Technology Validation and Start Up Fund

Round 27 Proposal Evaluations

1 February 2022

Submitted to:
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1) Executive Summary

Redwood is a Columbus, Ohio based LLC founded by former Battelle executives over 8 years ago. Redwood has assembled an extraordinary team for this Program. Each member of the four-person Redwood team is an accomplished technology commercialization professional with decades of experience in performing business and technical evaluations. This team, combined with identified external subject matter experts, has extensive experience in all six of the Ohio Third Frontier technology focus areas. More detail on the Redwood team is provided in Appendix 1 of this report and on our website (www.Redwdinnnov.com). Details of the TVSF program and the review process are provided in Appendix 2.

Fourteen (14) TVSF Round 27 applications were received and evaluated. There were no Phase 1 applications this round. All 14 applications were Phase 2 totaling $1,723,675. Funding is recommended for six Phase 2 applications for a total of $850,000. This translates to a 43% recommended application funding rate for this TVSF round, compared to the average of 45% over all 27 TVSF rounds.

2) Evaluation Results

Summaries of the evaluations of the proposals, including the interview and funding recommendations, are shown below in Table 1. Video interviews were conducted for the sixth time due to COVID-19 concerns. The total recommended funding for Phase 2 projects is $850,000. Note that the Table 1 column widths are proportional to the weighting of the evaluation criteria. For example, in Table 1, Management Team which is weighted at 20 is four times as wide as ESP Interaction which is weighted at 5. Note that a yellow evaluation indicates that the proposal meets that particular criterion.

More detailed evaluations and recommendations for each Phase 1 and Phase 2 proposal may be found in Section 3 of this report.

Table 1 – Phase 2 Proposal Evaluation and Funding Recommendation

TVSF Round 27 Proposal Evaluations

Phase 2 Proposals

Proposal #		Requested funding ($1000)	Recommended funding? ($1000)	Team	Opportunity / Market Size	IP Protection / License	Compelling Proof of Concept	Potential Investor / Business Partner Engagement	Business model	Project plan / budget narrative	Start- up in Ohio	ESP Interaction
22-0778	AdopTracell, LLC	$150	$150									
22-0779	Ceraxis Health, Inc.	$150	$150									
22-0782	DasiSimulations LLC	$150	$150									
22-0783	Datirium, LLC	$150	$150									
22-0785	DialGuide	$100	$100									
22-0787	HDO Health	$150	$150									
	Total	$850										
22-0780	Collaborative Concepts LLC	$100	$0									
22-0781	CoolYield Labs LLC	$99	$0									
22-0784	Desulf-TEK LLC	$100	$0									
22-0786	Earthen Made, LLC	$100	$0									
22-0788	HyperPath Solutions	$150	$0									
22-0789	Ignyte Assurance Platform	$100	$0									
22-0790	Neural Ear	$100	$0									
22-0791	Pneumaeon LLC	$125	$0									
	Total	$874										
		Evaluation Scale		Absent	Poor	Weak	Meets	Exceeds	Outstanding			
	Check total	$1,724										

Table 2 lists the funding approval rate by TVSF round. This rounds approval rate of 43% of the total submitted proposals is close to the average over all twenty-seven rounds. The historical range of individual rounds has spanned 27 – 75%, with an average of 45%.

Table 2. TVSF Approval Rate by Round

Round	$ Recommended	Approval Rate
1 (APR 2012)	$950,000	35%
2 (AUG 2012)	$900,000	52%
3 (DEC 2012)	$610,000	44%
4 (JUN 2013)	$864,000	30%
5 (FEB 2014)	$1,462,000	46%
6 (JUN 2014)	$998,000	39%
7 (OCT 2014)	$1,100,000	57%
8 (FEB 2015)	$710,000	37%
9 (JUN 2015)	$550,000	31%
10 (DEC 2015)	$925,000	38%
11 (APR 2016)	$1,239,000	46%
12 (OCT 2016)	$3,537,269	46%
13 (MAR2017)	$1,567,500	38%
14 (SEP 2017)	$498,832	27%
15 (DEC 2017)	$2,250,000	38%
16 (MAR 2018)	$2,098,600	52%
17 (SEP 2018)	$2,100,000	42%
18 (DEC 2018)	$1,150,000	35%
19 (APR 2019)	$2,250,000	43%
20 (NOV 2019)	$1,350,000	43%
21 (FEB 2020)	$3,944,000	56%
22 (JUN 2020)	$1,398,630	53%
23 (DEC 2020)	$900,000	50%
24 (MAR 2021)	$2,092,900	55%
25 (JUN 2021)	$800,000	75%
26 (OCT 2021)	$1,700,000	55%
27 (FEB 2022)	$850,000	43%
Overall	**$38,795,731**	
Average	**$1,436,879**	**45%**

3) Proposal Summaries

Proposal Summaries - Phase 2 Recommended for Funding

Proposal 22-0778	**AdopTracell, LLC**	Amount Requested: $150,000
Licensing Institution	University of Toledo	Amount Recommended: $150,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 23, 26	***Chimeric Antigen Receptor (CAR) Regulatory T cells (Tregs) to revert autoimmune diabetes***

Company Snapshot: AdopTracell has developed a treatment that shows potential in animal trial for reversing autoimmune type 1 diabetes.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	Team is very strong technically with 2 coinventors. An advisor with commercialization and regulatory experience and an EIR from ProMedica with financial experience round out the team. Plan to add commercialization, startup and fundraising experience.
Y	**Opportunity and Market Size**	The Market Segment is identified. The CAR T cell market and cost of CAR T treatment are identified. Interview discussion identified other paths to market including infusion centers.
Y	**Intellectual Property Protection/ License**	WO2020097546 published 14 May 2020. Letter of support from TTO states willingness to negotiate and license exclusively to company with receipt of TVSF. National Phase chose US, EP, CA, AU and IN.
G	**Compelling Proof of Concept**	Applicant has positive results of a 30-day pre-clinical proof of concept study in animals reverting diabetes. Ready to perform a larger (120 Mice), longer (6 months) study.
Y	**Potential Investor/ Business Partner Engagement**	Estimated capital needed to commercialize technology is $1M. In discussions with potential investors and support emails provided.
Y	**Business Model**	Technology milestones are well articulated. Commercialization, financial, scale-up and company growth addressed in interview.
Y	**Project Plan/ budget narrative**	Project is consistent with gaining data on a 6-month mouse trial.
G	**Start-up in Ohio**	Team and manufacturing located in Toledo.
G	**ESP Interaction**	Engaged with ProMedica Innovations with letter of support from EIR.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: Information obtained from additional market research, potential identification of business partners, the path to market, potential C suite talent, business model, and market introduction path were addressed in interview discussion. This is a platform technology with a very strong technical, scientific team working to reverse Type 1 diabetes as the first disease being considered. The team plans to add startup, commercialization, and fundraising experience to the team and identify the best path to market. Potential partners have been identified and discussions are continuing.

