



REIMAGINING MINNESOTA STATE

About Minnesota State

Minnesota State is an interdependent network of 37 vibrant colleges and universities committed to collectively nurturing and enhancing a civically engaged, socially mobile, and economically productive Minnesota. As a system, we foster the success of all students, no matter where they are enrolled, and we support the vitality of all Minnesota communities, no matter where they are located. With seven universities and 30 technical and community colleges on 54 campuses throughout the state, Minnesota State is the largest single provider of higher education in Minnesota, and the fourth largest system of higher education in the country. Six out of ten undergraduates in the state are Minnesota State students.

We are deeply committed to being a place of hope and opportunity for students who dream of becoming our state's next generation of professionals and leaders – no matter who they are or where they come from. This is critically important for students from communities traditionally underserved by higher education, including the 22 percent of our students who come from families of limited financial resources; 17 percent who are students of color and American Indian students; 13 percent who are first-generation students; and three percent who are veterans and service members. Minnesota State serves more students from these communities than all other higher education options in Minnesota combined.

Our campuses play an essential role in growing the state's economy through talent development. Every year, the system enrolls roughly 375,000 students every year – 120,000 of whom are in non-credit courses and customized training programs designed for businesses – and awards over 38,000 degrees, certificates, and diplomas. Eight out of ten graduates get jobs in fields related to their programs and stay in Minnesota.

Reimagining Minnesota State: Three Big Questions

Through the *Forum on Reimagining Minnesota State*, we will learn together and respond to the three big questions presented by the Chair of the Minnesota State Board of Trustees that will inform the future of the system.

What is Minnesota State's unique value proposition to the State of Minnesota? What are the key educational, economic, and social goals that Minnesota State must address to create a better way of life for all people of Minnesota?

How does Minnesota State foster a culture of innovation, collaboration, and partnership as we share responsibility for the achievement of our key goals? How do we empower our employees and

students to experiment with and collaborate on innovative approaches to move the needle on our key goals?

How do we leverage our “systemness” to the benefit of our students and the state? What is the unique role of our public higher education system that makes the system more than the sum of our parts? How does Minnesota State act more like an interdependent network that fosters the success of all students no matter where they are enrolled and supports the vitality of all Minnesota communities no matter where they are located? How will we offer a diversity educational delivery methods and continue to attract and serve a more diverse student population.

**Forum on Reimagining Minnesota State
Session 5. Innovative Models: Improving quality,
increasing access and reducing costs through system-wide innovation**

Briefing Paper 5

By Dr. Lisa H. Foss, Chancellor's Fellow

Description: The fifth session will focus on how higher education institutions and organizations are balancing the necessary but at times competing goals of serving new student needs, improving quality and outcomes, and reducing costs. Session 5: Innovative Models will allow for the exploration of how higher education institutions are approaching the creation of new and innovative educational and business models that support the development of new markets, improvement in quality and student success measures, and the achievement of organizational financial goals by reducing costs and identifying alternative or additional revenue streams.

Forum Session 5 Discussion Questions:

1. What are opportunities within Minnesota State for collective innovation to serve the needs and expectations of the student body of the future, especially as it relates to advancing equity and inclusion?
2. What are opportunities within Minnesota State for collective innovation to improve student learning?
3. What are opportunities within Minnesota State for collective innovation to ensure the financial sustainability of the system?
4. What are approaches or models of supporting innovation that you are currently using on your campus that could be expanded across the system?
5. What are opportunities for Minnesota State institutions and other organizations to partner and collaborate in order to support innovation in the future while maintaining its responsibility for advocacy and accountability?

Overall Observations about Innovation

Innovation has become widely recognized as both a major goal of economic activity and one of the most important instruments through which organizations and countries gain and sustain competitive advantage in globally competitive marketplaces. Innovation has become a key functional activity in organizations, in much the same way as marketing or finance are. While it may not be possible to control and manage innovation, it is possible to design and control the contextual and organizational conditions that enhance the probability of innovation occurring.

