



Technology Validation and Start-Up Fund

Round 3 Submittal Evaluations

Submitted: December 2012

Submitted To:

Christiane Schmenk

Director, Ohio Development Services Agency

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	3
2. PROPOSAL RECOMMENDATIONS - PHASE 1	5
SUMMARY OF RECOMMENDATIONS	5
DETAILS OF RECOMMENDATIONS.....	7
3. PROPOSAL RECOMMENDATIONS - PHASE 2	18
SUMMARY OF RECOMMENDATIONS	18
DETAILS OF RECOMMENDATIONS.....	19
4. SUMMARY	24
APPENDIX A-TEAM MEMBERS	25
TECHNICAL REVIEWERS' CREDENTIALS	25
APPENDIX B-OVERVIEW TECHNOLOGY VALIDATION AND START UP FUND	31
DEVELOPMENT'S PURPOSE FOR FUND	31
APPENDIX C-EVALUATION CONTRACTOR-YOURENCORE, INC.	33
CORPORATE BACKGROUND.....	33
SERVICES & EXPERIENCE	33
SUMMARY OF QUALIFICATIONS	33
APPENDIX D-EVALUATION PROCESS	34
APPROACH AND MANAGEMENT PLAN	34
TEAM STRUCTURE AND QUALIFICATIONS.....	37
<i>Development Committee</i>	37
<i>Development Sponsor</i>	37
<i>Project Manager</i>	37
<i>Business Reviewer</i>	37
<i>Technical Reviewers</i>	37
SYSTEM INFRASTRUCTURE AND UTILIZATION	38

1. EXECUTIVE SUMMARY

YourEncore was selected as the contractor to perform the review process based upon having over 7,000 subject matter experts with a collective average of over 25 years of experience. For each of the eight areas of “project focus” a technical expert was selected to review the proposals. Once the technical review was complete, a business reviewer and senior YourEncore managers reviewed each proposal. These experts have diverse backgrounds and a plethora of experience that make them ideally suited to review the proposals and recommend where the state of Ohio should most judiciously invest in the future.

For round 3, a total of 25 requests for funding were submitted to OTF’s Technology Validation and Start-Up Fund, 19 for Phase 1 and 6 for Phase 2. This is the same number of total grant requests as in round 2, though 12 fewer requests than received in round one. Of these 25 requests, nine requests in Phase 1 and two in Phase 2 were recommended for funding to OTF by the expert Review Team. As with the first two rounds, the Review Team was composed of subject matter experts in each field of technology, a business reviewer, and YourEncore senior managers. The Review Team evaluated each proposal based on the information submitted for review, and according to the criteria specified by OTF.

There was a noticeable improvement for the phase 1 applications with regard to identification of an objective third-party reviewer, which was a real area of concern in round 2. While omission of a third-party reviewer is not considered to be a fatal flaw, it does raise questions and doubts, so this improvement is welcomed.

A total of 7 applications not previously recommended for funding were resubmitted in this round, with mixed results. Only 2 of 5 resubmissions for Phase 1 grants were recommended for approval, and 1 of 2 for Phase 2. While all resubmissions did have meaningful improvements in the information provided, the review team would have expected a higher success rate for resubmissions. Therefore, teams that plan on resubmission are encouraged to take advantage of the opportunity to debrief with the review team to discuss potential improvements, as this may help clarify and focus the comments offered in this report.

Generally, the technologies as proposed are sound, and most requests that were not recommended for funding were lacking in some fundamental elements of business strategy. Phase 1 proposals not recommended for funding generally were deficient in Generation of Proof (6 of 9 had this fatal flaw) or Reasonable Path to Market (7 of 9). While Generation of Proof can be a technical issue, for most applications it was a business issue; that is, even if technical goals are met for the project, true proof would not be generated. Phase 2 proposals not recommended for funding were all deficient, at least to an extent, in their business model, which is a continuing theme from earlier rounds. The review team saw a lack of adequate preparation and understanding of market dynamics, pricing, or the basic business model itself, meaning, the product, license or royalty structure, partner model, etc. were poorly defined.

Total grant dollars recommended for funding have dropped significantly this round, to \$610,375, versus approximately \$950,000 for round 1 and \$900,000 for round 2. While the total number of applications for round 3 was similar to round 2, the percentage of grants recommended for funding dropped from 52% in round 2 to 44% for round 3, and there were several grants recommended that did not submit their request for the maximum amount.

The Phase 1 Proposals that are recommended for funding are:

1. 13-001: The University of Toledo, Facet Screw System, \$35,500
2. 13-002: The University of Toledo, Percutaneous Mechanical Thrombectomy Device, \$50,000
3. 13-004: Kent State University, Lightweight and Biocompatible Soft Piezoelectric Fiber Mats, \$50,000
4. 13-005: Kent State University, Active Retarder Films for Glasses-Free 3d TV Technology, \$38,590.53
5. 13-007: Kent State University, Bistable Liquid Crystal Window, \$48,981
6. 13-010: The University of Akron, Bio-Inspired Resuable Adhesives Using Scalable Electrospinning Techniques, \$37,304
7. 13-011: The Ohio State University, CellMarker, \$50,000
8. 13-013: The Ohio State University, MRE, \$50,000
9. 13-016: The Ohio State University, HAWC: Hybrid Air Water Conditioning System, \$50,000

The Phase 2 Proposals that are recommended for funding are:

1. 13-021: Sepsis Alert, LLC, Human Sepsis Test Development, \$100,000
2. 13-023: Acense, LLC, Acetylene Gas Sensor, \$100,000

2. PROPOSAL RECOMMENDATIONS - PHASE 1

SUMMARY OF RECOMMENDATIONS

PROPO SAL #	Licensing Institution	PROJECT TITLE	Generation of Proof to be Licensed	Project Plan / Team	Independent 3rd Party Review	Reasonable Path to Mkt	IP Protection	Start-up in Ohio	Market Opportunity / Size	Budget Narrative / Use of Funds
13-001	University of Toledo	Facet Screw System								
13-002	University of Toledo	Percutaneous Mechanical Thrombectomy Device								
13-003	Cincinnati Childrens Hospital	N of 1								
13-004	Kent State University	Lightweight and Biocompatible Soft Piezoelectric Fiber Mats								
13-005	Kent State University	Active Retarder Films for Glasses-Free 3D TV Technology								
13-006	Kent State University	High Speed Plasmonic Spatial Light Modulators with Low Driving Voltages								
13-007	Kent State University	Bistable Switchable Liquid Crystal Window								
13-008	University of Akron	Polymer Solar Cells with a Low Temperature-Annealed Sol-Gel-Derived MoO3 Film as a Hole								
13-009	University of Akron	Photodegradable Polymers as Novel Matrices for the Controlled Delivery of								
13-010	University of Akron	Bio-Inspired Reusable Adhesives Using Scalable Electroscoping Techniques								
13-011	The Ohio State University	CellMarker								
13-012	The Ohio State University	IC Relief								
13-013	The Ohio State University	MRE								
13-014	The Ohio State University	SimpleFill								
13-015	The Ohio State University	B2M X-Ray Convertor								
13-016	The Ohio State University	HAWC: Hybrid Air Water Conditioning System								
13-017	Wright State University	TWITRIS: Technology Validation and Enhancements for Commercialization								
13-018	Wright State University	THz Source echnology for Biomedical Imaging								
13-019	University of Cincinnati	The SENSE Device: A Major Advance in Critical Care of the Brain								

Definition of Columns:

Proposal # – A unique OTF number for each proposal

Licensing Institution – The Ohio Institution of higher learning that is requesting funds

Project Title – The Project Title for the Request for Proposals Application Page

Generation of Proof to be Licensed – The proposed proof needed to move the technology to a point where it is ready to be licensed to a start-up or young company is deemed meaningful and likely impactful to that end

Project Plan/Team – Proposed proof that the technology can be generated during a one year project period with the proposed resources to move the technology to a point where it is ready to be licensed by a start-up or young company

Independent 3rd Party Review – Will the validation/proof process be conducted or overseen by an independent party

Reasonable Path to Market – The technology has a commercially reasonable path to market entry of first product

IP Protection – Degree to which the intellectual property is protected

Start-up in Ohio – Degree to which the proposed project will likely lead to a start-up company if the technology validation is successful and needed proof is generated

Market Opportunity/Size – Is this technology a viable commercial opportunity in regards to the potential market size and competition

Budget Narrative/Use of Funds-newly added for Round 2, description of how the entity proposes to use the funding if received

DETAILS OF RECOMMENDATIONS

Proposal 13-001, The University of Toledo, Facet Screw System, \$35,500 requested. **Amount recommended: \$35,500**

Rationale: This proposal from The University of Toledo concerns development of a facet fixation screw, which would be used in surgery of the spine to stabilize vertebrae made unstable by disk degeneration, injury, or other causes. This is the third submission for this technology, which did not receive a recommendation for funding on two prior instances due to lack of detail on the facet screw itself – how it is different from other facet screws and how it is employed. This latest submission overcomes previous deficiencies, and as a result, a positive recommendation is given.

The facet screw under consideration is different from other screws in two respects: it is secured only at the distal end where the screw has threads; the length of the screw between the head and the threaded portion carries a sleeve of human bone, derived from cadavers, that facilitates growth of the patient's bone around the screw and across the fixated joint between the upper and lower facets. Inserting facet screws is easier and less disruptive to the tissues that surround the spine than pedicle screws that are installed in pairs in adjacent vertebrae and connected by rods. These new insights allowed the review team to appreciate the value of the technology and its potential.

The only remaining concern of the review team is the partnership the University of Toledo has in place with Joimax GmbH, which makes it possible the technology will be licensed or acquired by a European company and not remain in Ohio. However, it is conceivable that a startup company would be created to continue development on this and other related technologies.

Proposal 13-002, The University of Toledo, Percutaneous Mechanical Thrombectomy Device, \$50,000 requested. **Amount recommended: \$50,000**

Rationale: This proposal from The University of Toledo concerns a novel device for mechanically removing a blood clot (thrombus), that has blocked an artery or vein via percutaneous thrombectomy (PT), a non-surgical procedure. The review team believes this ingenious design, exploiting the unusual properties of the material nitinol, may well find a position of superiority relative to other PT devices on the market, and as a result, makes a favorable recommendation for funding.

There are two areas of caution/concern to be highlighted. First, it is not a given that a viable startup company will result from successful completion of the proposed work. The most expeditious path to revenue would be license to or acquisition by a medical device company, but the review team does recognize the potential for a startup to create a technology platform around this device. Second, while the proposal does address existing competitors in this space and makes a convincing case for superiority, it does not address whether potential competitors are also working on double-basket or nitinol-based devices. If the development team submits a Phase 2 grant request in the future, the review team will expect them to address the emerging competitive landscape.

