

ENVISIONING VIRGINIA TECH

BEYOND BOUNDARIES

A 2047 Vision

A framework prepared by Beyond Boundaries participants

Issued May 2016

Revised November 2016



A RESPONSE FROM THE PRESIDENT

More than a year ago, we began an important conversation about our future, one without the constraints of today's perspectives and perceived barriers. Thousands of you participated in Envisioning Virginia Tech - Beyond Boundaries, led by an outstanding steering committee and several work groups whose dedication and enthusiasm exceeded my expectations. Thank you to everyone who contributed their time and resources to this initiative. The outcome so far, including the "contained chaos" I mentioned in my State of the University Address, exemplifies the Virginia Tech spirit of innovation.

I have reviewed the committee's work and am pleased to present the Beyond Boundaries Visioning Report to the university community. I know this exploratory vision will evolve as we experiment with new models and alter existing practices, but the report provides a useful framework to guide our planning efforts. The report also provides a clear path for how Virginia Tech will navigate the changing landscape of higher education to enhance our standing as a global land-grant university.

As I noted in my letter to the university community last spring, the Beyond Boundaries work will not sit on a shelf. Many of the ideas that evolved during the visioning process have already gained traction and are having a wide-ranging impact on our community.

- The concept of the VT-Shaped Student has become the cornerstone of our vision for the future. Our graduates will have exceptional disciplinary preparation and interdisciplinary capabilities driven by deep purpose and engagement. Experiential learning and service in the spirit of Ut Prosim (That I May Serve) will continue to be a hallmark of the Virginia Tech experience.
- We are exploring new curricular designs through Pathways to General Education and Destination Areas. The Beyond Boundaries vision includes interdisciplinary efforts through which Virginia Tech will address global problems in the future. Destination Areas and related external partnerships and faculty synergies will help make this concept a reality.
- The importance of Cross-Sector Partnerships with external organizations has been a recurring theme. We are working to develop an even greater blend of living, learning, and research environments with partner organizations that leverage shared resources on a global scale. This includes establishing the Virginia Tech Carilion School of Medicine as our ninth college and the expansion of the Virginia Tech Carilion Research Institute, forming the centerpiece of a new Health Sciences and Technology campus in the Roanoke Innovation Corridor. In addition to providing experiential learning opportunities for an estimated 500 undergraduate and 500 graduate and medical students, the campus will strengthen our ability to drive transformative research at the intersection of health sciences and technology.
- We are advancing research commitments in the National Capital Region (NCR) and will continue to develop this area as a platform for global partnerships. We are already seeing Beyond Boundaries-focused partnerships, including the announcement this fall of the Qualcomm Thinkabit Lab at Virginia Tech and the MetroLab Network for "Smart Cities."
- We are accelerating our efforts to become more inclusive and diverse. For our vision to succeed, we must be more accessible to the best and the brightest prospective students and faculty, and our campus must reflect the diversity of our commonwealth and the world in which our graduates will live and work.

I am confident Beyond Boundaries will expand upon these achievements in the months to come. I have asked Alumni Distinguished Professor Rosemary Blieszner to remain engaged as the chair of an advisory group that will advise me on ways to move the Beyond Boundaries vision toward implementation. In year two, I have asked the advisory group to recommend metrics success of Beyond Boundaries outcomes and to design a continuous planning structure that removes existing barriers and boundaries to individual, team, and university-wide action. Going forward, I have taken the following steps to support the success of the Beyond Boundaries vision.

- The provost and I have established the Beyond Boundaries Scholars program, a one-to-one match for current-use gifts to Virginia Tech to create operating scholarships for high-achieving students and students from underrepresented groups. This will double the impact of current-use gifts and create scholarships ranging from \$4,000 to \$13,000 per year. It will provide immediate support for our efforts to lower barriers to highly qualified and underrepresented applicants.
- We will reconsider the ways in which we offer experiential learning. How is experiential learning defined, implemented, and assessed? And, how will we scale up these experiences so that all students have the ability to participate in meaningful experiential learning without financial or other barriers? I have asked Jill Sible, professor of biological sciences and assistant provost for undergraduate education, to engage the university community in a discussion around finding new ways to embed and implement experiential learning opportunities.
- Our provost, deans and the Directors of VAES and Virginia Cooperative Extension, Ed Jones, are working closely with industry partners and community leaders around the Commonwealth to expand the reach and impact of our network of Cooperative Extension offices and the Virginia Agricultural Experiment Station sites in the spirit of Beyond Boundaries.
- Provost Thanassis Rikakis will continue to support cross-cutting academic strengths that will advance academic quality, best prepare students, and boost our reputation globally. As a land-grant university, we are in the unique position to approach academic preparation through the lens of meaningful and applied service based on academic foundations and principles of scholarly engagement.
- In support of the advisory group, I have asked the Office of the Senior Fellow for Resource Development to continue to provide research and analysis that advances these goals. We will also continue the Beyond Boundaries Presidential Lecture Series, which will invite thought leaders to inspire disruptive and transformational approaches to globalization and the changing landscape of higher education. Our first two speakers, Facebook's Regina Dugan and University of Florida President Kent Fuchs, have already delivered stimulating messages to our community, and I look forward to the continuation of this series.

Beyond Boundaries is an exercise in imagining a vision for Virginia Tech a generation into the future. This vision sets a trajectory to position Virginia Tech as a global top-100 university. We know that existing ranking systems do not adequately capture the complexities of who we are, but our commitment to Ut Prosim and the land-grant mission extend our capacity beyond quantitative measures into collective values and action. I hope that each of you will use the Beyond Boundaries report as a starting point to inspire, energize, and transform the future of Virginia Tech. With your engagement, these initiatives will come together to advance diverse communities of learning equipped for a 21st century education. I strongly encourage the university community to continue to develop and share distinctive ideas that will transform the long-term direction of Virginia Tech.

Tim Sands, President



Dear Readers:

Throughout the world, higher education institutions are facing new opportunities and challenges. Leaders, critics, and other constituents are raising questions about the status quo and are working to chart the course for the next generation of learners. Virginia Tech is poised to lead the conversation about the role of public higher education in this changing landscape. How can we prepare students for a much different world than that which exists today? How will we leverage engagement and service on a global scale? And as we advance on these dimensions, how will Virginia Tech excel and simultaneously ensure an accessible and affordable educational experience?

Beyond Boundaries: A 2047 Vision offers a framework for the future as we look ahead to the 175th anniversary of Virginia Tech. In August 2015, President Tim Sands challenged the university community to envision Virginia Tech a generation into the future without the confines of today. In response, more than 90 committee members met during the 2015-16 academic year to imagine what we could and should be. This paper represents the work of thought leaders from across the university and is just the beginning of an ongoing dialogue and new understanding of the university's future in a changing landscape.

It is important to consider this work alongside the many existing initiatives and efforts underway at Virginia Tech. The Beyond Boundaries process has specific ties to InclusiveVT, Destination Areas, and the university strategic plan. These efforts are inextricably linked. The success of this vision is dependent on the university community working together to challenge aspects of our current environment and refine and implement emerging initiatives.

