

Progress and Initial Results of an On-Going NSF EPHC Grant for Building Institutional Capacity for External Partnerships (BICEP)

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Abstract:

In September 2024 Lawrence Technological University (LTU), in collaboration with three other universities, Santa Clara University, Grand Valley State University, and Minnesota State University, Mankato, were independently, and collectively awarded a three-year NSF Enabling Partnerships to Increase Innovation Capacity (EPIIC) grant in the form of a consortium program titled “Building Institutional Capacity for External Partnerships (BICEP)”. Per the NSF, the objective of EPIIC grants are to support the growth of innovation capacity-building efforts at institutions of higher education with limited research capacity to prepare those institutions to participate in more and larger NSF opportunities in the future. This includes increasing industry engagement of these universities in their respective regional innovation ecosystems. The BICEP project is a specific collaboration of these four universities to address common challenges faced by Primarily Undergraduate Institutions (PUIs) and Emerging Research Institutions (ERIs) in building capacity for external partnerships. BICEP focuses on the core objectives of Operational Maturity: Establishing institutional policies and structures to enable efficient and professional partnering; Professional Development: Enhancing the knowledge and skills of faculty and staff to effectively participate in technology partnerships; and Partner Engagement: Supporting the strategic management and evolution of partnerships over time. The ultimate goals of the NSF EPIIC program and the BICEP project are to enhance the overall educational and research environment of these four universities. LTU's and BICEP's results of the initial efforts of this still on-going, three-year program are presented, along with preliminary faculty assessment data and organizational mapping defining existing organizational capabilities and gaps that need to be addressed to meet the needs of the Operational Maturity goal. Also presented are the first year of faculty Professional Development activities that provided faculty the skills, tools and knowledge for engagement with possible external research funding groups in industry. The initial approaches and methods to foster external Partner Engagement and increase university participation in regional innovation ecosystems are reviewed. And lastly, a summary of overall first-year accomplishments are discussed and second-year initiatives are also presented.

1. Introduction:

Lawrence Technological University (LTU), with three other universities, Santa Clara University, Grand Valley State University, and Minnesota State University, Mankato, were individually and collectively awarded an Enabling Partnerships to Increase Innovation Capacity (EPIIC) grant. The EPIIC program is funded by the National Science Foundation (NSF). Per the NSF EPIIC website “The purpose of this solicitation is to broaden participation in innovation ecosystems that advance key technologies... by supporting capacity-building efforts at institutions of higher education (IHEs) interested in growing external partnerships.” [1] The intent of the EPIIC program, again per the NSF “...is to accelerate scientific and technological innovation nationwide and empower all Americans to participate in the U.S. research and innovation

enterprise.” A key component of the program is to develop networks of partnering universities who may lack infrastructure or the resources essential to develop external partnerships, with US industry, and in the future to “effectively engage with the NSF Engines program”. The intent is to have partnering universities work together supporting research and developing that research to practice or commercial application. Another goal is to develop a skilled workforce within the United States [1]. The EPIIC program was first launched by the NSF in 2022, and aligns well with the objectives of the ASEE College-Industry Partnership Division (CIPD).

The “Building Institutional Capacity for External Partnerships” Cohort, or BICEP, was organized through a series of fast-paced, NSF facilitated webinars, virtual “Speed-Dating” sessions, and an NSF-funded in-person working session for Universities to find alignment with their stated grant objectives. Through this process Lawrence Technological University found alignment with Santa Clara University, Grand Valley State University, and Minnesota State University, Mankato. This cohort partnership of these four universities has a common intent of mutually building each university’s capacity and understanding of how to grow external partnerships that further develop capabilities and key technologies within their innovation environments. These four universities are Primarily Undergraduate Institutions (PUI), or Emerging Research Institution (ERI). (Lawrence Technological University (LTU) was designated as a research institution under the new Carnegie Classification "R" category on February 14, 2025, due to its growth in research activity and funding.)

A brief comparison of the four institutions is given here:

Lawrence Technological University	Grand Valley State University
- Location: mid-west USA	- Location: mid-west USA
- Private institution	- Public institution
- Approx. 2,600 undergraduate students	- Approx. 18,000 undergraduate students
- Approx. 1,200 graduate students	- Approx. 2,800 graduate students
- Five engineering departments	- Three engineering departments
Santa Clara University	Minnesota State University, Mankato,
- Location: west coast USA	- Location: mid-west USA
- Private institution	- Public institution
- Approx. 5,500 undergraduate students	- Approx. 13,400 undergraduate students
- Approx. 3,150 graduate students	- Approx. 1,900 graduate students
- Eleven engineering departments	- Four engineering departments

The BICEP project was officially funded by the National Science Foundation (NSF) in August 2024, with the award period starting September 1, 2024, and running through August 31, 2027.