Proposal 13-003, Cincinnati Children's Hospital Medical Center, N of 1, \$50,000 requested. **Amount recommended: \$0**

Rationale: This proposal is a resubmission of a previous grant request, which did not receive a recommendation for funding primarily based on a lack of a reimbursement strategy or other means of selling

the product to an end-customer. The technology under development is a computer application designed to support a collaborative care program for chronic conditions such as Inflammatory Bowel Disease (IBD). While the applicants do provide some evidence for improved outcomes (sustained remission using the C3N model), and they also effectively address the concerns about increased medication costs using the system, they still have not adequately addressed their payor strategy. For example, though cost savings may be realized, it is unclear with the information provided as to whether that degree of savings would matter to a payor, especially with the undefined costs of the N of 1 system itself, nor do they mention other, similar approaches to personalized care that would serve as a means of comparison. If the payor is not the paying customer, the applicants fail to make that clear. They do mention a secondary path to market through large-scale health IT companies, but this effort seems to focus on providing access to their tool as a testing environment, not to sell or market the actual tool through those entities to end-customers. At some point in the very near future, the development team will need to articulate who their intended customer is, where the revenue will come from, at what price point (or if undefined provide insight on how price points will be obtained and validated), and provide a compelling rationale for purchase. Whether they are selling a reimbursable tool through payors, applications to healthcare providers, software as a service, or providing consultative resources to large-scale health IT organizations, the business model must be more clearly articulated.

It should be noted the applicants are utilizing CincyTech as their 3rd-party reviewer. While CincyTech is presumably providing substantial and meaningful support to the project, since they are also providing resources and perhaps funding they may not be a truly independent body, and may also lack the subject matter expertise to be able to provide that perspective, though that isn't clear from the grant application.

The review team is unable to provide a favorable recommendation for funding at this stage, despite what would appear to be compelling science and evidence for improved outcomes. The complex nature of the health care market, especially with a novel approach to medicine or technology that does not have existing benchmarks, admittedly puts more burden on a Phase 1 proposal than desirable.

Recommendations for Improvement: If the applicants decide to re-submit for a second time, the review team recommends a phone discussion to review their first two proposals and explore potential areas for improvement. The concerns above capture the areas for improvement, but a discussion may be needed to align on the applicant's intent from a business model perspective, and to explore options for how to articulate that model in a resubmission.

Proposal 13-004, Kent State University, Lightweight and Biocompatible Soft Piezoelectric Fiber Mats, \$50,000 requested. **Amount recommended: \$50,000**

Rationale: This proposal is to continue work on flexible piezoelectric fiber mats, which are capable of actuating (changing dimensions) soft materials when electrical current is applied, or generating an electrical voltage when pressed, squeezed or bent. The technology has already been demonstrated in a non-optimized state, and the development team would like to continue the process of characterization, optimization, prototyping and evaluation of the mats.

The technology is quite compelling and could be considered revolutionary when considering improved performance, ease of production using roll-to-roll processes, and durability. Though the proposal does a poor

job of indentifying and focusing on specific applications, the review team recognizes the broad and sizeable potential for these mats, and can accept that applications could be readily identified.

There is no budget narrative to account for the grant money requested and how it will be used. As it is all directed to personnel costs, it is assumed graduate students and perhaps the PI will receive these funds as compensation for their time in the lab.

Despite these concerns, the review team believes the technology has significant potential and therefore recommends funding for this Phase 1 effort. However, if the development team returns to seek Phase 2 funding, the review team will expect a much higher degree of focus on commercial applications and expects future development work to be focused on those applications.

Proposal 13-005, Kent State University, Active Retarder Films for Glasses-Free 3d TV Technology, \$38,590.53 requested. **Amount recommended: \$38,590.53**

Rationale: This proposed project represents a very logical approach to addressing a major need in the 3D TV market. Glasses-free 3D has recently been introduced to the commercial marketplace, but existing products are deficient in that they are very expensive and over long viewing times can cause uncomfortable brain sensations such as image flickering and dizziness. The proposed research presents a robust and cost effective concept for an auto-stereoscopic switchable 2D/3D display based on an LCD panel attached with switchable liquid crystal (LC) filled Fresnel lens array and blue phase liquid crystal technology.

The review team believes there is sufficient merit in the proposed technology to recommend approval for funding, despite the investments in this space by well-established consumer electronics brands. The potential market is substantial, and if successful, this project would position the active retarder film technology for success given the above-mentioned limitations in all currently available products.

The review team is concerned that this technology may be more easily licensed or sold to a large consumer electronics company and may not lead to a startup in Ohio. However, the team is willing to accept the assertions by the development team that a startup company to manufacture the active retardation film products is a good possibility.

Proposal 13-006, Kent State University, High Speed Plasmonic Spatial Light Modulators with Low Driving Voltages, \$45,881 requested. **Amount recommended: \$0**

Rationale: This proposal describes a validation path forward for high-speed plasmonic light modulators (SLMs). The field of optoelectronics is large and growth rates are high, so any meaningful improvement in that field would presumably lead to a viable commercial opportunity. The technology as presented certainly offers the potential to increase speed while using less power (and therefore lowering thermal management requirements) and this could potentially be a quantum leap forward for the industry.

Unfortunately, the proposal does not do enough to help the review team understand the specific performance targets of the proposed work. For example, one of their technology proofs is to see 'how high the operating speed of the electrical modulation of light beam can be.' While this is a sensible qualitative goal, it does not help the review team understand what, specifically, they feel they need to achieve to 'prove' the technology. Without specific goals and metrics, the development program appears to be basic research rather than proof.

Similarly, the proposal states Hamamatsu researchers ‘expressed strong interest in licensing our technology if it is demonstrated’, but offer no goals or targets. The review team believes the development team can improve the technology with grant funding, but is unclear as to whether those improvements would have any meaning commercially. As a result, a positive funding recommendation cannot be made at this time.

One final area of concern is the IP position of the technology. The proposal states ‘an invention disclosure is filed’, and the team anticipates generating patent applications once additional work is complete. This concern is compounded by the involvement of the University of Michigan in the development work, albeit in a somewhat ancillary way by providing facilities and resources to the development team. Until the IP position is clarified, the review team is concerned the University of Michigan may claim IP rights on this technology.

Recommendations for Improvement: An improved proposal would include specific and quantifiable goals and performance targets. These should be based on some commercial need, whether potential customer requirements or existing technologies. At the end of the program, it should be clear whether or not the improvements realized will translate into a viable business, and the review team is uncomfortable supporting open-ended improvement as achievement of proof. The IP situation should be clarified – at a minimum there should be evidence that the University of Michigan will not have rights to the IP developed in their facilities, and to meet the requirements of the TVSF program some IP should be filed to protect the state’s investment.

Proposal 13-007, Kent State University, Bistable Liquid Crystal Window, \$48,981 requested. **Amount recommended: \$48,981**

Rationale: This proposal describes a Phase 1 path forward for further development, prototyping and validation of a novel bistable liquid crystal (LC) glass/window technology. Currently available LC switchable systems are not bistable, i.e., they are monostable and require continuous electrical current to maintain one of the optical states. If successful, this technology would provide an energy-efficient means of delivering a visually impactful and practical means of achieving privacy, UV protection, etc.

This proposal is a re-submission of an earlier grant request which was denied funding for various reasons, including a sub-par budget narrative, unclear commitment from the principal investigator, and lack of a project plan and timeline. All of these deficiencies were addressed in this improved re-submission, and as a result a favorable recommendation for funding is made. Most notably, the development team has done a good job of identifying the specific areas of experimentation and exploration, tied those to meaningful outputs, and anticipated potential hurdles and how they will be overcome.

The proposal is still lacking in some dimensions, none of which preclude the favorable recommendation. Most notable is the lack of third-party review and oversight of the research. While the development team mentions plans for publishing results and mentions two private companies that have worked with the principal investigator in the past, no party was identified as an independent source of review. If the development team returns for additional funding in a Phase 2 request to the TVSF, this will be an area of focus and concern.

Proposal 13-008, The University of Akron, Polymer Solar Cells with a Low Temperature-Annealed Sol-Gel-Derived MoO₃ Film as a Hole Transport Layer, \$50,000 requested. **Amount recommended: \$0**

Rationale: This proposal, to develop a new approach to polymer solar cell technology, is a re-submission of an earlier grant request which was denied funding for various reasons, including failure to tie research results to a

meaningful commercial outcome, and lack of comparison of the novel technology under development to market incumbents. While this resubmission does address some deficiencies initially cited by the review team, a favorable recommendation for funding cannot be given at this point.

According to this and the earlier version of the grant request, Konarka, an organic photovoltaic (OPV) developer and manufacturer based in Massachusetts, is a potential commercial partner and/or licensee. Konarka's technology would appear to be quite similar to that described in the grant request, though the request does not specify what those similarities or differences are. Konarka's website shows its most recent efficiency certifications were 9% (as of Feb 2012), an improvement of about 50% in three years' time, which is less than the proposed approach which could yield between 10% to 13%. But the review team can infer that Konarka was on a similar trajectory for efficiency, at least through the beginning of 2012. Despite significant gains in performance, Konarka filed for Chapter 7 bankruptcy in May 2012 and has ceased operations. This information would not have been available to the development team at the time of their first grant request submission, but it is puzzling and troublesome this development is not mentioned in this second grant request, and the review team believes the applicants should have been quite clear as to why the proposed technology would not suffer a similar fate. Konarka's failure is not unique, as literally dozens of PV companies have filed for bankruptcy in recent years. But given the proximity of the Konarka technology to the technology under development, the review team reasonably expects a grant request to make mention of this (or at a minimum not mention them as a potential partner) and to make clear how their improved offering would still find ready acceptance in an obviously challenging marketplace. This omission leaves the review team with one of two unavoidable conclusions 1) the development team lacks commercial focus and may be developing a product that would not be successful in the market despite its scientific merits, or 2) the development team is well aware of the commercial challenges ahead and chose to omit those concerns from their proposal. Either way, the review team cannot support the proposal at this stage and cannot make a positive recommendation for funding.

Recommendations for Improvement: Scientifically, the proposal is sound, and improved efficiency, slowed cell degradation, and lower manufacturing costs are all worthy goals. At this point what's lacking is a clear picture of why the development team believes that, if all these objectives are achieved, there is a ready market for them, and meaningful insights as to how that market can be profitable.

Most technologies submitted for grant funding are entering a viable, existing market, and the review team can safely assume that an improved technology will win a share of that market. In this case, if the market itself is in question, robust improvements may or may not translate to commercial success. Should the development team decide to re-submit a second time, a much clearer value proposition must be offered, and this proposition must go further than the technology itself. It may well be that Dr. Gong, a highly qualified and talented scientist, lacks the commercialization experience to anticipate and address these issues, and he could benefit from business advisors within the university setting or in the OPV industry.

Proposal 13-009, The University of Akron, Photodegradable Polymers as Novel Matrices for the Controlled Delivery of Therapeutics, \$50,000 requested. **Amount recommended: \$0**

Rationale: This proposal concerns applications for a newly developed family of polycarbonates and polyesters whose chains are disrupted by exposure to 300nm (ultraviolet) radiation, thus allowing them to release small molecules previously incorporated, such as antibiotics or cosmetic agents. While the underlying science is

interesting and compelling, there is little obvious commercial application, at least in the areas identified by the development team.

