Industry and the University:
Partners in Technology Transfer

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Abstract

Linking a university's information systems resources with local businesses provides a win-win scenario for improving the technological life of both. Partners in Technology Transfer, residing at the intersection of several traditional roles of the university, establishes this connection using the ideas of virtual workgroups, workshops/courses, and projects to bring the parties together. The result is an environment for outreach education in technology, professional certification for workers in technology, and information systems consulting to the business community.

Keywords: Technology transfer, partnership, incubation center, certification, brain gain

1. What is the Partnership?

Partners in Technology Transfer is a <u>concept</u> to establish an organization, represented by Figure 1 on the next page. The <u>proposed organization</u> has the goal to produce:

- ***an incubation center*** where business computing professionals, high achieving UWSP computing students and UWSP CIS faculty work together to solve IS technology problems important to businesses,

- ***a training center*** where computing professionals from the business community, as well as pre-professionals [UWSP computing students] advance their knowledge and become skilled in the latest tools for software systems development and project management, and

- ***a certification center*** that documents and recognizes the learning and productivity activities of Partners' participants, with the goal of producing a technological 'brain gain' for the local area and making the Central Wisconsin Business Community more competitive.

Sitting at the intersection of the traditional department and extension/outreach, Partners is a unit focusing on:

- transferring of IS technology to business problem solutions,
- continuing education and certification of technology professionals in the local area, and
- linking high quality university students with businesses in the problem solving process.

2. Motivation

Enterprises in the local business community experience difficulty in attracting and retaining highly qualified software technologists.

<u>On the attracting side</u>, the UWSP produces high quality students in IS technology areas. However, sixty percent of these students take technology jobs outside the local area. The incubation center encourages enterprise computing professionals and students to work together not only solving technological problems, but also building relationships that encourage students to accept employment and stay in the area.

<u>On the retention side</u>, software professionals need continual professional development activities not only to provide quality products for their employers, but also to grow in job and professional satisfaction. The training

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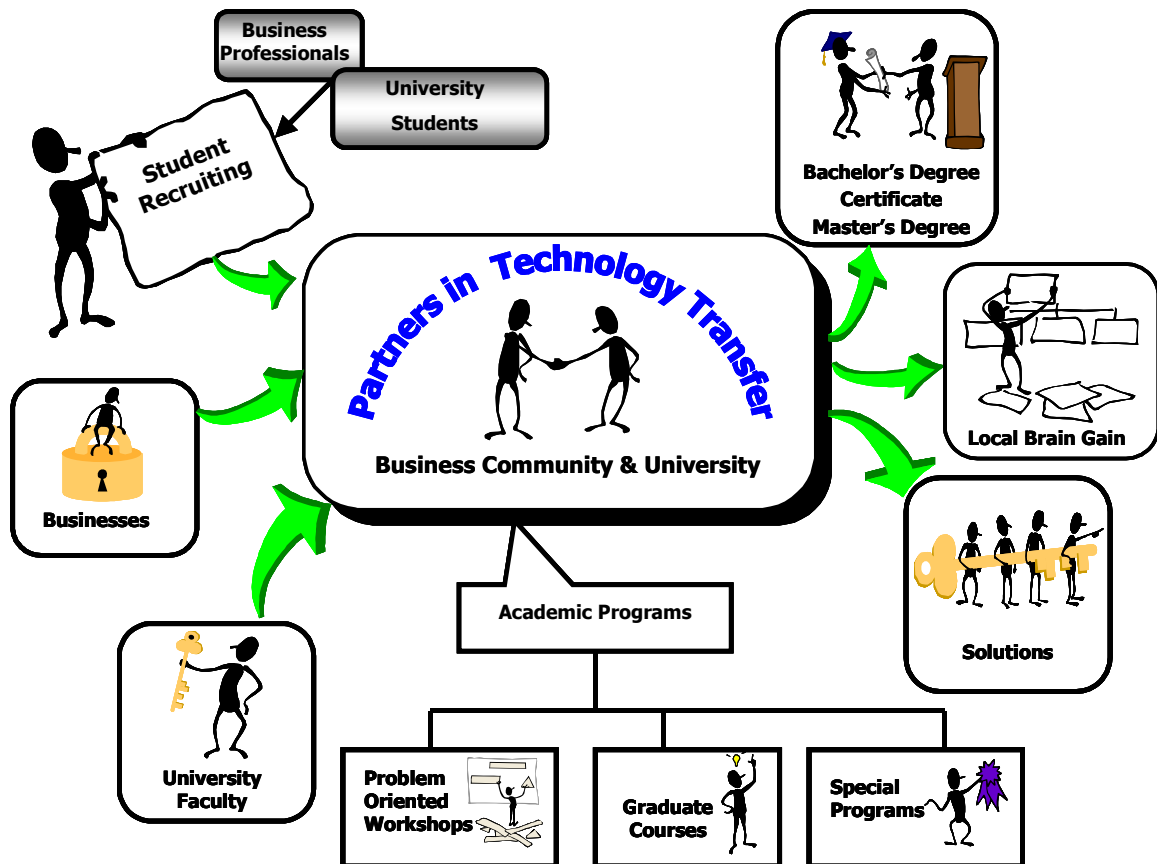[2] dgoulet@uwsp.edu