Innovation is not a new concept but the rapidly changing environment that has become the hallmark of the 21st century has made a capacity for deliberate innovation an important companion to technological developments. Innovation is rarely a single event nor does it follow a linear path. It more often than not combines knowledge and expertise from multiple fields and combines that knowledge in novel ways to solve new or existing problems.

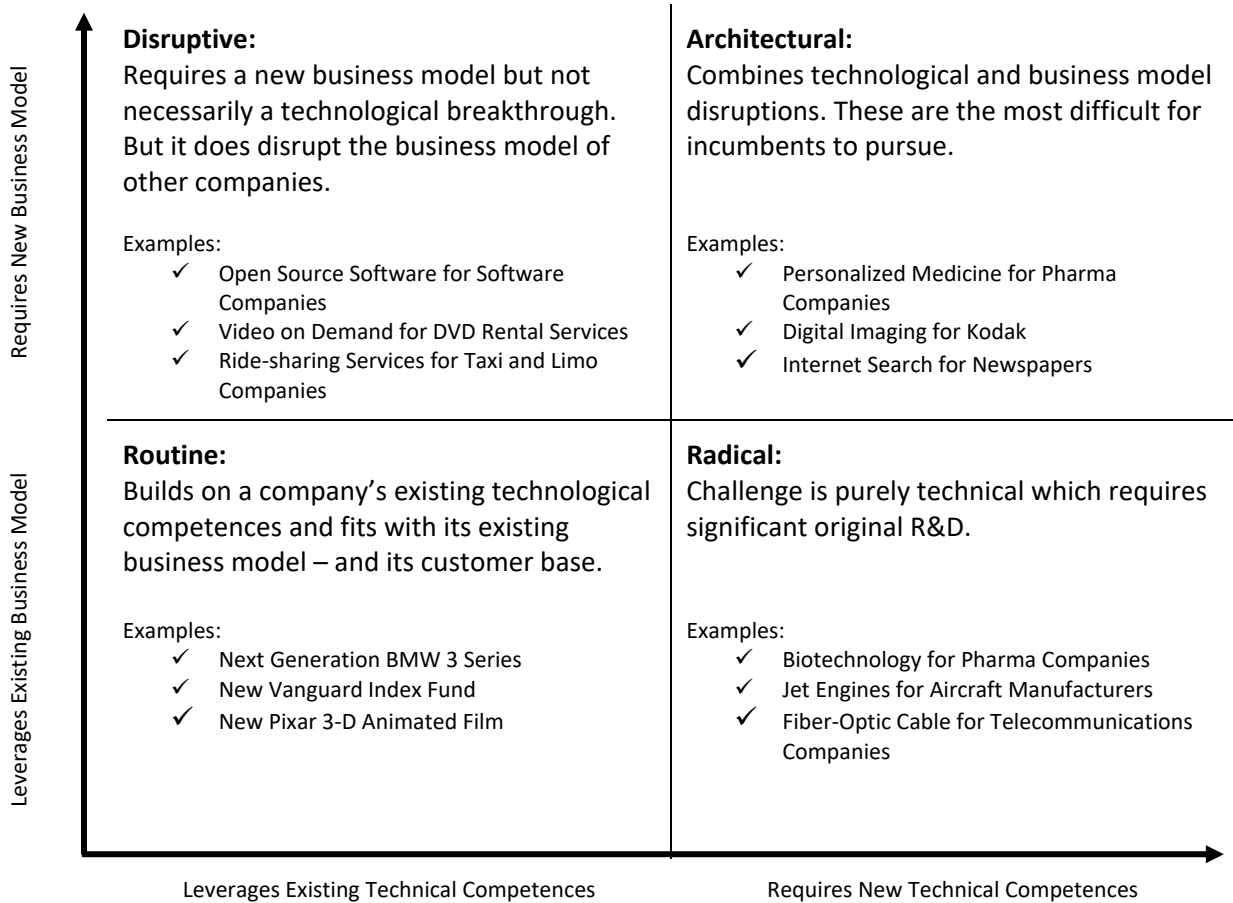
Definitions of innovation: Definitions of innovations are various. Examples include:

- A novel solution to an important problem
- The profitable application of creativity to improve products and services, processes, or business models
- Whereas invention is the creation of a new idea, innovation is more encompassing and includes the process of developing and implementing a new idea. As long as the idea is perceived as new to the people involved, it is an innovative idea. This includes technical innovations (new technologies, products and services) and administrative innovations (new procedures, policies, and organizational forms).