Three potential areas for commercialization were identified: release of antibiotics from a surface in a hospital setting, release of therapeutic substances from wound dressings or ocular implants, and release of active ingredients for cosmetics or personal care products. In the hospital setting, it seems much more complicated to expose surfaces to controlled amounts of UV radiation than it would be to simply wipe the surface with antibacterial products. For wound dressings, it is similarly more simple to apply antibiotics or healing agent directly to the wound. For cosmetics and ocular implants, users would need to somehow control the amount of UV light to which they are exposed – too much and the actives are released all at once, not enough they are released in suboptimal quantities or not at all.

The review team would like to see the development team on these technologies better develop their commercial thinking, as even completion of the proposed scientific investigations would not help to overcome the above challenges to commercialization. There may well be applications that would be a perfect fit for a UV release, but the review team does not believe any of the suggested applications are appropriate and cannot support a positive funding recommendation. If the grant applicants plan on resubmitting their request, they will also need to find a truly objective third-party reviewer, preferably one with a good understanding of the controlled release marketplace.

Recommendations for Improvement: As noted, the most important area to address is identifying an application that would be a better fit for this novel technology. Though this is not a suggestion, an example could be a two-part resin used in indoor environments that would allow unlimited time to work, followed by hardening when a catalyst is exposed to UV light. If more appropriate applications are identified, a budget narrative for use of funds and selection of an objective third party reviewer will also be expected in a resubmission.

Proposal 13-010, The University of Akron, Bio-Inspired Resuable Adhesives Using Scalable Electrospinning Techniques, \$37,304 requested. **Amount recommended: \$37,304**

Rationale: This proposal describes research currently being conducted by a University of Akron team in the field of bio-inspired reusable adhesives under NSF sponsored grants, which have multiple and sizeable potential commercial applications. The bio-inspired element comes from fine fibrils on the feet of insects and some lizards, and the technology under development mimics that approach, using electrospun materials that can be attached and detached at ease on a variety of surfaces.

The review team was impressed by the extensive customer research program already undertaken and the implementation of confidentiality and collaborative agreements with several potential commercial partners. This gives tremendous credibility to the commercial potential of the adhesives, and allows for a clear pathway to 'proof' at the end of the project period. All the resources needed have been identified and the project plan would appear to be quite reasonable and achievable. The review team gives a strong recommendation for funding of this proposal.

Proposal 13-011, The Ohio State University, CellMarker, \$50,000 requested. **Amount recommended: \$50,000**

Rationale: This proposal is concerned with further development of a suite of computer programs that support digital pathology called CellMarker. The software has been under development for several years and is in use in pathology departments at OSU Wexner Medical Center, Cleveland Clinic, and Massachusetts General Hospital.

Though there are many companies already in the business of digital pathology, it is a difficult conversion process – though digital pathology offers many benefits, the challenge of marketplace acceptance hinges on not slowing users down from what they are already able to do manually. The fact that this system is already in use (and has been for some time) is compelling proof that the development team has achieved this goal. Despite the developed nature of the technology, funding is still needed to make additional improvements, validate the system, and position the technology for FDA application for 510 (k) approval, meaning an accelerated regulatory pathway because substantially similar devices are already approved. The only concern that remains is the market opportunity given the relatively crowded space into which this technology will be launched, but this would appear to be manageable given what’s been demonstrated already.

The review team believes the proposed project schedule and deliverables are achievable within the one-year time frame, and that the technology has a very good chance of commercial success. A favorable recommendation for funding is given.

Proposal 13-012, The Ohio State University, IC Relief, \$50,000 requested. **Amount recommended: \$0**

Rationale: This proposal concerns the development of a test to diagnose interstitial cystitis, as well as development of a patient coaching model to assist patients in the long-term management of the disease. The review team agrees with the assertions of limited efficacy of existing therapies for IC, the high costs of diagnosis, the potential benefit of a coaching model for patients, and the debilitating nature of the condition.

Unfortunately, critical elements of the proposal are missing. Most important, the applicants state they have developed a diagnostic blood test, without any evidence that the proposed test is accurate, nor do they make any effort to describe what they are testing for or how the test works, a critical oversight for a novel diagnostic approach of an idiopathic condition. If the core technology under development is the blood test, the application cannot be considered without appropriate detail as to how the test works and how precise it is, even in theory. In addition, the applicants assume the FDA will treat the blood test as an exempt procedure, allowing them to quickly place the test on the market. Unfortunately, a diagnostic test which will guide therapy decisions cannot be treated as an exempt procedure. No rationale was provided as to why the FDA would overlook this fact.

Though it was not addressed in the proposal, the review team assumes the technology would realize revenue as a reimbursable procedure. Whether or not this is the intent of the development team, omission of any payor strategy considerations is troubling. Presumably even a positive diagnosis for IC would not pre-empt other diagnostic work to detect much more serious conditions, so the value proposition for payors is difficult to understand.

The development team also offers significant narrative on a patient coaching model which may in fact impart benefits to patients and providers alike, but the coaching model is an adjunct to the technology under development and is not a significant element of consideration for the overall proposal, given the requirements of the TVSF program.

Recommendations for Improvement: The development team will have to make a convincing scientific argument that their approach to the blood test is sound and will accurately diagnose IC. If that is achieved, the regulatory hurdles noted above must be candidly addressed and a more realistic pathway and timeline to market presented. And, once a regulatory pathway is identified, a payor strategy that aligns with that must be offered. Given the novel nature of the diagnostic test, identification of an objective third-party reviewer is essential as well. Finally, while the coaching model does not necessarily detract from the proposal, the focus should be on the technology under development, and the space allocated in the proposal to the coaching model could be better used to address the improvement recommendations provided here.

Proposal 13-013, The Ohio State University, MRE, \$50,000 requested. **Amount recommended: \$50,000**

Rationale: This proposal concerns development of an acoustic driver adapted for magnetic resonance elastography (MRE). MRE is a novel application of magnetic resonance in which acoustic vibrations are applied to the body, and different soft tissues within the body can be analyzed depending on their elastic properties. By improving the driver to increase the allowable upper frequency, improved spatial resolution can be realized. Currently available commercial acoustic drivers are unable to achieve these higher frequencies, which greatly limits the breadth and value of existing MRE tools.

Though the market for MRE is quite limited at the moment, it may earn a larger place within diagnostic and evaluative MR imaging. The applicants do not provide a lot of support for their high-level assumptions around market size, which is a concern. However, given the overall size of the MRI market (10,670 MRI centers, according to the proposal) it is conceivable a sufficient market is available. While it is likely an Ohio startup will be created to support the driver business, there may be some challenges getting this product on the market. This will either require a robust sales and marketing effort to sell the drivers to the main players within MRI, or the technology will need to be licensed to one of those players. The development team mentions Siemens Healthcare as a possible licensing partner for their driver. Siemens (or any other large partner) would expect exclusive rights to a license, which would greatly limit the potential market for the driver. Market definition and go-to-market strategies will be an area of focus and concern for the review team in a potential Phase 2 grant application.

As this is a Phase 1 request, and given the potential of the driver to dramatically impact the utilization of MRE within MRI suites, the review team recommends funding for this proposal.

Proposal 13-014, The Ohio State University, SimpleFill, \$50,000 requested. **Amount recommended: \$0**

Rationale: This proposal addresses design and development of a relatively simple solution for compressed natural gas (CNG) fuel-at-home systems for personal and commercial vehicles. Though CNG-powered cars are available today, there is a 'chicken and egg' problem for consumers – without an efficient and convenient means of refueling, very few consumers are purchasing CNG vehicles, and without consumer demand, large scale fuel distribution operations are reluctant to undertake the investment. The proposed SimpleFill technology would appear to provide an effective bridge to overcome this challenge in the relative near-term.

Despite an extremely compelling proposal, the review team is unable to provide a favorable recommendation for funding at this point. The applicants point out several times they have a 'close affiliation' with Chesapeake Energy, whom they also describe as 'eager to get involved, but must see a working prototype before

committing funds to a project.' What the applicants fail to mention, however, is that Chesapeake Energy has already announced plans, along with General Electric, to deploy 'CNG in a Box' units at filling stations. This leaves the review team with significant concern that Chesapeake has already made a strategic commitment in this space and may not be willing to invest in an 'at-home' solution as well. Since the Chesapeake / GE initiative is not addressed in the proposal, this may not be the case, but it is clear that Chesapeake has made no firm commitment to develop the technology if the prototype is successfully demonstrated. While it is possible Chesapeake sees the at-home solution as complimentary to their CNG in a Box initiative, it seems unlikely, as the latter exploits the existing paradigm of fuel sold at filling stations, greatly reducing upfront investments in sales and marketing needed to bring the product to market.

Recommendations for Improvement: At a minimum, an improved application would candidly address the above developments in CNG fuel delivery and provide a compelling rationale for the at-home solution in light of this. The applicants state their intent is to be 'first to market' and mention 'large company bureaucracies' as a mitigating factor that may allow them to do so. As this no longer appears to be the case, a new submission must weigh the competitive advantages of their at-home approach to what is already on the market, and take into account the substantial investment of sales and marketing of their product to disrupt the existing paradigm and create a sustainable business model.

Proposal 13-015, The Ohio State University, B2M X-Ray Convertor, \$50,000 requested. **Amount recommended: \$0**

Rationale: This proposal concerns a modified design for an X-ray tube, which, by placing a metal plate in the path of the emitted X-rays, causes the incident broad-band X-rays to be converted by a quantum process into narrow-band X-rays directed at the patient. The proposal cites five advantages of monochromatic X-rays over broad-band X-rays: reduced radiation dose, accuracy in depth of penetration, specificity in selected radiation, low cost, and ease of adaptation. The relevance of these advantages in medical imaging and radiation oncology remains to be seen, and is, in part, the purpose of the proposed work.

While the review team believes there is potential in the technology, it is unable to provide a favorable recommendation at this stage. Given the current stage of development, it is unclear (or even unlikely) the required proof will be generated at the end of one year. Part of the challenge is that the process of converting x-ray frequencies is well-known, so the IP claims may not be found to be novel and non-obvious. This, in turn, would appear to have pushed the applicants into a joint development program for both imaging and treatment using radiation oncology, perhaps to allow for maneuvering in the IP landscape. Unfortunately, this also serves as a distraction for the work underway and detracts from the proposal as a result.

Imaging is the 'closer in' application that would be first to market, but many of the benefits the applicants cite (listed above) are not particularly relevant. For mammography and dental x-rays, the current radiation exposures of patients is quite low, so lowering these levels further may not have much impact. Similarly, though the images may be proven to be of acceptable commercial quality, the images themselves will look quite different from those radiologists are accustomed to seeing, potentially creating resistance in the market. A new offering in an extremely well-developed and rather crowded marketplace will need to offer more than appears in this proposal.

Radiation oncology would, on the surface, appear to have a much greater commercial potential, but it is a good deal farther from the market. If this is the true area of potential, grant dollars should not be diverted to a lesser potential application.

