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2010 Innovations Awards Application

Deadline: March 1, 2010

ID # (assigned by CSG): **10-S-20VA**

Please provide the following information, adding space as necessary:

State: Commonwealth of Virginia

Assign Program Category (applicant): Workforce Development (Use list at end of application)

1. Program Name: University IT Internship Program
2. Administering Agency: Virginia Department of Mines, Minerals and Energy (DMME)
3. Contact Person (Name and Title) Todd Richardson, Chief Technology Officer
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8. Web site Address www.dmme.virginia.gov

9. Please provide a two-sentence description of the program.

The Virginia Department of Mines, Minerals and Energy (DMME) has innovatively dealt with budget shortages and increased work loads by establishing a creative IT internship partnership in software engineering with local universities. The program has provided valuable work experience and educational funding for students in an economically challenged area, boosted credibility of cutting-edge university programs, grown the workforce to match economic development efforts in the region, assisted DMME with meeting its mission through bright new ideas for creative business use of IT, saved money, and even generated national awards for the Commonwealth and the agency.

10. How long has this program been operational (month and year)? Note: the program must be between 9 months and 5 years old on March 1, 2010 to be considered.

DMME began partnering with local universities in 2001 for student IT interns to work onsite as software development team members. However, the current formal program began in the fall of 2006, when the University of Virginia's College at Wise launched the first undergraduate software engineering degree program in the state (one of only 10 in the nation). DMME established a formal partnership through a memorandum of agreement to employ software engineering students as interns. Students begin work with the agency as freshmen and continue throughout their educational program. The first students to complete both the internship program and the software engineering degree requirements graduated in the spring of 2009.

11. Why was the program created? What problem[s] or issue[s] was it designed to address?

The Virginia Department of Mines, Minerals and Energy (DMME) is a small agency which serves a large customer base of citizens, organizations and agencies. Its mission is to enhance the development and conservation of energy and mineral resources in a safe, environmentally sound manner to support a more productive economy in Virginia. Through its six divisions, the agency regulates the gas and oil, coal and mineral mining industries, provides mineral resource research and offers advice on the wise use of the Commonwealth's energy and mineral resources. Its programs directly serve citizens who live near mining operations, mine workers and labor groups, other regulatory agencies, the educational community, the mineral industry, and environmental, citizen and industry groups.

DMME's largest office is located in the region of the state's highest concentration of mineral resources, Southwest Virginia. This rural, mountainous and geographically remote area is economically distinct and struggles for educational and employment opportunities, particularly for its young people. Virginia historically has directed significant economic development efforts toward the region and continues to do so. Former Governors Warner and Kaine successfully pursued location of IT-focused companies to the region; in 2007, both Northrop Grumman and CGI opened major new IT-oriented facilities in the area. The Commonwealth public universities in Southwest Virginia include the University of Virginia's College at Wise (UVa-Wise), Mountain Empire Community College, and a satellite location of Old Dominion University.

DMME operates on level funding; minimal state general fund increases and frequent reductions create an extremely tight budget and personnel situation. DMME has added no full-time IT staff over the past ten years, despite significantly increased demand from both internal and external customers. Due to its small size, large scope of work and limited budget, DMME has made major efforts to provide effective IT solutions which enable the agency to meet its strategic goals and objectives. Achievement of DMME's vision to be a nationally recognized energy, geology, and mineral extraction customer service agency is closely tied to its ability to deliver information and services through customized applications.

DMME needs effective IT solutions in a challenging state budgetary environment; area universities need hands-on opportunities to better educational programs; area students need mentoring, hands-on training, and financial aid; new IT facilities need qualified staff; local citizens need opportunity for their students to remain in the area and provide economic contributions. The DMME internship program constitutes a win-win approach that effectively addresses problems of multiple stakeholders.

12. Describe the specific activities and operations of the program in chronological order.

DMME has a small in-house development team of three software developers and an IT manager. This team supports more than 230 employees, of which 140 users utilize custom laptop-based applications to perform inspection, assistance and enforcement activities in the field on a daily basis.