Developing an Innovation Strategy: Much of the current innovation literature focuses on the importance of organizations developing and implementing an innovation strategy – or a coherent set of interdependent processes and structures that dictates how the organization searches for novel problems and solutions, synthesizes ideas into a business concept and product designs, and selects which projects get funded. Authors have developed different matrixes to provide guidance to leaders on how to distribute an organization's time, attention and resources as part of their innovation strategy. These include:

The Innovation Landscape Map (Pisano, 2015)

When creating an innovation strategy, organizations have a choice about how much to focus on technological innovation and how much to invest in business model innovation. This matrix, which considers how a potential innovation fits with a company’s existing business model and technical capabilities, can assist with the decision. In thinking strategically about the four types of innovation, then, the question is one of balance and mix.



Innovation Matrix (Satell 2017)

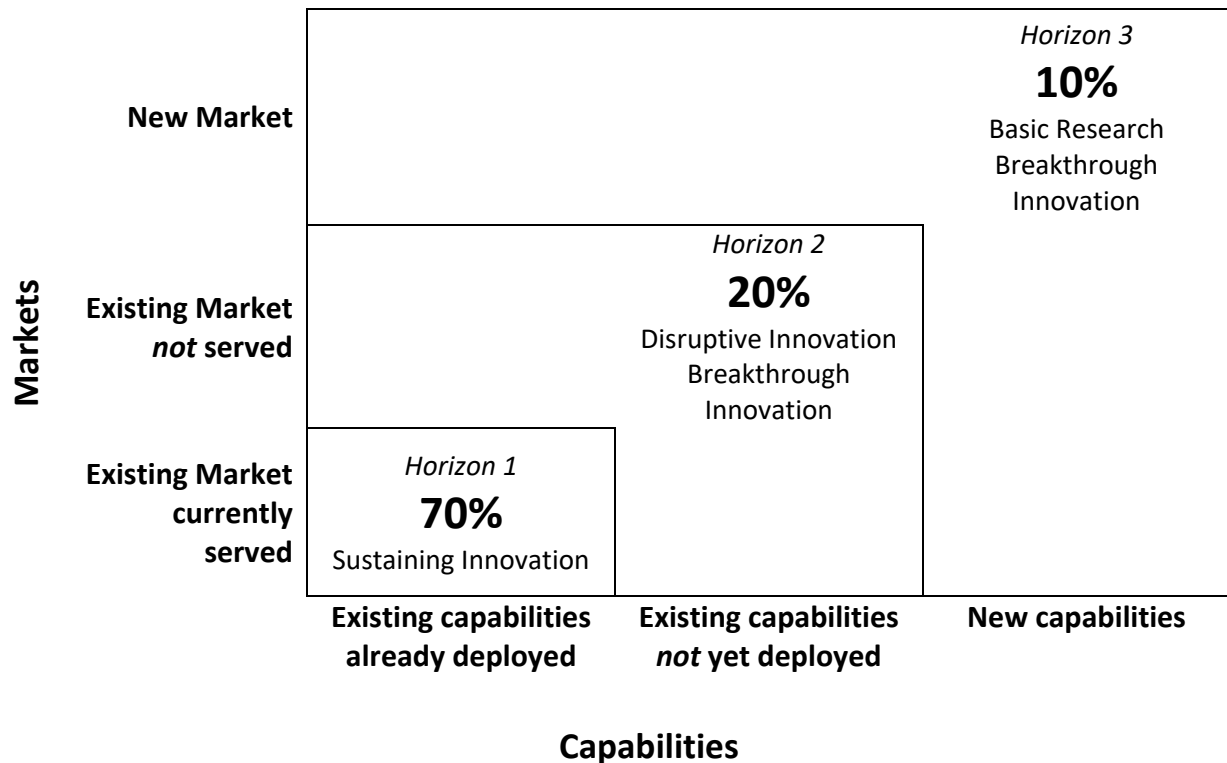
The Innovation Matrix asks two crucial questions: 1) How well is the problem defined; 2) Who is best placed to solve it? As the innovation matrix shows, once you have thought about how well defined both the problem and the domain are, you can narrow down your options for an innovation strategy to one of just four quadrants: basic research, breakthrough innovation, sustaining innovation, and disruptive innovations.