Recommendations for Improvement: An improved application would focus on one area of investigation only. If imaging, a much more compelling rationale for market acceptance will be needed. If oncology, the longer timeline and greater uncertainty that results will need to be addressed, and in fact more basic research within the university setting may be needed before a revised application can be submitted.

Proposal 13-016, The Ohio State University, HAWC: Hybrid Air Water Conditioning System, \$50,000 requested. **Amount recommended: \$50,000**

Rationale: This proposal relates to a combined space conditioning and water heating system for residential and commercial buildings. Increasing energy prices and focus on 'green' building solutions provide an opportunity for this technology, a unique configuration of existing technologies into one system. With an expected price of less than half that of competing systems and a greater coefficient of performance, this system would appear to be well-positioned for success. An alpha prototype has already been built and demonstrated, so the requested funds will go toward additional optimization and automation, which should be achievable in the one year timeframe. As a result, a favorable funding recommendation is offered.

The review team has some concerns, none of which preclude a favorable funding recommendation. The applicants plan to enter a crowded market, and will require substantial capital to do so. This gives the review team some concern that an Ohio-based startup may not be the most effective way to commercialize the technology, and that licensing out-of-state may be a more practical approach. There is also concern that \$20,000 of the requested budget will be directed to 'consumer research verifying the viability of the product and product aesthetics'. As the proposal does not specify which firm will receive these funds, the review team is concerned this work will be undertaken by the company, Priority Designs, which employs one of the co-inventors – the proposal states this company specializes in just this type of consulting work. Obviously if Priority Designs takes on this work it will call into question objectivity and raise conflict of interest concerns – a strong recommendation is given to direct this work to an objective third party with no ties to the project.

Proposal 13-017, Wright State University, TWITRIS: Technology Validation and Enhancements for Commercialization, \$50,000 requested. **Amount recommended: \$0**

Rationale: The market for analytical tools to help understand social media responses to advertisements or events is nascent, but growing quickly. The technology under development is a software platform for Collective Social Intelligence, which claims the ability to quickly analyze social media response across numerous dimensions. Unfortunately, the applicants make a number of assertions about the uniqueness and power of their tool, with nothing to substantiate their claims. The review team has every confidence the tool can provide meaningful analysis for customers, but has no sense as to why that analysis is, in fact, unique, or for that matter, better than what can be obtained elsewhere. The PI for the project has impressive credentials, and has laid out a good path to market, including customer research and feedback – the review team expects customer feedback to the work will be positive. But, without understanding how this technology truly differentiates itself, a positive recommendation for funding cannot be made.

For example, the proposal claims unique performance across dimensions called spatio-temporal-thematic, people-content-networking, and emotion-sentiment-intent, but fails to define those terms. Further, it does not help the review team understand how this tool or these dimensions offer something unique – though competing tools may not use these precise dimensional names, the review team expects competing tools still perform similar analyses. Simply put, it is unclear how the tool works or how it compares to other competing technologies.

Recommendations for Improvement: At a minimum, the development team will need to do a better job of describing their technology and its unique competitive advantages. And, while the customer research is a very positive element of the proposal, whatever tests are being run should be validated against the claims made on the technology. If the potential customers are comparing this tool to the market leading technology, endpoints should be identified that would help to confirm the differentiation, rather than simply confirm the utility of the tool. As there are already products on the market in this space, that is presumably what most potential customers would want to see before switching products.

Proposal 13-018, Wright State University, THz Source Technology for Biomedical Imaging, \$50,000 requested.
Amount recommended: \$0

Rationale: This proposal is an outgrowth of some highly ingenious applied research in generation of terahertz (infrared) illumination sources. In particular, the proposal mentions two potential applications: characterization of burns by recognizing the boundaries between dead and live tissue, and recognition of the boundaries of melanoma (malignant cancerous skin lesions). Though the review team is impressed with the direction of the research, it is clear from the objectives cited in the proposal that extensive improvements must be made in the technology before it can be applied to biomedical applications. As such the review team cannot make a positive funding recommendation.

Specifically, the milestones cited by the team are all related to improving the underlying technology and not on the actual commercial applications. And while the review team very much appreciates the customer involvement in validating the outcomes, part of the feedback sought is on the potential applications that would be of value. The review team believes the technology is too early in its development cycle to fit with the TVSF objectives as a result. This grant request would be a much better fit for the TVSF program once the applications and performance expectations have been identified, making funding to refine and enhance performance within those applications more appropriate. Development of a burn sensor or melanoma detector which utilize this underlying technology would be a more appropriate use of grant funds.

Recommendations for Improvement: The review team is hopeful the team can continue their work without this funding. If the team can better define the performance parameters required for a targeted application with commercial potential, this would greatly enhance a future submission.

Proposal 13-019, University of Cincinnati, The SENSE Device: A Major Advance in Critical Care of the Brain, \$50,000 requested. **Amount recommended: \$0**

Rationale: This proposal concerns a brain monitor for patients in intensive care units who are suffering from, or are at risk for, hemorrhage, edema, or clot. The monitor has been christened SENSE, which stands for Sensor Evaluation of Neurological Status in Emergencies. The proposal was previously submitted and did not

receive a positive recommendation for funding, as the review team was concerned as to whether the device would work adequately in a clinical setting. Specifically, the potential for false positives or negatives was great, and for the technology to work properly, a faraday cage was used to filter the extraneous radiofrequency noise which is prevalent in intensive care / critical care settings.

The review team greatly respects the credentials of the development team and on the whole is impressed with the work done to this point. This new submission is improved in some respects, including a provision for third-party review, but significant concerns remain and a positive recommendation for funding cannot be made. First, all reference to the faraday cage has been omitted from this application – a close review of the equipment required for the work shows no changes other than the omission of the cage. If the development team has found other ways to filter out unwanted signals they do not mention this, which is counter-intuitive if such a substantial improvement in the technology has been achieved. And, since the remaining equipment (antennas, amplifiers, etc.) are the same, it is entirely unclear how such an improvement could have been achieved. Second, the review team expressed concerns that false positives or negatives could be common, and this re-submission does not address this concern.

Recommendations for Improvement: Clearly the review team would like to have clarity on signal filtering and how that will be achieved in clinical practice. Additionally, a candid assessment from the development team on the likelihood the technology will perform with sufficient accuracy would be helpful. If these points can be adequately addressed, the review team believes the device has real potential.

3. PROPOSAL RECOMMENDATIONS - PHASE 2

SUMMARY OF RECOMMENDATIONS

PROPOSAL #	Licensing Institution	PROJECT TITLE	Proof to Raise Additional Funds	Project Plan (one year)	Likelihood of Additional Funds at project end	Team	Business Model	Company Backing	IP Protection	Opportunity / Mkt. Size	Budget / Use of Funds	Start-up in Ohio	License with Ohio Institution
13-021	The Ohio State University	Human Sepsis Test Development	Green	Green	Green	Green	Green	Green	Green	Green	Green	Yellow	Green
13-022	University of Toledo	Glucose Sensing Technology	Red	Green	Yellow	Yellow	Red	Yellow	Green	Yellow	Green	Yellow	Green
13-023	University of Toledo	Acetylene Gas Sensor	Green	Green	Green	Green	Green	Green	Green	Yellow	Green	Green	Green
13-024	The Ohio State University	Quantum Tunneling Electronics for Ultra-Low Power Electronics	Red	Red	Yellow	Yellow	Red	Red	Green	Green	Green	Green	Green
13-025	University of Toledo	Photovoltaic Windows for Building and Homes	Red	Green	Yellow	Yellow	Red	Yellow	Yellow	Yellow	Green	Yellow	Green
13-026	University of Toledo	Beta-Prototype Development of the Diabetic Analytic Support Tool (DAST)	Green	Red	Yellow	Green	Yellow	Green	Green	Green	Red	Green	Green

Definition of Columns:

Proposal # – A unique OTF number for each proposal

Licensing Institution – The Ohio Institution of higher learning that is requesting funds

Project Title – The Project Title for the Request for Proposals Application Page

Proof to Raise Additional Funds – The proposed proof needed to raise additional funds for commercialization

Project Plan – Proposed proof needed to move the technology can be generated during the one year project period with the proposed resources

Likelihood of Additional Funds at Project End – Likelihood of being able to raise additional funds for commercialization at the end of the project

Team – Experience and commitment of the team members in the commercializing new technology

Business Model – Realism and achievability of the proposed business model

Company Backing – Stability and backing of company, must have demonstrated backing and support independent of the university

IP Protection – Degree to which the intellectual property is protected relative to both the technology and the proposed business model

Opportunity/Market Size – Potential opportunity for the start-up in regards to the potential market size and competition

Budget /Use of Funds-newly added for Round 2, description of how the entity proposes to use the funding if received

Start-up in Ohio – Company plans to stay in Ohio

License with Ohio Institution – Company will execute a license with the Ohio institute of higher education within nine months of the date of the application

DETAILS OF RECOMMENDATIONS

Proposal 13-021, Sepsis Alert, LLC, Human Sepsis Test Development, \$100,000 requested. **Amount recommended: \$100,000**

Rationale: This proposal seeks funding for development of a test kit, which makes use of a unique biomarker for the presence of sepsis, called Hp-MMP9. At present, there are no definitive tests for sepsis, which would make successful development of a test kit a commercial success. Sepsis Alert, LLC, proposes to use a virtual manufacturing model, using Ohio companies, to manufacture their test kits. And, since the test is applied to blood samples and not human subjects, the process to obtain proof is much more straightforward than many technologies. Given the serious medical condition and unmet need, the review team offers a favorable recommendation for funding.

The only concern is the longer-term viability of the company and the test. There is an obvious first-mover advantage that will allow for a good return on the State's investment. Longer-term it is unclear that the company will be able to maintain this leadership position, and there is no clear technology platform to be leveraged that would allow for continued innovation. Nonetheless, it is highly probable that a first-to-market test for sepsis will realize healthy returns for several years, and even without a long-term model this is an appropriate investment to make.

Proposal 13-022, IRISense, LLC, Glucose Sensing Technology, \$100,000 requested. **Amount recommended: \$0**

Rationale: This proposal concerns development of a completely novel method for noninvasive measurement of blood glucose concentrations. It relies on the discovery that glucose levels in the aqueous humor (the clear fluid in the eye that lies between the lens and the retina) contains glucose in concentrations that track with blood levels, and that variations of those glucose levels alters the appearance of the iris. Therefore, analysis of a photograph of the iris can be used to infer glucose concentrations in the blood, potentially offering a non-invasive (no finger prick) means of measuring blood glucose levels in diabetics.

