Research Strategic Plan
2025-2030

Division of Research and Innovation

University of North Texas Research Strategic Plan

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Background:

UNT is the fourth largest state university in Texas, with 46,180 students, of which 1,967 are doctoral students and 9,356 master students (Fall 2024, Table 1 Appendix). The UNT student community is served by 1,431 faculty (606 tenured, 283 tenure-track, and 542 professional non-tenure track; Table 2), 2,695 staff, and 97 administrative staff. The university offers 114 bachelor's degrees, 87 master's degrees, and 39 doctoral degrees, is composed of fourteen colleges and schools, and is designated a Carnegie-ranked Tier One research university that reflects the population of Texas. UNT is designated a Hispanic-Serving Institute, named a first-generation forward institution by NASPA, and manages $456 million (M) in financial aid for students.

UNT aims to increase and elevate impactful research and innovation while facilitating the faculty, staff, and students with their research and scholarly work through efficient operations. The Division of Research and Innovation (DRI) works intentionally and collaboratively across campus to provide the UNT community with research services, development, compliance, and support for intellectual property endeavors. The DRI vision, mission, and core values guide the strategic plan (Figure 1). Further, accompanying this strategic plan is the plan to provide data and dashboards for the UNT community to follow the research progress.

UNT has proudly made significant strides to strengthen its research enterprise (Figure 2). Specifically, the total research expenditures increased by 78% since 2021 to $124.2M (NSF HERD data) and sponsored project expenditures, which are primarily research expenditures, have increased by 17% between FY23 and FY24. Importantly, UNT met the Texas University Fund (TUF) goal of $45M in research expenditures (federal and private research expenditures) in FY24 ($49.3M) and is on track to meet the goal for FY25. Integral to meeting this milestone is a 44% increase in federal research expenditures. The strategic investment of TUF and institutional funds reinforced research core facilities, research institutes, and research centers. Central to research success is the training of doctoral students as it prepares them for the workforce and societal needs of the future. Through the doctoral programs, UNT is advancing research fields critical to Texas and the U.S. economy. Research strengths, as measured by sponsored project awards, include, but are not limited to, materials science & manufacturing (structural/functional, extreme environments, 3D printing), computer science (cybersecurity, AI/ML, Big Data), life sciences (biomedical, genomics, social and environmental health, disaster impact and recovery, bioproducts, and workforce development), logistics, autonomous vehicles (air and ground), and synthetic chemistry. Collectively, these research areas drive innovation and contribute to the workforce for the region, state, and nation.

UNT Research Vision, Mission, and Core Values:

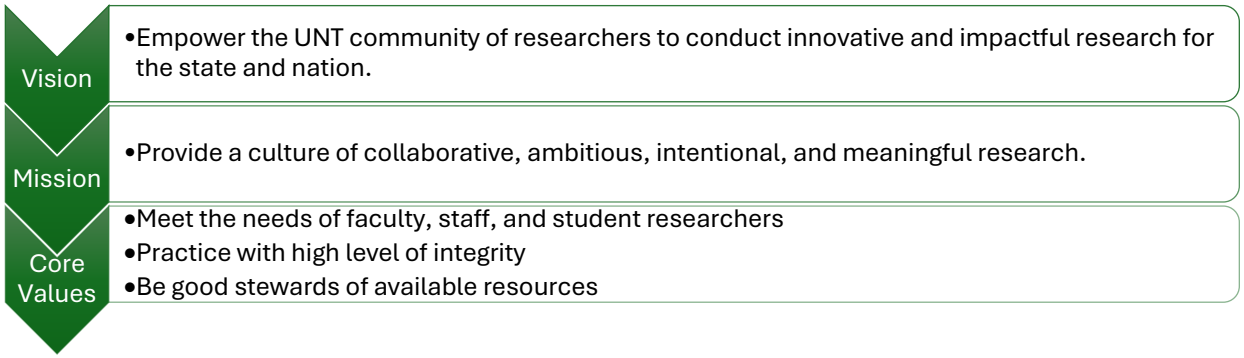
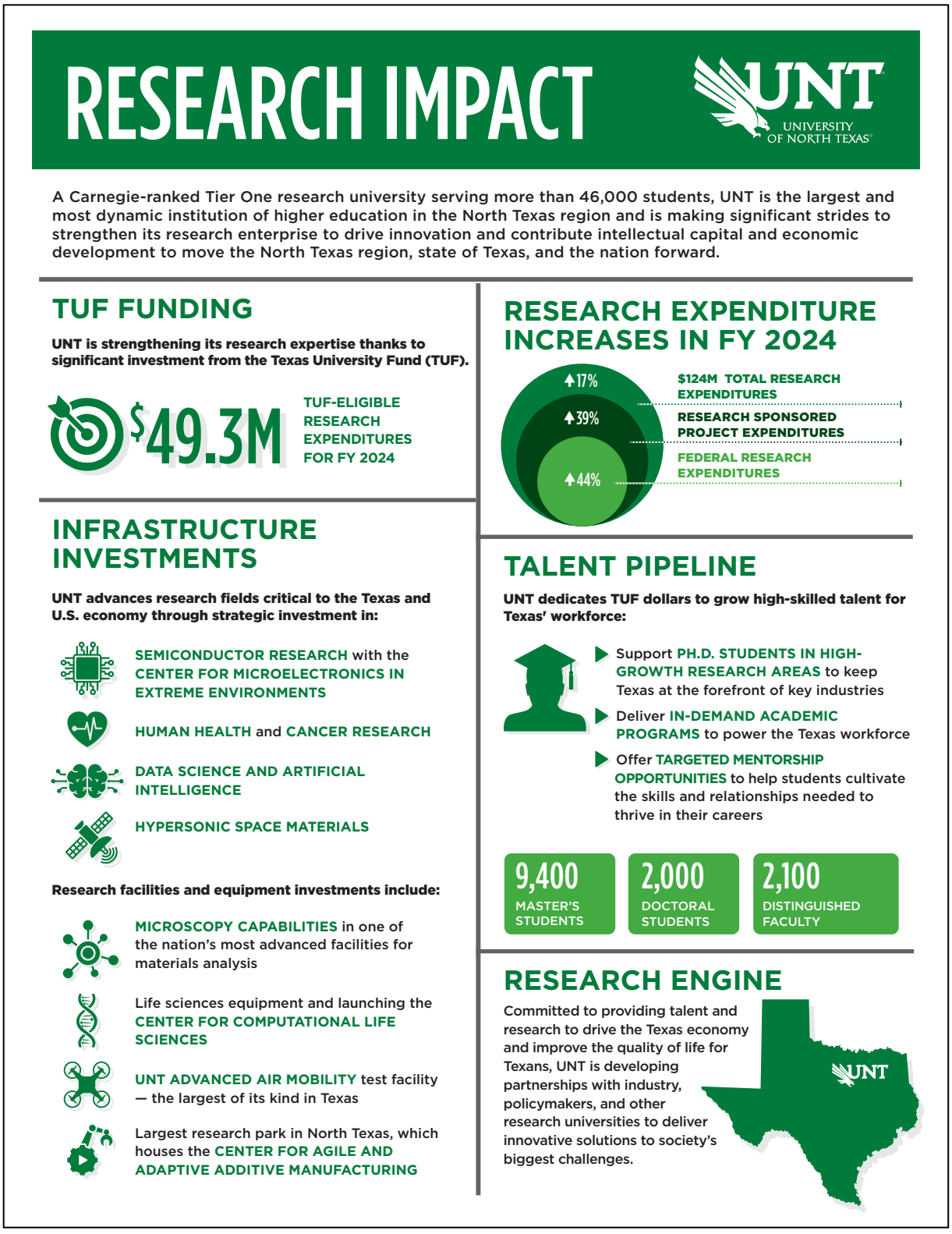


