# The Collaboratory at Valparaiso University: Phase One Report

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May, 2025

## Author Note

This research was supported by the National Science Foundation under Grant 2433851.

We have no known conflict of interest to disclose.

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**Acknowledgements**

The development of the Valparaiso University Collaboratory would not have been possible without the funding from the National Science Foundation and the collective vision, commitment, and collaboration of many individuals.

We are especially grateful to Devin Sodums, Madge Morningstar, Debbie Lowenthal, and Dean Whittaker for their leadership and dedication throughout the planning and implementation process. Their insights and support were instrumental in shaping the Collaboratory into a model for meaningful university-industry engagement.

We extend our appreciation to university leadership, including President Jose Padilla, Provost Eric Johnson, Senior Vice President for Finance Mark Volpatti, and General Counsel Darron Farha, for their strategic guidance and administrative support throughout this initiative.

We also thank the following faculty members for their participation in workshops and ongoing contributions to the development of the Collaboratory:

Jon Beagley
Craig Clark
Juan Carlos Ramirez Dorronsoro
Thomas Goyne
Haiying He
Todd Hillwig
Jon-Paul McCool
Andy Richter
Nick Rosasco
Paul Smith
Jana Stedman
Dan White
Stan Zygmunt

We also extend our gratitude to the Collaboratory Advisory Council members for their guidance, industry perspective, and commitment to fostering meaningful university-industry partnerships:

Cary Conrad
Tony Denhart
Heather Ennis
Kevin P. McCusker
Anthony Ortiz, P.E.
Keith Stayrook

Your engagement, ideas, and feedback helped build a shared vision that reflects the values and aspirations of Valparaiso University. Thank you for your commitment to advancing opportunities for our students, faculty, and regional partners.

## Executive Summary

The Valparaiso University (Valpo) Research Collaboratory (the Collaboratory) was designed to strengthen undergraduate research and enhance the regional economy through university-industry partnerships at a small, primarily undergraduate Emerging Research Institution (ERI). Funded through the National Science Foundation (NSF) "Growing Research Access for Nationally Transformative Economic Development" (GRANTED) planning grant, phase one focused on building the foundational structures to support a regional emerging industry sector and enhance faculty-industry collaboration while addressing institutional barriers that historically limit external engagement at ERIs. This report provides a detailed account of the Collaboratory's development and early implementation as a reference for peer institutions seeking to adopt a partnership model. Led by a cross-functional team from the Office of Advancement, the Provost's Office, and appointed Faculty Liaisons, where the Vice President of Advancement was the Principal Investigator, the Collaboratory coordinated internal assessments, stakeholder workshops, and industry surveys to identify institutional gaps and opportunities. A biosciences pilot was selected based on regional workforce data, alignment with faculty expertise, and cited industry needs. To support this work, the team created new internal workflows, a structured project menu, and a searchable prototype for faculty expertise using Scholarly, an AI-powered directory that aligns academic talent with industry challenges (scholarlysoftware.com).

Faculty engagement was central to phase one of the Collaboratory's success. Through ten workshops and an ideation session, faculty helped co-design the model, contributing to the development of tiered project opportunities, workload recommendations, and incentive structures. Industry partners also shared interest in project-based collaboration, with 84% of the

faculty surveyed and fifty organizations expressing enthusiasm for partnerships that include research, capstone projects, and student workforce pipelines. The Collaboratory's alignment under the Office of Advancement enabled integrated communications, centralized relationship management, and faster legal and operational support for partnerships. As a result, the Collaboratory surpassed its phase one engagement goals, working with sixteen evolving partnerships and laying the groundwork for long-term regional impact. This report outlines the strategies, processes, and lessons learned during phase one that could also provide a foundation for other organizations and universities looking to institutionalize external partnerships and enhance student research.

**Abstract**

This report documents phase one of the Valparaiso University Collaboratory, developed through a National Science Foundation (NSF) GRANTED Planning Grant. The goal was to design a centralized, scalable model for university-industry partnerships at a primarily undergraduate Emerging Research Institution (ERI). Through surveys, workshops, and a biosciences pilot, the team identified institutional barriers, developed internal workflows, and created tools like a tiered project menu and an AI-powered faculty expertise platform. The report outlines how faculty enthusiasm increased, industry demand aligned with academic strengths, and early partnerships exceeded expectations. These results offer a framework that other ERIs can adapt to strengthen regional innovation and undergraduate research through sustainable external engagement.

*Keywords*: university-industry partnerships, Emerging Research Institutions, undergraduate research, regional innovation, faculty engagement, scalable collaboration models

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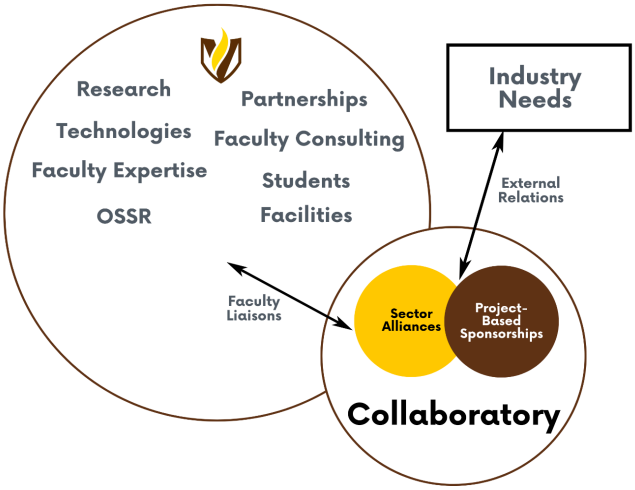
## The Collaboratory Report

The Collaboratory was designed to enhance university-industry partnerships at a small, primarily undergraduate (PUI) Emerging Reearch Institution (ERI) to grow research and support the growth and talent of the regional economy in Northwest Indiana. ERIs were designated under the CHIPS & Science Act in 2022 and are defined as institutions with less than $50 million in federal research expenditures (Quider & Blazey, 2023). There are over 2,700 ERIs in the United States (U.S. Department of Energy, 2024). Interactions between universities, industry, and government drive economic and technological advancement, but many universities like ERIs do not have the infrastructure to support industry partnerships that can grow undergraduate research opportunities and talent pipelines (Flechas et al., 2022). Industry partnerships, which Prigge and Torraco (2006) recommend establishing under a central external relations office, can produce graduates ready to "hit the ground running" by aligning curricula with industry needs and nurturing continuous interaction (Lutchen, 2024).

This report outlines the accomplishments of the work Valparaiso University (Valpo) completed through phase one of the NSF GRANTED Planning Grant, providing a roadmap for other institutions interested in replicating the Collaboratory model. The Collaboratory PI team includes the Vice President for Advancement, Executive Director of External Relations, Associate Provost, and two Faculty Liaisons (FL), who are faculty leaders who were paid stipends to facilitate engagement between faculty and the PI team. It captures the journey of designing and launching the Collaboratory at Valpo based on the model in Figure 1 and outlines the process, challenges, and successes to inform and guide other institutions in establishing similar initiatives. The development of the Collaboratory is structured in two phases, each designed to build upon previous work to create a sustainable and scalable model for

**Figure 1.**

*Valparaiso University Collaboratory Model*




university-industry engagement to make a regional economic impact. Through this phased approach, the Collaboratory will evolve into a sustainable and adaptable model for university-industry engagement at ERIs, providing a framework that other institutions and agencies across the nation can replicate. This report focuses on phase one, which established the foundation for faculty-industry partnerships through a structured research framework and pilot projects. Future reports will detail phase two, which expands and refines this model based on regional economic needs, an advisory council, sector alliances, and industry engagement.

**Phase One: Establishing the Framework**

The first phase focused on internal capacity-building, faculty engagement, and piloting the model with an emerging bioscience industry sector using newly developed internal processes to support research through university-industry collaboration. This report highlights the outcomes of phase one activities:

1. Assessment: Assessed the current state of research partnerships, identifying shared interests and collaboration opportunities through data collection. An industry sector was also chosen for the pilot, and industry-specific data were assessed.

2. Identification: Identified barriers to collaboration, such as communication silos, internal processes, faculty workload constraints, and other administrative hurdles that limit engagement and partnerships.
3. Examination: Examined faculty expertise and developed an internal platform within External Relations under the Office of Advancement in partnership with the Office of the Provost to quickly access faculty research capabilities, allowing for efficient partnership matchmaking based on the alignment of the expertise of faculty involved in the pilot and industry needs.
4. Development: Developed a framework with new internal processes that leverages university expertise to address industry challenges. The team also created marketing and communication strategies and tools, legal documents to support partnerships, and a launch event.

**Step One: Assessment**

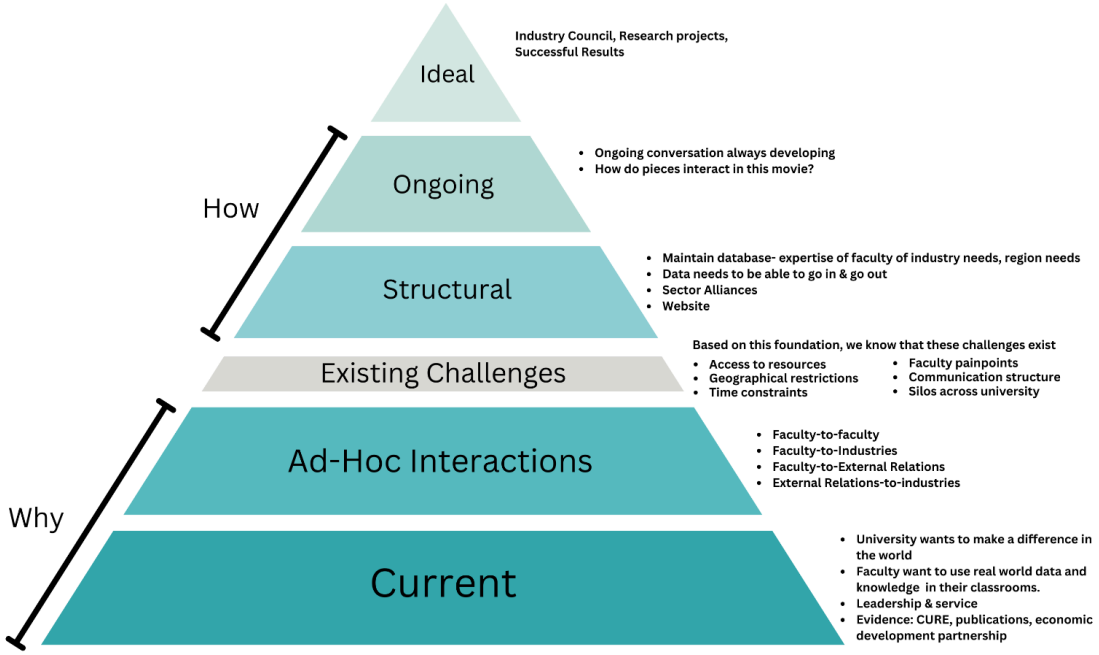
In the assessment step, the PI team conducted faculty and industry surveys, led a series of workshops, hosted an ideation session, and completed a regional analysis to better understand the current state of research partnerships at Valpo. These efforts evaluated existing relationships and identified future opportunities within the biosciences pilot cluster. This section summarizes the key findings that emerged, including faculty experiences with external partners, areas of expertise aligned with bioscience industry needs, levels of interest in future engagement, and the broader bioscience industry landscape across Northern Indiana. These insights established a baseline for building the Collaboratory and clarified where additional structure, support, and outreach may be most effective.

### *CSCV Pyramid*

At the beginning of the assessment step, the PI team developed Figure 2, the Current State, Challenges, and Vision Pyramid (CSCV), to guide and initiate discussions. The pyramid's base ("Why") explains the current fragmented and informal nature of faculty-industry engagement and why a more structured approach is necessary. The middle of the pyramid ("Challenges") identifies the primary obstacles that hinder sustainable partnerships. The upper sections ("How") describe the steps required to address these challenges. At the top of the pyramid ("Ideal") is the envisioned Collaboratory model, where research collaborations are fully integrated, proactively managed, and aligned with institutional and regional economic priorities.

**Figure 2.**

*Current State, Challenges, and Vision Pyramid (CSCV)*




This structure provided a roadmap for Valpo to transform university-industry partnerships from ad-hoc interactions into sustained, high-impact collaborations. This CSCV Pyramid was used when engaging with faculty members throughout the assessment step.

**Why.** The state of research partnerships at the university was informal and fragmented, relying on individual faculty efforts rather than a structured institutional process. While faculty recognized the importance of external collaborations, most partnerships occurred on an ad-hoc basis, with no formalized system to support, track, or sustain them. Meaningful research and service did take place, including faculty-led curriculum-based undergraduate research experience (CURE) initiatives, academic publications, and one-on-one projects with specific companies. However, these efforts were disconnected from a broader institutional framework that could ensure the sustainability and long-term growth of research partnerships.

**Challenges.** Several structural and operational challenges hindered the development of sustainable university-industry collaborations that are also common at other ERIs. Limited access to resources prevented faculty from fully engaging in external research partnerships, while geographical constraints created barriers to industry engagement for certain disciplines. Faculty workload constraints further complicated participation, as faculty balanced teaching, research, and service obligations without clear institutional support for industry collaborations. Additionally, institutional silos and communication structures prevented faculty, administrators, and external stakeholders from effectively coordinating research efforts. These barriers resulted in missed opportunities for long-term engagement, funding, and impact.

**How.** To overcome these barriers, the CSCV showed that Valpo must build and maintain structured support systems for external research partnerships. This included the development of a faculty-industry expertise database to catalog faculty research strengths and industry needs, allowing for more effective partnership matchmaking. Additionally, an Advisory Council and Sector Alliances (groups where industry leaders, faculty, and economic development leaders can convene to discuss challenges and opportunities related to their specific sector) could be formed

to bridge the gap between faculty and industry, providing a formalized structure for ongoing dialogue and strategic collaboration. A dedicated website could also be established, offering a centralized hub where faculty and industry representatives can access research opportunities, institutional resources, and engagement guidelines.

**Ideal.** The top of the CSCV Pyramid represents the long-term vision of a fully realized Collaboratory Model, where faculty-industry engagement would be proactive, structured, and seamlessly integrated into the university's mission and culture. The ideal goal would be to create sustained, long-term partnerships beyond episodic industry engagements. To achieve this, structured outreach efforts and processes could be expanded, ensuring consistent engagement with industry stakeholders through established Sector Alliances, aligning research efforts with regional economic priorities. Project-based sponsorships would be in place, creating consistent research funding streams that directly benefit faculty and industry partners.

**Table 1.**

*Overall Bioscience Industry Data in Northwest Indiana*

| Description | 2019 Jobs | 2024 Jobs | 2029 Jobs | 2024 Payrolled Business Locations | Current Wages, Salaries, & Proprietor Earnings | 2024 Employment Concentration | Ind. Mix Effect | Nat'l Growth Effect | Expected Change | Competitive Effect | 2024 % Demand met In-Region | 2024 GRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Animal Production | 1,673 | 1,815 | 1,866 | 38 | $59,600 | 1.92 | (212) | 148 | (63) | 257 | 19% | $331,062,290 |
| Water, Sewage and Other Systems | 103 | 164 | 167 | 19 | $84,556 | 1.25 | 14 | 9 | 23 | 40 | 52% | $40,129,653 |
| Pesticide, Fertilizer, and Other Agricultural Chemical Mfg | 78 | 30 | 27 | 6 | $78,516 | 0.38 | 3 | 7 | 10 | (61) | 9% | $13,499,034 |
| Pharmaceutical and Medicine Mfg | 287 | 393 | 475 | 5 | $121,357 | 0.54 | 39 | 25 | 64 | 123 | 16% | $231,674,353 |
| Navigational, Measuring, Electromedical, and Control Instruments Mfg | 294 | 255 | 262 | 11 | $74,063 | 0.30 | (20) | 26 | 6 | (38) | 1% | $26,549,930 |
| Medical Equipment and Supplies Mfg | 541 | 412 | 329 | 27 | $53,874 | 0.59 | (12) | 48 | 36 | (248) | 6% | $51,145,718 |
| Drugs and Druggists' Sundries Merchant Wholesalers | 268 | 302 | 308 | 32 | $116,710 | 0.56 | 15 | 24 | 38 | 2 | 14% | $274,376,807 |
| Architectural, Engineering, and Related Services | 2,098 | 2,555 | 2,780 | 283 | $83,233 | 0.70 | 169 | 186 | 355 | 328 | 63% | $353,033,463 |
| Scientific Research and Development Services | 48 | 219 | 279 | 37 | $87,779 | 0.11 | 15 | 4 | 19 | 212 | 7% | $34,188,867 |
| Other Professional, Scientific, and Technical Services | 1,829 | 2,485 | 2,896 | 172 | $48,154 | 1.18 | 296 | 162 | 458 | 608 | 76% | $279,098,617 |
| Medical and Diagnostic Laboratories | 1,135 | 768 | 657 | 40 | $54,383 | 1.14 | 117 | 101 | 218 | (696) | 65% | $97,675,572 |
| | **8,354** | **9,397** | **10,045** | **669** | **$68,280** | | **424** | **740** | **1,163** | **528** | **30%** | **$1,732,434,306** |

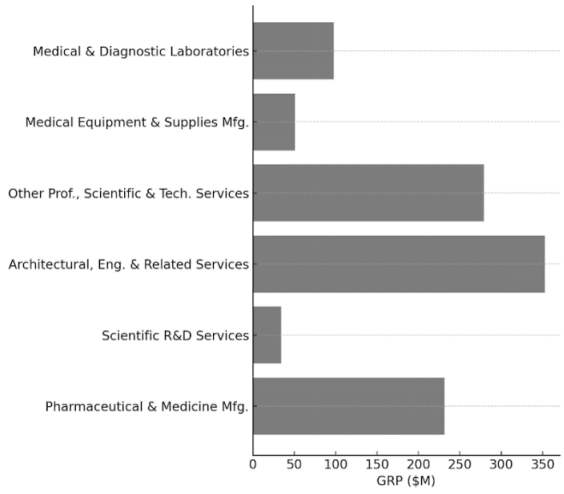
***Note:*** Adapted from Lightcast Q1 2025 dataset.

### *Defining the Industry Sector for the Pilot*

As part of the planning process, the PI team analyzed workforce and economic trends based on data from Indiana's Department of Workforce Development and Lightcast to determine which industry cluster would be the most strategic sector for the pilot. At the time of the decision, Indiana had received a Tech Hub designation based on bioscience manufacturing from the U.S. Economic Development Administration (2023). Additionally, based on the most recent available data at the time (the dataset has been refreshed to incorporate 2024 figures), the data affirmed the strength of the team's original sector selection. The bioscience sector is a high-opportunity area for regional impact and cross-sector collaboration (Table 1). For example, bioscience and biotech-related industries account for 2.7% of total employment, 3.3% of all firms, and 3.5% of Gross Regional Product (GRP) in Northwest Indiana (NWI). These figures are 3.5%, 4.0%, and 5.9%, respectively, at the national level, suggesting that NWI's bioscience economy is smaller than what would typically be expected for a region of its size (Table 1). Despite this gap, the sector presents a regional opportunity. Current data indicate that local firms are meeting only 30% of the in-region demand for bioscience industry outputs, highlighting the need and the opportunity for local expansion.