Beyond Boundaries committee members organized around themes of student preparedness, the campus of the future, new funding models, and our global land-grant mission. What began as a process organized around these four themes quickly transformed into overlapping discussions and shared concepts. The theme of improving the human condition through applied service underscores the concepts we introduce in this paper as VT-Shaped Discovery, Communities of Discovery, and Nexus of Discovery. This document details these concepts and future directions for Virginia Tech.

We encourage you to visit the Beyond Boundaries website for a complete set of related documents, including committee membership and reports, community input analysis, and related research.

We thank the Beyond Boundaries participants for their service toward envisioning Virginia Tech's future, and we look forward to continuing the dialogue—and the challenge—with you.

Sincerely,

Rosemary Blieszner, Alumni Distinguished Professor, Department of Human Development and Associate Dean, Graduate School

Alan Grant, Dean, College of Agriculture and Life Sciences

Thanassis Rikakis, Executive Vice President and Provost



THE LANDSCAPE

The Land-Grant University from Yesterday to Tomorrow

The Morrill Act of 1862 called for the creation and support of institutions in each state that would “teach such branches of learning as are related to agriculture and the mechanic arts ... in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.”¹ As such, land-grant institutions are charged with the goal of educating the whole person beyond the traditional confines of teaching and learning, and integrating research and outreach/extension into the undergraduate and graduate student learning environments.



The innovative land-grant university model, which has stood the test of time and proved its worth throughout the nation, lies at the heart of the Virginia Tech educational experience. In keeping with its land-grant mission, Virginia Tech's commitment to engagement and service is instilled in the university's motto of *Ut Prosim* (That I May Serve). Fundamentally, a land-grant university concentrates on the creation and dissemination of knowledge that enables people. Time and again, various Beyond Boundaries committees stressed the importance of sustaining a tripartite mission of teaching, research, and engagement/service. In recent years, educators have substituted different terms, such as learning, discovery, and engagement. Though terminology evolves, the fundamental mission remains unchanged.

While the tripartite mission has served Virginia Tech well and defines organizational culture, the mission does not permeate all aspects of the enterprise. To some extent the three parts are siloed. Some of our faculty, senior administrators, and students experience the full range of the mission, but this is not always the case.

During the past decade, the university has stressed undergraduate research experiences. Student life and the university culture highlight service-learning opportunities. But the three aspects of the university mission have not always been well-integrated. Beyond Boundaries study groups envision a maturation of undergraduate education to a model that may more closely resemble the experiences of contemporary graduate students (understanding that tomorrow's curriculum may bear little resemblance to today's). As students and university alike come to recognize the energizing power of Virginia Tech's motto, *Ut Prosim*, we envision a time when the full impact of the land-grant promise informs and drives the undergraduate experience as well as the rest of the enterprise.

**we envision a time when the full impact of
the land-grant promise informs and drives
the educational experience for *all* students**

The Knowledge Economy

Society has undergone an information revolution in the past 25 years with rapid advancements in both technology and telecommunications. These forces have dramatically changed the environment in which higher education institutions operate and the world in which their students will live and work. Technology has improved opportunities for high-quality distance education, which has enabled a growing number of nontraditional students seeking to develop new skills that will make them more competitive in the knowledge economy.

To address the unmet demand among nontraditional students, the number of for-profit higher education institutions increased rapidly from 2009 to 2013.² A 2012 U.S. Senate investigation found that more than \$30 billion in federal student loan money flows annually to the companies that run for-profit colleges, but more than half of enrolled students leave without degrees.³ This scenario suggests that students recognize the value that higher education has in their lives but may not feel that traditional four-year schools are accessible to them. Historically, land-grant institutions have had a responsibility to make education accessible to a broad population.

Technological advances allow us to interact with others from across the globe. As we consider the increasingly interconnected lives that our graduates will lead, these advances challenge our university to enhance educational opportunities for students to serve society globally.

On the economic front, the U.S. is increasingly linked to countries around the world. The U.S. is the second-largest trading nation on the planet. Total trade in 2013 (exports and imports) accounted for 30 percent of U.S. gross domestic product.⁴ The U.S. is the largest exporter of goods and services in the world and has held a services trade surplus since 1971.⁵

With these figures in mind, the Commonwealth of Virginia has aggressively pursued international investments or sought international business partners for its products. Washington, D.C., a world capital, resides at our doorstep. Virginia exported more than \$32 billion in goods and services in 2013. International trade, including exports and imports, accounted for 1 in 5 Virginia jobs.⁶ Virginia Tech's home state and our nation are so strongly linked to world economic trade, it is incumbent on university leadership to help instill a global outlook among its graduates.

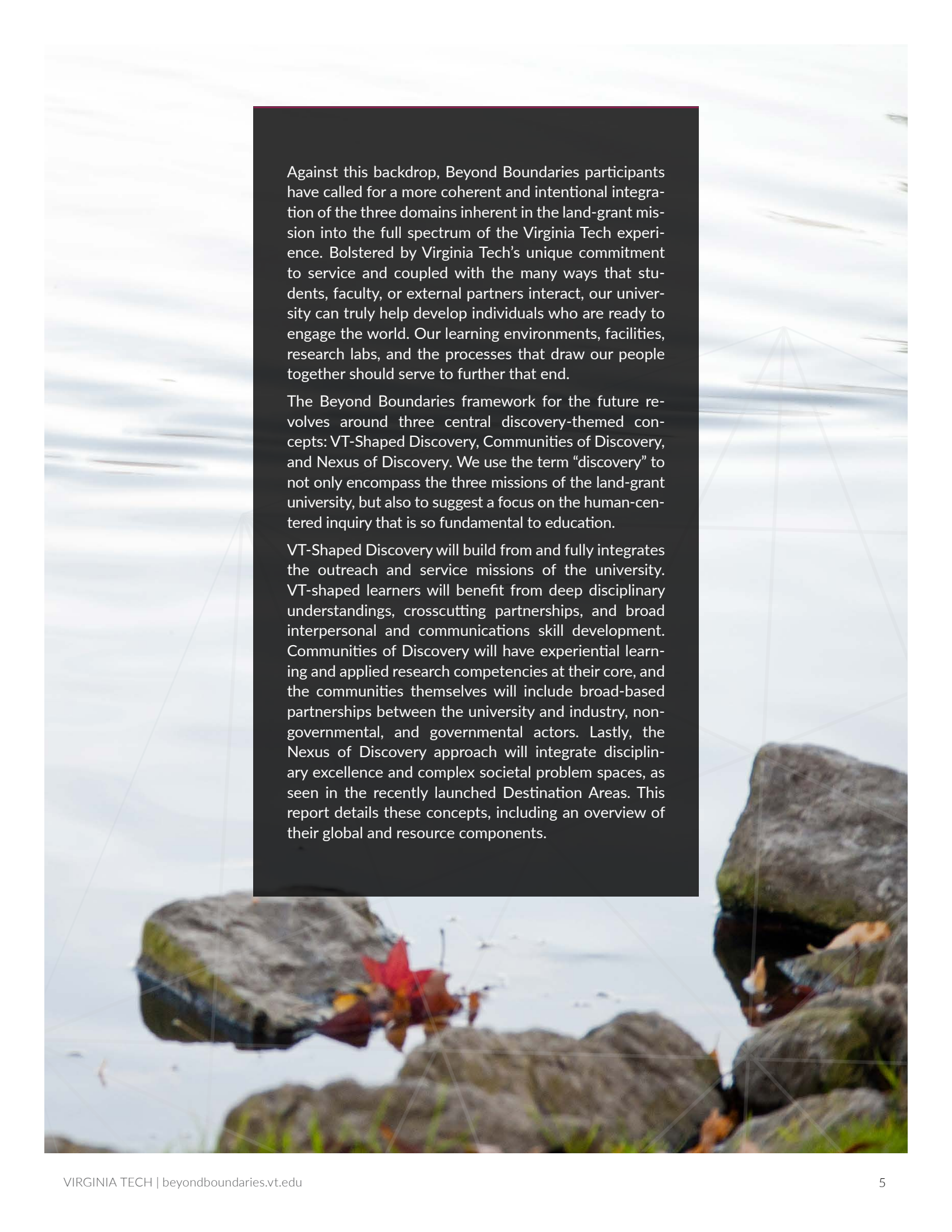
Advances in communication, transportation, and access to these tools have effectively "shrunk" the globe, and these trends will continue. Communications and the internet obviate time and distance. Many aspects of economic life and environmental problems transcend national boundaries. Companies and universities once competed for talent and resources throughout their states or regions and, sometimes, nationally. Today, many organizations, including universities, compete around the world for the best people. Thus, when quality, excellence, and impact are judged on a global scale, it behooves Virginia Tech to extend its reach and become a truly "global land-grant university."

