 97-219 § 102(b)(4).

[21]PL 102-564 § 103(a)(2), to be codified at 15 U.S.C.A. § 638(e)(4)(C).

[22]Id.

[23]Office of Innovation, Research and Technology, Small Business Innovation Development Act 1992 Annual Report, 6, 17 (1992). The actual number of companies achieving commercial sales is not accurately known due to differences in survey techniques and definitions used in the two surveys that collected this data. Id. at 17.

The current percentage of extramural research funding allocated to the SBIR program is 1.5%.[24] The percentage will increase to 2% in fiscal year 1995,[25] and to 2.5% in fiscal year 1997.[26] The current reauthorization expires in the year 2000.[27] In fiscal year 1992, the total pool of SBIR funds available is 440 million dollars.[28] This will rise to 1.2 Billion dollars by fiscal year 1997.[29]

The SBIR program is coordinated by the Small Business Administration.[30]

Another, smaller federal program exists to provide assistance to innovators and small businesses. The Department of Energy (DOE) in cooperation with the Department of Commerce provides services and funding for development of non-nuclear energy related innovation through the Energy-Related Inventions

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[24]PL 102-564 §103(b), to be codified at 15 U.S.C.A. § 638(f)(1)(A).

[25]PL 102-564 §103(b), to be codified at 15 U.S.C.A. § 638(f)(1)(B).

[26]PL 102-564 §103(b), to be codified at 15 U.S.C.A. § 638(f)(1)(B).

[27]PL 102-564 §104(b), to be codified at 15 U.S.C.A. § 638(m).

[28]Lecture by Ann Eskesen, President of Innovation Development Institute, at New Hampshire Small Business Development Center SBIR Conference (December 2, 1992).

[29]Id.

[30]15 U.S.C.A. § 638(b) (West 1976 & Supp. I 1992).

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Program (ERIP).[31]

ERIP provides free invention evaluation services through the Office of Technology Evaluation and Assessment at the National Institute of Standards and Technology (NIST).[32] The only prerequisite to an evaluation is that the submitted invention must have a non-nuclear energy related impact.[33] The evaluation analyzes both the commercial prospects of the invention as well as technical feasibility.[34] The program does allow the inventor to reply to a negative evaluation and even change the invention and resubmit their invention.[35]

If the invention receives a positive evaluation, the invention is recommended to DOE for possible financial support through a DOE grant or other forms of support.[36] Several inventors have successfully used a favorable NIST report to

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[31]Hayes, DOE Inventor, 29 Inventor Assistance Program News 12 (1992); Department of Energy, Programs in Energy Conservation: Inventions and Innovation Programs (1989).

[32]Hayes, DOE Inventor, 29 Inventor Assistance Program News 12 (1992); Department of Energy, Programs in Energy Conservation: Inventions and Innovation Programs 2 (1989).

[33]Hayes, DOE Inventor, 29 Inventor Assistance Program News 12 (1992); Department of Energy, Programs in Energy Conservation: Inventions and Innovation Programs 2 (1989).

[34]Hayes, DOE Inventor, 29 Inventor Assistance Program News 12 (1992); Department of Energy, Programs in Energy Conservation: Inventions and Innovation Programs 2 (1989).

[35]Hayes, DOE Inventor, 29 Inventor Assistance Program News 12 (1992); Department of Energy, Programs in Energy Conservation: Inventions and Innovation Programs 2 (1989).

[36]Hayes, DOE Inventor, 29 Inventor Assistance Program News 12 (1992); Department of Energy, Programs in Energy Conservation: Inventions and Innovation Programs 3 (1989).

obtain outside sources of venture capital instead of DOE grant funding.[37] This is an indication of the credibility that a NIST evaluation can provide an inventor.

The main advantages of an ERIP evaluation are that it is free and may lead to federal grant funding. The major disadvantage of ERIP is that the program is limited to energy related inventions. In addition, if the federal funding is used by the innovator to reduce the invention to practice, the federal government will receive a non-transferable, royalty free, non-exclusive license in the technology.[38]

B. PRIVATE PROGRAMS - INVENTION EVALUATION SERVICES

The only significant, non-profit, private programs that provide innovation assistance are invention evaluation services. These programs will first be examined conceptually to study how they operate. For-profit invention evaluation and invention promotion services will also be examined and compared to the non-profit programs. Specific non-profit programs will also be examined to show how different programs operate.

There are several non-profit innovation evaluation services available. These programs often have close connections with a university or are a university program. The methodology of these evaluation programs is that a panel of independent evaluators

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[37]Department of Energy, Programs in Energy Conservation: Inventions and Innovation Programs 3 (1989).

[38]35 U.S.C.S. 201 et. seq. (1982).

will analyze submissions based upon a variety of criteria.[39] The criteria are focused on issues relating to the commercialization process and marketing.[40] Normally, the evaluators are volunteers, which lowers the costs of the program. Doctor Gerald Udell developed an evaluation system while at the Experimental Center for the Advancement of Invention and Innovation at the University of Oregon that is now widely used. A monograph describing Dr. Udell's system is included in Appendix C as an example of an evaluation system.