Problem Definition	Well Defined	Breakthrough Innovation Mavericks Skunk Works Open Innovation/Prizes	Sustaining Innovation Roadmapping R&D Labs Engineering Acquisitions
	Not Well Defined	Basic Research Research Divisions Academic Partnerships Literature & Conferences	Disruptive Innovation VC Model Innovation Labs 15%/20% Rule Lean LaunchPad
		Not Well Defined	Well Defined
		Domain Definition	

1. **Basic Research:** When your aim is to discover something completely new, neither the problem nor the domain is well defined.
2. **Breakthrough Innovation:** The most impactful discoveries came from combining deep expertise in closely related fields with knowledge from an unlikely place. The highest-impact innovations are primarily grounded in exceptionally conventional combinations of prior work yet simultaneously features unusual combinations. That's why many organizations have found it useful to set up a skunkworks facility that is specifically designed to encourage multidisciplinary teams with diverse but specialized expertise to work closely together.
3. **Sustaining Innovation:** Continuously improving core business through innovating processes and products.
4. **Disruptive Innovation:** Disruptive innovation is a product that changes the basis of competition because it performs worse according to traditional parameters but better against new parameters that previously weren't regarded as important. Another way to view disruptive innovation is as an existing technology put toward a new purpose. 'What new markets can we adapt existing technology to?' Another facet of disruptive technologies is that the process of developing them is profoundly different than in any of the other four quadrants. They succeed by virtue of a new business model rather than developing fundamentally new capabilities.

Three Horizons Framework (Satell 2018)

The idea behind the three horizons framework is not to eliminate uncertainty, but to take your level of uncertainty into account when allocating resources. You invest the bulk of your resources in capabilities (e.g., skills and technologies) and markets you know well, a much smaller portion toward adjacencies, and an even smaller proportion to future opportunities that don't even exist yet.



Organization's with the strongest innovation track records can articulate a clear innovation ambition; have struck the right balance of core, adjacent, and transformational initiatives across the enterprise; and have put in place the tools and capabilities to manage those various initiatives as parts of an integrated whole. Firms that excel at total innovation management simultaneously invest at three levels of ambition, carefully managing the balance among them.

- **Horizon 1: Core Business:** Core is defined simply as businesses in the existing markets that the company already serves and capabilities that are already deployed. For all intents and purposes, Horizon 1 is synonymous with sustaining innovation.
- **Horizon 2: Adjacent Markets and Capabilities:** The second horizon involves moves into either new markets or new capabilities or, where the problem or domain is not fully defined. These are adjacencies. These are high risk, high reward investments. Horizon 2 is about building new streams of revenue. That takes time and demands new skills.
- **Horizon 3: Long-term Bets:** Horizon 3 is where no present business exists at all. These are new technologies and new markets where neither the problem nor the domain is well defined. These usually involve basic research.

Managing Innovation Process and Capacity (Nagli and Tuff 2012)

Managing the innovation process requires that leaders focus on four different interrelated dimensions of the innovation process:

- **Managing attention:** this is a cognitive problem and innovation is a creative way of understanding some reality. It involves shifting perspectives.
- **Managing ideas:** This is a political problem, in which the problem-solution must be acknowledged and validated by other people within the organization.
- **Managing whole-part relationships:** This is a managerial problem since, if an agreement to act is achieved, actions must be coordinated in order to succeed in realizing the solution.
- **Institutional leadership:** This is a human interaction problem and leaders play a crucial role in drawing together the previous phases.

