

**INDUSTRY/UNIVERSITY COOPERATIVE RESEARCH CENTER
FOR
NET-CENTRIC SOFTWARE AND SYSTEMS**

Center By-Laws

(Arizona State University – SenSIP Site)

Article I – Introduction

1. The following By-laws will be used to govern the Center for Net-Centric Software and Systems (“Center”), an Industry/University Cooperative Research Center (“I/UCRC”) funded in part by the National Science Foundation (“NSF”).
2. The By-laws may be amended at any time by an affirmative vote of the Academic Members, with the consent of two-thirds of the Industrial Advisory Board, as hereinafter defined.
3. The Center is a university consortium comprised of Southern Methodist University, The University of Texas at Dallas, University of North Texas, and Arizona State University (“Academic Members”).
4. These By-laws form a part of the Membership Agreement with Member Institutions. If there are any inconsistencies between the By-laws and the Membership Agreement, the terms and conditions outlined in the Membership Agreement take precedence over the By-laws.

Article II – Purpose

1. Vision Statement. The Center is designed to maintain a mechanism whereby the university environment can be used to collectively promote and undertake research, education, technology development, technology transfer, and technological workforce development to enable the nation to transition into the new, net-centric operations paradigm.

Our vision is that the Center will be a primary source for fundamental software and systems research for the modeling, analysis, design, implementation, testing, deployment, and evolution of net-centric systems. The Center will enable coordinated software engineering research and development as well as education and training of U.S. citizens to meet the future software and systems workforce needs of our nation.

The Center will be a leading research alliance in the nation, capable of conducting significant research projects for the federal government and industrial customers. By joining the forces of the participating academic institutions and high tech companies, the

Center will greatly enhance the research capabilities of the Member Institutions (referring collectively to the “Academic Members”, “Industrial Members”, and the “Small Business Industrial Members”, as each are defined herein below) and revolutionize our national research competence. It will earn its fame in the nation as a leading technology innovator, technology incubator, and a center for technology commercialization. It will convert North Texas into a major research region in the nation and attract the best research faculty and students from all over the world and million dollars in research funding. It will contribute significantly to the economic growth of Texas because numerous high-paying jobs and leading high tech companies will move into North Texas due to the research and technology innovation capacity, and the quality of the technological workforce brought about by the Center.

2. Mission Statement. The mission of the Center is:

A. To invent novel software technologies for building next generation, net-work ready, interoperable and trustworthy service-oriented systems.

B. To be a premier source of fundamental software research and technology for net-centric systems.

C. To enhance research capabilities of the Member Institutions and revolutionize our national research competence.

D. To be a leading technology innovator, technology incubator, and source for technology commercialization.

E. To provide competency to enable end-users to conceive, create, configure and deploy net-centric systems in real-time.

F. To address challenges in specifications, modeling, analysis, design, implementation, verification and validation, testing, and deployment of net-centric systems.

G. To coordinate education and training to meet the future software workforce needs of our nation.

H. To attract the best research faculty, students and high-tech companies to North Texas to participate in research and technology innovation.

3. Research Focus. The Center aims to develop effective tools and techniques for rapidly developing highly dependable and adaptable net-centric systems for safety-and/or mission-critical applications, such as command and control systems, emergency preparedness infrastructures, transportation systems, large-scale medical operations, and healthcare systems. Applications in these geographically distributed domains typically need to harness a large number of autonomous subsystems, including sensors and actuators, remote-controlled mobile units, data storage and information processing

entities, control centers, etc., interconnected via Internet, wireless, and satellite networks, that must collaborate in real-time to perform critical tasks. A major characteristic of such net-centric systems is that they are deployed in dynamically changing environments, including potentially harsh environments, and they must constantly adapt and evolve to meet changing goals. Due to the mission-critical nature of many emerging net-centric applications, these systems must always be available, reliable, dependable, and fault-tolerant, while simultaneously providing high security assurance.

More specifically, the Center will develop research and associated technologies for highly dependable, rapidly composable, fully analyzable net-centric systems. To achieve these objectives, the Center's research will focus on several layers of net-centric systems, including the processing and communication layers, the operating system and service layers, and the application layer.

