Wisconsin Technology Council

2021 WHITE PAPERS

Four Strategies for Wisconsin as we Cross the Coronavirus Chasm

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Wisconsin Technology Council

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The Role of the Tech Council

The Wisconsin Technology Council is the bipartisan, nonprofit science and technology policy adviser to the governor and the Legislature. As such, the Tech Council periodically issues "white papers" and special reports to assist those policymakers and others.

Tom Still
President

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Chairman

The ideas offered in the Tech Council's 2021 white papers are intended to set the table for a renewed public discussion about improving the state's tech-based economy as it recovers from the many challenges of the COVID-19 pandemic.

They include emerging priorities; restatements and updates from previous white papers; and ideas contained in legislative or executive branch discussions. Some are based on our knowledge of innovative ideas in other states, especially those states with members in the Tech Councils of North America.

Most ideas are brought forward by our board members, staff, partners, members of our Tech Council Innovation Network and others – entrepreneurs, investors, service experts and researchers – who take part in our events and webinars.

Our ideas often draw upon our understanding of Wisconsin's tech-based economy, which has its strengths and weaknesses. We advocate a comprehensive look, not a focus on any single metric.

That has been our approach since the early 2000s, when "Vision 2020: A Model Wisconsin Economy" was issued by the Tech Council as a roadmap to improving an economy in transition. This report contains a look back at the metrics established in 2003 and assesses how well Wisconsin has performed over time.

The pandemic has taken its toll worldwide, nationally and in Wisconsin. However, the fundamentals of a strong economy remain in place and serve as a foundation for moving ahead.

Our ideas have contributed to past success, as documented in "How past white papers have helped" in Section 5 of this report. They include improvements in Wisconsin's investment capital standing, human capital innovation, building a strong infrastructure and generally making it easier to be an entrepreneur in the great state of Wisconsin.

We recognize some proposals in this report will require investment, but we also expect those policies, if implemented, would generate more economic activity and tax revenue over time.

We are pleased to offer our 2021 white papers report for your consideration. We invite you to read on to learn more about the depth and breadth of Wisconsin's tech-based economy and it how it can help lead the way to a full recovery.

CONTENTS

Executive Summary

Recommendations in the Wisconsin Technology Council's 2021 white papers report fall into four major categories:

1. *Enhance workforce development and training, "K through Gray," while re-investing in higher education (human capital)*
2. *Support capital formation through improvements in existing law as well as innovative strategies to expand participation in the asset class (investment capital)*
3. *Focus on tech development as an economic driver, with an emphasis on how platform technologies can propel targeted sectors (tech infrastructure)*
4. *Make it easier to be an entrepreneur in Wisconsin, from startup to scale-up (entrepreneurism)*

Within those four broad categories, here are our leading recommendations:

Human Capital

1. **Recognize the economic value of higher education.** A succession of well-researched reports, including those issued by the Tech Council, have reinforced the economic value of post-high school education. This can take the form of a college degree or credentials in vocational and tech-based trades. The governor and Legislature should (1) constantly recognize the critical importance of talent development and attraction for all sectors of the Wisconsin economy; (2) help to attract and retain the best faculty and researchers; (3) keep our universities affordable and accessible; (4) improve the transfer of knowledge and ideas into a prosperous Wisconsin economy, and (5) be aware of the competitive world around us, especially in terms of capital projects to support research and development.
2. **Develop talent through means-tested student aid.** To make Wisconsin competitive, annual appropriations for state student grant aid must be raised to bring us to Minnesota's level for grant aid spending per undergraduate. This needed increase in the annual appropriation for Wisconsin Grants should be apportioned among students in the three sectors, as is currently the case. In other words, 55 percent for UW students, 20 percent for technical college students and 25 percent for Wisconsin citizens attending a private, nonprofit college in this state. This cost would be spread over multiple budget cycles and it would pay for itself over time through rising per capita incomes and tax collections associated with that revenue growth.
3. **Enhance economic impact by focusing on tech skills development.** Over the last decade, tech jobs in Wisconsin have grown 44% with an average wage 62% higher than the state average, according to the Milwaukee Tech Hub. Prior to COVID-19, Wisconsin had a gap of technical workers and those jobs were expected to grow 12% per year. In fact, openings still exist due to a much smaller COVID-related loss in tech jobs than in Wisconsin's overall job base. The tech industry has a 4 to 5 times economic multiplier effect, according to the federal Bureau of Labor Statistics. As the Tech Hub has reported, investment in the right skills has an outsized economic impact. However, responsibility for development of these high-tech skills has largely fallen on the individual or the employer with limited public support. Public "disrupted worker funds" don't often extend long enough for *individuals* to gain the required credentials to make a career change, so workers invest in training largely on their own. Employers can use apprenticeship models and/or tuition reimbursement, however, cost recovery can take years or may be lost entirely because the workforce is historically a "mobile asset." The combination means Wisconsin is not executing at scale and the skills gap persists. Two strategies (below) can help to change that.
4. **Build talent through employer incentives.** Wisconsin employers, with the incentive of a state "Future Workers Tax Credit" could better attract and train well qualified workers. A "Future Workers Tax Credit" would provide incentives to employers to invest in education and training of individuals (future workers), empowering employers, rather than government, to determine the skills and abilities they most need.