Proposal 22-0779	**Ceraxis Health, Inc.**	Amount Requested: $150,000
Licensing Institution	Cleveland Clinic Foundation	Amount Recommended: $150,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Stylus Platform Clinical Study Readiness***

Company Snapshot: Ceraxis Health, Inc. is developing a symptom tracking stylus and software targeted to people living with Parkinson's disease to assess and track symptoms over time to allow physicians to better manage treatment.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	**Management Team**	The management team is very strong featuring successful serial entrepreneurs with experience in the target market and the appropriate market / strategic networks.
G	**Opportunity and Market Size**	The Parkinson's diagnosis and treatment is a multi-billion dollar - market with opportunities for diagnostics and companion therapeutics.
G	**Intellectual Property Protection/ License**	There are two issued and relevant Cleveland Clinic patents that were exclusively licensed in September 2021.
G	**Compelling Proof of Concept**	The project funding will be used to confirm the ability of Ceraxis' system to assess rigidity – an important symptom that reflects disease progression and treatment efficacy.
G	**Potential Investor/ Business Partner Engagement**	Initial contacts have been made with potential strategics/ partners. Management team has substantial prior fund-raising success.
G	**Business Model**	Business model is solid and consistent with current target market practices.
G	**Project Plan/ budget narrative**	Plan is well-conceived, with appropriate budget and contractor.
Y	**Start-up in Ohio**	Principals are all based in Ohio.
Y	**ESP Interaction**	JumpStart has been engaged.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: This is a strong application featuring an accomplished team of successful serial entrepreneurs pursuing a large market with a well-conceived product. Business model is consistent with current target market practices. Ceraxis is recommended for TVSF funding.

Proposal 22-0782	**DasiSimulations LLC**	Amount Requested: $150,000
Licensing Institution	Ohio State University	Amount Recommended: $150.000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Advanced Prediction of Heart Valve Thrombosis Using Rapid Reconstruction and Reduced Order Modeling***

Company Snapshot: DasiSimulations is developing a software as a service (SaaS), fully automatic, artificial intelligence driven 3D modeling system for additional indications in transcatheter aortic valve replacement (TAVR) surgeries to assist surgeons in choosing the optimal valve design.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
G	**Management Team**	Strong team with inventor as CTO. CEO and COO have backgrounds in medical device sales, fund raising, FDA submission, clinical, and hospital executive experience.
Y	**Opportunity and Market Size**	TAM, SAM and SOM are identified for year 2025. Estimate number of TAVR in US in 2019 as 100,000 (actual 72,991).
G	**Intellectual Property Protection/ License**	New IP developed at both OSU and U Georgia and agreements reached with both Technology transfer offices on licensing.
G	**Compelling Proof of Concept**	Product addresses the currently unmet market need for choosing TAVR valve and potential for reducing adverse outcomes after surgery.
G	**Potential Investor/ Business Partner Engagement**	DASI has raised $1.5 M in convertible notes and has a pending NIH SBIR Phase 2 grant for $2.6 M.
Y	**Business Model**	Solid, scalable SaaS business model. Used in TAVR procedures and expanded to other heart procedures such as TMVR procedures.
Y	**Project Plan/ budget narrative**	Reasonable. Obtain data to submit for 510 (k) and CMS CPT coding.
G	**Start-up in Ohio**	DASI in Columbus. Plan 50 new jobs by 2024 with payroll over $3M.
Y	**ESP Interaction**	Engaged with Rev1 early in company formation.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: This is a strong application with an experienced team and an IP suite pursuing a Software-as-a-Service model (SaaS). The funding will be used to provide foundational verification and validation studies to gather significant data for both FDA 510(k) and CMS CPT coding submissions. As this software is proven in TAVR procedures, it is anticipated that the company will target trans-catheter mitral valve replacement (TMVR) and all other valve replacement and/or repair procedures.

Proposal 22-0783	**Datirium, LLC**	Amount Requested: $150,000
Licensing Institution	Cincinnati Children's Hospital Medical Center	Amount Recommended: $150,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Scientific Data Analysis Platform***

Company Snapshot: Scientific Data Analysis Platform (SciDAP), a Next Generation Sequencing (NGS) data analysis and experiment management platform, will provide researchers, without computational expertise, the ability to perform routine analysis with automated quality control and analysis of research data.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	The two key players are experts in their fields and well connected, each spending about 20% of their time. A recent business development staff member is spending over 25% of time.
Y	**Opportunity and Market Size**	Next Generation Sequencing market in the US is $560 M/ year Addressable market is estimated to be in the > $100 M range. Initial target market is $60 M/ year.
Y	**Intellectual Property Protection/ License**	Exclusively Trade secrets/ know how–negotiating exclusive license. Considering a new filing to cover business model.
Y	**Compelling Proof of Concept**	Seems reasonable and doable within the TVSF budget and the balance expected from STTR/ NIH funds.
Y	**Potential Investor/ Business Partner Engagement**	Early stage; recent addition with experience at P&G seems to have required background and connections.
Y	**Business Model**	Well laid out with several revenue streams, the main ones are SaaS and partnering with University/ IT clients. Shows breakeven in 2024.
Y	**Project Plan/ budget narrative**	Looks reasonable given scope and timing.
Y	**Start-up in Ohio**	A strong CCHMC connection and local vendors/ service providers.
Y	**ESP Interaction**	Working with University Venture center.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: Datirium LLC is recommended for funding. The Team is particularly strong technically and well versed in the field with many years of R&D in the field at CCHMC. Recent addition of a business development staff with relevant fund-raising activities further strengthens the Team. The SciDAP platform technology seems to be well developed, differentiated and suited for the target markets. The Team would benefit by further focusing on fund raising and marketing areas to realize the full potential of the technology.

Proposal 22-0785	**DialGuide**	Amount Requested: $ 100,000
Licensing Institution	U.S. Navy's Naval Surface Warfare Center - Crane Division	Amount Recommended: $100,000
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Automated natural language processing for descriptive language analysis***

Company Snapshot: DialGuide provides a "digital VP of sales" in the form of an AI-enabled web interface centered around phone and video sales calls primarily to small B2B businesses. The system enables pre-call preparation, real-time coaching, and post call feedback and training for sales teams who have little to no sales experience.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	The team, including advisors, is well qualified and has significant market connections. Full team commitment is pending having sufficient funding.
G	**Opportunity and Market Size**	DialGuide has identified a significant multibillion dollar market opportunity. The target market are B2B technology businesses with <50 employees and >10% year on year employee growth.
Y	**Intellectual Property Protection/ License**	A relevant patent application has been filed by the NAVY and license negotiations are underway.
G	**Compelling Proof of Concept**	The proposed proof of concept will create sufficient value for the company.
G	**Potential Investor/ Business Partner Engagement**	Local and regional VCs have been engaged.
Y	**Business Model**	An aggressive, but creditable, business model is proposed. Achieving this will require appropriately phased staff addition.
Y	**Project Plan/ budget narrative**	Although aggressive, the project plan is appropriate and quite optimistic.
G	**Start-up in Ohio**	Application shows a strong commitment to Ohio.
G	**ESP Interaction**	Strong interaction with ESP.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: DialGuide has assembled a strong team including advisors and has identified a significant market opportunity. Technology has a relevant patent application. A credible and aggressive Business Model is proposed. DialGuide is recommended for TVSF funding.

Proposal 22-0787	**HDO Health**	Amount Requested: $ 150,000
Licensing Institution	Ohio State University	Amount Recommended: $ 150,000
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: 26	***HDO Health***

Company Snapshot: HDO Health is commercializing a junctional tourniquet that provides a non-invasive, non-surgical solution designed for application in sub-optimal, high-pressure combat or trauma environments enabling hemostasis to be achieved while the patient is still in the field.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	The basic composition of the Team has not changed from Round 26. However, this proposal included CEO's experience and track record in business development, growing startup ventures, and extensive contacts with fund raising entities in the field.
Y	**Opportunity and Market Size**	Over $278 M/ yr. serviceable market and $35 M /yr. obtainable market for the initial thrust.
Y	**Intellectual Property Protection/ License**	Patent filed and negotiating licensing with OSU.
Y	**Compelling Proof of Concept**	Seems reasonable to get FDA clearance and building prototypes for field trials.
Y	**Potential Investor/ Business Partner Engagement**	None at this time; the CEO has reached out to several potential partners for feedback/ engagement opportunities, based on Round 26 feedback.
Y	**Business Model**	A more focused business model based on Round 26 feedback.
Y	**Project Plan/ budget narrative**	Seems reasonable given scope and timing.
Y	**Start-up in Ohio**	Company located in Columbus, OH.
Y	**ESP Interaction**	Working with Rev1.
	Evaluator Recommendation	This application is recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: HDO Health is recommended for funding. In the Round 27 application, the Team has taken the suggestions from Round 26 feedback by highlighting the CEO's experience in fund raising, business development in medical device field and engaging with Rev1 to explore other funding sources. The Team is technically strong and has developed the technology to TRL 5/6 in a Phase I TVSF program on time and within budget. The target markets have been focused to better suit the technology for a successful market entry.