Figure 1. UNT research vision, vision and core values lay the foundation for the strategic plan.

Figure 2: Recent Impact of UNT Research



I. Plan to Elevate Research Enterprise

A. Research Goals and Priorities: UNT developed three overarching goals that are foundational for the UNT research plan (Table A). This document will describe the strategies, objectives, action plans, and measurable and/or expected outcomes that address these three goals. Internally, we will provide incentives and support to accomplish these goals.

Table A. Overall Research Strategic Goals

Goals (What we want to achieve)	Key Strategies (How we will do it)	Metrics & Outcomes (Measure success)
1. Grow the UNT research & innovation enterprise	• Strategic investment of TUF in key areas • Align faculty recruitment with key investments • Culture of research excellence • Doctoral student support programs • MS and undergraduate student research programs • Use of data tools to track programs	**Increase:** • NSF HERD rankings & sponsored project data • Program rankings • Faculty recruitment, retention, awards & recognitions • Doctoral student recruitment, retention, graduation & advancement • Undergraduate and master's student research activities • Researcher training programs
2. Support an impactful research enterprise	• Expand team science and interdisciplinary research • Buildup UNT Innovation Enterprise • Produce intentional research communications • Assess the economic impact of UNT research • Monitor the societal benefit of UNT research	**Increase:** • Interdisciplinary research centers and institutes • Industry partner collaborations • Tech transfer parameters • Economic impact • Research communications • Web traffic metrics
3. Deliver sustainable and efficient research operations	• Provide effective research staff development & training • Improve research compliance and integrity training and tracking • Optimize research space usage • Build and sustain research core facilities • Ensure policies and procedures support a UNT research culture	**Improve:** • Grant administrative staff recruitment and retention • Assessment of grant administrative best practices • Assessment of research space usage/productivity • Core research facilities usage/productivity • Compliant research activities

Considerations for the strategic plan: Accomplishing these three overarching goals will *elevate the research enterprise*. This document will describe the overall strategies to meet these goals, the metrics we will measure for progress and success. A foundation for advancing these goals includes: 1) being intentional and strategic with the limited resources that support the UNT research

enterprise; 2) leveraging the research strengths to garner additional resources; 3) implementing data-driven decision-making; and 4) being supportive of a collaborative research enterprise.

Limited Resources: The UNT research enterprise is supported through the TUF and indirect costs (IDC) from sponsored projects. The use of TUF dollars has provided additional support for research core facilities (e.g. materials research facility, clean room) and the building of research groups that conduct semiconductor (CMEE), space, and DOD-sponsored research. UNT was in the final stages of renegotiating the indirect cost rate from 48.5% before the federal government paused the process. It is recognized that IDC funds, used to support the research infrastructure, could decrease due to external forces. *Thus, as good stewards of our limited resources, a research advisory committee of thought leaders will provide ideas and feedback on diversification of available resources and the usage of such.*

Research Strengths: With the limited resources, we intend to continue support for the research areas of strength that continue to demonstrate productivity (e.g. AI, biomedical innovations, cybersecurity, engineering and autonomy, life sciences, logistics, materials science, manufacturing, psychology, behavior sciences, synthetic chemistry) and to grow research institutes and research centers that demonstrate growth. Furthermore, we will expand the key areas that are expected to be further supported by the nation and state (e.g. specific areas of human health, semiconductors, space technologies, computer science (AI/cybersecurity/data science), and social sciences that inform on learning). For example, we recently established a Center for Microelectronics in Extreme Environments (CMEE) which capitalizes on the need for new semiconductor technologies and robust microelectronics for defense or space use. This center has engaged with other state partners and initiatives in the semiconductor research areas. Additionally, we have invested in infrastructure that supports the above-mentioned strengths (e.g. materials research facility, clean room) to remain competitive in these highly-specialized technological fields of expertise.

