

**MTAF Round 3  
Notice of Intent Submissions  
Sector: Information Technology**

MTAF #	Project Title	Lead Institution	County	State	Amount (\$)
3008	Maine Real-Time Systems Technology Lab for electric T&D (MRTS)	NITECH LLC, subsidiary of USi	Westchester	NY	590,000.00
3012	Terahertz Frequency Integrated Circuit Test and Measurement System	University of Maine	Penobscot	ME	550,000.00
3016	Multisphere Immersive Environment Facility	University of Maine	Penobscot	ME	415,000.00
3017	Cyberinfrastructure Investment for Development, Economic Growth, and Research	University of Maine	Penobscot	ME	200,000.00
3023	TEQcenter - The Technology Quality Center	University of Southern Maine	Cumberland	ME	1,000,000.00
3028	Implementation of the Maine Virtual Center for Geospatial Technology	University of Southern maine	Cumberland	ME	300,000.00
3029	Maine "Fiber to the Home" (FTTH) Project	Biddeford Internet Corp. dba GWI	York	ME	250,000.00

**Form Data (May 03, 2010 at 01:18:40 PM)****1. Project Title. Character limitation: 80 including spaces.**

**Project Title** Maine Real-Time Systems Technology Lab for electric T&D (MRTS)

**2. Lead Institution**

**Name** NITECH LLC, subsidiary of USi

**Lead Organization Type: Choose One**

Profit

**Mailing Address 1** 84 Business Park Drive

**Mailing Address 2** Suite 109

**City** Armonk

**County** Westchester

**State** NY

**ZIP** 10504

**3. Authorized Institutional Representative: Primary contact for the Lead Organization, who may or may not be the same as the Project Director. If the same as the Project Director, enter Project Director in each required box.**

**Rep. First Name** Paul

**Rep. Last Name** Alex

**Rep. Title** CEO

**Rep. Institution** NITECH LLC/USi

**Rep. Telephone** 914-273-8727

**Rep. Email Address** palex@usi-power.com

**Rep. Mailing Address 1** 84 Business Park Dr.

**Rep. Mailing Address 2** Suite 109

**Rep. City** Armonk

**Rep. State** NY

**Rep. ZIP** 10504

**4. Project Director: Scientific lead and/or project manager.**

**Dir. First Name** Jay

**Dir. Last Name** Shattuck

**Dir. Title** Director Business Development

**Dir. Organization** NITECH LLC/USi

**Dir. Mailing Address 1** 20 Godfrey Drive

**Dir. Mailing Address 2** None given.

**Dir. City** Orono

**Dir. State** ME

**Dir. ZIP** 04473

**Dir. Telephone** 203-377-4764

**Dir. Email Address** jshattuck@nitechllc.com

**Dir. Fax** None given.

**5. Collaborators, if Known: List either individual name and/or institution. If none, enter "None."**

**Collaborators** University of Maine, Central Maine Power, Bangor Hydro Electric, Dielectric Communications, RLC Engineering

**6. Approximate amount of funds requested. Please use numbers only without special characters, such as decimal point and commas. For example: 500000.**

**Amount (\$)** 590000"

**7. Technology Sector**

Chose One Sector Information

**8. Scientific Disciplines Involved. Character limitation: 125 including spaces.****Scientific Disciplines Involved**

T&D Smart Grid; integrated hardware/software for measuring and controlling; electrical, computer & communications engineering

**9. Names of two suggested reviewers from outside Maine, who are expert in the area of work with no direct conflicts of interest. Please list names and institutional affiliation. MTI is under no obligation to use these reviewers. If none, enter "None."**

Reviewer 1 none

Reviewer 2 none

**10. Names and institutional affiliation of potential reviewers from whom to withhold application information. If none, enter "None."**

Withhold from WITHELD BY MTI

**11. Project Overview, which includes a brief description of proposed project, including use of award funds; scientific rationale of the proposed project; potential economic impact areas; a listing of organizations participating in the project and a brief description of their roles.****Character limitation: 6,000 including spacing**