**Figure 3.**

*Gross Regional Product (GRP) of NWI Bioscience Industries*

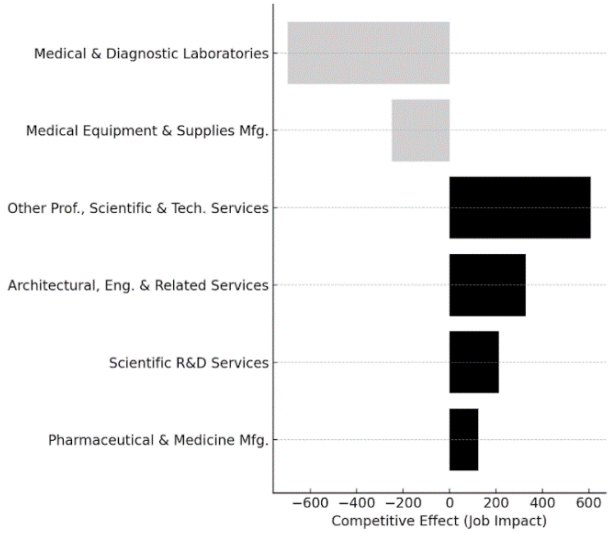



***Note:*** Adapted from Lightcast Q1 2025 dataset.

The job growth analysis provided further evidence for selecting biosciences as the pilot sector. Segments like Pharmaceutical and Medicine Manufacturing, Scientific Research and Development Services, and Professional, Scientific, and Technical Services are forecasted to grow steadily through 2029. The Gross Regional Product (GRP) data (Figure 3) reinforced the economic value of these industries in Northwest Indiana, with sectors like Engineering Services and Pharmaceutical Manufacturing contributing to the region's output despite more modest employment figures. This indicates that biosciences carry both educational and economic value, positioning the sector as an ideal focal point for the pilot. The review of the competitive effect (Figure 4) indicates that Bioscience sectors in NWI outperform national trends due to broad economic forces and distinct regional strengths. Positive competitive effects in areas like Scientific R&D and Professional Services reflect a favorable local environment that the Collaboratory can build upon. There is also an expectation of growth from an occupational perspective. Bioscience jobs are projected to grow by 7% over the next five years, outpacing the region's overall job growth, which remains under 1%, and even surpassing the national bioscience growth rate of 6.4% (Figure 5). Looking at bioscience through the lens of occupations, we find similar industry trends. Employment in bioscience occupations is expected to grow by 3.2% in Northwest Indiana

**Figure 4.**

*Competitive Effect of Bioscience Sectors in NWI*

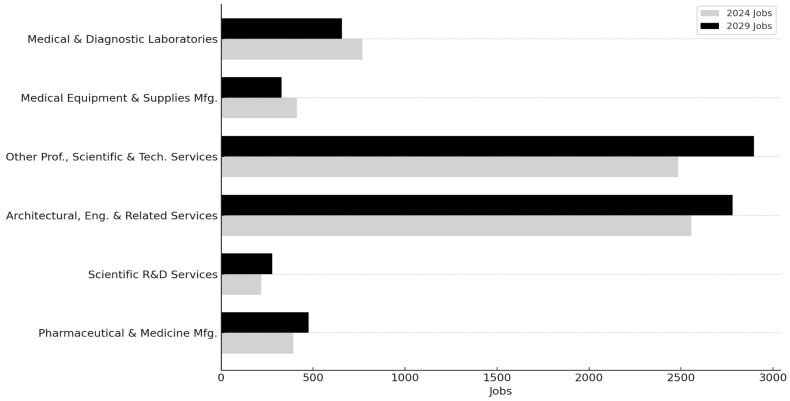



***Note:*** Adapted from Lightcast Q1 2025 Dataset

over the next five years, while overall employment in NWI is expected to grow only 0.9% (Appendix A). Together, these insights informed the PI team's decision to select the bioscience sector for the Collaboratory pilot, so faculty with expertise in bioscience and related fields were intentionally invited to participate in the planning process and interact with industry contacts throughout NWI during phase one.

**Figure 5.**

*Projected Job Growth in Key Bioscience Sectors in NWI*



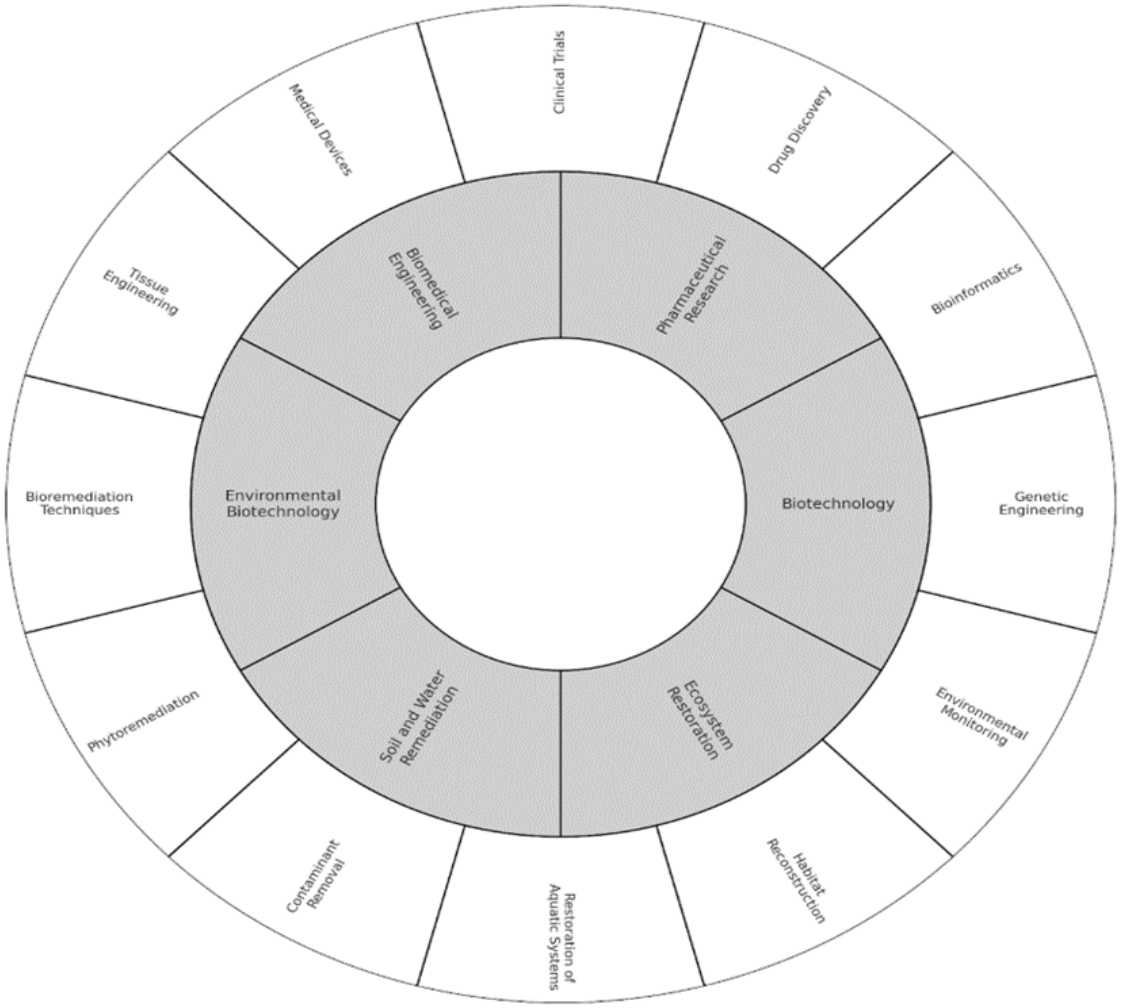

**Note.** *Adapted from Lightcast Q1 2025 Dataset.*

### *Bioscience Industry Landscape in Northern Indiana*

Whittaker & Associates (W&A), a consultant hired as part of the NSF grant, assessed the biosciences sector in Northern Indiana and defined it using six primary domains. Figure 6 below describes the bioscience categories used to define the ecosystem for outreach, recruitment, and data collection. W&A created an outreach list of bioscience-related companies in these categories and subcategories in NWI counties with over 25 employees, and companies with over 100 employees if they were outside of the NWI counties. These categories became the foundational framework for understanding where Valpo faculty expertise, student engagement, and industry needs might intersect. It also provided a shared language to inform partnership development, project menu design, grant alignment, and strategic planning within the Collaboratory. Each inner ring category is supported by a set of specific applications, shown in

**Figure 6.**

*Radial Diagram of Bioscience Categories and Subcategories*



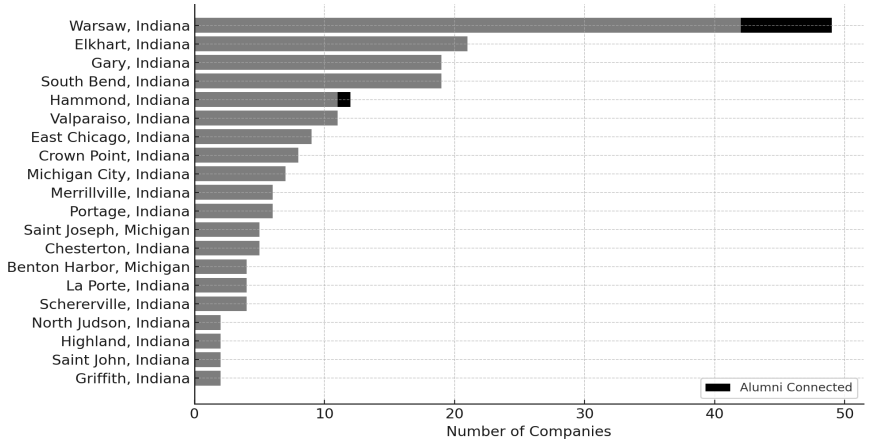

the outer ring. For example, biotechnology includes genetic engineering and bioinformatics, while pharmaceutical research encompasses drug discovery and clinical trials. Biomedical engineering focuses on innovations such as medical devices and tissue engineering. Environmental biotechnology and remediation domains include bioremediation, phytoremediation, and contaminant removal.

**Bioscience Companies and Alumni Ties.** W&A assessed the distribution of bioscience-related companies across key cities in Northern Indiana, based on the bioscience

categories and a curated list of industry leads identified using North American Industry Classification System (NAICS) codes. Figure 7 shows the number of bioscience-related industries in Northern Indiana. Each horizontal bar indicates the total number of bioscience-related companies recorded in each city (shown in gray). The black segments represent companies with known Valpo alumni contacts, based on the availability of updated information. Warsaw stands out as the leading location because of its saturation in the orthopedic and medical device market. Other cities with high levels of regional bioscience activity include South Bend, Merrillville, Valparaiso, and Elkhart, especially related to pharmaceutical manufacturing, diagnostics, environmental solutions, and biotechnology. By also assessing the number of alumni in companies like those in Valparaiso and Warsaw, these ties could offer natural entry points for research partnerships, student projects, and faculty engagement.

**Figure 7.**

*Number of Bioscience-Related Companies in Northern Indiana*




**Note.** *Data from Whittaker & Associates and the VU Office of Advancement*

### *Faculty Workshops and Engagement*

The Assessment step included ten workshops and an ideation session that included exercises and feedback sessions. Faculty members in STEM and bioscience-related fields were asked to reflect on whether industry collaborations and more research opportunities could

enhance student learning outcomes and align with course objectives. Many faculty expressed interest in integrating industry case studies, real-world projects, and co-taught industry courses, but noted challenges such as curriculum flexibility, administrative workload, and the need for industry participation incentives.

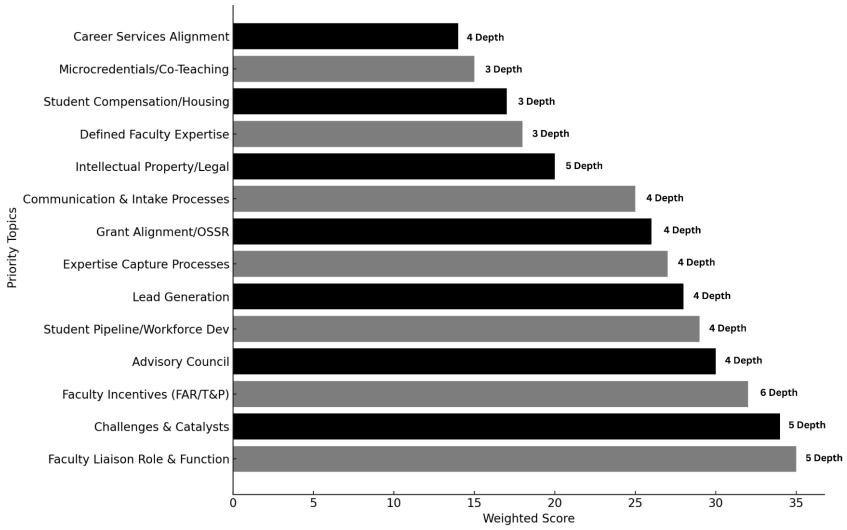
During one of the workshops, faculty participated in an assessment exercise using a Value Quadrant Chart to evaluate the feasibility of integrating university-industry partnerships into their curriculum and daily workload (Appendix B). Given that many ERI faculty face time constraints, it was essential to explore what types of research collaborations were both practical and engaging. Initially, faculty were asked to categorize partnerships based on complexity versus time investment, but as discussions evolved, they chose to redefine the quadrants using complexity versus enjoyment (or "fun") instead. Their reasoning was that if a project was genuinely engaging, they would be more likely to prioritize it, regardless of workload challenges. Interestingly, as they plotted various research and industry projects on the chart, nearly all of them fell above the "fun threshold," including complex initiatives such as on-site faculty consulting and year-long capstone research. Only two projects were identified as lacking enjoyment, reinforcing that faculty are more willing to commit time to industry partnerships when they find the work fulfilling and aligned with their interests.

The PI team also examined workforce development needs and the role of faculty-led research in shaping regional economic strategies. They analyzed how university degree paths align with industry clusters and state and national priorities. Faculty discussed how internships, industry-funded research projects, and capstone projects could strengthen the regional workforce pipeline for these emerging industries and regional priorities, providing students with practical industry experience while allowing companies to engage with emerging talent.

**Topics Prioritized in the Workshops.** Throughout the workshops, discussions were focused on prescribed topics but evolved to include topics that were relevant to the faculty or when finding solutions to various challenges. Figure 8 ranks the themes identified by faculty and the PI team during the ten Collaboratory workshops using a composite "Weighted Score" that multiplies how often each topic appeared by the depth of discussion (on a 1–6 scale). This scoring method highlights not just what was mentioned, but where faculty invested the most time, thought, and planning energy (Appendix C). The highest-scoring topic, Faculty Liaison Role & Function (score: 35), focused on what liaisons would do, not just how many were needed. Workshop participants emphasized that liaisons would be "translators" between faculty, the External Relations Office in the Office of Advancement, and external partners. They would also attend Collaboratory advisory council meetings, match faculty expertise to project needs, and promote interdisciplinary collaboration. One workshop called for liaisons to "attend events and talk to faculty in their departments monthly," while another suggested using liaisons to support "early triage and scoping of project ideas before agreements have been made." These roles were seen as critical for building sustainable capacity. Also

**Figure 8.**

*Priority Topics from Workshops*



scoring 35, Challenges & Catalysts included institutional and cultural barriers such as decentralization, lack of time, unclear processes, and silos between offices. Faculty requested centralized intake systems, pre-approved templates for Non-Disclosure Agreements (NDAs) and Memoranda of Understanding (MOUs), a centralized model, and better integration of the Collaboratory into existing communication structures. For example, faculty described being "unsure where to send companies who reach out" and noted that "too many competing tasks" and a lack of clarity were slowing progress. On the catalyst side, they saw funding, visibility, recognition in tenure, and a centralized, human connector role through the External Relations office as powerful enablers of momentum.

Faculty Incentives (FAR/T&P) received the highest depth rating (6), as shown at the end of the bar, and a total weighted score of 30. This score is based on in-depth conversations in at least four workshops about aligning Collaboratory work with faculty evaluation. Faculty recommended including Collaboratory activity in Faculty Activity Reports (FARs), suggested that release time or stipends be formalized in MOUs, and highlighted the need for publication pathways. In one session, the Provost Office affirmed that this work could be recognized under teaching, research, or professional development, depending on the context, and the colleges and departments would work through the structure and weights. In another session, participants discussed the need to ensure Collaboratory participation "does not replace required service work but counts as compensated, mission-aligned contribution."

The Advisory Council (28 points) was seen as a mechanism to connect Valpo's internal expertise with external needs. Discussions emphasized inviting decision-makers across industries, including nonprofits and alumni, and encouraging council members to share challenges, ideas, and feedback. Examples included adding student voices and holding quarterly

sector-specific roundtables. Faculty highlighted the importance of clarity to ensure that this council doesn't feel like just a showpiece but a space where ideas can be shaped and matched to Valpo's capacity. Lead Generation (24 points) was also discussed in connection with alumni, Career Services, the Office of Advancement, and faculty-initiated outreach. Participants stressed the need for a centralized structure and described needing a formal intake process for cold leads or companies reaching out without a clear idea. One proposed a Google Form that companies could complete, triggering a triage follow-up process with the Office of Advancement, a faculty liaison, or the Office of Sponsored and Student Research (OSSR). Another workshop recommended tagging faculty in the customer relations management (CRM) system so the Office of Advancement and its External Relations team could make targeted introductions.

Newer but relevant topics like Career Services Alignment (12 points) emerged after a special session with the Career Center. The Career Center proposed collaborating with industry partners to create internships and conduct mock interviews, and highlighted that companies want easier pathways to recruit Valpo students. They also discussed connecting the student career management system with faculty and industry users and integrating Collaboratory experiences into student preparation. Intellectual Property and Legal (15 points) was also discussed, especially during a session with the General Counsel. Faculty worked through IP ownership scenarios, NDA timing, publication clauses, and liability protections for student interns. One workshop even proposed a $20,000 poaching fee if a company hired a student mid-program.

***Survey Feedback***

To inform the development of the Collaboratory and better understand the needs of key stakeholders, surveys were conducted with both STEM faculty and industry contacts during the biosciences pilot planning phase. These surveys were designed to explore perceptions of

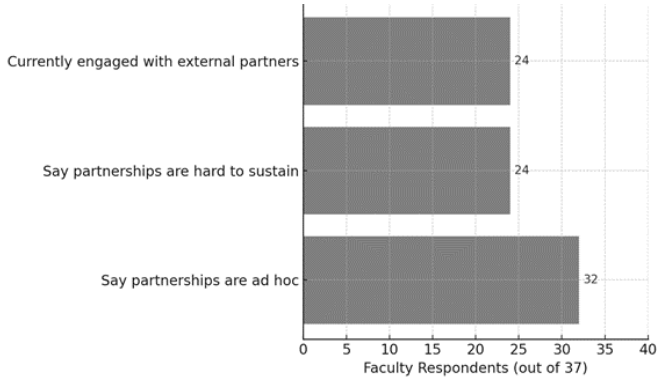
partnership, assess current engagement practices, and identify structural needs that could guide the Collaboratory's design. Input from faculty provided insight into internal opportunities and challenges, while feedback from industry contacts helped shape strategies for more effective collaboration.

**Faculty Survey and Perceptions.** Survey responses from 37 STEM full-time faculty participating in the biosciences pilot study indicated a strong interest in forming external partnerships, with 72% of respondents sharing a willingness to collaborate with industry (See Appendix D for survey questions). However, despite this enthusiasm, barriers to engagement persist. Time constraints emerged as the most common challenge, as faculty members must balance research responsibilities with teaching and service commitments. Funding limitations also hindered participation, with many faculty members citing a lack of financial support for research projects and industry collaboration. Additionally, awareness gaps prevented faculty from actively pursuing external partnerships because respondents reported that they were unsure of existing university resources for connecting with industry or how to initiate conversations with potential partners. Sections below drill in on responses by faculty based on topics.

**Initial State of Research Partnerships.** Survey responses also provided important insights about the current landscape of research partnerships at Valpo (Figure 9). Over 86% of respondents indicated that the process of establishing external partnerships is ad hoc, with little centralized support or structure to guide faculty in connecting with external organizations. Nearly two-thirds of faculty (65%) reported that maintaining external partnerships is difficult or unsustainable, rating the experience as low to neutral. Respondents cited barriers such as a lack of time, unclear expectations, and insufficient institutional infrastructure to support contracts,

**Figure 9.**

*Initial State of Research Partnerships with Bioscience Faculty*

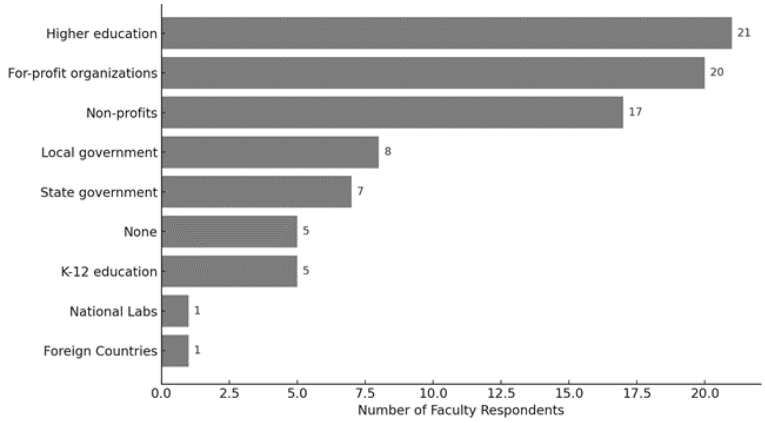



student involvement, or long-term engagement with external collaborators. Despite growing interest, only 43% of faculty reported that they are currently engaged with an external partner. This gap highlights that while faculty have the expertise and interest in research partnerships, many lack the tools, support systems, or incentives to maintain such relationships effectively.