Proposal Summaries - Phase 2 Not Recommended for Funding

Proposal 22-0780	**Collaborative Concepts LLC**	Amount Requested: $100,000
Licensing Institution	Ohio State University	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 26	***GPS Training Aid***

Company Snapshot: Collaborative Concepts LLC seeks to commercialize a "GPS Denial Training Unit". The units are used to deny GPS reception to single military aircraft for training purposes to enable air crews to experience all the system impacts of lost GPS signals.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	**Management Team**	CEO & CTO have technical and military contracting expertise and sales relationships for initial target market. Proposal does not show significant expertise in startup business including fund raising. CEO & CTO plan to spend 75% of their time to project.
Y	**Opportunity and Market Size**	SAM ~ $735 M for 35,000 units @ $21,000/unit for military aircraft. Proposal includes "initial product" for "GPS training aid" but does not discuss market for "anti-jam" application.
Y	**Intellectual Property Protection/ License**	US Patent 9,425,516 B2 filed 2013. No PCT filing. Literature review uncovered a large number of antenna designs and arrays to defeat GPS jamming. Competitive strength and barriers to entry uncertain.
Y	**Compelling Proof of Concept**	Proposal states "prototype training aid" without improved antenna has been flown on military aircraft. Specification for next generation prototype includes this antenna. Proposal states TRL is 7-8.
R	**Potential Investor/ Business Partner Engagement**	Private investors not contacted. Potential for AFRL Dayton funds for manufacturing. Plan discussions with Rev1 about funding options.
R	**Business Model**	Projected revenue is ~ $18.4 M (Yr 5). Expenses for COGS and SGA are intermingled. GM @ > 50% is on the high end.
G	**Project Plan/ budget narrative**	Material vendors/specialty fabricators validated for prototype.
G	**Start-up in Ohio**	Proposal states Ohio based companies will manufacture product.
G	**ESP Interaction**	Rev1 Ventures is working with proposer.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: Management team has technical and project management experience in design and development of antennas and associated electronic components. Management team has sales relationships with target military customers. Proposal does not show significant startup business experience including fund raising. It appears management team believes business can largely ramp up with cash from operations. This is considered questionable given projected growth. Income statement intermingles COGS & SG&A expenses. Gross Margin > 50% is on high end. Large differences in unit price and unit sales between funding rounds is concern. Ability to maintain price is questionable. Patent protection limited to USA. Patent filed ~10 years ago. Proposal describes market opportunity to sell "GPS training aids" for military applications but does not discuss "anti-jam" applications.

Proposal 22-0781	**CoolYield Labs, LLC**	Amount Requested: $98,880
Licensing Institution	Ohio State University	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: 26	***CoolYield 100% Solar A/C***

Company Snapshot: CoolYield Labs is developing a non-vapor Compression (V/C) air conditioner (A/C) that does not use a halogen-based refrigerant and operates on solar power only. The proposed A/C combines membrane/ MOF (metal organic framework)-based dehumidification and indirect evaporative cooling.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	**Management Team**	CEO (80%) has sales and marketing experience with e-commerce focus. CTO (20%) has technical and contract research experience. Proposal does not show significant management team experience in startup business (fund raising) or manufacturing capital goods at scale.
Y	**Opportunity and Market Size**	SAM is $1.5 billion for 42,505 grocery stores in USA @ $18,000 per A/C unit. Large market potential is recognized for efficient, non-V/C, A/C technologies that do not use halogen-based refrigerants.
Y	**Intellectual Property Protection/ License**	Published WO2020/168171 protection for the described A/C appears limited to using solar energy to regenerate membrane desiccant. It is not clear if this provides competitive advantage.
R	**Compelling Proof of Concept**	Proposal does not describe design & testing of the lab scale A/C unit. Desiccant membrane only made in small quantities. It appears that theoretical model is to predict A/C performance.
Y	**Potential Investor/ Business Partner Engagement**	Proposer plans to apply for NSF STTR Funding. Discussions with potential customers OSU/ENGIE/grocery stores.
R	**Business Model**	Proposal states company plans in-house manufacturing but does not explain why this is preferred business model given high startup costs.
R	**Project Plan/ budget narrative**	Question whether prototype can be built and tested in one year.
R	**Start-up in Ohio**	Manufacturer in Houston being considered to build A/C/ units.
Y	**ESP Interaction**	Rev1 advising. Participated in Customer Learning Lab.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: Proposal does not include any significant management team experience in startup business or manufacturing at scale. Proposal claims "target grocery store" annual energy cost reduced by $9,500 with proposed A/C but does not provide adequate data to support such claim. Competitive advantage appears limited: (a) Other A/C technologies claim high energy efficiency w/o halogen refrigerant (b) Patent appears limited to desiccant regeneration by solar energy (c) It does not appear that any of the available metal organic framework (MOF) has a performance advantage. It is unclear if business plan is to build A/C units in-house or license/private brand with an outside manufacturer. It is unclear why the fabrication of A/C units in Houston is being considered. Question whether prototype can be built in one year. Early development stage of membrane is of particular concern. Based on sales revenue, projected gross margin very high (78%) and SG&A expense very high (50%).

Proposal 22-0784	**Desulf-TEK LLC**	Amount Requested: $ 99,795
Licensing Institution	University of Dayton	Amount Recommended: $0
Prior Phase 1 Applications: Yes	Prior Phase 2 Applications: No	***Manufacturing Planning to Unleash Fuel Desulfurizers into the Market***

Company Snapshot: Desulf-TEK LLC is introducing the first mobile fuel desulfurizer to the domestic and global markets to meet a current need for a mobile, light weight desulfurization system. The process technology removes sulfur impurities from diesel and JP8 fuels at point of use using a two-step sulfur filter.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	**Management Team**	Team has excellent technical expertise in the field and many years of good relationship with DoD markets. Needs to add marketing, business development, manufacturing, fund raising skill sets.
Y	**Opportunity and Market Size**	Addressable market of $380 M/ yr. with good connections to major end users.
Y	**Intellectual Property Protection/ License**	Two filed with exclusive licensing terms.
Y	**Compelling Proof of Concept**	The proof of concept looks reasonable for the addressable market.
R	**Potential Investor/ Business Partner Engagement**	None at this time. Getting trained to pitch to investors.
Y	**Business Model**	A well laid business model with projected cumulative revenue of $273 M over 5 years-2023-2027.
Y	**Project Plan/ budget narrative**	Sounds reasonable given scope and timing.
G	**Start-up in Ohio**	A very strong presence and commitment.
Y	**ESP Interaction**	Limited at this time.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: Desulf-TEK LLC is not recommended for funding. The desulfurization technology of Desulf-TEK looks very interesting and promising, especially for the DoD markets that need reliable source of low sulfur diesel fuel in the field. A small-scale validation of the technology is quite encouraging. The Team is technical very strong and has a long-term relationship with potential DoD clients. However, the Team lacks in other critical skill sets such as manufacturing/ scale-up, marketing, business development and fund raising to further develop the early-stage technology and introduce to the target markets in a timely manner to fully realize the potential revenues outlined in the proposal. As there was no performance data in the application, it was hard to judge how robust the desulfurization system is—catalyst life, maintenance free operation in the field environment, etc.