Data-driven decisions: The Division of Research (DRI) and Innovation has been very intentional about collecting research data, using tools, and conducting predictive analysis. This approach has been a valuable start in informing the UNT community about research metrics and expectations. We intend to expand the use of data tools to access and predict or even mitigate research activities and productivity. Through the integration of data and analytical tools (e.g. NSF HERD, Academic Analytics, IRIS), we will assess to improve upon: 1) research growth; 2) faculty recruitment, retention, and awards; 3) productivity of graduate programs by examining student outcomes and workforce placement; and 4) monitor the economic impact of research. The utilization of data analytic tools to assess UNT's progress towards goals will provide benchmarking and analysis of key priorities against UNT's past data and comparisons with peer and aspiring universities (state universities within TX and across the country).

B. Collaborations and Partnerships: We aim to foster cooperative efforts amongst faculty across disciplines, collaborate with partners within industry and other TX institutes, and reinforce existing partnerships. These cooperative and collaborative efforts include faculty research collaborations, as measured by joint publications and sponsored projects/grants, collaborations with external colleagues across fields and disciplines and agreements with industry partners.

Objective 1: Grow research collaborations associated with sponsored projects.

The DRI partners with the College of Engineering and College of Science to provide seed grants to faculty that collaborate from across the two colleges. These interdisciplinary collaborations are expected to develop preliminary data and submit a research proposal within a year of the internal seed funding award. The invested internal seed funds led to new collaborations and the submission of new research projects of which nearly half of the projects led to external research awards.

Action: Several actions will be taken to increase these interdisciplinary collaborative projects. The research development team within DRI will facilitate this action. 1) The DRI will expand the collaborative seed grant opportunity to support, through incentives and resources, these high-potential collaborations. The expansion will depend on resource availability and data that supports the existing opportunities for research success. 2) The DRI will use the academic analytics tool to identify and leverage existing collaborations of UNT faculty researchers with one another and with external partners and determine if sponsored project opportunities match these collaborations. That is, UNT will implement the economic developmental toolkit to provide a searchable database of UNT faculty research and scholarship to support faculty collaboration, increase the ability to identify others with complementary skills, for potential projects and collaborations, and highlight the achievements of faculty researchers to support external collaborations and allow outside researchers to better understand the research expertise at UNT. 3) The DRI will organize and support interdisciplinary collaboration events (e.g. symposia, workshops, open laboratory days, and faculty group meetings) as a means to provide the framework for collaboration and integrate it with faculty research development programs. 4) The DRI will direct and support multidisciplinary research institutes and centers that have participating faculty researchers from across multiple colleges. These activities address goal 1 and goal 2.

Metric: Number and type of collaborative research grants. The DRI will provide dashboards to inform the UNT community on collaborative research projects.

C. Economic Impact: UNT intends to improve the ability to understand and communicate the economic impact of research. Specifically, to inform on the local, regional, and national impacts and with such information inform on how it impacts the state and if specific priority areas should be prioritized or emphasized.

The total economic impact of UNT within the Dallas/Fort Worth metroplex is at least 1.65B annually. Currently, the translation of research and scholarly work to support the economy is measured by the impact of research within the realm of intellectual property and commercialization. However, a more thorough economic impact should be conducted to move beyond these specific measurements. For example, a deeper analysis of the type of industries within the region, Texas, and nationwide that are impacted by UNT-sponsored research projects, or the commercial sectors that benefit from UNT researcher expenditures have not been fully examined. To begin a deeper dive into the economic impact of UNT research sponsored through funding, the DRI has begun using a data tool to assess the impact of sponsored project expenditures on the local, state, and national economy (IRIS data, University of Michigan). UNT's federal and non-federal research-related goods and services expenditures exceeded $38.8M nationally and $18.6M statewide in FY24. As UNT plans to grow research expenditures, the impact of UNT research expenditures on the economy as measured by an increase in research-related goods and services will be further assessed. Furthermore, the communication of such an impact will be

prioritized. Finally, the interaction with city economic boards within the DFW region, in particular Denton, will be reinforced through the development of agreements and opportunities for collaboration. These activities will address goal 2.

Objective 2: Use the IRIS tool to examine where within the state and nation research expenditures occur and what commercial sectors are impacted.

Action: On a semester basis, the DRI will examine the data collected through IRIS. Data examined include but are not limited to: the state and national regions that benefit from UNT research expenditures, the industry sectors that are impacted by the expenditures, and the number of individuals that are supported by sponsored projects.

Metric: The research expenditure impacts on sector, regions, and individuals.

Objective 3: Increase collaboration with the local city economic development board(s).

Action: Facilitating collaborations between local city staff and academic researchers could occur through the development of an MOU with local cities to incentivize research project collaboration between UNT faculty and local government. Such an MOU will serve as a vehicle to pre-determine contractual language, reporting, and other legal and administrative requirements so that projects with local and regional governments/agencies can proceed quickly and efficiently. Here we plan to work with the cities in the DFW region, including Denton and Frisco, to strengthen the collaborative efforts and ability of local government to lean into the expertise at UNT.

