# COVER SHEET FOR GRANT PROPOSALS

**State Board of Education**

**SBOE PROPOSAL NUMBER:** (to be assigned by SBOE)  
**AMOUNT REQUESTED:** $1,582,800 cumulative over three years  

**TITLE OF PROPOSED PROJECT:** IGEM Proposal: Multidisciplinary Cyber-Security Faculty Cluster Hire  

**SPECIFIC PROJECT FOCUS:**  
Hiring of five new faculty in support of cyber-security research and education in computer science, electrical and computer engineering, civil engineering and sociology. Funding of technology and knowledge transfer activities including workshops, joint proposals and joint development activities. Hiring of research software engineer and IT support personnel. Support for visiting faculty position. Support for establishment of software security testing laboratory.  

**PROJECT START DATE:** 7/1/2012  
**PROJECT END DATE:** 6/30/2015  

**NAME OF INSTITUTION:** University of Idaho  
Office of Sponsored Programs  
**DEPARTMENT:** Center for Secure and Dependable Systems (CSDS) in cooperation w/Computer Science Dept; Electrical & Computer Engineering Dept; Sociology Dept; and National Institute Advanced Transportation Technology (NIATT)  

**ADDRESS:** PO Box 443020, Moscow, ID 83844-3020  

**E-MAIL ADDRESS:** osp@uidaho.edu  
**PI PHONE NUMBER:** 208-885-4114  

**NAME:**  
**TITLE:**  
**SIGNATURE:**  

**PROJECT DIRECTOR**  
Jim Alves-Foss  
Director, CSDS  

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Katherine G. Aiken  
Dean of CLASS  

**CO-PRINCIPAL INVESTIGATOR**  
Gregory W. Donohoe  
Chair, CS Department  

**CO-PRINCIPAL INVESTIGATOR**  
Brian K. Johnson  
Chair, ECE Department  

**CO-PRINCIPAL INVESTIGATOR**  
Karen R. Den Braven  
Director, NIATT  

**AUTHORIZED ORGANIZATIONAL REPRESENTATIVE**  
Larry Stauffer, COE Interim Dean  

**Polly Knutson, OSP Director**
IGEM Proposal: Multidisciplinary Cyber-Security Faculty Cluster Hire

Submitted by University of Idaho Colleges of Engineering and Letters, Arts & Social Sciences

1. **Name of Idaho public institution:** University of Idaho (UI)

2. **Name of principal investigator directing the project:** Dr. James Alves-Foss
   (Co-PIs: Dr. Gregory Donohoe, Dr. Brian Johnson, Dr. Karen Den Braven, Dr. Katherine Aiken)

3. **Project objective and total amount requested:** ($1,982,800 over a 3 year period)

   This proposal is a request for a multidisciplinary faculty cluster hire in the area of cyber-security, with a specific focus on critical information infrastructure and support for secure software development. This is a significant enhancement to existing expertise at the University, focusing on development of critical technologies for Idaho industry. Cyber-security technologies improve the efficiency of corporate computing systems, whether they are for manufacturing controls, e-commerce or internal operations. In addition, the inclusion of cyber-security technologies in software products increases reliability of those products which in turn increases customer satisfaction and subsequent market share.

   The University of Idaho has existing expertise in power systems engineering and transportation engineering, both related to the support of critical technologies for industry and the general populace. The inclusion of cyber-security research related to the information infrastructure in support of power and transportation is essential for long term reliable operations as we move to more advanced systems for these infrastructures. These critical technologies have great potential for economic growth in Idaho, which is why this proposal includes an emphasis in these areas, and why this proposal is supported by industry in this field, including Avista, Comtech EF Data Corp, Campbell Company, Idaho Power and Power Engineers (support letters are in Appendix C.). We fully expect to grow our relationships with these and other companies,
partnering with them on joint faculty hires and support for faculty research labs and research projects. Industry also needs an understanding of the societal and personal impacts of these technologies and cyber-security implications for privacy.

Growth of research and education through this multidisciplinary STEM (Science, Technology, Engineering and Mathematics) proposal supports Idaho’s statewide higher education research strategic plan.

The federal government is very supportive of research and development in cyber-security and has solicited proposals from academia and industry in support of both basic and applied research, with a recent emphasis on results that lead to new products. We have a successful track record in obtaining these types of large federal grants and working with industry. This proposal will enhance the ability of the UI cyber-security team to partner with Idaho industry in response to these proposals as a mechanism for further enhancing academic research, and economic development in this area.

4. **Resource commitment:**

   During the 2010-2011 academic year, UI reviewed internal research centers and institutes. The Center for Secure and Dependable Systems (CSDS) and the National Institute of Advanced Transportation Technology (NIATT) were among the few centers selected to continue as focus areas of research strength for UI. The University provides operating budgets and funding for directors and staff in CSDS and NIATT (descriptions of CSDS and NIATT are in Appendix A.)

   The University requires annual evaluations of activities and productivity of these entities, and has a more intensive five year review process. UI commits to continuing support for these organizations through the life of the IGEM funding and beyond, as long as they remain productive units of the institution, building on our track record of success in these areas.
In direct support of this project, UI commits to providing office and laboratory space for the newly hired faculty, to support and mentor their growth, and to facilitate development of federally funded and industry collaborative research projects. UI will also financially support this project by paying fringe benefits of all faculty hires, and to use University funds and donations to enhance the startup and laboratory equipment needs of the cyber-security research faculty.

5. **Specific project plan:**

This proposal leverages existing cyber-security expertise, in conjunction with other areas of strength at UI, specifically transportation and power, and adds needed expertise in quantitative social science to develop a core multidisciplinary group of faculty as the foundation of a center of innovation in high assurance cyber-security for information infrastructures. The proposed five new tenure-track faculty hires, in conjunction with existing faculty at UI, and in collaboration with industry in the state and region, will provide a multidisciplinary research cluster of sufficient critical mass for fostering economic growth and development in this key technological area. The research and education expertise provided by these faculty will provide key technology transfer to Idaho and regional industry and government as well as foster intellectual innovation at UI. These new hires will be mentored by the co-PIs of this proposal, and by faculty within their research domains.

In addition to conducting research and transferring technological innovations, these faculty will also enable us to increase the number of undergraduate and graduate students with computing expertise, not only in computer science, but in electrical and civil engineering as well. This combination of knowledge and skill in computer science for critical information infrastructures as well as their particular engineering area will help them to enter the Idaho
workforce to meet the challenges of cyber-security in all aspects of computing technologies in industry. We propose these faculty hires be distributed as follows:

- An associate professor of computer science with a focus on research for secure software development and analysis to foster innovation in new computer security technologies in support of Idaho industry. This research will support the development of more secure technologies that better serve both industry and customers. This person will be responsible for reaching out to industry to develop collaborative proposals for federal funding, and working with industry to enhance the security of their software products. Part of this work will involve development and management of a proposed software security testing lab where products from industry partners can be tested and evaluated.

- An assistant professor of computer science focusing on critical infrastructure or embedded computing systems security, key technologies for future innovation. The majority of computing systems manufactured today are for embedded systems, such as mobile devices, printers, transportation and manufacturing equipment. Market analysts predict incredible growth in this area; industries that provide secure solutions will have an edge over others in their sector. We plan for this position to be a joint hire for the first two years between UI and an industry partner (to be determined during the first few months of this project). The new faculty member will work in conjunction with the industrial partner to co-develop technology and better transfer industry needs and future directions of technology development back into the university. During the third year and beyond, the individual will be fully working for the UI, though it is expected that they will maintain significant industrial collaborations.

- An assistant professor of electrical and computer engineering with a focus on power grid operation and control, specifically the dependability (assurance) of the information
communications systems for the modern smart grid. This is a great area of potential growth as new companies enter the industry to implement smart grid technologies, and this addition enhances the existing Power program at UI. We have the same intent for a joint hire with this position for the first two years, partnering with an industry partner.

- An assistant professor of civil engineering with a focus on transportation control systems, specifically the management and control of the information processed by those systems. The success of NIATT highlights the industrial potential and local leadership in this area. NIATT was recently awarded a large federal grant for traffic signal and routing technologies for reduced environmental impacts of congestion and greater energy independence. The project has a strong information system component that will require cyber-security technologies to ensure safety and reliability.

- An associate professor of social science with quantitative expertise, focusing on privacy/cyber-security policies as they relate to industry and their interaction with their customers, a key area of research that is needed in Idaho. The fallout from poor privacy policies has hurt industries in the past due to loss of customer confidence and subsequent loss of market share. Integration of people-oriented research and policies with the technologies discussed above is greatly needed. The James A. and Louise McClure Center for Public Policy Research at the UI could house this person and make use of the resources the center has for policy analysis.

In addition, we propose using the IGEM funding combined with support from our industrial partners to provide start-up funds for these positions as well as the hiring of a research software engineer and visiting faculty to support research activities in these areas. The research software engineer will be a staff researcher in CSDS to provide additional cyber-security expertise in
support of the research projects of the cyber-security faculty, will provide additional mentoring for students, and will assist in the technology and knowledge transfer to industry. The visiting faculty position will be used to enhance research expertise in specific areas of research as determined through our discussions and collaborations with our industry partners.

The new hires will bring technical expertise to UI, the state, and the region that will be seen through research, education, and outreach. These researchers will focus on understanding key cyber-security issues as they relate to critical infrastructure, computing technologies in support of industry, and secure software development. The quantitative sociologist will bring much-needed insight into the impacts these technologies will have on customers and society helping industry better meet consumer’s privacy needs and improve customer acceptance of technology.

To foster better communication and knowledge transfer with industry we propose using the $30,000 of the funding from IGEM to support the establishment of workshops and conferences to bring together academia and industry on a regular basis.

To improve cyber-security features in industry software, we also propose using $50,000 of the funds from IGEM along with industry donations to establishing a software security testing laboratory within CSDS at UI. This laboratory will enable us to assist industry in improving the quality of their software products as well as providing a location for training and knowledge transfer to industry partners.

6. **Potential economic impact**

The impact this project will have on Idaho’s economy can be understood from a recent statement by the U.S. Chamber of Commerce: *The rapid adoption of information technology has transformed global commerce. By using the internet, people can shop anywhere in the world, without ever leaving their homes. Thanks to the "Information Revolution", businesses are*
increasingly more productive, are open to additional markets, and more people have access to critical information faster than ever before....However, this same revolution that propels global commerce also emboldens hackers, thieves, and other cyber criminals. Unprotected computers are susceptible to viruses and worms that can damage or destroy a company's network. These risks must be effectively managed if businesses are to consolidate and build upon the opportunities created by the information revolution.

Every aspect of our economy is being revolutionized by the widespread use of comprehensive cyber infrastructure (CI). Advanced computational facilities (e.g., data systems, computing hardware, high speed networks) and instruments (e.g., telescopes, sensor networks, sequencers) are coupled with quantifiable models, algorithms, software, and other tools and services to support this complex CI of our modern society. Therefore the updated 2010-2020 US Bureau of Labor Statics’ *Occupational Outlook Handbook* (released Mar 2012) predicts that 73% of the new jobs in STEM fields will be in computing careers.