<b>Description Area</b>	<p>Overview: Recently the electric Transmission and Distribution industry (government, university, research organizations and businesses) has focused on defining and developing the Smart Grid. Public communication has been mostly around projects that aim to improve the consumers view and participation with the utility such as advanced 2-way metering at customer locations. A critical but less publicized side of the Smart Grid involves integrated communications, advanced sensor/measurement/analysis/control, and improved decision support tools that enhance T&amp;D system efficiency, reliability and capacity to integrate distributed renewable generation resources. Critical Smart Grid decision support software technologies for these areas include Dynamic Line Ratings (DLR) for managing thermal constraints, Synchronized Phasor Measurement (PMU) for managing stability constraints and Wide Area Monitoring systems (WAMS) for multi region situational awareness. We propose to develop a real-time systems decision support software development and testing lab at the University of Maine for DLR, PMU and eventually WAMS that monitors real-time T&amp;D thermal and stability system information from both Central Maine Power and Bangor Hydro systems. New Smart Grid commercial software tools as well as intelligent sensor variants are expected to be developed with support from the MRTS Technology Lab. Planned Use of Award Funds: Monitoring and communications equipment to be installed over a large geography on Central Maine Power (CMP) and Bangor Hydro Electric (BHE) utility transmission or distribution lines, computer servers and software to be installed at UMaine to develop new data analysis and decision support tools, and standard office equipment required for NITECH new business operations in Maine Scientific Rationale: USi has been an industry leader for electric T&amp;D Monitoring, Rating, Diagnostics and Control Systems (MRDC) and Dynamic Line Rating (DLR) systems since 1986, when USi's first commercial dynamic line rating system was installed at Boston Edison on an underground transmission feeder. USi maintains expertise in intelligent sensor platforms, software, system integration and is a pioneer in the development and implementation of real-time thermal models for electrical T&amp;D equipment. UMaine recently announced the development of a Maine Smart Grid Center through the department of Electrical and Computer Engineering and has resources and strong expertise in electrical, computer and communications technologies that enable the Smart Grid. Working with Central Maine Power (CMP) and UMaine, NITECH intelligent sensor PowerDonuts (PD2s) were recently deployed on the overhead CMP system for a DOE Phase I SBIR project. Adding a decision support software lab at UMaine will allow the DLR demonstration to be expanded to the entire state of Maine as well as trial several new intelligent sensor and software variants for commercialization. NITECH's intelligent sensor is unique in that it can be installed on utility lines without interrupting operations to deliver real-time DLR input data not otherwise available. Additionally new"</p>
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hybrid communications techniques in remote rural areas will be investigated for commercialization based on feedback from utilities. Potential Economic Impact: 1) Increase efficiency and reliability of existing and new transmission infrastructure allowing greater utilization of renewable generation assets. 2) Showcase a significant smart grid demonstration which will establish Maine at the forefront of smart grid technology innovation. Pursue additional DOE and other public and private funding opportunities made possible through the expanded analysis capabilities at the lab. 3) Create a base of operations in Maine to develop and commercialize new real-time systems products including related decision support tools and communications technologies. 4) Create several high technology jobs in Maine in 2010 with potential for significant revenues and many more permanent additions during commercialization and beyond. Creates opportunity for new manufacturing operations and jobs in Maine focused on intelligent sensors for the Smart Grid. Potential Participating Organizations and Roles: \*NITECH LLC, subsidiary of Underground Systems, Inc. a.k.a. USi ♦ co project leader \*University of Maine ♦ co project leader. \*Central Maine Power ♦ install and host equipment for lab on transmission lines and provide product feedback for commercialization and new variant products. \*Bangor Hydro Electric - install and host equipment for lab on transmission lines and provide product feedback for commercialization and new variant products. \*Dielectric Communications subsidiary of SPX (NYSE) ♦ Development of antenna and communications systems especially focusing on rural wireless infrastructure supporting intelligent device communications. \*RLC Engineering ♦ Transmission and Distribution engineering planning, support and interface with ISO-New England

**Please review your submission carefully.**

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**Submission Metadata**

<b>IP</b>	127.0.0.1
<b>Browser</b>	Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.9.2) Gecko/20100115 Firefox/3.6"

**Form Data (May 03, 2010 at 03:52:21 PM)****1. Project Title. Character limitation: 80 including spaces.**

**Project Title** Terahertz Frequency Integrated Circuit Test and Measurement System

**2. Lead Institution**

**Name** University of Maine

**Lead Organization Type: Choose One**

Academic

**Mailing Address 1** Office of Research and Sponsored Programs

**Mailing Address 2** 5717 Corbett Hall

**City** Orono

**County** Penobscot

**State** ME

**ZIP** 04469-5717

**3. Authorized Institutional Representative: Primary contact for the Lead Organization, who may or may not be the same as the Project Director. If the same as the Project Director, enter Project Director in each required box.**

**Rep. First Name** Michael

**Rep. Last Name** Hastings

**Rep. Title** Director, Office of Research Sponsored Programs

**Rep. Institution** University of Maine

**Rep. Telephone** 207-581-1484

**Rep. Email Address** umgrants@maine.edu

**Rep. Mailing Address 1** 5717 Corbett Hall

**Rep. Mailing Address 2** None given.

**Rep. City** Orono

**Rep. State** ME

**Rep. ZIP** 04469-5717

**4. Project Director: Scientific lead and/or project manager.**

**Dir. First Name** Nuri

**Dir. Last Name** Emanetoglu

**Dir. Title** Assistant Professor

**Dir. Organization** University of Maine

**Dir. Mailing Address 1** Electrical & Computer Engineering

**Dir. Mailing Address 2** 101 Barrows Hall

**Dir. City** Orono

**Dir. State** ME

**Dir. ZIP** 04469

**Dir. Telephone** 207-581-2233

**Dir. Email Address** nuri.emanetoglu@maine.edu

**Dir. Fax** None given.

**5. Collaborators, if Known: List either individual name and/or institution. If none, enter "None."**

**Collaborators** David Kotecki, University of Maine

**6. Approximate amount of funds requested. Please use numbers only without special characters, such as decimal point and commas. For example: 500000.**

**Amount (\$)** 550000

**7. Technology Sector"**

**Chose One Sector Information Technology**

**8. Scientific Disciplines Involved. Character limitation: 125 including spaces.**

**Scientific Disciplines Involved**

Physics Electrical Engineering

**9. Names of two suggested reviewers from outside Maine, who are expert in the area of work with no direct conflicts of interest. Please list names and institutional affiliation. MTI is under no obligation to use these reviewers. If none, enter "None."**

Reviewer 1                      None

Reviewer 2                      None given.