Metric: The total number of projects, total municipalities engaged, and total awards.

Objective 4: Increase communication regarding the impact UNT research has on the economy and the collaborations with regional government entities.

Action: The DRI will inform the UNT community through available dashboards and maps of the impact UNT research expenditures have on the local and national economy. It is expected that this level of communication will not only inform but also incentivize researchers to reflect further on how their research impacts the economy. With this knowledge, we can strategize to grow the economic impact of UNT research.

Metric: Dashboard to communicate which regions of the state and nation receive sponsored project expenditures and collaborations.

II. Plan to Increase Research Funding and Productivity

A. External Funding: UNT has made intentional and extensive efforts to increase research funding and productivity, and this is observed in the growth in research awards and expenditures. Since 2021, UNT has reported a 78% increase in NSF Higher Education Research and Development (HERD) expenditures to over $124M. Over the next five years, UNT aims to grow NSF HERD total research expenditures to $250M with at least 50% of those funds originating

from federal and private sources. This ambitious growth will require achieving goals that transform infrastructure, operations, processes, and policy to centralize a culture of research productivity and excellence. Collectively, the objectives below address all three goals.

Objective 5: Improve the culture of research through the recognition and value of research excellence and productivity.

All tenure-track and tenured faculty, and some professional faculty, have a research workload. Results from stakeholder meetings suggest that research is evaluated, rewarded, or incentivized differently across academic units. To achieve increased research growth and productivity across academic disciplines faculty must be incentivized to undertake research activities and recognized for their successes. For example, in some units, sponsored projects/grants may not be formally rewarded or included in annual review or promotion and tenure processes. In others, workload adjustments to allow faculty opportunities to pursue greater funding levels may not be utilized or permitted. While different disciplines may have different specific criteria/expectations for productivity, research should be rewarded and incentivized in university procedures.

Action 1: Work collaboratively with the Academic Affairs division and Provost office to develop university-level guidelines and communications for research buyouts, teaching buyouts, and workload incentives focused on increasing flexibility toward funded research. University guidelines for research buyouts exist and the capacity for teaching buyouts varies among units. The improved communication of, expectation for, and support for research and teaching buyout programs are important for building a culture of research productivity, value, and excellence.

Metric: Increase in faculty salaries on sponsored projects. This can be achieved by increasing the number of faculty research buyouts and teaching buyouts on extramural grants.

Action 2: Increase the nomination of faculty for internal and external awards. Develop a process to better engage academic departments and external references to facilitate the nomination of faculty for external and internal awards. To improve on this process, the faculty awards component of Academic Analytics will be used to efficiently identify and match qualified faculty for internal and external awards (state, national, and professional organization awards). Highly qualified faculty will be determined through analytics, achievements (e.g. highly cited researchers), and nominations. The DRI will assess if feasible to expand the number of internal awards to support the pathway to external award nominations.

Metric: Number of faculty externally recognized through external award applications submitted and received, number of faculty listed within in top 2% of the world-cited researchers, and the number of professional society fellows.

Action 3: Increase the recognition of faculty for research excellence in broader marketing materials and university media.

Metric: The number of internal and external news stories highlighting UNT researchers, their area of expertise, engagement of student researchers, and discoveries. The website traffic to these research stories can be examined consistently. These recognitions will be shared on effective social

channels to improve awardees' research reputation, which could lead to a more successful process in securing external grants.

Objective 6: Reduce barriers to expensing sponsored project funds by improving operations through efficiency and knowledge-based approaches.

Receiving a research grant is an initial step in creating research productivity. Funds must be expensed to meet state and federal reporting mechanisms. Through discussions, we found that stakeholder groups perceive barriers, both internal and external to the UNT research enterprise, that inhibit spending. Examining processes and procedures to increase efficiency while also maintaining compliance is needed to accommodate growth. Administrative hurdles in hiring, student scholarships, procurement, and other activities that fall outside the DRI can have a direct impact on the timely expenditure of research funds. This object addresses goal 3.

Action: Improve post-award management through faculty and staff training on best practices and federal/state guidance for grant management. This can be accomplished using outside training resources (e.g. NCURA conference and workshop) and creating regular in-house guidelines, communications, and workshops. Training and easy-to-follow process documents and guidelines on processes that can be shared early with PIs and unit-level grant-administrative staff for new awards can reduce delays in hiring, student scholarship or research support, and procurement. Inform faculty and units how to track the burn rate of funded projects to ensure timely research expenditure, reduction of over-budget expenditures, or loss of funds due to improper expenditure levels or errors in expenditure tracking.

Metric: The number of relevant and updated external and internal training and workshops, guidance materials, and communications for faculty and grant administrative research staff (central and unit-based). The training materials will be updated yearly to align with the current knowledge base of grant administrative professional societies such as NCURA to ensure informative and timely materials.

Action: Make available the dashboard monitoring system for external grant expenditures to identify projects falling behind on expenditures to target for support and corrective actions. Conduct a periodic post-award grant review between, DRI, Academic units and PIs to manage project budget progress and expenditures. Currently, DRI and college-level leaders have access to the grant "burn rate" dashboard. This dashboard will be updated to allow faculty to have access to the grant they are lead PI on so that the data can help inform faculty on expenditure progress in an easily communicated format.

Metric: Track the grant expenditure data points such as: burn-rate, over or under-spending on projects, and the number of no-cost extensions, relative to PI, academic unit, and university-wide.

Objective 7: Diversify the sponsored-project agency funding.