the nation is engaging in a conversation about the expense and relative value of higher education

State Disinvestment in Public Higher Education

Public investment in higher education has declined steadily over the past 30 years. For example, in the U.S. since the 1980s, state appropriations for public universities have decreased while student enrollment has increased, causing universities to do more with less—or seek alternative sources of revenue to make up the difference.⁷ In 1990, states allocated 14.6 percent of their general fund expenditures to higher education and 9.5 percent to Medicaid. Now, the priority has flipped: In 2014, states allocated 19.1 percent to Medicaid and only 9.4 percent to higher education.⁸ Between 2008 and 2014, state disinvestment in higher education accelerated as funding per full-time equivalent (FTE) student fell by more than 20 percent when adjusted for inflation. This trend existed in 36 states, with 10 states experiencing a decrease of more than 30 percent.⁹ To offset these funding cuts, universities are pressured to raise tuition and fees at rates much faster than the rate of inflation.

As public investment in higher education has decreased and costs to families have increased, the nation is engaging in a conversation about the expense and relative value of higher education. A burgeoning crisis regarding student loan debt has contributed to the sense of urgency that surrounds much of this conversation. Generating additional revenue—from new or expanded academic programs or from philanthropic resources—is a vital first step toward enhanced funding for Virginia Tech that will enable the university to remain competitive and achieve its strategic objectives, while investing in new initiatives and controlling escalating tuition costs.



Against this backdrop, Beyond Boundaries participants have called for a more coherent and intentional integration of the three domains inherent in the land-grant mission into the full spectrum of the Virginia Tech experience. Bolstered by Virginia Tech's unique commitment to service and coupled with the many ways that students, faculty, or external partners interact, our university can truly help develop individuals who are ready to engage the world. Our learning environments, facilities, research labs, and the processes that draw our people together should serve to further that end.

The Beyond Boundaries framework for the future revolves around three central discovery-themed concepts: VT-Shaped Discovery, Communities of Discovery, and Nexus of Discovery. We use the term "discovery" to not only encompass the three missions of the land-grant university, but also to suggest a focus on the human-centered inquiry that is so fundamental to education.

VT-Shaped Discovery will build from and fully integrates the outreach and service missions of the university. VT-shaped learners will benefit from deep disciplinary understandings, crosscutting partnerships, and broad interpersonal and communications skill development. Communities of Discovery will have experiential learning and applied research competencies at their core, and the communities themselves will include broad-based partnerships between the university and industry, non-governmental, and governmental actors. Lastly, the Nexus of Discovery approach will integrate disciplinary excellence and complex societal problem spaces, as seen in the recently launched Destination Areas. This report details these concepts, including an overview of their global and resource components.

A FRAMEWORK FOR THE FUTURE

GOALS

The Beyond Boundaries thematic groups were tasked with creating a future vision for Virginia Tech that would prepare the university for two related goals:

Advance as an internationally recognized, global land-grant university

Strategically address the challenges and opportunities presented by the changing landscape of higher education

PRINCIPLES

In order to do so, committee members identified the following values that would remain critical to the university in the future.

Academic Excellence, World-Class Research, and *Ut Prosim*

Virginia Tech must reaffirm and enhance its commitment to integrating its threefold mission of teaching and learning, research and discovery, and outreach and engagement.

Engaging the Whole Person

Virginia Tech has a responsibility not only to educate through hands-on, minds-on learning, but also to create a diverse and inclusive environment that is person-centered.

Innovation

Through flexibility and continuous improvement, Virginia Tech will foster an environment of creativity and connectivity among all students, faculty, and staff—an environment that is easy to adapt in response to a changing landscape of higher education and societal trends.

Affordability and Accessibility

As a global land-grant university, Virginia Tech must be within reach financially for everyone—regardless of income, gender, race, or identity—who wishes to pursue academic excellence, world-class research, and service to the world.

FUTURE DIRECTIONS

1 Advance academic excellence to differentiate the Virginia Tech experience and deepen the university's value to the commonwealth, nation, and the world. In an era where knowledge is widely available and resources or talent move freely around the globe, Virginia Tech will provide more than an education. To that end, we should aspire to **become a top 100 global university.**

3 Offer flexible and personalized degrees to support increasing interest in and demand for interdisciplinary work. Interdisciplinary capacities will be acquired in or outside of the traditional classroom and applied towards degree requirements. We recognize that a single trajectory of study may not meet the needs of each unique Virginia Tech student. Curriculum is adaptive, customizable, and inclusive to each learner, and possibly unbound from grades and credit hours.

4 Become a problem-situated, distributed institution that tackles natural, interrelated, global problems. Extend beyond current disciplinary boundaries to form a living laboratory that will project Virginia Tech to the world and bring the world to Virginia Tech. Seamlessly engage with issues, organizations, and international economies through strategic investment in the National Capital Region (NCR) and creation of integrative innovation hubs in Virginia and across the globe that connect diverse sectors to the various facets of a complex problem.

2 Foster VT-shaped people who prioritize purpose-driven engagement with a combination of disciplinary depth and interdisciplinary capacities. VT-shaped people include faculty, staff, students, and university partners and friends. Bound together as communities of learners, VT-shaped people are lifelong learners and contributors. Through cross-disciplinary engagement in the solution of complex societal problems, VT-shaped learners develop empathy for the people they are serving and thus embrace the true spirit of *Ut Prosim*. VT-shaped learners learn to not only collaborate across disparate disciplines, but to employ diverse lived experiences to generate superior and more universal solutions to a problem.