These programs are normally partially financed by government or corporate sources, with the remainder of the costs paid by the program's clients. The normal fee for an evaluation is around $150.[41] An evaluation can normally be done in three to six months.[42] Two invention evaluation services will be discussed in detail later in this section as they are illustrative of how these programs operate. The evaluation provided by the Energy-Related Inventions Program of the Department of Energy was discussed above.

There are many private, for-profit, invention evaluation and marketing firms. These firms claim to evaluate an inventor's idea and if the idea appears feasible, they will attempt to

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[39]G. Udell, K. Baker, & M. O'Neill, Guide to Invention and Innovation Evaluation (1977) (Found in Appendix C).

[40]Id. at 2.

[41]See generally articles in 24 Inventor Assistance Program News 1-8 (1991).

[42]Id.

market the idea to businesses that are potentially interested in the idea.[43] The idea is often deemed to have merit by these companies (regardless of actual merit) and high up-front fees are charged by the company to solicit potential licensors.[44] The success rates are exceedingly low and the services provided (such as an evaluation and perhaps a patent search) are rarely worth the initial fee.[45] The result is usually an unhappy (and poorer) inventor. As a result, these businesses have acquired a very poor reputation for integrity.[46]

These companies target independent inventors since they frequently need the services the companies purport to provide.[47] The inventors are also the people who are least able to guard against abuses by commercial invention brokers.[48] Several states have enacted legislation governing commercial invention brokers designed to curb the abuses of these companies.[49]

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[43]Jake Ward, Beware of the Scam, The Maine Idea, Vol 2, No. 2. p.1 (1991).

[44]Id. at 1-2.

[45]Id. at 2.

[46]One cannot say that every commercial invention broker engages in deceptive practices, however, their reputation as a group certainly poor. See Hofmeister, Dream Weavers, Venture, p. 48 (October 1988); Jake Ward Beware of the Scam, The Maine Idea, Vol. 2, No. 2, p.1 (1991).

[47]Jake Ward Beware of the Scam, The Maine Idea, Vol. 2, No. 2, p.1 (1991).

[48]Id.

[49]e.g. CA. St. § 22370 et. seq. (1987), Kan. Stat. Ann. §§ 50-666 - 50-668 (Supp. 1992).

Two non-profit, invention evaluation services are analyzed next. These programs were selected as being both representative and well known. They are analyzed to show how a typical non-profit invention evaluation service operates.

The University of Wisconsin at Whitewater administers the Wisconsin Innovation Service Center (WISC).[50] The WISC program evaluates invention disclosures and attempts to match inventors with exceptionally high evaluation scores with potential manufacturers. An evaluation costs $165 and normally takes between two and three months.[51] The evaluation methodology is based upon Dr. Gerald Udell's innovation evaluation system.[52]

WISC maintains a network of about 300 evaluators with expertise in a variety of technical fields.[53] If a submission requires expertise beyond what is available within the network of evaluators, WISC will attempt to locate qualified technical evaluators in that field.[54] WISC has evaluated new products in a variety of fields. The products that have been commercialized after a successful WISC evaluation range from The Crayon Keeper®

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[50]Knox-Malewicki, Where's the Nations Top Center for Invention? In Wisconsin, Of Course!, 24 Inventor-Assistance Program News, 1 (1991).

[51]Wisconsin Innovation Service Center, Marketing Ingenuity and Invention (1986).

[52]Telephone Interview with Debra S. Malewicki, Program Manager, Wisconsin Innovation Service Center.

[53]Where's the Nations Top Center for Invention? In Wisconsin, Of Course!, 24 Inventor-Assistance Program News, 1, 2 (1991).

[54]Id.

(a clear plastic tube to be placed around crayons to prevent breakage) to a time-of-flight mass spectrometer (a sophisticated scientific device used for chemical analysis).[55]

The evaluation has two parts. First, a literature search is done to find competitive products.[56] Second, the literature is examined by the evaluators to help measure the factors used in the evaluation.[57] A summary is provided at the end of the report. In addition, an appendix includes sources of help and information for inventors as well as a recommended bibliography.[58] The largest drawback of the evaluation is that it appears to be "canned". The responses to each factor used in the evaluation are fairly generic and do not relate directly to the submission. This is not entirely surprising considering the evaluation methodology used. A sample evaluation of a non-technical invention from WISC is included in appendix G.

WISC analyzes the success of the program based upon client satisfaction. After performing over 3600 evaluations since 1980, WISC reports a client satisfaction rate of 90%.[59] WISC has not done a formal long term tracking study, but estimates that approximately 10-15 percent of WISC clients get their product on

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[55]Id.

[56]See Appendix G, Sample Invention Evaluation.

[57]Id.

[58]Id.