At the processing layer, the Center will develop compiler supported methods of enabling parallel processing of packet network protocol and application tasks to take advantage of multi-core architectures and achieve real-time performance while reducing energy requirements and heat generation.

At the communication layer, the Center seeks to develop rapid integration techniques that select and assemble existing wired and wireless technologies and automatically resolve interoperability issues to support real-time communication protocols among the large number of subsystems and services in embedded net-centric applications.

At the operating system and service layers, the Center plans to develop advanced research for: (1) automated service assembly for net-centric systems that can be rapidly verified for functional, performance, and security compliance; (2) continuous system health-monitoring and proactive system recovery strategies to tolerate unexpected events and adapt to dynamically evolving requirements; (3) compositional verification and validation techniques that can assess system dependability, survivability, and performance to a high degree of confidence.

At the application layer, the center will develop appropriate frameworks for enabling the rapid development of highly survivable and user-friendly net-centric systems in a variety of application domains. Currently, the service-oriented architecture (SOA) technique, which allows autonomy in individual subsystems and supports the infrastructure for asynchronous collaboration among the entities, is considered to be a promising paradigm for modeling, developing, and rapidly deploying net-centric systems. In the SOA based net-centric paradigm, systems are no longer designed with a fixed set of capabilities but as a set of services that will be dynamically acquired or created, replaced, composed, verified, and validated in real-time in the field, without human intervention. The Center researchers will also explore a variety of alternate paradigms, including agent-oriented architectures, for implementing net-centric systems.

Article III – Membership

1. The classes of Membership shall include:

A. Academic Members

B. Industrial Members

C. Small-Business Industrial Members

2. Academic Members. An “Academic Member” includes the founding universities listed above, as well as any college or university that subsequently joins the Center for purposes of participating in activities of the Center.

An Academic Member that receives and uses Industrial Membership Fees will provide a 25% cost-share match in connection with the membership fees to support Center research in accordance with the requirements of the National Science Foundation I/UCRC Program Solicitation NSF 08-591.

3. Industrial Members. An “Industrial Member” is defined as any company, federal research and development organization, or any government-owned contractor operated laboratory that has joined and been accepted as a member of the Center by signing an “I/UCRC Industrial Membership Agreement” that has been signed by an authorized representative of an Academic Member and has paid annual membership fees pursuant to said agreement.

The Industrial Members shall pay a \$35,000 membership fee per year in support of the Center. The Industrial Member may support the Center with two or more paid memberships. Membership fees will be used to support Center research.

4. Small-Business Industrial Members. A “Small-Business Industrial Member” is any small business concern, as defined by the Small Business Association and qualified to participate in the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) authorized under 15 U.S.C. §638, that has joined and been accepted as a member of the Center by signing an “I/UCRC Industrial Membership Agreement Small Business” that has been signed by an authorized representative of an Academic Member and has paid annual membership fees pursuant to said agreement.

The Small Business Industrial Members shall pay an annual membership fee of \$10,000 cash and match amount, from non-federal funds, of \$25,000. A Small Business Industrial Member shall provide a listing of categorized items to be considered as its match support for approval by Academic Members. Match from Small Business Industrial Members may include the value of Members’ contribution of professional and technical services, property, equipment or supplies. Academic Members will accept match in accordance with 200.306 Subpart D – Post Federal Award Requirements under Uniform Guidance.

A small business concern may, at its option, join the Center as an Industrial Member.

Article IV – Organization

1. The Center shall be governed by a/an:
 - A. Academic Policy Board
 - B. Industrial Advisory Board
 - C. Center Director
 - D. Site Directors
2. Academic Policy Board. The “Academic Policy Board” shall refer to a board comprised of one administrative representative, the Vice President or Provost of Research or designee, from each Academic Member with personnel and financial authority over the Center activities at his or her university.

The Academic Policy Board is responsible for administrative oversight and the policies, including but limited to intellectual property policies, of the Center. The Academic Policy Board will resolve any and all Center administrative issues, including review of academic standards, recruitment strategies, retention issues, funding issues, space requirements, and equipment requirements related to the Center. The Academic Policy Board will assure faculty recognition for participation in the Center in tenure and promotion decisions, and assure that the research is appropriate for graduate education. The Academic Policy Board, with the consent of the Industrial Advisory Board, will approve by unanimous vote any changes to these By-laws.