5 Integrate the tripartite land-grant mission so that graduate and undergraduate students engage in meaningful research, work, and learning experiences. This includes scaling-up existing pockets of excellence. Virginia Tech's applied service mission undergirds this approach.

6 Cultivate global citizens by enhancing international engagement on our existing campuses and viewing the Commonwealth of Virginia and the world as our extended campus. Leverage new technologies so that students may share international experiences with one another. Understand difference through inclusion, the presence and practice of the arts, and human-centered approaches to learning. Engage with diverse cultures by strategically advancing global engagement hubs.

7 Nurture diverse partnerships in ways that allow Virginia Tech to invest in new initiatives, leverage resources, and “project” core competencies. Advance organizational networks and engage the university in ideas that matter. All sectors will collaborate in this effort—the university community, public and nonprofit agencies, and private industry partners.

8 Grow infrastructure with a networked and nimble approach that integrates future physical and technological demands. Physical space requirements will exist on a continuum of temporary to permanent. Human-centered smart technology will reduce the need for traditional academic spaces and places.

9 Adopt reflexivity and evaluation to become a true learning organization that continuously and rigorously innovates, evaluates, and improves.

10 Develop new and varied funding models to offset the public disinvestment in higher education and to make investments in new initiatives. Students and families should not carry the weight of increased costs alone. A network of multisector stakeholders will supplement the gaps in public funding. Our students will be so valuable and coveted that their educational costs will be funded by a diverse set of institutions.

VT-SHAPED DISCOVERY

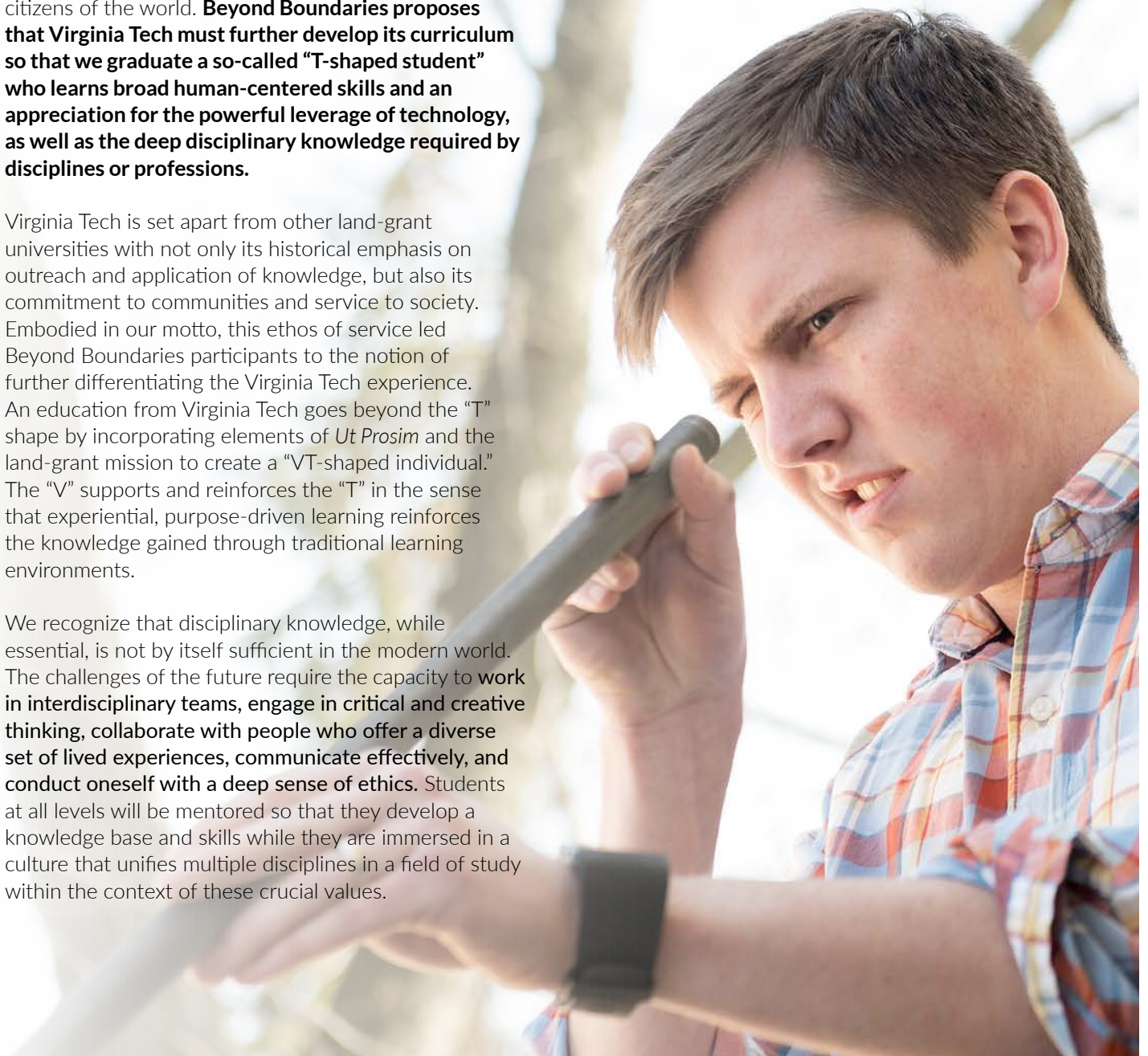


VT-shaped people prioritize purpose-driven engagement with a combination of disciplinary depth and interdisciplinary capacities.

In recent decades, public debate has ebbed and flowed concerning the value of a liberal arts education versus a more applied or professional approach to preparing for a career. However, most educators believe that an either/or stance is a false dichotomy and that both bodies of knowledge are important for preparing productive citizens of the world. **Beyond Boundaries proposes that Virginia Tech must further develop its curriculum so that we graduate a so-called “T-shaped student” who learns broad human-centered skills and an appreciation for the powerful leverage of technology, as well as the deep disciplinary knowledge required by disciplines or professions.**

Virginia Tech is set apart from other land-grant universities with not only its historical emphasis on outreach and application of knowledge, but also its commitment to communities and service to society. Embodied in our motto, this ethos of service led Beyond Boundaries participants to the notion of further differentiating the Virginia Tech experience. An education from Virginia Tech goes beyond the “T” shape by incorporating elements of *Ut Prosim* and the land-grant mission to create a “VT-shaped individual.” The “V” supports and reinforces the “T” in the sense that experiential, purpose-driven learning reinforces the knowledge gained through traditional learning environments.

We recognize that disciplinary knowledge, while essential, is not by itself sufficient in the modern world. The challenges of the future require the capacity to **work in interdisciplinary teams, engage in critical and creative thinking, collaborate with people who offer a diverse set of lived experiences, communicate effectively, and conduct oneself with a deep sense of ethics.** Students at all levels will be mentored so that they develop a knowledge base and skills while they are immersed in a culture that unifies multiple disciplines in a field of study within the context of these crucial values.