**10. Names and institutional affiliation of potential reviewers from whom to withhold application information. If none, enter "None."**

Withhold from                      None

**11. Project Overview, which includes a brief description of proposed project, including use of award funds; scientific rationale of the proposed project; potential economic impact areas; a listing of organizations participating in the project and a brief description of their roles.**

**Character limitation: 6,000 including spacing**

<b>Description Area</b>	<p>Terahertz electromagnetic radiation (100 GHz to 10 THz) lies in the boundary region between light and radio waves. Modern integrated circuits have breached the 100 GHz clock frequency barrier, and ICs operating up to 300 GHz have been recently reported. A major challenge in realizing low cost microelectronic circuits operating at frequencies greater than 100 GHz is the capability to accurately and rapidly measure and characterize these electrical signals. Conventional contact probes are inadequate for measuring integrated circuits at frequencies above 100 GHz. Thus, there is a strong need for a contactless, noninvasive, measurement technique that will allow measurements of integrated circuits at THz frequencies without altering the performance of the integrated circuits being tested, in order to enable the continued development of integrated circuit technologies, such as microprocessors and memory chips. The proposed instrumentation development project investigates optical probing techniques to accurately measure electrical signals from integrated circuits with frequencies extending into the terahertz regime. The optical techniques are expected to be simpler, more reliable, and provide quicker measurement results than currently used waveguide probing. The proposed system will use two opto-electronic interaction mechanisms, changes in the index of refraction of a semiconductor due to electron plasmas, and electro-reflective materials, and thus will be capable of characterizing THz integrated circuits made of Si or other semiconductors. Further, advances in laser technology allow extending the measurement frequencies to the THz regime. The final product of this instrument development research will be a low cost electrical characterization system capable of measuring electrical signals on integrated circuits in the terahertz frequency regime. To test and calibrate the system, equipment to provide a more traditional waveguide probing technique is also proposed. The proposed research focuses on the following objectives: Investigate new techniques, using a short, &lt; 100 femtosecond duration optical probe, for noninvasive, contactless, electrical testing and characterization of terahertz electrical signals in the time domain. Research fundamental interactions between femtosecond optical pulses and nanoelectronic devices. Demonstrate the use of electro-reflective materials (ERM), deposited post-fabrication on a terahertz integrated circuit, to allow interrogation of electrical signals on the integrated circuit with an optical pulse. Demonstrate a low cost, rapid response, optical testing method to capture electrical signals using a non-invasive, contactless, optical pulse in the terahertz regime with the possibility of future commercialization. This research will demonstrate a measurement technique capable of accurately measuring electrical signals at terahertz frequencies. The requested funds will be used to develop a test and measurement system capable of measuring electrical signals on integrated circuits operating at terahertz frequencies. An amount of \$500K is requested for building the proposed test and measurement system. This amount will cover (i) fs laser system, (ii) LeCroy 100 GHz oscilloscope, (iii) 20 GHz signal generator, (iv) opto-mechanical components, and (v)"</p>
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electronic parts to make a complete system.

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**Submission Metadata**

<b>IP</b>	127.0.0.1
<b>Browser</b>	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET CLR 1.1.4322; InfoPath.2)"

**Form Data (May 03, 2010 at 04:33:54 PM)****1. Project Title. Character limitation: 80 including spaces.**

**Project Title** Multisphere Immersive Environment Facility

**2. Lead Institution**

**Name** University of Maine

**Lead Organization Type: Choose One**

Academic

**Mailing Address 1** Office of Research & Sponsored Programs

**Mailing Address 2** 5717 Corbett Hall

**City** Orono

**County** Penobscot

**State** ME

**ZIP** 04469-5717

**3. Authorized Institutional Representative: Primary contact for the Lead Organization, who may or may not be the same as the Project Director. If the same as the Project Director, enter Project Director in each required box.**

**Rep. First Name** Michael

**Rep. Last Name** Hastings

**Rep. Title** Director, Office of Research & Sponsored Programs

**Rep. Institution** University of Maine

**Rep. Telephone** 207-581-1484

**Rep. Email Address** umgrants@maine.edu

**Rep. Mailing Address 1** 5717 Corbett Hall

**Rep. Mailing Address 2** None given.

**Rep. City** Orono

**Rep. State** ME

**Rep. ZIP** 04469-5717

**4. Project Director: Scientific lead and/or project manager.**

**Dir. First Name** Nicholas

**Dir. Last Name** Giudice

**Dir. Title** Assistant Professor

**Dir. Organization** Spatial Information Science & Engineering

**Dir. Mailing Address 1** 325 Boardman Hall

**Dir. Mailing Address 2** None given.

**Dir. City** Orono

**Dir. State** ME

**Dir. ZIP** 04469

**Dir. Telephone** 207-581-2187

**Dir. Email Address** giudice@spatial.maine.edu

**Dir. Fax** 207-581-2206

**5. Collaborators, if Known: List either individual name and/or institution. If none, enter "None."**

**Collaborators** (partial list - industry will be added for final submission) Owen F. Smith, New Media Department and Intermedia Program, University of Maine Mike Scott, Director Internet New Media Lab, University of Maine Ali Abedi, Research Director WiSe-Net Lab, Electrical and Computer Engineering, University of Maine SSI EPSCoR initiative at University of Maine"



**6. Approximate amount of funds requested. Please use numbers only without special characters, such as decimal point and commas. For example: 500000.**

Amount (\$) 415000

**7. Technology Sector**

Chose One Sector Information

**8. Scientific Disciplines Involved. Character limitation: 125 including spaces.**

**Scientific Disciplines Involved**

Cognitive Neuroscience, Psychology, New Media, Scientific Visualization, Spatial Information Science and Engineering and HCI

**9. Names of two suggested reviewers from outside Maine, who are expert in the area of work with no direct conflicts of interest. Please list names and institutional affiliation. MTI is under no obligation to use these reviewers. If none, enter "None."**