[59]Knox-Malewicki, Where's the Nations Top Center for Invention? In Wisconsin, Of Course!, 24 Inventor-Assistance Program News, 1, 2 (1991).

the market based upon informal studies.[60]

WISC has not collected any information on job creation.[61] The program does not formally collect product commercialization or job creation data because they believe that too many factors other than the evaluation process affect the commercial success of a product.[62]

Another invention evaluation service is the Wal-Mart Innovation Institute (WIN).[63] Wal-Mart Stores, Inc., Southwest Missouri State University College of Business, and the Innovation Institute have joined together in a cooperative venture to form WIN.[64] Dr. Gerald Udell is the director of the WIN Innovation Center.[65] WIN evaluates submissions based upon a version of Dr. Udell's innovation evaluation system.[66] The submission must be a consumer related invention because of the expertise of the evaluators.[67]

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[60]Telephone Interview with Debra S. Malewicki, Program Manager, Wisconsin Innovation Service Center.

[61]Id.

[62]Id.

[63]Udell, Wal-Mart Innovation Network (WIN) Formed to Promote American Invention and Industry, 23 Inventor-Assistance Program News, 2 (1991).

[64]Id.

[65]Id.

[66]Udell, An Update on Phase I of the WIN Venture, 24 Inventor-Assistance Program News, 8,9 (1991).

[67]Udell, Wal-Mart Innovation Network (WIN) Formed to Promote American Invention and Industry, 23 Inventor-Assistance Program News, 2, 4 (1991).

The submission is first evaluated by a panel of reviewers. If the initial screening is successful, the submission is then evaluated a second time. This time the evaluators are professional retail buyers and marketers.[68] The second evaluation focuses on marketability and consumer appeal.[69] Retail buyers and marketers are used because of their expertise in consumer purchasing habits.[70]

If the second evaluation is successful, WIN will attempt to locate assistance in prototype development, business planning, and other business needs.[71] If the invention is commercialized, Wal-Mart has agreed to have one of their retail buyers review the product for possible sale in their retail stores.[72] The fee for the initial evaluation is $150, with other possible fees based upon additional services provided.[73] A reevaluation is free if the original submission has been modified to reflect the comments in the original evaluation.

As previously discussed, the federal government also provides an evaluation service through the Energy-Related Inventions Program (ERIP) of the Department of Energy (DOE).[74]

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[68] Id at 3.

[69] Id.

[70] Id.

[71] Id.

[72] Id.

[73] Id. at 2,3.

[74] See footnotes 31 through 38 and accompanying text.

III. METHODS OF INNOVATION ASSISTANCE

This section will describe various methods of innovation assistance. It will analyze each method and explain how innovators will be helped by each program. Both the strengths and weaknesses of each method will be examined. The discussion in this section will not be targeted toward any specific program. Section IV will discuss specific programs and how they embody these methods.

A. EDUCATIONAL SERVICES

Education is another possible method of assisting inventors and innovators. The educational services should be in all areas of the innovation process. Independent innovators and small businesses may find educational assistance by someone familiar with patent, copyright, and trademark laws helpful. Other potential areas of interest include licensing, finding sources of venture capital, and prototype development.

Educational services can be provided through seminars, workshops, written materials, bibliographic resources or other information services. This method offers the advantage of providing assistance to a large number of clients at a low price.

This method does have its limitations. The information given will often not be enough to provide all the assistance an inventor needs. Still, it does provide a starting point and allows the entrepreneur or innovator to make an informed decision about a future course of action.

A low cost approach to providing basic information about the

innovative process is through informational pamphlets and booklets. A variety of sources produce booklets on topics of interest to innovators and entrepreneurs.[75] They are generally available at low or no cost. Due to their small size, the amount of information provided is very limited and may not provide all the information desired by the reader. Still, these resources can serve as an introduction to a topic or as a starting point for further research.

A great supply of literature exists on the subjects of innovation and intellectual property law. These materials are targeted towards a lay audience. These materials are published both privately and by government sources. These resources are intended to provide introductory information about a subject as well as more practical advice. Access to this literature will prove to be a valuable addition to the resources of independent inventors and small innovation based businesses. A sample bibliography is in Appendix B.

Information also can be provided to innovators and entrepreneurs through seminars and workshops. The workshops and seminars can be on a variety of areas of interest to innovators such as intellectual property law, patent searching, marketing, and venture capital sources. The seminar or workshop format is particularly useful because it allows interaction between the speaker and the audience. In addition, seminars and workshops can be targeted to address specific needs of the audience.

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[75]See Appendix A.

Education can be provided through one-on-one counseling. The primary advantage to counseling services is that the program can provide individual assistance to a client's specific needs. The major disadvantage is that one-on-one counseling can be expensive on a per-client basis as only one client can be helped at a given time.

B. LICENSING SERVICES

A state innovation assistance program also may act as a clearing house for innovators with new products and manufacturers who want to produce and market new products. Inventors often have very high technical expertise, but may not have a high level of business expertise in manufacturing and marketing.[76] This type of program attempts to bring together innovators who lack the resources, skills or know how to successfully produce and market the product with a manufacturer who already has these resources and skills.