5. **Support apprenticeships, internships and training.** Strategies include (1) supporting the federal CHANCE in Tech Act, an acronym for Championing Apprenticeships for New Careers and Employees in Technology, which would award contracts to industry intermediaries to develop apprenticeships; (2) support tech internship programs that expose college students to Wisconsin companies; (3) encourage establishment of industry "centers of excellence" that function as training centers and (4) support funding of computer science courses in K-12 schools.
6. **Invest in UW System capital projects that will attract talent, grants and industry support.** The Board of Regents has approved a capital budget plan that includes science, tech, engineering and health training and research facilities statewide. These facilities will attract outside grants, industry support, faculty and graduate student talent while training all students and bolstering local economies through private partnerships and the work of the WiSys Technology Foundation. Important note: The UW-Madison is the nation's only major university without its own bonding authority. That should change.

Investment capital

1. **Establish a fund-of-funds based on a public/private partnership model.** Wisconsin should invest $150 million over six years in a fund or funds that lever public dollars by attracting private investment within the state and beyond. This should be constructed in a way that does not compete with Wisconsin-based private funds, but which improves the state's inroads into larger capital markets.
2. **Work with the State of Wisconsin Investment Board and other major institutional investors to increase the supply of Wisconsin-based venture capital.** The State of Wisconsin Investment Board is Wisconsin's largest investor in the venture capital asset class and a national leader with impressive connections to capital outside Wisconsin. Other institutional investors and corporations have similar connections that can help Wisconsin without altering their respective fiduciary responsibilities.
3. **Support diverse fund managers in Wisconsin.** Minority- and women-led funds and networks will enhance return on investment, based on the track records of such early stage investment funds nationally, while improving economic opportunity in more communities.
4. **Update the QNBV law.** *a. Ineligible exclusion removals.* Allow participation of any business where innovative application of technology creates scalable business models. Removal of ineligible industry exclusions such as retail would allow participation in sectors where the impact of rapid innovation has become particularly evident during the COVID-19 crisis. *b. Unify tax credit programs.* Simplify the angel and early stage (venture) tax credits to one program, which could provide incentives for out-of-state investment. *c. Adjust the percentage employment constraints to net new "in-state" growth conditions.* For example, a Wisconsin firm otherwise now qualified under QNBV could expand elsewhere by adding sales teams or even acquiring a related business and its investors may no longer qualify for Wisconsin credits. That's an unintended penalty on growth.

Tech infrastructure

1. **Accelerate investments and welcome emerging platforms in broadband development.** This is a two-part recommendation. Wisconsin should enhance development of 5G coverage in urban centers and accelerate high-speed broadband deployment in rural and underserved settings. This will require money, of course, but also regulatory reform and adoption of new technologies where they make sense. The COVID-19 pandemic has reinforced the importance of broadband to healthcare, education, Main Street business prosperity, emergency services and more, especially in rural Wisconsin. However, "last mile" investments could be the most expensive while reaching the fewest people. The state Public Service Commission should be asked to estimate what it will cost to raise Wisconsin's broadband access ranking from 30th (September 2020, Broadband Now) to 25th by 2023 and 20th by 2025.
2. **Enhance access to clean power.** Wisconsin must steadily reduce its reliance on coal-based power generation, which is the biggest single contributor to man-made climate change worldwide. Wisconsin remains one of the 15 most coal-dependent states in the country in relative terms. As Wisconsin is slowly weaned from coal, however, energy use is not likely to diminish – even with conservation efforts.