The research funding landscape is constantly evolving due to changes in political and social structures as well as emerging needs. Most UNT-sponsored projects are from federal agencies, with the Department of Defense and National Science Foundation being the top funders of UNT

researchers. In the long term, diversifying funding sources will create greater opportunities and stability in the research enterprise. The diversification of the funding agency profile at UNT requires the faculty to be well-versed in applying for funding from a multitude of agencies including non-government. This is true for faculty at all career stages and fields. The transfer of knowledge is a mechanism to address this objective.

Action: Improve structures for pursuing less sought-after funding opportunities including philanthropic and industry funding. This can be accomplished through information sharing and collaboration between the DRI, academic units, and the division of advancement. The holding of intentional meetings and workshops between research development, academic units, corporate and foundation relations, and innovation and commercialization staff supports will reveal funding opportunities and a mechanism to leverage faculty expertise, incentivize researcher participation, and support the process and operations of garnering these funds. Further within this process, the support for the establishment of academia-industry consortia can be realized.

Metric: Number of proposals submitted to and awards from private, philanthropic, and industry sources.

Action: Target large, interdisciplinary "center" style grants through incentives and grantsmanship support. The Academic Analytics grants module will allow the research development team to identify and reach out to faculty whose productivity and expertise match large center grant opportunities. Provide proposal writing assistance to large center proposal grants.

Metric: Number of multi-PI grants with a total budget of greater than $2M.

B. Research Facilities: UNT intends to grow the space available to researchers and better assess the productivity and quality of the research space. Research space is a limiting factor on campus. Currently, the university utilizes the Research Space Adjudication Subcommittee to annually review research space use and productivity with a primary focus on the colleges that have research lab space (e.g. College of Engineering, College of Science). Since FY21, UNT has grown its research space productivity by 18% from $306/sq ft to $362/sq ft. This exceeds the state of Texas FY24 expectation ($255/sq ft) by over $100/sq ft. Due to limited research space, there is a lack of space for collaborative, incubator, or startup activities. The university is currently building a 105K ft^2 Science and Technology Building (STB) which will have 65K ft^2 of assignable space which includes wet and dry lab space, shared space, and core facility space. This building is set to be completed by December 2026 with a move-in of January 2027. However, even this building will not resolve space issues and thus greater efficiency of space remains a priority and requirement. The objective below can address all three goals.

Objective 8: Facilitate the culture of productive and collaborative shared research space.

Action: Leverage the new Science and Technology Building (STB) to increase research awards and expenditures. Develop guidance that ensures space in the STB exceeds state expectations for expenditures per square foot. Leverage the STB research space and associated core facilities to

recruit and retain highly productive researchers, build critical research programs, and provide "flexible" research space to support growth.

Metric: Monitor the research expenditure dollars per square foot of research space relative to faculty-assigned space, academic unit, and research building.

Action: Facilitate a culture of collaborative and shared research space by improving the evaluation of usage and efficiency of shared research space and core facilities. Develop and update a guidance document for interdisciplinary and shared research space through a collaborative approach between DRI (leadership, core facility advisory members), academic units (associate deans of research), and division of finance administration (units within facilities). The guidance document will make considerations of space quality as a component of space assessment recognizing that "prime" space will have higher expectations regarding research expenditures and research productivity. Make available effective communications, via websites, of the research space guidance, shared space, and equipment available to researchers, point of contact(s) for space and equipment usage, and space usage expectations.

Metric: Development of an effective guiding principle and policy document for the STB and other shared research facilities on campus (reviewed by central administration). Monitor start-up funds that contribute to shared facilities for the recruitment of faculty. Integrate into the Research Space Adjudication Subcommittee work the assessment of core and shared facilities (PI and lab member usage, expenditures per ft^2). Assessment of web traffic to space, equipment, and core facility information page(s).

C. Commercialization: UNT recognizes that a measure of the impact of research on society is the transfer of knowledge and innovative technology into society through various means including the commercialization realm. University technology transfer plays a crucial role in economic development within the region, state, and nation. Commercialization and technology transfer, measured by disclosures, patents filled, patents issued, licenses, and start-up/spin-out companies, are critical outputs of research productivity. Technology transfer offices help universities secure additional funding through licensing agreements, patents, research partnerships with industry, translate research to societal and commercial benefits, and attract top-tier innovative faculty, staff, and students. Moreover, researchers who engage in entrepreneurship bring practical applications of their work to the market, fostering a culture of innovation and collaboration. Their entrepreneurial efforts can lead to the creation of startups and spin-off companies, which contribute to the local economy and provide valuable learning opportunities for students. Combined, this boosts UNT's expertise and reputation. The objectives below address all three goals.

Objective 9: Build a cohesive and collaborative entrepreneurial and innovative ecosystem by supporting the pathway of intellectual property to commercialization.

Action: Increase the understanding and incentivize the practice of intellectual property to commercialization pathway. This will be done by providing aligned intellectual property (IP) policy, effective guidance and communications, intentional workshops, and recognizing practices that meet the goals of the faculty and students. To accomplish this the following must be right-sized and invested in; staff support, informative websites, building intentional partnerships,

providing connections and networks, and highlighting and nominating faculty for specific awards to recognize inventions and entrepreneurship. The mechanism includes the use of the Academic Analytics toolset to highlight researcher expertise relative to commercialization opportunities. Further, we will leverage the resources of Academy of Inventors membership by providing materials to researchers and having workshops, seminars/panels for the UNT community interested in moving their research into a commercialization realm.