Such a program will maintain a database of manufacturers and marketers who are interested in producing new products, but do not have the research and development capabilities to produce new products. The program will attempt to match production capabilities of manufacturers with the requirements of submitted proposals. Once a match is made, the inventor and the manufacturer will work out a licensing agreement. The program

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[76]See e.g. State of Oklahoma, Inventors Assistance Program Annual Report, 3 (1991).

can take an active role in this step, or can allow the parties to come to an agreement between themselves.

A state innovation assistance program may need to do some preliminary screening of the submissions to weed out scientifically and commercially unsound ideas. The program can also charge innovators a fee (perhaps $150) to enter their product into the database. This would act as a filter, since if the inventor is not willing to pay the fee, he or she is probably not that confident of the merits of the idea. The fee will also help defray the costs of operating the database. The major reason the program would want to screen out low quality submissions is to add credibility to the database. If a manufacturer is given a poor quality submission, they may be unwilling to participate in the program in the future.

The major advantage of this program is that it can bring together parties with complementary abilities and needs. In the past, manufacturers and marketers have been unreceptive to unsolicited outside submissions. If the state is involved in screening and matching the participants, manufacturers and marketers may be more receptive to these solicitations. The major disadvantage of this program is that the network of manufacturers and marketers may be difficult to assemble until the program has a track record. A significant amount of effort may be required to build a network of manufacturers and marketers in the early stages of the program.

C. ASSISTANCE PREPARING FEDERAL GRANT PROPOSALS

Another method of innovation assistance is to provide assistance in obtaining federal funding for research and commercialization. The SBIR program provides the vast majority of federal money available for research and development for small businesses. While the program is intended to be simpler than the regular complex federal grant proposal process,[77] the process is still not uncomplicated.

While eighty percent of SBIR proposals come from first time applicants, only half the awards are made to first time applicants.[78] One major reason for this discrepancy is that those who have applied before are more experienced with the federal procurement system than a first time applicant. Some companies became so experienced with the SBIR grant process that they received a disproportionate number of the awarded grants, despite never going on to phase III commercialization.[79] These companies managed to support themselves based almost solely upon SBIR grant funding.[80] This is evidence that experience in the

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[77]Lecture by Ann Eskesen, President of Innovation Development Institute, at New Hampshire Small Business Development Center SBIR Conference (December 2, 1992).

[78]Id.

[79]Anuskiewcz, SBIR First Decade-Results, Benefits, Problems From a Michigan Perspective, Tech. Transfer, Winter 1992 at 15-16.

[80]This problem has been partially addressed in the reauthorization. Now if a company receives more than 15 phase II awards in five years without any commercialization, the company may lose their eligibility for future SBIR funding. PL 102-564 § 103(h)(1), to be codified at 15 U.S.C.A. § 638(l)(2).

grant process is invaluable when seeking phase I and phase II funding. Additional evidence may be found in the fact 20% of phase I proposals are rejected for administrative reasons.[81]

The nature of the grant process makes it possible to improve the chances of receiving an award by helping a grant writer prepare a proposal that is more likely to be successful. The grant proposal can often be improved by the assistance of someone who is experienced in the grant writing process. Since entrepreneurs and independent innovators often do not have experience in drafting grant proposals, assistance from a professional grant writer can dramatically improve the quality of the grant proposal.[82]

In fiscal year 1991, New Hampshire ranked 22nd in the nation in receiving phase I and phase II SBIR funding.[83] Only 35 phase I and II awards were received by New Hampshire businesses during fiscal year 1991, out of a total 3,341 awards nationwide.[84] By providing grant writing assistance, the number of successful SBIR

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[81]These reasons range from failing to comply with the formalities of the process to failing to address the problem which the government needed solved. Lecture by Ann Eskesen, President of Innovation Development Institute, at New Hampshire Small Business Development Center SBIR Conference (December 2, 1992), see also, Eckert, Going After SBIR Dollars - Now is the Time, 30 Inventor-Assistance Program News 3 (1992).

[82]See e.g. M. Wurglitz & S. Conn, Writing SBIR Proposals, (7th ed. 1992).

[83]Based upon data provided in, Office of Innovation, Research and Technology, Small Business Innovation Development Act 1992 Annual Report, 12, 28 (1992).

[84]Id.

phase I and II grant proposals can be expected to increase.

The major advantage of providing assistance in writing SBIR proposals is that for a relatively small investment, a state may be able to bring in many millions of dollars in additional federal grant funding. Some projects that successfully complete phase II will enter phase III commercialization, creating jobs and new businesses. The only drawback of this form of innovation assistance is that someone with experience in federal grant writing and procurement will be required to administer the program.