3. More people using more devices equals more energy use. That means welcoming out-of-state power generated from alternative sources and promoting efficient "green" energy use, such as solar and wind power. In percentage terms, solar energy is the state's fastest-growing alternative source. Wisconsin should also support the Nuclear Regulatory Commission's review of an application to extend the life of the Point Beach Nuclear Plant, which remains a reliable source of emissions-free energy.
4. **Embrace innovation in transportation**, such as electric vehicle charging stations in appropriate areas; openness to autonomous and connected vehicles; considering other "people-moving" strategies; and continuing freight moving and rail safety technologies to reduce accidents while improving efficiency. It should be noted that electric vehicles will require an infrastructure that will use more electric power over time. Autonomous connected vehicles will also require reliable 5G connections.
5. **Support efforts to enhance Wisconsin's computing capacity.** These include efforts to make computer science classes more available in K-12 and higher education, and not just to those students who are majoring in the subject. Computer education must move beyond the typical "Friday afternoon elective" in today's K-12 curriculum and take on the weight of a full course. Computer science programs at the UW-Madison, the UW-Milwaukee, the Milwaukee School of Engineering, Marquette University and beyond have strong working relationships with Wisconsin industry. They are also reputed nationally. They are resources that need nurturing if Wisconsin is to continue to produce skilled engineers and computer scientists.
6. **Embrace a national solution to data privacy.** The United States was a leader in data privacy laws decades ago, but not enough is being done at the federal level today to prevent personal information from being misused. The European Union's General Data Protection Regulation aims to harmonize privacy laws across the EU, but critics say it continues practices that have long stifled innovation in Europe. China's data privacy protocol is even more far-reaching and, some argue, even dangerous, given fears of cyber-snooping on U.S. tech companies. The next president and Congress should adopt reasonable federal standards that would pre-empt 50 different state privacy laws, an outcome that would make a mess of interstate commerce while confusing consumers.
7. **Examine steps that could attract hyperscale data centers.** Hyperscale data centers can be major business attractors. Every state surrounding Wisconsin has attracted at least one such center. All of those states have sales and use tax exemptions on personal property for data centers, something not currently in place in Wisconsin. Private studies now underway may help determine the cost-benefit relationship of such an exemption for Wisconsin.

Entrepreneurism

1. **First, do no harm:** Avoid state-based research restrictions. Validate our level of regulation relative to other states to ensure we maintain an open and competitive innovation environment for entrepreneurs already in our state – as well as attracting entrepreneurs to Wisconsin.
2. **Compare "fence-me-in" regulations in Wisconsin with those in other states.** Ensure that professional and occupational licensing isn't a "fence-me-in" strategy to exclude new entrants to the marketplace.
3. **Remote work may be here to stay.** One trend not likely not to fade after COVID-19 passes is people working at home. While a hybrid approach will likely emerge, Wisconsin's head start on remote work acceptance could become a talent attractor for companies of all sizes and stages.
4. **Use our existing metrics"** and other studies to validate the importance of startups and scale-ups to the Wisconsin economy. This report contains a summary of how Wisconsin has performed against goals set in our 2003 report, "Vision 2020: A Model Wisconsin Economy."
5. **Create a clear path for a Startup Visa (federal)** and establish Global EIR programs in the state's universities leveraging existing immigration law. Also, **create new visas for U.S.-educated students and entrepreneurs** through legislation such as the "Immigration and Innovation" act at the federal level.

To read past white papers and other policy reports, visit our web site at *www.wisconsintechnologycouncil.com*.

The Tech Council is one of many "Key Strategic Partners" who work with the WEDC, which is the state's leading economic development agency

Wisconsin Economic Development Corporation

Wisconsin Technology Council

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IGNITING EARLY STAGE INVESTMENT

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Expand Human Capital

Before the COVID-19 epidemic buried its bristly microscopic nodes into the economy, Wisconsin's tech-based sector was making solid progress in jobs, salaries and contribution to the state domestic product.

As the outlines of a broader recovery plan emerge, state policymakers should be careful not to conclude that tech businesses will simply take care of themselves.

Wisconsin was 15th among the 50 states and the District of Columbia in boosting the size of its tech-based labor force over the past decade, according to a 2020 report by CompTIA, the nation's largest association of tech companies and other associations. A report covering progress through 2020 is expected to be issued later in 2021.

In fact, Wisconsin outperformed Minnesota, a neighboring state often cited by those who have long aspired to "keep up with the Joneses" to our west.

Wisconsin added 44,389 tech workers during the 10 years ending in 2019, compared to 41,623 for the decade in the Gopher state. Minnesota's overall tech labor force is still larger than the pool in Wisconsin – 252,000 jobs versus 218,000 – but the cross-border growth rate appears roughly equal for now.

Between 2010 and 2019, tech-related jobs in Wisconsin grew by 25.6%, according to the annual report by CompTIA, which means the tech sector now accounts for 7% of the state's total economy and 7.1% of the state's workforce. Net tech employment for Wisconsin increased by roughly 5,000 workers in 2019, a 2.3% increase from 2018 and the 21st-highest increase for any state last year.

The net tech jobs number is a formulaic combination of two categories: 108,545 tech industry jobs and 161,214 tech occupation jobs, the latter number reflecting tech professionals who work for non-tech-based companies.

Leading tech occupation categories in total jobs were software and web developers; systems and cybersecurity analysts; network architects, administrators and support specialists; and information technology support specialists.