Managing total innovation will require a significant shift for most companies, which are used to a less orderly approach. Managers should agree on an appropriate ambition level for innovation and find common language to describe it. Next, it makes sense to survey the company's current innovation landscape. A comprehensive audit will reveal how much time, effort, and money are allocated to core, adjacent, and transformational initiatives—and how that allocation differs from the ideal ratio for the company in question. Throughout all this activity, leaders must communicate clearly and relentlessly about innovation goals and processes. Managing an organization's innovation strategy and portfolio demands unique approaches to the organization's functional operations.

- **Talent.** Core and adjacent innovations require analytical skills because such initiatives call for market and customer data to be interpreted and translated into specific offering enhancements. Transformational innovation efforts typically employ a discovery and concept development process to uncover and analyze the social needs driving business changes, underlying market trends, and ongoing technological developments. These activities require skills found among designers, cultural anthropologists, scenario planners, and analysts who are comfortable with ambiguous data.
- **Integration.** A decision will be how closely to connect the skills and associated activities with the day-to-day business. In most companies, the majority of people engaged in innovation are working on enhancements to core offerings; they're most likely to succeed if they remain integrated with the existing business. Transformational innovation tends to benefit when the people involved are separated from the core business—financially, organizationally, and sometimes physically.
- **Funding.** Most efforts related to core and adjacent innovation are fairly small-scale projects that don't need major infusions of cash. They can and should be funded through annual budget cycles. Bold transformational efforts typically require sustained—and sometimes significant—investment. Their funding should come from an entity (perhaps the executive suite, and ideally the CEO) that can rise above the fray of annual budget allocation. But companies should avoid the “innovation tax” approach, whereby the C-suite asks all areas of the business to contribute a percentage of their budgets to transformational initiatives.
- **Pipeline management.** Any well-managed innovation process includes mechanisms to track ongoing initiatives and ensure that they are progressing according to plan. Companies typically rely on stage-gate processes to assess projects periodically, recalculate their projected ROI according to any changed conditions, and decide whether they should get a green light. Transformational efforts are not generally managed with a funnel approach; they require a nonlinear process in which potential alternatives remain undefined for a long period of time.
- **Metrics.** Finally, there is the question of what measurements should inform management. For core or adjacent initiatives, traditional financial metrics are entirely appropriate. Organizations should

use a combination of noneconomic and internal metrics— to assess transformational efforts in their early stages; this can enhance the team’s ability to learn and explore.

Innovation Models from Other Industries

The Institute for Healthcare Improvement, a leading innovator in health care and health care improvement worldwide, describes the need to move from old to new models of innovation to support breakthrough innovation and continuous quality improvement. They argue that innovation and continuous quality improvement must be deliberately managed and become a core function of health care organizations.

IHI Old vs. New Mental Models of Innovation

Old Mental Model	New Mental Model
Inventers invent	Innovation is a disciplined process grounded in an understanding of need, based on close observation
Innovation is everyone’s job	Innovation requires dedicated resources
Leadership commissions innovation and then awaits its products	Leadership conscientiously links innovation and operations together to ensure implementation and adoption of proven new ideas
There is a specific way to innovate and create value	Organizations use multiple innovation methods, matched to customer needs
Innovations are found and developed within an organization	The organization is open to new ideas from anywhere

To do so organizations must develop purposeful innovation systems that involve three steps:

1. Determine the Innovation System Architecture
 - a. Establish the Aims/Goals of the Innovation System
 - b. Determine Innovation Priorities
 - c. Dedicate Resources for Innovation
 - d. Prepare the Environment for Change
2. Create a Disciplined Innovation Process
 - a. IHI’s Innovation Process: 90-Day Learning Cycles, 90-Day Testing Cycles
 - b. Link Learning and Testing Cycles
3. Establish Ongoing Management of the Innovation System
 - a. Innovation Drivers
 - b. Mainstay Processes
 - c. Support Processes

