

SOUTH DAKOTA BOARD OF REGENTS

Budget and Finance

**REVISED
AGENDA ITEM: 7 – I**

DATE: October 4-6, 2016

SUBJECT: DSU Madison Cyber Labs Building – Preliminary Facility Statement

Dakota State University requests approval of its Preliminary Facility Statement to begin planning for the future construction of the Madison Cyber Labs (MadLabs) building. This proposed building will allow opportunities for South Dakota to renew its endeavors in national defense.

This future DSU building would be approximately 40,000 square feet on the DSU Madison campus. The MadLabs will provide advanced technology infrastructure, networking and labs that are not presently available in South Dakota. The MadLabs will create a hub of cyber security expertise and applied research and development. Creating real-world cyber experience for DSU graduates will foster spin-off companies and will be a driver of economic development in the state and region. An Arizona State University study reports that a \$10 million investment in public research and development creates 334.5 jobs, \$8.65 million in wages, \$452,000 in state revenue, and \$13.5 million in sales. Investing in R&D technology application is extremely powerful.

Approval of this proposed project will allow DSU to develop a Facility Program Plan to outline more specific project details and costs. This project was submitted as part of the BOR's FY18 budget request. Additional project details can be found in DSU's attached Preliminary Facility Statement. Local funds or private donations will fund the facility program plan.

If approved, the Board President should appoint a building committee to oversee the planning of this project.

DRAFT MOTION 20161004_7-I: I move to approve DSU's Preliminary Facility Statement to begin planning for a Madison Cyber Labs (MadLabs) building.

PRELIMINARY FACILITY STATEMENT
Madison Cyber Labs
Dakota State University

DSU requests approval of this Preliminary Facility Statement to plan a **Madison Cyber Labs (MadLabs)** building.

A. General programmatic needs to be addressed

TECHNOLOGY-FORWARD RESOURCES

This facility would support the Madison Cyber Labs (MadLabs) Strategic Plan. DSU is proposing an approximately 40,000 square foot new facility on the DSU Madison campus. At present, DSU is unable to compete for leading-edge sophisticated and lucrative cyber security contracts already available. The University has the faculty and staff who can lead and mentor students and attract qualified individuals to complete the work desired in these types of contracts, and in working on such projects DSU students would develop superior portfolios of technology-forward skills. The MadLabs is necessary for DSU and South Dakota to leverage its present cyber security expertise and role to continue and advance its national and international cyber security leadership.

The MadLabs building will also provide space for additional high-end computer labs along with appropriate infrastructure and networking.

JOB GENERATION

The MadLabs, through the development of job-generating partnerships and eventually spin-off companies, will be a powerful impetus to the economic development of Madison and southeastern South Dakota. Cyber security is an exploding marketplace, filled with high-demand, high-wage jobs. In fact, there are presently over 300,000 unfilled cyber security jobs in the U.S. A report from Cisco, the technology giant, puts the global figure at one million cybersecurity job openings. Demand is expected to rise to 6 million jobs globally by 2019, with a projected shortfall of 1.5 million workers, according to Symantec, the world's largest security software vendor. In the U.S., the median wage for cyber security jobs is over \$90,000 a year, 74% above the U.S. median wage of \$36,000.

REGIONAL ECONOMIC DEVELOPMENT

Investing in a regional science or engineering capacity, like the MadLabs, has been proven by economists to be the most successful driver of regional economic development. A recent Arizona State University study reported that \$10 million in public R&D creates 334.5 jobs, \$8.65 million in wages, \$452,000 in new state revenue and \$13.5 million in sales.

Investment in technology R&D and application is especially powerful. According to the World Economic Forum, for every one IT job that is created, five additional new jobs are created in the community.