Figure 1: Concept Graphic for Partners in Technology Transfer

center side of Partners provides a local resource where business professionals can come to learn and be re-energized, resulting in a desire to stay in the area.

3.   Goals for the Partnership

The goals are *within three years* to link the Central Wisconsin Business Community with UWSP's CIS resources *resulting in technology rich solutions to business problems* and to implement an ongoing *outreach educational program* leading to a *Bachelor's Degree,* a *Certificate Program*, or a *Master's Degree* in software development and management for both traditional and non-traditional students.

4.   Components of the Partnership

The concept graphic in Figure 1 identifies the components of the Partnership. The goal and ideas behind each component in more detail are:
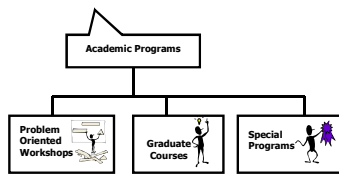
Local Businesses
Central Wisconsin Businesses are both the partners in and the recipient of the benefits of Partners.   Businesses work with Partners to bring appropriate and technology rich solutions to their workplace in order to be more competitive in the marketplace.   While there are many models for administering this type of cooperative effort, some variant of a contractual arrangement seems most appropriate.

University Faculty

The University Faculty, in particular, the CIS Faculty, are the key to implementing Partners. The CIS faculty are responsible for building and guiding the programs sponsored by Partners, and have a dual appointment to Partners and the CIS curriculum. The distribution of the assignment between Partners and the CIS curriculum is flexible, but a working model might be one–third FTE during the academic year and full FTE during the summer to Partners.

Business Professionals and University Students

IT professionals from the contracted businesses join skilled university CIS students as the problem solving team working under the guidance and direction of Partners faculty. This team forms not only the solutions team, but also the 'brain gain' channel for keeping these highly skilled students in the local area after graduation. A university student participates in Partners for a period of two years before graduation. The IT professional participates on a reduced and concentrated schedule dictated by their participating enterprise.
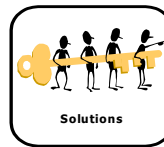
Academic Programs

One of the keys to success for Partners' programs and the 'brain gain' idea is that Partners provides an ongoing and intensive set of technology training activities. These activities take the form of topic-oriented workshops, special programs designed to satisfy a particular technology specialty, or graduate courses leading to a graduate degree. The activities are directed and presented by Partners faculty. The workshops and specialty programs are flexible in nature, responding to the needs and demands of the participating enterprises. The graduate courses form a core set of Information Technology studies supporting IS technology activities with a view to the long term.

Certification

Certification for new skills learned is vitally important to the participants in Partners. For the successful undergraduate university student, a special transcript notation added to his/her academic record signifies both participation and additional academic course work. For the IS professional not in search of an advanced degree, a Certificate Program indicates a particular level of skill has been achieved in a specified area. For the IS professional desiring an advanced academic degree, a Master's Degree is earned by completing core and specialty academic courses that relate specifically to the transfer of technology.

Solutions

Solutions are both the product of Partners and the gift to the local business community. Solutions come in many forms. One is a technology answer to a particular technology question. Another is providing an enhanced technology skill set to local IS Professionals so they can provide solutions for both the problems of today and the opportunities of tomorrow. Another is the lure for business to relocate / start-up in the local area. Still another is attracting and retaining high quality CIS faculty.

Local Brain Gain

The goal of the entire Partners initiative is to provide a mechanism for growing the technology base of the local area and to provide businesses with a competitive advantage. Partners is one of the incubators, as well as one of the leaders in this effort. Partners, in cooperation with the business community, can assist this goal by helping businesses retain the best and the brightest IS technology graduates.

5. Services and Products of the Partnership

The Vision is that Partners will have a set of Services and Products built around three mission areas: the Incubation Center, the Training Center, and the Certification Center.

Services

   Incubation Center: The basic service of the incubation center is to solve IS problems for businesses by bringing professionals, university computing students and CIS faculty together in a working team.