Computing technology is now ubiquitous. The confidentiality, integrity and availability of data used by these systems are integral to success in research, development and business. It is essential for Idaho, national and global industries to have access to cyber-security technology to protect their computer systems so that they can compete and grow. Industries that integrate cyber-security technology into the products they ship, websites and servers that support their industries, and internal tools that fuel their operations and innovation will see more efficient operations, better customer relations, and enhanced potential for improved market share.

The development of software products does not require a large investment in physical infrastructure, manufacturing resources, or shipping, and can be conducted in both urban and rural communities. Software and information based industries are a good investment for Idaho.
Software engineers trained in cyber-security must have a good understanding of computing technologies and the interaction of those technologies with their environment; making them among the most talented software developers in the market place. Even if they do not develop security software, these cyber-security experts know how to make all types of software secure and reliable. Reliability of software for the power grid, transportation and manufacturing is essential for industry and citizens of the state. Some of the key software in these area is used for embedded devices (dedicated computing devices such as traffic signal controls or smart meters), which are related to devices in cars, airplanes, cell phones and printers.

7. **Criteria for measuring success:**

   We propose to use the following metrics to evaluate this project:

   - Number of personnel directly hired by funds in this project (including the faculty, staff researchers and also any students hired with faculty start-up funds).

   - Number of copyrightable and patentable materials generated by individuals directly or indirectly funded (through new cyber-security research grants or contracts).

   - External funding awarded to faculty hired through this initiative:
     - Dollar amount of grants and contracts received.
     - Dollar amount of expenditures from these grants and contracts.
     - Number of personnel hired for these grants and contracts.

   - Partnerships with industry
     - Number of industry-academic collaborations (this includes joint projects, joint hires and industry sponsored university projects)
     - Number of technology transfer, training or small projects conducted in collaboration with industry.
- Economic impact of these collaborations as reported by the partner industry including new positions created, increase in revenue, and creation of new products or services.

8. **Budget:***

   We are requesting $1,982,800 from IGEM to cover the expenses of this project over a three year period. The detailed breakdown of this request is in Appendix D.

9. **Budget justification**

   **Personnel:** Dr. Alves-Foss will be paid 10% time to support this project for mentoring, establishment of industry partnerships, contacts with funding agencies and overall management of the cyber-security research activities ($17,300 annually from IGEM).

   UI will hire four new faculty members during the first year of this project, all to start in Spring semester 2013 (all listed salaries are full academic year salaries). This includes the associate professor of computer science ($105,000) and an assistant professor of sociology ($75,000). In addition we will have two joint hires with industry partners with 50% of salaries and fringe benefits paid by industry partners: an assistant professor in computer science ($90,000) and an assistant professor in electrical and computer engineering ($85,000). During the second year we will hire an assistant professor of civil engineering ($85,000).

   During the first year we will hire a research software engineer ($90,000) and an IT support person ($65,000) who will both start in Fall semester 2012 for a 75% annual appointment, and be funded from IGEM 62.5% in the second year and 50% in the third year, with the remaining funds coming from UI funds, external research grants and partnerships.

   During the third year we will bring a visiting faculty member to campus ($100,000), funded 50% from IGEM with the rest from UI funds and external sources.
Fringe benefits: Fringe benefits for these positions will be funded by UI and industry partners ($88,400 and $201,500 and $238,500 for the three years respectively).

Start-up funds: To seed initial research and recruit the best new faculty, we will provide $150,000 to the associate professor, $100,000 to the other engineering and computer science professors and $75,000 for the sociology professor ($525,000 total with $400,000 from IGEM).

Operating expenses: We expect each faculty search to cost $10,000 in addition to 10% salary for moving expenses. We are also requesting $20,000 a year in general operating expenses and $25,000 a year in travel expenses to support CSDS faculty and student research activities, research supplies, travel to meet with industry partners, funding agencies and research conferences to keep CSDS faculty up to date with the rapidly changing research in this field. Some of these funds will also be used to support industry/academic workshops and meetings for knowledge and technology transfer.

Equipment: We will use $100,000 in year one and $50,000 in each of year two and three ($200,000 total with $95,000 from IGEM) to outfit the software security testing lab as well as enhance power and transportation labs as appropriate for industry led research projects.

10. Additional institutional and other sector support

In the few days since we were informed that this proposal was selected to move forward out of the UI campus, we have had discussions with the following industrial partners who support this project, as indicated by the letters in Appendix C. These partners have stated willingness to provide support to help this project succeed: Avista, Comtech EF Data Corp, Campbell Company, Idaho Power and Power Engineers.

Moving forward, in FY16 all tenure track salary expenses will come from internal university funds, federal research grants and industrial support.
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Appendix A: Facilities and Equipment:

**CSDS:** The University of Idaho offered its first computer security course in 1992, and has been active in research and education in cyber-security for the past two decades. CSDS was established in 1998 and was recognized as a National Center of Academic Excellence in Information Assurance Education in 1999, one of the first seven universities in the nation to receive this designation, receiving over $10 million in research funding since that time. We have been offering the federal Cybercorps Scholarship for Service to students since 2001, one of the founding five universities to have this program, receiving over $5 million in scholarship funds, and supporting more than 67 students to date. These research and scholarship funds have led to more than 100 academic publications, as well as the education and graduation of 24 Ph.D. students, 37 M.S. students focusing in cyber-security. In addition, since 2000, 178 undergraduates have taken the introduction to computer security course, many of whom have gone on to take other cyber-security courses offered at UI. This is more than 50% of the 296 students who have received B.S. degrees in computer science from UI during that time period.

This activity has led to a recognized national and international presence and leadership in design and analysis of secure computing systems, specifically for high assurance systems, such as those that control our power grid, transportation networks, avionics and communication systems. The focal point of this cyber-security research has been in CSDS and the Dept. of Computer Science.

CSDS consists of a 1000 sq ft suite of rooms for housing staff and graduate students. This space is adjacent to the Computer Science Department (CS) faculty offices. The CSDS space provides researchers with desktop and networked computing resources, development and testing software, and experimental single-board computer platforms for different embedded systems.
CSDS currently supports over $100,000 of donated or research-supported computing platforms and software licenses. Faculty affiliated with CSDS are given separate offices outside of this space and have access to departmental as well as CSDS space and resources. The CSDS equipment and software are currently maintained by the College of Engineering IT support staff and CSDS student employees.

The CS department provides additional office space for SFS students, networked computing systems, development software, and teaching labs for embedded systems and cyber-security. The equipment is maintained and supported by dedicated IT staff in CS.

**NIATT:** NIATT’s mission is to develop engineering solutions (knowledge and technology) to transportation problems and to prepare our students to be leaders in the design, deployment, and operation of our nation’s complex transportation systems. This mission is accomplished through multidisciplinary collaborative research activities conducted by NIATT affiliate faculty members and researchers.

NIATT (initially NCATT, the National Center for Advanced Transportation Technology) was established by the US Congress in 1991 as part of the surface transportation reauthorization (Intermodal Surface Transportation Efficiency Act). Congress provided $8 million towards the construction of a new engineering and physics building on campus to house the new transportation center. In 1998, NIATT was included in that surface transportation program reauthorization as a Tier 1 University Transportation Center (UTC), which provided base annual funding of $750,000. NIATT has since successfully recompeted to be a USDoT Tier 1 UTC in 2002, 2006, and most recently in 2011, and so has continuously remained a Tier 1 UTC. The most recent competition selected only ten centers across the nation from 46 highly competitive proposals. The UI was chosen to lead a team of five universities to make the nation’s
transportation system more sustainable. Research work at NIATT is student intensive—in the last five years, 120 undergraduate and 69 graduate students have worked on NIATT research projects.

Many of the planned NIATT UTC projects will leverage the potential of vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications. Security of these communication systems is of paramount importance for safety and performance assurance, so CSDS and NIATT will collaborate on ensuring the security of those systems.

The Center for Traffic Operations and Controls within NIATT has nine affiliate faculty members in the areas of civil engineering, mechanical engineering, electrical and computer engineering, and computer science, with extensive experience in real-time traffic control systems, hardware-in-the-loop simulation (HILS) modeling, smart signal applications, security and survivability of real-time control systems, highway and traffic safety, and engineering education and workforce development. These laboratories are used in the development and testing of signal and infrastructure control strategies.

Traffic controller laboratories with remote access capabilities allow state-of-the-art real-time traffic control research and advanced HILS microscopic modeling of traffic signal system operations. NIATT’s controller interface device (CID) has been used by FHWA and more than 30 universities and research organizations across the U.S.

**Power Lab:** The University of Idaho has one of the finest power laboratory suites in the Northwest. The entire facility is quite new, with 60% of the floor space completely renovated in 2001 and the remaining 40% completely renovated in 2002. Nonetheless, care was taken during the renovation to retain and improve the exceptionally reliable machinery that has been the foundation of the lab for a number of years. All equipment within the laboratory suite is
compatible. This permits a great deal of flexibility in designing experiments. For example, a power electronic controller can be applied to a model power system that has several machines as components.

The laboratory suite includes an electric machinery lab with 14 integral horsepower motor-generator sets, ranging in size from 5 HP to 20 HP. Two of the sets have the capability of directly measuring torque. There is a mix of ac and dc machines, permitting flexible experimentation with active loads. The largest is a 20 HP synchronous generator modified for developing and testing scheme for protecting large generators from internal faults and will soon have power quality measurement equipment. The power electronics laboratory presently has four building blocks for developing power converters. The building blocks can be connected to implement any of the common converter configurations, including dc/dc converters, dc/ac inverters, and ac/dc rectifiers. Converter controls are programmed using microprocessor development systems, allowing the capability to change the control settings easily. The facilities have been used to distributed generation studies and externally funded energy storage projects using batteries, flywheel energy storage systems and ultracapacitors.

The Analog Model Power System (AMPS) lab facility has a scale power transmission system that can be configured to have four transmission line segments. The system has full instrumentation for SCADA and power system protection through contributions from Schweitzer Engineering Laboratories and Idaho Power Company. All of this is readily accessible for experiments originating and controlled from remote Internet locations. This enables a wide range of experiments in circuit protection, either by simulation or by connection to experimental hardware assembled using equipment in the laboratory. The system can also be used for modeling and testing power electronic controllers for grid control application.
The lab facilities also include a real time digital simulator (RTDS) capable of performing real time, hardware in the loop time domain simulation of power system. This system can be used to develop and test protection systems, smart metering and control applications and power electronic controllers for grid applications. The RTDS can be controlled remotely via a secure VLAN with some local assistance to connect the hardware under test with the system. Both the RTDS and the AMPS can be interfaced the SCADA test bed that is housed in the same room. This test bed was developed.