The MadLabs will position South Dakota to obtain regional, national, and international government and industry cyber security grants, and strengthen partnerships to draw new cyber-concerned businesses to the State. Cyber security attacks and breaches are only increasing for government and business and industry, increasing spending in this area. And large corporations are increasingly considering what cyber security infrastructure, workers and resources are available in areas before they locate or relocate their companies. DSU and the MadLabs will present a strong statement of South Dakota's commitment to leadership in cyber security. In addition, given that none of the top 100 cyber security firms are located anywhere in the center of the U.S. (they are primarily on the East and West Coast, with a few in Texas), there is an enormous multi-state area to which South Dakota could potentially provide cyber security expertise and services – a large untapped market.

KEEPING SOUTH DAKOTA PROFESSIONALS IN THE STATE WORKFORCE

The MadLabs will assist with keeping South Dakota trained professionals in the state. At present, after graduation, most CyberCorps Scholarship for Service graduates leave South Dakota to fulfill their service obligation at a federal, state, local, or tribal government site. Other DSU cyber graduates also leave the state for post-graduate and career opportunities in cyber security that are not available in South Dakota. These DSU alumni end up not only starting their careers out-of-state, but establishing their own professional and personal roots far away from South Dakota. As a result, South Dakota loses the considerable investment it has made in these students, as they are lost from South Dakota's workforce. It should be noted that many of these graduates have expressed a desire to return to South Dakota, and would likely do so for lifestyle reasons if there were jobs and advanced cyber security facilities available to allow them to continue or advance their careers. The MadLabs will provide more opportunities for CyberCorps scholars and all DSU cyber security students to work and live in South Dakota.

RENEWING SOUTH DAKOTA'S NATIONAL DEFENSE ROLE

The MadLabs will also create opportunities for South Dakota to renew its role in national defense. Cyber security is one of the key issues in U.S. national defense today. U.S. governments, federal and state, and all aspects of corporate activity experience constant and growing cyberattacks. The U.S. Director of National Intelligence James R. Clapper ranks cybercrime as the No. 1 national security threat, ahead of terrorism, espionage, and weapons of mass destruction. Cyber threats to U.S. national and economic security are increasing in frequency, scale, sophistication, and severity of impact. The MadLabs will create a strong incentive for cyber security endeavors to be added in South Dakota, given the level of cyber

security expertise that will be created within the facility's programs, as well as the potential to train and employ future cyber experts in government programs.

CONTINUE SOUTH DAKOTA'S CYBER SECURITY EDUCATION LEADERSHIP

DSU and South Dakota presently hold a top leadership role in cyber security education. The University has strong relationships with the U.S. National Security Agency (NSA) and the U.S. Department of Homeland Security (DHS), among others. DSU has three NSA and DHS Center of Academic Excellence designations, including the Cyber Operations designation, the most exclusive of the awards. NSA's National Cryptologic School (NCS) and DSU partnered on two articulation agreements to allow NSA employees to complete bachelor's and master's degrees through DSU via distance education, which are the first articulation agreements ever entered into in the history of the NSA. The National Science Foundation (NSF) awarded DSU's cyber security programs the nation's largest CyberCorps Scholarship for Service grant at over \$1M per year to support 30 DSU student scholars annually. As of fall 2016, the University has **500 students** in various cyber security-related degree programs.

South Dakota and DSU are well-positioned for an international role in cyber security education. DSU has partnering conversations already in progress with University College London's Academic Centre of Excellence for Cyber Security Research, the UCL Institute of Security and Crime Science, and the UCL Security Science Doctoral Research Training Centre (SECRet). And The MadLabs will facilitate DSU's development and leadership of an international alliance of cyber security higher education institutions endorsed by the Five Eyes, the intelligence alliance of Australia, Canada, New Zealand, the United Kingdom, and the United States.

B. Analysis of the student body or constituents to be served

The MadLabs will serve a wide range of the extended DSU community, from students to faculty, from researchers to government and business partners.