DMME works with professors and the financial aid offices to ensure communication and outreach to potential interns; staff also assist students with course selection. DMME staffers actively participate in university and college planning committees, work as adjunct faculty and provide feedback to and participation in campus programs as part of the communication and implementation plan.

DMME provides an hourly intern salary of \$9.00, paid to the University through internal agency transfers. Interns are managed and mentored by the DMME in-house software development team for progress and growth. Interns receive computer-based training from staff, including significant instruction on information security and accessibility for the disabled in compliance with the Commonwealth's strict standards as part of software development.

One intern, a significantly disabled student, has been an exemplary participant who brought real-world perspective to the need for accessibility for the disabled; this graduate now will continue work on a federal grant-funded project for DMME on a contract basis.

Significantly, DMME recruits its IT interns early, preferably as freshmen; it retains these interns throughout their college careers and provides progressively challenging projects that become real-world applications, meeting the business needs of the agency.

13. Why is the program a new and creative approach or method?

Thanks in large part to the work of its IT interns and with no budget increase, DMME has dramatically increased its available web-based and mobile applications. Web-based customer service tools, electronic permitting, GIS systems and mobile enforcement applications developed through the work of student interns now permit the agency to operate much more efficiently and in a customer-centric fashion within its limited resources.

The internship program has provided necessary financial assistance for students who might otherwise not have had the opportunity to continue in their education. It also provides a real-world work environment and a portfolio of product upon graduation.

The agency has received the benefit of an energetic and highly cost effective IT workforce, as well as a continuous flow of new ideas and, most importantly, IT solutions to meet agency business needs.

The DMME program allows students to find gainful employment within the IT sector and to remain in the Southwest Virginia region. The region continues to be plagued by the loss of its best and brightest students to more metropolitan areas. Through these partnerships, students are offered employment opportunities in the IT Industry that did not exist five years ago.

The financial benefit to students in the region are estimated to be over \$170,000 in salary paid to date by DMME through its student IT internship programs. DMME, its customers and the Commonwealth have also realized measurable benefits through the IT internship program. The financial benefit of the student intern program to DMME has been estimated to be over \$500,000.

One Division of Gas and Oil (DGO) project is particularly illustrative. Since July 2006, student interns contributed 2,524.34 hours to the project at \$9 hour, for a total student investment of \$22,719.06. Their work comprised 50% of total time for software engineering. The Commonwealth's Supplier Managed Staff Augmentation for IT personnel, mandatory for executive branch agencies, would have charged \$31.73 for a similar level 2 programmer in DMME's geographical zone, if available, for a total of \$80,097.30, a savings of \$57,328.25 on just one application. This student intern-supported application received a 2008 Digital Government Achievement Award from the Center for Digital Government, a Governor's Technology Award and the Southwest Virginia Technology Council's award for High Tech in Government. DMME's laptop and Web-based mobile systems have been consistently recognized in benchmark sessions by the Interstate Mine Compact Commission (IMCC) as the best in the nation

14. What were the program's start-up costs? (Provide details about specific purchases for this program, staffing needs and other financial expenditures, as well as existing materials, technology and staff already in place.)

In the initial pilot phases of the program, DMME internal agency special funds were used to pay for student interns. As students progressed in expertise, external grants were specifically targeted for projects to utilize student interns as developers. Existing agency resources including staff and equipment exclusively are used to manage and mentor student interns.

15. What are the program's annual operational costs?

The total expenditure per year for the program has been from \$35-40K. These costs are paid directly to the University or College who then pays the students interns. This payment arrangement significantly reduces the intern costs. As a University employee, UVA Wise has paid the employer share of social security taxes, Medicare, and state/federal unemployment, or approximately 8% of their total wages. This also results in a significant reduction in agency overhead related to on-boarding a similar temporary or contract employee.