D. NEW PRODUCT ANALYSIS

Another means for helping innovators is to provide an objective evaluation of their idea. The evaluation can provide an objective and expert analysis of the new product or idea. One of the main advantages of an evaluation is that the idea is examined critically by evaluators who have no stake or interest in the commercial success of the idea. They provide unbiased feedback that is specifically targeted towards the submitted idea. Since the evaluators normally are experts in the field of the idea, they also bring their expertise to the evaluation process. Becuase of the variety of technologies that will be submitted to an invention evaluation program, a program must have evaluators available in a variety of technologies. Alternatively, the program can limit the types of ideas that they evaluate.

An Inventor's Assistance Program can provide evaluation services in house. The main advantage of providing the service in-house is that the program can be in closer contact with the inventor and better follow-up is available. However, some nonprofit invention evaluation programs also provide good follow-up services. The major disadvantage is that volunteer evaluators must be found and trained in the evaluation methodology. The variety of technologies for which the program can expect submissions may require that the network of evaluators be broad and varied. The existence of reputable outside, non-profit invention evaluation services, discused in Section II B, causes there to be little need for providing an invention evaluation service in-house. An Inventor's Assistance Program can provide referrals to reputable outside evaluation programs. Since many outside programs are subsidized by government or corporate funding, a new program is unlikely to be able to provide the same services at a lower cost or provide a significantly better evaluation for the same fee. Because of the availability of reputable non-profit programs to evaluate inventions, there does not seem to be any need to refer the clients of an Inventor's Assistance Program to a for profit invention evaluation and marketing service.

E. VENTURE CAPITAL FUNDS

Another method of promoting innovation and new businesses is through the use of a venture capital fund. The fund can be used

to provide either grants, loans, or for purchasing an ownership interest in a new business. The purpose of this type of financing is to provide venture capital to firms that normally have great difficulty obtaining venture capital. This may be because the investment is not large enough to attract venture capital or the venture may not have a track record suitable for traditional forms of financing.

The key advantage of this method of innovation assistance is that it provides the innovator with needed capital when costs are high and income is either non-existent or very low. The fund would provide venture capital at more favorable terms than the market would, and therefore would lower the economic hurdles before the entrepreneur or inventor. The result would be that more products would succeed because of adequate capitalization in the product development and commercialization stage. The effective size of the fund can be stretched by requiring the new venture to have matching sources of outside capital to finance the venture.

This method does have several drawbacks. First, the fund must be well financed to provide the long term financial support required. The average product commercialization time is from three to five years. During this period, no significant income will be generated by the new venture. As a result, the new venture will be unable to quickly begin repayment of a loan, and may continue to require funding to cover commercialization costs. Second, the basis of repayment must provide for a sufficient

return on investment considering the risk that the venture will fail. Third, payback of the loan by the inventor or entrepreneur may not be possible if the venture fails to generate any profits. Since the vast majority of ideas generated do not survive the development stage to become profitable products, the default rate upon the loans may be high unless an adequate screening technique is used. Finally, the fund must be organized to prevent the fund from being re-appropriated by the legislature the next time the budget needs to be balanced. Due to the long term financial commitment required, the money invested during the early period of the program will not generate the desired returns, unless the program is allowed to operate for several years.

F. ANCILLARY ADVANTAGES OF AN INNOVATION ASSISTANCE PROGRAM.

One ancillary advantage of providing a state sponsored innovation assistance program is that fewer independent inventors will use a commercial service. As a result, they are less likely to be taken advantage of by an unscrupulous commercial invention broker. In addition, the program can help an inventor in resolving disputes with a commercial invention broker.

Another advantage resulting from having a state innovation assistance program is that the program can act as a focal point for bringing together innovators to discuss common problems.

Inventor organizations are common in many states.[85] These organizations meet every month or every other month and often publish a newsletter for members. These forums offer an information resource about the members experiences in solving problems in the innovative process. A newsletter can provide information concerning available grants, innovation conferences, and workshops as well as informational articles. An example of some information that is available for publication can be found in the Inventor-Assistance Program News.[86]

IV. EXISTING STATE INNOVATION ASSISTANCE PROGRAMS.

This section will describe and analyze the existing major state sponsored innovation assistance programs. Every major program from which information could be obtained is included in this section. The state sponsored programs in Arkansas, Maine, Michigan and Oklahoma are analyzed.

While many states provide limited innovation assistance through Small Business Development Centers, these programs are not specifically targeted towards innovators. As such, they are

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[85]State Inventors Initiative, Inventions and Innovation Division, U.S. Department of Energy, Inventor Assistance Source Directory, (1992).

[86]The Inventors-Assistance Program News is a free newsletter published by Pacific Northwest Laboratory. Permission is granted by the publisher to copy and republish any portion of the newsletter. Because the newsletter is a limited-edition publication, it is difficult for an inventor to obtain directly, but must be obtained through other sources. Normally, the newsletter is provided only to programs which encourage and assist inventors.

not analyzed in this report. Also, there exist numerous inventors clubs and organizations that provide some services. These organizations are privately organized and mainly provide a forum for inventors to discuss common problems. They are not included in this report because of their lack of state sponsorship and small size.[87]

A. ARKANSAS

The Arkansas program to encourage innovation is the Arkansas Science and Technology Authority (the Authority).[88] It is designed to encourage scientific and technical research. This is done by funding basic research at Arkansas colleges and universities, stimulating applied research partnerships between private industry and Arkansas colleges and universities, helping small businesses in identifying and applying for funds to conduct research and development, technology transfer from Arkansas colleges and universities and government laboratories to private industry, creating facilities to foster growth of Arkansas technology based enterprises, and developing emerging product and process technologies that contribute to business growth.[89]

Financing is accomplished through an endowment fund and an

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[87]A Listing of organizations that are engaged in some form of innovation assistance can be found the Inventor Assistance Source Directory, which can be found in Appendix H.