Metric: Develop dashboards to monitor the growth of specific IP measurements (disclosures, patents, licenses, startups, and company engagement with UNT researchers). Track and communicate commercialization awards or specific types of grants (e.g. SBIR/STTRs). Track faculty and student success as innovators and entrepreneurs. Monitor, through web traffic, the use and access of IP guidance and communications.

Action: Provide options for entrepreneurial and incubator space (on campus and/or off campus) within a space guidance document. The STB can be leveraged for on-campus space. For off-campus options, develop a partnership through a MOU mechanism, with the City of Denton or other metroplex cities or spaces within the region to incentivize and support incubator space for the UNT community.

Metric: In the already-in-place monitoring of start-up company data by faculty include data on the utilization of incubator space on campus or through city partnership with UNT. The data will include ft^2 usage, number of occupants/users, job creation metrics, and dollar amount associated with the space in terms of awards.

III. Plan to Support Doctoral Programs

Doctoral Program Background: Graduate students, in particular doctoral students, have a pivotal role in advancing the growth and sustainability of the research enterprise at UNT. Their innovative research, critical thinking, and scholarly contributions drive discovery and knowledge creation across disciplines. UNT has 1,967 doctoral students (Fall 2024) and graduates close to 300 per year (Table 3, Appendix). UNT has increased doctoral student enrollment by 8% and the average time to degree decreased from 5.66 years to 5.47 years (2022 to present analysis). By fostering and growing a vibrant research culture, doctoral students can support UNT's strategic goals and attract funding, partnerships, and top-tier talent to enhance the university's position as a leading research institution. Over the next five years, UNT expects to continue the upward enrollment, optimize the years-to-degree completion time, and enhance doctoral student research engagement by 25% by increasing funding and career and skill development to meet the workforce demand of Texas and the region, especially in key areas and programs.

A. Doctorate Awards. UNT intends to increase the support for doctoral students and grow the doctoral numbers in specific areas that address workforce needs of the region, state, and nation. This will be addressed by improving the gathering and dissemination of data to improve decision-making that impacts doctoral students, address gaps in doctoral student financial support and development activities, and build a culture of doctoral support by providing faculty with mentorship programs and information on

Objective 10: Provide the UNT community with transparent and informative data on doctoral student success and needs.

Action: The tracking of student outcomes is central to building and serving student needs and developing relevant programs. UNT will track doctoral student outcomes through various mechanisms. 1) Improve usage of UNT institutional data (Insights) to track doctoral student outcomes relative to programs. 2) Obtain bench-marking data through a survey (conducted on odd years beginning in 2025) to inform on the needs of doctoral students; this is through the collaboration with the Student Experience in the Research University (SERU) Consortium. UNT will utilize this data to follow grad student outcomes relative to time and relative to peer institutes within TX and out of TX. 3) Implement the Academic Analytics toolkits to assess the impact of doctoral student alum careers, in terms of employment sector, through time and relative to peer institutions. Encourage faculty mentors and academic units to utilize the data to make informed decisions on doctoral programs.

Metric: The development and usage of easy-to-access and visual dashboards that communicate doctoral student outcomes.

Make available: 1) degree applicants, admission, enrollment, graduation relative to program and year; 2) SERU survey results to inform on UNT doctoral student perspectives relative to recognize successes and inform on gaps to address; 3) career outcomes of graduate student alum as a mechanism to monitor program success as well as build a network for current students.

Note that this objective can inform all doctoral-related activities

Objective 11: Increase the recruitment, retention, and graduation outcomes of specific doctoral students by offering and informing on funding opportunities.

Action: TUF dollars will be used to address gaps and grow specific programs, in phases and as indicated by the workforce needs of the state and nation. A significant challenge is that UNT is the only R1 university in Texas that does not provide health insurance to doctoral students supported by university funds (e.g. RA, TA). To address a gap in recruitment, in a phased manner, UNT will provide health insurance support to incoming doctoral students. Furthermore, the growth of programs in a phased manner through increasing resources, such as tuition support, to provide competitive assistantship packages, and informing on scholarships, funding opportunities, and other forms of financial aid. To reinforce data-driven decisions and budget capacity, the graduate student data, through dashboards, will be provided to academic units to support informed decisions on the growth of programs and intentional recruitment.

Metric: Track the funding support for doctoral students including research assistantships, teaching assistantships, tuition support, health insurance support, scholarships, and financial aid relative to academic programs through time.

Objective 12: Increase doctoral student professional development opportunities to increase career readiness.

The doctoral student mentor, committee members, and academic unit are key to providing doctoral students the skills needed to navigate the program, reach expected milestones, successfully conduct research, publish within their respective fields, network, and obtain the next step in their career. However, there are programs that the university as a whole can provide to the benefit of all doctoral students.

Professional development is a critical component for all doctoral student success and long-term career readiness. Research-related skills, in particular, are widely recognized as high-impact practices that contribute to student achievement and professional growth in higher education. These skills are essential to preparing doctoral students for competitive careers both within and beyond academia. However, opportunities to develop these competencies might be limited due to bandwidth and capacity within academic units or treated as extracurricular.

Action: To address gaps in doctoral student career readiness, the DRI will collaborate with academic units and student success to deliver professional development workshops and activities for graduate students to supplement academic programs.

Metric: Number of doctoral students engaged in professional development opportunities related to research (e.g., career pathways, securing external funding, skill development, scholarly outputs/creative works).

Objective 13: Work collaboratively to develop faculty programs to enhance knowledge of doctoral mentorship practices and learning science of doctoral students.