Despite the intriguing science underlying the technology, the business model is simply not well-enough developed to warrant a funding recommendation at this point. Part of the challenge is technical – a good deal of work has to be done to prove the technology works through its intended application, smart phone cameras in the hands of consumers. But technical challenges are to be expected, and the review team believes the right talent is in place to address these. Most of the challenge is in the business model. Up to this point, the company has been managed minimally, consisting of the principal investigator and a business advisor engaged for about one hour per week, and only recently was an interim CEO named to the company. It is expected this addition will help identify and address many of the business model questions and challenges. These include 1) the intent to realize first revenue as a novelty product, as the technology is many years removed from achieving diagnostic status, 2) determining a revenue model, whether novelty or otherwise, that clarifies the path to profitability, both with regards to pricing and platform (software as a service, app sales, licensing, etc.), 3) formulating strategies to address issues beyond their immediate control, whether with the FDA or with additional grant funding via NIH/SBIR, 4) creating a realistic and achievable means of marketing the product, with greater clarity on the value proposition to an end-user, and 5) a better articulated strategy for partnerships or customer relationships to capture and make use of any data acquired – payor reimbursement, glucose monitoring companies, etc.

Recommendations for Improvement: At its core, this technology has real promise, but is greatly lacking as a Phase 2 TVSF grant application. The review team believes that the addition of an interim CEO may help address many of the issues listed above. Given the lack of dedicated business and management resources, it is not surprising that there are this many gaps in the business plan/model. With a better and more objective focus on a business plan, it is quite possible an improved application could be offered.

Proposal 13-023, Acense LLC, Acetylene Gas Sensor, \$100,000 requested. **Amount recommended: \$100,000**

Rationale: This proposal, for continued development of a low-cost acetylene gas sensor, is a resubmission of an earlier grant request which was not recommended for funding. While the earlier request was technically sound, a complex financial relationship between Acense and a partner company, First Power, precluded a

favorable recommendation. The principle of both companies, J. W. Harley, has improved this situation, and as a result the review team recommends funding this work.

The sensor under development is reasonably expected to find a profitable market niche. While there are other methods to remotely detect or predict failure within a transformer, these methods suffer from higher cost or lesser performance. The team has a reasonable project plan, including field tests with a potential customer, and proof of concept is quite achievable during the project period. The only concern of the review team at this point is the slow predicted uptake for the product (a function of the target industry, not the technology or development team), but given the experience of the development team in this field, the review team does expect a long-standing business with deep roots in Ohio will emerge. And, given the relatively low level of investment and risk in the project, the review team also believes the State will realize a good return on this early-stage venture.

Proposal 13-024, QuTel, Inc., Quantum Tunneling Electronics for Ultra-Low Power Electronics, \$100,000 requested. **Amount recommended: \$0**

Rationale: This application is a resubmission of a plan for development of reduced power consumption technology to be incorporated into Complementary Metal Oxide Semiconductor (CMOS) chips. The earlier grant application was not recommended for funding due to concerns around the pathway to market and the licensing model. This resubmission is improved in some respects, including a better description of the intended licensing model and the addition of a business advisor to the development team.

However, the review team still has significant concerns that preclude a favorable funding recommendation. According to the applicants, funding is needed to achieve an 800-fold reduction in size from the current device size used to demonstrate the technology in the university setting, which would make the size align with industry standards. While this scale for size reduction seems challenging, the applicants were quite clear in both the written application and the interview that this is easily achieved – all that is needed is funding to make it happen. Given the tremendous gains in reduced power consumption described in the proposal, both the review team and the applicants believe a device that could deliver on this would indeed have a place in the market. This then raises a significant question: if the size reduction is easily achieved and would only require three months (according to the applicants) and a relatively small investment, why would a foundry or chip maker not enter into an agreement with the development team now, rather than wait and potentially lose the opportunity to the myriad competitors that would no doubt be interested in licensing or acquiring it? During the interview the applicants were unable to effectively address this question. That leaves the review team to one of two troubling assumptions: 1) the size reduction process is not as straightforward as it would appear, which would explain why industry partners have not come forward but making the demonstration of proof an issue for the proposed project work, or 2) even large leaps forward in improvements still meet with resistance against existing (and therefore competing) approaches currently under development within industry labs. This latter point was among the concerns and reasons for not recommending the initial grant application for funding.

Fundamentally, the review team is left to believe the application and approach are lacking, though precisely in what way is unclear. Between Professor Berger's extensive scientific contacts within the industry and the new business advisor's extensive marketing experience within the industry, it is reasonable to expect clear answers

to our questions, but as of now, the answers are not clear at all. Finally, it should be noted that QuTel was licensed as an Ohio company in early 2012 for a 6-month period, which has since expired. The license status on the Ohio Secretary of State's website is 'cancelled by operation of law'. Though this is likely an administrative oversight, this status will need to be corrected if the applicants intend to reapply for funding.

Recommendations for Improvement: Should the development team wish to resubmit their application a second time, the review team will need unambiguous answers to our questions. If the needed work to demonstrate a quantum leap forward in performance is so straightforward, why are no industry partners ready to invest now? Why is a 3-month wait and a small investment not feasible to secure rights to a revolutionary technology? And, if the project work is not straightforward, a much more candid assessment of the work to be performed and the inherent risks and gaps must be provided so the review team can objectively evaluate the proposal.

Proposal 13-025, Solar Spectrum, LLC, Photovoltaic Windows for Buildings and Homes, \$100,000 requested.
Amount recommended: \$0

Rationale: Funding is sought to advance the development of a thin film deposition process to efficiently produce solar photovoltaic windows. The review team has a number of concerns about the technology under development, the IP status and the market strategy, and as a result cannot offer a favorable recommendation for funding.

As noted, there are several concerns. First, the IP controlled by the applicants relates to the thin film deposition process, not to the manufacturing processes. This would conceivably allow another company in the thin film space to quickly enter the market and displace or severely disrupt this technology. Second, the initial market strategy is to target the residential market – new builds or retrofits. Assuming the tax credits that pertain to the windows remain, which may be unlikely, there is still a 25% price premium for these windows. The development team estimates a cost payback period of 2.5 to 3 years, but this assumes the energy generated is efficiently utilized by the customer. Since the windows will not, at least in the near term, connect to the grid, energy can only be stored in a battery and used by consumers plugging into the battery. The development team pointed out during the interview that a large-scale appliance uses too much power to be connected to the battery, so only smaller scale appliances and consumer electronics could be used, implying a less than perfect utilization of the generated power. Because of the cost and return limitations, the review team thinks it is likely the applicants have greatly overestimated their potential residential market, both in terms of number of homes and more especially number of windows per home. Third, the development team brought an early stage prototype of the window to the interview, with the presumed intent of demonstrating the potential of the technology. Unfortunately, the prototype did more to convince the review team the technology has a significant development path ahead. Finally, the review team was concerned about the open disagreement among team members during the interview process. While allowances must be made due to the unavoidable absence of a critical team member, the lack of alignment amongst the team highlighted concerns around business acumen and strategic approach.

Recommendations for Improvement: Given the above comments, a great deal of re-work would need to be done to improve the grant application. The most important improvement will be to move away from an apparent reliance on the novelty factor of the windows, and build a business plan with realistic estimates

based on the true value – over the long run – of the product. If novelty is required to drive revenue, the business will quickly falter, and the grant application should be much more candid and realistic in its assumptions. It is possible that exercise would require internal debate within the development team that would, in turn, bring closer alignment on many issues that caused confusion during the interview. Finally, while the IP issue is a reason for concern, there could be workarounds. An improved application would help the review team understand how the team will protect its market position given their limited control, currently, of the IP to manufacture their product.

Proposal 13-026, Analytic Diabetic Systems, LLC, Beta-Prototype Development of Diabetic Analytic Support Tool (DAST), \$99,875 requested. **Amount recommended: \$0**

Rationale: This proposal requests funding for continued development of a tool for prediction of glucose levels in diabetic patients. The tool has two separate, but parallel, development pathways – one intended for use in a critical care hospital setting, the other intended for consumer use. There is a vast amount of data potentially available for use in glucose prediction modeling, which largely goes unutilized at this point. The system under development has robust algorithms and models which can use the data, if efficiently and accurately collected, to predict glucose levels, allowing patients or health care providers to better anticipate hypo- and hyperglycemic events.

The review team was impressed with the technology and the work done to date. The main concern at this point is the lack of focus of the development efforts. The review team recognizes the consumer market ultimately offers much greater potential returns for the technology, and it may be that the inclusion of this market at this early stage is to attract private sector investment interest because of that potential. However, it is also clear that this pathway requires much greater investment and carries much higher risk. The tool has already been successfully demonstrated in a hospital setting, which, with the help of electronic medical records and diligent tracking of input data, also provides a more controlled setting for testing and development, with less variability across patients. Successful proof in the hospital setting would lead to initial revenue (which though much less than the consumer market is far from insignificant), attract the interest of additional investors, and make future development of the consumer tool achievable because of the greater and more diverse funding available at that point.

Therefore, a positive funding recommendation cannot be offered at present. This does not detract from the merits of the technology. It would simply appear that the proposed development plan is more focused on what an equity investor (venture capital, for example) would expect to see, with much greater potential returns, than what the TVSF is intended to do. The hospital market is meaningful, and certainly substantial enough to warrant grant funding, closer to market, and carries a much higher probability of success. Grant dollars would be better directed here, in a very focused way. The success of a hospital market product would then allow the development team to shift their focus elsewhere.

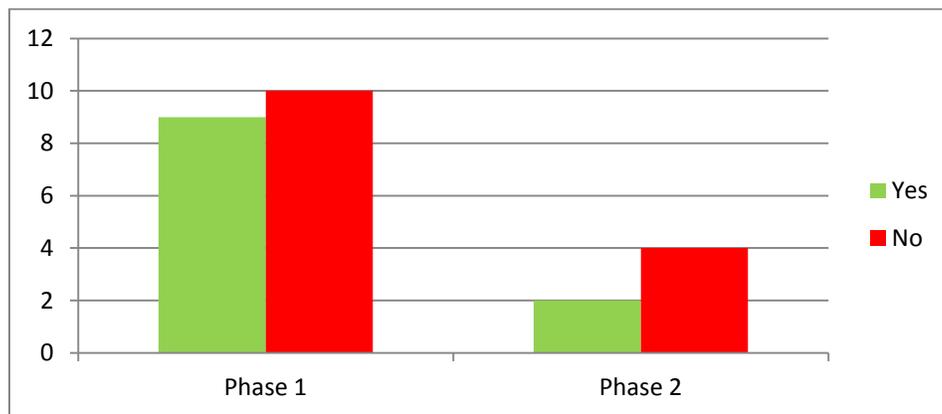
Recommendations for Improvement: If the development team is willing to rethink their strategy and approach as described above, the application would be greatly improved. Limited resources require focus in thought and effort, and a new submission should provide that focus and more realistic approach to first product sales.