**Reviewer 1** Dr. Longin Jan Latecki Associate Professor Dept. of Computer and Information Sciences  
Temple University 1805 North Broad Street Philadelphia, PA 19122, USA Tel. +1 215 204  
5781 Fax +1 215 204 5239 Email: latecki@temple.edu

**Reviewer 2** Dr. Hugo Bruggema Assistant Professor of Research Dept. of Cognitive and Linguistic  
Sciences Brown University, Box 1978 Providence, RI 02912-1978 401.863.1398  
hugo@brown.edu

**10. Names and institutional affiliation of potential reviewers from whom to withhold application information. If none, enter "None."**

Withhold from None

**11. Project Overview, which includes a brief description of proposed project, including use of award funds; scientific rationale of the proposed project; potential economic impact areas; a listing of organizations participating in the project and a brief description of their roles.**

**Character limitation: 6,000 including spacing**

**Description Area** This proposal calls for the construction of a fully immersive information dome, dubbed the Multisphere, which will serve as a state-of-the-art collaborative core for interdisciplinary research initiatives and commercial applications across the region and the state. The facility would provide infrastructure resources for researchers and companies to conduct transformative experiments, develop new methodologies, and create and evaluate emerging technologies. The requested funds would be used to construct a domed immersive environment space used for geospatial technologies, spatialization, visualization and related research and industry needs.

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#### Submission Metadata

**IP** 127.0.0.1

**Browser** Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET CLR 1.1.4322; InfoPath.2)"

**Form Data (May 03, 2010 at 04:40:00 PM)****1. Project Title. Character limitation: 80 including spaces.**

**Project Title** Cyberinfrastructure Investment for Development, Economic Growth, and Research

**2. Lead Institution**

**Name** University of Maine

**Lead Organization Type: Choose One**

Academic

**Mailing Address 1** Office of Research & Sponsored Programs

**Mailing Address 2** 5717 Corbett Hall

**City** Orono

**County** Penobscot

**State** ME

**ZIP** 04469-5717

**3. Authorized Institutional Representative: Primary contact for the Lead Organization, who may or may not be the same as the Project Director. If the same as the Project Director, enter Project Director in each required box.**

**Rep. First Name** Michael

**Rep. Last Name** Hastings

**Rep. Title** Director, Office of Research & Sponsored Programs

**Rep. Institution** University of Maine

**Rep. Telephone** 207-581-1484

**Rep. Email Address** umgrants@maine.edu

**Rep. Mailing Address 1** 5717 Corbett Hall

**Rep. Mailing Address 2** None given.

**Rep. City** Orono

**Rep. State** ME

**Rep. ZIP** 04469-5717

**4. Project Director: Scientific lead and/or project manager.**

**Dir. First Name** Bruce

**Dir. Last Name** Segee

**Dir. Title** Professor

**Dir. Organization** University of Maine

**Dir. Mailing Address 1** 5708 Barrows Hall

**Dir. Mailing Address 2** None given.

**Dir. City** Orono

**Dir. State** ME

**Dir. ZIP** 04469

**Dir. Telephone** 207-581-2212

**Dir. Email Address** segee@maine.edu

**Dir. Fax** None given.

**5. Collaborators, if Known: List either individual name and/or institution. If none, enter "None."**

**Collaborators** Jeff Letourneau, UNET, Neville Hall, Jeffl@maine.edu, 561-3507, John Grover, UNET, Neville Hall, 561-3510, Yifeng Zhu, UMaine, zhu@eece.maine.edu, ECE, 581-2499, Dave Kotecki, UMaine, Kotecki@eece.maine.edu, 581-2248, Phil Dickens, UMaine, dickens@umcs.maine.edu, 581-3967, Peter Koons, UMaine, peter.koons@maine.edu, 581-2158, Mick Peterson, UMaine, Michael.peterson@maine.edu, 581-2129, Fei Chai, UMaine, fei.chai@umit.maine.edu, 581-4317, Huijie Xue, UMaine, hxue@maine.edu,"

581-4318, Jim Fastook, UMaine, fastook@maine.edu, 581-3927, Andre Khalil, UMaine and Jackson Laboratory, andre\_khalil@umit.maine.edu, 581-3911, Clare Congdon, University of Southern Maine, Congdon@gmail.com, 228-8441, Karyn Kunzelman, Central Maine Heart and Vascular Institute, kunzelka@cmhc.org, 753-3910

**6. Approximate amount of funds requested. Please use numbers only without special characters, such as decimal point and commas. For example: 500000.**

Amount (\$) 200000

**7. Technology Sector**

Chose One Sector Information

**8. Scientific Disciplines Involved. Character limitation: 125 including spaces.**

**Scientific Disciplines Involved**

Cardiology, Genomics, Bioinformatics, Climate, Energy

**9. Names of two suggested reviewers from outside Maine, who are expert in the area of work with no direct conflicts of interest. Please list names and institutional affiliation. MTI is under no obligation to use these reviewers. If none, enter "None."**

Reviewer 1 None

Reviewer 2 None given.