Here at UNT, there are no cross-university communications regarding the best practices for mentoring doctoral students or knowledge of how doctoral students effectively learn. In some cases, faculty are also not incentivized to mentor doctoral students. Combined, this leads to a mosaic of success in doctoral student training and mentorship.

Action 1: Units across campus (academic units, graduate school, and DRI) will collaborate to increase workshops, seminars, and programs to build a community of faculty mentors that utilize data-supported practices to deliver optimal mentorship to doctoral students. According to published studies, the quality of faculty mentorship received significantly increases doctoral student success. Yet, faculty receive little if any formalized training on how to be an effective mentor for a doctoral student. Here, DRI will be a conduit for creating a culture of collaboration to provide information, including research studies, on mentorship.

Metric: The engagement of faculty in doctoral mentorship programs.

Action 2: Learning science is the understanding of learning through the development of innovative and improved instructional methodologies utilizing the knowledge within the social and psychological sciences, computer science, and education. Applying learning science principles can enhance doctoral programs by increasing faculty knowledge and competencies. Here, DRI will be a conduit for a Learning Science Institute to inform faculty on research regarding doctoral student learning.

Metric: The engagement of faculty at learning science workshops, seminars, and online materials.

Expected outcomes: Implementation of programs to support faculty is expected to translate to an increased success of doctoral students which can be measured by the rate of doctoral degree completion, the number of student publications and creative works, and the number of funded graduate students through fellowship.

B. Supports for Doctoral Candidates. UNT has prioritized providing an increase of financial support to doctoral students. The support includes providing, in a phased manner, health insurance and an increased stipend.

Objective 14: Increase external funding to support doctoral students.
UNT doctoral students are recipients of prestigious research fellowships including the National Science Foundation Graduate Research Fellowship and the Texas Higher Education Board Texas Leadership Research Scholarship, yet the number of students awarded lags behind peer institutions.

Action: Support students to pursue research fellowships, grants, and other funding opportunities by offering tailored guidance, workshops, and mentorship programs. Build upon current efforts (e.g., NSF Graduate Research Fellowship webinar and proposal writing, UNT THECB Texas Leadership Research Scholar activities) to inform more doctoral students about funding opportunities. The student research development team within DRI will support and manage these efforts.

Metric: Number of research fellowships, grants, and external funding for doctoral students.

Objective 15: Increase the internal research funding for doctoral students to support key activities (e.g., research, travel, and publication costs).

Action: As internal funds are available, set up a committee of evaluators to review applications for doctoral support. The student research development team within DRI will coordinate these efforts.

Metric: Tracking of the number of doctoral students supported by internal funds and their time to graduation.

Objective 16: Increase faculty-led student training grants.

The opportunity to enhance doctoral student research experiences while at UNT, faculty have secured both research and training-sponsored project awards. With more than 25 training grants and supplemental funding, tens of doctoral students receive sustainable funding to support their academic and research experience at UNT. The number of doctoral students supported by these funding opportunities is insufficient and a major barrier is the lack of support (e.g., administrative) and incentive (e.g., promotion and tenure) for faculty members to pursue these types of sponsored awards.

Action: Provide targeted resources, workshops, and administrative assistance to support faculty in securing doctoral training grants from federal and private agencies. Centralized administrative and professional development for some training grants is provided by the VPRI's office.

Metric: Number of training grants secured; number of students supported by training grants; number of professional development opportunities for faculty focused on training grants; number of administrative assistance hours provided.

C. **Areas of emphasis.** UNT has established research strengths and seeks to reinforce areas that contribute to the workforce needs of the state and country.

Objective 17: Ensure that focused doctoral programs and research areas are based on Texas and national workforce demands.

UNT is committed to meeting the workforce demand in areas important to the state of Texas and the nation by producing a greater number of graduates from key doctoral programs. Potential targeted research areas include, but are not limited to, semiconductors, adaptive manufacturing, space technologies, data science and artificial intelligence, synthetic chemistry, learning sciences, neuroscience, logistics, business, life sciences, and social sciences that contribute to the health and welfare of humans.

Action: As part of a UNT graduate student reporting, inform on the doctoral workforce demands in Texas and nationwide on an annual schedule. State and national metrics and publications can be accessed to inform these workforce needs. The Academic Analytics tool will be used to examine which sectors the UNT doctoral student alumni are working in. Combined these data will indicate if UNT is graduating doctoral students to meet the workforce needs.

Metric: Communication of UNT doctoral workforce relative to state and nationwide needs.

Action: Increase recruitment and resources to the Doctoral programs that data indicates that the state of Texas or the nation has a deficit in the workforce. Here we will conduct specific and targeted recruitment efforts in undergraduate programs to provide a pipeline to the UNT doctoral programs.

Metric: Number of doctoral applications, admission, enrollment, and graduation rates in targeted areas and programs.

IV. Plan for Faculty Development

A. New faculty. The recruitment and retention of faculty to UNT is a high priority and will be approached through collaborative efforts, intentional mentorship programs and investments.

UNT has 889 tenured/tenure-track faculty that have a research workload. Additionally, other faculty such as clinical faculty also have a research workload. The recruitment of faculty that will be innovative, productive, and creative researchers, inspirational instructors and mentors, and collaborative colleagues is of interest to all universities. UNT has heavily relied on a grass-roots

approach to identify candidates for faculty positions. As we move toward a more intentional, data-driven approach for faculty recruitment.