The ECE faculty members have close ties with engineers from SEL and POWER Engineers who assist undergraduate and graduate students in learning to fully utilize the protection and control devices and the RTDS. In the long run this is a win-win situation for the students, the university and the employers as it strengthens the students engineering abilities when they graduate.
Appendix B: Biographical Sketches and Individual Support:

Curriculum Vitae for Jim Alves-Foss
University of Idaho

NAME: Alves-Foss, James  DATE: June 13, 2011
RANK OR TITLE: Professor of Computer Science
DEPARTMENT: Computer Science
OFFICE LOCATION AND CAMPUS ZIP: JEB 225, 1010
OFFICE PHONE: (208) 885-5196
FAX: (208) 885-9052
EMAIL: jimaf@uidaho.edu

DATE OF FIRST EMPLOYMENT AT UI: August 1991
DATE OF TENURE: August 1998
DATE OF PRESENT RANK OR TITLE: July 2006
EDUCATION BEYOND HIGH SCHOOL:

Degrees:

Ph.D., Computer Science, 1991, University of California, Davis. Mechanical
Verification of Secure Distributed Systems Specifications. Advisor: Dr. Karl N.
Levitt.
Master of Science, Computer Science, 1989, University of California, Davis.
Bachelor of Science, Physics, Mathematics, and Computer Science, 1987, University
of California, Davis.

EXPERIENCE:

Teaching, Extension and Research Appointments:

Assistant (1991)/Associate Professor (1998)/Professor (2006), University of Idaho
Department of Computer Science, August 1991-present. Specialization in
Director, Center for Secure and Dependable Systems, MRC Institute, University of
Idaho, January 2004-present. Was co-founder and co-Director 1998-2001; and
Associate Director July 2001-December 2003 while on leave at UC Davis.
Visiting Associate Professor, University of California at Davis, July 2001-June 2003.
Specialization in Formal Methods and Computer Security.
Research Assistant, Division of Computer Science, University of California, Davis,
January 1990-August 1991, under direction of LLNL/DOE. Specialization in
Formal Methods and Computer Security.
Associate Instructor, Division of Computer Science, University of California, Davis,
January-June 1990. Taught two introductory computer science course.

Consulting:

Consultant, Wind River Corporation, 2010-2011. Provide secure software development training to software engineers.
Steering Committee Member, INL Knowledge Partnership Center, 2007-2008.

Non-Academic Employment including Armed Forces:

Programmer, Department of Human Physiology, University of California, Davis, January 1984-March 1987. Provided technical support for research lab.

TEACHING ACCOMPLISHMENTS:

Areas of Specialization:

Formal Methods, Computer Security, Design and Analysis of Dependable Software Systems

Courses Taught: (EO indicated concurrent Engineering Outreach offering –distance ed)

Lower Division:


Upper Division:

CS 140A: (at UC Davis) Programming Languages, Spring 2002
CS 336: Introduction to Information Assurance, Fall 2005, Spring 2006 (EO), Fall 2009, Fall 2010 (EO)
CS 341: Operating Systems, Fall 1992-94
CS 386: Derivational Programming, Spring 1997-98, Spring 2006
CS 395: Design and Analysis of Algorithms, Spring 2011
CS 420/520: Data Communications, Fall 1991-92, Spring 1994-96 (EO; joint undergraduate/graduate)
CS 421: Data Communications Lab, Spring 1995-96
CS 436/536: Advanced Information Assurance, Spring 2007, Fall 2008 (EO) (joint undergraduate/graduate)
CS 438/538: Network Security Spring 2010 (EO), 2012 (EO) (joint undergraduate/graduate, also offered through live video to WSU)
CS 445: Compilers, Spring 1998-2001 (EO 1998 and as pre-taped only 1999) Also taught as CS 142 at UC Davis; Spring 2002.

Graduate:
ECS 274: (at UC Davis), Automated Deduction, Winter 2002
CS 504: Principles of Concurrent Programming, Spring 1992 (EO)
CS 520: (see 420/520)
CS 536: (see 436/536) separated into separate class starting Fall 2010 (EO)
CS 538: (see 438/538)
CS 541: Advanced Operating Systems, Fall 1993-98 (EO)
CS 542: (see 442/542)
CS 586: (see 486/586)

Students Advised:
Undergraduate Students:
Averaging 20-25 per year.

Graduate Student Thesis Advised as Major Professor:
16 PhD:
Dong Yu. A Novel Correlation and Confidence Fusion Framework in Intrusion Detection Systems, Ph.D. C.S, May 2006 (I was major professor for only last few months due to resignation of original major professor)
23 MS Thesis:
Jessica Smith, A Security Review of the Cell Broadband Engine Processor, M.S., CompE., June 2010
David Manz. A Network Simulator for Group Key Management Algorithms M.S., C.S., December 2005

4 MS Non-Thesis (project option) Advised as Major Professor:
Qinghua Tian, M.S., C.S., Dec 2011
Mohan Muppaleni, M.S., C.S., Spring 2007

Current Major Advisor for:
PhD Students in Computer Science
Rachel Bonas, Jennifer Guild, Cheryl Hinds, Kevin Krause, Mark Rounds
MS Students in Computer Science
Lawrence Kerr, Evan Painter, Cynthia Rempel, Jia Song, Stephen Tutton, Joel Weis

External Committee Member for:
Michael Wilder (Ph.D., C.S, 2012)
James Conrad (Ph.D., C.S., 2010)
Paul Craven (Ph.D., C.S., 2009)
Barbara Endicott Popovksi (Ph.D., C.S., 2007)
Wayne Boyer (Ph.D., C.S., 2004)
Courses Developed:

CS 336: Introduction to Information Assurance
CS 442/542: Computer Security Concepts
CS 436/536: Advanced Information Assurance
CS 421: Data Network Laboratory
CS 541: Advanced Operating Systems

Honors and Awards:

College of Engineering Outstanding Faculty Member of the Year Award: 2000
UI ACM Teacher of Year Award: 2001 (CS student professional group).
College of Engineering Outstanding Faculty Member of the Year Award: 2007

SCHOLARSHIP ACCOMPLISHMENTS:

Publications (* indicates student co-author):
Refereed/Adjudicated (evaluated by external reviewers whose opinion can result in rejection):
Books:

**Book Chapters:**


**Journals and Conference Proceedings Published:**


**Peer Reviewed/Evaluated:** (not anonymous, single reviewer review, or abstract only review)

**Journals and Conference Proceedings:**


**Other (Books and Edited Volumes):**


**Presentations and Other Creative Activities:**


External Research Grants and Contracts Awarded ($9.5M):


Using Honeynets for Attacker Forensic Evidence, $3,000, funded by Microsoft Corporation, Sept. 2006 (Lead PI: Carol Taylor, Co-PI J. Alves-Foss)


Industrial Applications of Information Security to Protect the Electric Power Infrastructure, $775,000, funded by NIST, October 2001-May 2003, (Schweitzer Engineering Lab is lead agency; Lead-PIs: P. Oman and E. Schweitzer University of Idaho is a subcontractor for $220,000 with Co-PIs: J. Alves-Foss and A. Krings).


NSF Scholarship Grants (5M):


Cyber Service Training and Education Supplement, $1,212,000, funded by NSF, January 2003-July 2007, (Co-PI with P. Oman, D. Frincke and R. Lewis)


Donations, Fellowships and Other Non-Research Grants (492K):

Secure MLS Voice over IP, $15,000 funded by Raytheon Corp. Dec 2006. (PI: J. Alves-Foss)

5 development seats of RTI DDS 4.x $ 86,655 US. Real-Time Innovations (RTI) University Program, Sept 2006. (MS student Elaine Mui was the lead student on this acquisition effort).


Other Internal or Institution Funding (95K):

Reliable Communication, $5,000, funded by the National Center for Advanced Transportation Technology, March 1993-May 1994, (PI: J. Alves-Foss).


SERVICE:
Major Committee Assignments:
National and International Committees:
  Minitrack co-chair, Assurance Research for Dependable Software Systems (ARDSS) minitrack of the HICSS conference 2011-2012
  Sponsorship Chair, Recent Advances in Intrusion Detection, 2005
  Program Committee Member International Conference I-Warfare and Security 2006-2011.
  Program Committee Member, New Security Paradigms Workshop 2003
  Program Committee Member, National Institute of Standards and Technology (NIST) Workshop on Software Assurance Tools, Techniques, and Metrics, 2005
  Session Chair, International Conference on Computers and Information, 1996
  Special Sessions Chair, International Workshop on Higher Order Logic Theorem Proving and its Applications, 1995
  Program Committee Member and Reviewer, International Workshop on Higher Order Logic Theorem Proving and its Applications, 1993
  Reviewer: Numerous Conferences and Journals

Department of Computer Science Committees:
  Curriculum/Petitions Committee Fall 2008-Spring 2010 (chair)
  Graduate Committee Fall 2006 – Spring 2008, (Chair Fall 2007 – Spring 2008)
  Chair, Tenure Recommending Committee, Fall 2005
  Director Center for Secure and Dependable Systems, 2004 - present
  Associate Director, Center for Secure and Dependable Systems, 2001-2003 (while on leave)
  Co-Director, Center for Secure and Dependable Software, 1998-2001
  Director of Department’s Laboratory for Applied Logic, August 1994-1998
  Ph.D. Planning Committee, 1991-92
  Hardware/Software Committee, 1991-96 (Chair, 1992-94)
  Chair, Strategic Planning Committee 1998-2000
  Graduate Committee, 1996-2001 (Chair Fall ’97-’00), 2003-2004, 2006-2008 (Chair in 2008),
University Committees:
  Quorum Committee, Fall 1995
  University Computing Advisory Committee, 1993-96
  Borah Symposium Committee 2004-2006
  University Research Council 2009-2012
  Ad hoc Intellectual Property Dispute committee Fall 2010 (Chair)

Special Committees
  UI Primary Representative to NSA Center of Excellence in Information Assurance Education (2004-present)
  UI Primary Representative to Institute for Information Infrastructure Protection (2008-present)

Professional and Scholarly Organizations:
  Association for Computing Machinery (ACM), Senior Member 2008
  Institute of Electrical and Electronic Engineers (IEEE) Computer Society, Senior Member 2005
  Object Management Group (OMG)
  Open Group
Current and Pending Support for Jim Alves-Foss
(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

<table>
<thead>
<tr>
<th>Investigator: James Alves-Foss</th>
<th>Other agencies (including NSF) to which this proposal has been/will be submitted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support</td>
<td></td>
</tr>
<tr>
<td>Project/Proposal Title: IGEM Proposal: Multidisciplinary Cyber Security Faculty Cluster</td>
<td></td>
</tr>
</tbody>
</table>

Source of Support: Idaho SBOE/HERC
Total Award Amount: $1,982,800
Total Award Period Covered: 7/1/2012 – 6/30/2015
Location of Project: Moscow, ID Campus
Person-Months Per Year Committed to the Project: Cal: 0.5 Acad: Sumr:

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: Wind River MILS 2.0 High Level Verification Phase III SOW 4 of the SKPP Verification Project | |

Source of Support: Wind River Corporation
Total Award Amount: $ 632,000
Total Award Period Covered: 9/1/2009 – 12/31/2012
Location of Project: Moscow, ID Campus
Person-Months Per Year Committed to the Project: Cal: 3 Acad: Sumr:

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: A New Operating System for Security Tagged Architectures in Support of MILS Compliant Systems | |

Source of Support: AFRL
Total Award Amount: $ 450,000
Total Award Period Covered: 11/1/2010—12/31/2013
Location of Project: Moscow, ID Campus
Person-Months Per Year Committed to the Project: Cal: 1.8 Acad: Sumr:

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: Continuation of University of Idaho Scholarship for Service Program 2010 | |

Source of Support: National Science Foundation
Total Award Amount: $1,587,173
Total Award Period Covered: 10/1/2010-6/30/2014
Location of Project: Moscow, ID Campus
Person-Months Per Year Committed to the Project: Cal: 1 Acad: Sumr:

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: Wind River MILS 2.0 High Level Verification Phase III SOW 4 of the SKPP Verification Project Extension | |

Source of Support: Wind River Corp.
Total Award Amount: $ 500,000
Total Award Period Covered: 6/1/2012-5/15/2013
Location of Project: Moscow, ID Campus
Person-Months Per Year Committed to the Project: Cal: Acad: 3 Sumr: 2

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

NSF Form 1239 (10/99) USE ADDITIONAL SHEETS AS NECESSARY
Biographical Sketch for Karen Den Braven

Director, National Institute for Advanced Transportation Technology
Professor, Mechanical Engineering Department Phone: (208) 885-7655
University of Idaho Fax: (208) 885-9031
P.O. Box 440901 Email: kdenb@uidaho.edu
Moscow, Idaho 83844-0901 Web: www.webs1.uidaho.edu/niatt/

Education:
Ph.D., Mechanical Engineering, 1987, Colorado State University, Fort Collins, Colo.
M.S., Mechanical Engineering, 1980, University of California, Berkeley
B.S., Mathematics, 1978, North Carolina State University, Raleigh

Professional Experience:
Director, National Institute for Advanced Transportation Technology, 2009–Present
Acting Chair, Mechanical Engineering, University of Idaho, 2009
Director, Center for Clean Vehicle Technology, University of Idaho, 2005–Present
Professor of Mechanical Engineering, University of Idaho, 2000 – Present
Associate Professor of Mechanical Engineering, University of Idaho, 1993–2000
Assistant Professor of Mechanical Engineering, University of Idaho, 1987–1993

Activities and Awards:
American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE),
Geothermal Technical Committee
American Society of Mechanical Engineers (ASME):
- Fellow of ASME
- Energy Resources Board Member-at-Large for Division Operations, 2002–06
- Program Coordinator, Energy Resources Board, 1997–2000; Chair, 1999–2000; Vice Chair, 1998–99; Program Chair, 1994–96
- Advanced Energy Systems Division; Vice Chair of Heat Pump Technical Committee, 1989–91; Chair, 1991–94;
Society of Automotive Engineers:
- Best Paper Award, Small Engine Technology Conference, San Antonio, Nov., 2006
- Award for “Excellence in Oral Presentation” for presentation “Making the Connection: The University of Idaho Clean Snowmobile” at the SAE 2002 Spring Fuels and Lubricants Meeting, Reno, May 6–9, 2002.
Naval ROTC Battalion of the University of Idaho and Washington State University Faculty Excellence Award, 2007
UI Engineering Expo: Booth Award and Technical Session Award for the Clean Snowmobile Team, 2007 and 2011.
Research Grants from the Past Five Years:
“University Transportation Centers Program Tier 1 Grant: Transportation for Livability by Integrating Vehicles and the Environment,” US Department of Transportation, 2012–2014, $3,500,000, Principal Investigator.
“University Transportation Centers Grant for the Pacific Northwest Transportation Consortium (Region 10): PacTrans”, USDoT, 2012-2014, $600,000, Principal Investigator.
“Pollution Emissions Reduction in a Two-Stroke Direct-Injection Snowmobile Engine”, NIATT/USDoT, 2010–12, $85,000, Principal Investigator.
“Sustainable Transportation Engine and Fuel Systems”, SBOE/HERC, 2008–10, $550,000, Co-Principal Investigator with Judi Steciak and Steven Beyerlein.
“University Transportation Centers Program Tier 1 Grant,” US Department of Transportation, 2007–2011, $3,000,000, Co-Principal Investigator with Michael Kyte.

Peer-Reviewed Publications from the Past Five Years (*denotes graduate student co-authors):
The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

<table>
<thead>
<tr>
<th>Investigator: Karen R. Den Braven</th>
<th>Other agencies (including NSF) to which this proposal has been/will be submitted.</th>
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<tr>
<td><strong>Support:</strong></td>
<td>Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support</td>
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<tr>
<td><strong>Project/Proposal Title:</strong></td>
<td>University Transportation Center (UTC) Year 4</td>
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<tr>
<td><strong>Source of Support:</strong></td>
<td>USDoT</td>
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<tr>
<td><strong>Total Award Amount:</strong></td>
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<td><strong>Total Award Period Covered:</strong></td>
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<tr>
<td><strong>Location of Project:</strong></td>
<td>Moscow</td>
</tr>
<tr>
<td><strong>Person-Months Per Year Committed to the Project:</strong></td>
<td>3 Cal: 3 Acad: Sumr:</td>
</tr>
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</table>

| **Support:**                      | Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support     |
| **Project/Proposal Title:**       | University Transportation Centers: TransLIVE (Transportation for Livability by Integrating Vehicles and the Environment) |
| **Source of Support:**            | USDoT                                                                             |
| **Total Award Amount:**           | $3,500,000                                                                        |
| **Total Award Period Covered:**   | 2/1/2012-1/31/2014                                                                |
| **Location of Project:**          | Moscow (with subawards to four partner universities)                              |
| **Person-Months Per Year Committed to the Project:** | 3 Cal: 3 Acad: Sumr: |

| **Support:**                      | Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support     |
| **Project/Proposal Title:**       | University Transportation Centers: Pacific Northwest Transportation Consortium (Region 10)PacTrans |
| **Source of Support:**            | USDoT/subaward from Univ. of Washington                                          |
| **Total Award Amount:**           | $600,000                                                                          |
| **Total Award Period Covered:**   | 2/1/2012-1/31/2014                                                                |
| **Location of Project:**          | Moscow (our portion)                                                              |
| **Person-Months Per Year Committed to the Project:** | 0.75 Cal: 0.75 Acad: Sumr: |

| **Support:**                      | Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support     |
| **Project/Proposal Title:**       | IGEM Proposal: Multidisciplinary Cyber Security Faculty Cluster                    |
| **Source of Support:**            | Idaho SBOE/HERC                                                                   |
| **Total Award Amount:**           | $1,982,800                                                                        |
| **Total Award Period Covered:**   | 7/1/2012 – 6/30/2015                                                               |
| **Location of Project:**          | Moscow, ID Campus                                                                  |
| **Person-Months Per Year Committed to the Project:** | Cal: Acad: Sumr: |

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.*
Biographical Sketch for Gregory W. Donohoe, Ph.D. P.E.

1. Professional Preparation
   B.S., Lake Superior State University, 1976.
   M.S., University of New Mexico, Electrical and Computer Engineering, 1982.
   Ph.D., University of New Mexico, Electrical and Computer Engineering, 1989.

2. Appointments (Some overlap)
      I. Physical Security, Intrusion Detection (1976-82)
      II. Intelligent Systems Division, Robot Sensing & Control, (1982-87)
      III. Exploratory Development Department, Machine Intelligence (1987-90)
   a. University of New Mexico. 1990-96. Assistant Professor.
      - Research in computing for digital image processing and pattern recognition
      - Teaching in computer engineering
      - Microelectronic on-board computing systems for spacecraft
      - Research in computer-based medical imaging, medical information systems.
      - Research in microelectronics computing systems for space
      - Space protection, spacecraft situational awareness.
   e. Center for Advanced Microelectronics and Biomolecular Research, University of Idaho, 2002-2006. Research Associate Professor.
      - Research in microelectronic systems, processor design for space.
   g. EnTempo Corporation, President, 2006-2007. A software startup company focused on technologies for embedded computing.
   h. Computer Science Department, University of Idaho, 2009-present. Department Chair, Professor.

3. Scholarly Activity
   - Publication (author or co-author)
     o 3 book chapters
     o 129 technical articles
     o 25 other presentations and talks.


- Graduate Students: Major Professor
  - Supervised 23 Masters to completion of their degrees
  - Supervised 5 PhD students to the completion of their degrees
- Teaching
  - Taught 28 different classes in Electrical and Computer Engineering and Computer Science
  - Developed 5 undergraduate and graduate courses
- Principal Investigator on $6.2M in research

4. Role, Synergistic Activities

Dr. Donohoe’s role in this effort is principally one of administration, mentoring and enabling, in support of the PI and the team. His experience as a deputy program manager for the Air Force Research Labs and project management for the Defense Advanced Research Projects Agency (DARPA), prepares him to take the large-scale programmatic view.

His relevant technical background is in embedded computing, which is a key element of the critical information infrastructure.

Dr. Donohoe has long been an advocate for bringing engineering and commerce together. He was an early supporter of the university’s Vandal Innovation Enterprise Works (VIEW), a program design to bring engineering and business students together to study commercialization strategies and develop business plans around engineering students’ capstone projects. Dr. Donohoe will continue to work with the business community to promote the transfer of technologies developed under this program to marketable products.