[88]Ark. Stat. Ann. §§ 15-3-101 to 134 (1987 Supp. 1991).

[89]Ark. Stat. Ann. § 15-3-109(a) (Supp. 1991).

investment fund.[90] The endowment fund cannot be spent, but may only be used to generate income by investments.[91] The net income from the endowment fund can be transferred to the investment fund.[92] The investment fund may be used for loans, equity investments, leaseholds, management and consultant contracts, and any other contractual relationship with an entity involved with science and technology.[93] The investment fund also may be used to support the operating expenses of the Authority.[94]

The Authority can also purchase qualified securities in Arkansas enterprises with the investment fund.[95] The enterprise must met the following requirements before the Authority will invest in them. (1) The enterprise must submit a business plan demonstrating a strong managerial team. (2) The enterprise must be deemed to have a reasonable chance of success. (3) The funding from the Authority is necessary because more traditional sources of funding and venture capitol are either unavailable or only available at a cost that would hinder the enterpris' chances of success. (4) The enterprise must have a reasonable potential

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[90]Ark. Stat. Ann. § 15-3-118 to 120 (1987).

[91]Ark. Stat. Ann. § 15-3-118(c) (1987), Ark. Stat. Ann. § 15-3-119(a) (1987).

[92]Ark. Stat. Ann. § 15-3-119(b) (1987), Ark. Stat. Ann. § 15-3-120(b) (1987).

[93]Ark. Stat. Ann. § 15-3-121(1) (1987).

[94]Ark. Stat. Ann. § 15-3-121(2) (1987).

[95]Ark. Stat. Ann. § 15-3-122(a) (1987).

to create a substantial amount of employment within Arkansas. (5) The entrepreneurs must have already made or are contractually committed to making a substantial financial and time commitment to the enterprise. (6) There must be a reasonable possibility that the Authority will recoup at least its initial investment. (7) The proceeds of the investment fund may only be used to cover the initial capitalization of the enterprise. (8) A commitment to adequate financial reporting by the enterprise must be made.[96]

No more than $500,000 can be invested in any given enterprise.[97] The Authority may not purchase stock or any other form of ownership interest in any enterprise,[98] despite language in the statute indicating otherwise.[99]

The endowment fund was initially funded with 1.8 million dollars in 1986. The state of Arkansas has not invested any additional funds in the endowment fund since its initial funding. As of October 5, 1992, the fund has grown to 2.47 million dollars and seven companies have been helped by the fund. The value of the fund has been stretched by requiring that every dollar invested by the fund be leveraged by three dollars from other sources. These sources can include funds from state agencies, federal agencies or private investors. The growth of the

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[96]Ark. Stat. Ann. § 15-3-122(b) (1987).

[97]Ark. Stat. Ann. § 15-3-122(d) (1987).

[98]Ark. Const. Art. 12, § 8.

[99]Ark. Stat. Ann. § 15-3-122(d)(2) (1987).

investment and endowment fund has been credited to the careful screening process used to approve applicants. Only one to two applications are approved every year by the Authority.

As of October 5, 1992, the Authority has invested in seven companies. An eighth company was due to be funded in November of 1992. A total of 1.25 million dollars has been invested in these first seven companies. Because two companies failed, $264,822 has been charged off. Only one company is still in repayment, with 101,835 dollars still owed to the authority. The remaining four companies have paid off their loans in full.

Of the seven companies that were funded, two failed and were dissolved. One other company was dissolved after the Authority was repaid. This company is viewed by the Authority as a successful venture because they successfully developed the desired technology, sold the technology to another company and repaid the loan from the Authority. The purchasing company is still a going concern. The remaining four companies are still in business and employ a total of 214 workers. A table summarizing the above data can be found in appendix D.

The Authority uses a variety of financing structures to provide funding from the investment fund. The nature of the financing structure chosen often depends upon the amount of risk involved in the investment. These financing structures include both traditional loans and royalty interests as well as technology leasebacks. A summary of the forms of financing used by the Authority can be found in appendix E.

B. MAINE

The Maine Inventor's Network (MIN) is the innovation assistance program sponsored by the state of Maine. MIN operates out of the University of Maine at Oreno. The objective of MIN is to provide education, counseling, and referrals to Maine residents interested in developing or commercializing inventions or new products. The program was funded for a two year term that ended in June, 1992. The office is still open, but the program is officially at an end. The program's future is uncertain at this time. Since MIN was never fully funded, some proposed programs were never implemented.

