CENTER FOR INTELLIGENT MAINTENANCE SYSTEMS

The National Science Foundation
Industry/University Cooperative Research Center for
Intelligent Maintenance Systems

University of Cincinnati
Baldwin Hall 560
PO Box 210072
Cincinnati, OH 45221-0072

513.556.3412
513.556.4650
513.556.3390
www.imscenter.net

IMS Organization and Operation Structure

IMS Center is an NSF Industry/University Cooperative Research Center which focuses on industrially relevant research, education, and outreach activities using a well- established operation structure supported by National Science Foundation and company members.. The organization chart of the IMS Center is shown in Figure 1 Co-Directors report to their corresponding Deans of Engineering. The Industry Advisory Board (IAB) is the main body of the operation which consists of the representative from each company and advises the Centers management on all aspects of the Center from research project evaluation to strategic planning. The IAB meets twice per year at the membership meetings of the Center to select the project, review the progresses of research and operations, as well as discuss critical issues that are relevant to Centers development.

The Center co-Directors manage the operations of the Center, including administration of Center funding, developing strategies, and managing day-to-day operations. In addition, the co-Directors act as the liaison with member companies, recruit new industry participants, define new areas of research jointly with company members, deal with affiliate universities, and interact with the administration of the involved universities.

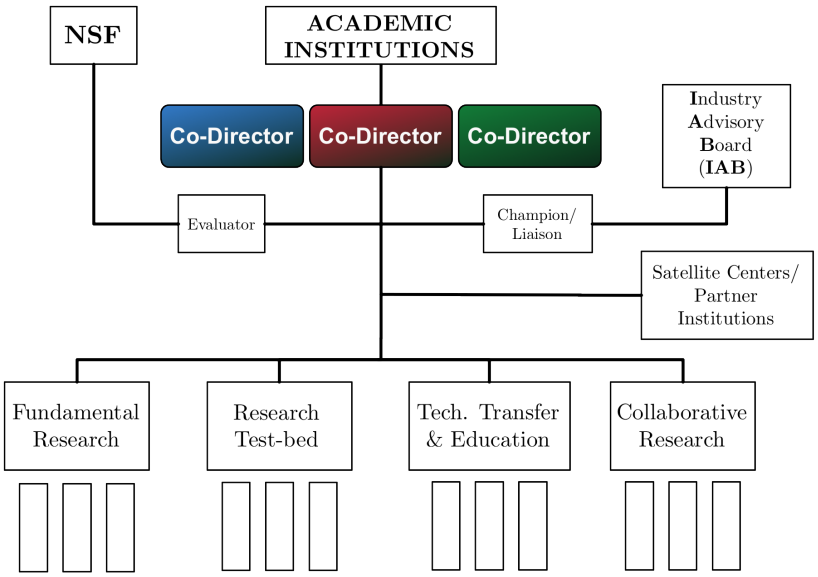

Figure 1: IMS Center Organization and Operation Structure

Each project in the Center has monitors from industry (who may be an IAB representative or engineers assigned from an IAB member company). The evaluator serves as a liaison between the Center co-Directors, the NSF, and the industrial sponsors of the Center to assure the performance of industry/university interactions. The evaluator is charged with writing and maintaining a structured historical profile of the IMS Center on an annual basis, administering and preparing process outcome questionnaires from the faculty and industrial sponsors, conducting exit interviews with representatives of departing companies, attending semi-annual IAB meetings, attending semi-annual NSF sponsored evaluator meetings, and providing information and feedback to both the NSF and the Center Director.

University of Cincinnati 513.556.3412
Baldwin Hall 560 513.556.4650
PO Box 210072 513.556.3390
Cincinnati, OH 45221-0072 www.imscenter.net

Membership

There are two kinds of memberships:

- **Full Membership**
  Annual membership fee is $40K.
- **Affiliated Membership**
  Annual membership is $12K. It is primarily for small businesses (employees less than 500 people).

Benefits to Company Members

The following is a list of the benefits and rights for IMS members:

- All IMS members will have non-exclusive and royalty free licensing rights in using all technologies and information developed by the Center.
- The university will waive the overhead for the membership as the contribution to the Center.
- The university will contribute to the Center by support Center Directors summer salary as well as the annual salary of the administrative secretary for 5 years.
- Company members can receive the leveraged research results (at least 15:1 ratio) from its membership investment. All projects funded through membership fund will be shared among companies.
- Company members can share the best practices and experiences in different IMS testbeds and develop partnerships.
- The Center can work with company members to develop company specific projects. In addition, these projects can be executed by either a research team at the Center or with dedicated full-time on-side researchers working at company site and assist companies to deploy and implement IMS technologies. The Center will work with the Company to develop a separate research contract and IP agreement based on companys interests.
- Company members mentor the IMS testbed projects and can hire and recruit experienced IMS researchers with great impacts.
- The Center will develop short courses and training courses for companies who are interested in deploying and implementing the developed IMS technologies.

University of Cincinnati 513.556.3412
Baldwin Hall 560 513.556.4650
PO Box 210072 513.556.3390
Cincinnati, OH 45221-0072 www.imscenter.net

Technology Transfer Model

The most critical mission of the IMS Center is to nurture and cultivate new breed of engineers, scientists, and leaders in intelligent maintenance systems through a closely dovetailed industry/university collaborative model (Figure 2). This model has been used by over 80 NSF sponsored Industry/University Cooperative Research Centers (I/UCRCs) and has impacted large number of students, faculty, and industry members since 1972.