As chair of the Computer Science Department, Dr. Donohoe is responsible for Computer Science instruction, including curriculum, staffing, and instructional resources. He will be responsible for recruiting, hiring and mentoring the Computer Science faculty members associated with this effort. He will work closely with the PI to see that instructional and research resources will be brought to bear on this effort.
**Current and Pending Support for Gregory Donohoe**  
*(See GPG Section II.D.8 for guidance on information to include on this form.)*

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

<table>
<thead>
<tr>
<th>Investigator: Gregory Donohoe</th>
<th>Other agencies (including NSF) to which this proposal has been/will be submitted.</th>
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<td>Project/Proposal Title: IGEM Proposal: Multidisciplinary Cyber Security Faculty Cluster</td>
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Source of Support: Idaho SBOE/HERC  
Total Award Amount: $1,982,800  
Total Award Period Covered: 7/1/2012 – 6/30/2015  
Location of Project: Moscow, ID Campus  
Person-Months Per Year Committed to the Project. Cal:  
Acad:  
Sumr:  

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: GE/ONR Passive Electronic Components Phase 2 | |

Source of Support: GE Global Research  
Total Award Amount: $1,005,600  
Total Award Period Covered: 1/1/2011 – 6/30/2013  
Location of Project: Moscow, ID Campus  
Person-Months Per Year Committed to the Project. Cal: 1.2  
Acad:  
Sumr:  

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: | |

Source of Support:  
Total Award Amount:  
Location of Project:  
Person-Months Per Year Committed to the Project. Cal:  
Acad:  
Sumr:  

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: | |

Source of Support:  
Total Award Amount:  
Location of Project:  
Person-Months Per Year Committed to the Project. Cal:  
Acad:  
Sumr:  

| Support: □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support | |
| Project/Proposal Title: | |

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.*
Biographical Sketch for Brian K. Johnson

Department Chair, Department of Electrical and Computer Engineering
Professor, Electrical and Computer Engineering    Phone: (208) 885-6902
University of Idaho                 Fax: (208) 885-7579
P.O. Box 441023            Email: bjohnson@uidaho.edu
Moscow, Idaho 83844-1023     Web: www.ece.uidaho.edu/ee/power/brian

Education:
Ph.D., Electrical Engineering, August 1992, University of Wisconsin-Madison, Madison, Wisconsin
M.S.E.E, May 1989, University of Wisconsin-Madison, Madison, Wisconsin
B.S.E.E., December 1987, University of Wisconsin-Madison, Madison, Wisconsin

Professional Registration:
Registered Professional Engineer (Idaho #8368, Wisconsin #30895)

Professional Experience:
Dept. Chair, Department of Electrical and Computer Engineering, University of Idaho, 2006-
Interim Chair, ECE Department, University of Idaho, 2004
Professor, University of Idaho, 2004-
Associate Professor, University of Idaho, August 1997-2004
Assistant Professor, University of Idaho, August 1992-July 1997

Activities:
Member American Society for Engineering Education
Member of CIGRE (International Council on Large Electric Systems)
Senior Member IEEE
IEEE Industry Applications Society
  - IEEE Violet Book Standards Working Group (co-author of one chapter)--Standard 511 IEEE
    Industrial Electronics Society
  - IEEE Grey Book Standards Revision Working Group (contributor to one chapter), Standard
    241 IEEE Industry Applications Society
Administration Committee IEEE Intelligent Transportation Systems Council (2001-2003)
Board of Governors, IEEE Intelligent Transportation Systems Society (2004-2008)
IEEE Power Engineering Society
  - Active in many working groups and task forces
Conference Chair, 2004 North American Power Symposium

Funded Research Grants from the Past Five Years:
[1.] Johnson, B.K. and J.D. Law. “Subsynchronous Resonance Risk Assessment and
 Signal”, USDOT UTC, Aug. 2010-Aug. 2011, $124,633

Significant Publications (*denotes graduate student co-authors):
The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

**Current and Pending Support for Brian K. Johnson**  
(See GPG Section II.D.8 for guidance on information to include on this form.)

<table>
<thead>
<tr>
<th>Support:</th>
<th>Current</th>
<th>Pending</th>
<th>Submission Planned in Near Future</th>
<th>*Transfer of Support</th>
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**Project/Proposal Title:** Improving Pedestrian Safety at Signalized Intersections

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<tr>
<th>Source of Support: US Department of Transportation UTC</th>
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<td>Total Award Amount: $120,281</td>
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<td>Person-Months Per Year Committed to the Project:</td>
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<td>Total Award Period Covered: 8/1/2011 – 8/31/2012</td>
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**Project/Proposal Title:** Subsynchronous Resonance Risk Assessment and Countermeasures

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<tr>
<th>Source of Support: Laboratory for Applied Science and Research w/SEL</th>
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<tr>
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<td>Location of Project: Post Falls, ID w/LASR</td>
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<td>Total Award Period Covered: 3/1/2011 – 1/31/2013</td>
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**Project/Proposal Title:** Renewable Energy Balancing

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<td>Total Award Period Covered: 1/1/2012—6/30/2012</td>
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**Project/Proposal Title:** Optimal Allocation of FACTS Devices and PMUs in Qatar Power Grid

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<th>Source of Support: University of Qatar</th>
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**Project/Proposal Title:** Static Compensation Controlled via Synchrophasers to Enhance Operation in Future Qatar Smart Power System

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<tr>
<th>Source of Support: University of Qatar</th>
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<td>Total Award Amount: $ 142,886</td>
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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.*
### Current and Pending Support for Brian K. Johnson

(See GPG Section II.D.8 for guidance on information to include on this form.)

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<tbody>
<tr>
<td>Location of Project:</td>
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| Support:                       |                                                                                   |
|                                | □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support    |
| Project/Proposal Title:        |                                                                                   |

Source of Support: GE Global Research

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| Support:                       |                                                                                   |
|                                | □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support    |
| Project/Proposal Title:        |                                                                                   |

Source of Support: L

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| Support:                       |                                                                                   |
|                                | □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support    |
| Project/Proposal Title:        |                                                                                   |

Source of Support:

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<tr>
<td>Person-Months Per Year Committed to the Project.</td>
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</tr>
</tbody>
</table>

| Support:                       |                                                                                   |
|                                | □ Current □ Pending □ Submission Planned in Near Future □ *Transfer of Support    |
| Project/Proposal Title:        |                                                                                   |

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.*
Biographical Sketch for Katherine G. Aiken, Ph.D.

1. Professional Preparation
   B.A., History, 1972, University of Idaho
   M.A., History, 1974, University of Oregon
   Ph.D. History, 1980, Washington State University

2. Appointments
   a. Associate Dean, Continuing Education, Lewis Clark State College, 1980-1984
   b. Project Director, “Humanities Programs for Rurally Isolated Nontraditional Students,”
      National Endowment for the Humanities—Lewis Clark State College, 1985-1987
   c. Assistant Professor of History, Univ. of Idaho, 1988-1994
   d. Associate Professor of History, Univ. of Idaho, 1994-2000
   e. Professor of History and Chair, Univ. of Idaho, 2000 to 2005
   f. Associate Dean, College of Graduate Studies, Univ. Idaho, Spring 2003 and 2004
   g. Associate Dean, College of Letters, Arts and Social Sciences, Univ. Idaho, 2005-2006
      Dean, College of Letters, Arts and Social Sciences, Univ. of Idaho, July 2006 to present

3. Scholarly Activity
   • Relevant Publication
     o Idaho: The Heroic Journey (with Kevin Marsh and Laura Woodworth-Ney),
     o Kellogg Idaho’s Bunker Hill: The Rise and Fall of a Great Mining Company,
     o “Senator Church and His Constituents,” in Russell A. Miller, ed., U.S. National
       Security, Intelligence and Democracy: From the Church Committee to the War
       on Terror, Routledge, 2008, 76-95.
     o “Idaho,” in Benjamin F. Shearer, ed., The United States: The Story of Statehood
   • Graduate Students: Major Professor
     o 20 completed M.A. students since 1990
     o 6 completed Ph.D. students since 1991
     o Member of over 55 graduate committees since 1990
   • Project Director/lead scholar grants from Idaho Humanities Council and National
     Endowment for the Humanities
   • Project Humanist for twenty-eight Idaho Humanities Council Projects
   • Over fifty public presentations and teacher institutes in last ten years
   • Idaho State Board of Education Certification of Teacher Education Programs Team
     (College of Idaho, BYU-Idaho and Northwest Nazarene)
   • State of Idaho, Department of Education, Professional Standards Commission, 2008—
     present
   • Panelist for National Endowment for the Humanities nine times
   • Consultant for United States Department of Justice
   • Idaho Humanities Council Chair
Honors and Awards

- Idaho Woman Making History Award, 2011
- University of Idaho Panhellenic Council Outstanding Faculty Award, 1989 and 2009
- Virginia Woolf Distinguished Service Award, University of Idaho Women’s Center, 2006
- Phi Kappa Phi Distinguished Professor, 2005
- Associated Students, University of Idaho, Outstanding Faculty Award, 2000 and 2004
- University of Idaho Professional Women’s Association Woman of the Year, 2003
- Organization of American Historians/Japanese Association for American Studies Residency in Japan, Rikkyo University, 2001
- Student Disabilities Services Outstanding Faculty Award, 2001
- University of Idaho Award for Teaching Excellence, 2000
- Faculty Fellow, Excellence in Teaching the Humanities Program, 1998-99
- Naval ROTC Faculty Excellence Award, 1998, 1999
- Idaho Humanities Council Fellowship, 1991-1992
- National Endowment for the Humanities Fellowship for College Teachers, 1983
- National Endowment for the Humanities Summer Seminar, 1981

4. Role, Synergistic Activities

Katherine Aiken’s role in this project is to facilitate the social science elements. Her expertise in Idaho history will allow her to assist in framing social science research within the Idaho experience.

College of Letters, Arts & Social Sciences faculty are currently working on two major initiatives that feature research plans that are relevant to this proposal. With funding from MICRON, faculty have conducted focus groups in twenty Idaho communities to determine attitudes towards Science, Technology, Engineering, and Mathematics (STEM) education. They have developed a series of surveys based on information gleaned from the focus groups and are evaluating data from both sources. The James A. and Louise McClure Center for Public Policy Research is currently surveying Idahoans’ attitudes towards energy and energy policy. Under the auspices of a grant from Idaho National Laboratories and Idaho Power Company, social scientists will analyze the survey results and write a white paper on Idaho residents’ attitudes toward various sources of energy.

In a similar vein, the social scientist collaborator on this project will conduct research designed to determine the human responses to various implementation schemes for cybersecurity.

Dr. Aiken will oversee the hiring of a social scientist and the creation of a social science research team who will work with other project participants to ensure that the information infrastructure and the products created align with community responses and considerations.
### Current and Pending Support for Katherine Aiken

**See GPG Section II.D.8 for guidance on information to include on this form.**

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

<table>
<thead>
<tr>
<th>Investigator: Katherine Aiken</th>
<th>Other agencies (including NSF) to which this proposal has been/will be submitted.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Support:</strong></td>
<td>![ ] Current</td>
</tr>
<tr>
<td><strong>Project/Proposal Title:</strong></td>
<td>IGEM Proposal: Multidisciplinary Cyber Security Faculty Cluster</td>
</tr>
</tbody>
</table>

**Source of Support:** Idaho SBOE/HERC  
**Total Award Amount:** $1,982,800  
**Total Award Period Covered:** 7/1/2012 – 6/30/2015  
**Location of Project:** Moscow, ID Campus  
**Person-Months Per Year Committed to the Project.** Cal: | Acad: | Sumr: |

| **Support:** | ![ ] Current | ![ ] Pending | ![ ] Submission Planned in Near Future | ![ ] *Transfer of Support* |
| **Project/Proposal Title:** |

**Source of Support:** GE Global Research  
**Total Award Amount:**  
**Total Award Period Covered:**  
**Location of Project:**  
**Person-Months Per Year Committed to the Project.** Cal: | Acad: | Sumr: |

| **Support:** | ![ ] Current | ![ ] Pending | ![ ] Submission Planned in Near Future | ![ ] *Transfer of Support* |
| **Project/Proposal Title:** |

**Source of Support:** L  
**Total Award Amount:**  
**Total Award Period Covered:**  
**Location of Project:**  
**Person-Months Per Year Committed to the Project.** Cal: | Acad: | Sumr: |

| **Support:** | ![ ] Current | ![ ] Pending | ![ ] Submission Planned in Near Future | ![ ] *Transfer of Support* |
| **Project/Proposal Title:** |

**Source of Support:**  
**Total Award Amount:**  
**Total Award Period Covered:**  
**Location of Project:**  
**Person-Months Per Year Committed to the Project.** Cal: | Acad: | Sumr: |

| **Support:** | ![ ] Current | ![ ] Pending | ![ ] Submission Planned in Near Future | ![ ] *Transfer of Support* |
| **Project/Proposal Title:** |

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.*
Appendix C: Non-faculty Researchers and Letters of Support

Capabilities and responsibilities of non-faculty researchers: In addition to the hiring of five tenure-track faculty members, this proposal includes the hiring of a research software engineer and provides funds for a visiting faculty member.

