Engineering and Technology Industry Council
New Initiative Proposal
Biennium from July 1, 2005 to June 30, 2007

Campus: **Portland State University**
Contact Name: **Robert D. Dryden, Dean**
Date of Submission: **April 2, 2004**
Summary of Proposal: **PSU Computer Security**

Goals: **Create a Nationally Recognized Program in Computer Security**

Investment Description

- Recruit 2 faculty members (one senior; one junior) to work with existing computer security team.
- Create a 950 sq. ft. computer security laboratory.
- Employ Graduate Students to support research
- Leverage External Resources consistent with ETIC expectations.

Results

Computer security is an area of great national and regional importance at this time and into the indefinite future. Through Oregon RAINS (Regional Alliances for Infrastructure and Network Security) and other efforts, Oregon is an emerging national leader in this field. The Computer Science Department at Portland State University entered this field early in the sense that we have developed a strong curriculum to advance the state of the art in computer security and have established a promising research program in this area. Our efforts have been recognized with the award of a Center of Academic Excellence in Information Security Education by the National Security Agency; we are one of only fifty programs in the United States with this certification. We propose to enhance this program with additional faculty, laboratory space, and graduate students to facilitate the emergence of a vibrant Oregon industry cluster in the computer security area.

This proposal builds on existing strengths within PSU Computer Science. We currently have four faculty members involved in this area. Further faculty investment will accelerate growth toward the creation of a program cluster. Our plan is to continue to move quickly into this market niche. Other states are interested in this area and we desire to build on our early success.

The public-private RAINS consortium involves over 60 Oregon companies. PSU is the leading academic partner in RAINS, which is developing a testbed network for first responders that will serve as a research environment and as a working model for other communities. RAINS efforts have already attracted interest from groups in other states who are looking to adapt the ideas to their own environments. Our faculty are working with RAINS to develop grant proposals and other joint research projects. Our proposal is strong in a number of areas in which ETIC has an interest: Global Competitiveness; Industry Collaboration; Public-Private Partnerships; and Economic Investment Focus.

PSU faculty are also cooperating with local governmental agencies on computer security issues. For example, in the Police Reserve Specialists program, developed by the Hillsboro Police Department in conjunction with PSU faculty, civilian experts in computer science (including PSU faculty) work together with police to evaluate evidence in cases where computers are involved in crime. The FBI is building a seven million dollar Regional Computer Forensics Laboratory in Portland, one of only a few in the nation. PSU's expertise in digital forensics, and our curriculum in that area, will make us a natural partner for this lab.

We have also proposed a graduate certificate in computer security, which is in the process of approval by PSU. This certificate will provide a thorough, professional grounding in computer security, including all the elements recommended by the NSA. The certificate consists of 21 hours with two components, a required core of classes, and a set of electives. The required core consists of the following classes:

1. CS 533 Concepts of Operating Systems. This class is also a core M.S. requirement. A thorough understanding of operating systems is fundamental to computer security.
2. CS 591 Introduction to Computer Security. This class and the next class are the foundation for most if not all security classes. This class is a broad overview of computer security and in and of itself satisfies the Federal National training standard NSTISSI No. 4011.
3. CS 594 Internetworking Protocols. This class is a basic introduction to networking and provides foundation concepts for security-oriented students.
4. A technical communications class such as OMSE 515. This class is only taught once every two years, so other communications classes that focus on team communication or written communication will also be accepted.

The electives are as follows:

1. one software engineering course such as:
    1. CS 554 Software Engineering or
    2. CS 555 Software Specification and Verification
2. CS 576 Computer Security Seminar
3. CS 585 Cryptography
4. CS 590 Computer Forensics
5. CS 592 Applied Computer Security.
6. CS 596 Network Security.
7. AJ 515 Theories of Crime and Justice (from the Administration of Justice department. They have approved the notion that our students could take this class.)

We thus have a high-quality research and educational program in support of computer security, and a firm basis for future growth. Our recent faculty recruitment attracted over 500 applicants, many in the security area, and many students have expressed interest in pursuing this field. Given the dearth of resources, however, our growth is much slower than it could be, and other states are investing in capturing this promising area. We request investment of funds to enhance our program and accelerate its growth.

Proposed Investment and Private Support Forecast ($M)

Senior Faculty Member	0.17	0.17	0.34
Junior Faculty Member	0.11	0.11	0.22
Faculty Start-up Funds	0.15	0.15	0.30
6 Graduate Research Assistants	0.15	0.15	0.30
Laboratory Equipment	0.20	0.20	0.40
Lab Renovation	0.10	0.10	0.19
Subtotal	0.88	0.88	1.75
Expected private support ($M) (2)	1.31	1.31	2.63
Total ($M)	2.19	2.19	4.38
New Faculty Supported (FTE) (3)	2.0	2.0	2.0

Metrics Forecast:

	Baseline	**Projected**			
	AY 99	**AY06**	**AY07**	**AY08**	**AY09**
Total Research Volume	$1.8M	$5.0M	$5.95M	$6.9M	$7.64M
Computer Security Certificates		20	20	20	20
ECS Graduate Student Credit Hours	8685	19807	20460	21960	23407

Notes:

(1) List metrics including those relevent from Core Proposal template and others relevent to your proposal. If you use a metric that is also covered in your Core Proposal, the forecasted results that you give above should be the combined result of your Core Proposal and the investment described in this document.