Proposal 22-0786	**Earthen Made, LLC**	Amount Requested: $ 100,000
Licensing Institution	University of Akron Research Foundation	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Sustainably Manufacturing Artificial Limestone for Shoreline Protection***

Company Snapshot: Shoreliner is a cementitious material made of recycled aggregate and industrial waste that is formed in the shape of dolomitic limestone to be used on shorelines to prevent erosion, flooding and negative impacts on critical infrastructure.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	**Management Team**	Team is composed of CEO and CTO—both with academic background and experience. No marketing/ sales, manufacturing and fund-raising skills
Y	**Opportunity and Market Size**	Addressable market in the Great Lakes region is projected as $785 M over the lifetime.
R	**Intellectual Property Protection/ License**	Preparing to file a provisional; not clear if this has been done. If done rating would be a 3.
Y	**Compelling Proof of Concept**	POC completed and TVSF funds to be deployed for mold fabrication/ producing several samples for field testing.
R	**Potential Investor/ Business Partner Engagement**	None at this time; seems to have had some discussions with a few VCs.
Y	**Business Model**	Seems reasonable with revenues of $15 M in 2026 with a net income of $9 M.
Y	**Project Plan/ budget narrative**	Seems reasonable given scope and timing.
Y	**Start-up in Ohio**	Staff are OH based and the market focus is in OH/ Lake region.
Y	**ESP Interaction**	Yes—UARF I-Corp; NSF I-Corp.
	Evaluator Recommendation	This proposal is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: The technology based on recycled aggregate and industrial waste seems attractive with a lot of potential. However, stage of the development is too early to better understand its performance, as no data is given in the application. Target markets look reasonable and quite attractive. There is no discussion on the funds needed to manufacture sufficient volumes for early market entry/ validation. The Team lacks staff/ experience in marketing, business development, manufacturing, and sales to the two target markets—municipalities and homeowners. Further, the Team lacks fund raising skills/ staff needed for executing the business plans.

Proposal 22-0788	**HyperPath Solutions**	Amount Requested: $ 150,000
Licensing Institution	Research Institute at Nationwide Children's Hospital	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***HyperPath Solutions Pathology Review Platform (HSPRP)***

Company Snapshot: HyperPath Solutions provides pathologists with a platform to help clients address continuing staff shortages with more efficient processes through algorithms and a digital image relabel tool.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	CEO and CTO were responsible for the initial creation of the software being licensed from NCH. CEO has partnership and business development experience. Advisor brings fund raising experience to the team.
Y	**Opportunity and Market Size**	Market segment and total addressable market identified. Need is established with decreasing number of pathologists in US.
Y	**Intellectual Property Protection/ License**	Copyrighted source code and custom image analysis algorithms plus institutional knowledge are current IP. Plan to generate patentable process and methods use patent application.
Y	**Compelling Proof of Concept**	Currently used in academic and research markets. Market need exists in US due to declining number of pathologists.
Y	**Potential Investor/ Business Partner Engagement**	Potential investors and business partners discussed in interview.
R	**Business Model**	Pro forma provided with assumptions. Path to obtain FDA clearance not being pursued by company. Revenue and gross profit optimistic.
Y	**Project Plan/ budget narrative**	Budget is consistent with completion of project within 1 year.
G	**Start-up in Ohio**	Startup exists and plan to add significant FTEs by year 5.
Y	**ESP Interaction**	Engaged with Rev1. Participant-Customer Learning Lab Oct/Nov '21.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: CEO and CTO were part of team at NCH to develop software, where it is used at NCH. Three potential investors discussed during interview process, only one identified. Details of early-stage potential business partner discussions were not provided. Pro forma projections optimistic. If applicant wishes to reapply, it is suggested that the TVSF format be used and that the business model be clearly detailed with number of customers who could use product without FDA clearance as Company states they do not plan to pursue FDA clearance, but wait for others to do so. Limited understanding demonstrated of what is needed to obtain FDA clearance.

Proposal 22-0789	**Ignyte Assurance Platform**	Amount Requested: $ 100,000
Licensing Institution	U.S. Navy	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Cyber Risk Management***

Company Snapshot: Ignyte Assurance Platform™ focuses on combining learning, linguistics, and data analysis to solve the complex cybersecurity risk management problem for small businesses looking to achieve the DoD's Cybersecurity Maturity Model Certification (CMMC) compliance.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	The team has strong technical experience, market knowledge / access and growing entrepreneurial success.
G	**Opportunity and Market Size**	The market for assisting small businesses to ensure the security of their software is large, growing and being actively driven by the US Department of Defense.
Y	**Intellectual Property Protection/ License**	A NAVY patent for CyberKnight, an efficient software scanning algorithm, has been issued and licensing discussions are underway.
Y	**Compelling Proof of Concept**	The proposed Proof of Concept is well conceived to create value for the company.
Y	**Potential Investor/ Business Partner Engagement**	The company has had initial discussions with local / regional potential investors. Addition of potential strategics is suggested.
R	**Business Model**	The proforma is not attractive in top or bottom line. A more attractive pro-forma with creditable discussion is needed.
Y	**Project Plan/ budget narrative**	The project plan is well conceived and seems quite optimistic.
G	**Start-up in Ohio**	The Ohio roots of the company are strong.
Y	**ESP Interaction**	There is clear engagement with the Entrepreneurs' Center.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: Ignyte's target market and intended offering are attractive. Should the company choose to reapply, they need to provide a creditable business model and corresponding narrative with substantially higher revenue and profit than in the application.

Proposal 22-0790	**Neural Ear**	Amount Requested: $ 100,000
Licensing Institution	Ohio State University	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Neural Ear***

Company Snapshot: Neural Ear will leverage hearing aid technologies assisted by machine learning and algorithms that filter out random sounds in noisy environments ("the cocktail party problem"), thereby helping the wearer to increase speech understanding.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
Y	**Management Team**	On paper, the team is well qualified. It is not clear from LinkedIn postings that the principals have the bandwidth for their claimed commitments to this company. In addition, the application seems inconsistent with the team qualifications.
Y	**Opportunity and Market Size**	There is likely a significant market for this product. The write-up does not provide a clear explanation of the pricing rationale. And, a claimed market of $85M is of limited attractiveness.
Y	**Intellectual Property Protection/ License**	There are two filings that are relevant. One patent has issued. It would be helpful to discuss how infringement by others might be detected.
R	**Compelling Proof of Concept**	The proof arising from this project does not have specific performance or cost goals and is overall very vague.
R	**Potential Investor/ Business Partner Engagement**	The need for investor/partner engagement is clear from the application. The extent of this engagement is not described.
R	**Business Model**	Market penetration plan is to work with a strategic followed by direct sales. Projected income is difficult to justify with the limited data.
R	**Project Plan/ budget narrative**	Project plan is very vague in scope, tasks and price.
R	**Start-up in Ohio**	The employment of one to two people is of low economic impact.
Y	**ESP Interaction**	The level of input Rev1 had to this application is not clear.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: The market need targeted by this application is likely large. The application does not clearly describe the addressable market, how the product will be developed or specific performance advantages versus competitors. In addition, the project plan is very vague and the business model lacks the detail needed to be creditable. This application is not recommended for funding.