The research software engineer will be an individual with a PhD in computer science with an emphasis in software engineering for secure systems. This person will be required to have a strong publication and research record and potential to work independently, to interact with industrial partners and to assist in the development of grant proposals for external funding. Their primary job duties will involve working with cyber-security faculty in support of externally funded research projects (partially funded by these projects) by writing technical papers and reports, assisting student researchers and conducting independent research. In addition, job duties will include working with the faculty in establishing and maintaining relationships with industrial partners, assisting in knowledge and technology transfer, assisting in development of external research proposals and assisting in the development and management of the software security testing laboratory.

The visiting faculty member will join us in the third year. By that time we will have expanded our relationships with industrial partners and our external research grants. We anticipate that there will be an area of cyber-security research where we have need of an external expert. We expect to bring on board an associate professor of computer science who will be on sabbatical from their home university and is interested in helping us strengthen our program in an area of need. This person will have to have a strong research and publication record in cyber-security and ability and interest in working with industrial partners.
Support from industrial partners: We have attached letters of support from some of our industrial partners who have all expressed an interest in seeing the project move forward. Several have expressed willing to explore potential joint hires and financial support for this project. These partners have a history of partnering with the university and providing funding for various projects.

Schweitzer Engineering has committed to supporting our joint hire in electrical and computer engineering in the power field with an emphasis on cyber-security for the power grid. They have committed to fund part of the start-up package for this joint hire as well.
April 20, 2012

To the IGEM Evaluation Committee,

Avista Corporation is pleased to strongly support the University of Idaho's interdisciplinary cyber security proposal. As a corporation that owns and operates a multi-state energy transmission and distribution system (both electric and natural gas) we understand the need for investment in cyber security research and education. We see the needs for enhanced cyber security in our business operations computers, our public-facing websites; our systems control software and the communications infrastructure that allows us to support remote command and control of the critical power infrastructure that we support. A serious cyber attack against the natural gas and electric power infrastructure would be devastating to the citizens and industry in our service territory (Idaho, Oregon, and Washington).

The UI proposal is very interesting in the way they have structured a cluster of faculty hires to augment existing research and education expertise. This cluster of faculty will not support just a single department, but spans four separate departments touching on not only the key computer science faculty, but bringing in domain experts from power and transportation as well as the sociological side. We were pleased to see a break-down of the traditional barriers between departments and to see engineers and computer scientists interested in understanding and addressing the needs of the users of their technology and the impact it may have on quality of life in Idaho.

Avista Corporation serves an area roughly the size of South Carolina. Our customer base includes the second largest city in Washington and the growing population centers of the Idaho panhandle. Accordingly, we value secure service and are greatly encouraged by the potential value that the cyber security proposal brings to Avista.

In conclusion, I strongly recommend that you support the University of Idaho cyber security IGEM proposal, and I thank the state of Idaho for investing in the future of Idaho's economy by supporting such important research areas such as cyber security for critical information infrastructures.

Sincerely,

Tracy L. Rolstad
Senior Power System Consultant
April 16, 2012

To IGEM Evaluation Committee,

Campbell Company is pleased to strongly support the University of Idaho's interdisciplinary cyber security proposal. As a corporation that designs and manufactures products that communicate via networks we understand the need for investment in cyber security research and education. We see the need for enhanced cyber security in our business operations computers, our public-facing websites, our manufacturing control software and the communications infrastructure that allows us to support remote command and control of the critical power infrastructure that we support.

The UI proposal is interesting in the way they have structured a cluster of faculty hires to augment existing research and education expertise. This cluster of faculty will not support just a single department, but spans four separate departments touching on not only the key computer science faculty, but bringing in domain experts from power and transportation as well as the sociological side. We were pleased to see a break-down of the traditional barriers between departments and to see engineers and computer scientists interested in understanding and addressing the needs of the users of their technology and the impact it may have on quality of life in Idaho.

End user agencies are becoming dependent on the data reporting of our APS products. Accessibility and security are key concerns for engineers in the transportation segment. These are often at different ends of the concerns spectrum. The "cluster" design of this group will allow each of the specific concerns to be discussed in concert with the whole. These solution sets to these concerns have a strong impact on the future viability of our products.

In conclusion, I strongly recommend that you support the University of Idaho cyber security IGEM proposal, and I thank the state of Idaho for investing in the future of Idaho's economy by supporting such important research areas such as cyber security for critical information infrastructures.

Best Regards,

Phil Tate
April 16, 2012

To IGEM Evaluation Committee,

The AHA Products Group of Comtech EF Data Corporation is pleased to support the University of Idaho’s interdisciplinary IGEM proposal, “Interdisciplinary Cyber Security Faculty Cluster”. As a corporation that develops and produces products for telecommunications, we are keenly aware of the need for investment in education for critical information infrastructure. We see the need for reliable and secure computing and communication in our products, our business operations, our public-facing websites, our manufacturing control software and the communications infrastructure that we depend on.

We find the UI proposal interesting and unusual in that it does not narrowly focus on a particular discipline or academic program, but spans multiple departments and research entities, breaking down traditional barriers between departments and brings experts from different disciplines together to address the needs of the users of their technology and the impact it may have on quality of life in Idaho.

My company was founded over 20 years ago as a result of collaborative research with the University of Idaho and NASA. We continue to employ engineering graduates from the University of Idaho and provide high salaried employment within the state. I believe that the IGEM proposal has the potential to similarly increase the technology base in Idaho and establish Idaho as a leader in the field of cyber security and critical information infrastructure. This field is growing in importance to e-commerce, telecommunications and all of industry and one of great interest to my company.

In conclusion, I strongly recommend that you support the University of Idaho Critical Information Infrastructure IGEM proposal. I thank the state of Idaho for investing in the future of Idaho’s economy by supporting such important research areas such as cyber security for critical information infrastructures.

Best regards,

Bill Thomson

General Manager
AHA Products Group
Comtech EF Data Corporation
1126 Alturas Dr.
Moscow, ID 83843
April 16, 2012

To IGEM Evaluation Committee:

Idaho Power is pleased to strongly support the University of Idaho's interdisciplinary cyber security proposal. As an electric utility that relies on cyber security to deliver reliable electricity to southern Idaho and eastern Oregon, we understand the need for investment in cyber security research and education. We see the need for enhanced cyber security in our business operations computers, our public-facing websites, the new advanced metering systems, and the systems that control the generators and the operation of the grid infrastructure.

The UI proposal is very interesting in the way they have structured a cluster of faculty hires to augment existing research and education expertise. This cluster of faculty will not support just a single department but spans four separate departments touching on the key computer science faculty while bringing in domain experts from power and transportation as well as the sociological side. We were pleased to see a break-down of the traditional barriers between departments and to see engineers and computer scientists interested in understanding and addressing the needs of the users of their technology and the impact it may have on quality of life in Idaho.

Idaho Power has been a vital part of the economies of southern Idaho and eastern Oregon for almost one hundred years. In the last ten years our industry has seen historic technological innovation that has exponentially surpassed that which occurred in the previous ninety years. We have also seen a commensurate increase in customers' requirements and expectations. This convergence requires ongoing innovation, and we believe it is critical for us to partner with the state’s universities and government to ensure we continue to deliver fair-priced, reliable electric service. However, this is not just an Idaho challenge. Because this is a global challenge, this could be a competitive edge for our state. We believe this could be a catalyst for a new industry creation.

In conclusion, I fervently recommend that you support the University of Idaho cyber security IGEM proposal, and I thank the state of Idaho for investing in the future of Idaho's economy by supporting important research areas such as cyber security for critical information infrastructures.

Sincerely,

[Signature]
April 18, 2012

Larry Stauffer
Interim Dean
University of Idaho
College of Engineering
PO Box 441011
Moscow, ID 83844-1011

Dear Dean Stauffer:

POWER Engineers is pleased to strongly support the University of Idaho's interdisciplinary cyber security proposal. As a corporation that designs electric power infrastructure, we understand the need for investment in cyber security research and education. We see the need for enhanced cyber security in our engineering design solutions for electric power generation, delivery and industrial use. A serious cyber attack against the power infrastructure would be devastating to the citizens and industry in the state. Our ability to employ professionals having specific training in these areas is a benefit to the employees, our clients, this company, and the State of Idaho.

The UI proposal is very interesting in the way they have structured a cluster of faculty hires to augment existing research and education expertise. This cluster of faculty will not support just a single department, but spans four separate departments touching on not only the key computer science faculty, but bringing in domain experts from power and transportation as well as the sociological side. We were pleased to see a break-down of the traditional barriers between departments and to see engineers and computer scientists interested in understanding and addressing the needs of the users of their technology and the impact it may have on quality of life in Idaho.

POWER was founded in Idaho in 1976 and has grown to over 1500 employees across the US and in several foreign countries. Our focus is on the design of substations, transmission lines, power plants and the industrial facilities that use electric power. The safe, secure, dependable delivery of electric power requires that our designs be resistant to cyber attack. This requirement creates the opportunity for POWER to become more competitive by hiring and developing experts in this technical field. By working together to develop this program, the University of Idaho, its graduates, their employers (including POWER), and our clients all become more competitive as we address the threat of cyber attack.
In conclusion, I strongly recommend that you support the University of Idaho cyber security IGEM proposal, and I thank the state of Idaho for investing in the future of Idaho's economy by supporting such important research areas such as cyber security for critical information infrastructures.