Objective 18: Conduct intentional and strategic recruitment of interdisciplinary researchers. The DRI collaborates with the Provost's office (VPAA) for recruitment of faculty that specifically require competitive startup funds and research space/laboratory. The new science and technology building (STB) provides the opportunity to house 25-30 research groups from diverse fields: biomedical engineering, chemistry, physics, life sciences, kinesiology, psychology, kinesiology, computational sciences, and engineering. The building will house specific core facilities (e.g. clinical space, vivarium, molecular genomic facility), digital visualization space, collaborative and shared wet lab research space, meeting spaces, and graduate student and postdoctoral space. The intent is to recruit highly productive and interdisciplinary STEM researchers.

Areas of emphasis include researchers across multiple disciplines that 1) address human health issues impacting the state and nation (e.g. cancer research); 2) translate fundamental research into applied societal needs (e.g. semiconductors, manufacturing, space and defense, cybersecurity, bio and synthetic chemical products, psychology, and human health); or 3) combine experimental and computational approaches to investigate societal priority research areas (e.g. environmental health); 4) merge engineering, human, social and business disciplines in using AI, Big Data, autonomy, robotics, materials, and biotechnology advancements.

Action: UNT will intentionally leverage the new STB research space and use state programs including GURI, CPRIT, TSIF, and SEARF to recruit faculty that work within interdisciplinary teams. To facilitate interdisciplinary teams the DRI will host programs that build on successful team science approaches. This will be done by providing research development programs (e.g. KnowInnovate team science workshops), incentives to participate and in-house research development programs.

Metric: Successful recruitment of faculty that conduct collaborative and interdisciplinary research and lead and participate in large-sponsored projects that increase research expenditures.

B. Faculty Research:

Objective 19: Enhance research communications. The faculty workload can be extensive with many activities involved with instruction, research, and service. The DRI values effective communication of programs that will reinforce research productivity and operations to increase the competitiveness of UNT faculty for sponsored projects and research awards and celebrate the faculty's research and scholarly work achievements. The “Research Radar” communication is an example of DRI information disseminated monthly to faculty via email.

Action: DRI will improve and streamline communications on the DRI website. The UNT websites have migrated to a new platform and the DRI website is being reconstructed better inform the UNT research community of research operations, provide up-to-date information, and be a landing space to celebrate UNT researchers by providing UNT faculty research highlights. Furthermore, through the data acquired through academic analytics, faculty expertise, and collaborations can be made available to the UNT community.

Metric: Track the amount of traffic to specific pages within the DRI website.

Objective 20: Increase mentorship opportunities for all faculty researchers. All faculty can gain from formal and informal mentorship programs. Surveys of faculty that have left UNT in recent years indicate that <50% of faculty received mentorship through academic programs. The DRI is intentional about providing workshops for early career faculty (e.g. grantsmanship workshop, NSF CAREER workshop, NIH grantsmanship workshop). Here we aim to increase research mentorship programs.

Action: Increase the offering of mentorship training sessions for faculty; initiate a program to match assistant/associate faculty with full professors for interdisciplinary research proposals.

Metric: The number of assistant/associate faculty reporting satisfaction with the mentoring program; increase in the number of research proposals submitted by assistant/associate faculty.

Action: Create and incentivize a mentorship program for faculty grantsmanship that includes an internal review process. PIs with successful funding agency experience will be used to review proposal drafts and provide feedback for improvement before submission. Track research funding opportunities from other federal agencies (DoE, NASA, USDA, NSA, HMS, etc.), industry groups, and foundations, and support faculty in proposal submissions to such calls.

Metric: The success rate of pre-reviewed proposals relative to non-pre-reviewed proposals. Diversification of an individual PI research-sponsored project portfolio. That is, faculty research support by diverse agencies that are both federal (e.g. NIH, NSF, DoD, DoE, NASA) and private funding.

Conclusion:

In 2015 UNT was designated a top tier of American research university and to this day UNT continues to strengthen its research enterprise. UNT being recognized as one of the nation's top 187 "R1" research universities demonstrates UNT's commitment to very high research and doctoral degree production. Over the past year, the research at UNT has been accelerated by the Texas University Fund (TUF), a state endowment created by the legislature and approved by Texas voters in 2023. Here, we continue to use TUF dollars to support the three strategic goals for UNT to grow research, support impactful research and provide efficient operations. To address these three goals 20 objectives with specific actions and metrics were developed. The UNT community will have access to dashboards and yearly reports to support transparency and connection to the research strategic plan. In conclusion we are enthusiastic to move forward on this ambitious research strategic plan.

Appendix

Table 1. UNT Student Headcount (2024 Calendar Year)						
	Undergraduate	**MS**	**Doctoral**	**Spec-Prof**	**Post-Bac**	**Total**
Spring 2024	30,982	10,521	1,840	45	642	44,030
Summer 2024	13,951	4,557	505	34	362	19,409
Fall 2024	34,170	9,356	1,967	45	642	46,180

Table 2. Faculty Headcount (Spring 2025)			
College	**Tenured**	**Tenure-track**	**Professional non-tenure track**
Applied & Collaborative Studies	1	0	22
Education	39	38	42
Engineering	67	36	51
Health and Public Service	37	23	32
Information	29	11	9
Liberal Arts and Social Sciences	143	43	109
Merchandising and Hospitality	18	8	12
Music	81	26	20
Science	64	33	72
Visual Arts and Design	36	18	16
G. Brint Ryan College of Business	70	36	67
Honors & TAMS	2	0	2
University Library	0	0	56
Toulouse Grad School	3	0	23
Other	16	11	9
Total (1,431)	606	283	542
Notes: Number of T/TT faculty: 889			

Table 3. Graduate Student Degrees Awarded		
FY	MS	Doctoral
2024	4929	284
2023	4227	291
2022	2789	294
2021	2249	267