Proposal 22-0791	**Pneumaeon LLC**	Amount Requested: $ 125,000
Licensing Institution	The Cleveland Clinic Foundation	Amount Recommended: $0
Prior Phase 1 Applications: No	Prior Phase 2 Applications: No	***Pneumaeon - innovative airway management***

Company Snapshot: Pneumaeon's intention is to provide hospital-acquired pneumonia patients with a novel and effective solution which allows for adequate care prior to the need for intubation, and with the hope that it can result in fewer intubations overall.

Rating (R/Y/G)	Category	Highlights/Issues/Comments
R	**Management Team**	Team is inexperienced and were all fellows of the Cleveland NeuroDesign Innovation Fellowship in early 2021. Need to add experienced entrepreneurial, commercialization, fund raising and business development skills to the team.
R	**Opportunity and Market Size**	Market is identified as airway management devices. TAM identified as patients who are critically ill.
Y	**Intellectual Property Protection/ License**	Provisional patent filed. Applicant states that novel key features exist and a patentability and freedom to operate have been conducted on both technologies.
R	**Compelling Proof of Concept**	Unclear whether the products meet specific market needs. Limited input received from potential users of the products.
R	**Potential Investor/ Business Partner Engagement**	No engagement with any potential investor or business partner described in application.
R	**Business Model**	A generic Business Model to sell to ICU purchasing committees is identified. Budget table lacking detail of revenue, manufacturing, etc.
R	**Project Plan/ budget narrative**	Project plan section does not delineate use of funds.
Y	**Start-up in Ohio**	Applicant states that company will be retained in Ohio.
Y	**ESP Interaction**	Three founders interacted with JumpStart.
	Evaluator Recommendation	This application is not recommended for funding.

Evaluation Scale	Absent	Poor	Weak	Meets	Exceeds	Outstanding

Comments and Recommendations: Overall, the application lacked details in most areas of the proposal. Should the team wish to reapply, they would do well to follow the TVSF RFP guidelines and also obtain more structured guidance from an ESP and help in providing the details necessary for an application to TVSF. These include, but are not limited to project plan use of funds and budget narrative, business model, discussions with potential investor and/or business partners, delineating the market need and the differentiators of these products to current commodity products on the market, TAM for these product replacements and team.

4) Round 27 Analysis

Figure 1 shows the proposal activity and funding recommendations by technology source for Phase 2 proposals. OSU was the most active with five submissions followed by two submissions from the Cleveland Clinic Foundation and one submission each from University of Toledo, Cincinnati Children's Hospital, University of Dayton, Naval Surface Warfare Center, University of Akron, Nationwide Children's Hospital and the US Navy. Two applications from OSU and one each from University of Toledo, Cincinnati Children's Hospital, Naval Surface Warfare Center and the Cleveland Clinic Foundation are recommended for funding.

Figure 1. Round 27 Funding by Technology Source

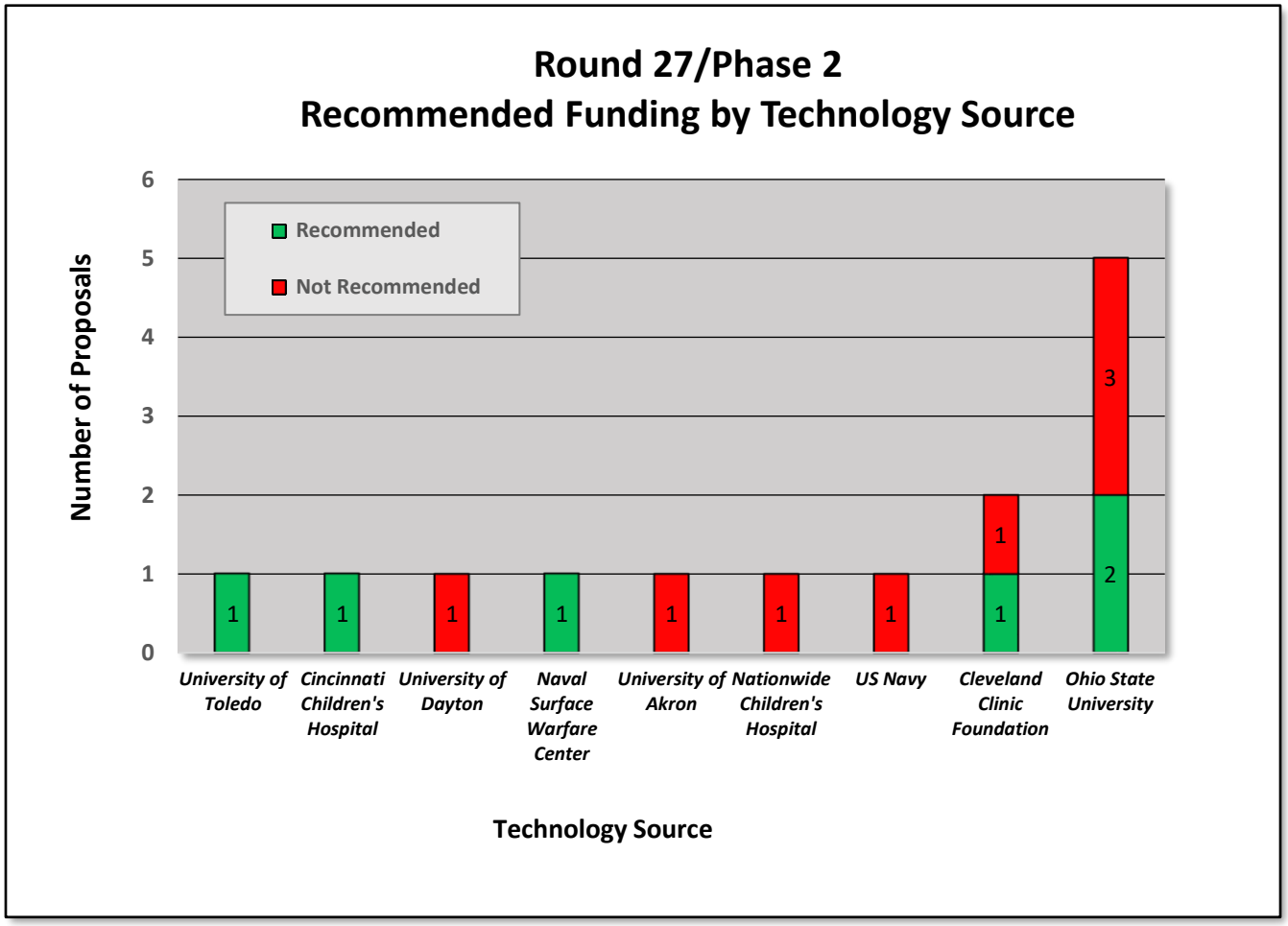


Figure 2 depicts Phase 2 proposal activity and funding recommendations by Third Frontier focus area. In Round 27, eight of the fourteen proposals (57%) are in Biomedical/Life Sciences, two of the fourteen in each of Energy (14%) and Software/Information Technology (14%), and one each in Advanced Materials (7%) and Sensors (7%). Five of fourteen in Biomedical/Life Sciences (36%) and one of the fourteen in Software/Information Technology (7%) are recommended for funding. This round represents 57% in Third Frontier Technology areas that are Biomedical/Life Sciences. The previous seven rounds have averaged 65% of the applications in Biomedical/Life Sciences. Round 26 was the only round of the last seven rounds that Biomedical/ Life Sciences was in the minority of applications (43%).