**10. Names and institutional affiliation of potential reviewers from whom to withhold application information. If none, enter "None."**

Withhold from None

**11. Project Overview, which includes a brief description of proposed project, including use of award funds; scientific rationale of the proposed project; potential economic impact areas; a listing of organizations participating in the project and a brief description of their roles.**

**Character limitation: 6,000 including spacing**

<b>Description Area</b>	<p>Cyberinfrastructure is providing a radical and transformative technical revolution that has resulted in fundamentally new ways of doing business, conducting research, and seeking and exchanging information in the 21st century. Cyberinfrastructure consists of three essential components: (1) advanced networking, (2) high performance computing, and (3) collaborative applications. The advanced networking facilitates the data exchanges across time, distance and disciplines. Through computing and simulation rather than physical experiments, high performance computing system allows scientists and engineers to work in ways that were not previously possible. The collaborative applications build up a virtual organization that opens new horizons for interdisciplinary research and business. By leveraging the recent investments in cyberinfrastructure by the State of Maine, the National Science Foundation, the National Institute of Health, and the department of commerce we can create a supercomputer resource that is central to the economic development of the entire state, and particularly the Old Town region. Summary of the contribution of the requested capital assets The requested capital asset is a key piece in transforming the economy of Maine, to a clean, data-based model. The supercomputer will be a resource for the entire state and publicly available for Maine's researchers, educators, students and businesses. It will be the first part of cyberinfrastructure of a much larger high technology economic growth undertaking of the City of Old Town to create a technology park that spans, literally and figuratively, from the former paper mill in Old Town, to the University of Maine campus. The supercomputer will follow the model of most critical infrastructure (roads, bridges, etc.) in that it will be built and maintained not to be a fee for service in and of itself, but for the economic benefit that it provides. The supercomputer will improve research capabilities and hence attract both quality researchers and federal dollars. The supercomputer will be a valuable resource for existing companies in Maine, for startup companies and for established companies who will move to Maine. Note that among the world Top 500 supercomputers, 57.2% of them are used by the business and industry, such as finance, semiconductor and manufacturing. The supercomputer will be a valuable educational tool enabling Maine students to graduate with the skills necessary to participate in the high technology economy that Maine will have in the 21st century. It must be noted"</p>
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that the supercomputer will benefit tremendously from and improve the value of recent investments (and those planned in the near future) in high performance fiber optic networking. Proposed outcomes and measures The long-term goal of this project is to build a new knowledge-based economy in Maine. This supercomputer will be run by the University of Maine, but will be a resource for the State. Researchers, educators and businesses WITHIN the state will be able to submit jobs to be run at no cost. We believe that this will have the additional and measurable outcomes, including (1) existing Maine businesses will use computer modeling and simulation, (2) existing data-intensive business will relocate to Maine, (3) Maine researchers will extract more Federal research funds, and (4) supercomputing will be used more in education in Maine. It is anticipated that a business would contact us prior to relocating to the state; hence we will also know of the businesses that relocate because of the supercomputer. Projected economic benefit One hundred years ago, electrical generation and distribution were in the very early stages but became almost immediately, absolutely essential for doing business. Fifty years ago, the interstate highway system was the infrastructure that changed the way business was done. In the 21st century it is the Cyberinfrastructure that will play the dominant role in where and how business is done. We must act soon. Physical experimentation is becoming less used as the primary mechanism for scientific discovery. Computer models allow a researcher to conduct thousands of virtual experiments simultaneously. Having a computing facility in Maine will make Maine researchers much more competitive in attracting Federal funding. Furthermore, students will learn about supercomputing, either by being directly involved in research, or as a spin-off to the research. This leads to an ever-growing pool of potential employees who are knowledgeable in the area of high performance computing. The analogy between high performance computing in 2008 and electrical power distribution in 1908 is very strong. High performance computing will soon be essential for doing business as electricity. If we invest now we can attract and retain those businesses that have need of high performance computing in the near term. If we do not invest now, they will relocate to where this cyberinfrastructure is available and be lost to Maine. The consequences of failing to make this critical investment are dire. If we do not move ahead, we will soon be far behind.

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**Submission Metadata**

<b>IP</b>	127.0.0.1
<b>Browser</b>	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET CLR 1.1.4322; InfoPath.2)"

**Form Data (May 04, 2010 at 11:02:14 AM)****1. Project Title. Character limitation: 80 including spaces.**

**Project Title** TEQcenter - The Technology Quality Center

**2. Lead Institution**

**Name** University of Southern Maine

**Lead Organization Type: Choose One**

Profit

**Mailing Address 1** 96 Falmouth Street

**Mailing Address 2** None given.

**City** Portland

**County** Cumberland

**State** ME

**ZIP** 04104-9300

**3. Authorized Institutional Representative: Primary contact for the Lead Organization, who may or may not be the same as the Project Director. If the same as the Project Director, enter Project Director in each required box.**

**Rep. First Name** Glenn

**Rep. Last Name** Wilson

**Rep. Title** Director

**Rep. Institution** University of Southern Maine

**Rep. Telephone** 207-228-8060

**Rep. Email Address** gwilson@usm.maine.edu

**Rep. Mailing Address 1** 70 Falmouth Street

**Rep. Mailing Address 2** None given.

**Rep. City** Portland

**Rep. State** ME

**Rep. ZIP** 04104-9301

**4. Project Director: Scientific lead and/or project manager.**

**Dir. First Name** Joseph

**Dir. Last Name** Kumiszczka

**Dir. Title** Executive Director

**Dir. Organization** TechMaine

**Dir. Mailing Address 1** 506 Main Street

**Dir. Mailing Address 2** Ste 24

**Dir. City** Westbrook

**Dir. State** ME

**Dir. ZIP** 04092

**Dir. Telephone** 207-857-3003

**Dir. Email Address** joe@techmaine.com

**Dir. Fax** 207-857-3029

**5. Collaborators, if Known: List either individual name and/or institution. If none, enter "None."**

**Collaborators** Kepware Technologies Starlit Software USM School of Law/Center for Law and Innovation  
York County Community College

**6. Approximate amount of funds requested. Please use numbers only without special characters, such as decimal point and commas. For example: 500000.**