3. Industrial Advisory Board. The “Industrial Advisory Board” shall refer to a board comprised of one representative appointed by each of the Industrial Members and one representative appointed by each of the Small-Business Industrial Members. An organization may have more than one Center Membership and will be entitled to have one voting representative on the Industrial Advisory Board for every paid membership. The Industrial Advisory Board will meet as needed to fulfill its responsibilities hereunder.

The Industrial Advisory Board is led by an elected Industrial Advisory Board Chair. The Industrial Advisory Board will select an Industrial Advisory Board Chair for a two-year term at the inaugural Industrial Advisory Board meeting on February 27, 2009 and no less than every two years thereafter. The Industrial Advisory Board Chair and Center Director will work together as needed to manage Center activities.

All Industrial Members and Small Business Industrial Members will participate through the Industrial Advisory Board in the strategic planning of the Center. The

Industrial Advisory Board will assist the Center Director, Site Director and participating faculty in identifying pre-competitive, generic, industry-related, research problems in net-centric technologies; recommend research projects for future work; identify appropriate internship opportunities for graduate students; assist the Center Director and Site Directors in identifying new members; review the research and educational accomplishments of the Center; and recommend restructuring and/or redirecting of on-going programs to meet Industrial Members' needs and concerns.

At all meetings of the Industrial Advisory Board or committee thereof, two-thirds of the Industrial Advisory Board or committee will constitute a quorum for the transaction of business. The act by two-thirds vote of the Industrial Advisory Board or committee at any meeting at which there is a quorum will be the act of the Industrial Advisory Board or committee. If a quorum is not present at any meeting, the present representatives may adjourn the meeting to another place, time or date, without notice other than announcement at the meeting, until a quorum is present.

3. Center Director. The "Center Director" holds an appointment with the Lead Academic Member, as determined by the National Science Foundation, and conducts research within the Center's Research Focus. The Center Director is appointed by the NSF. The Center Director is the primary decision-maker for the Center and shall have responsibility and authority for all aspects of Center's operation and performance.

The Center Director will be responsible for all Center activities and will report directly to the Academic Policy Board and Industrial Advisory Board. The Center Director will be advised by the Industrial Advisory Board Chair.

4. Site Directors. Each Academic Member may select a Site Director to oversee Center activities at their university. If a Site Director becomes unable to serve, the appropriate university will appoint a successor Site Director subject to confirmation by the other Academic Members.

The Site Directors will be responsible for Center activities at their university and will report directly to their respective university administrators and to the Center Director. The Site Directors will serve as a liaison between the Center and the appropriate departments of the Academic Members.

5. Project Principal Investigators. Project Principal Investigators will manage specific research projects funded by the Center or Industry Members and will report directly to the appropriate Site Director, university administrator, and to the Industrial Member supporting the project. Project Principal Investigators will be identified in specific project proposals.

6. Center External Evaluator. A Center External Evaluator, appointed by the National Science Foundation, will advise the Center Director, Site Directors, Academic Policy Board, and the Industrial Advisory Board on the organization and operation of the Center and will provide an independent assessment of the operation of the Center. The

Center External Evaluator will report directly to the I/UCRC Program Manager at the National Science Foundation.

7. Administrative Support Staff. The Academic Members will provide a reasonable level of clerical and account support for the operation of the Center.

Article V – Administration

1. The Academic Policy Board, Industrial Advisory Board, Center Director and Site Directors will work together on strategic plans for the Center and on recruiting new members.

2. The Academic Policy Board and Industrial Advisory Board shall hold biannual Center Board Meetings.

3. The Center Director, in cooperation with the Site Directors will submit an annual operating and research budget to the Academic Policy Board and Industrial Advisory Board for review and recommendations. This budget will be available for review prior to the second biannual Center Board Meeting each year.

4. The Site Directors, upon recommendation of the Industrial Advisory Board and the Center Director, will authorize the use of membership fees by the Project Principal Investigators in support of Center research.

5. The Site Directors will work with the Project Principal Investigators and appropriate academic departments on recruiting graduate students for the Center and will set standards for student participation; monitor student progress towards a degree; set goals for recruiting students; and, help students to apply for industry internships. The Site Director and project Principal Investigators will develop a strategy to integrate the technologies of the Center into the academic curriculum at each university to the maximum extent possible.