The Carnegie Foundation for the Advancement of Teaching Improvement Science Networks is advocating for the rigorous application of Improvement Science to K-12 and post-secondary education

to drive improvement and innovation. Improvement Science, which has a strong track record in other industries, could be a pathway for improving key outcomes in a researched-based, collaborative model. They argue that the benefits of Improvement Science are that it:

- Brings scientific discipline to social learning
- Leverages the social intelligence of a group to accelerate a whole professions/organizations capacity to learn and improve
- Represents a new organizational form, deliberately designed to enable effective collective action on solving complex problems and for developing complex products
- Accumulates practical knowledge generated from multiple tests, making reform work reliably across various contexts

A key element of improvement science networks is the “Hub”, which plays a critical role in structuring and supporting improvement science networks in achieving their goals. The Hub provides support services, such as:

- Detailing the problem and maintaining the framework
- Establishing processes and norms
- Establishing evidentiary standards for warranting claims
- Providing technical resources
- Supporting the communication mechanisms to accelerate learning

Collective Impact is an approach that is used increasingly by communities and regions to create a platform for multiple independent organizations and institutions to work together to solve large-scale and difficult community challenges. There are five conditions of a successful Collective Impact initiative. All organizations involved agree to: 1) A common agenda; 2) A shared measurement system; 3) A set of mutually reinforcing activities to achieve their goals; 4) Continuous communication; and 5) Support for a backbone organization.

The backbone organization plays a critical role for the Collective in that it supports the partner organizations by: 1) Guiding vision and strategy; 2) Supporting aligned activities; 3) Establishing shared measurement practices; 4) Building public will; 5) Advancing public policy; 6) Mobilizes funding.

The Collective Impact approach is built upon the work of Peter Senge and includes a set of “Principles of Practice” that should undergird all Collective Impact initiatives.

- Design and implement the initiative with a priority placed on equity
- Include community members in the collaborative
- Recruit and co-create with cross-sector partners
- Use data to continuously learn, adapt, and improve
- Build a culture that fosters relationships, trust, and respect across participants
- Customize for local context
- Cultivate leaders with unique system leadership skills

Futurists Models of Higher Education

With all of the discussion about disruption and change in higher education, a number of authors have attempted to describe different models that might exist in the far future, based on current and near-future trends. Each author is clear to state that these are ideal-type models, and it is unlikely that any

represent actual models that will appear in the future. They pose the models to drive discussion among higher education leaders as they think about managing their institutions into a dynamic future.

These new models are often addressing a similar set of future trends (ACE PIL Report). These include:

- **The Rise of Content Commons:** The commons is a concept used to describe resources that are owned in common or shared between or among larger communities and populations. The term increasingly relates to open digital materials that are becoming available to people around the world via the Internet.
- **Actionable Data Streams:** The rise of digital content makes personalization far easier to implement.
- **Social-structured Work and New Work Skills:** Work is becoming de-institutionalized, and people are called on to contribute to tasks based on their skills and abilities rather than solely on their degrees and certifications. The new generation of digital platforms is changing not only the nature of work itself, but also how we think about determining someone's knowledge and skill levels. These are increasingly assessed based on the individual's actual performance on specific skills.
- **Alternative Assessment and Credentialing:** Credentialing approaches in the learning ecosystem may evolve. Traditional assumptions underlying concepts like seat time, the credit hour, and even the default presumption of a unified institutional degree program are being questioned. As individuals' past work portfolios become more detailed as well as more readily accessible, one can envision a day when these credentials might possibly substitute for more traditional forms. Those in the position of enrolling students and hiring others will need to take into account a wider array of credentials, certificates, badges, reputation, and other markers of suitability. As credentialing is a core function of colleges and universities, these emerging alternative credential trend will be important to track.

Speculative Design Method: Using a process of speculative design, one futurist proposes five models of innovation in higher education that might disrupt higher education through entrepreneurial experimentation (Staley 2015).