**Amount (\$)** 1,000,000"

**7. Technology Sector**

Chose One Sector Information

**8. Scientific Disciplines Involved. Character limitation: 125 including spaces.****Scientific Disciplines Involved**

Software Testing: Computer Science and Information Technology

**9. Names of two suggested reviewers from outside Maine, who are expert in the area of work with no direct conflicts of interest. Please list names and institutional affiliation. MTI is under no obligation to use these reviewers. If none, enter "None."**Reviewer 1 Cem Karner, PhD Florida Institute of Technology <http://www.karner.com/resume.html>Reviewer 2 Tom DeMarco <http://systemsguild.com> (Tom resides in Maine, his work is International in Scope)**10. Names and institutional affiliation of potential reviewers from whom to withhold application information. If none, enter "None."**

Withhold from None

**11. Project Overview, which includes a brief description of proposed project, including use of award funds; scientific rationale of the proposed project; potential economic impact areas; a listing of organizations participating in the project and a brief description of their roles.****Character limitation: 6,000 including spacing**

**Description Area** The mission of the Technology Quality Center aka TEQcenter is to develop and maintain a quality software testing facility that serves businesses and the community. The Center will provide technical education and work experience through a joint effort between industry, educational institutions and government to create a pipeline of skilled labor, increase employment and overall economic opportunities and add to the basic and applied research portfolio of USM in the Information sector. The TEQcenter will offer fee-based software testing for the purpose of making innovations more robust and reliable and enabling faster commercialization and market presence at a higher quality. The Brookings Institution identified Maine's brand as Quality. The Technology Quality Center will capitalize on Maine's brand to bring an awareness and understanding of quality technology development to Maine's entrepreneurs and students. The Center will create an asset-based economic and workforce development strategy building on our existing brand. Rather than focus on the traditional model of physical asset investments that depreciate over time, the Center will focus on the development of intellectual assets that appreciate over time. The TEQcenter will evaluate the usability of software with an emphasis on quality assurance and reliability and will give Maine's entrepreneurs a competitive advantage. The TEQcenter will employ software testing and usability experts at the Ph.D., MS, BS, and AS levels, who will evaluate and provide feedback on software applications from companies without the facilities or talent to accomplish these technical tasks. Use of Funds: Monies will build out a floor of the Research Wing of the USM Science building to create a testing, usability, design, and quality center. This will finish the building's interior, purchase equipment, instrumentation, software, and furniture. Matching funds will be used to hire a leading expert in the software testing discipline to lead R&D activities and academic efforts to develop next generation technology professionals. The facility will function collaboratively; TechMaine activities will serve as a catalyst to bring entrepreneurs and industry together with the TEQcenter, students, faculty, and staff. Scientific Rationale and Academic Importance Software testing is a relatively new area of academic endeavor, but ever-increasing in its importance as evidenced by the recent legal cases against Toyota. Systems for testing software have been created, but are highly specialized in their purposes. The academic importance, stated by Dr. Cem Kaner of Florida Institute of Technology, a recognized leading expert in the area of software testing, of this endeavor rests with the interdisciplinarity required to successfully launch and sustain a genuinely comprehensive system for software testing. Although there are dominant automated software testing systems, these are relegated to detecting internal coding errors and inconsistencies. These systems can only find problems they are programmed to discover. Creating new automated testing systems will support advanced undergraduate courses or"

MS level training in computer science. Testing techniques at the novice user level, for ease of use, or for cultural or contextual use, are continually under development and tend to be done on a less than systematic approach. As demonstrated by Dr. Kaner (background in Law, Psychology, and Computer Science), an interdisciplinary skill set is essential. USM has a group of computer scientists, lawyers, technologists, faculty business experts, and statisticians who have a successful history of working together. Economic Impact Areas: The information sector will see an immediate and positive impact; technology-reliant businesses will receive benefits from the TEQcenter. This is particularly true of businesses depending on software as core to their innovation. This end to end approach delivers positive economic impact to students and existing workers, who will be employable with new in-demand skills; businesses, who will have products improved, come to market faster, and are more efficient due to few product recalls and reduced time spent on bug fixes and help systems. TechMaine research indicates students associated with the TEQcenter may expect to receive employment with a high school degree at \$30K per year. Students with 6 years of experience and a BS Degree may earn \$100K per year. An indication of the need for trained software testers is illustrated by Microsoft's hiring practices, as they hire a tester for each additional developer. There is a shortage of skilled testers and no recognized workforce development program. The development of a pipeline of in-demand workers will bring new employers to Maine. Why Should the TEQcenter be Created? It provides a powerful focusing and collaborative effect on business, industry and academia. MOUs will be executed between business and industry outlining contracts with respective units and the TEQcenter. MOUs guarantee effective and ongoing working relationships among public education, university, non-profits, and business for the purpose of workforce and economic development through the TEQcenter. List of Organizations: University of Southern Maine, TechMaine, High School/Vocational, York County Community College, Maine Center for Law and Innovation, IDEXX, Kepware, Unum  
 Role of Organizations: USM, TechMaine, and educational and industry partners will create and supply the academic programs and intellectual capital for this project. High Schools/Vocationals will supply students; York County will supply students and curricula; Maine Center for Law and Innovation will supply legal expertise, curriculum, and students, and TechMaine will supply business expertise, marketing, public relations, and business relationships and development. Business partners, including IDEXX, Unum, Kepware will provide projects and contracts.

