

Ohio

Third Frontier

Innovation Creating Opportunity

Commission Meeting

June 12, 2013

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Innovation Platform Program

Purpose

To link the development and innovation capabilities and capacities of an already established **Innovation Platform** at an Ohio college or university or not-for-profit research institution to specific late stage development and innovation needs of Ohio client companies

***Innovation Platform** – an already existing capacity that incorporates unique technology capabilities and strengths, talent, equipment, facilities, engaged industry partners, a track record of research commercialization and innovation, intellectual property, and other resources in a particular technology area that collectively can serve as a vehicle for significant, industry-defined and directed opportunities through the development and commercialization of new products and innovations*

FY2013 Proposals

- 27 proposals submitted - 10 interviewed - 6 recommended (**green**)
- Proposals based in one or more of 9 technology focus areas:
 - *Advanced Materials* (11)
 - *Agribusiness/Food Processing* (2)
 - *Medical Technology* (12) (**3**)
 - *Sensing/Automation* (3) (**1**)
 - *Solar Photovoltaics* (1)
 - *Aeropropulsion Power Management* (2)
 - *Fuel Cells & Energy Storage* (3)
 - *IT for business/healthcare* (4) (**1**)
 - *Situational Awareness Surveillance* (2) (**1**)
- Applicant institutions:
 - *Case Western* (4) (**2**)
 - *Cleveland Clinic* (3)
 - *Cleveland State Univ.* (1)
 - *Health Foundation of Cincinnati* (1)
 - *Kent State* (1)
 - *OSU* (8) (**2**)
 - *Summa Health Systems* (1)
 - *University of Akron* (3)
 - *University of Dayton* (2) (**1**)
 - *University of Toledo* (2) (**1**)
 - *Wright State Univ.* (1)

Program Basics

- **Lead Applicants** - Ohio colleges or universities or an Ohio not-for-profit public or private research institution. Proposals must include collaboration with at least two or more Ohio for-profit companies as clients of the platform.
- **Funding**
 - \$24 million available (FY13)
 - Award range of \$1 – \$3 million
 - 1:1 cash cost share, at least half of which must come from Ohio client companies
- **External Evaluator** - National Academies of Science

**Review of Proposals to Ohio's Third
Frontier Program, 2012-2013:**

Innovation Platform Program (IPP) 2013

**The National Academies
June 12, 2013**

The National Academies

The National Academies bring together committees of experts in all areas of scientific and technological endeavors. These experts serve on a volunteer basis to address critical national issues.

The National Research Council, which operates under the auspices of the National Academies, is committed to providing elected leaders, policy makers, and the public with expert advice based on sound scientific evidence.

Committee Membership

T. S. Sudarshan, *Chair*, Materials Modification, Inc.

Viola L. Acoff, Univ. of Alabama

Catherine G. Ambrose, Univ. of Texas

David E. Aspnes (NAS), North Carolina State Univ.

Carol Cherkis, NewCap Partners

David E. Crow (NAE), Pratt and Whitney (ret)

J. Eric Dietz, Purdue University

Bruce Gitter, Indiana University School of Medicine

Jahan K. Jewayni, Independent Wealth Management Consultant

Hywel Jones, Independent Consultant

Mohammad A. Karim, Old Dominion University

Chester Kolodziej, Freedom Field Renewable Energy, Inc

Laura Mazzola, Wave 80 Biosciences

Trent Molter, Univ. of Connecticut

C. Bradley Moore (NAS), Univ. of California, Berkeley

Arthur L. Patterson, Managing Member, GTI

Shalini Prasad, Univ. of Texas, Dallas

Lloyd M. Robeson (NAE), Air Products and Chemicals (ret)

Subhash C. Singhal (NAE), PNNL

Katepalli R. Sreenivasan (NAS/NAE), NYU

Norman A. Wereley, Univ. of Maryland

Jim Wheeler, Thomas P. Miller and Associates, Inc.

Raul E. Zavaleta, Indigo BioSystems, Inc.

Committee Membership

Committee of 23 includes:

- Working engineers, scientists, academics, investors, and businessmen and women
- 6 are elected members of the National Academy of Engineering (NAE) and/or the National Academy of Science (NAS)
- 3 financial analysts
- 5 Presidents or CEOs, 2 Vice Presidents, and 1 Executive Director of private (for profit) companies
- Geographically diverse: members are from all over the United States;
- 20 previously served on the 2012 IPP review

IPP Evaluation Criteria

Technical Merit & Plan

- Can the technical challenges be met?
- Are the project goals and objectives realistic?
- Does the proposal include a plan for beyond the 3-year time period?