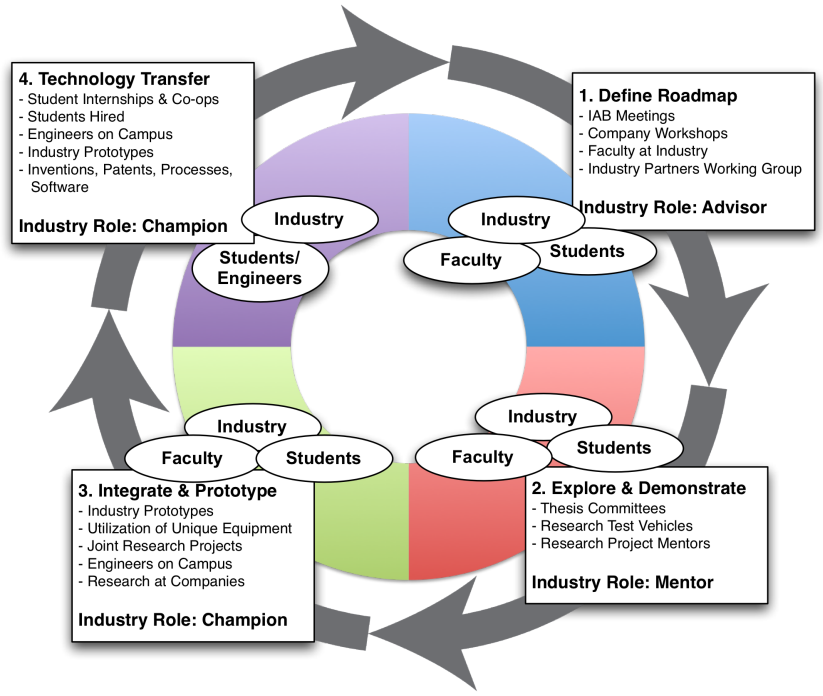

Figure 2: Industry/University Collaboration Model for Technology Transfer

As shown in Figure 2, the IAB Industry Advisory Board (IAB) and industrial practitioners serve as many roles within the IMS Center. In the roadmap definition phase, they serve as an advisor to help the Center define the strategic vision, path, and focus, and align them with industry needs. In addition, they work with faculty and company members to harness industry/university partnerships. In the research exploration and demonstration phase, they serve as a mentor to participate in research projects and provide guidance to faculty and students. In the prototype and validation phase, they serve as a champion to identify company prototype project with right point of contacts in the company. Faculty and students have opportunities to learn about business realities and constraints in risks, costs, and time. To bring the research results to impact company's next-generation products and processes, they serve as users to recruit and hire Center's students to join company team. In addition, they help faculty develop career experiences by strategically position them with company line organization to involve in real-world project assignment. The entire education program serves this purpose.

Technology transfers are executed by either proprietary interests or collective benefits sharing. At the IMS Center, membership cuts across all competitive lines and advancements in intelligent maintenance systems can be shared collectively. A competitive advantage for any IMS Center member is the ability to immediately transfer these engineering advances and thereby gain the leveraging advantage.

University of Cincinnati 513.556.3412
Baldwin Hall 560 513.556.4650
PO Box 210072 513.556.3390
Cincinnati, OH 45221-0072 www.imscenter.net

Maximizing Your IMS Membership

The IMS Center actively engages with member companies, satellite centers and partner institutions to advance research and broaden the knowledge in the area of PHM. Listed below are several opportunities for collaboration that the Center pursues.

- ***Core Membership Research Projects*** target areas that are central furthering the IMS Center's overall mission and that are of interest to the majority of the Center's members. These areas are identified by IMS researchers as well as the Center's members. Core Research Projects are presented to the members at the Industrial Advisory Board (IAB) Meetings, held every six months. At these meetings, members have the opportunity to indicate their interest or support for these projects, and can give targeted feedback to the researchers to help guide these projects to mutually beneficial results.

- ***Feasibility Studies*** - Prior to a sponsored project, a feasibility study may need to be conducted. The purpose of such studies is to help determine the specific needs of the sponsor-member, as well as the technologies required to required to meet those needs. Such studies are funded by membership funds, with the ultimate result being a member-specific sponsored project.

- ***Member-specific Sponsored Project (Includes new IP)*** When a member company has a specific research goal, or its needs go beyond the abilities of existing technologies, a member-specific sponsored project is generated, the outcomes of which are owned by the sponsor and will not be shared with other IMS members. Specific intellectual property terms are decided upon based on the sponsors input, and in keeping with the terms of the IMS membership agreement, and the policies of the IMS Center Site's host institution.

- ***Technical Assistance Agreement*** A Technical Assistance Agreement (TAA) can be generated for situations in which a member has a specific issue that can be addressed using existing technologies. For such projects, no new IP will be created, though some customization work may be required. TAAs work well for projects involving consultation, training, test-bed validation, existing tool deployment, and any other project involving the application of existing core technologies.

- ***Internships (for graduate students and post-doctoral fellows)*** As an alternative to developing a member-specific project or technical assistance agreement, an IMS member has the opportunity to host a researcher from the Center at their facility. Such internships are common, and serve as an excellent way to promote collaboration, as well as to share information, experiences, technologies, etc. The work conducted by an IMS researcher while on internship is owned solely by the host member.

- ***Technical Training*** The IMS Center offers training courses for engineers from member organizations in the use of its prognostics methods and its Watchdog Agent Toolbox. These courses can be tailored to the interests and level of experience of the attendees. Such courses can run from 3 days to 3 weeks, depending on the level of detail required.

- ***Corporate Training*** The IMS Center also provides training for engineers and executives in Dominant Innovation: a tool developed by Professor Jay Lee (IMS Center Director) for helping organizations to identify and develop value-added services to achieve improved productivity and performance. Participation in this training can transform an existing business into a smart product service business.

- ***Joint Proposal Writing*** Many opportunities exist for IMS members for joint proposal writing; this is especially true for small companies (SBIRs, STTRs, etc.) and research institutes.