**Please review your submission carefully.**

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In addition, within two business days MTI will send an e-mail to the Project Director providing an application number to be included on each page of the formal application, and an acknowledgement that the Notice of Intent is complete.

**Submission Metadata**

<b>IP</b>	127.0.0.1
<b>Browser</b>	Mozilla/5.0 (Windows; U; Windows NT 6.0; en-US; rv:1.9.2.3) Gecko/20100401 Firefox/3.6.3 ( .NET CLR 3.5.30729)"

**Form Data (May 04, 2010 at 11:57:23 AM)****1. Project Title. Character limitation: 80 including spaces.**

**Project Title** Implementation of the Maine Virtual Center for Geospatial Technology

**2. Lead Institution**

**Name** University of Southern maine

**Lead Organization Type: Choose One**

Academic

**Mailing Address 1** 37 College Ave

**Mailing Address 2** 300 Bailey Hall

**City** Gorham

**County** Cumberland

**State** ME

**ZIP** 04038

**3. Authorized Institutional Representative: Primary contact for the Lead Organization, who may or may not be the same as the Project Director. If the same as the Project Director, enter Project Director in each required box.**

**Rep. First Name** Larry  
**Rep. Last Name** Waxler  
**Rep. Title** Director of Office of Sponsored Programs  
**Rep. Institution** University of Southern Maine  
**Rep. Telephone** 2077804413  
**Rep. Email Address** larryw@usm.maine.edu  
**Rep. Mailing Address 1** PO Box 9300  
**Rep. Mailing Address 2** None given.  
**Rep. City** Portland  
**Rep. State** ME  
**Rep. ZIP** 04104-9300

**4. Project Director: Scientific lead and/or project manager.**

**Dir. First Name** Vinton  
**Dir. Last Name** Valentine  
**Dir. Title** Director of USM GIS  
**Dir. Organization** University of Southern Maine  
**Dir. Mailing Address 1** 37 College Ave  
**Dir. Mailing Address 2** 300 Bailey Hall  
**Dir. City** Gorham  
**Dir. State** ME  
**Dir. ZIP** 04038  
**Dir. Telephone** 2072288455  
**Dir. Email Address** vvalentine@usm.maine.edu  
**Dir. Fax** 2077805167

**5. Collaborators, if Known: List either individual name and/or institution. If none, enter "None."**

**Collaborators** Matthew Bampton, University of Southern Maine Firooza Pavri, University of Southern Maine Joseph Szakas, University of Maine Augusta Cathleen McAnney, University of Maine Farmington Matthew McCourt, University of Maine Farmington Brad Deardon, University of Maine Farmington David Hobbins, University of Maine Fort Kent Tora Johnson, University of Maine Machias Chunzeng Wang, University of Maine Presque Isle University of Maine Orono"



**6. Approximate amount of funds requested. Please use numbers only without special characters, such as decimal point and commas. For example: 500000.**

Amount (\$) 300000

**7. Technology Sector**

Chose One Sector Information

**8. Scientific Disciplines Involved. Character limitation: 125 including spaces.**

**Scientific Disciplines Involved**

Geography Geosciences Environmental Studies Computer Science Criminology Forestry Health and Medical Sciences

**9. Names of two suggested reviewers from outside Maine, who are expert in the area of work with no direct conflicts of interest. Please list names and institutional affiliation. MTI is under no obligation to use these reviewers. If none, enter "None."**

Reviewer 1 None

Reviewer 2 None given.

**10. Names and institutional affiliation of potential reviewers from whom to withhold application information. If none, enter "None."**

Withhold from None

**11. Project Overview, which includes a brief description of proposed project, including use of award funds; scientific rationale of the proposed project; potential economic impact areas; a listing of organizations participating in the project and a brief description of their roles.**

**Character limitation: 6,000 including spacing**

<b>Description Area</b>	<p>One of Maine's assets is a current and emerging technology cluster in geospatial information, analysis, and technology (MCBER 2008, p. 145). To grow and expand businesses and opportunities in this cluster, colleagues at the University of Maine Orono are leading an effort to obtain funds from the MTI Custer program. The Geospatial Cluster proposal focuses on 25 or so companies within the state to provide resources for the group as a whole to compete and receive money from external sources. While the cluster proposal has links to education and training efforts, however, a formalized organization is needed to capitalize and propel those efforts to the benefits of the workforce and the industry statewide. The purpose of this MTAF proposal is to enable the implementation of a Maine Virtual Center for Geospatial Technology, under the auspices of the University of Maine System. The proposed name is a working version only; part of the proposed activity will be to decide as a group on the formal name. In any case, the idea for the Center builds on and formalizes current geographic information systems (GIS) curriculum and software license consortia among the University of Maine System campuses. It also furthers the results of a National Science Foundation grant, spearheaded by University of Maine Machias and University of Southern Maine, to create a new collaborative model for geospatial technology education in a rural region. Specifically, the results of a Maine geospatial workforce study will guide the Center's development. The vision for the Center is to support geospatial technology education and research throughout Maine's educational system: K12, community college, four-year college and graduate levels. This support will include maintaining the license consortium to provide inexpensive GIS software licenses to the state's schools, establishing and maintaining articulation agreements among institutions in the Maine Community College System and the University of Maine System, providing support for collaborative projects among faculty at all partner institutions, continuing to host and support the annual competitions and annual conference of Maine GIS educators, serving as a liaison between industry and higher education, fostering ongoing cooperation between education programs in higher education and the Maine Learning Technology Initiative and among informal educators to promote geospatial technology and geospatial literacy among K12 students in Maine. The requested funds will used to implement this vision. We envision using part of the requested funds to connect the substantial educational resources within the state as well as linking those resources to the geospatial industry cluster. For example, we envision connecting the GIS laboratories at the UMS campuses directly through a teleconferencing mechanism to share instructors and classrooms for"</p>
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benefits to students and organizations across the state. Another example is the use of remote client-server technologies to share expensive software through program offering without requiring students or employees to purchase or obtain license seats or the hefty computers needed to run the applications. Funds will also be used to upgrade facilities at some of the campuses to enable this interconnectedness and to purchase any specialized equipment identified to support the various offerings of the educational institutions. Importantly, the Center will offer our higher education products and services to the current and growing geospatial industry cluster as well as prepare the Maine workforce to support this emerging cluster's needs. In some cases, this connection can provide an extra boost and backup for industry development and growth. Lastly, the Center has a goal to reduce the distance for the industry and the workforce to obtain the education and training needed to support this important emerging industry.