As we seek to prepare VT-shaped students, it is important to enhance our community of VT-shaped individuals. Specifically, faculty and staff play a crucial role in educating and mentoring VT-shaped students. We believe that the university must continuously invest in faculty and staff development in the areas of communication, conflict resolution, team building and managing, cultural competency, and technology. Role models and mentors are critical to the success of VT-Shaped Discovery.

Purpose-Driven and Person-Centered Curriculum

Emerging from this work is the notion of a “purpose-driven and person-centered” curricular design. A Virginia Tech education will engage the whole person and through inclusive connections contribute to the value of each person and to the groups in which they participate. To this end, Beyond Boundaries envisions significant changes in Virginia Tech curricula to reflect the belief that students at both the graduate and undergraduate levels will want to shape their own courses of study. **Curricular design must be flexible and personalized.** A flexible approach enables students and faculty to be purpose-driven in curricular design and research, thus addressing the complex needs of communities and society at large as they arise.

an education from Virginia Tech goes beyond the “T” shape by incorporating elements of *Ut Prosim* and the land-grant mission to create a “VT-shaped individual

The very nature of the land-grant mission revolves around communities and the needs of those communities. Defined in multiple ways, communities might be comprised of large or small geographic regions, professional groups, societal needs, and/or even entire industries. Curricula must be flexible to reflect the demand for student engagement in interdisciplinary and transdisciplinary work.

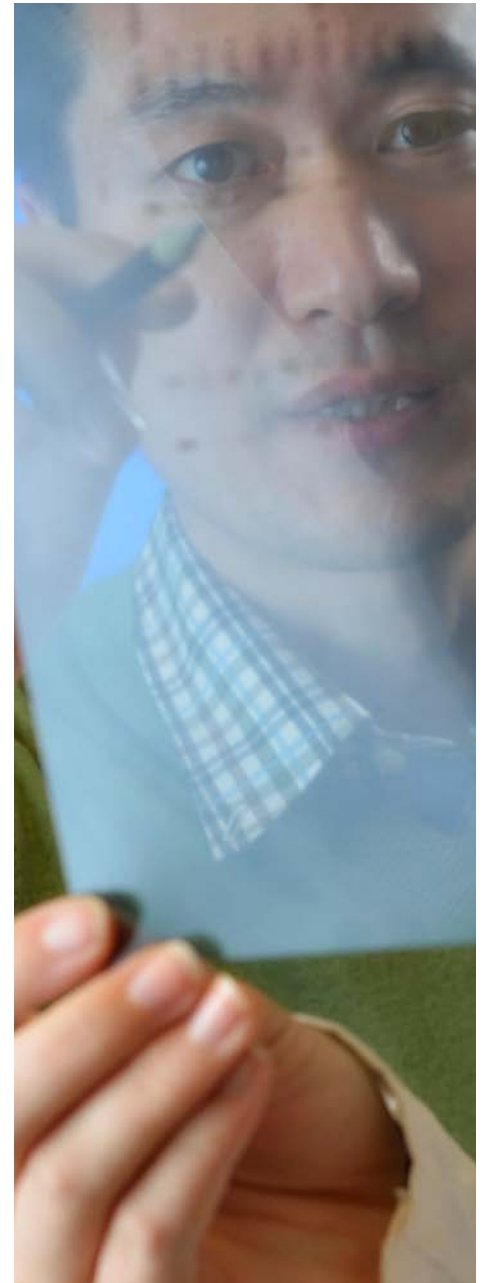
While many higher education institutions value all experiential learning variants—research, scholarship, internships, work experiences, service-learning, living/learning communities, student organizations, study-abroad, and cooperative education—the variants currently are seen as add-on benefits rather than

curricular design must be flexible and personalized

being integrated into curricular design for most undergraduates. As Virginia Tech incorporates curricular flexibility, experiential learning options will be built into and form the center of the learning environment. Building flexibility into the process may demand a more modular approach to the desired and necessary body of knowledge required for graduation. It becomes possible for non-campus players, such as **employers or alumni mentors, to participate in or help develop a student's educational experiences.**

We recognize that it may take several decades to fully achieve some desired outcomes. **Curricular design rests on long-standing principles of course credit and classroom hours.** Understanding how to identify and transmit requisite bodies of knowledge outside traditional course-for-credit methods will take time and ample experimentation by our faculty and staff. Additionally, Virginia Tech must manage external constraints levied by the Commonwealth of Virginia and various accrediting bodies (Virginia Tech currently engages with 44 external organizations on matters of curricular accreditation). The natural inclination to add time-to-degree will be resisted by forces that are (understandably) trying to limit the cost of an education.

Thus, the task of creating flexible and personalized degree options while **infusing all three parts of the land-grant mission into the curriculum** (indeed into the entire educational experience) will be a challenging endeavor. Driven forward with a supported faculty and staff, however, the end results—a deep and finely tuned educational experience, focused and purpose-driven graduates, and the useful application of new knowledge that benefits society—will reflect further evolution of the noble land-grant university model. In short, the Virginia Tech student of 2047 learns by doing, creating, and engaging, all in service to humanity, and does so not in isolation or as an academic exercise but rather with the support of a community.