MADISON AND SOUTHEASTERN SOUTH DAKOTA COMMUNITY

The MadLabs will be home to multiple different academic and applied research and development clusters. Each of these areas is of interest to different business, industry and government entities. Conversations have already begun with a wide range of government agencies and corporations about the possibilities of partnering with DSU to bring their R&D and application work to DSU, Madison, and southeastern South Dakota. This would bring

jobs and highly-educated, high-powered professionals and leaders into the state and the region, along with their families.

Initial research clusters, all of which have already sparked interest both within and outside of South Dakota, include:

- The Cyclops Lab (Cyber Classified Operations) – of special interest to government and high-level proprietary business and industry;
- The PATRIOT Lab (Protection and Threat Research for the Internet of Things) – of special interest to technology companies like Google;
- The DigForCE Lab (Digital Forensics for Cyber Enforcement) – of special interest to the law enforcement community and industry;
- The BaSe Lab (Banking Security) – of special interest to the entire financial industry;
- The interdisciplinary CLASSICS Institute (Collaborations for Liberty And Security Strategies for Integrity in a Cyber-enabled Society) - of special interest to policy makers and many business and government leaders;
- The CybHER Security Institute (Women in Cyber Security) – of special interest to the entire cyber security community because of the desperate need for a larger and more diverse cyber work force that includes more women.
- Other clusters are under consideration and development, including Health Care, Education, and Big Data, with corresponding interest in government and corporate organizations working in those arenas.

STATE AND REGIONAL GOVERNMENT, BUSINESS AND INDUSTRY

Presently the vast majority of cyber security expertise and resources are located on the U.S. east or west coasts. Because cyber security is such a major and expensive concern for government and business and industry, these organizations across the Plains and the West are presently severely underserved when it comes to cyber protection, a key component that they absolutely require to protect and grow their companies. Their facilities are also located at a significant geographical and often cultural distance from the cyber security companies that provide such services, further reducing the quality of service they can obtain.

The MadLabs, in creating a hub of cyber security expertise and applied research and development, has the potential to create a strong community of spin-off companies that can protect and enable business and industry to thrive and grow where they are presently located across the center of the country.

STATE AND REGIONAL K-12 EDUCATION

DSU's signature mission is technology-intensive and technology-infused academic programs; DSU's heritage mission is teaching teachers. The MadLabs will enrich the technology and expertise infrastructure and environment of DSU, ensuring that DSU

teaching students graduate having had exposure to leading edge technology tools so they will be competent to prepare their K-12 students for the technology-rich world in which those students will certainly be working as adults. These DSU-trained teachers will play a key role in raising the technology literacy of all South Dakota students, such that the State's future workforce will be ready for advanced cyber security education and careers. The MadLabs on DSU's campus will ensure they have exposure to those advanced levels of technology.

STUDENTS

The MadLabs will provide multiple opportunities for students — undergraduate, graduate and professional — that are not presently available at DSU. As companies and organizations bring their cyber security work to the MadLabs, they will create internships and jobs for DSU students.

C. Additional services to be offered

The MadLabs will provide advanced technology infrastructure, networking and labs, that are not presently available on DSU's campus or in South Dakota. Compliance with master plan

This project is in compliance with the Campus Master Plan.

D. Analysis of needs assessment based on the facilities utilization report

This analysis is not applicable.

E. Location

The location of this facility will be determined as part of the planning process after selecting an architectural firm. Potential sites, including the location of Lowry Hall, have been identified and are within the DSU Campus Master Plan.

F. Reallocation or demolition of old space, if any

Depending on the site location, there may be some reallocation of space within the campus. This will be identified during the programming phase of the project. A potential site for the new building is the current location of Lowry Hall which would require demolition of that building. If this is the site selected, relocation of existing operations that are currently within Lowry Hall will need to be determined.

G. Proposed funding sources

This project will be funded from state general funds (pending legislative approval), donations and other sources yet to be identified.

H. Budget for development of a Facility Program Plan

Local funds or private donations will be used to fund the facility program plan.