Article VI – Reports

1. The Center Director shall provide a semi-annual report to the Academic Members, Industrial Members, Small Business Industrial Members, and to the National Science Foundation.

2. The Site Directors and Project Principal Investigators shall provide interim reports to the Center Director and to the sponsoring Industrial Members or Small Business Industrial Members as necessary at the completion of major research tasks or as set-forth in the sponsored research agreement.

3. All administrative issues, concerns or conflicts regarding the activities of research and reporting are the responsibility of the Center Director.

Article VII – Meetings

1. The Center Director, Site Directors, and the Industrial Advisory Board Chair will establish the schedule of activities and meetings for the Center, as well as agenda for the semi-annual Research Review Meetings.

2. The Industrial Advisory Board will meet at least twice a year to review research results, select projects for recommendation to the Academic Policy Board, review budgets, and discuss the strategic plans for the Center. The Industrial Advisory Board review meetings will coincide with the semiannual Center Board Meetings. An Industrial Member or Small Business Industrial Member may send more than one representative to the Industrial Advisory Board Meetings, but may only have one voting representative per paid membership.

4. The Academic Policy Board will meet as necessary to discuss and resolve Center program and management issues.

5. Center Board Meetings are closed to the public, because of proprietary Center information that will be discussed. Attendance is limited to faculty, staff, and students affiliated with the Center; representatives of Industrial Members or Small Business Industrial Members; and the Center Evaluator and other NSF personnel.

Article VIII – Research Project Selection Procedures

1. During the start-up period of the Center (February 2009 – January 2010), commitment of first-year membership fees will be made to Project Principal Investigators. The Center Director and Site Directors, in consultation with the Industrial Advisory Board will jointly and unanimously approve first-year, start-up projects in support of the Center mission with special consideration given to the first-year Industrial Members' or Small Business Industrial Members' research needs. Thereafter research projects shall be selected pursuant to the Center's Operating Procedures which shall, to the fullest extent possible, comply with the principals set forth in these By-laws.

2. A Center research project will usually require performance by two or more Academic Members and may be sponsored by two or more Industrial Members or Small Business Industrial Members. Therefore, membership fees from several Industrial Members or Small Business Industrial Members may be used to support individual projects of common interest. The Center research projects will be conducted by students at one or more of the Academic Members.

3. All Member Institutions may participate in the selection and evaluation of research projects. Industrial Members or Small Business Industrial Members may acquire multiple Center memberships, and therefore will have a corresponding number of voting representatives on the Industrial Advisory Board.

4. Typically, Industrial Members or Small Business Industrial Members will propose general industry-oriented research topics of interest to their organization. A portfolio of relevant research topics will be compiled based on the interests of the Member Institutions. These research topics will be posted on the Center web site and will form the basis for cooperative discussions among the faculty and all Industrial Members. Each Academic Member will develop a set of pre-proposals consistent with the goals of their group, the interests of the Industrial Members and Small Business Industrial Members, and the mission of the Center. The pre-proposals will be posted on the Center web site prior to the second biannual Center Board Meeting each year. At the Industrial Advisory Board Meeting, faculty/student teams will discuss their proposals with the Industrial Advisory Board members.

5. Industrial Members and Small Business Industrial Members may have an opportunity to fund one or more research projects. Members of the Industrial Advisory Board will recommend funding of projects and will cooperate with the Center Director to establish an annual budget for each project.

Article X1 – Publicity

1. An Industrial Member or Small Business Industrial Member shall not use the name of any Academic Member or the Center in any publicity, advertising or news release without the prior written approval of an authorized representative of the affected university, or in the case of the Center written approval of the Center Director is required. Likewise, no Academic Member may use the name of an Industrial Member or Small Business Industrial Member in any publicity without the prior written approval of the member. Notwithstanding the foregoing, the parties may satisfy any reporting requirements of their respective organizations. Industrial Members and Small Business Industrial Members shall take no action that states or implies or allows another to infer that an Academic Member has approved or endorsed an Industrial Member's or Small Business Industrial Member's products or services.