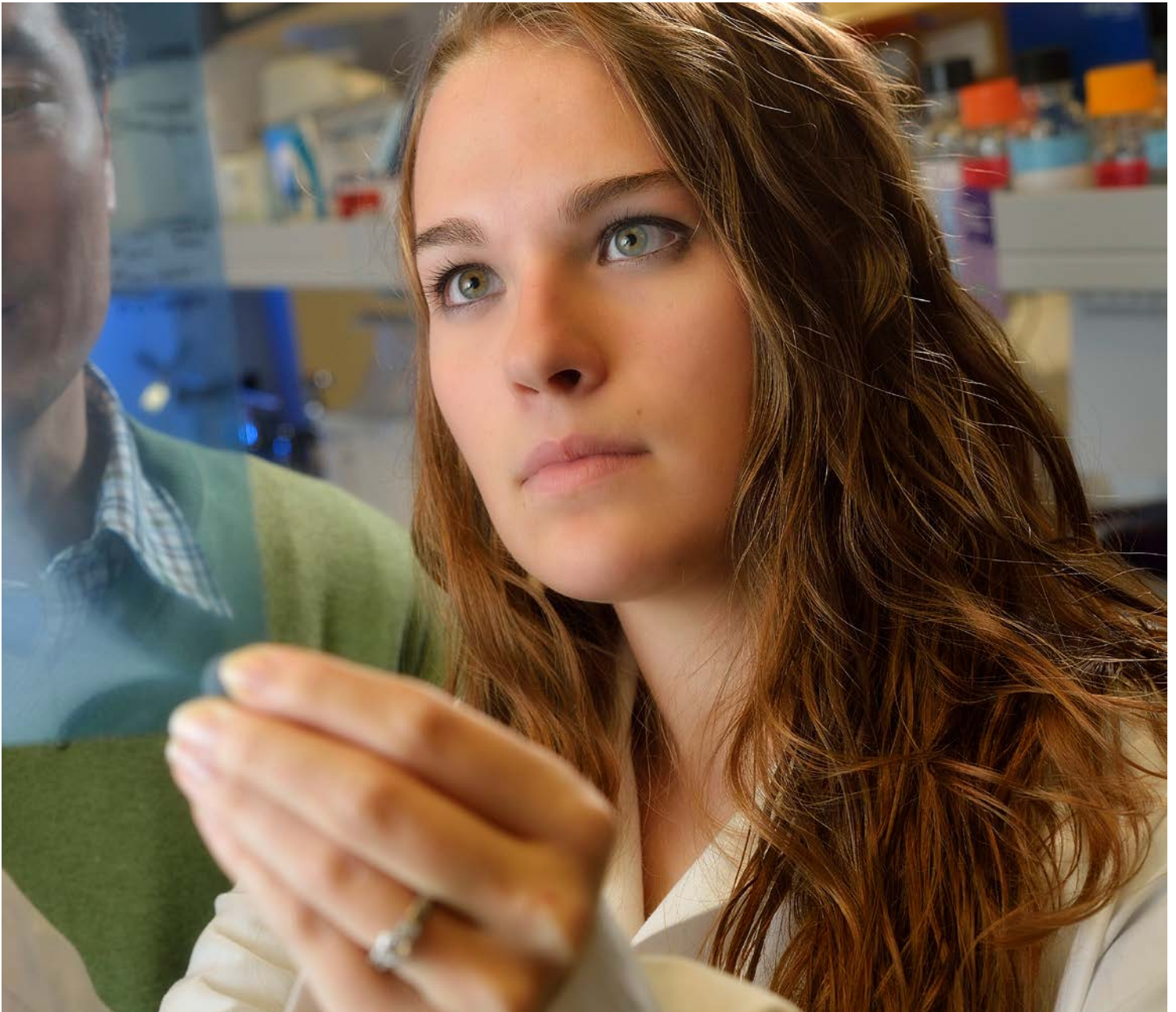


Global Citizens

Virginia Tech will place graduates on a path toward becoming global citizens so that they may successfully live and work in an interconnected world. Inclusive communities—which exhibit a lifelong commitment to understanding, empathizing with, and learning from diverse collaborators—are central to this trajectory. Not all Virginia Tech students may have a traditional study-abroad experience. Instead, they will undertake culturally enriching global experiences. This may take many forms:

participating in the arts on campus, addressing the needs of local communities in the commonwealth, interning with a global company in the NCR, assisting with a research team working abroad, or studying at an international partner institution. The potential opportunities are endless and as such, our curricula and organizational structures and incentives must allow space for these new types of international learning experiences, faculty engagements, and institutional partnerships.

Our graduates will lead the way in securing meaningful, well-paid jobs as they navigate and develop the strategies to support the complex dynamics between work, the environment, and the global economy. In line with our mission to improve the human condition, our effort to understand globalization places individual and collective well-being and sustainability at the core.



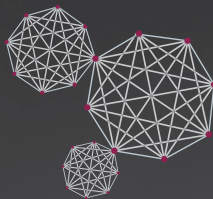
Resourcing VT-Shaped Discovery

In the spirit of reflection, we will challenge existing financial and educational approaches in ways that will affect our real costs. This includes such strategies as examining time-to-degree, reconsidering traditional “seat” time, reimagining pricing paradigms, and leveraging new technologies to manage enrollment domestically and abroad.


Virginia Tech students will be able to find new, multiple, and variable sources of support to fund their education, including internships with government, business, or nonprofit organizations that fund tuition in return for service before or after graduation.

New learner-centered programs will generate additional revenue by developing complementary academic programs or expanding current ones.

COMMUNITIES OF DISCOVERY



Communities of Discovery advance organizational networks and engage the university in ideas that matter.



Knowing that learning comes alive when theoretical concepts or principles are observed in practice, learning communities will be integrated into curricular design. Communities of Discovery are central elements to implementing purpose-driven learning. Through them the university flips the traditional instructional model where course-driven learning is at the core and experiential learning is peripheral. Beyond Boundaries envisions that **experiential learning wrapped around an issue, problem, or topic of the community will become the core of the educational experience**, with the traditional course instruction supporting that work.

Experiential learning embedded in a Community of Discovery resides at the core of Beyond Boundaries. The place, focus, and direction of these communities will evolve over time. Regardless of what shape they take—professional communities, topical communities, or problem-based communities—their **communal needs inform curricula with a feedback loop enriching the learning experience**. The physical and virtual environments of campus, whether in our existing facilities or in new operations around the world, will be designed to support human-to-human interactions, emerging pedagogy, flexible learning, cutting-edge research, and the unique mission of Virginia Tech.

Mobility

We recognize that not all discovery experiences need to occur in one place. Access is expanding through rapid transportation and more robust communication technologies. Jobs and capital flow freely across national boundaries. But disease, pollution, political and economic instability, and environmental change ignore borders as well. In light of the compelling need to nurture intercultural and global outlooks, **experiences beyond Blacksburg or other campuses will be essential**. Time away from one campus amplifies learning in ways not possible in traditional classrooms or in a relatively cloistered campus environment.

We also recognize shifts in demographics: Growth in future student populations will be much larger among so-called nontraditional students. Currently, Virginia Tech largely enrolls full-time residential students, except for non-Blacksburg graduate student populations. Three or four decades from now, most students will participate in learning or research experiences that are not place-bound. This will allow for more nontraditional and distance learners to benefit from a Virginia Tech education.

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tomorrow's campus will mirror today's innovation districts

Continuously advancing information and **communication technologies will enable connections that will obviate the need for place-bound learning and research.** In future decades, virtual faculty, student, mentor, or work relationships will be as rich and effective as current face-to-face interpersonal experiences.

Innovation Hubs

Today, modern, dynamic urban environments are witnessing the rise of “innovation districts” that merge living, recreation, work, learning, and innovation in close proximity.¹⁰ Physically compact and built on or around mixed-use facilities that offer retail, offices, housing, and cultural venues, these communities attract today's entrepreneurs, emerging technologies, and knowledge workers.

To enable our Communities of Discovery, we envision that **tomorrow's campus will mirror today's innovation districts** in some respects. We see this occurring on several levels, on and away from campus, and virtually as well as physically. On the main campus, planners should consider moving away from the current segregation in which classes, labs, housing, and recreation occur in different zones. Serendipitous “productive collisions” abound when living, working, learning, and recreation interact freely in shared spaces to promote innovation.

Already on the Blacksburg campus there are living/learning facilities focused on disciplines, such as engineering or science, or themes, such as innovation or entrepreneurship. We should consider integrating traditional campus spaces with innovation spaces, businesses, or start-ups ... in a sense merging the Virginia Tech Corporate Research Center environment with the main campus. University facilities in Roanoke and the NCR already possess elements of innovation districts and represent ideal test beds for these concepts.