An important part of EPIIC and this four-university BICEP program is to disseminate this knowledge through publications, workshops and a toolkit with resources that may be used by other PUI/ERI universities. This ASEE conference paper is for partial fulfillment of these goals.

2. Background:

Universities with a historical focus on teaching, and without a primary focus of research, often lack the resources and infrastructure to significantly engage, to carry out, and sustain research efforts with corporate partners over a long-term. The current environment of teaching universities is dramatically changing. The need to expand their relationships to external partners is essential. The benefits of, and the strategies for, the need of universities to develop partnerships have long been explored and are well documented [2] – [8]. The knowledge and plans for how PUIs/ERIs can best grow those needed external technical partnerships, however, is limited.

Therefore, the BICEP effort intentionally focused on how to best grow external technical partnerships. The BICEP collaborative team set out to identify strategies, practices, and lessons learned relevant to how PUI/ERI institutions can, develop and build their abilities to support and augment their innovation ecosystems. BICEP team identified three specific objectives on which to collaboratively focus through the project. These are:

1. **Operational Maturity:** establishing and refining internal institutional processes and structures to enable efficient and professional support for external innovation partnerships.
2. **Professional Development:** enhancing the knowledge of faculty and staff so that they are equipped to participate in, contribute to, and develop/mature technology partnerships with regional companies, agencies and institutions.
3. **Partner Engagement:** developing a thoughtful and proactive approach to managing partner relationships and strategically evolving partnerships over time.

The group drafted sections of the proposal common to all four university partners, then each university added their unique details. The Cohort Universities had a common NSF Authorization Number that linked the proposals together, however, each University submitted their own proposals that included the common sections and University-specific sections, along with their specific Budgets. Santa Clara University was selected as the lead-applicant for the Cohort with fiduciary responsibilities for the grant evaluator team.

3. Initial Organizational Efforts:

After the grant award four key activities were initiated between the four BICEP recipient universities. These included:

Consortium Governance

Santa Clara University (SCU) initiated the primary organizational efforts required to align the four participating institutions. The team agreed on four foundational tasks: the establishment of biweekly cohort meetings for the four institutions, a comprehensive review of the project tasks and timeline, the collective determination of priority items for the first 90-day "kick-off" period, and the early integration of the project evaluation team. Administrative coordination remains centralized through SCU.

Resource Allocation and Collaborative Framework

This project received a total of \$1.6 million funding, and was distributed evenly among the four cohort institutions. Each university has independent control over its own budget and expenses while remaining responsible for the implementation of gap analyses and training on its respective campus. At LTU, overall funding is administered by the LTU PI, and validated by the LTU Office of Sponsored Research and paid by LTU Business Office. All PIs and Co-PIs meet biweekly to discuss strategic milestones. Deliverables are handled by each university as well as thematic subgroups. These subgroups address common institutional challenges, such as the creation of an industry-facing landing webpage, the refinement of proposal processes, the implementation of a system for partnership tracking, and the development of standardized procedures. Each university works independently on campus-specific policy improvements.

Assessment Tools and Gap Analysis Rationale

To ensure initiatives were data-driven, the four universities identified the need for faculty assessment tools to conduct comprehensive institutional gap analysis. These tools established a baseline understanding of the current "operational maturity" at each institution, how faculty and staff perceive the value of industry partnerships, and their familiarity with existing policies. The standardized survey sought to identify barriers to collaboration, such as a lack of awareness of Intellectual Property (IP) protocols, Non-Disclosure Agreements (NDAs), or the appropriate internal contacts for initiating a partnership. Understanding these is essential for refining each university's internal procedures and also ensuring that staff are equipped to support faculty-industry collaborations.

LTU Institutional Organization and Participant Roles

At Lawrence Technological University, a project team comprised of participating college Deans and administrators was organized to oversee faculty engagement to support research growth and institutional capacity. Some attend biweekly cohort meetings on a regular basis, and some contribute to different thematic subgroups. LTU recruited a Faculty Ambassador who is a veteran faculty member with significant industrial and leadership experience to serve as a bridge between the research faculty, and the Office of Research and Economic Development. The ambassador supports the project in multiple aspects, such as presenting workshops, coaching faculty on the nuances of industrial partnerships, and providing consultation to researchers who may be unfamiliar with corporate needs.