2. The Center Director shall post the descriptions of all Center research projects on the Center web site. The descriptions shall not contain confidential or proprietary information and may be published freely.

Article X – Publications

1. Subject to Academic Members' publication policies, faculty engaged in Center research reserve the right to publish in scientific or engineering journals the results of any

research performed by the Center. The sponsoring Industrial Members or Small Business Industrial Members, however, shall have the opportunity to review any paper or presentation containing results of the research program of the Center prior to publication of the paper, and shall have the right to request a delay in publication for a period not to exceed ninety (90) days from the date of submission to the sponsoring Members, for proprietary reasons, providing that the sponsoring Members make a written request and justification for such delay within sixty (60) days from the date the proposed publication is submitted by certified mail to the sponsoring Industrial Members or Small Business Industrial Members.

2. Any confidential information provided by an Industrial Member or Small Business Industrial Member to a Project Principal Investigator or other members of the Center shall be provided under the protection of an independent confidentiality agreement between the Industrial Member or Small Business Industrial Member and the appropriate university.

Article XI – Benefits

1. All Member Institutions will have non-exclusive rights to the entire Center research portfolio under the conditions outlined in the Membership Agreement.

2. All Industrial Members and Small Business Industrial Members will have an opportunity to directly participate in Center research and education programs by serving as industrial mentors and/or thesis committee members as appropriate and consistent with the policies and procedures of Academic Members.

3. All Industrial Members and Small Business Industrial Members will have an opportunity to propose case study problems, specific research problems and focus areas for research. The case study problems will be used to train Center students.

4. Technology transfer between the faculty research teams and Industrial Members and Small Business Industrial Members may be promoted by:

A. Graduate student industrial internships;

B. The direct involvement of the industrial advisor on the research team;

C. Web-based submission of reports; or

D. Semiannual meetings.

5. Each Industrial Member or Small Business Industrial Member that joins the Center will vote at Industrial Board Meetings on the selection of research projects supported by membership fees. They will also be eligible to vote at Industrial Board

Meetings on all other Center matters and participate in the evaluation and discussion of research projects.

6. Selection of research projects to be carried out by Academic Members shall be made by the Academic Policy Board, with the advice of the Industrial Advisory Board, as described above.

Article XII – New Academic and Industrial Members

1. New universities or colleges may request membership into the Center. Each new university requesting membership shall initially obtain concurrence from the Center Director, Site Directors, and the I/UCRC Program Manager at the National Science Foundation prior to submitting a “Letter of Intent” to join the Center. Universities requesting membership must demonstrate their ability to perform synergistic research within the focused research areas of the Center and their willingness to work within the structure, policies and procedures of the Center. Upon concurrence by the Center, the new university requesting membership may continue application per the applicable procedures of the prevailing National Science Foundation I/UCRC program solicitation.

2. New companies, federal research and development organizations, government-owned contractor operated laboratories or small businesses concerns may request, or be requested, to join the Center as an Industrial Member or Small Business Industrial Member. These new organizations may join the Center upon signature of the applicable Membership Agreement, acceptance of the current By-laws, and payment of the non-prorated annual membership fees. Application of these new membership fees may be made to existing research programs at the affiliated site or held in reserve until the next Center Board Meeting.

Article XIII – Outreach and Broader Impacts

1. The Center Director and Site Directors will develop a Broader Impacts Plan to ensure that the Center promotes collaborations within the community through local, regional, national and international participation in center activities. This plan shall include solicitation of the National Science Foundation, Industrial Members and Small Business Industrial Members, Academic Members and state funding in support of these broader impact activities.

2. The Center Director and Site Directors will develop within the Broader Impacts Plan a strategy to ensure that the Center promotes collaboration within the community through extensive K-12 involvement. This plan may take the form of technology demonstrations, tours, and student research projects at the K-12 level. The plan will promote development of collaborative educational opportunities for K-12 faculty and students through establishment of summer internship programs at the Center. This plan shall include solicitation of National Science Foundation, Industrial Members and Small

Business Industrial Members, Academic Members and state funding in support of these broader impact activities. The Site Directors shall report on their annual progress of the activities required to be performed under these By-laws, as part of their program progress reports delivered at the Center Board Meetings.