4. SUMMARY

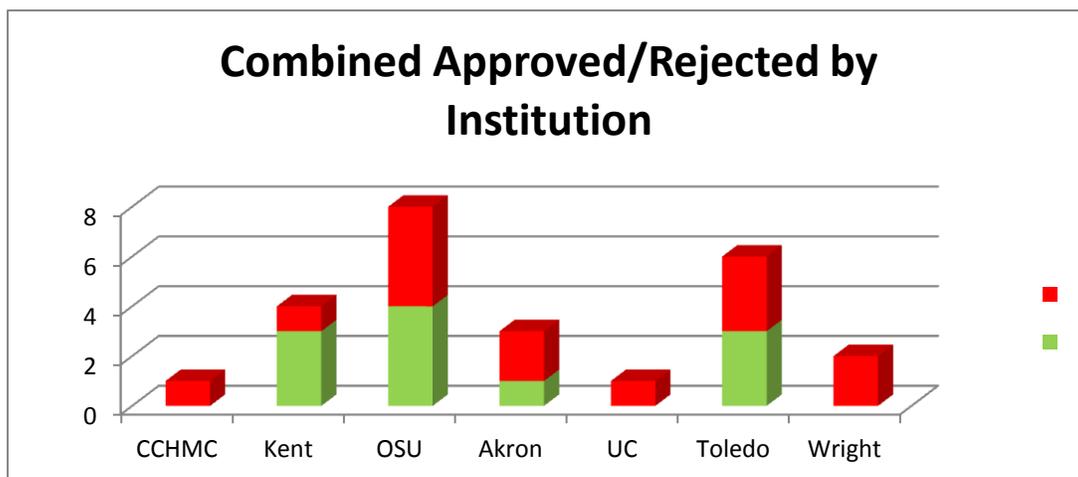
The Review Team is recommending 11 of the 25 submitted grants for review (44%) which is a significant improvement from round 1, in which 35% of grant proposals were recommended for funding, but a reduction from round 2, where 52% of proposals were recommended. For this current round, 9 of the 19 Phase 1 proposals are recommended for funding (47%). For Phase 2, 2 of the 6 submitted grants are recommended for funding (33%). With the Ohio Third Frontier accepting grants on a quarterly basis, the Review Team expects that many of the grants will be revised to address the concerns of the review team.

For both Phase 1 and Phase 2, grants which were recommended for funding did not have a “fatal flaw” in the proposal. The “fatal flaw” is described in the reviewers’ comments in the previous sections and readily identified as red in the charts at the beginning of the each of the phase reviews.

Phase 1 and 2 Recommendations



Combined Approved/Rejected by Institution



If any applicant desires feedback or further clarification on the above recommendations a review session can be arranged through the Ohio Development Services Agency.

APPENDIX A-TEAM MEMBERS

TECHNICAL REVIEWERS' CREDENTIALS

John Banisaukas (Advanced Materials)

Summary:

An independent consultant specializing in Government Contracts Program Management and Administration, as well as a technical consultant to the carbon fibers advanced composites industry. Has a broad background and over forty years experience in advanced composite materials.

Core Competencies/Field of Expertise:

Carbon Fiber

Advanced Composites

UCC's Parma, OH Research Center

Carbon Fiber Research and Development Engineer

UCC / BPA Carbon Fiber & Advanced Composites facility, Greenville, SC 21 years

Chairman of the Suppliers of Advanced Composite Materials Association (SACMA) Technical Affairs Steering Committee

Marshall Heard (Aero Propulsion and Power Management)

Summary:

Expert joined the Florida Aerospace Alliance in 1999 after a 34-year career with the Boeing Company. He served as both Vice Chairman of the Alliance and Executive Director prior to becoming Chairman. While with Boeing, he divided his efforts between engineering, marketing/business development, and project management. As a Vice President he directed the Tandem Rotors Programs (CH-46 and CH-47), the Comanche Program (RAH-66), and served as the Deputy Program manager of the V-22 Joint Program Office. He was also Vice President of marketing/business development for Boeing's passenger, cargo, and tanker military aircraft programs and was Boeing Aerospace's senior executive in their Washington, D.C. office.

Expert has served on numerous Cabinet-level panels and commissions (including the Defense Science Board and the Commercial Space Transportation Advisory Committee). He has been a frequent witness before both the U.S. Congress and foreign legislative bodies on the subjects of strategic deterrence, battlefield mobility, and the role of technology in national defense policy. In addition to his role with the Florida Aviation Aerospace Alliance he also serves on the boards of Enterprise Florida, Inc., the National Aerospace Technical Advisory Committee and several other organizations. He has a keen interest in promoting science, technology, engineering and math (STEM) and serves on the Florida Coalition for the Improvement of Math and Science (CIMS), the Florida Center for Advanced Aero-Propulsion and is an Executive Committee member of the Aerospace Resources Center (ARC), the state's first BANNER center. Expert has an active aerospace related consulting practice specializing in business development and the integration of large scale systems.

Education:

A graduate of the U.S. Naval Academy, he also holds advanced degrees in engineering and business management from the University of Illinois and the Massachusetts Institute of Technology

James Mellentine (Fuel Cell and Energy Storage)

Summary:

A Project Management Professional (PMP) and LEED Green Associate, combining years of fast-paced business consulting experience with renewable energy & energy storage technology, economics, and policy research. Directed the analysis, design, quality assurance, deployment, and training activities for complex system implementations and business transformations. Recommended logistics process transformations and performance management solutions based on industry best practices customized for client needs. Conducted broad energy systems and policy research.

Core Competencies:

Project Management
Business Consulting
Renewable Energy
Energy Storage
Flow Batteries
Energy Systems Analysis
Project Financial Analysis
Energy Project Feasibility
Life Cycle Assessment
Sustainable Building

Education & Certifications:

University of Iceland/University of Akureyri, Master of Science, Renewable Energy Systems & Policy
University of Michigan, Bachelor of Engineering, Mechanical Engineering
University of Michigan, Bachelor of Engineering, Aerospace Engineering
Project Management Professional (PMP), Project Management Institute
LEED Green Associate, Green Building Certification Council

Phil Drew (Medical Technology)

Summary:

Expert provides data and analysis to users and manufacturers of medical imaging equipment. For hospitals and radiologists, the Expert provides strategic planning services, program and space planning studies, studies of financial and organizational feasibility, and related assistance. For manufacturers and others interested in the commercial aspects of medical imaging he provides technological and market forecasts based on analysis of technical, clinical, operational and competition-related factors, as well as assistance in strategic planning, product planning and acquisition studies.

Experience:

Mallinckrodt Institute of Radiology
Department of Radiology for the State University of New York at Stony Brook
Cardiovascular Division of the Washington University School of Medicine
Arthur D. Little, Inc.

Core Competencies/Field of Expertise:

Electrical engineering
Mechanical engineering
Health care
Medical imaging
Hospital operations

Education:

Technology Validation and Start-Up Fund, Round 2 Summary, YourEncore Inc.

Harvard University, Degree: Ph.D. Electrical engineering
Harvard University, Degree: M.S. Applied Mathematics
Carnegie-Mellon University, Degree: B.S. Mechanical Engineering

John McClure (Business Reviewer)

Summary:

Over 20 years of management experience. Expert builds shareholder and customer value through the development and implementation of creative business strategies and new product/service offerings for existing and new markets. Demonstrates the ability to successfully start up technology business ventures, including hardware, software, Internet, e-Commerce, and telecommunications solutions.

Experience

Sicuro-China LLC. - President & Chief Executive Officer
Comm South Companies, Inc. - President & Chief Executive Officer
ADVAL Communications, Inc. – 2001 - Chief Operating Officer & General Manager
Wintegrity, Inc. – President & Chief Executive Officer
Electronic Data Systems Corporation (EDS) – Business Unit Vice President, Strategic Global Opportunities

Core Competencies/Field of Expertise:

Bankruptcy
Mergers and acquisitions including due diligence
Operations management
Financial support including public and private fund raising
Support of the development and presentation of client business plans

Education:

University of Iowa & Roosevelt University, Accounting

Joel Studebaker (Software Applications)

Summary:

Over 30 years of experience in project management and in all phases of the software development life cycle for pharmaceuticals, biotechnology, blood banking, and other industries. Experience in drug discovery, high-throughput genotyping, and analysis of medical and pharmacy claims.

Experience

Integrated eCare Solutions – Director of Data Analysis
CareAdvantage – Senior Data Manager
Orchid BioSciences – AD of Informatics
IBM – Advisory Engineer, Senior Industry Specialist

Core Competencies/Field of Expertise:

Project Management
Oracle 10g
Informatica 8.1
Erwin Data Modeling
SQL
Clinical Risk Grouper
SAS
Toad

Education:

Harvard University, Degree: Ph.D. Chemical Physics
Stanford University, Degree: B.S. Chemistry

Thomas Jones (Sensing and Automation Technologies)

Summary:

Over 25 years technical management and engineering analysis experience with the system engineering and integration of Electro Optical and Spectral remote sensing collection systems. Excellent communicator who provides briefings to all levels of corporate and government organizations, as well as technical and program management. Functional oversight and administrative management of group of lead senior remote sensing technologists.

Experience:

System Engineering Consultant
Lockheed Martin:

Management lead and technical oversight for multiple year remote sensing modeling corporate research & development effort. Resulting models used in proposals, studies and contracts and instrumental in acquiring new business.

Technical management coordinator of system integration support to government sensor technology research and technology customers. Provided technical oversight consultation of government contactors including technical roadmap development. Technology manager of senior remote sensor system analysts and technologist group.

Core Competencies:

System engineering for electro optical remote sensing collection systems including spectral analysis and requirements development/ system operations support/ sensor system modeling and simulations/ mission analysis / operations concepts/ technology roadmaps/ functional management/ project management/ research & development technical oversight and management / proposal and new business development

Education & Certifications:

BEE Villanova university 1964
MSEE Drexel University 1969
Multi-year System Engineering Course General Electric Co. 1970-72
Numerous Sensor engineering courses Lockheed Martin Co.
Numerous Proposal/Marketing courses Lockheed martin Co.

Margaret Ryan (Sensing and Automation Technologies)

Summary:

Chemistry Expert with broad range of Research, Consulting and Academic experience

Core Competencies/Field of Expertise:

Chemical sensors

Jet Propulsion Laboratory

Principal Member of the Engineering Staff, Power and SENSOR Systems Section,
Chemical sensors

Alternative SENSORS include an all silicon carbide sensor for identification of hydrocarbons and hydrocarbon mixtures for automotive applications, colorimetric oxidation sensors, and electronically conducting molecularly imprinted polymer sensors for identification of organic compounds in water.

Education:

PhD in Physical Chemistry from the University of Massachusetts

Walter Gist (Situational Awareness and Surveillance Systems)

Summary:

Successfully created and operates a consulting firm specializing in military aircraft avionics, advanced situational awareness, and weaponization. Several years of experience assisting foreign companies successfully market airborne equipment to the US military market. Organized and participated in proposal development, review and vetting. Has 41 years experience in marketing to the large US military OEMs like Boeing, Lockheed-Martin, Northrop Grumman, and BAE Systems. Understands the process by which foreign companies obtain access to International Trade in Arms Regulations (ITAR) controlled information and the rules and guidelines for doing so. He has also assisted in the merger and acquisition process.