The program did (and still does to a limited extent) provide two major services. First, it provided education in the form of consultations, workshops and seminars. The consultations were often informal meetings with the program coordinator who would often do a preliminary patent search to examine marketability.[100] The program also would try to refer inventors to interested companies willing to work with small inventors.[101] The seminars and workshops were on a variety of subjects of interest to inventors and entrepreneurs, such as intellectual property law, licensing, and the innovation process. Three major workshops on innovation were held in the last two years, with an

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[100]Maine Inventor's Network, Introductory Material on Inventions, 1 (Undated).

[101]Id. at 2.

average attendance of 115 people per conference.[102]

The second major form of assistance that MIN provides are information services. MIN provides access to information resources often needed by inventors and entrepreneurs.[103] The program would also try to place inventors in contact with faculty at the University of Maine to resolve technical problems.[104] Finally, the program coordinates monthly inventor forums in Bangor and Portland. These are attended by 20-40 inventors and entrepreneurs per month.[105]

A breakdown of the number of significant contacts with the program and attendance figures for both the inventor forums and workshops is provided in Appendix E.

The Maine program does not provide a revolving loan fund or other capital investment fund. This is viewed by the program coordinator as the largest problem with the Maine Program.[106] Apparently, a venture capital fund was not provided for because of a concern about potential liability by the State of Maine.[107] Another concern raised was the difficulty of protecting the fund from state legislators seeking to procure the fund money for

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[102]See Appendix E.

[103]Maine Inventor's Network, Introductory Material on Inventions, 1-2 (Undated).

[104]Id. at 1.

[105]See Appendix E.

[106]Telephone Interview with Jake Ward, Program Director, Maine Inventors Network.

[107]Id.

other programs.[108]

The Maine program has not collected any statistical evidence on actual job creation in Maine.[109] This has not been done for several reasons. First, there is a substantial question whether job creation is an accurate measure of the effectiveness of the program.[110] The program coordinator believes that the value of the innovation that was assisted by the program is a better measure of the success of the program.[111] The value of innovation is difficult, if not impossible to measure. Second, since MIN has only been in existence for slightly over two years, the effects of the program cannot yet be measured. The average commercialization time for a new product is approximately three to five years from the date of conception. Therefore, it is still to early to have a reliable measurement of the success of MIN.[112]

While no statistical information has been collected about the success of MIN, some early anecdotal evidence is available. Several clients of MIN have products that are now being manufactured in Maine, while others are in the prototype or patenting stage.[113] In addition, the program has saved clients'

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[108] Id.

[109] Id.

[110] Id.

[111] Id.

[112] Id.

[113] Id.

money by encouraging them to not pursue ideas that were unsound, by obtaining clients' refunds from fraudulent commercial invention brokers, and by clients not contacting commercial invention brokers.[114]

C. MICHIGAN

Michigan has funded the MERRA[115] program that is aimed at helping small businesses learn about the SBIR program and successfully compete for awards.[116] MERRA holds workshops and conferences on the SBIR program for small businesses. These workshops are used to educate small businesses about the SBIR program and federal procurement.[117] Some of these conferences bring together SBIR Program Managers from participating federal agencies with small business people.[118] These conferences are designed to allow small business people the opportunity to speak with program managers to learn how to better participate in the program and to learn of possible future areas of grant funding.[119] In addition, direct staff assistance and support

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[114]See Appendix E.

[115]MERRA is not a state agency, but is funded by grants from state, federal and private sources.

[116]Todd Anuskiewcz, SBIR First Decade - Results, Benefits, Problems From a Michigan Perspective, Technology Transfer, Winter 1992 at 8.

[117]Id. at 8, 11.

[118]Id. at 11.

[119]Id. at .

aid small businesses in using the SBIR program.[120]

Michigan has also funded the Michigan State Research Fund, which is used to finance research and development with high commercial potential. This fund is also used to supply grants to help small businesses bridge the funding gap between the end of phase I and the beginning of phase II.[121] Because of the long (4-12 month) gap between the end of phase I funding and the beginning of phase II funding, many businesses are not able to continue their research. Some businesses fail during this time, while others must change to other projects. This funding gap is a perpetual problem with the SBIR program that was not adequately remedied in the reauthorization.[122] By supplying grants to small businesses during this funding gap, Michigan has allowed these businesses to continue with their research and commercialization efforts.[123]

MERRA reports that these activities have led to an improvement in both the quality of SBIR proposals as well as the number of proposals submitted by Michigan firms.[124] MERRA also reports that the program has led to a dramatic increase in the

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[120]Id. at 8.

[121]Id. at 12.

[122]Lecture by Ann Eskesen, President of Innovation Development Institute, at New Hampshire Small Business Development Center SBIR Conference (December 2, 1992).

[123]Todd Anuskiewcz, SBIR First Decade - Results, Benefits, Problems From a Michigan Perspective, Technology Transfer, Winter 1992 at 12.