Sincerely,

Bill Eisinger  
Executive Vice President

c: John Kumm
Appendix D: Proposed Budget

PROPOSAL BUDGET – YEAR ONE, TWO, AND THREE

Name of Institution: University of Idaho
Name of Project Director: Jim Alves-Foss

A. FACULTY AND STAFF

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Annual Rate of Pay</th>
<th>No. of Months</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Alves-Foss, Professor, CS and Director of CSDS</td>
<td>$121,300 / AY</td>
<td>2.78</td>
<td>1.05 $51,900</td>
</tr>
<tr>
<td>Cyber Security, TT, Associate Professor, CS</td>
<td>$105,000 / AY</td>
<td>22.5</td>
<td>$262,500</td>
</tr>
<tr>
<td>Embedded Security, TT, Assistant Professor, CS</td>
<td>$95,000 / AY</td>
<td>13.5</td>
<td>$142,600</td>
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<tr>
<td>Power, TT, Assistant Professor, EE</td>
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<td>13.5</td>
<td>$127,600</td>
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<tr>
<td>Transportation, TT Assistant Professor, CE</td>
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<td>18.0</td>
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<tr>
<td>Social Research, TT Associate Professor, Sociology</td>
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<tr>
<td>Cyber Security, NTT Research Software Engineer, CSDS</td>
<td>$90,000 / FY</td>
<td>22.5</td>
<td>$168,800</td>
</tr>
</tbody>
</table>

% OF TOTAL BUDGET 56.0% SUBTOTAL $1,110,900

B. FACULTY AND STAFF

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visiting Faculty</td>
<td>$100,000 / AY</td>
<td>4.5</td>
<td>$50,000</td>
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</table>

% OF TOTAL BUDGET 2.5% SUBTOTAL $50,000

C. POST DOCTORAL ASSOCIATES/OTHER PROFESSIONALS

<table>
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<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Systems, Staff CSDS</td>
<td>$65,000 / FY</td>
<td>22.5</td>
<td>$121,900</td>
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% OF TOTAL BUDGET 6.1% SUBTOTAL $121,900

D. GRADUATE/UNDERGRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>Dollar Amount Requested</th>
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</thead>
</table>

% OF TOTAL BUDGET SUBTOTAL % OF TOTAL BUDGET
E. FRINGE BENEFITS

<table>
<thead>
<tr>
<th>Rate of Pay %</th>
<th>Salary Base</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Idaho to pay fringe benefits for all above employees</td>
<td></td>
<td></td>
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<tr>
<td>SUBTOTAL:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F. EQUIPMENT (List each item with a cost in excess of $1000.00.)

<table>
<thead>
<tr>
<th>Item/Description</th>
<th>Dollar Amount Requested</th>
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</thead>
<tbody>
<tr>
<td>Computing and test equipment w/software</td>
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<td>SUBTOTAL:</td>
<td>$ 70,000</td>
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G. TRAVEL

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<tr>
<th>Dates of Travel (from/to)</th>
<th>No. of Persons</th>
<th>Total Days</th>
<th>Transportation</th>
<th>Lodging</th>
<th>Per Diem</th>
<th>Dollar Amount Requested</th>
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</thead>
<tbody>
<tr>
<td>Various</td>
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<td></td>
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<td></td>
<td>$ 75,000</td>
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<td></td>
<td>$ 75,000</td>
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H. Participant Support Costs

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<th></th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stipends</td>
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</tr>
<tr>
<td>2. Travel (other than listed in section G)</td>
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</tr>
<tr>
<td>3. Subsistence</td>
<td></td>
</tr>
<tr>
<td>4. Other</td>
<td></td>
</tr>
<tr>
<td>SUBTOTAL:</td>
<td></td>
</tr>
</tbody>
</table>
## I. OTHER DIRECT COSTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Materials and Supplies - software, moving expense, supplies, fees, workshop support, etc.</td>
<td>$ 155,000</td>
</tr>
<tr>
<td>2. Publication Costs/Page Charges</td>
<td></td>
</tr>
<tr>
<td>3. Consulting Services (Include Travel Expenses)</td>
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</tr>
<tr>
<td>4. Computer Services</td>
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</tr>
<tr>
<td>5. Subcontracts</td>
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</tr>
<tr>
<td>6. Other (specify nature &amp; breakdown if over $1000) - <strong>Start-up Funds targeted to support individual hires</strong></td>
<td>$ 400,000</td>
</tr>
<tr>
<td><strong>SUBTOTAL:</strong></td>
<td><strong>$ 555,000</strong></td>
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</tbody>
</table>

### J. TOTAL COSTS (Add subtotals, sections A through I)

**TOTAL:** $ 1,982,800

### K. AMOUNT REQUESTED

**TOTAL:** $ 1,982,800

---

Project Director’s Signature: [Signature]

Date: Apr 20, 2012
### A. INSTITUTIONAL / OTHER SECTOR DOLLARS

<table>
<thead>
<tr>
<th>Source / Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fringe Benefits from UI and external funds</td>
<td>$528,400</td>
</tr>
<tr>
<td>Faculty/research salaries from external grants, contracts, partnerships and joint hires</td>
<td>$365,600</td>
</tr>
<tr>
<td>Startup Funds</td>
<td>$125,000</td>
</tr>
<tr>
<td>Equipment and Software from external donations</td>
<td>$105,000</td>
</tr>
</tbody>
</table>

### B. FACULTY / STAFF POSITIONS

- Two faculty positions will be funded 50% for two years through partnerships with industry.
- Visiting faculty member will be funded 50% from external sources in third year.
- Research Engineering will be funded 37.5% and 50% in second and third years from external sources.

### C. CAPITAL EQUIPMENT

- The hardware and software needs for the software security testing lab will be determined through conversations with industry partners, to ensure that the lab is adequately equipped. We will then solicit donations in support of this lab.
- We will solicit donations to enhance the power and transportation labs in support of research goals of our industry partners.

### D. FACILITIES & INSTRUMENTATION

- Description
## FACULTY AND STAFF

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Annual Rate of Pay</th>
<th>No. of Months</th>
<th>CAL</th>
<th>ACA</th>
<th>SUM</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Alves-Foss, Professor, CS and Director of CSDS</td>
<td>$121,300 / AY</td>
<td>0.92</td>
<td>0.35</td>
<td></td>
<td></td>
<td>$17,300</td>
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<tr>
<td>Cyber Security, TT, Associate Professor, CS</td>
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<td>4.50</td>
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<td>Embedded Security, TT, Assistant Professor, CS</td>
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<td>$23,800</td>
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<tr>
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<td>$21,300</td>
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<tr>
<td>Transportation, TT Assistant Professor, CE</td>
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<td>$0</td>
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<tr>
<td>Social Research, TT Associate Professor, Sociology</td>
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<td>$67,500</td>
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% OF TOTAL BUDGET: 34.3%

SUBTOTAL: $219,900

## POST DOCTORAL ASSOCIATES/OTHER PROFESSIONALS

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>CAL</th>
<th>ACA</th>
<th>SUM</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Systems, Staff CSDS</td>
<td>$65,000 / FY</td>
<td>9.0</td>
<td></td>
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<td></td>
<td>$48,800</td>
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</table>

% OF TOTAL BUDGET: 7.6%

SUBTOTAL: $48,800

## GRADUATE/UNDERGRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>CAL</th>
<th>ACA</th>
<th>SUM</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
</table>

% OF TOTAL BUDGET: 0%
P. FRINGE BENEFITS

<table>
<thead>
<tr>
<th>Rate of Pay %</th>
<th>Salary Base</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

University of Idaho to pay fringe benefits for all above employees

Q. EQUIPMENT (List each item with a cost in excess of $1000.00.)

<table>
<thead>
<tr>
<th>Item/Description</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing and test equipment w/software</td>
<td>$50,000</td>
</tr>
</tbody>
</table>

SUBTOTAL: $50,000

R. TRAVEL

<table>
<thead>
<tr>
<th>Dates of Travel (from/to)</th>
<th>No. of Persons</th>
<th>Total Days</th>
<th>Transportation</th>
<th>Lodging</th>
<th>Per Diem</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25,000</td>
</tr>
</tbody>
</table>

SUBTOTAL: $25,000

S. Participant Support Costs

5. Stipends

6. Travel (other than listed in section G)

7. Subsistence

8. Other

SUBTOTAL:
<table>
<thead>
<tr>
<th>T. OTHER DIRECT COSTS</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Materials and Supplies - software, moving expense, supplies, fees, workshop support, etc.</td>
<td>$ 96,500</td>
</tr>
<tr>
<td>8. Publication Costs/Page Charges</td>
<td></td>
</tr>
<tr>
<td>9. Consulting Services (Include Travel Expenses)</td>
<td></td>
</tr>
<tr>
<td>10. Computer Services</td>
<td></td>
</tr>
<tr>
<td>11. Subcontracts</td>
<td></td>
</tr>
<tr>
<td>12. Other (specify nature &amp; breakdown if over $1000) - Start-up Funds targeted to support individual hires</td>
<td>$ 200,000</td>
</tr>
</tbody>
</table>

**SUBTOTAL:**  $ 296,500

<table>
<thead>
<tr>
<th>U. TOTAL COSTS (Add subtotals, sections A through I)</th>
<th>TOTAL:  $ 640,200</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>V. AMOUNT REQUESTED</th>
<th>TOTAL:  $ 640,200</th>
</tr>
</thead>
</table>

Project Director's Signature: [Signature]

Date: Apr 20, 2012
## A. INSTITUTIONAL / OTHER SECTOR DOLLARS

<table>
<thead>
<tr>
<th>Source / Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fringe Benefits from UI and external funds</td>
<td>$ 88,400</td>
</tr>
<tr>
<td>Faculty/research salaries from external grants, contracts, partnerships and joint hires</td>
<td>$ 45,000</td>
</tr>
<tr>
<td>Startup Funds</td>
<td></td>
</tr>
<tr>
<td>Equipment and Software from external donations</td>
<td>$ 25,000</td>
</tr>
</tbody>
</table>

## B. FACULTY / STAFF POSITIONS

Description

Two faculty positions will be funded 50% for two years through partnerships with industry for the second half of the first year.

## C. CAPITAL EQUIPMENT

Description

The hardware and software needs for the software security testing lab will be determined through conversations with industry partners, to ensure that the lab is adequately equipped. We will then solicit donations in support of this lab.

We will solicit donations to enhance the power and transportation labs in support of research goals of our industry partners.