16. How is the program funded?

DMME has successfully applied for numerous state and federal grants to develop IT solutions for agency business problems using its interns as the primary resources. The Office of Surface Mining (OSM) Administration and Enforcement Grant and the OSM Abandoned Mine Land Grant have both been used to support student interns. A number of one-time grants also have been received to support student internship work, including: Virginia Dept. of Environmental Quality's federal Section 106 water quality grant; OSM Electronic Permitting Initiative for the Appalachian Region; Mine Safety and Health Administration's (MSHA) Brookwood Sago Grant; MSHA mine mapping grant; USGS data preservation grant; and the Governor's Productivity Investment Fund grant. DMME has been awarded \$93,400 through these grants for just the designated student IT internship portions of these applications.

17. Did this program require the passage of legislation, executive order or regulations? If YES, please indicate the citation number.

No.

18. What equipment, technology and software are used to operate and administer this program?

DMME student interns have developed an Access database to track their individual project time in order for the agency to track expenditures and to verify participation for the universities.

19. To the best of your knowledge, did this program originate in your state? If YES, please indicate the innovator's name, present address, telephone number and e-mail address.

Yes. The Virginia DMME internship program is administered by Todd Richardson, Chief Technology Officer, 3405 Mountain Empire Road, Big Stone Gap, VA 24219; (276)393-0191; todd.richardson@dmme.virginia.gov

20. Are you aware of similar programs in other states? If YES, which ones and how does this program differ?

Other internship programs between government and universities certainly exist; however the partnership between DMME and the neighboring Virginia universities is somewhat unique. Most importantly, the program has been established to create measurable benefits for the multiple stakeholders previously mentioned. The geographic location and existing economic conditions of the region create both challenges and opportunities that have been used to mold the program. Interns participate in the program from the beginning of their educational program through attainment of the degree, and area IT business interests and universities participate in the mentoring of the students. Finally, the goals of the program extend beyond the years of work contributed; sustained, targeted economic development and opportunity for citizens to contribute productively in their home region both are core goals. This aspect makes the DMME University IT Internship Partnership most innovative and unique.

21. Has the program been fully implemented? If NO, what actions remain to be taken?

Yes, the program has been full implemented at the agency and the universities, though room for growth is inherent.

22. Briefly evaluate (pro and con) the program's effectiveness in addressing the defined problem[s] or issue[s]. Provide tangible examples.

DMME's customers have reaped significant benefits thanks to the many new e-Gov applications supported by student IT intern work. For example, industry customers using the student-driven online e-Forms application report substantial time savings in preparing and submitting required applications and reports. An electronic permit renewal with no changes now takes five minutes to complete in the e-Forms center, compared to one hour for the equivalent paper form. A mineral mining permit renewal with changes previously took a customer 3-4 hours to complete; e-Forms reduces this to one hour. For the 440 mineral mine sites in Virginia, this represents an aggregate time savings of from 400 to 1200 worker hours per year. Customers also save an estimated six days per round trip and cost avoidance compared to the U.S. Postal Service.

For the agency, the applications enable a streamlined permit review process, reduced opportunity for data entry and transcription errors, reduced paper handling and a reduction in storage space required for paper documents. Another efficiency benefit for the agency has been greater customer compliance with regulatory requirements and deadlines.

Citizen self-service access to agency data also has been enabled through student intern projects by including inquiry-only versions of e-Gov systems, allowing viewing of public gas and oil data and generation of information reports, including interactive search and a downloadable digital archive of thousands of scanned gas well logs. This functionality increases transparency and frees staff time.

The financial benefit to students in the region are estimated to be over \$170,000 in salary paid to date by DMME through its student IT internship programs.