**Faculty Experience with External Partners.** The survey also asked about the types of partnerships the bioscience-related faculty currently have or have had in the past. These responses indicate a strong foundation of interest and experience (Figure 10). Faculty most frequently reported partnering with other higher education institutions, suggesting a culture of academic collaboration. These partnerships often include co-authored research, grant applications, and shared efforts, demonstrating Valpo's capacity for interdisciplinary work and scholarly engagement beyond campus.

**Figure 10.**

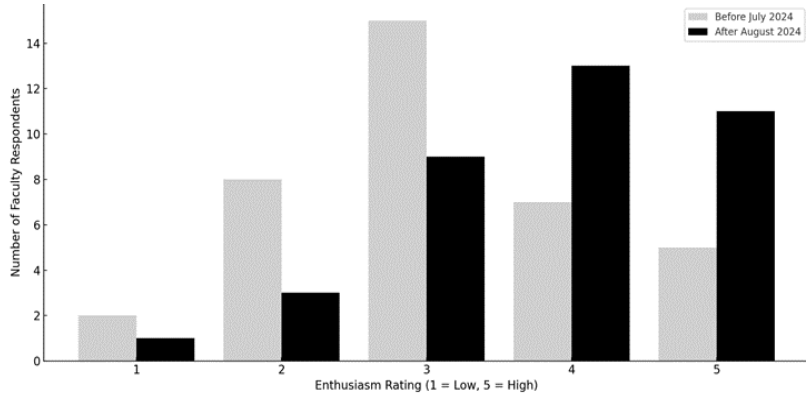
*Types of External Partners with Whom Bioscience Faculty Have Worked*



Nonprofit organizations and for-profit companies were also commonly mentioned, highlighting faculty involvement in applied and community-based work. However, many faculty have not had the formal pathways, institutional coordination, or industry connections needed to turn prior experience into sustained relationships.

**Figure 11.**

*Change in Faculty Enthusiasm about the Collaboratory*



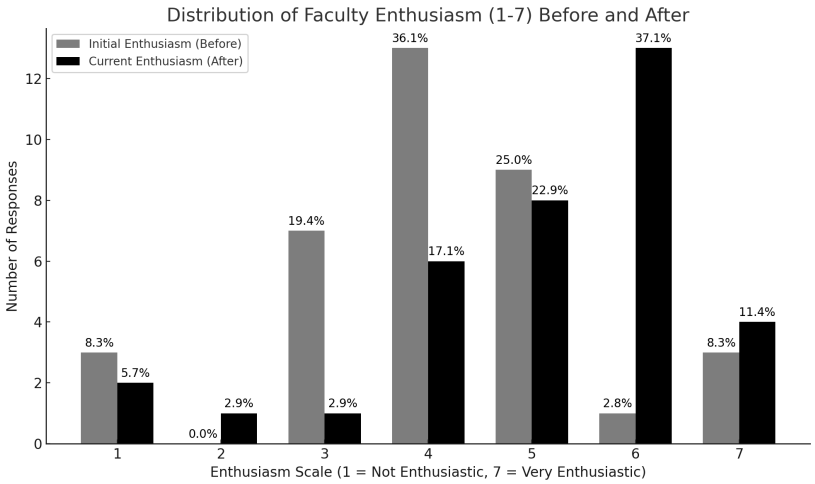

Faculty also shared experiences working with federal agencies and research funders such as NIH, NSF, and DOE. A portion of respondents selected "None," indicating they have not yet worked with external partners. It was clear from the survey results that Valpo faculty bring valuable experience, broad interests, and untapped potential to externally engaged research. It also showed that the Collaboratory could be a strategic opportunity to move from isolated efforts to a scalable, university-supported model to strengthen research, expand impact, and create new possibilities for students, faculty, and Northwest Indiana.

**Faculty Enthusiasm.** Prior to the launch of the NSF planning period, the Collaboratory and research partnerships had been discussed with the bioscience faculty. For the Collaboratory planning work to be successful, it was imperative that faculty members were motivated to be part of the process. Survey results in Figure 11 showed a clear increase in enthusiasm for the Collaboratory between July and August 2024, after the ideation session and 3 days of workshops. Prior to July, enthusiasm was generally moderate to low, with most faculty rating their interest

in the 2–3 range. Only a few respondents rated their enthusiasm at the highest level (5). By contrast, responses collected after the August 2024 Collaboratory engagement period show a noticeable shift. The number of faculty selecting ratings of 4 and 5 nearly doubled, while lower scores (1–2) almost disappeared. This upward trend reflects the positive impact of the Collaboratory's early communication efforts, pilot planning workshops, and increased transparency about how faculty might participate. The data also suggest that exposure to the Collaboratory's purpose, structure, and potential benefits boosted confidence and excitement among faculty. It also signaled a growing readiness to engage if institutional structures continued to support the momentum. In the May 2025 survey of faculty across all disciplines, not just STEM, enthusiasm for the Collaboratory showed a clear upward trend among the forty respondents. As shown in Figure 12, faculty reporting the highest levels of enthusiasm (ratings of 6 and 7) increased significantly, with level 6 responses rising from just 2.8% to 37.1%, and level 7 responses also increased. Meanwhile, lower enthusiasm ratings (1–4) declined overall, indicating that previously neutral or uncertain faculty are now more engaged. This shift suggests that faculty across the university are increasingly recognizing the value of the Collaboratory for research, teaching, and industry engagement. The growth in high enthusiasm

**Figure 12.**

*Enthusiasm of All Valpo Faculty Before and After (May 2025)*



levels reflects broader institutional buy-in and lays a strong foundation for sustaining and scaling Collaboratory partnerships.

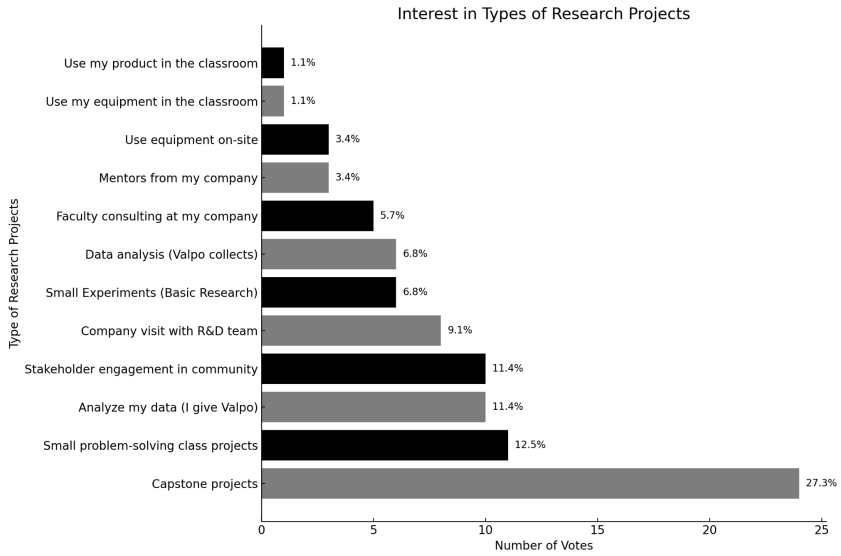
### *Industry Survey*

As part of the Collaboratory planning process, a survey was also distributed to industry professionals through targeted outreach to companies connected with the Valpo Career Center and the local Chamber of Commerce to assess current levels of engagement and interest in partnering with Valpo. The 50 respondents shared their views on current partnerships with Valpo and other universities and their willingness to participate in research partnerships with the University in the future. From the industry perspective, the survey results uncovered gaps in awareness and engagement. Only 26% of surveyed companies were aware of faculty research capabilities at the university. Many industry representatives expressed a desire to work with faculty but found it difficult to identify the right expertise or navigate university processes. Companies also highlighted the challenges they face in engaging with universities, including bureaucratic hurdles, slow response times, and unclear partnership structures. When asked about desired partnership models, industry respondents preferred project-based collaborations andshort-term consulting opportunities, as these arrangements offer tangible, immediate benefits while minimizing risk (See Appendix E for survey questions).

**Partnership Interests in Projects.** At the Collaboratory Launch event, attendees from industry partners, alumni, faculty, and economic development leaders were invited to share their preferences for the types of research projects they would like to pursue with Valpo (Figure 13). The most highly rated option was capstone projects, which received more interest than any other category. This result shows enthusiasm for student-driven research efforts that span an academic semester and focus on tackling real-world business challenges. These projects not only allow

**Figure 13.**

*Interest in Types of Research Projects*



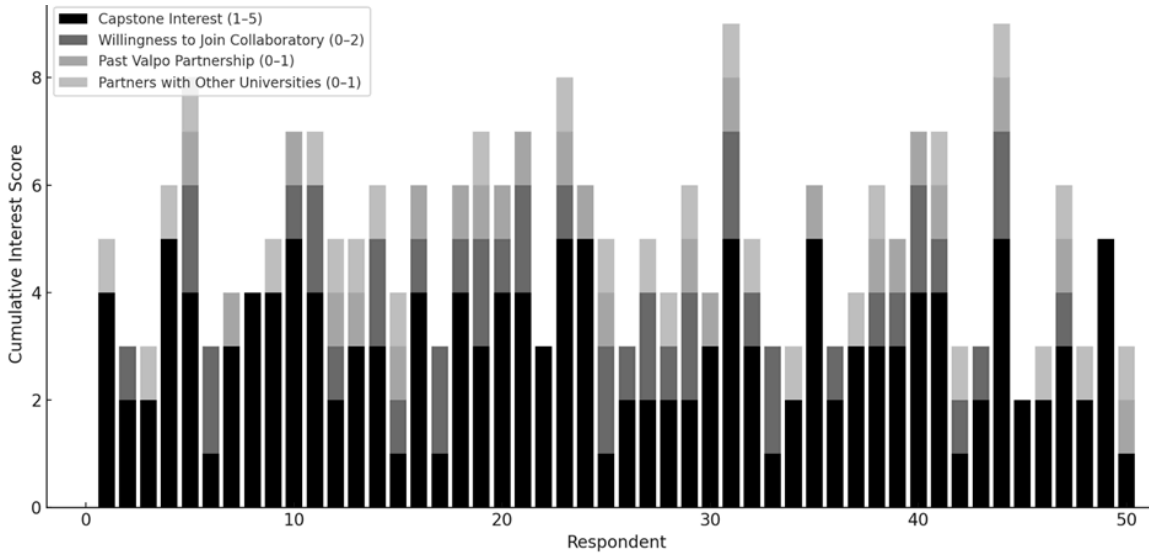

students to apply their classroom knowledge in practical settings but also offer companies a chance to explore new ideas, innovations, or process improvements through a guided, faculty-supported framework. Participants also expressed interest in small problem-solving class projects, as well as data analysis support, where the company would provide the data and where Valpo would conduct its own data collection. Closely related was the interest in stakeholder engagement in the community, which signals that partners see the university as a connector between organizations, students, and the broader public. Additional areas of interest included student visits with company R&D teams and small experiments tied to basic research. Though interest in faculty consulting or providing mentors from within the company was lower on the list, it still reflected a willingness by several participants to engage with the university in advisory or supportive roles.

**Industry Partnership Landscape.** Survey responses (Figure 14) helped the PI team understand a sample of the landscape and determine readiness and awareness of regional industries (scoring in Appendix F). This layered bar chart illustrates the results of four key indicators for each respondent, and each bar represents a unique respondent and the signals of engagement across these areas:

- Interest in sponsoring a Valpo capstone project, rated on a 1 to 5 scale
- Willingness to participate in the Collaboratory or share further insights: Yes (2), Maybe (1), or No (0)
- Previous experience partnering with Valpo faculty or students: Yes (1) or No (0)
- Current experience partnering with other universities: Yes (1) or No (0)

**Figure 14.**

*Signals of Industry Interest in Partnerships with Valpo*




While a small number of companies show multiple strong signals, such as past university partnerships, interest in project sponsorship, and openness to joining the Collaboratory, many indicated limited or no current involvement with Valpo or other institutions. Several respondents expressed moderate to high interest in sponsoring student-led projects, even without prior partnership experience. This points to an opportunity to grow Valpo's external engagement footprint. The presence of respondents who are open to partnership but lack established pathways highlights the importance of creating low-barrier entry points.

## Step Two: Identification

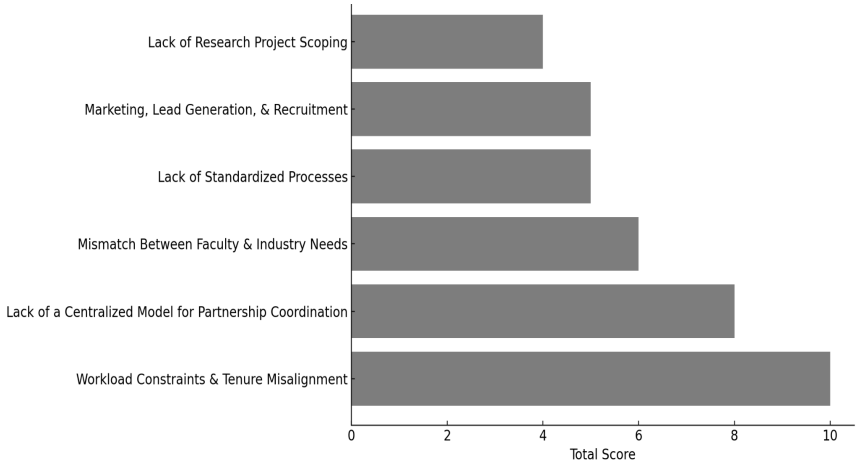
The Identification step focused on surfacing the barriers that limit effective university-industry collaboration at Valpo. Through workshop feedback and leadership discussions, faculty, staff, and administrators shared honest reflections on the institutional, cultural, and operational challenges that make external partnerships difficult to initiate or sustain. This step was essential in translating anecdotal concerns into actionable insights that could shape the Collaboratory's design. By identifying and ranking these barriers, the planning team gained a deeper understanding of the structural changes needed to enable scalable collaboration.

### *Barriers Identified in Workshops*

Faculty and staff shared insights during the Collaboratory workshops. Figure 15 synthesizes and ranks feedback about challenges that impede university-industry collaboration based on the scores in Appendix G. Each perceived barrier's total score reflects how frequently it appeared across workshops, whether it was explicitly flagged as a barrier, the presence of proposed solutions, its relevance to the Collaboratory's design, and whether it required a cultural shift to overcome. The highest scoring barrier, Workload Constraints and Tenure Misalignment, emerged as the most frequently cited and discussed challenge. Faculty expressed interest in engaging with

**Figure 15.**

*Top Barriers Identified in Workshops*



external partners but often felt like they lacked the time, structural support, or recognition in tenure and promotion policies to participate. This perception was reinforced across multiple sessions, with faculty calling for solutions such as course releases, stipends, and clearer alignment with the FAR. Addressing this issue is not just procedural; it requires a fundamental cultural shift in how universities define and reward engagement.

The second highest barrier, Lack of a Centralized Model for Partnership Coordination, underscores the operational difficulties faculty and staff face when navigating the university procedures. Participants described overlapping efforts, confusion around who manages external relationships, and a need for a more unified entry point. These insights informed the design of the Collaboratory as a centralized mechanism to streamline communication and coordinate engagement efforts across departments and divisions. Several additional barriers, including uncertainties about possible mismatches between faculty expertise and industry needs, a lack of research project scoping, a need for standardized processes, and marketing, lead generation, and recruitment, highlight the operational friction that complicates partnership development.

This barrier analysis complements the priorities summarized previously in Figure 8, where participants identified the most critical focus areas for advancing the Collaboratory's design. The strong alignment between the barriers and priority topics reinforces the validity of both datasets and highlights a shared institutional understanding of what must change and where to begin. Solutions to these challenges were discussed in workshops and in PI team meetings to align faculty expertise with industry needs, establish legal agreement templates, better utilize technology and other operational tools, create recruitment plans and strategies, develop project intake tools, and establish clearer visibility into faculty availability and interests. These and other solutions will be further discussed in Step Three: Examination and Step Four: Development.

### *Administrative Barriers*

During the identification step, several institutional challenges that hindered effective collaboration with external partners were discussed. These included unknown administrative processes, a lack of clarity around internal workflows between departments, and confusion surrounding new contractual and financial procedures related to research partnerships. These concerns were discussed both in faculty workshops and during one-on-one conversations with university leadership. To better understand these pain points and explore solutions, administrators from across the university engaged directly in the process. Some participated in one-on-one conversations with the Vice President for Advancement, while others attended Collaboratory workshops to hear feedback firsthand, share context from their divisions, and explore opportunities for collaboration.

Workshop discussions included an in-depth focus on administrative workflow practices, where a representative from Academic Affairs or the Office of Sponsored and Student Research offered insights into current practices and worked alongside faculty to identify ways to streamline processes while remaining compliant with university policy. Similarly, a representative from the General Counsel's Office participated in sessions focused on MOUs, NDAs, and intellectual property (IP) agreements. Financial barriers were also a major topic of concern. To address this, an administrator from the Finance Office discussed policies on stipends, student payments, and faculty consulting arrangements. These conversations evolved into how financial systems might support collaborative work, reduce friction or time lapses, while ensuring compliance with institutional standards. Through these intentional conversations and collaborative sessions, the Collaboratory helped shift the culture from isolated questioning to shared problem-solving. University leaders and faculty began to identify concrete adjustments

that could support scalable, sustainable partnerships. These efforts laid the foundation for more efficient processes, clearer communication, and a more innovation-ready internal infrastructure.

**Step Three: Examination**

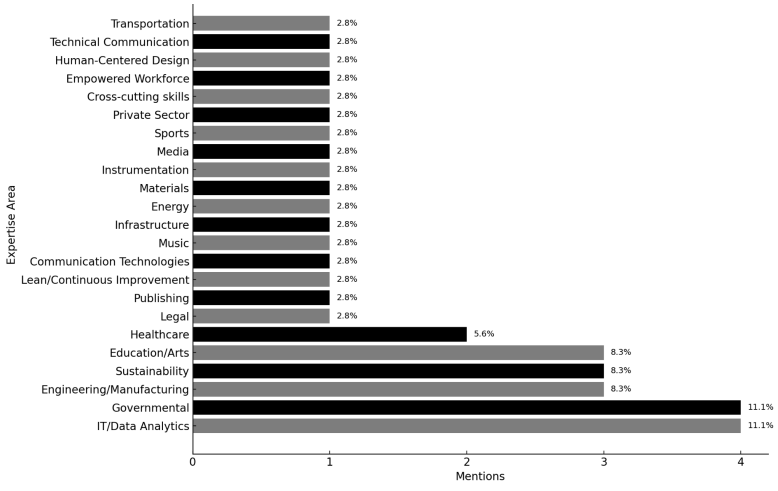
One of the most complicated challenges discussed in the workshops and highlighted in both Figures 8 and 15 was the potential mismatches between faculty expertise and industry needs and the priority of having a mechanism to capture faculty expertise so the External Relations team could easily access the backgrounds and knowledge of faculty at Valpo to share with industry contacts during outreach conversations. Like most universities, Valpo did not have a streamlined structure for gathering and listing the expertise of faculty beyond individual CVs, grant proposals, and FARs overseen by separate departments. Extensive time was spent on tackling this obstacle through faculty feedback, gathering data in Excel, and finally developing a prototype with an academic platform, Scholarly.