Reimagining the educational environment (on campus and elsewhere) around “integrative innovation hubs” can combine the full continuum of one's educational experience. Imagine students, faculty, businesses, or community partners intimately engaged—learning, working, and addressing fundamental problems together. Residing at the core of our innovation hubs are common issues, problems, or initiatives that bind these communities together. At the graduate and professional student levels, innovation hubs may support specialized training and mentoring with public and private agencies. These partnerships would lay the groundwork for meaningful employment opportunities outside academia and potentially fund students in exchange for service upon graduation (cooperative education). Integrative innovation hubs will be supported by the depth of traditional and emerging core disciplines, forming our future VT-shaped university.



Global Engagement Hubs

Engaging the world does not necessarily mean significantly increasing Virginia Tech's permanent physical footprint. Committee members described global infrastructure needs on a continuum from temporary to permanent, and expressed that the university would be heavily reliant on technology to enable human-to-human connections worldwide. We will leverage our existing Cooperative Extension system to project our capabilities outside of traditional campus boundaries and onto complex problems.

Global engagement hubs will be distributed around the world, supporting engagements of weeks or months or years, depending on the time scale of the problem under consideration. Where a physical presence is necessary, the hub would be established on a temporary basis until the need for long-term engagement is demonstrated. The hubs will be integrated with local communities and, in some cases, dependent upon local support. Local investment might come in many forms—from businesses, governments, and Virginia Tech alumni.

Three or four decades in the future, technologies will support rich virtual environments or other forms of communication seamlessly connecting people from around the globe. Human-centered smart environments will create linkages between virtual or physical innovation spaces, traditional instruction, research labs, living/learning communities, businesses, and governments, to name a few.

Human-Centered Smart Environments

Within our digitally enabled human-centered smart environments, students, faculty, and partners can experiment, prove ideas, and learn from failures. **Simulation, augmented and virtual realities, and technologies will underlie these hands-on, minds-on environments.** Think of simulated stock or commodity trading floors for students studying financial markets. Or a fully immersive virtual environment where physical spaces can be experienced and tested before construction. In such an environment, one could walk through a dynamic, realistic representation of a human cell or engage in decision-making while undergoing real-time functional brain imaging. These environments have immense but un- or under-utilized potential applications in the humanities fields, as the environments could enable remote historical site exploration, new forms of artistic expression, and language immersions for students in richer ways than are widely available at present. Such learning environments should be pervasive across the curriculum and research enterprise, be seeded by big data flowing from the physical and digital world, be flexible enough to adapt to a variety of applications, and evolve over time. Creating these environments requires investing in facilities that support robust, high-quality, connectivity, both on and off campus.



New Partnerships, New Opportunities

Partnerships are instrumental if we are to achieve the principles set forth in Communities of Discovery. We believe that an even greater variety of engaged industries will be required to tackle the world's most complex problems through education and applied research. We imagine that new funding models will emerge from these partnerships. In the future, students and institutions may be funded by a variety of sources. Virginia Tech graduates will be so valuable that

employers will willingly contribute to the cost of education in exchange for future service.

Joint ventures like the Virginia Tech Carilion School of Medicine and Research Institute foster curricula that integrate hands-on learning and provide additional opportunities to generate new revenue. Now and in the future, there will be multiple partnerships at different levels that support students, faculty, departments, and other university

units. The newly launched VTC Health Sciences and Technology campus in the Roanoke Innovation Corridor is one such example.

Alumni play an important role in nurturing these communities. The graduates of the future will be lifelong learners committed to service. Alumni give back to the Virginia Tech community by providing experiential learning opportunities, mentoring, and financial advancement.

NEXUS OF DISCOVERY



Nexus of Discovery extends beyond current disciplinary boundaries to form a living laboratory that will project Virginia Tech to the world and bring the world to Virginia Tech.

we will better integrate disciplinary excellence for the resolution of complex problems

A land-grant university concentrates on the creation and dissemination of knowledge that enables people. Equally, all higher education institutions provide intergenerational transfer of knowledge organized around disciplines. This purpose will be the same in the next generation. One limitation of such an arrangement, however, is that we tend to apply an academic or institutional lens to complex problem-solving without considering the broader context. As we move into the next generation, we will **advance from a disciplinary-based university structure to a distributed university structure by better integrating disciplinary excellence for the resolution of complex problems.**

Situated in a problem context, disciplinary boundaries stretch and overlap to meet the demands of the given domain. This intersection of disciplinary excellence is where Destination Areas are formed. We define Destination Areas as **crosscutting disciplinary and interdisciplinary strengths that address problems related to improving the human condition.** These strengths are so compelling that Virginia Tech will be a primary destination for students and faculty wishing to pursue work in these areas.

Important issues, such as feeding, building, and empowering a healthy world, require both research and engagement, and rely on both the academic expertise and the knowledge brought by all sectors and people embedded in these contexts. One Virginia Tech professor studying water quality embodies this stance: “Science should be about pursuing the truth and helping people,” he said.¹¹ **In 2047, Virginia Tech will project**

its talents to the world and in tandem, view the world as an extended campus. This ideal supports the premise of VT-shaped individuals, those who seek to apply new knowledge to benefit society.

Virginia Tech’s success in these endeavors relies upon academic exceptionalism. We will strategically capitalize on crosscutting strengths to boost Virginia Tech’s academic renown and, ultimately, its reputation on an international scale. To compete with our academic peers, Virginia Tech seeks to grow in its value to students and society such that it is **recognized among the top 100 global universities.** Operating among the world’s leaders requires much more international research collaboration and a “brand” of academic excellence that is recognized by the world’s best universities. A diverse pool of highly qualified talent—students, faculty, and staff—drawn from all corners of the planet is a requirement to realize this aspirational position.

Another component to the Nexus of Discovery is a **tightly coupled network of cross-sector partners.** Higher education institutions are increasingly turning to the private sector, government agencies, and nonprofit organizations to enrich—and fund—robust academic and research environments (such as innovation districts and global engagement hubs). The university’s Cooperative Extension model will inform the creation of these relationships all over the world and in Virginia, supporting the “living lab” concept in which students, researchers, and partners come together in a defined problem space. A network of talent, interests, and abilities is important to successfully fulfilling the global land-grant mission of the future.



Seeing the Commonwealth Through a Global Lens

Beyond Boundaries committees focused on enhancing the student experience in ways that highlight meaningful engagement and global experiences. Global interconnectivity and technological advancements challenge higher education institutions to reconsider their roles in best preparing graduates for the changing world.

Virginia Tech must continue developing as a global land-grant university while applying its frame of reference to an increasingly interconnected economy. As Virginia’s flagship land-grant institution, the best way for Virginia Tech to serve Virginians is to acknowledge that a global perspective is required to help

citizens and companies compete internationally and to help address our own complex problems locally.



Excellence Demands and Yields Resources

By integrating academic disciplines with complex problems, Virginia Tech will become the “destination” for specific areas of focus. Focused excellence will not only attract top-notch students, scholars, and international brand recognition, but also increase philanthropic gifts and funded research projects. By enhancing the Virginia Tech brand through wise stewardship, high-quality educa-

tion, world-class research, and influential public engagement, Virginia Tech will achieve and sustain international recognition. As a result, the university will also enjoy the benefit of attracting strong philanthropic support. To remain competitive as a world-class institution, Virginia Tech must accelerate its efforts to secure philanthropic resources by linking donors and alumni to the ongoing mission of the university.