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**Submission Metadata**

<b>IP</b>	127.0.0.1
<b>Browser</b>	Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.9.2.3) Gecko/20100401 Firefox/3.6.3 ( .NET CLR 3.5.30729)"

**Form Data (May 04, 2010 at 11:58:29 AM)****1. Project Title. Character limitation: 80 including spaces.**

**Project Title** Maine ♦Fiber to the Home♦ (FTTH) Project

**2. Lead Institution**

**Name** Biddeford Internet Corp. dba GWI

**Lead Organization Type: Choose One**

Profit

**Mailing Address 1** 8 Pomerleau St

**Mailing Address 2** None given.

**City** Biddeford

**County** York

**State** ME

**ZIP** 04005

**3. Authorized Institutional Representative: Primary contact for the Lead Organization, who may or may not be the same as the Project Director. If the same as the Project Director, enter Project Director in each required box.**

**Rep. First Name** Fletcher

**Rep. Last Name** Kittredge

**Rep. Title** CEO

**Rep. Institution** Biddeford Internet Corp. dba GWI

**Rep. Telephone** 207-286-8686

**Rep. Email Address** fkittredge@gwi.net

**Rep. Mailing Address 1** 8 Pomerleau St

**Rep. Mailing Address 2** None given.

**Rep. City** Biddeford

**Rep. State** ME

**Rep. ZIP** 04005

**4. Project Director: Scientific lead and/or project manager.**

**Dir. First Name** Heather

**Dir. Last Name** Kelley

**Dir. Title** VP Residential Services

**Dir. Organization** Biddeford Internet Corp. dba GWI

**Dir. Mailing Address 1** 8 Pomerleau St

**Dir. Mailing Address 2** None given.

**Dir. City** Biddeford

**Dir. State** ME

**Dir. ZIP** 04005

**Dir. Telephone** 207-602-1137

**Dir. Email Address** hkelly@gwi.net

**Dir. Fax** 207-286-2061

**5. Collaborators, if Known: List either individual name and/or institution. If none, enter "None."**

**Collaborators** Maine Fiber Company Tilson Fiber Technology, LLC Plus at least one additional service provider

**6. Approximate amount of funds requested. Please use numbers only without special characters, such as decimal point and commas. For example: 500000.**

**Amount (\$)** 250000"

**7. Technology Sector**

Chose One Sector Information

**8. Scientific Disciplines Involved. Character limitation: 125 including spaces.**

**Scientific Disciplines Involved**

Information Systems & Technology; specifically delivery of telecommunications via Fiber To The Home (FTTH).

**9. Names of two suggested reviewers from outside Maine, who are expert in the area of work with no direct conflicts of interest. Please list names and institutional affiliation. MTI is under no obligation to use these reviewers. If none, enter "None."**

Reviewer 1 Bernie Cosell, formerly of Bolt Beranek and Newman

Reviewer 2 Steve Wengert, University of New Hampshire

**10. Names and institutional affiliation of potential reviewers from whom to withhold application information. If none, enter "None."**

Withhold from **WITHELD BY MTI**

**11. Project Overview, which includes a brief description of proposed project, including use of award funds; scientific rationale of the proposed project; potential economic impact areas; a listing of organizations participating in the project and a brief description of their roles.**

**Character limitation: 6,000 including spacing**

<b>Description Area</b>	This project will explore and attempt to find solutions to the economic, technical and regulatory barriers to developing and commercializing the next generation of high-speed access in rural areas of Maine. This expansion of Maine's high-speed broadband infrastructure to homes in Maine will occur by implementing a Fiber to the Home solution built off of the recently ARRA funded Three Ring Binder project. The Three Ring Binder is a middle-mile fiber project lead by GWI and then turned over to Maine Fiber Company. It is funded through \$25.4 million dollars of federal grant money and \$7 million in private investment. While the Three Ring Binder is building the middle-mile fiber to anchor institutions and business across Maine, our project will extend to individual homes. These connections will begin to level the playing field for rural communities and its residents. At least four parties will collaborate on this new project: GWI, Maine Fiber Company Inc., Tilson Fiber Technology, LLC and at least one other Maine service provider. The awarded funds will be used at a minimum for: research and testing of equipment required to enable affordable fiber connectivity to homes in Maine, expenses related to licensing and make ready work required to string fiber into communities in Maine, the purchase of fiber and related equipment, the cost of construction of the new fiber plant, selection and implementation of any software or hardware used to track and inventory the fiber and technical training necessary to install, support and maintain the new fiber. Each of the four organizations, named above, will provide the following to varying degrees: resources used to submit the grant application, matching funds, technical expertise needed to develop and implement the fiber installation as well as oversight and continued management of the project.
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