4. Preliminary Faculty Assessment Data:

A faculty assessment tool was created to capture a comprehensive snapshot of the institutional landscape regarding external partnerships. The content of the survey was collaboratively developed by the four-institutions to ensure consistency in data collection across the different campuses. The administration of the assessment tool coincided with the project's initial 90-day "kick-off" phase. The survey was launched in December 2024 and remained open through January 2025 to ensure maximum participation across the university. The instrument included qualitative questions designed to identify the challenges faculty encounter when establishing or maintaining industry collaborations, as well as the types of resources or support systems they believe would be most beneficial to their work. Some example questions included were:

- “What challenges have you encountered when establishing or maintaining industry collaborations?”
- “What types of support or resources would be beneficial to facilitate industry collaboration within the university setting?”

The survey also utilized Likert-scale agreement statements to measure faculty awareness of institutional procedures, such as whether a faculty member knows the specific campus office or contact person required to initiate a project, and their familiarity with the administrative documentation, including Intellectual Property (IP) policies and Non-Disclosure Agreements (NDAs), all of which are required before a project can officially start. Example questions include level of agreement on statements such as:

- “I know who to contact on campus to begin the conversation about establishing an industry collaboration.”

By gathering faculty perspectives, the project team hoped to learn how faculty value these partnerships, and where communication or procedural breakdowns occur. A secondary goal was to assess the "support ecosystem" by surveying university staff and administrators. This dual-track approach was designed to show if obstacles to industry engagement stem from faculty reluctance, or a lack of clear internal policy, or administrative bottlenecks, thereby providing a clear roadmap for institutional improvement.

Participation was voluntary and anonymous, which encouraged transparent feedback from the campus community. Responses were received from over 174 participants (at LTU only, and the focus of this paper), including 96 faculty members and 78 staff and administrators. This high response provided a statistically significant foundation for the preliminary results, and the subsequent development of targeted workshops and training materials. A summary of survey results for LTU are discussed and graphically documented below.

Interpretation of Survey Results:

The faculty and staff survey highlighted several valuable insights. The first being that faculty were **very** interested in engagement with industry. The majority of faculty and staff thought it was important to do so. Both faculty and staff believed that LTU has something meaningful and valuable to offer industry partners, such as product support and solutions for their businesses. Faculty did, however, have concerns. They were concerned that their research focus might not align with industry's business focus or needs. They were also concerned that LTU's research efforts might not reach the visibility of industry partners. How could they let industry know they were available for collaborative work? Faculty also had concerns about industry's budget allocations, business timeline needs matching with academic calendars, and faculty's academic demands vs. industry needs fulfillment. Another discovery was that many faculty at LTU were not aware of the current research other faculty members were undertaking at LTU. They often did not know who were possible collaborators within LTU.

Lastly, many faculty at LTU have never held positions in industry. Faculty expressed a lack of understanding how their research focus could benefit industry, even when they knew both faculty and industry interests directly overlapped. The language of the academic may not align with the

language of business and industry, and faculty had a concern of how to successfully bridge that communication gap.

The surveys highlighted important areas of capability and also areas of need. Therefore, a plan to implement several professional development activities was initiated. See below in part 5.

LTU BICEP Faculty/Staff Survey Highlights



85% of respondents think industry collaboration is viewed as important to the institution, and 76% of respondents are interested in collaborating with industry, but only 30% think current university resources on this topic are effective.

LTU BICEP Faculty/Staff Survey Highlights

What value do you believe you offer to industry when they collaborate with you and the university?

Themes:

- Experience both hands on and theoretical
- Providing innovative solutions for problems in industry
- Access to lab facilities/equipment
- Resolving issues with their products
- Presence at career fairs, workshops, events, etc.

Explain why current university resources are **not** effective for industry collaborations

Themes:

- Research interests do not align with industry
- No effective centralized communication/messaging from university
- Do not understand the current process(es)
- More business development and outreach is needed

What challenges have you encountered establishing industry collaborations?