DMME, its customers and the Commonwealth have also realized measurable benefits through the IT internship program. The financial benefit of the student intern program to DMME over the past 5 years has been estimated to be over \$350,000. One Division of Gas and Oil (DGO) project is particularly illustrative. Since July 2006, student interns contributed 2,524.34 hours to the project at \$9 hour, for a total student investment of \$22,719.06. Their work comprised 50% of total time for software engineering. The Commonwealth's Supplier Managed Staff Augmentation for IT personnel, mandatory for executive branch agencies, would have charged \$31.73 for a similar level 2 programmer in DMME's geographical zone (if one had been available) – for a total of \$80,097.30, a savings of \$57,328.25 on just one application. This student intern-supported application won a 2008 Digital Government Achievement Award from the Center for Digital Government, a Governor's Technology Award, and the Southwest Virginia Technology Council's award for High Tech in Government. DMME's laptop and Web-based mobile systems have been consistently recognized in benchmark sessions by the Interstate Mine Compact Commission (IMCC) as the best in the nation.

These improvements would not have been achievable without the work of the student IT interns, and in turn, they are able to point with deserved pride to real-world use of their work as they enter the IT industry. One former intern summarizes this well in a letter to his former supervisor: "The DMME college internship has been invaluable to my professional career. Having real world experience and several software development projects to put on my resume helped me rise to the top of my class and land that ever elusive first job. With polished communication skills, a padded resume, and real world experience to lean on I was able to go after the job I wanted out of college, not a job I had to settle for."

Perhaps the most notable "con" of the program is that DMME is unlikely to be able to offer permanent employment to its interns upon graduation, particularly in the current budget environment. It is hoped

that the inclusion of private sector employers as active participants in the program will counteract this con for the student participants.

The success of the program may also be viewed by external recognition received; IT work performed in large part by DMME student interns has received significant validation in this respect. Awards received for such work include: 2005 Virginia Governor's Award for Innovation and Technology Digital Mine Mapping System; 2006 Virginia Governor's Award for Innovation and Technology Mobile Workforce Productivity; 2008 Virginia Governor's Award for Innovation and Technology for Business E-forms B-to-G; 2009 Virginia Governor's Award for Innovation and Technology for Digital Signatures; 2005 Southwest Virginia Technology Council Award for High Technology in a Government; 2008 Southwest Virginia Technology Council Award for High Technology in a Government; 2007 Digital Government Achievement Award for the WaterTrans project in the Government to Business category; 2008 Digital Government Achievement Award for the DMME E-forms application in the Government to Business category; 2006, two honorable mentions from the National Association of State CIO's for DMME IT projects; and 2009, DMME University IT Internship project selected as a finalist for the NASCIO Collaboration and Partnership Award.

23. How has the program grown and/or changed since its inception?

This program's multi-faceted success has been well noted by other Virginia entities. Currently, DMME is working with the Chief Applications Officer and the Enterprise Applications Division of the Virginia Information Technologies agency to establish similar programs in the Richmond/Capitol area. Through this extension, student IT interns may soon be supporting not just individual agencies but also development of applications that will be utilized on an enterprise basis.

24. What limitations or obstacles might other states expect to encounter if they attempt to adopt this program?

The current economic environment strongly supports the University IT partnership. Agencies operating in larger cities may have difficulty in attracting students due to the demand of the skills involved.

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2010 Innovations Awards Application Program Categories and Subcategories

Use these as guidelines to determine the appropriate Program Category for your state's submission and list that program category on page one of this application. Choose only one.

Infrastructure and Economic Development

- Business/Commerce
- Economic Development
- Transportation

Government Operations and Technology

- Administration
- Elections
- Information Systems
- Public Information
- Revenue
- Telecommunications

Health & Human Services

- Aging
- Children & Families
- Health Services
- Housing
- Human Services

Human Resources/Education

- Education
- Labor
- Management
- Personnel
- Training and Development
- Workforce Development

Natural Resources

- Agriculture
- Energy
- Environment
- Environmental Protection
- Natural Resources
- Parks & Recreation
- Water Resources

Public Safety/Corrections

- Corrections
- Courts
- Criminal Justice
- Drugs
- Emergency Management
- Public Safety

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