Commercialization Strategy

- What are the specific value propositions of the different commercial applications?
- Is sufficient evidence provided to support the contention that the market values these benefits?
- Has the Innovation Platform already achieved at least proof of principle?
- How closely matched is the project with the existing or emerging supply chain's capabilities?

Performance Goals

- What is the project's impact on Ohio in job creation, personal wealth, new sales of products, and follow-on investment? Are the reported numbers realistic?
- How successful was the performance of the team on related prior OTF grants?

Experience and Qualifications

- Is leadership demonstrated in all critical phases of the proposal?
- Does the applicant team have the relevant experience to perform the work involved?

IPP Evaluation Criteria

Budget & Cost Share

Budget:

- Is the budget justified and adequate?
- Will a supermajority of OTF funds remain with the lead applicant?

Cost Share:

- Is the cost share necessary and reasonable? Does a majority of the cost share come from the clients?
- Does the cost share represent a specific new commitment, and is it in the form of cash?
- Is the cost share being used directly in support of the Innovation Platform?
- Is the cost share firmly committed, with no contingencies or conditions, from known sources and available to the Innovation Platform at the time of Proposal submittal?

Scope of Submissions

| Lead Applicant | # Submitted | # Interviewed |
|---|-------------|---------------|
| The Ohio State University | 8 | 3 |
| Case Western Reserve University | 4 | 2 |
| Cleveland Clinic | 3 | 1 |
| University of Akron | 3 | 1 |
| University of Dayton | 2 | 1 |
| University of Toledo | 2 | 1 |
| Kent State University | 1 | 1 |
| Summa Health System | 1 | 0 |
| Health Foundation of Greater Cincinnati | 1 | 0 |
| Wright State University | 1 | 0 |
| Cleveland State University | 1 | 0 |
| Total: | 27 | 10 |

Evaluation of Proposals

| | |
|-----|-------------------------------|
| TMP | Technical Merit and Plan |
| CS | Commercialization Strategy |
| PG | Performance Goals |
| EQ | Experience and Qualifications |
| BCS | Budget and Cost Share |

| | |
|---|---------------------------------------|
| E | Exceeds Requirements of the RFP |
| M | Meets Requirements of the RFP |
| D | Does Not Meet Requirements of the RFP |

| Proposal (Lead Applicant) | Rank | Technical Merit and Plan (TMP) | Commercialization Strategy (CS) | Performance Goals (PG) | Experience and Qualifications (EQ) | Budget and Cost Share (BCS) |
|---|------|--------------------------------|---------------------------------|------------------------|------------------------------------|-----------------------------|
| 13-329 Trusted Situational Awareness (University of Dayton) | 1 | E | M | M | E | M |
| 13-327 Ohio Platform for Tomorrow’s Industrial Medical Imaging Systems and Equipment (OPTIMISE) (Case Western Reserve University) | 2 | M | E | E | E | E |
| 13-301 Innovative Technology Platform for the Development of Spinal Devices of the Future (University of Toledo) | 3 | E | M | M | E | M |
| 13-307 Intelligent Simulation Platform for Product Commercialization (The Ohio State University) | | M | M | M | M | E |
| 13-316 Commercialization of an Innovative Neuromodulation and Neurostimulation Technology Program (Case Western Reserve University) | | M | M | M | E | M |
| 13-333 The Ohio Sensor and Semiconductor Innovation Platform (OSSIP) (The Ohio State University) | | M | M | M | M | M |

| Proposal (Lead Applicant) | Technical Merit and Plan (TMP) | Commercialization Strategy (CS) | Performance Goals (PG) | Experience and Qualifications (EQ) | Budget and Cost Share (BCS) |
|--|--------------------------------|---------------------------------|------------------------|------------------------------------|-----------------------------|
| 13-302 Innovative Technology Platform of Carbon Based Nanomaterials/Composites (The Ohio State University) | D | D | D | M | M |
| 13-324 Concussion Management and Reduction Program (Cleveland Clinic) | D | D | D | M | M |
| 13-330 Electrochromodynamic Systems (Kent State University) | M | M | D | E | D |
| 13-342 Smart Sensor System Design, Development, and Commercialization (University of Akron) | D | D | D | M | M |