Experience:

BAE SYSTEMS - Director, Business Development

GEC-Marconi/Plessey, Plc - Marketing and Sales Manager

Simmonds Precision - Aerospace Regional Manager

Core Competencies/Field of Expertise:

Mechanical Engineer by trade

New Business Development

Customer Relations

Marketing and Sales

Business Development Process

Education:

Business Administration, Pepperdine University Graziadio School of Business, Los Angeles CA

Timothy Newbound (Solar Photovoltaics)

Summary:

Organometallic synthesis of highly air- and moisture-sensitive compounds. Analytical evaluations using multi-nuclear NMR, FTIR, UV-vis, ESR, GC, x-ray structures and other methods to describe novel compounds described in peer-reviewed publications. Oil and Gas industry root-cause materials failure analysis for gas-oil separation plants (GOSPs), Water Injection Pump Stations (WIPS), pipeline systems (sour gas collection and Sales gas), Gas Plants (Amine sweetening and sulfur removal), natural gas and NGL fuel conditioning, dew-point control and light hydrocarbon separations. Research project management, project proposals, economic and technical feasibility studies and corporate strategic research assessments from industry-wide due diligence. Semiconductor materials development (Group IVA) and process scale-up for manufacturing of hydrocarbon functionalized nanocrystalline silicon free of surface oxides. Developed novel architectures using these materials in solar PV and Li-ion secondary batteries. Patent processing and intellectual property evaluation. Multiple international publications including ASME/IGTI O&G Division Best Paper Award, 2004.

Core Competencies:

Natural gas conditioning, dew-point control, dehydration, heavy-ends composition, (CGTs)

Natural gas corrosion inhibitors (US patent # 6,920,802, July 26, 2005)

Cross-functional team industrial applied research project management

Analytical materials identification and root-cause failure determination

Technical reporting and presentations preparation and delivery
Organic, inorganic and organometallic synthesis and characterization
Semiconductor (Group IVA) nanomaterials manufacturing process development

Education & Certifications:

Ph.D., Inorganic Chemistry, University of Utah

Thesis: "Substitution Effects and Reaction Chemistry of Metal-Pentadienyl Complexes"

B.S., Chemistry, Eastern Michigan University

YourEncore Senior Manager-Robert Worden

Robert has held a variety of sales, marketing and business development roles over a 20-year career, both as an individual contributor and as a manager. He has extensive work experience across the globe, with a concentration in Latin America. His core competencies include sales, marketing, business development, general management, and Six Sigma (certified Black Belt). He earned his MBA from the University of Virginia.

YourEncore Senior Manager-Camille Rechel, Director, Consumer Practice.

In addition to being a degreed chemist, Camille has over 25 years of Business Management experience. She holds several pioneering patents for polymeric coatings for optical fibers. She brings experience from the chemical industry and industrial electronics industry. Her core competencies include customer service and business development.

YourEncore Project Manager-David Young

David Young is a Project Manager with YourEncore and has led projects in numerous industries. He also assists with business development, rule harvesting and analysis, and Engagement Management. His core competencies include Project Management, Program Management, business rule definition and analysis, and process definition.

If a proposal fell outside the technical experts' core capabilities, the Project Manager engaged an Expert from YourEncore's network with deep expertise proposal's specific technical area.

Number of YourEncore Experts per Technology Area

- *Advanced Materials: 63*
- *Aero Propulsion and Power Management: 19*
- *Fuel Cells and Energy Storage: 80*
- *Medical Technology: 86*
- *Software Applications: 109*
- *Sensing and Automation Technologies: 28*
- *Situational Awareness and Surveillance Systems: 31*
- *Solar Photovoltaic and Photovoltaic: 31*

APPENDIX B-OVERVIEW TECHNOLOGY VALIDATION AND START UP FUND

DEVELOPMENT’S PURPOSE FOR FUND

Ohio’s Third Frontier (OTF) created the Technology Validation and Startup Fund (TVSF) to accelerate economic growth in Ohio through helping Ohio-based entrepreneurial companies commercialize technologies developed by Ohio institutions of higher education. The TVSF will accomplish this through:

1. **Validating Technologies:** Enhancing the commercial viability of protected technologies developed by Ohio institutions of higher education by supporting validation activities such as developing prototypes, demonstrations, and/or assessments. These validation activities will help generate the proof needed to either license the technology to an Ohio entrepreneurial firm or deem the technology unfeasible. The purpose of Phase 1 is to verify a milestone for licensing, not funding for basic research.
2. **Funding Startups:** Providing Ohio-based entrepreneurial firms the funding needed to accelerate the commercialization of licensed technologies from Ohio institutions of higher education. The goal is to enable these companies to 1) generate the proof needed to acquire additional outside funding to support commercialization or 2) support the commercialization of these licensed technologies. The purpose of Phase 2 is to establish start-up companies, independent of the university.

OFT has divided the Fund into 2 distinct Phases:

	Phase 1: Technology Validation	Phase 2: Startup Fund
Objective	<i>Evaluate the commercial viability of protected technology developed by Ohio institutions of higher education</i>	<i>Determine whether a company has the resources, acumen, and market opportunity to successfully commercialize licensed IP</i>
Activities	<ol style="list-style-type: none"> 1. Assess protected technologies from higher education institutions 2. Suggest technology development alterations to improve feasibility 3. Provide funding recommendations 	<ol style="list-style-type: none"> 1. Assess companies’ plan for commercializing licensed technologies 2. Discuss improvement programs to unfunded Applicants 3. Interview strong candidates 4. Recommend funding candidates

Assumptions	▪ Submissions Per Year:	▪ Submissions Per Year:
	- 2012: 50-80	- 2012: 20-40
	- 2013: 100-160	- 2013: 40-80
	▪ 6 Page Grant Form	▪ 6 Page Grant Form
▪ Grant Size: \$50K	▪ Grant Size: \$100K	
▪ Available Funds: \$3M	▪ Available Funds: \$3M	

Due to the technical nature of the Phase I / Phase II Proposals, OTF required the selected reviewing contractor to have subject matter expertise in the following technical areas:

- *Advanced Materials*
- *Aero Propulsion and Power Management*
- *Fuel Cells and Energy Storage*
- *Medical Technology*
- *Software Applications*
- *Sensing and Automation Technologies*
- *Situational Awareness and Surveillance Systems*
- *Solar Photovoltaic and Photovoltaic*

APPENDIX C-EVALUATION CONTRACTOR-YOURENCORE, INC.

CORPORATE BACKGROUND

YourEncore is a company of veteran scientific, engineering and technical Experts that provides clients with solutions based on a lifetime of proven expertise. YourEncore deploys its expertise against capability, capacity, and technical challenges in a confidential environment to help clients develop products essential to healthier, safer and richer lives. Given its diversity of expertise and flexible resourcing deployment model, YourEncore offers unique flexibility to swap in and out the right expertise or team size to meet the needs of client demands.

YourEncore Expert Network Profile:

- 7,000+ Experts
- Avg. 25+ years Experience
- 67% have advanced degrees
- Representing 1000+ different companies

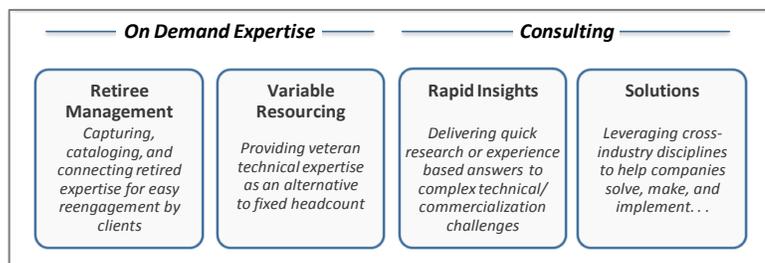
YourEncore understands the unique needs and challenges startups face since, 8 years ago, it was one. YourEncore was founded in 2003 by John Barnard of Barnard Associates. Barnard Associates is composed of a cross-functional team of highly experienced executive leaders, who advise start-ups on launching and growing businesses. Tim Tichenor, formerly the Director of the Business Development Center for Indiana University and Director of Business Advisory Services for Barnard Associates, is YourEncore’s CFO.

Today, YourEncore has over 75 employees and is a recognized leader in Expert advisory services. YourEncore has over 7,000 Experts in its network, and serves over 70 companies, including 9 of the top 12 pharmaceutical companies and 5 of the top 9 global consumer companies. YourEncore was awarded a top 100 “Most Brilliant Company” by Entrepreneur Magazine in 2011 and P&G’s “External Enabler of the Year” Award in 2009.

SERVICES & EXPERIENCE

YourEncore deploys its Expertise in two ways: On-Demand Expertise, contracting of specialized Expertise to address short-term resource gaps, and Consulting. Within Consulting, technology assessment and due diligence are core offerings. YourEncore performs assessments for over 50% of its 70+ clients, the majority of which are global leaders in their industries.

Figure 1: YourEncore’s Services



SUMMARY OF QUALIFICATIONS

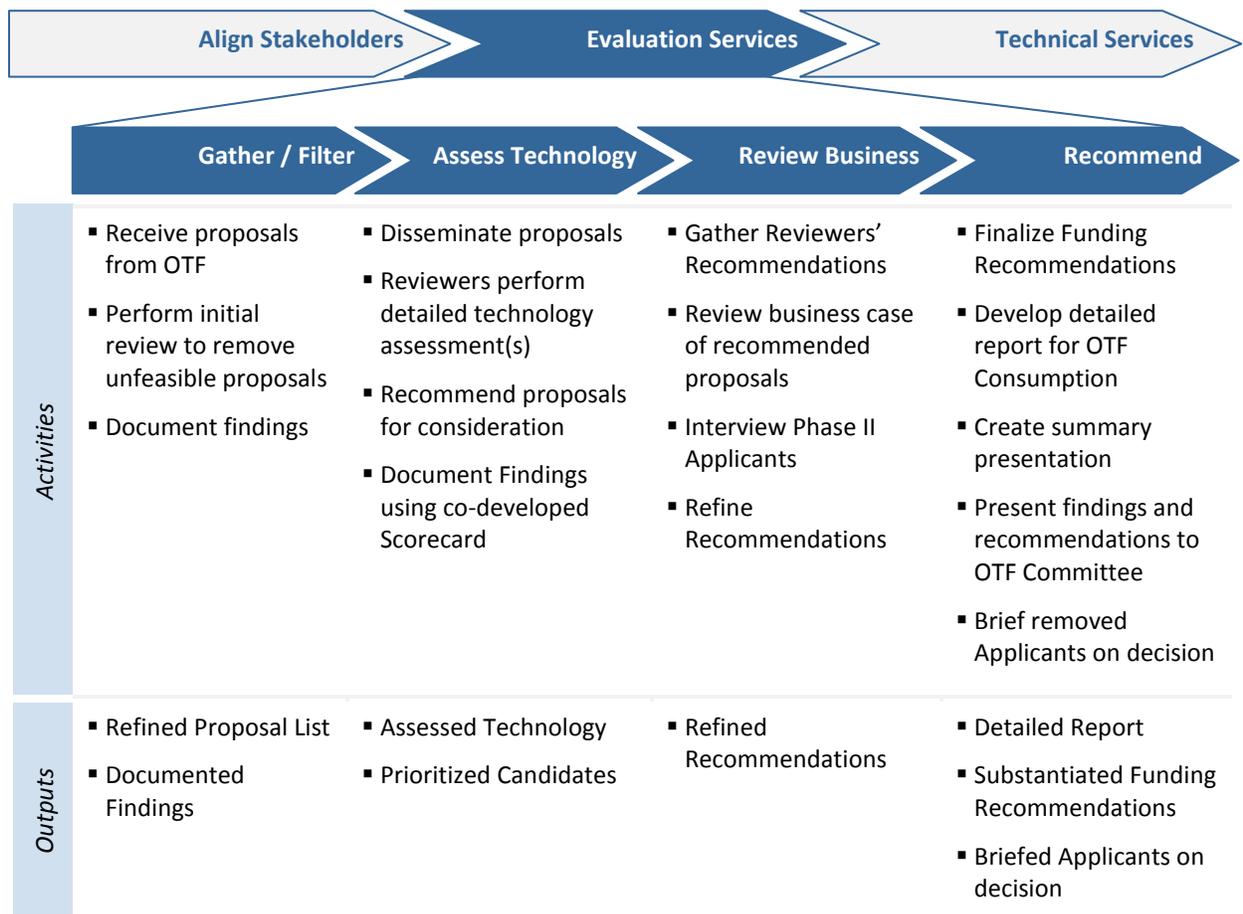
1. Unparalleled Expertise	2. Recognized Leader	3. Flexible Resource Model
----------------------------------	-----------------------------	-----------------------------------