Financial giving will become an integral part of Virginia Tech’s *Ut Prosim* culture—and the culture will result in increased philanthropic revenue. As a result of its scholarly excellence, Virginia Tech will more routinely realize gifts of \$100 million or more to fund programs of excellence. Endowed gifts will support faculty recruitment and retention and student scholarships.

CONTINUOUS INNOVATION

Through these concepts suggested by committee members, Virginia Tech is poised to confront the changing future. Two resounding themes of this effort are dynamism and agility—characteristics not often used to describe higher education institutions in the traditional context. **In order to achieve the environment we have outlined in this work, however, institutional structures will have to evolve to meet new demands.** How do we best incentivize, develop, and support faculty with diverse talents? Design curricula to be adaptive while still meeting the high standards of accrediting bodies? Dissolve programs that no longer best serve our interests and invest in new initiatives with new funding sources? We will continuously innovate to evolve.

Together, we will establish a culture centered on “value to experience.” This expands on the concept of return on investment in the academic environment in which mission-critical programs do not always appear to be cost-effective when evaluated in isolation. This approach will result in an environment that is agile, transparent, and adaptable. **A culture of self-evaluation and innovation requires both bold ideas and resources.** Beyond Boundaries committee members see these two ingredients advancing hand-in-hand. To be sure, some of the anticipated changes, including new technologies, international experiences, and scaled-up engagement opportunities, will be costly. We welcome the opportunity to examine our current investments—monetary and nonmonetary—and allocate resources based on educational impact.

Indeed, the vision of the Beyond Boundaries committees presents **significant, yet worthwhile, upheavals in our current system.**


We will require new metrics to evaluate the success of concepts that have otherwise been routine and embedded in the university culture. The process of identifying new measures of progress has just begun, and we anticipate continuous emergence of innovative metrics as new VT-Shaped programs evolve.

The university’s engagement-based mission presents an opportunity to further differentiate the Virginia Tech experience. VT-Shaped Discovery—inspired by the desire to improve the human condition in Virginia and worldwide, now and into the future—will characterize and motivate our graduates, faculty, and staff.

Communities of Discovery have already begun to take shape on our campuses, through joint research efforts abroad, in the VTC Health Sciences and Technology campus in the Roanoke Innovation Corridor, the National Capital Region, and other affiliated locations. These communities **promote networks, partnerships, and pools of diverse talents that will enhance Virginia Tech’s capacities and students’ educational experiences.**

Moreover, partnerships create financial leverage that enables us to succeed in big projects that would otherwise be beyond our means.

Existing crosscutting academic strengths provide a third opportunity to advance Virginia Tech in several dimensions. The Nexus



promote networks, partnerships, and pools of diverse talents that will enhance Virginia Tech’s capacities and students’ educational experiences

of Discovery integrates disciplines and complex problems in strategic areas of focus. With this approach, Virginia Tech will be the **internationally recognized destination for talent** and will, in turn, attract funding for learning and research in these areas. By raising “tent-poles” of excellence around Destination Areas, we will expand the space and opportunities “under the tent” for the entire university community.

Next Steps

This visioning report presents committee work and research that took place during the 2015-16 academic year. The recommendations offer a framework for near-term steps and the next university strategic plan. Committee members were asked by the president to be bold without being bound by regulations, resources, or the status quo, and to explore ways in which Virginia Tech can apply and adapt the land-grant model to address constituent needs several decades into the future. We posit many ideas, but the committee’s recommendations need further refinement. As such, the university requires complementary processes to put ideas into action.

One of the first action items emerging from the Beyond Boundaries initiative is the Destination Areas concept—a strategic focus on our crosscutting academic strengths. The first Destination Areas-related major is planned to launch in the 2016-17 academic year. Investments in new faculty positions, shared lab facilities, and tools for teaching complex new majors will support this developing curriculum.

We challenge the university community to keep the discussion alive through experimentation and testing. The Beyond Boundaries incubator will be a mechanism for cultivating the university community’s efforts to advance visioning and strategic action. The incubator will provide space in which thought leaders can collaborate and formulate ideas from the bottom-up. For example, what characteristics define the faculty member of 2047, and how will the university support faculty development? What innovative financial models may be employed to enhance the contemporary Virginia Tech experience while curbing escalating tuition costs?

An initiative that is integral to the Beyond Boundaries vision is InclusiveVT. Virginia Tech will continue to examine and advance issues that support an inclusive community. Virginia Tech depends on a diverse set of talented individuals to accomplish its long-term goals of purpose-driven work, enabled people, global engagement, and international reputation. We cannot fully realize the aspirations of our motto, *Ut Prosim*, without vigorously pursuing the development of empathy within our communities of learners. Understanding those you are serving is the foundation of an inclusive 21st century engaged institution.

The Beyond Boundaries vision lays the foundation for the next university strategic planning process. Here, the university community will have the opportunity to define and implement the complex ideas introduced in this paper. A seamless transition between visioning and planning will ensure the integrity of these ideas.

The university concept, now almost a millennium old, derives some strength from the powerful human urge to understand the world around us—the timeless pursuit of knowledge for knowledge’s sake. But American higher education, and particularly land-grant universities, enhance this mission with purpose-driven learning. The land-grant schools afforded the nation a social construct for upward mobility, economic development and competitiveness, critical and scientific inquiry, and bettering the human condition. In part, land-grant universities have done so by adhering to the inherent values in this unique model. Indeed, the original vision of the Morrill Land-Grant Act was built on education, opportunity, and economic strength.

These institutions have also adapted over time to meet the changing needs of society. The academy today is different from that of the 19th or 20th century. We trust that readers of this visioning document will use the ideas presented here as a starting point for building on the land-grant vision and the nation’s educational successes in order to mold the university of the future into a dynamic institution poised to address contemporary needs.



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Issued by the Office of the Senior Fellow for Resource Development, May 2016, revised November 2016

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RESEARCH AND REPORTS

Committee reports and related research accompany this work. Visit www.beyondboundaries.vt.edu to access materials.

Thematic Group Reports and Idea Bank Analysis

Advancing as a Global Land-Grant University

Chris Barrett, Paul Knox, and James Harder

Discovering New Funding Models

Thomas Dingus, Lara Khansa, and Jerald Walz

Envisioning the Campus of the Future

Kathryn Albright, Sanjay Raman, and Meredith Hundley

Preparing Students for the World

Jill Sible, Matthew Wisnioski, and Elsa Camargo

Beyond Boundaries Idea Bank Analysis

Jaimie Edwards

Related Research and Analysis

Advancing as a Global Land-Grant University

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Characteristics of Highly Ranked Universities in the Times Higher Education (THE) World University Rankings

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Virginia Tech's Future Relationships with the Region and the Commonwealth

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What is the Right Thing to do for Tomorrow? Funding Models and Virginia Tech

Jaimie Edwards

ENDNOTES

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