Themes:

- Limited facilities / lab spaces
- Time or budget constraints
- Participation in non-credit programming
- Aligning collaboration with course credit and semester timelines
- Industry misunderstanding of rates/cost

Explain why current university resources **have been** effective for industry collaborations

Themes:

- Many alumni contacts
- Have been successful in industry collaborations (at a small scale) in past
- Staff very responsive and involved in coordination of collaborations
- LTU has a proven track record in this area

What types of support or resources would be beneficial to establishing future industry collaborations?

Themes:

- Knowing point person / points of contact
- Industry Sponsor Day - tours of labs and facilities with potential collaborators
- Having an assigned coordinator for industry collaborations
- Easing administrative approval and purchasing process / timelines
- Workshops and training for faculty and staff
- Support for interdisciplinary projects between departments
- Templates for documentation, contracts, budgets
- Centralized list of potential industry collaborators

5. Addressing Survey Results and Professional Development Activities:

After compiling the surveys and assessing the results, the project team initiated several actions. The most significant of these are listed here.

Faculty Profiles:

Faculty Research Profiles were requested and developed for LTU faculty members who wanted to increase their visibility, activities and engagement with external partners, particularly with industry for possible funded collaborative research efforts. The profile highlighted individual faculty members, their formal education, current college and department affiliation, included a short biography, their research areas of expertise and areas of research interest, as well as examples of recent research work, and lastly a listing of awards and/or professional association membership. There were three important benefits to this exercise.

- 1) The completed Faculty Research Profiles helped faculty members to collect, consolidate and document their research efforts into a concise package, giving potential external partners the ability to quickly assess the benefit of working with that faculty member.
- 2) These Faculty Research Profiles were then cataloged, and are now available to any LTU corporate partners who may be seeking help in any areas that fall within those faculty areas of expertise.
- 3) The administrators were able to group faculty members with similar research interests to potentially collaborate in similar research areas. Often these faculty were in different departments and did not know their colleagues in other departments or colleges within the LTU community were working in similar, if not identical areas. Follow-up meetings gave faculty opportunities to meet and discuss their collective research interests. In many cases these faculty members had never met previously to these face-to-face engagements.

Faculty drafted outlines of their Research Expertise, Value Proposition to Industry, and listed potential Industry Partners with whom they could potentially connect. Follow-up was conducted with each faculty member and plans were developed based on their level of expertise with possible Industry Partners.

Additional Faculty Professional Development:

A University-Industry Training Series was implemented to bring Faculty together based on Research & Technology interests and expertise, which resulted in Teams of Interdisciplinary Faculty being formed that helped focus outreach efforts to Industry Partners.

Over the course of the 2025 spring and summer, additional formal Faculty Professional Development Training Sessions were provided. Seventeen interested faculty members also attended a series of training sessions, plus a 1.5-day Training Session facilitated by Dr. Chris Kitts from SCU in the summer of 2025. These faculty submitted Faculty-Industry Research and Collaboration Plans which provided the basis for the Faculty Ambassador to work with faculty to foster greater industry research and collaboration.

Expanding Faculty's Knowledge of Industry

An interesting observation was made after faculty engaged with the NSF EPIIC surveys. The faculty typically fell within two categories: 1) Very Experienced collaborating with Industry Partners, and 2) Very Little or No Experience collaborating with Industry Partners.

Many faculty at LTU are new, junior-level faculty, with recently minted PhDs from their respective doctoral programs, and have no industry experience. To help address the concerns of

this second group who expressed “Very Little or No Experience collaborating with Industry Partners” additional training was initiated in the fall of 2025 on how to successfully engage with industry, and how to secure funding from industry. The majority of faculty members were familiar with preparing grant proposals for submission to federal funding agencies, foundations and non-profit organizations. Though successful academic researchers, the majority of them were not familiar with, and often uncomfortable with the task of how to make a business case for why potential industry partners would be willing to fund their specific research focus. They needed to learn how to communicate and present the value of their research focus and background to potential industry partners.

These fall 2025 academic semester series of workshops at LTU were delivered over several Friday mornings. These helped faculty understand the needs of industry and how those needs are often fundamentally different than what is required for federal agency grant funding. Representatives from LTU’s many industry contacts were brought in to meet with faculty and discussed how industry views engagement with universities, what the needs are for industry research, and what industry views as valuable research. The participating industry partners in these workshops were quite candid about their need and desire for help, and their willingness to fund work. But, they emphasized that the research with universities must fall within their respective business needs and benefits.