***Faculty Feedback***

To gather feedback, faculty were asked to reflect on "What industry domains do your expertise intersect with and what about your colleagues?" Figure 16 provides a snapshot of their responses based on the range and frequency of themes the faculty identified. Across the breakout groups, faculty personally shared industry-specific areas where their work naturally aligns. These included healthcare, manufacturing, engineering, and

**Figure 16.**

*Frequency of Expertise Areas Mentioned by Faculty*



energy, which are all areas that are closely tied to regional workforce and innovation needs. Faculty noted that subfields such as materials science and instrumentation often overlap with manufacturing, while sustainability was seen as a theme that cuts across multiple domains, including energy, infrastructure, and healthcare. In addition to these sector-specific areas, faculty emphasized a set of cross-cutting skills that are applicable across nearly all industries: technical communication, human-centered design, and workforce development. They also shared areas of experience in information technology (such as GIS, data analytics, and biostatistics), as well as in education, arts, and the nonprofit and government sectors. Throughout the sessions, there was strong recognition that many areas of expertise naturally overlap. This overlap suggests that Valpo's strength is not just in individual expertise but in its potential to build interdisciplinary teams that are well-matched to tackle complex industry challenges.

### *Faculty Expertise Inventory*

In response to faculty feedback and recognizing the interdisciplinary nature of academic fields, the PI team explored opportunities to automate and streamline access to faculty expertise across campus. This improvement started with evaluating faculty capabilities and exploring approaches for how the External Relations team could access, understand, and articulate these

**Figure 17.**

*Faculty Self-Reported Expertise Inventory Using Excel (Intentionally Left Blank)*

| Faculty Member | Area(s) of Expertise | Department | Faculty Rank | Professional Certfications | Previous Related Work Experience (company, experience) | Related industries and companies | Key Words for Database | Potential Collaborations between VU departments | Student Involvement | Known Road Blocks Internally | How have you connected with industry in the past or currently? (Please list specific companies) | Link to Faculty Photo | Research Project Description(s), worded for a public audience | CV | Link to Research and/or Project Photo(s) | Potential Connections |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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capabilities to align them with regional industry needs. To begin this process, the 39 Valpo faculty participating in the biosciences pilot completed a self-reported expertise inventory with categories shown in Figure 17. The information from this inventory was later used along with faculty CVs and photographs for a future profile in the prototype platform, Scholarly.

While this input was helpful, the PI team recognized the need for a more scalable, structured system that could support both current analysis and future partnership development. Throughout the workshop process, the PI team explored various possibilities like creating faculty profiles through ORCID, Simple Syllabus, and 12Twenty. Faculty noted that any system should be searchable, current, and low-burden, and include metadata tags for interest level, availability, and applied skills. It was also important that this expertise was translated into terminology and the focus areas of real-world industries.

### *Scholarly*

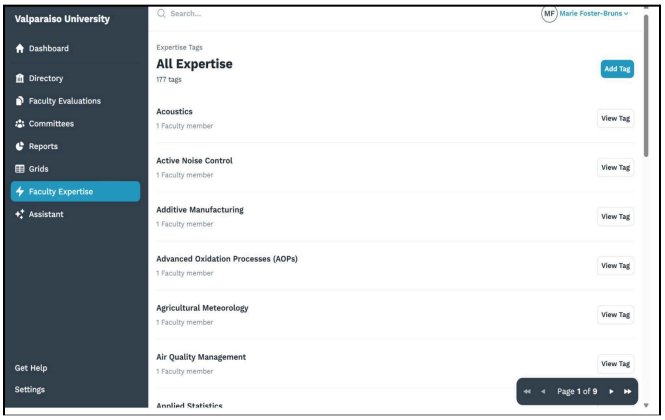
To achieve this, the PI team worked with Scholarly, an online platform that is typically used with university academic offices to centralize faculty data, manage promotion and tenure processes, and track FARs, to design a prototype tool with thirty professors from the pilot specifically for the Collaboratory's needs. This tool leverages AI to match faculty expertise with industry needs, making it easier for companies to find relevant faculty research capabilities while also

**Figure 18.**

*Faculty Directory in Valpo Prototype on Scholarly*

**Figure 19.**

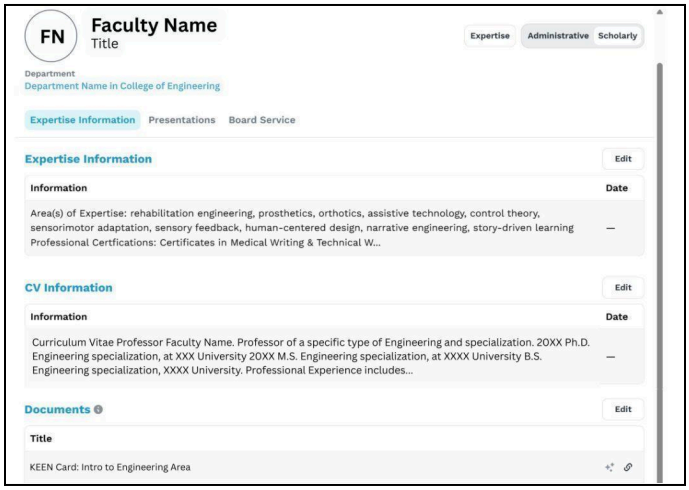
*Faculty Expertise Tags in Valpo Prototype on Scholarly*




helping faculty members connect with each other and the external partners through the Office of Advancement for funding, applied research projects, and knowledge exchange. The system is designed to streamline the engagement process, automate expertise, assist with discovery, and reduce administrative barriers, ensuring that faculty members and industry partners can efficiently explore research opportunities. The Faculty Directory in Figure 18 on the previous page categorizes faculty by department for easy access, with a link to view each professor with a profile in the system. Scholarly's platform also tags faculty expertise based on their self-reported profiles, uploaded documents, and institutional data (Figure 19). These tags go beyond academic terminology and are translated into industry-relevant language, allowing for clearer alignment between faculty skills and real-world business needs.

**Figure 20.**

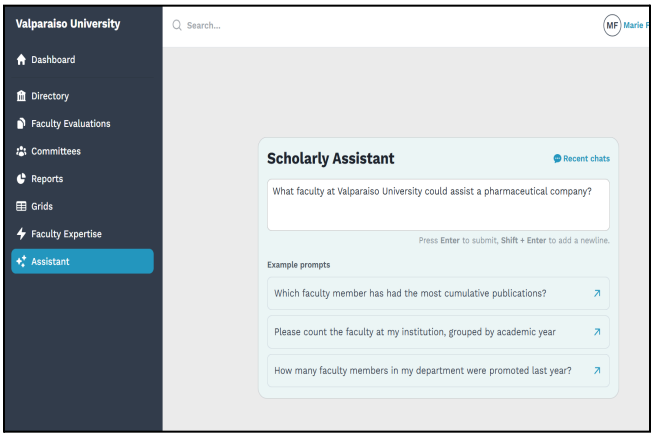
*Faculty Profile in Valpo's Prototype on Scholarly*




As mentioned in multiple workshops, faculty were interested in having their profiles where their expertise could be highlighted and easily accessible. Faculty profiles within Scholarly (Figure 20) are enhanced with CVs, syllabi, research summaries, presentations, and other documents

**Figure 21.**

*AI Assistant in Valpo's Prototype on Scholarly*

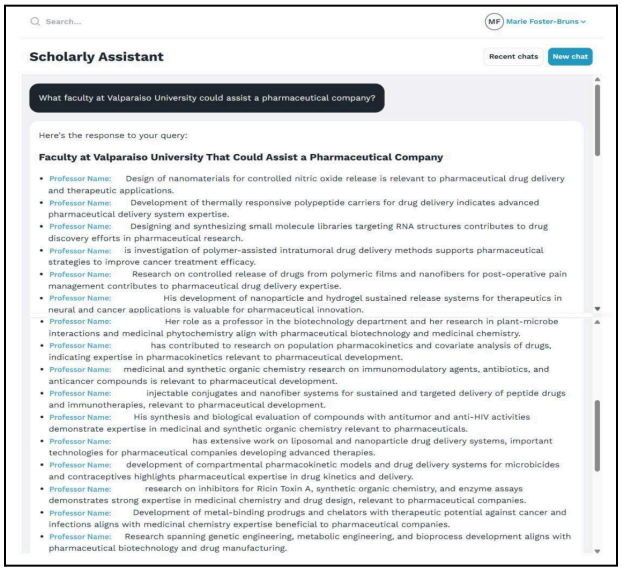



that faculty or administrative offices can upload. This data fuels AI-generated expertise tags, which can then be searched or filtered based on specific project needs. The platform would be a centralized, searchable repository of faculty talent and one that the Collaboratory team can use when identifying potential research collaborators for partnerships.

The prototype also includes an AI Assistant that allows users to ask targeted questions and receive relevant faculty matches. For example, as shown in Figure 21, the External Relations team asked "What faculty at Valparaiso University could assist a pharmaceutical company?"

**Figure 22.**

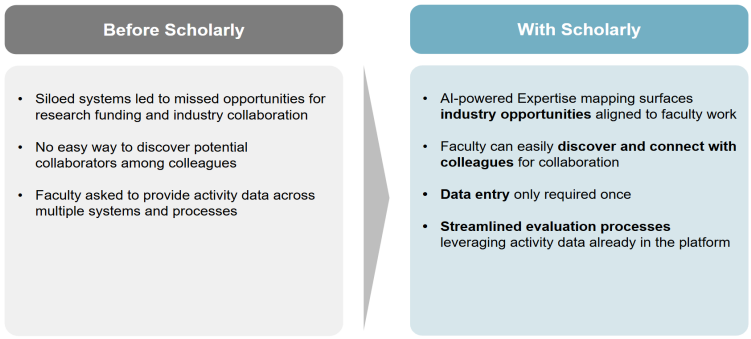
*Results of AI Search in Valpo's Prototype on Scholarly*




The AI Scholarly Assistant returned a curated list of faculty with experience in drug delivery systems, biomedical engineering, and plant-based medical chemistry, among other relevant areas. Figure 22 shows how Scholarly presents this information in accessible, non-technical language, making it easier for External Relations or industry representatives to identify

**Figure 23.**

*Before and After Comparison using the Valpo Prototype in Scholarly*

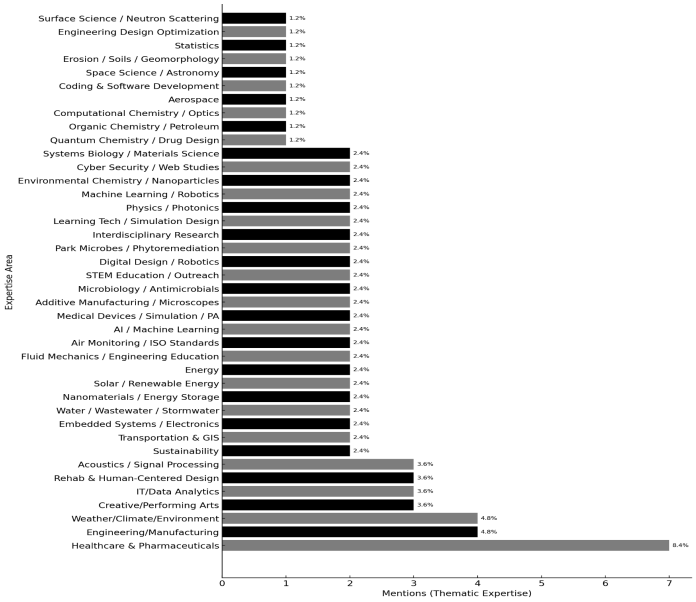



**Note.** Comparison provided by Scholarly Software, Inc,

potential collaborators without requiring deep knowledge of academic jargon. The AI tagging and search capabilities represent a major step forward in institutional capacity to proactively match faculty with industry partners, funding opportunities, and cross-disciplinary collaborators. This before-and-after comparison from Scholarly in Figure 23 describes the transformative impact of the platform on faculty collaboration, research alignment, and institutional efficiency. Before the Scholarly prototype, Valpo faced limitations due to fragmented systems and siloed data. Faculty members were often required to manually enter activity data into multiple platforms, leading to redundancy and frustration. These disconnected systems also made it difficult to uncover cross-disciplinary research synergies or identify relevant industry partners, ultimately resulting in missed funding and collaboration opportunities. This examination step built a

**Figure 24.**

*Bioscience Faculty Expertise Updated After Scholarly*



foundation for a more sustainable and strategic approach to research partnership development. It also improved knowledge about faculty expertise at Valpo, as shown in Figure 24 and broken out in Appendix H. Compared to Figure 16, which illustrated the most accurate reflection of faculty expertise, External Relations and fellow professors now have access to more accurate and detailed data about faculty expertise at Valpo. By implementing Scholarly as an institutional prototype, Valpo is helping to ensure that faculty expertise is visible, accessible, and aligned with the Collaboratory's mission to foster research that drives regional innovation and workforce growth. It also provides a tool for other ERIs to use as they nurture external partnerships.

**Step Four: Development**

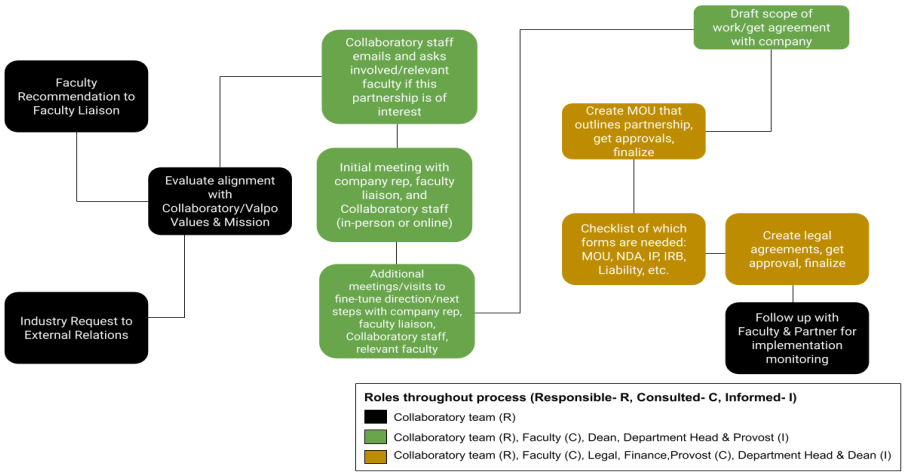
The Development step translated the insights gathered during previous steps into actionable systems designed to support sustainable university-industry collaboration. Drawing directly from the barriers identified, the Collaboratory team created standardized workflow processes, project menus, and support structures to streamline engagement. These tools were designed to ensure clarity, accountability, and ease of participation for both internal and external partners. Central to this step was new coordinated internal and external workflows, supported by the Office of Advancement. By building a centralized infrastructure and clear processes, the Collaboratory will move ad hoc partnership activity to a strategic, scalable model of engagement.

***Workflow Processes***

Collaboratory workflows were created as a response to the barriers identified in step two during the planning workshops and through conversations with industry partners. Faculty prioritized the need for standardized processes and a centralized model for coordination to ensure clarity, consistency, and structure in how partnerships are initiated and managed. Among the most frequently cited challenges were unclear points of entry for both faculty and companies,

**Figure 25.**

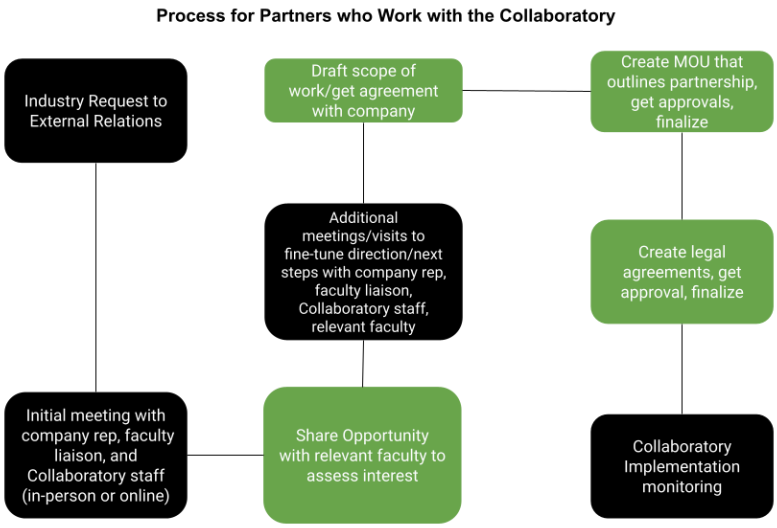
*Internal Collaboratory Workflow Processes*




administrative inefficiencies, and confusion around responsibilities and timelines. Industry partners also shared that their attempts to engage with the university often stalled due to a lack of visible pathways, slow response times, or uncertainty about who to contact. To address these issues, the Collaboratory team developed two coordinated workflow models: one from the internal institutional perspective in Figure 25 and one from the external industry perspective in Figure 26. These workflows were responsive to the barriers like workload misalignment, lack of administrative support, process ambiguity, and difficulty matching faculty expertise with real-world challenges. Importantly, the workflows create a centralized, mission-aligned structure for External Relations and

**Figure 26.**

*External Collaboratory Workflow Processes*



the faculty liaisons to use when engaging with external partners while protecting faculty time and ensuring appropriate approvals are in place. The process begins in one of two ways: Either a faculty member recommends a potential industry connection to a faculty liaison, or a company reaches out directly to the Office of External Relations. Regardless of the entry point, the request is routed through the Collaboratory for review. The first step is to evaluate the proposed partnership for alignment with the university's mission and the values of the Collaboratory. This ensures that the opportunity not only benefits students and faculty but also advances the university's broader goals for regional engagement and innovation.

If the opportunity qualifies as a good fit, the Collaboratory then reaches out through the faculty liaisons to relevant faculty to gauge interest and availability. An initial meeting is then scheduled with the company representative, faculty liaison, and Collaboratory staff, either in person or virtually. This meeting serves as a discovery conversation to understand the goals, needs, and potential for collaboration. If there is mutual interest, follow-up meetings are held to fine-tune the direction, clarify expectations, and determine next steps. Once the collaboration is scoped, the team works with the company and faculty to draft a scope of work that defines the purpose, deliverables, timelines, and resources needed for the partnership. From there, a checklist is used to determine which formal documents are required. Depending on the nature of the project, this may include an MOU, NDA, IP agreement, liability waivers, or IRB approvals. The Collaboratory coordinates with appropriate university offices to finalize all legal documents and secure necessary approvals. After agreements are signed, the partnership officially moves into implementation. The Collaboratory monitors progress and maintains communication with both faculty and the company, ensuring the collaboration remains productive, aligned, and

sustainable. This follow-through is a critical component of the model, as it helps prevent breakdowns in communication and supports long-term relationship building.

### *Menu of Projects*

To provide clarity and flexibility for industry and nonprofit partners, the Collaboratory developed a structured project menu that organizes engagement opportunities by both level of commitment and strategic partner purpose. This ensures that potential collaborators can easily identify partnership options that align with their capacity, timeline, and goals while also aligning with faculty expertise and institutional priorities. The project menu in Table 2 is organized into four tiers of engagement. Tier 1, referred to as "Quick Wins," includes short-term, low-resource activities such as guest speaking, panels, and company tours. Tier 2, "Tactical Engagements," encompasses medium-scope projects like mentorship programs, skill-building workshops, and student challenge competitions. Tier 3, "Strategic Partnerships," offers longer-term collaborations such as internships, CUREs, and capstone project sponsorships. Tier 4, "Transformative Initiatives," includes the most comprehensive and sustained collaborations, such as co-development of grant proposals, long-term applied research projects, and the creation of innovation spaces.