- **Polymath University:** Every student commits to three disparate majors – one from the professions, sciences/social sciences, and arts/humanities. Faculty at Polymath University possess competency in three distinct disciplines and teach, research, create, and think in the areas between those disciplines. Polymath University is built on an educational philosophy that creativity and innovative thinking emerge from the mashing-up of disparate ideas, from the ability to make connections between what appears to be different concepts.
- **Nomad University:** Nomad University has no fixed physical location. Learning occurs around the country and around the globe, with professors and students seeking out problems and experiences anywhere in the world. Each course is organized around a specific problem. The faculty mentor identifies the problem, grounded in a specific research question. Students graduate once they have participated in 12 such classes and developed a portfolio of their work.
- **Interface University:** Interface University focuses on the idea that machines will not—indeed cannot – supplant human cognition. The curriculum presumes that humans and computers thinking together are better than humans or computers thinking alone and that thinking with machines allows students to engage in a level of cognition not possible with the human brain alone. The educational philosophy of Interface University asserts that the highest goal of education is achieving the symbiosis between human and computer intelligence and faculty and students treat the computer not as a tool but as a 'third hemisphere' of the brain.

- **Neo-Liberal Arts College:** The Neo-Liberal Arts College teaches broad, practical intellectual skills that are ready-made for action in the world, and students develop fluency in these skills. The college has no majors or electives: a degree from the Neo-Liberal Arts College signals competence in each of these 10 skills (sense-making, social intelligence, novel and adaptive thinking, cross-cultural competency, computational thinking, new-media literacy, transdisciplinarity, design mindset, cognitive load management, virtual collaboration). These broad-based skills of the liberal arts experience align with workforce development needs, thus rather than history or chemistry, students study sense-making, communication, complex problem solving and other skills with formal courses organized around each skill.
- **Ludic University (or the University of Play):** Ludic University believes that ability to play may be the single most important skill to develop for the twenty-first century. They define play as the tension between the rules of the game and the freedom to act within those rules and to create a sense of unlimited agency to build and experiment with things within those boundaries. If the laboratory defines the modern research university, then the studio defines Ludic University. Ludic University students explore novelty and engage in generative creation: imagining that which does not exist, bringing the new into being.

Recombinant Education: Another author argues that Just as genetic recombination increases diversity by producing new forms of DNA, so too education recombination promises to bolster the learning ecosystem's resilience, helping it withstand threats and make use of possibilities (KnowledgeWorks 2018).

- **Democratized Startup:** Transformational investment strategies and open access to startup knowledge, expertise, and networks will seed an explosion of disruptive social innovations and startup educational enterprises.
- **High-fidelity Living:** As big data floods human sensemaking capacities, cognitive assistants and contextual feedback systems will help people target precisely their interactions with the world. Highly sophisticated learning analytics tools will integrate multiple data streams about learners, including their social and emotional conditions, to predict performance and suggest personalized strategies for success.
- **De-Institutionalized Production:** Activity of all sorts will be increasingly independent of institutions as contributions become more ad-hoc, dynamic, and networked. Radically expanded options to architect massive collaborations in diverse technical and social settings will open new opportunities for creating, scaling and sustaining efforts that both supplement and supplant traditional organizational models. The increasing necessity of self-directed lifelong learning will make flexible credentials meaningful and will drive new tools and practices for communicating accomplishments.
- **Customizable Value Web:** Innovative, open business models will leverage complex networks of assets and relationships to create ultra-customer-centric experiences across industries. Web service brokers, interactive maps, APIs, and technical standards will become essential tools for helping learning agents, learners, and parents find, organize, and curate learning resources and experiences. As the costs of coordinating learning resources and conveying learning communities decline rapidly, diverse and flexible forms of hyper-focused schools will multiply.

The Georgia Tech Center for 21st Century Universities in partnership with Deloitte Services developed a detailed report on "The Future(s) of public higher education." In the report, they identified five approaches that could serve as models for the future of public higher education in the states. They are clear that these ideas are not exhaustive or prescriptive, but could serve as prompts for further

discussion and debate as state public higher education systems and institutions engage in planning their future.