Recommended Proposals

| | | | | | | |
|--|---|-----|----|----|----|-----|
| 13-329: Trusted Situational Awareness (University of Dayton) | R | TMP | CS | PG | EQ | BCS |
| | 1 | E | M | M | E | M |

Goal

- Deliver to market an open-architecture situational awareness system that will enable smaller SA companies to test and integrate their technologies.
- Incorporate cyber security metrics into the TSA system
- Enable demonstration of new SA technologies in partnership with the City of Dayton

Funds Requested: \$3,000,000

Cost Share: \$3,088,388

| | State Funds | | Cost Share | |
|-------------------|-------------|---------------------------------|-------------|----------------------------------|
| Woolpert | \$1,050,000 | (Personnel, Indirect) | \$2,150,000 | (Indirect, Equipment, Personnel) |
| Optica Consulting | \$100,000 | (Personnel, Indirect) | \$100,000 | (Personnel) |
| Greenlight Optics | \$150,000 | (Personnel, Services, Indirect) | \$75,000 | (Equipment, Personnel) |
| Tenet 3 | \$150,000 | (Personnel, Indirect) | \$150,000 | (Personnel) |
| City of Dayton | \$0 | (N/A) | \$300,000 | (Personnel) |

| | | | | | | |
|---|----------|------------|-----------|-----------|-----------|------------|
| 13-329: Trusted Situational Awareness (University of Dayton) | R | TMP | CS | PG | EQ | BCS |
| | 1 | E | M | M | E | M |

Market Size

- Air Traffic Control (ATC) equipment market: projected to reach \$3.9 billion by the year 2017.
- Bio- and chemical sensors market could reach \$21 billion by 2016.

| | | | |
|------------------------|------------------------|----------------------------|-----------------------|
| For-Profit Jobs | Non-Profit Jobs | Total Jobs (Year 3) | Year 3 Revenue |
| 26 | 6 | 34 | \$3.46M |

Strengths

- Strong, multifunctional team
- Targets low-hanging fruit (Woolpert’s existing customers) as well as untapped markets
- Open-architecture approach and focus on middle market enables a strong case for sustainability
- Numerous commercial possibilities – for example UAVs were recently used to locate missing persons in an avalanche and have been used for oil scouting and exploration

| | | | | | | |
|--|---|-----|----|----|----|-----|
| 13-327: Ohio Platform for Tomorrow's Industrial Medical Imaging Systems and Equipment (OPTIMISE) (Case Western Reserve University) | R | TMP | CS | PG | EQ | BCS |
| | 2 | M | E | E | E | E |

Goal

Commercialize two next generation products: improved radiofrequency (RF) coils for breast biopsy systems to meet new radiology standards and the use of magnesium diboride (MgB2) to respond to the shortage of liquid helium for superconducting magnets for magnetic resonance imaging (MRI) machines.

Funds Requested: \$3,000,000

Cost Share: \$3,356,095

| | State Funds | Cost Share |
|------------|---|--|
| QED | \$500,000 (Personnel, Supplies, Indirect) | \$1,200,000 (Personnel, Machinery, Indirect) |
| Hyper Tech | \$500,000 (Supplies, Services, Indirect) | \$1,500,000 (Indirect, Personnel, Supplies) |

| | | | | | | |
|--|---|-----|----|----|----|-----|
| 13-327: Ohio Platform for Tomorrow's Industrial Medical Imaging Systems and Equipment (OPTIMISE) (Case Western Reserve University) | R | TMP | CS | PG | EQ | BCS |
| | 2 | M | E | E | E | E |

Market Size

- The MRI equipment market is expected to reach \$7.9B by 2015 and annually there are more than 3000 new MRI systems installed world-wide
- Overall market for magnets in this space will be approximately \$250M in the U.S.

| | | | |
|------------------------|------------------------|----------------------------|-----------------------|
| For-Profit Jobs | Non-Profit Jobs | Total Jobs (Year 3) | Year 3 Revenue |
| 17 | 10 | 27 | \$2.7M |

Strengths

- QED has identified three OEM customers for its coils and has engaged in preliminary discussions with other OEM clients
- Better MRI's can lead to better diagnosis and there is an ever increasing number of women being examined for preventive care
- Better MRI's have the ability to prevent surgery when not needed through more careful interpretation of images

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-301: Innovative Technology Platform for the Development of Spinal Devices of the Future (University of Toledo) | R | TMP | CS | PG | EQ | BCS |
| | 3 | E | M | M | E | M |

Goal

Develop orthopaedic device product concepts and advanced analytical capabilities to support additional product development, prototyping, and testing. Initial proposed products include spinal implants, an infection sensor, and a family of exercise machines.

