The mission of the Security and Software Engineering Research Center is to conduct a program of applied and basic research on software security, system security and software technology problems of interest to its members.

Affiliates have the opportunity to interact with world-class researchers and enjoy immediate access to innovative projects that often go beyond areas they might normally attempt in-house. Affiliates have the advantage of hiring new graduates and finding quality summer interns. In some cases, affiliates have sent personnel to study for advanced degrees while working on company-specific projects. In short, the S2ERC is a partnership between academia and industry that offers multi-faceted benefits on both sides of the technology transfer equation.

The center strives to deliver practical, customized research that addresses our affiliates’ vital needs. Every S2ERC affiliate sets its own research agenda by hand-picking and customizing the research projects in which it invests. As a result, technology transfer is the hallmark of the S2ERC. Additionally, collaboration with the center often results in extraordinary economic impact, with some affiliates documenting returns on investment as high as 10-to-1.

At Iowa State, the S2ERC core competencies consist of the following:
- User Authentication
- Wireless Security
- Cloud Security
- Intrusion Detection and Network Forensics
- Hardware Security
- Cyber-Physical Systems
- Software Reliability and Software Safety
- High Assurance Software
- Embedded Systems Security
- Security Testbeds

S2ERC @ Iowa State

In 1976, the National Science Foundation (NSF) established the Industry/University Cooperative Research Center Program (I/UCRC) to encourage more collaborative endeavors between academia and industry. The goal of the program was to establish self-sufficient research centers of excellence in areas of critical technology. In 2010, Ball State’s Software Engineering Research Center (SERC) and the Iowa State Center for Information Protection (CIP) combined their considerable research strengths to form the S2ERC – a single, NSF-funded I/UCRC.

Our center, in continuous operation since 1986, is the only I/UCRC devoted to security and software engineering. The center continues to grow and evolve: recently, the NSF approved Virginia Tech and Georgetown as its third and fourth primary sites, with several other universities currently in the planning stage.

**S2ERC Membership**

Membership in the S2ERC @ Iowa State is subdivided into two classes:
- A Full Membership requires an annual commitment of $40,000 per year. This entitles you to one vote on the IAB and all of the benefits described herein. If you commit to $80,000 or more per year, you are entitled to two votes on the IAB.
- A Contributing Membership requires a minimal annual contribution of $5,000. A Contributing Member may send a representative to the IAB meetings and has a fractional vote proportional to their level of contribution.
Industry Collaboration and Innovation Program

Industry-university collaboration greatly improves the software process and product. Researchers gain access to real-world data and experienced practitioners who can validate their models and guide their research. Affiliate companies gain immediate access to innovative research that is often stratified beyond areas they might normally support. Affiliates are able to appoint their research dollars to projects that address a specific technical need in their company, and they can request research proposals addressing particular problems of interest. S²ERC strives to cultivate a rich industry-university dialogue throughout the transfer of technology. Thus, customized security and software engineering research projects are the norm in the S²ERC.

Industry Advisory Board (IAB)
The Industry Advisory Board, or IAB, is the mechanism through which partners:
- Guide direction of S²ERC research
- Recommend projects for funding
- Get project updates, publication access, on site seminars, visits, and more.
- Learn of new project proposals in real time
- Network with other like-minded researchers, companies and federal agencies.

Two-day IAB meetings are held twice a year and are hosted by one of the participating universities or member companies in the continental United States. Although attendance is not required, many affiliates find that the IAB meeting – where affiliates can interact directly with researchers and peers – is one of the most valuable benefits of membership.

Project Selection Process

Industry membership fees are pooled to establish a research fund:
- IAB votes on university projects to fund, with ideas generated by:
  • Responses to affiliate-issued Request for Information (RFI)
  • Internal proposals generated by university faculty
  • Projects are funded at $40K/year

Through this process, there is generally a one-to-one relationship between the membership fee, a member’s vote, and funded projects.

"At PNNL, we consider S²ERC a strategic investment that we can leverage in order to collaborate with Iowa State on larger federal R&D proposals."

- Nick Multari, Senior Project Manager, Cyber Security Research, Pacific Northwest National Laboratory
Coover Hall/ECpE Addition at Iowa State University - Where researchers have been catching bugs since 1950

Highlights of Membership

- Customized research projects tailored to your needs
- A significant return on investment
- Exploit inventions that may lead to new innovative products
- Improve quality and productivity of software engineers
- Unbiased security testing and analysis
- Access to expertise in new software engineering technology
- Use of unique facilities with low overhead costs
- Technical reports, on-site short courses and seminars
- Summer interns, potential future employees
- Networking opportunities with industry and government leaders

Iowa State Management Team

Joseph Zambreno
Director
Raj Aggarwal
Program Advisor
Ginny Anderson
Program Assistant

The S²ERC consists of a diverse group of research faculty across multiple colleges and departments at Iowa State. Funding for S²ERC is leveraged by several federal sources, including NSF, DARPA, DOE, AFOSR, DHS, and others.