6. First-year Accomplishments:

A list of the most significant LTU university-level accomplishments have been made towards the objectives of the EPIIC grant. A partial list includes the following:

- The LTU Team established and began developing a new model of regional industry partnership and innovation ecosystem strategy and plan that included direct and matrixed industry, economic development, innovation, and agency identification, outreach and development of key relationships.
- A confidential MOU was executed between LTU and the world’s largest innovation platform to advance use-inspired university-industry research, corporate innovation, and commercialization that will stimulate and advance the regional innovation ecosystem. The confidential details of this MOU cannot be shared at this time.
- An LTU grant operational team was formed consisting of EPIIC PI/Co-PIs. The team works within the auspices of LTU’s Research and Economic Development office.
- The team implemented a better coordination of communications, including meetings with faculty, monthly Research and Education Workshops, as well as frequent Drop-In sessions to answer faculty questions.
- Grant and contract funded personnel budgets, requests, approvals and tracking, etc. were improved and digitized.
- A 17-Member University-Industry Advisory Board (UIAB) was established to support and provide guidance for LTU’s NSF EPIIC BICEP objectives as well as objectives for LTU’s Research and Economic Development initiatives.
- A new website, intended to serve as a “friendly front door”, is developed as part of LTU’s Research and Economic Development department at: www.LTU.edu/research.

At the BICEP cohort level, significant results include the following:

- Assessment of the institutional surveys consistently showed significant interest in enhancing partnerships along with significant desire for improvements and support in their implementation. Discussions are ongoing regarding how to deliver these improvements.
- Designed a process matrix to identify the comprehensive set of necessary capacity-related functions needing to be addressed. It also assessed each institution's current and desired levels of maturity.
- Program Web Page: A web page for the BICEP cohort's activities was drafted and will be hosted by SCU. The page describes the EPIIC/BICEP effort, and has links to program and resource pages at each cohort member's institution.

7. Unanticipated Actions and Results:

There have been several positive (and somewhat unanticipated) results from the efforts taken under the EPIIC grant. For example, faculty were extremely receptive, attended and participated in six Faculty Training Sessions, and received the full support and participation by all the Deans from each College within LTU. LTU also established Interdisciplinary & Cross-Functional Research & Technology Faculty Teams, including faculty from all Five Colleges. Faculty met each other and conversed, often for the first time. This helped LTU communicate its "bench-strength" in these areas with Industry Partners, and provides greater confidence to faculty that they have other university expertise and colleagues with whom they can work. Through this process LTU has identified thirty faculty that have a combination of research, academic, and industry collaboration expertise in AI. This is critical because overall LTU has identified AI as a targeted research area. Lastly, the efforts specifically under the EPIIC grant have resulted in collaboration with three new Industry Partners for the LTU.

Industry Response and Participation:

LTU found its current pool of industry partners where **very** interested in engaging with faculty on possible collaborative efforts. The industry partners who participated in the fall 2025 faculty session enthusiastically wanted faculty and academic input on product development and insights. This was a surprise to some faculty. The industry participants stated to faculty that they viewed engagement as a positive thing and wanted more of it. They requested further meetings with faculty.

Faculty Response and Participation:

Some faculty members have enthusiastically embraced industry engagement. Other faculty, however, are positive, but are cautious. These cautious faculty have concerns that industry research may not be viewed as "real" research, and may not be "fundamental" enough to be seen as "legitimate" research. They view it as potentially too "applied", but are still open to pursuing it.

8. Lessons Learned:

The lessons learned from this still-active grant are still unfolding, but there are lessons and insights that can be passed on to other institutions who may be interested in similar pursuits. The most interesting aspect of this EPIIC process, so far is there has been virtually no miss-steps in

this process. The four collaborating universities have worked remarkably well together. Online meetings are attended, volunteers step forward to carry out needed action items and do their assigned tasks, and true collaborative effort takes place. Common issues and common solutions are shared. It is believed this is due to three elements.

- The four universities were initially well-aligned. Each university, though very different in size and resources from the others, has remarkably common needs and is in almost the same situation to the others in the cohort.
- Each of universities see and understand the benefit of mutual collaboration without any conflict of interest. They can work together.
- Each university has freedom within the collective effort to move and establish their own unique approach without having to seek approval, or to have cross-university consensus before they can act as they see fit. Such as freedom to act, but willingness to share collective information has allowed real progress to be made by each institution for the mutual benefit of all four institutions.