## D. FACILITIES & INSTRUMENTATION

Description
### PROPOSAL BUDGET – YEAR TWO

##### Name of Institution: University of Idaho

##### Name of Project Director: Jim Alves-Foss

#### W. FACULTY AND STAFF

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Annual Rate of Pay</th>
<th>CAL</th>
<th>ACA</th>
<th>SUM</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Alves-Foss, Professor, CS and Director of CSDS</td>
<td>$ 121,300 / AY</td>
<td>0.92</td>
<td>0.35</td>
<td></td>
<td>$ 17,300</td>
</tr>
<tr>
<td>Cyber Security, TT, Associate Professor, CS</td>
<td>$ 105,000 / AY</td>
<td>9.00</td>
<td></td>
<td></td>
<td>$ 105,000</td>
</tr>
<tr>
<td>Embedded Security, TT, Assistant Professor, CS</td>
<td>$ 95,000 / AY</td>
<td>4.50</td>
<td></td>
<td></td>
<td>$ 47,500</td>
</tr>
<tr>
<td>Power, TT, Assistant Professor, EE</td>
<td>$ 85,000 / AY</td>
<td>4.50</td>
<td></td>
<td></td>
<td>$ 42,500</td>
</tr>
<tr>
<td>Transportation, TT Assistant Professor, CE</td>
<td>$ 85,000 / AY</td>
<td>9.00</td>
<td></td>
<td></td>
<td>$ 85,000</td>
</tr>
<tr>
<td>Social Research, TT Associate Professor, Sociology</td>
<td>$ 75,000 / AY</td>
<td>9.00</td>
<td></td>
<td></td>
<td>$ 75,000</td>
</tr>
<tr>
<td>Cyber Security, NTT Research Software Engineer, CSDS</td>
<td>$ 90,000 / FY</td>
<td>7.5</td>
<td></td>
<td></td>
<td>$ 56,300</td>
</tr>
</tbody>
</table>

| % OF TOTAL BUDGET | SUBTOTAL | $ 428,600 |

#### X. FACULTY AND STAFF

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visiting Faculty</td>
<td>$ 100,000 / AY</td>
<td>0.00</td>
<td>$ 0</td>
</tr>
</tbody>
</table>

| % OF TOTAL BUDGET | SUBTOTAL | $ 0 |

#### Y. POST DOCTORAL ASSOCIATES/OTHER PROFESSIONALS

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Systems, Staff CSDS</td>
<td>$ 65,000 / FY</td>
<td>7.5</td>
<td>$ 40,600</td>
</tr>
</tbody>
</table>

| % OF TOTAL BUDGET | SUBTOTAL | $ 40,600 |

#### Z. GRADUATE/UNDERGRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
</table>

| % OF TOTAL BUDGET | SUBTOTAL | % OF TOTAL BUDGET |

---

69
### AA. FRINGE BENEFITS

<table>
<thead>
<tr>
<th>Rate of Pay %</th>
<th>Salary Base</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Idaho to pay fringe benefits for all above employees</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUBTOTAL:**

### BB. EQUIPMENT (List each item with a cost in excess of $1000.00.)

<table>
<thead>
<tr>
<th>Item/Description</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing and test equipment w/software</td>
<td>$10,000</td>
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</tbody>
</table>

**SUBTOTAL:** $10,000

### CC. TRAVEL

<table>
<thead>
<tr>
<th>Dates of Travel (from/to)</th>
<th>No. of Persons</th>
<th>Total Days</th>
<th>Transportation</th>
<th>Lodging</th>
<th>Per Deim</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25,000</td>
</tr>
</tbody>
</table>

**SUBTOTAL:** $25,000

### DD. Participant Support Costs

- **9.** Stipends
- **10.** Travel (other than listed in section G)
- **11.** Subsistence
- **12.** Other

**SUBTOTAL:**

---

70
### OTHER DIRECT COSTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Materials and Supplies - software, moving expense, supplies, fees, workshop support, etc.</td>
<td>$38,500</td>
</tr>
<tr>
<td>14. Publication Costs/Page Charges</td>
<td></td>
</tr>
<tr>
<td>15. Consulting Services (Include Travel Expenses)</td>
<td></td>
</tr>
<tr>
<td>16. Computer Services</td>
<td></td>
</tr>
<tr>
<td>17. Subcontracts</td>
<td></td>
</tr>
<tr>
<td>18. Other (specify nature &amp; breakdown if over $1000) - Start-up Funds targeted to support individual hires</td>
<td>$125,000</td>
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</table>

**SUBTOTAL:** $163,500

### TOTAL COSTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Item</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF.</td>
<td>TOTAL COSTS (Add subtotals, sections A through I)</td>
<td></td>
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<tr>
<td></td>
<td>TOTAL:</td>
<td>$667,700</td>
</tr>
</tbody>
</table>

### AMOUNT REQUESTED

<table>
<thead>
<tr>
<th>Section</th>
<th>Item</th>
<th>Dollar Amount Requested</th>
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<tbody>
<tr>
<td>GG.</td>
<td>AMOUNT REQUESTED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL:</td>
<td>$667,700</td>
</tr>
</tbody>
</table>

Project Director's Signature: 

Date: Apr 20, 2012
### A. INSTITUTIONAL / OTHER SECTOR DOLLARS

<table>
<thead>
<tr>
<th>Source / Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fringe Benefits from UI and external funds</td>
<td>$201,500</td>
</tr>
<tr>
<td>Faculty/research salaries from external grants, contracts, partnerships and joint hires</td>
<td>$148,100</td>
</tr>
<tr>
<td>Startup Funds</td>
<td>$ 75,000</td>
</tr>
<tr>
<td>Equipment and Software from external donations</td>
<td>$ 40,000</td>
</tr>
</tbody>
</table>

### B. FACULTY / STAFF POSITIONS

**Description**

Two faculty positions will be funded 50% through partnerships with industry for the second year.

Research Engineering will be funded 37.5% in second year from external sources.

### C. CAPITAL EQUIPMENT

**Description**

The hardware and software needs for the software security testing lab will be determined through conversations with industry partners, to ensure that the lab is adequately equipped. We will then solicit donations in support of this lab.

We will solicit donations to enhance the power and transportation labs in support of research goals of our industry partners.

### D. FACILITIES & INSTRUMENTATION

**Description**

- 
- 
- 

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- 
- 

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- 
-
### PROPOSAL BUDGET – YEAR THREE

**Name of Institution:** University of Idaho  
**Name of Project Director:** Jim Alves-Foss

#### HH. FACULTY AND STAFF

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Annual Rate of Pay</th>
<th>No. of Months</th>
<th>CAL</th>
<th>ACA</th>
<th>SUM</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Alves-Foss, Professor, CS and Director of CSDS</td>
<td>$121,300 / AY</td>
<td></td>
<td>0.92</td>
<td>0.35</td>
<td></td>
<td>$17,300</td>
</tr>
<tr>
<td>Cyber Security, TT, Associate Professor, CS</td>
<td>$105,000 / AY</td>
<td></td>
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<td>9.00</td>
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<td>$105,000</td>
</tr>
<tr>
<td>Embedded Security, TT, Assistant Professor, CS</td>
<td>$ 95,000 / AY</td>
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<td></td>
<td>6.75</td>
<td></td>
<td>$ 71,300</td>
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<tr>
<td>Power, TT, Assistant Professor, EE</td>
<td>$ 85,000 / AY</td>
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<td></td>
<td>6.75</td>
<td></td>
<td>$ 63,800</td>
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<tr>
<td>Transportation, TT Assistant Professor, CE</td>
<td>$ 85,000 / AY</td>
<td></td>
<td></td>
<td>9.00</td>
<td></td>
<td>$ 85,000</td>
</tr>
<tr>
<td>Social Research, TT Associate Professor, Sociology</td>
<td>$ 75,000 / AY</td>
<td></td>
<td></td>
<td>9.00</td>
<td></td>
<td>$ 75,000</td>
</tr>
<tr>
<td>Cyber Security, NTT Research Software Engineer, CSDS</td>
<td>$90,000 / FY</td>
<td>6.0</td>
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<td>$45,000</td>
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</tbody>
</table>

**% OF TOTAL BUDGET:** 68.5%  
**SUBTOTAL:** $462,400

#### II. FACULTY AND STAFF

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>CAL</th>
<th>ACA</th>
<th>SUM</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visiting Faculty</td>
<td>$100,000 / AY</td>
<td>4.50</td>
<td></td>
<td></td>
<td></td>
<td>$50,000</td>
</tr>
</tbody>
</table>

**% OF TOTAL BUDGET:** 7.4%  
**SUBTOTAL:** $50,000

#### JJ. POST DOCTORAL ASSOCIATES/OTHER PROFESSIONALS

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Rate of Pay</th>
<th>No. of Months</th>
<th>CAL</th>
<th>ACA</th>
<th>SUM</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Systems, Staff CSDS</td>
<td>$65,000 / FY</td>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td>$32,500</td>
</tr>
</tbody>
</table>

**% OF TOTAL BUDGET:** 4.8%  
**SUBTOTAL:** $32,500

#### KK. GRADUATE/UNDERGRADUATE STUDENTS

**% OF TOTAL BUDGET**
**LL. FRINGE BENEFITS**

<table>
<thead>
<tr>
<th>Rate of Pay %</th>
<th>Salary Base</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Idaho to pay fringe benefits for all above employees</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MM. EQUIPMENT** (List each item with a cost in excess of $1000.00.)

<table>
<thead>
<tr>
<th>Item/Description</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing and test equipment w/software</td>
<td>$10,000</td>
</tr>
</tbody>
</table>

**NN. TRAVEL**

<table>
<thead>
<tr>
<th>Dates of Travel (from/to)</th>
<th>No. of Persons</th>
<th>Total Days</th>
<th>Transportation</th>
<th>Lodging</th>
<th>Per Deim</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$25,000</td>
</tr>
</tbody>
</table>

**OO. Participant Support Costs**

<table>
<thead>
<tr>
<th></th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Stipends</td>
<td></td>
</tr>
<tr>
<td>14. Travel (other than listed in section G)</td>
<td></td>
</tr>
<tr>
<td>15. Subsistence</td>
<td></td>
</tr>
<tr>
<td>16. Other</td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS**
<table>
<thead>
<tr>
<th>PP.</th>
<th>OTHER DIRECT COSTS</th>
<th>Dollar Amount Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>Materials and Supplies - software, moving expense, supplies, fees, workshop support, etc.</td>
<td>$ 20,000</td>
</tr>
<tr>
<td>20.</td>
<td>Publication Costs/Page Charges</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Consulting Services (Include Travel Expenses)</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Computer Services</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Subcontracts</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Other (specify nature &amp; breakdown if over $1000) - <strong>Start-up Funds targeted to support individual hires</strong></td>
<td>$ 75,000</td>
</tr>
<tr>
<td></td>
<td><strong>SUBTOTAL:</strong></td>
<td>$ 95,000</td>
</tr>
<tr>
<td>QQ.</td>
<td>TOTAL COSTS (Add subtotals, sections A through I)</td>
<td><strong>TOTAL:</strong> $ 674,900</td>
</tr>
<tr>
<td>RR.</td>
<td>AMOUNT REQUESTED</td>
<td><strong>TOTAL:</strong> $ 674,900</td>
</tr>
</tbody>
</table>

Project Director's Signature: [Signature]
Date: Apr 20, 2012
INSTITUTIONAL AND OTHER SECTOR SUPPORT – YEAR THREE
(add additional pages as necessary)

A. INSTITUTIONAL / OTHER SECTOR DOLLARS

<table>
<thead>
<tr>
<th>Source / Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fringe Benefits from UI and external funds</td>
<td>$ 238,500</td>
</tr>
<tr>
<td>Faculty/research salaries from external grants, contracts, partnerships and joint hires</td>
<td>$ 172,500</td>
</tr>
<tr>
<td>Startup Funds</td>
<td>$ 50,000</td>
</tr>
<tr>
<td>Equipment and Software from external donations</td>
<td>$ 40,000</td>
</tr>
</tbody>
</table>

B. FACULTY / STAFF POSITIONS

Description

Two faculty positions will be funded 50% for two years through partnerships with industry, including first half of the third year.

Visiting faculty member will be funded 50% from external sources in third year

Research Engineering will be funded 50% in third year from external sources

C. CAPITAL EQUIPMENT

Description

The hardware and software needs for the software security testing lab will be determined through conversations with industry partners, to ensure that the lab is adequately equipped. We will then solicit donations in support of this lab.

We will solicit donations to enhance the power and transportation labs in support of research goals of our industry partners.

D. FACILITIES & INSTRUMENTATION

Description