APPENDIX D-EVALUATION PROCESS

APPROACH AND MANAGEMENT PLAN

YourEncore engaged an Expert team comprised of a Project Manager, Business Reviewer, and eight Technical (i.e., Subject Matter) Reviewers along with 2 of its senior managers to most efficiently and accurately assess all Phase I / Phase II proposals. Prior to implementing a robust Phase I and Phase II RFP evaluation process, YourEncore conducted a grounding session to align stakeholders around common objectives and finalize the expertise requirements.

After the stakeholders were aligned, YourEncore deployed a comprehensive Proposal Evaluation process that initially gathered and filtered all submissions, engaged subject matter experts to assess technologies/firms, and provided substantiated funding recommendations. Finally, to ensure a robust review, YourEncore senior managers reviewed for consistency and quality.



Align Stakeholders

Shortly after selection, YourEncore held a half-day grounding session with YourEncore's stakeholders (i.e., Account Director, Project Manager, Senior Managers) and OTF's desired stakeholders. This session assured alignment around common success criteria (i.e., funding goals, success metrics, and timelines), scoped the program's expertise requirements to ensure the right subject matter experts were engaged, and reviewed the evaluation scorecard. This scorecard included the following information:

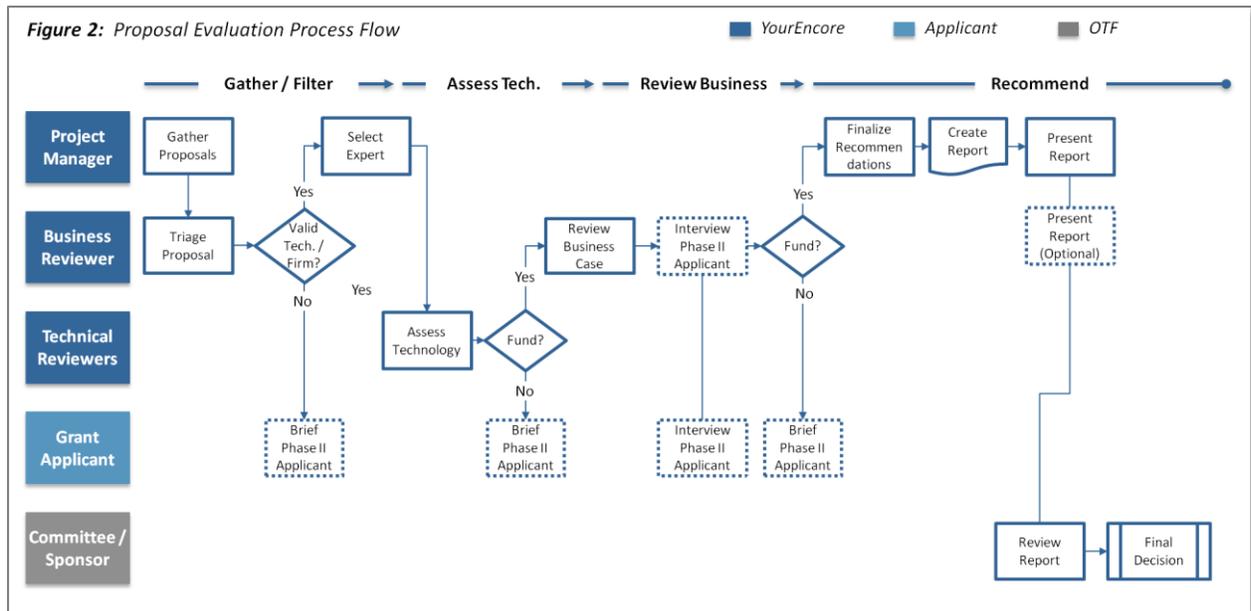
Key Evaluation Scorecard Components

- *Alignment and quality of response to the TSVF's RFP requirements*
- *Demonstrated proof to move technology / business to a next major milestone*
- *Evidence that milestone can be obtained during the one-year period and with the proposed resources*
- *Validation / proof process will be overseen by independent 3rd party*
- *Achievability of the proposed technical application and/or business model*
- *Demonstrated support/ stable backing that is independent from the university. (Phase II only)*
- *Strength of Intellectual Property (IP) protection*
- *Likelihood project will lead to the creation and/or success of a Ohio-based entrepreneurial company*

In addition, YourEncore conducted a grounding session with all technical reviewers to assure they were aligned on the criteria and they judged each grant submission in a uniform manner.

Evaluation Services

To assure a robust decision for each Phase I and Phase II Proposal YourEncore instituted a four part approach that encompassed gathering / filtering submissions, assessing the technical feasibility, reviewing the business case, and recommending funding prospects.



Gather and Filter Submissions: After gathering the Proposals from OTF the Project Manager collaborated with the Senior YourEncore Managers to remove all submissions deemed unfeasible, document findings, and brief Phase II applicants as required. For those submissions deemed feasible, the Project Manager then identified an Expert with the necessary technical background to perform an in-depth assessment.

Assess Technology: Upon receiving the proposal, the YourEncore Technical Reviewers’ leveraged the co-developed evaluation scorecard to perform assessments for the Phase I / Phase II submissions they were provided. Upon completion of the assessment the Technical Reviewers documented their recommendations.

Review Business Case: The Project Manager compiled the technical assessments and disseminated recommended Proposals to the Business Plan Reviewer. The Business Reviewer then reviewed the business case and analyzed the market potential of each recommended proposal. For all recommended Phase II applicants, the Business Reviewer, the Project Manager and YourEncore Senior Managers conducted a short on-site interview to further determine the company’s feasibility.

Recommend Funding Decision: After determining the final recommendations, the Project Manager and Senior YourEncore Managers developed this detailed report and summary presentation to share the assessments’ findings and the final funding recommendations, including dollar amount, with the OTF Committee. The OTF Committee will then use the final recommendations to distribute the funding as they deem appropriate.

TEAM STRUCTURE AND QUALIFICATIONS

To successfully execute YourEncore's proposal a clear team structure (See Figure 3) with defined roles and responsibilities was required.

DEVELOPMENT COMMITTEE

OTF has an established Committee to provide overall program sponsorship, guidance, and support to ensure the program's success.

DEVELOPMENT SPONSOR

YourEncore worked with Dr. Andrew Hansen from Development to help set the direction for the team, review progress on a monthly basis, and work with YourEncore's Project Manager to resolve any issues. Furthermore, Dr. Hansen previewed the final outputs prior to Development Committee presentation and support implementation of improvement initiatives.

PROJECT MANAGER

The YourEncore Project Manager managed the day-to-day operations of the program including ensuring all assessments are completed on-time. This individual established and managed the program's processes, assured process / scorecard compliance, and engaged / managed Technical Reviewers to ensure on-time completion of assessments. Furthermore, this individual leveraged YourEncore's internal Project Management system to track each proposal's submission, expert assignment, timelines, budget, and documented outputs.

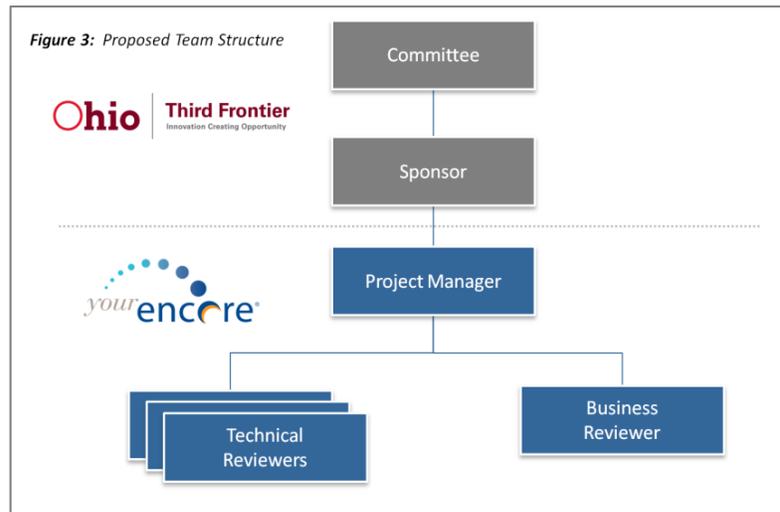
BUSINESS REVIEWER

To validate the Experts' recommendations YourEncore engaged a strategic business development, entrepreneurial expert to perform review of all Proposals. Furthermore, this individual participated in all Phase II onsite interviews.

TECHNICAL REVIEWERS

YourEncore identified and selected a team of nine subject matter experts to perform detailed technical assessments on Phase I and Phase II proposals, complete co-developed scorecard and document recommendations. Reviewers had expertise in each of the following areas.

- *Advanced Materials*
- *Aero Propulsion and Power Management*
- *Fuel Cells and Energy Storage*
- *Medical Technology*
- *Software Applications*



- *Sensing and Automation Technologies*
- *Situational Awareness and Surveillance Systems*
- *Solar Photovoltaic and Photovoltaic*

SYSTEM INFRASTRUCTURE AND UTILIZATION

YourEncore leveraged its internal Project Management System, DelTek Vision, as the central system of record for the program. This system houses all information for thousands of YourEncore projects and has the capacity to handle all of OTF's Phase I / Phase II proposal information.

YourEncore believes this is the best solution due to the program's robust document repository, project management tools (i.e., timelines, budgets, experts engaged), reporting, and activity audit trail capabilities. By leveraging this system all Reviewers will utilize one system to house and track all the activities, scheduling, and documents associated with this program. Furthermore, this system will enable YourEncore to create reports on a regular basis to report on progress, budget utilization, and identify / reconcile issues.