The “Sharing University”:

- Links student and administrative services to realize efficiencies of scale and/or capitalize on the expertise of the institutions
- Repetitive activities would be either automated or outsourced to a single institution within the system, enabling the other campuses to focus resources on more strategic activities.
- As capabilities and collaboration increase, more innovative solutions and increasingly complex challenges could be addressed.
- The concept can even be expanded to institutions outside of the system and state to go beyond the system’s traditional boundaries when other institutions face common issues and goals.
- Under this model, each institution could retain a smaller, highly engaged staff to offer personalized advice and service to students while allowing the Sharing University to provide commodity services such as job fairs and resume-writing workshops, for example.

The “Entrepreneurial University”

- A state university system differentiates its offerings at the institution level while coordinating at the system level to align educational investments with student and economic needs.
- Individual institutions would specialize in areas such as undergraduate education, vocational training, professional graduate programs, health sciences, or research, while degree programs and curricula would be centrally influenced through the definition of clear goals by the state and system.
- Degree programs are centrally influenced through the definition of clear goals by the state, system and institutions.
- Given that specialization may result in less competition, campuses could share faculty, departments, and academic and administrative resources as needed.
- System offices play an elevated role in planning, monitoring progress, and providing information to support investment decisions.
- One of the keys to this strategy is differentiation and coordination.

The “Experiential University”

- Integrates work experiences deeply into the curriculum, with students toggling between long stretches in the classroom and the work world related to their area of study.
- Students can “cycle out” of the institution at various points once they complete individual courses and work experiences that land them gainful employment. At these various “exit points” they would receive industry-recognized badges and certificates that would be stacked toward a traditional or competency-based degree that the student can earn over time.
- Technology supports students who are off campus in taking classes, meeting with advisors, and collaborating with peers.

The “Subscription University”

- This model reimagines college education as a platform for continued learning that provides student with multiple opportunities to develop both soft and critical technical skills, not just between the ages of 18 and 22, but whenever necessary
- Under this model, students would start higher education earlier by taking dual-enrollment or early college courses while still in the K-12 system. Thereafter they would dip in and out of the curriculum throughout their lives to gain and update their knowledge and skills as needed.

- Defines a new mission for public higher education systems as K-gray – allowing the university to deliver tiers of services to different types of students throughout their lives.

The “Partnership University”

- This model creates a new social compact, extending the planning window and renewing the commitment among states, institutions, and students, and also adding employers as a critical player.
- This model extends the annual budgeting cycle across several years, making it easier for institutions to plan and make strategic investments.
- It would guarantee a certain level of funding from the state over several years in exchange for agreements from colleges for tuition limits, cost savings, increased collaboration and consolidation, and private fundraising.
- Integral to the partnership would be employers, which would provide insights on the curriculum, financial assistance for equipment and other essential resources, as well as a steady stream of students.

AGB Board of Directors’ Statement on Innovation in Higher Education (2017)

In response to the calls for greater innovation, the Association of Governing Boards produced a Statement on Innovation in Higher Education in 2017.

“A culture of innovation at a college or university begins with an understanding that the status quo is not sufficient for continued success or viability. While the institution’s mission may still have value, the new environment for higher education requires fresh approaches for delivering that mission.

In this new setting, a culture of innovation prizes and rewards creative thinking. It empowers constituents—staff, faculty, administration, students, and community members – to think creatively about solutions and to implement them. It also embraces risk and failure as integral aspects of innovation. It even rewards failures following good attempts to motivate the continued effort to develop new ideas. Many institutional innovations begin at the grassroots level as compelling ideas that gain traction and are then scaled to create sustainable innovation throughout the institution. In a culture of innovation, governing boards and presidents recognize the power of these grassroots ideas and seek to support the good work on innovation that is occurring in all areas of the campus community. They also look externally for connections in the local community or region to leverage these institutions.

A culture of innovation requires boards and chief executives to work and think together about opportunities and risks. The governing board, as the ultimate fiduciary in any institution or system, must demonstrate leadership by conveying trust in its institution’s leaders in spite of the inherent risks associated with innovation. The board should show a willingness to be nimble, add value to both strategy and supportive policies, offer recognition, and ensure appropriate investments – both large and small – in support of change.

Background Readings

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