[124]Id. at 11.

Michigan's SBIR win record.[125] MERRA credits this increase to the education and support provided to small businesses in Michigan.[126]

D. OKLAHOMA

Oklahoma has enacted an Inventors Assistance Program designed to assist in the commercialization of new products and processes in Oklahoma.[127] The primary form of assistance is matching inventors with manufacturers looking for innovative products.[128] Commercialization of the technology, preferably in Oklahoma is a condition of receiving assistance.[129] The program operates on the premise that most small manufacturers lack the resources to conduct research and development and most inventors lack the commercial resources to manufacture or market their idea.[130] The program seeks to bring together these interests to form strategic alliances through a joint venture or through licensing.[131] Because of the strong emphasis on licensing, strong intellectual property protection for the idea is strongly

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[125]Id.

[126]Id.

[127]Okla. Stat. Ann. tit 74, § 5064.1-5060.9 (West Supp. 1993).

[128]Okla. Stat. Ann. tit 74, § 5064.4 (West Supp. 1993).

[129]Okla. Stat. Ann. tit 74, § 5060.10 (West Supp. 1993).

[130]State of Oklahoma, Inventors' Assistance Program Annual Report 1991, 3 (1991).

[131]Id. at 3, 6.

encouraged by the program.[132] The program does not provide any legal services in the intellectual property field, preferring instead to refer clients to outside legal experts.

The program has established a network of manufacturers interested in licensing or manufacturing new products in Oklahoma.[133] The program has also established a network of marketing firms and distributors who are looking for new products.[134] Once the program has found a match between a manufacturer, a distributor and an inventor, the program will assist them in forming a strategic alliance that complements all their skills.[135] Depending upon the needs and desires of the clients, this can be either assistance in licensing or forming a joint venture.

During the last year, the program has structured approximately 20 deals. Ten of the deals were regarded as small, while three were regarded as substantial by the program.[136] One deal structured by the program has projected revenues of up to 25 million dollars by 1994, with anticipated employment of 100

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[132]Id. at 8.

[133]State of Oklahoma, Inventors' Assistance Program Annual Report 1991, 5, 6 (1991).

[134]Id.

[135]Id. at 6.

[136]Telephone interview with Susan Josephson, New Product Development, Capital Resources Division, Oklahoma Dept. of Commerce.

workers.[137] Other deals are in varying stages of development, from prototype design to production.[138] Detailed financial data from the Oklahoma program was not available.

The fee for the licensing service is $100.[139] The program can also charge a fee of up to 10% of the royalties received on any commercialized products.[140] At this time the program does not collect these fees.[141]

The program also provides informal referral and consultation services.[142] This part of the program is aimed towards educating inventors and entrepreneurs in the innovative process. Referrals to other sources of assistance education are made if the problem cannot be resolved by the program's staff.[143] There is no fee for this service.

As a financial incentive to inventors and manufacturers who participate in the program, Oklahoma offers special tax incentives. Inventors can exempt all the royalty income from a patented product developed and manufactured within the state from

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[137]State of Oklahoma, Inventors' Assistance Program Annual Report 1991, 13 (1991).

[138]See Id. at 11-15.

[139]Okla. Stat. Ann. tit 74, § 5064.6(a) (West Supp. 1993).

[140]Okla. Stat. Ann. tit 74, § 5064.6(b) (West Supp. 1993).

[141]Telephone interview with Susan Josephson, New Product Development, Capital Resources Division, Oklahoma Dept. of Commerce.

[142]State of Oklahoma, Inventors' Assistance Program Annual Report 1991, 15-16 (1991).

[143]Id.

their state income tax for seven years.[144] Manufacturers receive tax credits for the purchase of depreciable property used to manufacture the product.[145] Several entrepreneurs have moved to Oklahoma to take advantage of this tax treatment and the services of the program. One Manufacturer relocated his business, which has annual revenues of 1.5 million dollars, to Oklahoma for the tax benefits as well as for the services of Oklahoma's program.[146] This manufacturer has already licensed one product through the center and is considering others. A copy of the Oklahoma Inventors' Assistance Program's 1991 Annual Report can be found in appendix F.

V. CONCLUSION

This report has analyzed various forms of innovation assistance used throughout the country. The programs were examined both in the abstract and as they have actually been implemented. The focus of the analysis has been on how these programs attempt to achieve their goals. By understanding the methods used by other programs to help innovators, a state considering adopting an innovation assistance program can best choose the methods that are most appropriate to meet the needs of that state. It is hoped that this report has been able to

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[144]Okla. Stat. Ann. tit 74, § 5064.7(1) (West Supp. 1993).

[145]Okla. Stat. Ann. tit 74, § 5064.7(2) (West Supp. 1993), Okla. Stat. Ann. tit 68, § 2357.4 (1992).

[146]State of Oklahoma, Inventors' Assistance Program Annual Report 1991, 13 (1991).

summarize the strengths and weaknesses of each program so that an informed choice can be made between the various types of innovation assistance.