**Table 2.**

*Collaboratory Project Menu*

| Tier | Level of Engagement | Talent Discovery & Development | Innovation & Problem Solving | Research & Impact | Capacity Building | Awareness & Engagement |
|---|---|---|---|---|---|---|
| 1 | Quick Wins (1-3 Months) | Guest Speaking<br>Company Tours | Guest Speaking<br>Panels | Guest Speaking | - | Site Visits<br>Case Studies |
| 2 | Tactical Engagements (3-6 months) | Mentorship<br>Resume Reviews | Challenge Competitions<br>Course Projects | Data Projects | Workshops | Faculty-Partner Mixers |
| 3 | Strategic Partnerships (6 months) | Internships | Capstone Projects | CUREs | Training Series | Student-Led Projects |
| 4 | Transformative Initiatives (6-12+ months) | Fellowship Pipelines | Innovation Space | Long-Term Research | Grant Co-Development | Branded Multi-Year Initiatives |

In addition to time and resource tiers, the project types are organized by partner purpose. These categories include Talent Discovery and Development, Innovation and Problem Solving, Research and Impact, Capacity Building, and Awareness and Engagement. For example, partners

looking to identify potential future employees might explore internships, mentorships, or fellowships, while those interested in exploring complex challenges might engage through capstone projects, challenge competitions, or long-term research collaborations. This matrix structure offers a flexible, transparent approach to partnership building. It allows external stakeholders to understand the scope of what is possible at Valpo while giving faculty a shared language and framework to articulate what kinds of partnerships they are able to support. The tiered menu promotes right-sized collaboration, ensuring mutual benefit and realistic expectations from the outset.

This project menu was shaped by faculty input gathered throughout the Collaboratory planning process. Faculty perspectives were collected through structured workshops, small group sessions, and direct conversations with the principal investigator team. These insights helped clarify what types of projects faculty were most excited to lead, what level of involvement was feasible given workload realities, and where institutional structures needed to support collaboration. The final menu was designed by one of the Collaboratory's faculty liaisons, who synthesized faculty insights into a visual structure that balances accessibility for external partners with practical alignment to campus capacity. Their leadership ensured the project menu was not only functional but also reflective of the voices and priorities of those most critical to its success.

***Collaboratory Partnerships and Project Alignment***

During the planning phase of the Collaboratory, the PI team set a goal to secure one to two industry partners to help co-develop early-stage projects and test the viability of the model. However, interest in the Collaboratory surpassed expectations with sixteen partner engagements. As shown in Table 3, the Collaboratory has established connections across various sectors, with the bioscience and biotech industries accounting for 37.5% of all active partnerships. This strong

**Table 3.**

*Collaboratory Ongoing Partnerships by Categories*

| Industry | Project Type | Alumni | Menu Alignment |
|---|---|---|---|
| Behavioral Health | Career Center Engagement, Work Based Learning | No | No |
| Bioscience | Research | Yes | Yes |
| Bioscience | Research | Yes | Yes |
| Bioscience | Research | Yes | Yes |
| Bioscience | Curricular, Research, Work Based Learning | No | Yes |
| Bioscience | Curricular, Research, Work Based Learning | No | Yes |
| Biotech | Research | Yes | Yes |
| Education Non-Profit | Workforce Development | No | No |
| Education Non-Profit | Curricular | No | No |
| Education Non-Profit | Work Based Learning | No | Yes |
| Healthcare | Work Based Learning | No | Yes |
| Manufacturing | Research | No | Yes |
| Manufacturing | Work Based Learning | Yes | Yes |
| Service Non-Profit | Research, Work Based Learning | Yes | Yes |
| Technology | Curricular, Research | No | Yes |
| Transportation | Work Based Learning, Research | Employee Spouse | Yes |

early engagement in the life sciences reaffirms the decision to select biosciences as the initial focus area for the pilot. Projects include research collaborations, curricular integration, and work-based learning experiences, all aligned with regional workforce needs and faculty strengths. The Collaboratory's engagement strategy initially focused on a defined set of strategic offerings listed in a menu. The Menu Alignment column in the chart shows that 81% of all projects align with the Collaboratory's strategic menu of offerings, and several projects emerged outside of that initial framework. These organically developed collaborations are helping to inform future iterations of the model, revealing areas where the Collaboratory may expand its scope or offerings to better meet the evolving needs of both partners and faculty.

Drivers of this momentum were the unexpected and enthusiastic involvement of alumni and faculty. Alumni are involved in 37.5% of all industry connections, suggesting a strong relational asset within Valpo's network. Their deep understanding of the institution's capabilities through lived experience as students and ongoing faculty relationships made them natural champions for early partnerships and helped accelerate the model's credibility and reach. Faculty also played a role in advancing the Collaboratory's mission. Many brought forward existing

connections with industry and community partners and expressed a strong desire to deepen those relationships through structured collaboration. These faculty-led outreach efforts often served as catalysts for new projects, demonstrating how internal networks could be leveraged to create meaningful, applied learning opportunities and research engagements.

### *Marketing and Outreach*

**Collaboratory Website.** Based on the barriers identified and priorities mentioned above, the PI team also developed marketing and communication strategies. Because of the external nature of the Collaboratory, a website was built and can be found at valpo.edu/collaboratory. It is the digital front door for Valpo's external partners and is designed to support multiple audiences, like faculty, industry partners, students, and peer institutions, by offering accessible entry points, defined partnership opportunities, and resources. Each section of the site is structured with a specific strategic purpose. The homepage introduces the Collaboratory's vision and role in connecting Valpo's academic expertise with external stakeholders. It provides a concise overview of how the Collaboratory facilitates research partnerships, industry capstone projects, and knowledge exchange across sectors. The "Get Involved" page is central to the site's engagement strategy. This page is also a call to action for companies, community organizations, students, and faculty who want to participate in the Collaboratory. It includes quick links to event registrations, a form for new partner inquiries, and clear contact information for the External Relations team. Designed for usability, the page lowers the barrier to entry for potential partners and signals the university's readiness to collaborate.

Feedback from faculty workshops informed the creation of the "How Faculty Can Get Involved" page. During the planning phase, faculty expressed the need for clarity around how their expertise could be connected to external partners and what kinds of support were available

through the Collaboratory. As a result, this page outlines the various ways faculty can participate, such as serving as a project lead, mentor, or research collaborator. It also addresses frequently asked questions and provides a faculty-specific contact pathway for those seeking further guidance or to share project ideas or testimonials. Another important section is the "For Other Universities" page, which positions Valpo as a resource for other ERIs looking to develop similar partnership structures. This page will host Collaboratory reports, sample MOUs, templates for industry engagement, and process documents that were piloted and refined throughout the planning phase. The goal is to ensure knowledge-sharing and replication across peer institutions, especially those with limited research infrastructure that want to expand their impact through industry engagement.

**Events and Outreach.** As part of its early engagement efforts, the Collaboratory strategically aligned with Valpo's major research presentation days called SOURCE (Symposium on Undergraduate Research and Creative Expression), FiRES (Fall Internship and Research Symposium), and SiRES (Summer Internship and Research Symposium). These events provided a natural setting to highlight faculty and student research while also fostering dialogue between the university and external partners. The Collaboratory hosted networking events adjacent to these symposiums, offering a more informal and comfortable environment for conversations. (See sample run of show in Appendix I). These sessions featured brief presentations from faculty, students, industry partners, and the PI team, highlighting collaborative work and emerging ideas for research-industry engagement. The response was overwhelmingly positive, with strong attendance and a balanced mix of faculty members and external stakeholders from various sectors.

One of the most impactful faculty-driven suggestions during these events was to introduce color-coded nametags, grouped by industry sector. This small but thoughtful change significantly enhanced the quality of conversations by helping participants quickly identify relevant contacts, making their time more intentional and productive. Faculty reported that this feature facilitated deeper, more targeted discussions with companies aligned to their fields. In addition to fostering external engagement, the events also served as a valuable platform for cross-disciplinary faculty connections. Many faculty members met colleagues for the first time through these interactions, sparking ideas for future collaboration that extended beyond the initial industry focus.

The Collaboratory also used these events to advance its branding and recruitment strategy. Professionally designed marketing materials were distributed to raise awareness, and feedback display boards invited attendees to place stickers in response to questions about partnership interests, future programming, and research priorities. There were also table cards to get feedback from attendees at every table. (See templates in Appendix J). This interactive method created a visual snapshot of community interest and provided actionable insights for the Collaboratory's planning team. Ultimately, these engagement activities did more than raise visibility; they helped establish the Collaboratory as an accessible, welcoming, and strategic initiative that bridges research, teaching, and external partnership. The events seeded meaningful relationships and positioned the Collaboratory as a hub of connection and impact.

***Centralized Structure Under the Office of Advancement***

A core strength of the Collaboratory's development has been its strategic alignment with the University Office of Advancement, which provided essential infrastructure, communications capacity, and relationship management expertise. From the earliest stages of planning, the

Advancement team played a pivotal role in ensuring the Collaboratory had the tools and visibility necessary to build momentum and credibility across campus and with external partners. The Advancement communications team designed and worked with University Marketing to create professional brochures, flyers, and branded marketing materials that were used at campus events, industry engagements, and partner visits. These ensured consistent messaging and helped visually position the Collaboratory as a formal, long-term initiative. This communications support was especially effective during outreach events like SOURCE, FiRES, and SiRES, where printed materials reinforced the Collaboratory's value and mission. In parallel, the Advancement operations team integrated Collaboratory partners into the university's CRM system, allowing for seamless tracking, segmentation, and follow-up. These partners were also added to the division's targeted communications platforms, enabling quick turnaround for event invitations, confirmations, and post-event outreach. This technical integration made it possible to manage relationship development efficiently and at scale.

The Collaboratory also benefited from close coordination with the Advancement research team, who supported lead generation by tagging prospects within the CRM, uploading external research leads, and preparing briefing materials in advance of meetings and events. Their involvement allowed the Collaboratory team to approach new partnerships with clear context, tailored messaging, and relevant institutional history. Importantly, the alumni relations function within the Office of Advancement played a vital role in fostering early connections. Many of Valpo's engaged alumni serve in leadership roles within companies or organizations aligned with biosciences and other industry sectors. Through the Office of Advancement's outreach channels, the Collaboratory was able to directly engage alumni in its mission, resulting in faster

development of partnerships and expanded networks of support. The enthusiasm and credibility of alumni advocates helped open doors and deepen relationships with external partners.

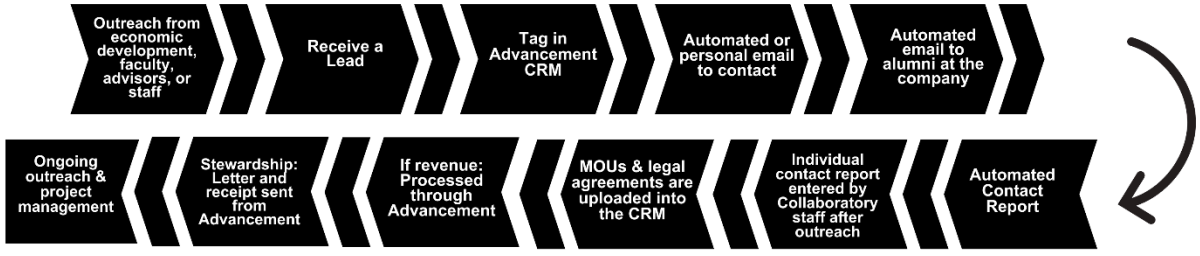
Additionally, the Office of Advancement's established processes for handling sensitive data and legal documentation created a natural bridge to the Office of General Counsel, which provided support on drafting MOUs and other legal documents for collaboration. This alignment reduced friction in developing partnership agreements and added professionalism to early-stage conversations. Because the Office of Advancement already manages e-newsletters and stakeholder communications for the External Relations Office, the Collaboratory was able to leverage these channels to share updates, opportunities, and success stories without the need to build a new communications pipeline from scratch. With the Office of Advancement's existing structure as a centralized unit serving all academic colleges, it was well-positioned to work across campus and ensure consistent messaging and outreach that supported the Collaboratory's institutional goals.

### *Pipeline Management Process*

The Collaboratory Pipeline Management Process in Figure 27 is a coordinated system that streamlines how Valpo engages companies and external partners through the Office of Advancement and the Collaboratory. Outreach originates through multiple channels, such as

**Figure 27.**

*Collaboratory Pipeline Management Process*



from economic development partners, faculty and staff across the university, the Collaboratory website, leads generated through the W&A platform, and direct outreach from staff. Once a lead is identified, it is logged into the Advancement CRM, Valpo's centralized Advancement relationship management system. The lead is then tagged appropriately, allowing teams to track engagement activity across departments and units. An automated or personalized email is then sent to the company contact. If the organization has alumni connections, an additional automated message is delivered to alumni at the company, leveraging institutional pride and affinity. In parallel, Collaboratory staff conduct personalized outreach, including phone calls, tailored messages, or in-person visits. These interactions are documented through individual contact reports entered into the CRM, capturing relevant insights, next steps, and relationship details.

When a company expresses interest in a formal partnership, MOUs and legal agreements are developed and also uploaded into the CRM. If revenue is associated with the collaboration, such as contract payments or sponsored research, it is processed through the Office of Advancement to ensure accurate receipting, stewardship, and compliance. The pipeline also includes automated contact reports and reminders to keep stakeholders informed and accountable. Following any financial or formal engagement, the Office of Advancement provides stewardship through acknowledgment letters and continued communication. This builds institutional trust and demonstrates Valpo's long-term commitment to the partnership.

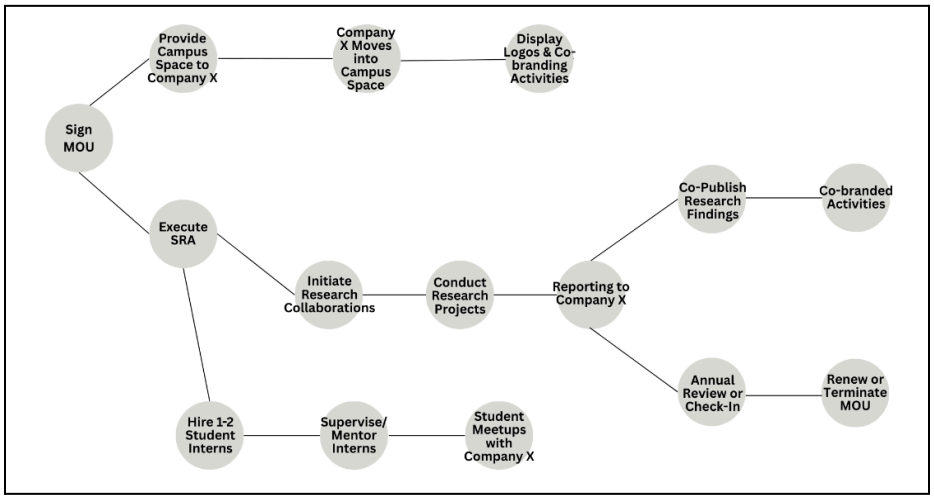
***Project Management***

The Program Evaluation Review Technique (PERT) chart in Figure 28 is an example of a tool that can be used for executing the Collaborative initiatives. This example is based on an MOU between Valpo and Company X. This visual translates the written agreement into a

sequence of tasks, enabling effective planning, execution, and monitoring. Each node in the chart represents a key activity or milestone, beginning with the signing of the MOU and concluding with either its renewal or termination. The arrows indicate task dependencies, helping stakeholders understand the order in which activities must be completed. For instance, before student internships can begin, Company X must be onboarded with office and lab space on campus. Similarly, joint research projects cannot commence until the necessary legal agreements are in place.

**Figure 28.**

*Sample PERT Chart for Valpo and Company X*




The multi-tiered layout of the PERT chart highlights parallel processes and dependencies. For example, while internship-related activities progress on one path, research collaborations and publication efforts develop along another, eventually converging on shared deliverables like co-branded dissemination. The structure can also include dates, locations, and key contact names to ensure that all stakeholders, including faculty, administrators, legal teams, and industry partners, can visualize how their responsibilities align with others. By using this PERT chart as a project management tool, the University and Company X can:

- Track progress and accountability across workstreams (e.g., space allocation, legal agreements, research).
- Identify bottlenecks or delays based on which tasks are prerequisites for others.
- Coordinate timelines to ensure synchronized efforts between academic and corporate partners.
- Facilitate communication for check-ins, updates, and decision-making.
- Plan reviews and next steps by indicating long-term outcomes such as annual evaluations and MOU renewal discussions.

This PERT chart can also be printed, digitized, or embedded into a project management system to guide quarterly planning meetings and stakeholder engagement during the MOU's lifecycle.

**Conclusion**

The development of the Valpo Collaboratory through the NSF GRANTED Planning Grant is a step forward in creating a sustainable, centralized model for university-industry partnerships at Emerging Research Institutions. By addressing structural barriers, engaging faculty, and aligning with centralized offices like Advancement, the Collaboratory has laid the foundation for scalable, mission-aligned collaboration that benefits students, faculty, and regional industry. The data, information shared, and workshop summaries in Appendix K in this report are meant to assist other universities as they build their own Collaboratory entities. As the model has evolved, its early outcomes have already sparked interest from peer institutions and economic development organizations seeking to implement similar approaches in their own contexts. This growing interest affirms the broader applicability of the Collaboratory framework and reimagines how small universities can contribute to innovation and regional development.

## References

Flechas, X., Kazunari Takahashi, C., & Bastos de Figueiredo, J. (2022). The triple helix and the quality of the startup ecosystem: A global view. *Revista de Gestão*, *30*(3), 238–252. https://doi.org/10.1108/rege-04-2021-0077

Lutchen, K. R. (2024, January 16). *How companies can help universities train tech workers*. Harvard Business Review. https://hbr.org/2024/01/how-companies-can-help-universities-train-tech-workers

Prigge, G. W., & Torraco, R. J. (2006). University-industry partnerships: A study of how top American research universities establish and maintain successful partnerships. *Journal of Higher Education Outreach and Engagement*, *11*(2), 89–99. https://eric.ed.gov/?id=EJ1093048

Quider, A., & Blazey, G. (2023). How to keep emerging research institutions from slipping through the cracks. *Issues in Science and Technology*, *29*(3), 50–53. https://doi.org/10.58875/acqp2387

U.S. Department of Energy. (2024, October 21). *Grants institution designations/classifications*. https://science.osti.gov/grants/Applicant-and-Awardee-Resources/Institution-Designations

U.S. Economic Development Administration. (2023). *Heartland BioWorks*. https://www.eda.gov/funding/programs/regional-technology-and-innovation-hubs/2023/Heartland-BioWorks