Figure 2. Round 27 Phase 2 Proposal Activity by Third Frontier Technology Area

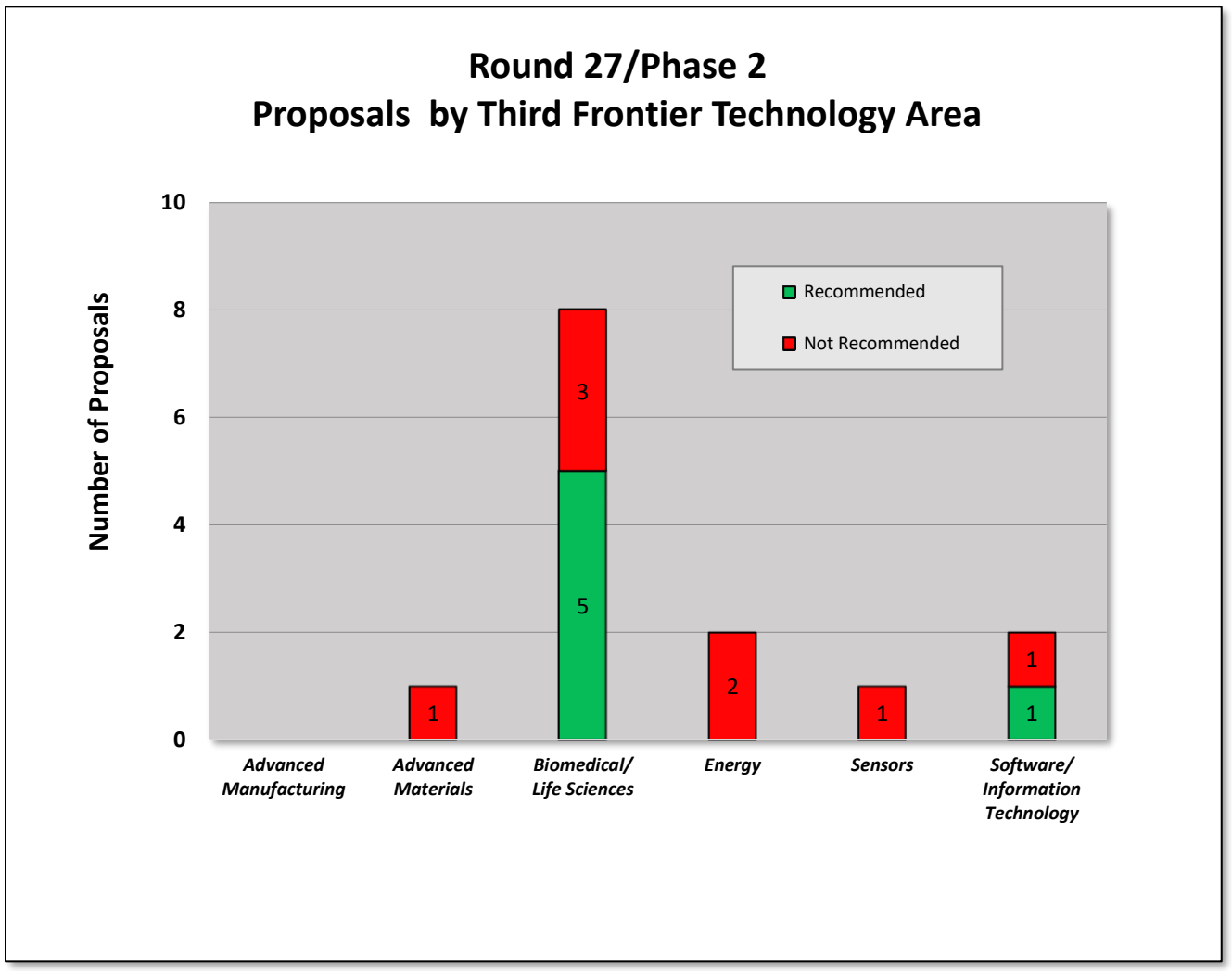


Figure 3 shows the aggregate ratings by evaluation criteria for all Phase 2 proposals. Setting aside the Start-up in Ohio and ESP Interaction categories, the quality of the intellectual property and market opportunity were the strongest categories in Round 27. Business model was rated as the weakest, followed by Investor/partner and Management team.