Funds Requested: \$2,355,319

Cost Share: \$2,357,961

| | State Funds | Cost Share |
|--------------------------|---|---|
| X-Spine Systems Inc | \$450,000 (Personnel, Supplies) | \$450,000 (Personnel, Supplies) |
| Turning Point, LLC | \$300,000 (Supplies, Services, Other Direct) | \$300,000 (Supplies, Services, Other Direct) |
| Metro Medical Innovation | \$600,000 (Other Direct, Personnel, Supplies) | \$600,000 (Other Direct, Personnel, Supplies) |

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-301: Innovative Technology Platform for the Development of Spinal Devices of the Future (University of Toledo) | R | TMP | CS | PG | EQ | BCS |
| | 3 | E | M | M | E | M |

Market Size

- The market for spine products was worth approximately \$4.8 billion in 2010, and increased at a rate of 9% from 2008 to 2010.
- By 2015, spinal implants and replacement products could represent a market of \$5.5 billion

| | | | |
|-----------------|-----------------|---------------------|----------------|
| For-Profit Jobs | Non-Profit Jobs | Total Jobs (Year 3) | Year 3 Revenue |
| 28 | 7 | 35 | \$15.56M |

Strengths

- At least one product for each client company will achieve market entry within three years
- An exercise machine already exists; the goal is to make it cheaper to reach a broader market
- The exercise machines operate from a standing position, not a sitting position like competitors, making them more ideal for targeting lower back pain

Caveat

Should be considered *only if the infection sensor work is removed from the proposal*

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-307: Intelligent Simulation Platform for Product Commercialization (The Ohio State University) | R | TMP | CS | PG | EQ | BCS |
| | 3 | M | M | M | M | E |

Goal

Utilize a cloud-based modeling and simulation technology to create six manufacturing design applications. These apps would be sold through a new app store and be used by small- to medium-sized manufacturers for “digital design”. Initial apps include: ceramic matrix composites, oven temperature distribution, virtual wind tunnel, virtual crush test rig, and generalized versions of P&G apps

Funds Requested: \$2,999,936

Cost Share: \$3,500,000

| | State Funds | | Cost Share | |
|----------------|-------------|---------------------------|-------------|-----------------------|
| AltaSim | \$0 | (N/A) | \$300,000 | (Personnel) |
| TotalSim | \$0 | (N/A) | \$450,000 | (Personnel) |
| Kinetic Vision | \$0 | (N/A) | \$450,000 | (Personnel) |
| P&G | \$0 | (N/A) | \$1,000,000 | (Services, Personnel) |
| Intel | \$0 | (N/A) | \$600,000 | (Services, Personnel) |
| Nimbis | \$500,000 | (Personnel, Other Direct) | \$700,000 | (Personnel) |

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-307: Intelligent Simulation Platform for Product Commercialization (The Ohio State University) | R | TMP | CS | PG | EQ | BCS |
| | 3 | M | M | M | M | E |

Market Size

- The size of the opportunity is very large, as it is not limited to any one industry, product or service
- ~300,000 companies in the U.S. fit the customer profile with at least 600 in Ohio, employing more than 80,000 people, as ideal initial candidate customers

| For-Profit Jobs | Non-Profit Jobs | Total Jobs (Year 3) | Year 3 Revenue |
|-----------------|-----------------|---------------------|----------------|
| 23 | 6 | 29 | \$2.5M |

Strengths

- Will enable small- and medium-sized manufacturers to access tools previously only accessible to large firms
- Already demonstrated the ability to simplify complex manufacturing problems into “apps” that are user friendly, do not need intensive training, and give succinct information leaving less for interpretation difficulties
- Initial apps are in high demand; project has a solid case for sustainability

Caveat

Should be considered *only if the platform makes a verifiable commitment to giving priority to Ohio firms*

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-316: Commercialization of an Innovative Neuromodulation and Neurostimulation Technology Program (Case Western Reserve University) | R | TMP | CS | PG | EQ | BCS |
| | 3 | M | M | M | E | M |

Goal

Develop and market the OMNISTIM™ System—an implantable neurostimulation device and related software.