## Appendices

# Appendix A

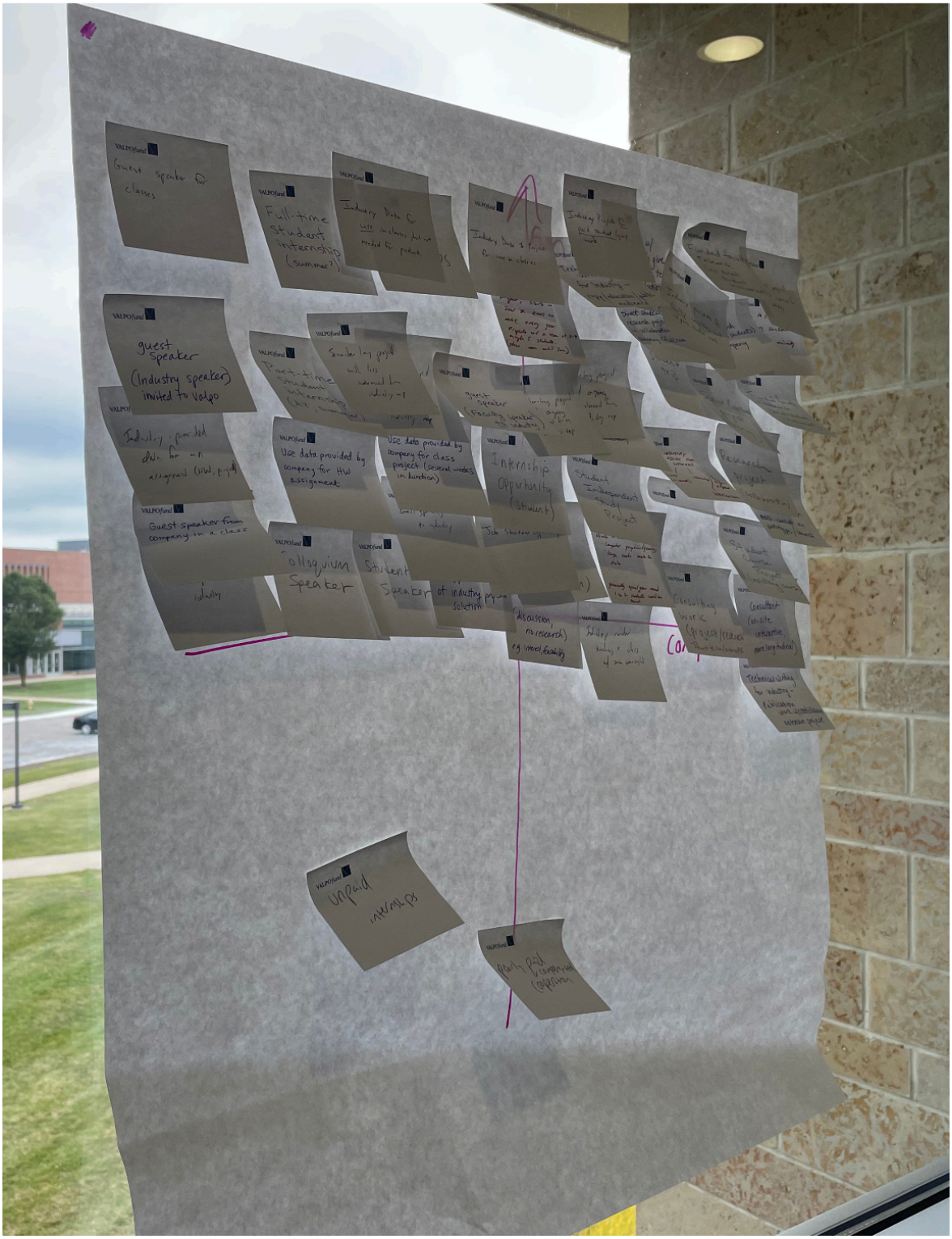
*Occupational Data in the Bioscience Sector in Northwest Indiana*

| SOC | Description | 2019 Jobs | 2024 Jobs | 2029 Jobs | 2019 Resident Workers | 2024 Resident Workers | Pct. 25 Hourly Earnings | Median Hourly Earnings | Pct. 75 Hourly Earnings | Current Year Age 45-54 % of Occupation | Current Year Age 55-64 % of Occupation | Current Year Age 65+ % of Occupation | 2024 - 2029 Openings | Avg. Annual Openings | 2024 - 2029 Replacement Jobs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11-9121 | Natural Sciences Managers | 69 | 148 | 152 | 108 | 158 | $47.21 | $64.17 | $87.06 | 22% | 18% | 7% | 58 | 12 | 52 |
| 13-1041 | Compliance Officers | 231 | 305 | 320 | 354 | 435 | $26.60 | $35.00 | $46.28 | 26% | 21% | 8% | 137 | 27 | 119 |
| 15-2041 | Statisticians | 20 | 15 | 19 | 36 | 17 | $37.40 | $47.92 | $59.98 | Insf. Data | Insf. Data | Insf. Data | <10 | 2 | <10 |
| 15-2051 | Data Scientists | 37 | 158 | 196 | 80 | 212 | $35.68 | $47.02 | $61.90 | 16% | 12% | Insf. Data | 89 | 18 | 52 |
| 17-2031 | Bioengineers and Biomedical Engineers | 69 | 136 | 138 | 72 | 125 | $39.37 | $47.95 | $56.47 | 18% | 20% | 7% | 41 | 8 | 38 |
| 17-2199 | Engineers, All Other | 132 | 202 | 218 | 177 | 224 | $41.16 | $57.52 | $73.68 | 20% | 19% | 13% | 76 | 15 | 60 |
| 19-1011 | Animal Scientists | 11 | <10 | <10 | <10 | <10 | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | <10 | 0 | <10 |
| 19-1012 | Food Scientists and Technologists | <10 | 14 | 16 | 25 | 22 | $29.30 | $38.45 | $46.61 | Insf. Data | Insf. Data | Insf. Data | <10 | 2 | <10 |
| 19-1013 | Soil and Plant Scientists | 10 | 16 | 19 | 17 | 16 | $25.25 | $35.13 | $51.79 | Insf. Data | Insf. Data | Insf. Data | <10 | 2 | <10 |
| 19-1021 | Biochemists and Biophysicists | 33 | <10 | 11 | 29 | 10 | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | <10 | 1 | <10 |
| 19-1022 | Microbiologists | <10 | <10 | <10 | 11 | 12 | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | <10 | 0 | <10 |
| 19-1023 | Zoologists and Wildlife Biologists | <10 | <10 | <10 | <10 | <10 | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | <10 | 0 | <10 |
| 19-1029 | Biological Scientists, All Other | 18 | 31 | 33 | 22 | 37 | $22.63 | $30.56 | $43.83 | Insf. Data | Insf. Data | Insf. Data | 14 | 3 | 11 |
| 19-1041 | Epidemiologists | <10 | <10 | <10 | <10 | <10 | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | <10 | 0 | <10 |
| 19-1042 | Medical Scientists, Except Epidemiologists | 157 | 58 | 63 | 191 | 101 | $27.94 | $41.54 | $53.85 | 19% | Insf. Data | Insf. Data | 21 | 4 | 15 |
| 19-1099 | Life Scientists, All Other | <10 | <10 | <10 | <10 | 0 | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | Insf. Data | 0 | 0 | 0 |
| 19-2031 | Chemists | 100 | 166 | 169 | 159 | 208 | $36.57 | $46.79 | $61.13 | 24% | 17% | 7% | 61 | 12 | 57 |
| 19-2032 | Materials Scientists | 50 | 29 | 26 | 56 | 34 | $35.91 | $44.28 | $52.72 | Insf. Data | Insf. Data | Insf. Data | <10 | 2 | <10 |
| 19-2041 | Environmental Scientists and Specialists, Including Health | 87 | 180 | 192 | 97 | 168 | $26.05 | $32.95 | $41.78 | 20% | 16% | 6% | 85 | 17 | 73 |
| 19-4021 | Biological Technicians | 52 | 41 | 41 | 83 | 61 | $18.07 | $20.33 | $25.58 | Insf. Data | Insf. Data | Insf. Data | 26 | 5 | 25 |
| 19-4031 | Chemical Technicians | 128 | 42 | 49 | 178 | 73 | $20.04 | $22.47 | $27.12 | Insf. Data | Insf. Data | Insf. Data | 33 | 7 | 26 |
| 29-2018 | Clinical Laboratory Technologists and Technicians | 801 | 823 | 791 | 919 | 904 | $25.92 | $33.91 | $42.61 | 21% | 21% | 7% | 259 | 52 | 255 |
| 29-2099 | Health Technologists and Technicians, All Other | 205 | 212 | 217 | 277 | 287 | $20.99 | $24.68 | $32.31 | 23% | 18% | 6% | 77 | 15 | 71 |
| | | 2,239 | 2,603 | 2,687 | 2,909 | 3,113 | | | | 21% | 19% | 7% | 1,028 | 206 | 891 |

Source: Lightcast Q1.2025 Data provided by the Indiana Department of Workforce Development

## Appendix B

*Value Quadrant Chart Created by Faculty at a Collaboratory Workshop*



## Appendix C

*Data Used in Figure 8 Priority Topics from Workshops*

| Topic | Frequency | Depth | Weighted Score |
|---|---|---|---|
| Faculty Liaison Role & Function | 7 | 5 | 35 |
| Challenges & Catalysts | 7 | 5 | 35 |
| Faculty Incentives (FAR/T&P) | 5 | 6 | 30 |
| Advisory Council | 7 | 4 | 28 |
| Expertise Capture Processes | 6 | 4 | 24 |
| Lead Generation | 6 | 4 | 24 |
| Student Pipeline/Workforce Dev | 6 | 4 | 24 |
| Grant Alignment/OSSR | 5 | 4 | 20 |
| Communication & Intake Processes | 5 | 4 | 20 |
| Intellectual Property/Legal | 3 | 5 | 15 |
| Defined Faculty Expertise | 5 | 3 | 15 |
| Student Compensation/Housing | 4 | 3 | 12 |
| Microcredentials/Co-Teaching | 4 | 3 | 12 |
| Career Services Alignment | 3 | 4 | 12 |

## Appendix D

*Questions in Survey to Faculty in Collaboratory Pre-Survey Assessment*

1. Have you attended any of the Collaboratory workshops, including the ideation session? *Yes/No*
2. Do you currently engage with external partners? *Yes/No/Other*
3. Have you engaged with industry and/or external partners in the past (at Valpo or at another institution)? *Yes/No/Other*
4. What types of external partners have you worked with? Check all that apply.
    a. Non-profits
    b. K-12 education
    c. Higher education
    d. For-profit organizations
    e. Local government
    f. State government
    g. Federal government & agencies
    h. I haven't worked with any
    i. Other
5. List companies you have worked with currently and in teh past on academic projects.
6. Do you think the process of finding industry and/or external partnerships is currently an ad-hoc process at Valpo? *Yes/No/Other*

7. On this 1-5 scale, please share how sustainable it is currently for your to maintain external partnerships.
8. How enthusiastic were you about the Collaboratory (prior to July 2024)? *Scale 1-5*
9. How enthusiastic are you now about the Collaboratory (after August 2024)? *Scale 1-5*
10. With more institutional support, how excited would you be about working with industry partners? *Scale 1-5*
11. I am willing to be interviewed to share more insight into past, present, and future industry collaborations. *Yes/No/Other*

## Appendix E

*Questions in Survey to Industry Representatives*

1. Does your company/organization currently partner with university faculty or classrooms (at any college or university)? *Yes/No/Other*
2. Does your company/organization currently partner with Valparaiso University faculty or classrooms? *Yes/No/Other*
3. Have you (as an individual) ever worked with Valparaiso University faculty and students on classroom or research projects? *Yes/No/Other*
    a. If yes, please explain the project(s).
4. What academic needs does your company/organization have that Valpo faculty and students may help you solve, either now or in the future? (Examples: solve a challenge, test a product, data collection or analysis, customized training workshops)
5. How interested would your company be in sponsoring a Valpo capstone project in a classroom where students work on making your great idea greater? *Scale 1-5*
    a. Please explain your answer.
6. Does your company/ organization have data that Valpo/s computer science students can use in their classroom work? *Yes/No/Other*
7. Would you be willing to share further insights with Valpo and/or participate in the Collaboratory? *Yes/No/Other*
8. Do you have any further questions or comments you would like to share?

# Appendix F

*Data Used in Figure 14: Layered Interest Signals by Respondent*

| | Capstone Interest | Would Participate in Collaboratory | Past Valpo Partnership | Partners with A University | Cumulative Interest Index |
|---|---|---|---|---|---|
| Respondent 1 | 3 | 1 | 1 | 1 | 6 |
| Respondent 2 | 3 | 2 | 0 | 1 | 6 |
| Respondent 3 | 3 | 2 | 0 | 0 | 5 |
| Respondent 4 | 2 | 0 | 0 | 0 | 2 |
| Respondent 5 | 2 | 0 | 0 | 0 | 2 |
| Respondent 6 | 3 | 2 | 1 | 0 | 6 |
| Respondent 7 | 2 | 1 | 0 | 0 | 3 |
| Respondent 8 | 1 | 1 | 0 | 0 | 2 |
| Respondent 9 | 3 | 0 | 0 | 0 | 3 |
| Respondent 10 | 2 | 1 | 0 | 1 | 4 |
| Respondent 11 | 2 | 1 | 0 | 1 | 4 |
| Respondent 12 | 3 | 1 | 0 | 1 | 5 |
| Respondent 13 | 1 | 0 | 0 | 0 | 1 |
| Respondent 14 | 4 | 2 | 0 | 1 | 7 |
| Respondent 15 | 2 | 1 | 0 | 1 | 4 |
| Respondent 16 | 5 | 2 | 1 | 0 | 8 |
| Respondent 17 | 5 | 1 | 1 | 0 | 7 |
| Respondent 18 | 5 | 1 | 0 | 0 | 6 |
| Respondent 19 | 4 | 1 | 0 | 1 | 6 |
| Respondent 20 | 5 | 0 | 0 | 0 | 5 |
| Respondent 21 | 5 | 1 | 0 | 0 | 6 |
| Respondent 22 | 3 | 0 | 0 | 0 | 3 |
| Respondent 23 | 4 | 2 | 1 | 0 | 7 |
| Respondent 24 | 5 | 2 | 1 | 1 | 9 |
| Respondent 25 | 3 | 2 | 0 | 1 | 6 |
| Respondent 26 | 3 | 2 | 0 | 0 | 5 |
| Respondent 27 | 4 | 1 | 0 | 1 | 6 |
| Respondent 28 | 1 | 0 | 0 | 0 | 1 |
| Respondent 29 | 3 | 0 | 0 | 0 | 3 |
| Respondent 30 | 1 | 0 | 0 | 0 | 1 |
| Respondent 31 | 3 | 1 | 0 | 1 | 5 |
| Respondent 32 | 5 | 2 | 1 | 1 | 9 |
| Respondent 33 | 3 | 1 | 0 | 0 | 4 |
| Respondent 34 | 2 | 0 | 0 | 0 | 2 |
| Respondent 35 | 3 | 0 | 0 | 1 | 4 |
| Respondent 36 | 3 | 1 | 0 | 0 | 4 |
| Respondent 37 | 5 | 2 | 1 | 1 | 9 |
| Respondent 38 | 3 | 1 | 0 | 0 | 4 |
| Respondent 39 | 3 | 2 | 0 | 1 | 6 |
| Respondent 40 | 5 | 2 | 0 | 0 | 7 |
| Respondent 41 | 3 | 2 | 0 | 0 | 5 |
| Respondent 42 | 4 | 2 | 0 | 1 | 7 |
| Respondent 43 | 3 | 1 | 0 | 0 | 4 |
| Respondent 44 | 3 | 0 | 0 | 0 | 3 |
| Respondent 45 | 5 | 2 | 0 | 1 | 8 |
| Respondent 46 | 3 | 1 | 0 | 0 | 4 |
| Respondent 47 | 1 | 1 | 0 | 0 | 2 |
| Respondent 48 | 5 | 2 | 0 | 0 | 7 |
| Respondent 49 | 3 | 0 | 1 | 0 | 4 |
| Respondent 50 | 3 | 2 | 0 | 1 | 6 |

# Appendix G

*Data Used in Figure 15: Top Barriers in Workshops*

| Barrier | Times Mentioned In Workshops | Times Flagged as Barrier | Includes Suggested Solution | Explicitly Linked to Collaboratory Design | Cultural Shift Score | Total Score |
|---|---|---|---|---|---|---|
| Workload Constraints & Tenure Misalignment | 5 | 6 | 1 | 1 | 1 | 10 |
| Lack of a Centralized Model for Partnership Coordination | 4 | 4 | 1 | 1 | 1 | 7 |
| Lack of Standardized Processes | 3 | 3 | 1 | 1 | 0 | 4 |
| Mismatch Between Faculty & Industry Needs | 4 | 3 | 1 | 1 | 0 | 5 |
| Marketing, Lead Generation, & Recruitment | 3 | 2 | 1 | 1 | 0 | 4 |
| Lack of Research Project Scoping | 3 | 3 | 1 | 1 | 0 | 4 |

# Appendix H

*Data Used in Figure 24: Bioscience Faculty Expertise Updated After Scholarly*

| Department | Expertise | Key Words |
|---|---|---|
| Mathematics and Statistics | data science, machine learning, business analytics | anything with a dataset, finding efficiencies, cost benefit anaylsis, operational analysis to inform decisions, inventory management, Steel, healthcare |
| Biology | microbiology | pharmaceuticals |
| Geography and Meteorology | Meteorology, Climatology, lake-effect snowfall, weather forecasting | Weather, Climate, Snowfall |
| Geography and Meteorology | satellite remote sensing | |
| Mathematics and Statistics | Statistics | Pharmaceutical marketing promotions |
| Physics and Astronomy | Computational physics, Materials science, quantum chemistry | low-dimensional materials and their applications in electronics, catalysis, energy storage and conversion |
| Mechanical Engineering and Bioengineering | Systems biology modeling, Soft tissue mechanics and biology, Design of biological scaffolds, Multiscale modeling, Effects of sex hormones on soft tissue | Systems biology, Scaffolds, Sex hormones, Computational modeling, Multiscale modeling |
| Geography and Meteorology | erosion, topography, geomorphology, GIS (analysis, mapping), soils, drones | GIS, ArcGIS, ESRI, geomorphology, wetlands, environmental soils, geoarchaeology, topography, drones, LiDAR, landform, Dept of Transportation, construction companies, civil engineers, anything with a spatial component (distance, space, area) |
| Mechanical Engineering and Bioengineering | Nanomaterials, biomaterials, drug delivery, lymphatic transport | pharmaceuticals, medicine, Nanomaterials, nanoscience, lymphedema, nanoparticles, liposomes, drug delivery |
| Civil and Environmental Engineering | Transportation design and operations, traffic signals | transportation, design, traffic signals, traffic |
| Electrical and Computer Engineering | Machine Learning, AI, Digital Design, Robotics, Digital Signal Processing, Computer Vision | AI, Machine Learning, Computer Vision |
| Mechanical Engineering and Bioengineering | fluid mechanics, computational fluid dynamics (CFD), thermodynamics, heat transfer, engineering education, sustainability, vibration analysis | fluid mechanics, computational fluid dynamics (CFD), thermodynamics, heat transfer, engineering education, sustainability, vibration analysis |
| Electrical and Computer Engineering | Signal/Audio Processing, Active/Passive Noise and VIbration Control, Physiological Responses to Noise and Vibration, Hardware-Software Co-design | Acoustics, Sound, Noise, Vibration, Signal Processing, Filtering, Human Response to Noise and Vibration, Physics - Control of Noise and Vibration; Currently working with Dr Christina Cavinder on NICU Noise Quieting |
| Physics and Astronomy | physics, astronomy, space science, public science | data analysis, instrumentation, public engagement, telescopes/optics, astronomy, computational programming |
| Mechanical Engineering and Bioengineering | rehabilitation engineering, prosthetics, orthotics, assistive technology, control theory, sensorimotor adaptation, sensory feedback, human-centered design, narrative engineering, story-driven learning | rehabilitation engineering, prosthetics, orthotics, assistive technology, control theory, sensorimotor adaptation, sensory feedback, human-centered design, narrative engineering, story-driven learning, healthcare, physical therapy, occupational therapy, human-machine interfaces, haptics |
| Mechanical Engineering and Bioengineering | Fluid Mechanics, Thermodynamics, Heat transfer, Solar, Solar thermal chemistry | Fluid Mechanics, Thermodynamics, Heat transfer, Solar, Solar thermal chemistry |
| Civil and Environmental Engineering | Stormwater Management and stormwater BMPs, Surface water hydrology | Stormwater management, Stormwater BMPs, Cost, effectiveness, and optimization of stormwater BMPs. |
| Chemistry | water chemistry, micro and nanoplastics, volatile organic contaminants, environmental chemistry, environmental justice | Water and wastewater treatment, USGS, DOE, Watereuse, Compostable pac, Water contaminants, microplastics, nanoplastics, environmental justice, VOCs |
| College of Nursing and Health Professions | medical simulation, medical and health education including public audience, mobility medical devices, prosthetics, orthoses | Physician Assistant, Certified. Upcoming: Basic Life Support, Advanced Cardiac Life Support (renewal), paramedics, medical device manufacturers, hospital systems, assistive technology, simulation, health, medicine, medical, mobility |
| Mechanical Engineering and Bioengineering | Engineering Design Optimization, Multiscale Modeling, Machine Learning, Additive Manufacturing | modeling, optimization, additive manufacturing, makerspace |
| Biology | Molecular and cellular biology, Medicinal phytochemistry, Plant-microbe interactions, Microbiology, Plants and human health, Environmental biotechnology | Antimicrobial drug discovery; Phytocompounds; Microbiology; Molecular biology |
| Chemistry | Inorganic chemistry, energy storage, solar fuels, batteries, xray diffraction, raman spectroscopy | Nanomaterials, nanoscience, battery, catalyst, electrochemistry, raman spectroscopy, solar fuels |
| Physics and Astronomy | Nanoscience, surface studies, x-ray & neutron scattering | Nanoscience, x-ray, structure-function, nanomaterials, thin films, surfaces |
| Computing and Info Sciences | Computing, software development | Software Apps Development Software Engineering Systems Integration |
| Chemistry | Synthetic Organic Chemistry, Drug Design, Enzyme Assays, Heterocyclic Chemistry, Fluorescent Sensors | Antimicrobial drugs; Medicinal Chemistry; Organic Synthesis |
| Electrical and Computer Engineering | Electronics, Embedded Systems, Signal Processing, Semiconductors, Analog Digital Mixed-signal chip design VLSI, Space and Satellite systems, Internet of Things | Electronics, Embedded Systems, Signal Processing, Semiconductors, Analog Digital Mixed-signal chip design VLSI, Space and Satellite systems, Internet of Things |
| Civil and Environmental Engineering | Air Pollution- Ambient and indoor monitoring and sampling | Air monitoring; industrial Stack Sampling; Indoor air sampling; particulates control; ISO 14000 environmental Management system; chargeability of powders; air monitoring instruments; quality assurance and quality control; |
| Physics and Astronomy | Computational Materials Science, Quantum chemistry/physical chemistry | catalysis, computational chemistry, computational screening, Petroleum use in materials/plastic production |
| Mechanical Engineering and Bioengineering | Fluid Mechanics, Thermodynamics, Heat transfer, Solar energy, Solar thermal chemistry | solar energy, heat exchanger, concentrating solar power, temperature measurement, flow measurement, energy, renewable energy, HVAC, solar photovoltaics |

Source: Valparaiso University Prototype on Scholarly Software, Inc.