   Training Center: Services provided by the training center include offering workshops, short courses, and regular university courses at a distance using both work-site and university locations, face-to-face at the work site, face-to-face at a new training center in the County's Industrial Park, and face-to-face on the university campus.

   Certification Center: The certification center provides a clear statement of the expanded knowledge and skills attained by both pre-professionals and professionals through the Training Center in the form of Bachelor's Degrees, Certificates of Performance, and Master's Degrees.

Products

   Incubation Center: The envisioned products of the Incubation Center are:

- Solutions for technology based business problems,
- Pre-professionals ready to move into the professional ranks who have had exposure to and training in solving real-world problems,
- Pre-professionals who have a working relationship with professionals from a local business, and
- Professionals who have been retooled to better support their business enterprise.

Training Center: The envisioned products of the Training Center are:
- Professionals trained in object technology through workshops and short courses.
- Professionals trained in Project Management skills.
- Professionals with expanded computing technology skills resulting from participation and attendance in regular credit generating graduate CIS courses.

Certification Center: The envisioned products of the Certification Center are:
- Certificates in Object-Oriented Technology.
  These Certificate Programs are built from Object-Oriented workshops. The entrance requirements for these programs are experience, desire to expand one's knowledge and skill base in the area, and letters of recommendation.

- Certificate in Project Management.
  This Certificate is built from Project Management workshops and courses. Workshops and course content follow the recommendations of the Project Management Institute. The entrance requirements for these programs are experience, desire to expand one's knowledge and skill base in the area, and letters of recommendation.

- Post Baccalaureate Certificates.
  Post-Baccalaureate Certificates consist of coursework from the existing IS curriculum. The prerequisite for these programs is a Bachelor's Degree. These Certificates can be an end unto themselves or serve as a stepping-stone for a Master's Degree. The certificates are:
  Certificate - Business Computing,
  Certificate - Website Development,
  Certificate - Data Communications.

- Master's Degrees.
  The Master's Degrees will emphasize the Post Baccalaureate Certificate Program. Each Master's Degree will have a certificate programs as its prerequisite. The Master's Degree program will be completed with a four-course core in Object-Oriented

Technology and a Partners in Technology Transfer Research Project. The candidate degrees are:
Master's Degree -Business Computing,
Master's Degree -Website Development,
Master's Degree -Data Communications.

6.   Growth of the Partnership

The proposed growth of Partners is directly related to the quality of service that can be provided to the local business community. Growth will occur in Partner's three mission areas: as an incubation center, as a training center, and as a certification center.

The Design of the Start-up Year or so:
    As an Incubation Center: Initially, there will be two CIS faculty, up-to four CIS students, and perhaps about five IT professionals spending some time 'attached' to Partners for problem solving activities.

    As a Training Center: Most of the initial start-up time for workshops and object-oriented technology seminars will be spent developing and testing training materials, with only a few formal training seminars given. The focus of the first training seminars will be on-site training at one of the major participating corporations.

During the initial start-up time, the current CIS course structure will be adjusted to accommodate graduate level [5xx] courses. These regular CIS courses are mostly in place as CIS 3xx courses. These courses will be made into 'slash' course, i.e., CIS 3xx/5xx, through normal university processes.

    As a Certification Center: Workshop and seminar certifications requirements will have to be developed. This will be done in consultation with the Advisory Committee and input from area businesses and the leadership of UWSP Extension.

Defining certification requirements for the university credit based Bachelor's, Certificates, and Master's is a multi-year task. The current thinking is to work first on the Bachelor's, then on the Certificates, and then on the Master's. However, this may change as business needs are defined and UW initiatives appear.

Working Toward a Mature Organization
    As an Incubation Center: Partners is envisioned to grow to five IS faculty, twenty IS students and twenty IT professionals.

    As a Training Center: An array of workshops, seminars and regular courses are envisioned for object-oriented technology and Project Management.

7. Summary and Conclusions

In the local area there is insufficient integration of these elements:

- There exist consulting firms that can work with businesses to solve both traditional and e-business software solutions.

- There exist educational and training organizations that can provide traditional software development workshops and training.

- There exist educational institutions that could certify professional development.

- There exist educational institutions that produce IS graduates.

- There exist organizations that could provide an incubation center.

However, ***there does not exist an organization, public or private, that provides and integrates all of these coupled activities and services within one organization***.

The services provided by Partners do not exist for members of the Central Wisconsin Business Community. The format of linking the business community directly to the university through Partners' training center, incubation center, certification center, and provided solutions is unique, certainly in Central Wisconsin, and perhaps in the entire state.