Funds Requested: \$3,000,000

Cost Share: \$3,000,000

| | State Funds | | Cost Share | |
|---------------------|-------------|------------------------------------|------------|----------------------|
| NDI Medical | \$1,626,000 | (Personnel) | \$970,000 | (Supplies, Services) |
| SPR Therapeutics | \$890,400 | (Services, Personnel) | \$500,000 | (Services) |
| Valtronic | \$177,000 | (Supplies, Personnel, Indirect) | \$30,000 | (Supplies) |

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-316: Commercialization of an Innovative Neuromodulation and Neurostimulation Technology Program (Case Western Reserve University) | R | TMP | CS | PG | EQ | BCS |
| | 3 | M | M | M | E | M |

Market Size

- The market for neurostimulation devices has an expected compound annual growth of over 18.6%, the fastest growing segment of the medical devices sector.
- Sales of neurostimulation products are expected to exceed \$6.8 billion by 2017.

| | | | |
|------------------------|------------------------|----------------------------|-----------------------|
| For-Profit Jobs | Non-Profit Jobs | Total Jobs (Year 3) | Year 3 Revenue |
| 22 | 3 | 25 | \$7.5M |

Strengths

- Making good progress toward commercialization of first two targeted applications.
- Has the potential to take care of many difficult patients who have Alzheimer's, Parkinson's, or other neuro-disorders

Caveat:

Should be considered *only if ODSA will require and can confirm that medical devices for both the U.S. and European markets are developed and manufactured in Ohio*

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-333: The Ohio Sensor and Semiconductor Innovation Platform (OSSIP) (The Ohio State University) | R | TMP | CS | PG | EQ | BCS |
| | 3 | M | M | M | M | M |

Goal

Pursue several cooperative sensor projects:

Focal-plane detectors used in cameras in the infrared (IR) spectral range (with CE/L-3);

Electro-optic modulators for use in transmission of information (with Srico);

Remotely located surface-acoustic-wave (SAW) sensors for assessing conditions of jet engines (with Syntonics)

Funds Requested: \$2,992,147
(w/o Syntonics): \$2,543,494

Cost Share: \$3,072,653
\$2,441,126

| | State Funds | | Cost Share | |
|--------------------|-------------|-----------------------|-------------|----------------------------------|
| L-3 Communications | \$0 | (N/A) | \$1,230,009 | (Indirect, Personnel, Equipment) |
| Srico | \$230,400 | (Personnel) | \$230,400 | (Indirect) |
| Syntonics | \$448,653 | (Personnel, Indirect) | \$631,527 | (Indirect, Personnel) |

| | | | | | | |
|---|---|-----|----|----|----|-----|
| 13-333: The Ohio Sensor and Semiconductor Innovation Platform (OSSIP) (The Ohio State University) | R | TMP | CS | PG | EQ | BCS |
| | 3 | M | M | M | M | M |

Market Size

- Project will primarily produce components for multiple applications, thus market size cannot be specified as the technology is truly a platform on which several things will be added or built

| For-Profit Jobs | Non-Profit Jobs | Total Jobs (Year 3) | Year 3 Revenue |
|-----------------|-----------------|---------------------|----------------|
| 50 | 3 | 53 | \$30.8M |
| 45 | 3 | 48 | \$29.2M |

Strengths

- Two of the projects clearly advance the state of the art, can be realized in the 3-year time frame, and have an excellent chance of providing the predicted revenue and jobs
- Military and commercial markets will be pursued
- Clear linkage between platform and clients

Caveat:

Should be considered *only if the Syntonics element is removed*

Summary of Recommendations

| | Rank | State Funds | Special Conditions |
|---------------|----------|--------------------|---|
| 13-329 | 1 | \$3,000,000 | N/A |
| 13-327 | 2 | \$3,000,000 | N/A |
| 13-301 | 3 | \$2,355,319 | Only if the infection sensor work is removed from the proposal |
| 13-307 | | \$2,999,936 | Only if the platform makes a verifiable commitment to giving priority to Ohio firms |
| 13-316 | | \$3,000,000 | Only if ODSA will require and can confirm that medical devices for both the U.S. and European markets are developed and manufactured in Ohio |
| 13-333 | | \$2,543,494 | Only if the Syntonics element is removed |

Final Remarks

Total state funds requested by the 6 proposals: **\$17,347,402**
(or **\$16,898,749** if recommended changes are followed)

The remaining 21 proposals, when ranked against the RFP's criteria and requirements, scored significantly lower than the recommended 6

Thank You!

The National Academies would like to thank the State of Ohio for placing its trust in our process and in our outstanding volunteer committee members.

QUESTIONS?