One area that LTU sees as need to improve is additional post-training support for faculty in developing new, successful, and deeper funded industry partnerships. The LTU training programs are well established and have been implemented effectively. Follow-up sessions were conducted and successfully organized faculty into focused groups based on areas of expertise. However, forming these groups is only an initial step. Faculty appear to need more structured guidance, coordination, and facilitation as they begin outreach to industry partners. In particular, additional coaching is needed for how to initiate project discussions, and develop statements of work for clearly defined, fundable projects.

Progress in this area has been slower than anticipated for two main reasons. First, all members are balancing significant existing academic responsibilities, leaving limited time for coordinated outreach and partnership development. Second, the broader economic climate at this time has made many companies more cautious about committing funds to university-based projects. LTU is working now at the time of writing this paper to address these faculty need issues in future training sessions.

9. Future Plans Going Forward:

This grant is still on-going, and future action plans for the LTU EPIIC/BICEP effort focus on the three pillars of the original proposal.

Operational Maturity:

- Complete the additional Process Matrix Action Plans to improve LTU's internal processes for Faculty and Industry Engagement.
- Co-Author and submit proposals to two related NSF grants.

Faculty Professional Development:

- Facilitate the Development and Submission of Faculty Research Proposals to Industry Partners.
- Conduct a Year-Two 1.5 Day Building Academic Industry Partnerships (BAIP) workshop with faculty.

Partnership Engagement:

- Establish Research & Technology Sub-Committees within the LTU Research & Economic Development Advisory Board to inform LTU of Industry Perspectives.
- Conduct a Survey of Industry Partners in Southeast Michigan of their Perspectives of LTU, Priorities for Research & Technology Development, and Collaboration Requirements based on input from the LTU Research & Economic Development Advisory Board.

General action plans for the duration of the EPIIC grant and items identified in the NSF EPIIC BICEP Logic Model to be carried out also include:

- Identify staffing and structures needed and propose changes
- Conduct Train the Trainers Sessions so LTU can sustain its Faculty Professional Development
- Internalized training at each of the BICEP cohort institutions
- Offer industry "training" in partnership development and increase joint sponsored research training
- Enhance practices and process within the research enterprise at BICEP campuses
- Create a BICEP-Authored Toolkit/Playbook for Emerging Research Institutions on developing and scaling industry partnerships that can be provided through NSF

9. Summary and Conclusions:

In September 2024 Lawrence Technological University, in collaboration with three other universities were individually and collectively awarded a three-year NSF EPIIC grant. A consortium between these four universities was formed around a program titled “Building Institutional Capacity for External Partnerships”, or BICEP. The objective of EPIIC grants are to support the growth of innovation capacity-building efforts at institutions of higher education with limited research capacity to prepare those institutions to participate in more and larger NSF opportunities in the future. This consortium partnership is still in place and is scheduled to be so until 2027. The BICEP project address common challenges faced by PUIs and ERIs in building capacity for external partnerships. BICEP effort focuses on three core objectives faced by the four university partners: Operational Maturity: Establishing institutional policies and structures to enable efficient and professional partnering; Professional Development: Enhancing the knowledge and skills of faculty and staff to effectively participate in technology partnerships; and Partner Engagement: Supporting the strategic management and evolution of partnerships over time.

The ultimate goal of the EPIIC program and the BICEP project is to enhance the overall educational and research environment of these four universities. The results of the initial efforts of this three-year program were presented, with faculty assessment data and organizational mapping defining existing organizational capabilities and gaps that need to be addressed to meet the needs of Operational Maturity. Also presented were the first year of faculty Professional Development activities that are to provide faculty the skills, tools and knowledge for engagement with external research finding groups in industry. The initial approaches and methods to foster external Partner Engagement were reviewed. And lastly, a summary of overall first-year accomplishments was discussed and next steps were also presented.

These initial efforts clearly show that private and public universities that have been PUIs and are ERIs, with diverse geographical locations and student demographics, face common challenges. They can work together to share ideas and efforts to enable each to grow and establish external partners for growth, research and engagement. The contents of this paper describe, in general, what has taken place within the Lawrence Technological University, as well as within the partnership with the other three collaborating universities.

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We note here that Mark Brucki, the Associate Vice President of Economic Development at LTU, is the Principal Investigator on this grant. Also, both Dr. Liping Lu, Associate Dean of Graduate Studies and Research and Associate Professor of Mechanical, Robotics, and Industrial Engineering, and Dr. Matthew Johnston, Associate Professor in Math and Computer Science, currently serve as Co-Principal investigators on this NSF grant.

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