Figure 3. Round 27 Phase 2 Proposal Rating Summary

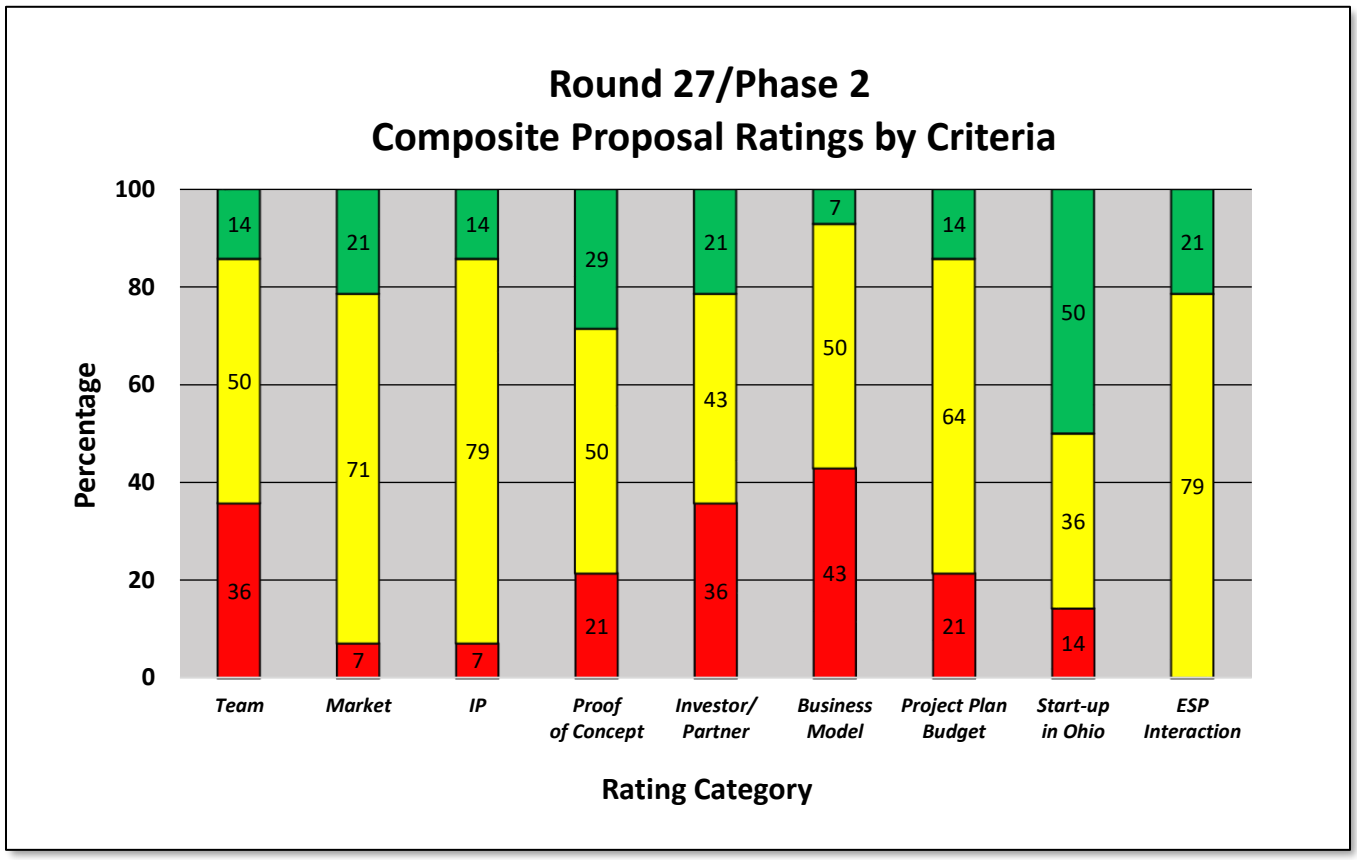
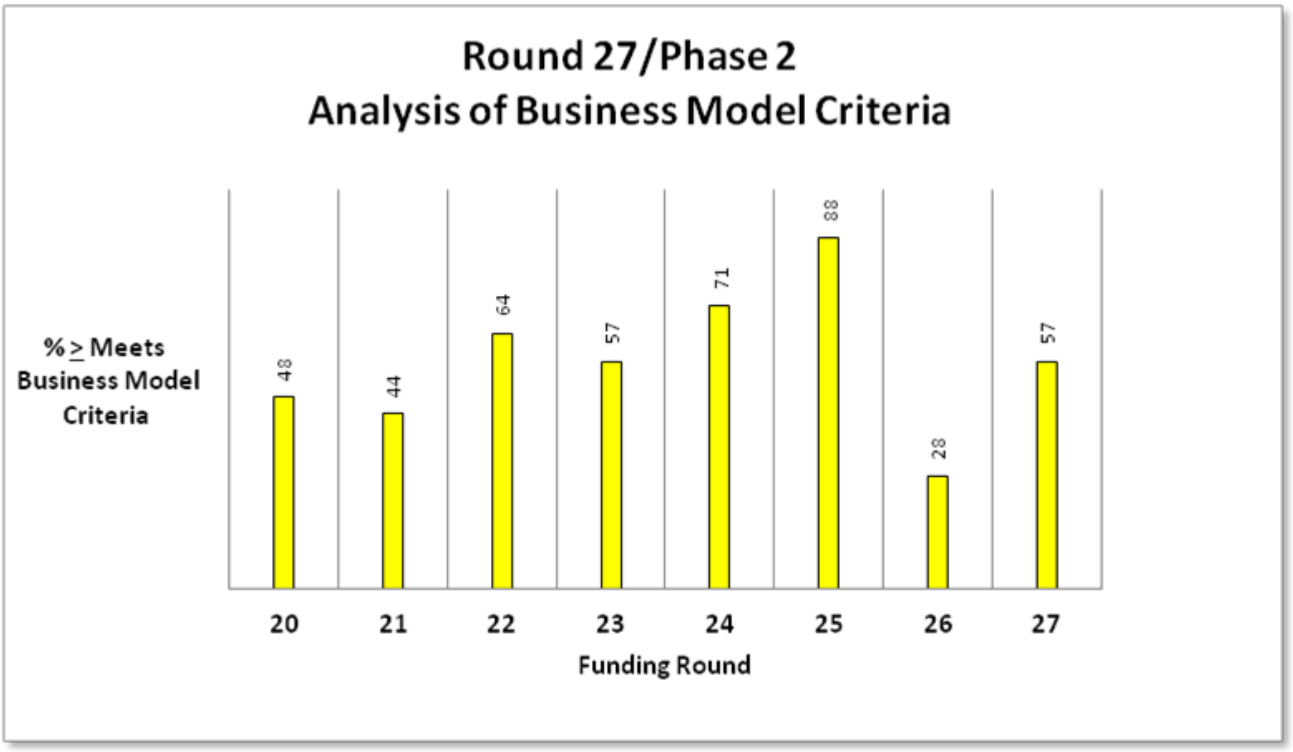


Figure 4 shows the percent meets or exceeds of the business model by Round. In the previous seven Rounds, business model was the lowest rating in Rounds 20-23 (53% average ≥ meets). The RFP was revised to elicit stronger business models and it appears that the proposals have provided stronger business models in Rounds 24 and 25 (80% average ≥ meets). Round 26 dropped to only 28% ≥ meets. In Round 27, business model was 57% ≥ meets that is comparable to the 53% average ≥ meets prior to revision of the RFP. Average for the past eight rounds is 57%. Further rounds will be monitored to see if the drop in the last two rounds is an anomaly or if the improvement from Rounds 24 and 25 continues.

Figure 4: Rounds 20 to 27 Phase 2 Analysis of Business Model



Carry Through and Reapplication

Phase 1 Carry Through: There were 2 Phase 2 applicants that previously received Phase 1 funding. One was recommended for funding.

There were four Phase 2 reapplications. One application submitted for the third time and was recommended for funding. Three were second time submissions and one was recommended for funding.

5) Recommendations

Biomedical/ Life Sciences applications have been in the majority of the applications in 7 of the last 8 rounds. It is recommended that active outreach efforts be developed to encourage more proposals in other Third Frontier Technology areas that reflect the diverse markets and economic activities in the State.

Appendix I

Summary of Redwood team and qualifications

Redwood, as a company, has been providing technology commercialization services for over 8 years while each team member has been active in this field for over 25 years.

Each Redwood team member

- possesses an advanced technical degree and extensive business proficiency
- has worked across the spectrum of technology commercialization from invention to successful market introduction
- understands how to assess a concept case from the perspective of aligning technologies to product applications in specific markets
- has lived, both conceptually and literally, the iterative process of understanding market needs and wants, value chains and who the customers are within the value chain

Team members have all worked for major corporations, research institutions, venture capital firms and technology start-up companies gaining a comprehensive understanding of what is necessary for development teams to successfully commercialize a technology. The Redwood team has served as evaluators for the Ohio Advanced Manufacturing program and an individual team member served as an evaluator for CALF, TIP and IOF loan programs for over a decade.

The four members of the Redwood team are highly qualified evaluators for the TVSF program and have combined experience and expertise in the following areas (combined years):

Commercializing technology into market pulled products (125+ years)

Market/Technology Assessment (140+ years)

Startup/ Spin out companies (50+ years)

Board member/Advisor to Startups (30+ years)

Evaluating/ monitoring RFPs/ Funding selection (40+ years)

The following is a brief summary of the four principal team members used in this evaluation Round.

John McArdle

- BE, Manhattan College, MS, Northeastern University, Chemical Engineering
- MBA, Finance / International Business, University of Chicago (Booth School of Business)

- Former Business Development Manager, Battelle
- Former Product Line Manager – Koch Industries
- Former Technical Sales Manager, Allied Signal Corporation
- Extensive experience in energy, water/ wastewater treatment and environmental remediation technologies
- Successful track record of introducing innovative technologies for a variety of municipal, industrial, and military applications in domestic and overseas markets.

Jim Sonnett

- BS, University of Virginia, MS, University of Massachusetts, PhD, University of Delaware, all in chemical engineering
- Former Vice President – Science and Technology, Battelle Health & Life Sciences
- Former R&D Leader – W. L. Gore & Associates and E. I. DuPont
- Built and led high impact innovation organizations in aerospace, electronics, and life sciences
- Former Board Member – Velocys, Ventaira, Battelle Ventures
- Adjunct professor – Ohio State University Fisher School of Business

Susan Stanton

- BS, Millersville University, Chemistry, MPh, Syracuse University, Organic Chemistry, PhD, University of Rochester, Organic Chemistry
- Personally developed 12+ products and led new product development teams at Mobay, Alcoa & Nexicor
- Holder of 10+ patents
- Former VP Market and Technology Assessment at the National Technology Transfer Center
- Over 10 years as an angel investor in technology-based startups
- Over 10 years as an evaluator for Ohio Third Frontier funds including IOF, CALF and TIP
- Over 6 years teaching market and business analytics to STEM graduate and post doc students.