## Appendix I

*Sample Run of Show for the Collaboratory Launch Event*

VALPARAISO UNIVERSITY

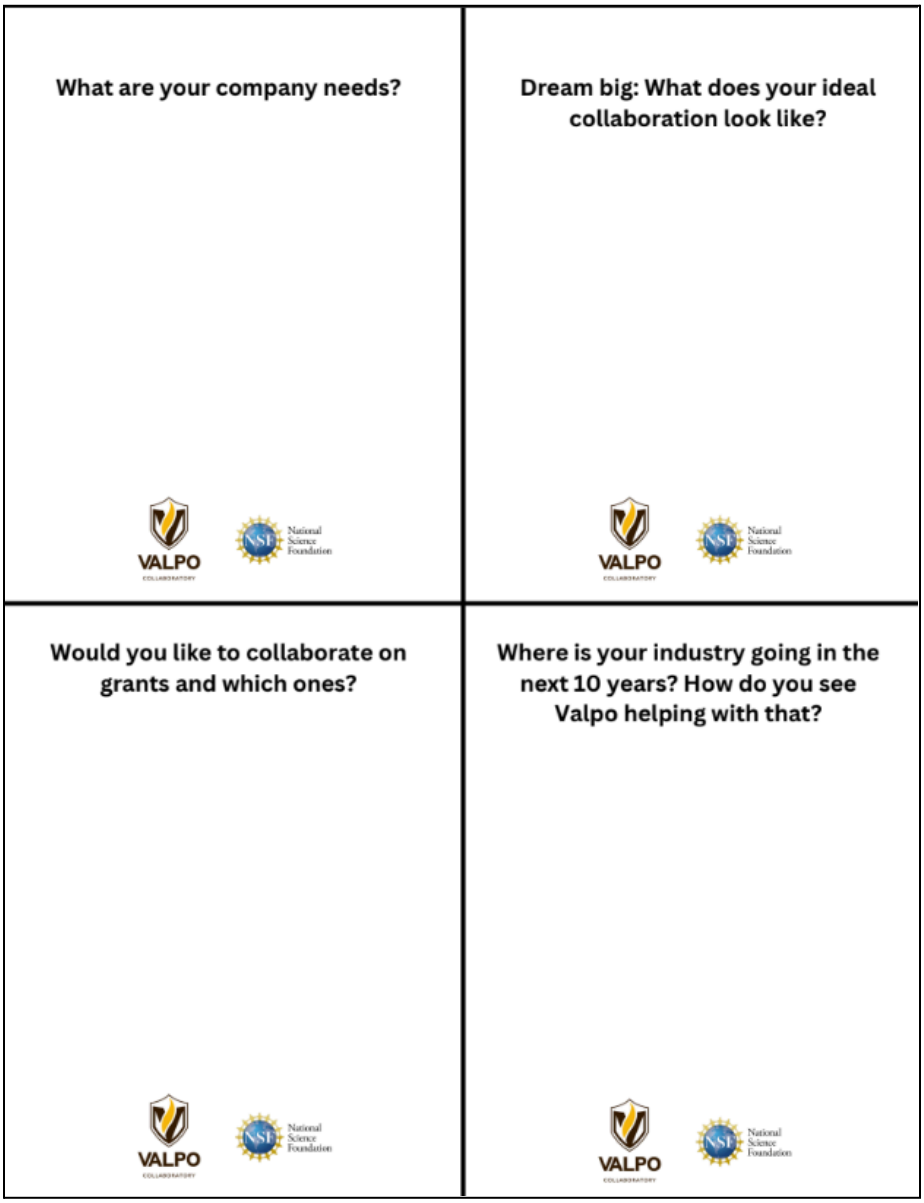
**Collaboratory Launch**
**Run of Show**

| | |
|---|---|
| **3:00p** | The Multipurpose room gets set up with tablecloths, centerpieces, questions, etc., both indoor and outdoor spaces<br>The vendor sets up food and bar |
| **3:30p** | Registration table gets set up with color-coded name tags and a packaged 12 stickers, a drink ticket, and a sign-in sheet<br>AV is set up in the Multipurpose room – Mic, presentation, and loops some soft jazz |
| **4:25p** | Guests start arriving and checking in |
| **5:00p** | -Programming begins with a video<br>-Collaboratory speaker shares overview of Collaboratory effort<br>-Career Services speaker: asks how Career Services can help companies |
| **5:20p** | A faculty member and company partner speak about their partnership and the importance of working together. |
| **5:30p** | Programming wraps up; discussion with the planted questions at the tables to wrap up the time |
| **6:00p** | Guests leave; Clean up |

**All times are given in CST*

## Appendix J

*Template of Table Feedback Cards Used at the Collaboratory Event*



## Appendix K

*Summaries of Ten Workshops and Ideation Session*

### Workshop 1

The first workshop focused on identifying and mapping faculty expertise in STEM and applied research to align with Northwest Indiana's economy and industry needs. This session provided a structured way for faculty to share past experiences working with external organizations and to discuss challenges and opportunities in establishing sustainable partnerships. The discussion explored existing faculty-industry collaborations, potential research applications in industry, and institutional barriers that hindered engagement. The session also laid the groundwork for the development of the Collaboratory model as a structured mechanism to facilitate industry partnerships. A large portion of the workshop was dedicated to assessing faculty experiences with industry and external organizations. Several faculty members shared details of past projects, including workforce modeling collaborations with a local nonprofit organization, Bitcoin data analysis for regional utility departments, and GIS-based environmental and transportation research. These discussions highlighted the interdisciplinary nature of faculty expertise and the potential for cross-sector engagement. However, faculty also expressed concerns about contracting and administrative barriers, lack of a centralized industry engagement process, and uncertainty about IP agreements when working with external partners.

Another major discussion was based on mapping faculty expertise to industry needs. Participants explored how their research could align with regional economic priorities, including manufacturing, healthcare, environmental science, and data analytics. Faculty expertise in predictive modeling, materials science, GIS, and space science emerged as strong areas for

potential industry collaboration. However, many faculty members were unaware of how to connect with industry partners or how their research could be applied in commercial settings. As a solution, the attendees expressed a need for a structured database of faculty expertise, making it easier for external stakeholders to identify potential academic collaborators. Challenges in legal and administrative processes also became a focal point of discussion. Faculty raised concerns about software licensing restrictions preventing students from using industry-standard tools, as well as unclear policies on intellectual property when conducting company-sponsored research. Concerns about workload balance also emerged, with some faculty indicating that external projects could be difficult to sustain without institutional support. The workshop participants proposed the creation of standardized MOUs, NDAs, and IP agreements to streamline industry partnerships and reduce bureaucratic delays. The final portion of the session focused on developing a structured approach for faculty-industry engagement. Participants discussed the need for faculty liaisons who would serve as designated contacts for external partners. The group also proposed tiered engagement pathways, allowing companies to collaborate at different levels, from guest lectures and capstone projects to co-funded research initiatives. Another recommendation was the establishment of student research pipelines, where industry-aligned projects could be integrated into coursework, internships, or summer research fellowships.

**Workshop 2**

The second workshop focused on developing systematic mechanisms for connecting faculty expertise with industry needs and defining organizational structures to support ongoing partnerships. The session explored tools for tracking faculty expertise, managing industry partnerships, streamlining administrative processes, and ensuring long-term sustainability of the Collaboratory. Faculty and administrative leaders discussed the challenges of capturing faculty

research interests, industry engagement barriers, and strategies for aligning external partnerships with institutional priorities. One of the discussions included tracking faculty expertise and research activities to make it easier for external stakeholders to find relevant university expertise. Faculty highlighted challenges such as the lack of a centralized system for cataloging research interests, limited granularity in FARs, and difficulties in aligning faculty skills with industry needs. As a solution, participants proposed integrating ORCiD or a similar platform to allow faculty to list their research interests using searchable keywords. The attendees and facilitators brainstormed the possibility of AI-driven tools that could scan Simple Syllabus documents and course learning objectives to help align faculty expertise with workforce needs. A cloud-based faculty expertise repository was also suggested, which would enable the Office of Advancement and External Relations to quickly access faculty profiles during industry meetings.

The workshop also addressed developing and managing industry partnerships, particularly the informal ways these relationships often begin. Faculty pointed out that many collaborations emerge through student internships, faculty connections, and research networks such as national labs. Companies already value Valpo graduates for their strong communication and interdisciplinary skills, but there was no streamlined process for maintaining long-term partnerships. Participants proposed creating a Faculty Liaison role within the Collaboratory to serve as a bridge between faculty and industry partners. A centralized request process (e.g., a designated email like faculty.liaison@valpo.edu) would allow external partners to quickly connect with relevant faculty. A CRM system would track industry requests and faculty responses to ensure continuity in relationships. Additionally, a repository of past industry collaborations was recommended to help identify new opportunities based on prior engagement.

To strengthen faculty involvement in industry partnerships, the workshop explored incentives for faculty participation. A barrier identified was the lack of formal recognition or incentives for faculty engaging in industry collaborations. Administrative challenges, such as credit allocation for co-taught courses and cross-departmental partnerships, also discouraged faculty involvement. To address this, participants recommended integrating Collaboratory engagement into tenure and promotion guidelines under categories such as Campus Citizenship, Scholarly Work, and Professional Development. Adding specific questions about Collaboratory contributions to FAR submissions could help track faculty involvement. Another suggestion was granting full teaching credit for interdisciplinary courses and exploring adjunct opportunities for industry professionals to co-teach with faculty, further bridging academia and industry. The session also examined the facilities, policies, and systems needed to support faculty-industry partnerships. A CRM system was recommended to track company interactions, ensuring consistent engagement over time. Faculty requested clearer pathways for contract agreements, MOUs, and intellectual property rights to reduce administrative barriers. The workshop outlined a workflow model where both faculty and industry requests would be processed through the Collaboratory, connecting the right people efficiently. Finally, the discussion turned to long-term sustainability and funding. Faculty and administrators expressed concerns about how the Collaboratory would be maintained beyond grant funding. To ensure sustainability, participants proposed allocating a percentage of project contracts to fund Collaboratory operations and faculty liaison positions. Additionally, marketing and outreach efforts would be essential to communicate the impact of the Collaboratory, using metrics such as projects generated, students impacted, and partnerships formed to demonstrate success.

**Workshop 3**

The third workshop focused on developing structured faculty-involved processes for industry partnerships, establishing clear expectations for both faculty and external partners, and identifying barriers to sustaining the Collaboratory beyond initial grant funding. The session explored existing faculty collaborations, strategies for aligning research with industry needs, and long-term funding models to ensure the sustainability of the Collaboratory. A primary discussion centered on faculty experiences with external partnerships and the range of industry collaborations already taking place. Faculty shared examples, including chemistry professors using equipment for fee-for-service models such as NMR testing, public health faculty working on water and air quality testing for pollutants like E. coli and fentanyl, and researchers partnering with faith-based organizations to conduct lead sampling. Additionally, faculty in meteorology described their collaborations with a public school on forecasting projects and explored the possibility of expanding this to agriculture and sports analytics. A startup piloting telehealth solutions for mobility equipment prescriptions also emerged as an example of faculty expertise being applied in real-world settings.

The workshop also explored potential opportunities for expanding faculty and student involvement in industry partnerships. Participants discussed scaling equipment services and fee-based testing for local industries, while also creating structured student involvement pipelines to ensure that industry collaborations lead to measurable research outcomes. These discussions reinforced the importance of data analysis, GIS, environmental monitoring, chemistry applications, and telehealth innovation as key areas where faculty expertise could be

leveraged. The session also included discussions about aligning student coursework and skills, such as CAD design and data analytics, with industry expectations, allowing companies to identify students who are workforce-ready. Faculty and industry expectations for partnerships were also a major focus of the discussion. Faculty participants highlighted the need for defined project timelines (one semester or an academic year), transparency in problem scoping, and the right to publish anonymized data derived from industry collaborations. Faculty also discussed the importance of compensation models for their time and for student engagement in research. The PI team shared conversations they had with industries and administrators. Industry representatives expressed a strong interest in accessing problem-solving pipelines within the university and ensuring that projects were matched to specific industry needs. Administrators emphasized that faculty needed institutional support for bandwidth management, along with clearer processes for structuring and maintaining partnerships.

Another key theme of the workshop was capstone and research project structures, particularly how senior design and honors projects could be tailored to industry needs. Faculty shared examples of phased projects, where research starts with data collection and moves into implementation in later semesters. The group discussed how the Collaboratory could develop a structured framework for aligning faculty expertise, student readiness, and industry needs. A Venn diagram model was proposed to visualize these overlapping areas, ensuring that faculty, students, and industry all benefit from the engagement. The need to market Valpo's unique value like mentorship, smaller class sizes, and liberal arts-integrated STEM training, was also discussed as a key differentiator for attracting industry partners. Long-term sustainability and supporting faculty entrepreneurship was also discussed. Participants again explored ways to integrate Collaboratory work into tenure and promotion policies, streamline student

transportation and summer housing for industry projects, and ensure ongoing faculty compensation through industry-funded internships. Strategies for sustainability included grant-writing provisions for equipment maintenance, faculty mentoring, and continued project funding. The workshop also introduced faculty entrepreneurship pathways, such as pitch competitions for faculty-led startups and industry-connected sabbaticals, where companies "hire" faculty for short-term research projects that provide mutual benefit.

**Ideation Session**

The ideation session brought together faculty and staff from across Valpo to co-develop strategies for scaling external engagement through the Collaboratory. Participants acknowledged that while many faculty already maintain strong industry and community relationships, these efforts are often siloed and ad hoc. The discussion emphasized the importance of shifting from isolated outreach to a coordinated, centralized model- one that respects the relational nature of academic work while providing structure, support, and visibility for faculty-industry partnerships. Faculty shared that their expertise intersects with a wide range of sectors, including manufacturing, healthcare, energy, sustainability, information technology, nonprofits, government, media, arts, and education. They noted the value of highlighting both domain-specific and cross-cutting skills (e.g., technical communication, human-centered design, workforce development) when engaging with external audiences. Participants collaboratively mapped this expertise, revealing natural opportunities for interdisciplinary collaboration and applied learning.

A barrier to scaling these partnerships is the fragmented nature of institutional knowledge. Faculty expertise is currently captured in multiple systems like FARs, CVs, department websites, and the OSSR, but these are inconsistently maintained and difficult to

access when needed. Attendees recommended creating a centralized, dynamic database supported by External Relations, which would allow real-time access to faculty interests and availability, improving both internal coordination and external responsiveness. The session also affirmed the vital role of faculty liaisons as translators, connectors, and facilitators between academic departments and external partners. Faculty emphasized that liaisons must be trusted peers with a clear mandate, appropriate compensation, and professional development opportunities. Many supported having one liaison per college or sector area, with staggered terms to ensure continuity. Liaisons would attend research events (e.g., SOURCE, FIReS, SIReS), visit departments regularly, help interpret industry needs, and ensure mutual alignment between faculty interests and sector opportunities.

Participants expressed concern about overburdening faculty with outreach expectations and stressed the need for clear roles and administrative infrastructure. Suggestions included hosting mixers and receptions with chambers of commerce, involving alumni, and leveraging the Innovation Hub and career center to connect with new partners. Faculty noted that centralized marketing, student support, and policy alignment would also be essential to sustaining this work. Finally, the conversation explored the emerging structure of Sector Alliances, envisioned as advisory groups that connect industry and community partners with faculty and students. Participants suggested that Sector Alliances should bring insights on workforce needs, sponsor applied research, co-design student projects, and help identify funding opportunities. They also highlighted the importance of building long-term, mission-aligned relationships that enhance curriculum relevance and strengthen regional economic development. Success, as defined by the group, includes expanded funded research, enhanced student learning, increased community impact, and a more resilient and visible system for external engagement. The session

underscored that with coordination, intentionality, and relational trust, the Collaboratory can serve as a powerful model for advancing Valpo's institutional goals and regional partnerships.

**Workshop 4**

The fourth workshop centered on plans for industry recruitment efforts, refining the Collaboratory website for industry engagement, and solidifying the structure of a future concept called Sector Alliances. This session ensured that the Collaboratory's outreach strategy, messaging, and governance framework were aligned with industry expectations and institutional goals. Discussions focused on preparing for the November 1 launch event, reviewing the Collaboratory's website from an industry perspective, and structuring Sector Alliances for long-term engagement. A large part of the workshop was dedicated to planning the November 1 recruitment event to attract industry representatives, faculty, and key stakeholders. Participants identified the core audience and discussed strategies for ensuring faculty availability at the event. The recruitment strategy emphasized targeting industry partners whose interests aligned with faculty expertise and prioritizing outreach to specific companies and organizations. The event agenda was designed to highlight the Collaboratory's purpose, showcase successful ad hoc faculty-industry partnerships, and provide student engagement opportunities. The primary goals of the event included: demonstrating the value of the Collaboratory, fostering new partnerships, and gathering industry feedback to refine future engagement efforts.

The Office of Advancement created a website for the Collaboratory, and attendees reviewed the site, with participants evaluating its effectiveness from an industry perspective. Key feedback included the need for the website to clearly articulate what the Collaboratory is, how industry partners can engage, and the benefits of collaboration. Areas for improvement included enhancing clarity on partnership opportunities, providing real-world examples of faculty-industry

collaborations, and streamlining the process for companies to express interest or propose project ideas. Additionally, success stories, faculty expertise profiles, and a structured engagement pathway (e.g., sponsorship opportunities, capstone projects, internships) were identified as missing elements that needed to be integrated into the site.

The workshop also focused on refining the future structure of the Sector Alliances. Participants proposed a governance model that included industry representatives, Collaboratory Faculty Liaisons, External Relations, and OSSR staff, with Deans and representatives from the Provost's Office serving in informational roles. The proposed meeting cadence included regular internal Collaboratory Advisory Council meetings to align efforts and biannual Sector Alliance meetings to focus on industry needs, project brainstorming, and partnership development. The functions of the Sector Alliances would include assessing industry pain points, presenting faculty expertise, and showcasing student-driven projects. A key discussion point was the framework for engagement, which defined project goals, outcomes, and necessary resources. Participants explored ways for companies to sponsor projects, fund internships, or contribute to equipment needs since industry partners expressed interest in early access to Valpo's student talent pool, collaborations on capstone projects, and industry-specific research solutions. The workshop concluded with a finalized Sector Alliance structure, defined roles for internal and external stakeholders, and strategies to prevent silos and duplication of efforts.

**Workshop 5**

Workshop 5 focused on outreach strategies and final preparations for the November 1 launch recruitment event, refining the Collaboratory's website for industry engagement, and clarifying the structure and purpose of the Sector Alliances. A major portion of the workshop centered around finalizing the attendee list and program structure for the recruitment event.

Participants identified key industry representatives, nonprofits, and alumni with industry connections as priority attendees, particularly from biosciences, healthcare, environmental organizations, cities, and manufacturing. Faculty shared companies that they had direct contact with and shared their willingness to reach out with a personal invitation. The event program was structured to maximize engagement, beginning with 30 minutes of networking (with color-coded nametags by industry sector), followed by a 15-minute presentation by the Office of Advancement introducing the Collaboratory's value. Faculty members were encouraged to prepare targeted questions for industry attendees to facilitate meaningful discussions. Additionally, a looping PowerPoint display featuring faculty profiles, along with QR codes for feedback, collaboration sign-ups, and surveys, was proposed. Potential enhancements to the event included facility tours of the Center for the Sciences and speaking slots for emerging partners to highlight collaboration benefits. The key objectives of the event were to build connections, demonstrate opportunities, and recruit project sponsors.

Faculty also continued their discussion on the role and structure of the Sector Alliances. Participants clarified that while the Collaboratory can engage with nonprofits, the Sector Alliances should focus on industry-specific benefits, including research collaborations, workforce pipelines, and economic impact. Alliance members would be expected to bring industry challenges and research needs to faculty, serve as collaborators for grant-writing efforts, and influence curriculum to align with workforce demands. To ensure a strong foundation for the Sector Alliances, participants discussed recruitment strategies that prioritize individuals in decision-making or technical roles who can directly influence partnerships. A balance between local and regional industry partners was recommended to foster both immediate engagement and long-term impact. The final portion of the workshop focused on reviewing and refining the

Collaboratory's website to better appeal to industry partners. Participants emphasized that the site must clearly communicate the Collaboratory's purpose and its benefits to industry, such as access to top students, workforce development opportunities, and faculty expertise. Suggested improvements included:

- Adding success stories and real-world project examples to demonstrate impact.
- Creating a streamlined way for companies to express interest or propose project ideas (e.g., QR codes, contact forms).
- Highlighting the workforce development benefits for industry partners.

To align the website and faculty engagement with industry needs, participants were assigned tasks to update their expertise profiles in the faculty expertise inventory spreadsheet, ensuring that industry partners could easily find faculty with relevant skills.

**Workshop 6**

Attendees in workshop 6 worked on finalizing the Collaboratory Faculty Inventory, clarifying the role of the OSSR in industry collaborations, and developing workforce development and alumni engagement strategies. The session helped ensure that faculty expertise was accurately represented for industry engagement, align university research efforts with external funding opportunities, and strengthen workforce development partnerships. A portion of the workshop was dedicated to refining faculty profiles in preparation for the November 1 industry recruitment event. Faculty members were tasked with updating their expertise descriptions, ensuring abstracts were in layperson-friendly language, and adding high-quality photos to enhance visibility for industry partners. Participants also reviewed the faculty expertise spreadsheet and provided feedback on potential improvements, such as adding additional fields

to make profiles more searchable and ensuring integration with tools like Scholarly, Pivot, or Instrumentl.

The workshop also defined OSSR's role in industry collaborations as a bridge between faculty, industry, and external research funding opportunities. Some ideas about OSSR responsibilities that were discussed included:

- Tracking and tagging grants that involve industry collaborations for long-term partnership development.
- Monitoring NSF and other funding opportunities that align with faculty-industry research.
- Identifying funding streams for undergraduate STEM research, workforce development initiatives, and multi-partner collaborative grants.
- Creating a centralized, searchable database for past grant submissions, both successful and non-awarded, to help streamline future applications, especially for external partnerships.

To support these goals, the group proposed leveraging student interns to assist with grant administration, which aligns with NSF's goals of building a pipeline of research professionals while also easing administrative burdens on faculty. Another discussion topic was workforce development strategies, and how the Collaboratory could support local and regional industries through short-term training programs, co-op models, and long-term upskilling initiatives. Faculty and administrators explored multiple approaches to industry collaboration, including:

- Developing co-op models where students engage in industry research projects while simultaneously upskilling employees in partnering companies.

- Creating short-term training courses (a few weeks in length) that equip students with technical, behavioral, and research skills, co-developed with industry professionals.
- Partnering with large employers to support long-term workforce retraining programs.
- Hiring adjunct/industry specialists who could co-teach courses with Valpo faculty, providing students with direct exposure to real-world industry practices.

A major challenge identified was the mismatch between faculty research timelines and industry needs. Faculty members operate on academic calendars, while companies often work on tighter, more flexible cycles. To address this, participants proposed:

- Developing fee-for-service agreements that allow for quicker industry-sponsored projects.
- Leveraging OSSR to track relevant funding opportunities and ensure transparency in grant applications.
- Facilitating initial conversations between faculty and industry through targeted outreach efforts, including Zoom follow-ups with interested companies.

The final portion of the workshop focused on alumni engagement as a key driver of industry recruitment. Alumni with strong ties to Valpo faculty were discussed as potential connectors for industry partnerships. Participants proposed outreach strategies such as personalized email invitations, Google Forms for interest collection, and follow-up Zoom meetings to cultivate relationships. The Advisory Council or future Sector Alliances could also host industry seminars led by alumni, where Valpo graduates in industry positions share research trends and workforce needs, helping faculty align their expertise with real-world applications. The Collaboratory was also positioned as a facilitator of interdisciplinary collaborations and large grant applications. Faculty discussed opportunities to support internal and external grant

applications by connecting researchers across disciplines and using the new College of Nursing and Health Professions building as a hub for bioscience and biomedical partnerships. They also discussed how community college system could collaborate to expand workforce development pipelines, ensuring that students at multiple educational levels could benefit from training programs.

**Workshop 7**

Workshop 7 evaluated the Collaboratory launch event, finalized standard operating procedures (SOPs) for faculty and industry engagement, structured Sector Alliance meetings, and identifying long-term strategies to sustain faculty-industry partnerships. Participants discussed best practices for following up with industry partners, governance models for collaboration, and faculty workload considerations when engaging in external partnerships. The first part of the workshop assessed feedback from the Collaboratory launch event. Overall, the event was seen as high-energy and well-attended, with faculty-industry discussions leading to concrete partnership ideas. However, participants noted areas for improvement, including clearer differentiation between internal (Valpo) and external attendees, and the need for strong follow-up mechanisms to maintain momentum and prevent industry leads from being lost. To address this, faculty were encouraged to document all conversations and insights from the event, and a post-event survey was distributed to both faculty and industry attendees to gather additional feedback.

Another discussion focused on establishing SOPs for external engagement, ensuring a structured, efficient approach to faculty-industry partnerships. Participants proposed a checklist for companies that includes MOUs, NDAs, IP agreements, IRB processes, and liability statements, allowing industry partners to understand the procedural steps required to collaborate

with the university. Faculty workload limitations were also considered, with a proposal to limit external engagements to 8 hours per week during the academic year, with more flexibility during the summer. The session also explored alternative faculty support models, such as hiring specialized 3-5 year instructors across departments or creating postdoctoral teaching fellowships modeled after the Lilly Fellows program. Participants also agreed that the Sector Alliances should focus on sector-specific partnerships, starting with biosciences as the pilot sector. Alliance members would be responsible for bringing industry research needs to faculty, while the Collaboratory would serve as a facilitator, ensuring ongoing engagement despite faculty turnover. The group finalized a Sector Alliance meeting and Collaboratory events schedule that aligned with academic milestones, ensuring that collaborations were structured around faculty and student project cycles:

- January: Call-out for summer research internships
- March: Call-out for senior design projects
- April: Collaboratory Meeting during SOURCE (Student Research Symposium)
- July: Collaboratory Meeting during SIRES (Summer Industry Research Experiences)
- September: Call-out for summer research projects
- October: Collaboratory Meeting during FIRES (Fall Industry Research Experiences Symposium)

To ensure deeper engagement, Sector Alliance meetings would incorporate roundtable discussions with 3-12 industry representatives, allowing for more focused conversations on workforce development and applied research. The workshop also addressed community engagement and student involvement in industry-aligned projects. Participants talked about opportunities for students and faculty to engage in community education and advocacy work,

such as assisting companies with ISO 14000 environmental certifications, housing insulation regulations, and sustainability initiatives. Faculty also emphasized the need for short-term skills-based courses to prepare students for research and workforce development programs, ensuring that students could contribute meaningfully to industry partnerships.

Finally, the group discussed formalizing documentation and tracking systems for partnerships to prevent industry collaborations from dissolving when individual faculty members leave. Maintaining clear SOPs would help faculty and external partners understand their roles, responsibilities, and risks. The workshop also identified grant and funding opportunities, including NSF initiatives, that could support both nonprofit and industry research collaborations.

**Workshop 8**

Workshop 8 focused on legal and liability processes, clarifying the structure and function of the Sector Alliances, and integrating Career Services into the Collaboratory for workforce development and alumni engagement. Participants worked through contractual policies, student and faculty work limitations, IP considerations, and strategies for industry collaboration to ensure sustainable and structured partnerships. Most of the workshop was dedicated to legal and liability considerations for students, faculty, and industry partners engaging in research collaborations. Participants clarified liability policies for different types of engagement:

- Students working in labs are covered by university insurance, and if paid by the company, they are also covered by the company's insurance.
- Industry employees using Valpo labs must list Valpo as "additional insured" on their liability policy to minimize institutional risk.
- Equipment use agreements were categorized into donated and loaned equipment:

    - Donated equipment remains with the university, but the company is responsible for maintenance during active projects.
    - Loaned equipment must be removed within 30 days after the project ends, with removal expenses covered by the company.

The group also discussed contracts and agreements, with a focus on standardizing MOUs, NDAs, and IP policies. Participants reviewed force majeure clauses to address uncontrollable delays and introduced a student retention clause to prevent companies from poaching students before graduation. One proposed policy suggested a compensation fee if a student quits school due to immediate industry employment after engaging in an industry-sponsored project. Another discussion centered on IP ownership. The default policy at Valpo is that faculty retain IP unless compensated by the university, in which case the university owns the IP. If research is fully funded by a company, the company retains ownership, but contracts must explicitly state how students and faculty will be credited or included in patent filings. Faculty emphasized the importance of publication rights for tenure and promotion, agreeing that companies should have a temporary restriction on publication until patents are secured.

The workshop also established work limitations for students and faculty involved in research partnerships:

- Students: Limited to 10-15 hours per week during the academic year, with exceptions for international students based on visa restrictions.
- Faculty: Summer work policies and external workload alignments will be defined to ensure faculty bandwidth is protected.

The second half of the workshop focused on clarifying the structure and operations of the Sector Alliances. These alliances were designed as sector-focused, industry-supported membership

groups that allow companies closer access to faculty and collaboration opportunities. In contrast, the Collaboratory remains open and flexible, focusing on broad, project-based partnerships without membership fees. The finalized Sector Alliance structure included:

- Core Members:
    - 6-12 industry representatives
    - 5-6 faculty members
    - 2-3 rotating students
    - Support staff (OSSR, Career Services, and administrative coordinators)
- Meeting Structure: Quarterly, 90-minute meetings featuring:
    - 15 minutes of networking with refreshments
    - 15-minute open session with faculty or industry presentations
    - 60-minute roundtable discussions by sector focus
- Meeting Topics: Industry trends, faculty expertise (e.g., large language models), and student project consultations.
- Academic Alignment: Meetings scheduled around key research and workforce development milestones:
    - January – Summer research internships
    - March – Senior design project call-outs
    - April, July, October – Collaboratory meetings (SOURCE, SIRES, FIRES)
- Faculty Incentives: Stipends to encourage consistent participation, meeting preparation, and presentations.

The final discussion centered on integrating Career Services and alumni engagement into workforce development initiatives. The Collaboratory will help students identify and access

industry-based research opportunities through targeted surveys and structured internship pipelines. Career Services will also support small companies in developing internship programs and explore the value of microcredentials for both students and industries. To strengthen alumni connections, Career Services and the Collaboratory will:

- Develop pipelines for student research projects with industry alumni.
- Create industry-driven research opportunities through alumni networks.
- Support alumni career transitions and upskilling through industry partnerships.
- Utilize Career Hub (12Twenty) as a tool to connect students, alumni, and industry partners.

The workshop concluded with a conversation about adding to the Collaboratory value proposition by also emphasizing:

- Workforce solutions: Providing industry partners with skilled students and research-active faculty.
- Industry relationships: Establishing long-term partnerships through structured processes.
- Alumni integration: Strengthening connections between alumni, industries, and Career Services to drive research collaborations.

**Workshop 9:**

Attendees at workshop 9 discussed faculty incentives for Collaboratory and Sector Alliance participation, integrating Collaboratory work into T&P policies, clarifying the role of the OSSR in supporting grants, and ensuring agility in responding to industry needs. This session ensured that faculty engagement in industry partnerships is valued, compensated, and aligned with institutional priorities while maintaining academic integrity and research expectations. Faculty incentives and participation in the Collaboratory and Sector Alliances were also

discussed. Participants outlined three primary mechanisms for recognizing and compensating faculty engagement:

1. Tenure & Promotion Integration: Collaboratory involvement can be formally recognized in the FAR under:
    - Teaching: Enhancing real-world experience, industry engagement, and student research opportunities.
    - Research: If the collaboration results in public outcomes or publications (including industry-funded reports).
    - Professional Development: If participation is similar to conference presentations or training opportunities.
2. Pre-tenure faculty were encouraged to negotiate publication rights in MOUs with industry partners to ensure research output aligns with T&P expectations. Faculty were also advised to balance Collaboratory work with publicly available research outcomes to support their career progression.
3. Course Release & Compensation: Course releases for Collaboratory involvement can be funded through Collaboratory grants, NSF support, or industry sponsorships. However, faculty cannot receive both a course release and direct consulting compensation for the same project. Summer work remains eligible for separate compensation to allow for industry collaboration without impacting academic-year teaching loads.
4. Faculty Stipends: Stipends emerged as the preferred mechanism for compensating faculty participation in the Collaboratory and Industry Council. Faculty participating in these initiatives would be expected to:
    - Attend seven meetings per year.

    - Give at least one presentation during the year.
    - Bring a student to a meeting to encourage student involvement in industry partnerships.

The workshop also explored the role of Faculty Liaisons, who would be responsible for:

- Recruiting faculty for Collaboratory projects and Industry Council participation.
- Facilitating cross-campus relationships to expand engagement beyond STEM fields, integrating the humanities, arts, and business disciplines into industry-aligned research.
- Identifying emerging industry trends and opportunities for faculty engagement.
- Working closely with deans to ensure that faculty participation is aligned with department goals and workload capacities.

The second half of the workshop focused on Sector Alliance and Collaboratory alignment. While the Sector Alliance is sector-specific (starting with biosciences as a pilot), the Collaboratory is a broader research and engagement platform for faculty across disciplines.

- Sector Alliance Funding: Membership fees will support:
    - Faculty stipends.
    - Development of new industry-academic collaborations.
- Meeting Structure (7 meetings per year):
    - 15 minutes of networking.
    - 15-minute presentation from faculty or industry partners.
    - 60-minute roundtable discussions by sector focus.

The Collaboratory is open to all disciplines, supporting cross-sector and interdisciplinary projects that align with university research goals, student engagement, and workforce needs. OSSR's role in supporting grants and research efforts was also clarified. OSSR will:

- Identify, write, and oversee grants for the Collaboratory.
- Assist faculty with pre-award and post-award grant management.
- Support student participation in research, including presenting at conferences.
- Develop an annual reporting process to distinguish between industry partnerships and grant-driven research.

To streamline faculty engagement, participants agreed on the need for simplified SOPs covering:

- MOU templates with clear IP rights, publication permissions, and liability considerations.
- Guidelines for faculty involvement, including expectations for Collaboratory projects and Sector Alliance membership.
- Clear pathways for industry requests, ensuring faculty can respond efficiently to industry needs while maintaining academic commitments.

The session also explored agility in responding to emerging industry needs. Faculty liaisons will actively:

- Track industry trends (e.g., EV battery manufacturing, AI applications).
- Work with Deans to propose new programs, microcredentials, or certificates to align with regional workforce demands.
- Explore CPE credits and other programs to upskill local employees while maintaining Valpo's academic quality standards.

The final discussion focused on defining faculty expectations and restrictions for Collaboratory work. A draft overview was created to ensure that:

- Incentives (stipends, T&P recognition, course release) are clearly defined.
- Restrictions prevent Collaboratory work from replacing core faculty service or teaching obligations.

**Workshop 10**

Workshop 10 focused on finalizing the internal structure and processes of the Collaboratory, refining faculty engagement models, and planning future steps for ongoing faculty-industry partnerships. The session served as a culmination of the previous workshops, ensuring that all elements of the Collaboratory, including governance, incentives, and outreach strategies, were ready for implementation. Faculty internal processes and how the Collaboratory can seamlessly integrate into existing faculty workloads was an important topic. The group reviewed policies regarding stipends, workload balance, and faculty compensation to ensure that participation in the Collaboratory and Sector Alliances is both incentivized and sustainable. Several faculty engagement mechanisms were proposed, including:

- Collaboratory Stipends: Faculty who go beyond the expected commitment in establishing industry relationships, leading major projects, or taking on substantial advisory roles would be eligible for stipends from a total available fund.
- Sector Alliance Stipends: Faculty serving as key liaisons within Sector Alliances would be compensated based on participation expectations, such as attending seven Sector Alliance events annually and giving at least one presentation.
- Standard Operating Procedures: Finalizing a clear workflow for faculty liaisons, including expectations for engaging industry partners, managing research collaborations, and streamlining communication with administration.

The workshop also developed structured faculty engagement pipelines. Participants agreed that informal faculty engagement should be supported through regular communications, department meetings, and digital platforms. The Collaboratory will maintain dedicated faculty

email addresses (collaboratory@valpo.edu and collaboratory.faculty@valpo.edu) to facilitate engagement and ensure that faculty can easily connect with industry partners. Another related topic was the ongoing refinement of the Collaboratory website. The group outlined specific structural changes and content updates needed to make the site more accessible to faculty and industry partners. These included:

- Separate navigation tabs for faculty and industry to provide information to each audience.
- "Get Involved" drop-down menu with next steps for both faculty and industry partners.
- Examples of past and current industry collaborations, including faculty testimonials on the benefits of partnerships.
- Industry-focused pages showcasing case studies of how companies have benefited from working with faculty and students.
- Faculty Liaison Contact Section, featuring an industry-facing representative (e.g., External Relations director's email and photo for personalized engagement).
- A streamlined inquiry form for companies interested in partnerships.

The discussion also covered the governance structure of the Collaboratory, to integrate advisory roles into existing university committees. The proposal included:

- A Faculty Advisory Committee for the Collaboratory with faculty members who provide insight into research priorities, talent strategies, and industry collaboration opportunities.
- A connection between the Faculty Advisory Committee and existing faculty governance bodies, such as the Committee for Creative Work and Research, to ensure smooth communication between university leadership and faculty stakeholders.

The group also analyzed faculty mentorship and support for tenure-track faculty engaged in industry collaborations. Participants cautioned against overly incentivizing tenure-track

faculty to engage in industry partnerships if the projects do not lead to publicly recognized research outcomes that support tenure. A balance was recommended where tenure-track faculty can engage in industry work, but that projects should align with their research agendas.

The final discussion focused on faculty outreach, communication, and promotion of the Collaboratory. They looked at strategies to leverage department meetings and university-wide faculty workshops to increase awareness and utilizing posters and announcements at key campus locations to encourage informal engagement. Collaboration between Career Services and Graduate Programs would also allow for more alignment between industry partnerships with student workforce development initiatives.

To ensure continued momentum, the workshop attendees committed to conducting informal faculty surveys and engaging in regular communication with department leadership. Future plans also include:

- A Spring Faculty Workshop to discuss the Collaboratory's role in industry partnerships and how faculty can get involved.
- Developing virtual shared documents that faculty can contribute to for the continuous improvement of the Collaboratory's structure.
- Building stronger connections with nonprofits and community partners as part of the Collaboratory's expansion strategy.