Bhima Vijayendran

- BS, University of Madras, MS, University of Madras, PhD, University of Southern California in Polymer and Surface Science, MBA, University of New Haven
- Former Senior Research Leader and Vice President Business Development, Battelle Memorial Institute; Chief Research Officer, Battelle Science and Technology, Malaysia
- Former Director, Discovery Research, PPG Industries
- Recognized as one of the leading authorities on advanced materials, special chemical and polymer systems in numerous markets including: Renewable and clean technology, Energy, Nano Technology and Industrial Products.
- Recipient of ten R&D 100 awards and over 100 patents and numerous other awards.

Appendix 2

TVSF objectives and phases

The Technology Validation and Start-up Fund (TVSF) provides grants under two phases to transition technology from Ohio Eligible Research Institutions into the marketplace through Ohio start-up companies. Under Phase 1, Ohio Research Institutions may apply for a pool of funds to support validation/ proof that will directly impact and enhance both the commercial viability of their unlicensed technologies and ability to support a start-up company. Under Phase 2, Ohio start-up and young companies may apply for funding to commercialize a technology they intend to license from a university or an Ohio research institution.

The goals of Phase 1 include:

- Generate the proof needed to move technologies to the point that they are either ready to be licensed by an Ohio start-up company or deemed unfeasible for commercialization. The institutions are encouraged to work with potential Ohio licensees to identify the proof needed.
- Perform validation activities such as demonstration and assessment of critical failure points in subsequent development, prototyping, scale-up and commercialization in order to generate this proof with strong preference for these activities being performed by an independent 3rd party source.

The goals of Phase 2 include:

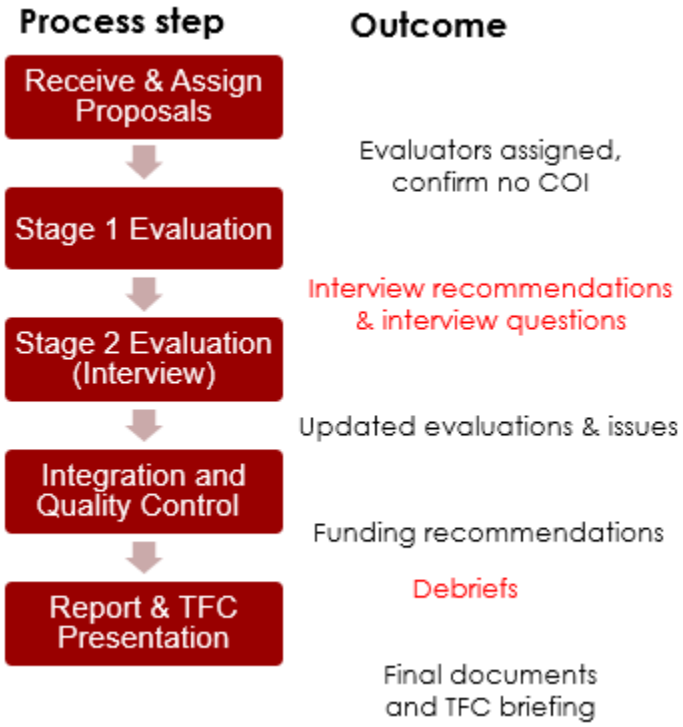
- Accelerate the commercialization of technology by Ohio start-up companies that license technology developed at Eligible Institutions during the critical early stage of life of the company.
- Generate the proof needed to move technology to the point where it is able to be commercialized or additional funds for commercialization can be raised. A clearly identified path to subsequent funding opportunities and working directly with potential investors to define the proof needed for investment into the company is strongly encouraged.
- Funded activities may include, but may not be limited to, beta prototype development and deployment to potential customers for testing and evaluation and market research/ business development in order to generate the proof needed.

Based upon these goals, the proposal evaluation criteria were developed. The proposals were then evaluated based on the criteria.

Description of review process

Review summary. Our overall review process flow and outcomes by stage are shown in Figure 1. A similar process has been successfully used by Redwood in prior projects for public and private clients. Discussions were held with the TVSF program manager after all but the initial step in Figure 1.

Figure 1. TVSF Evaluation Process



Review and Assign Proposal In this first step proposals were summarized and a primary evaluator was assigned who has the appropriate background and no conflict of interest.

Stage 1 Evaluation Stage 1 evaluations were conducted for each proposal using the criteria shown below in Tables 1 and 2. Differentially weighted criteria were used to evaluate Phase 1 and Phase 2 proposals. Each proposal was rated on a 0 (absent) – 5 (Outstanding) scale for each criterion, an approach used by the NSF and in other State of Ohio programs. The weightings reflect the experience of the Redwood team and our belief that some factors, for example team and market opportunity in Phase 2, are more important than others.

The entire review team subsequently discussed all the evaluations to ensure consistency and agreed upon which applicants to invite for interviews. Interview questions were then provided in advance to each applicant.

Stage 2 Evaluations (Interviews) The standard procedure for this step is: In-person or Zoom (due to Covid restrictions), 45-minute interviews were held with each invited applicant to discuss the advance questions plus other topics of interest to the evaluators. Two Redwood team members participated in the interviews in person or Zoom (due to Covid restrictions) with additional team members joining via conference call. However, due to Covid-19, interviews in this round were held via Zoom video conference call interviews.

Integration and Quality Control Proposal evaluations were updated based on interview results. A calibration review was held by the review team to ensure that evaluations were performed consistently and that any changes made were a result of team consensus. Based on this review, proposals were recommended for funding.

Table 1 – Phase 1 Evaluation Criteria

Criterion	Weighting	Description
Alignment and Compliance	Go / No go	Institutional alignment with TVSF intent and compliance with RFP
Project Selection Committee	20	Skills, background and commitment of the committee members
Deal Flow; Budget Strategy	15	Is the projected deal flow consistent with the requested budget to enable committing funds within 1 year?
External Participation	15	Does process ensure validation activities will be performed by 3rd parties; ESPs and state-funded programs/organizations are enlisted to enhance commercialization activities of the project?
Track Record	15	Is there a strong Phase 1 or comparable program track record of licensing and newco creation? If not, is there a plan for improvement?
Metrics	15	Realism and impact of proposed metrics, including licensing, start-ups.
Project Management & Experience	15	Is there a strong project management strategy and appropriate experience of people who allocate the pool of funds and manage individual projects?
Project Selection Process	5	Is there a clear, appropriate process for project selection?

Table 2 – Phase 2 Evaluation Criteria

Criterion	Weighting	Description
Alignment & compliance	Go / No Go	Proposal alignment with TVSF intent and compliance with RFP
Management Team	20	Skills, background and commitment
Opportunity / market size	15	What is the market segment and total addressable market? Is it a platform or breakthrough technology or incremental improvement? If breakthrough, is it compatible with viable commercialization pathways?
IP Protection / License	15	Is IP adequately protected, does it enable the business model, is it differentiated from likely competition, is license likely within 9 months?
Compelling Proof of Concept	15	Was meaningful input from potential customers and key performance metrics used to design Proof of Concept? Are the competitive advantages compelling for potential customers?
Potential Investor / Business Partner Engagement	10	Is there company engagement / collaboration independent of licensing institution, including financial backing?
Business Model	10	Is the business model realistic AND achievable? Can the service / manufacturing model be scaled?
Project Plan / Budget Narrative	5	Is the budget consistent with proof in 1 year?
Start-up in Ohio	5	Does a start-up exist or is it planned? Will the start-up be in Ohio?
ESP Interaction	5	Is team engaged with ESP? Has team incorporated feedback from ESP into the project, proposal or business plan?