Wisconsin had 8,635 tech-based "establishments" in 2019, the report concluded, which is still fewer than Minnesota (11,313) but comparable to two other Midwestern states with similar populations, Indiana and Missouri.

The growth in Wisconsin tech establishments is encouraging. Wisconsin showed 7,592 such businesses in 2018 compared with 6,556 in 2017, CompTIA reported. That can include a lot of one-person shops, but the increase suggests there's more happening with tech-based startups than other national surveys might suggest.

Perhaps as important as the number of jobs gained is the quality. The estimated median tech occupation wage in Wisconsin for 2019 was pegged at $68,576, which is 62% higher than the median wage for all occupations in the state.

Of potential interest to women in tech fields: Wisconsin was among the nation's leaders, in percentage terms, in tech jobs held by women. Wisconsin tied with Iowa, South Carolina, Maine and Missouri for second place (35%) behind the District of Columbia.

The report from CompTIA examined about 50 Standard Occupational Codes, predominantly in computing, engineering and telecommunications. Cyberstates has tracked the progress of the U.S. tech economy since the late 1990s.

Overall, the manufacturing industry was the only sector to add more jobs to Wisconsin's economy in 2019.

However, 2019 was a very different year than 2020, which was characterized by economic disruption and massive unemployment in some sectors. Where will those displaced workers go? A return to retail, service and hospitality may not be possible for many, which means thousands will need reskilling for new careers.

Providing those opportunities for training may prove to be a function of public-private partnerships in sectors where growth is most likely to take place. The last decade has demonstrated that tech is one of those sectors for Wisconsin. Building on that foundation shouldn't be overlooked by policymakers during the recovery.

Specific recommendations on tech training are included in the executive summary.

Need-based tuition grants for public and private colleges.

Some strategies are proven to ensure that larger percentages of under-represented populations have access to postsecondary education. Means-tested student grant aid provides access to higher education for academically qualified citizens who, without a financial boost, could not move up the ladder of success that higher education provides.

Wisconsin's primary "means-tested" state student aid program is called *Wisconsin Grants,* which applies to the UW System, state private colleges and the Wisconsin Technical College System.

Wisconsin has room to improve upon its national ranking on student aid, as evidenced by its neighboring state of Minnesota.

Minnesota stands in 18th place among the 50 states in student grant aid, per undergraduate, while Wisconsin lags in 28th place. Average income in Minnesota puts it in 10th place while Wisconsin lags in 22nd place.

The same kind of relationship appears to exist between education attainment and per capita incomes. Most of the top 15 states in college degree achievement are also found in the top 15 per capita income states. That suggests an increase in the number of people with college degrees would lead to more income – and more tax revenue for the state to help pay for *Wisconsin Grants* over time.

The COVID-19 pandemic showed that some instruction can take place online. It also demonstrated that a vibrant, modern physical plant is vital to classrooms, residence life and research.

Invest in capital projects that will attract talent, grants and industry support.

The UW Board of Regents has approved a capital budget plan that includes science, tech, engineering and health training and research facilities statewide.

Examples include demolition of an old chemistry building and construction of engineering and health sciences facilities at UW-Milwaukee; replacement of a core engineering building at UW-Madison; construction of the Prairie Springs Science Center (Phase 2) at UW-L Crosse; the Science and Technology Innovation Center at UW-River Falls; the Cofrin Technology and Education Center at UW-Green Bay; the science and health center at UW-Eau Claire and more.

These facilities will attract outside grants, industry support, faculty and graduate student talent while training all students and bolstering local economies through private partnerships and the work of the WiSys Technology Foundation.

Important note: The UW-Madison is the nation's only major university without its own bonding authority.

How can a comprehensive campus work with an industry partner?

A strong current example is the Mayo Clinic Health System, Jamf (a software company) and the UW-Eau Claire working together to pull off more research and clinical studies around health care and overall "patient experience," which is code for how people feel about their treatment when they're sick.

It may seem odd for Rochester, Minn.-based Mayo to be planting a research flag two hours away from home, but Mayo already has more than 5,000 employees and about 20 facilities in northwest Wisconsin. The university has the major cornerstones of a pre-medical program, and Jamf has found innovative ways for patients and doctors alike to visualize real-time data.

Expand Human Capital *cont.*

As Mayo's director of research and innovation told the Tech Council Innovation Network, the aim is to tap into one of the Midwest's top undergraduate research universities while harnessing strong clinical studies programs in the region. Research that saves and improves lives while making health care more affordable is the goal, Dr. Timothy Nelson said.

That's just one example of how cities and regions removed from Wisconsin's largest metropolitan areas are blazing new paths, sometimes involving university and college campuses.

- The UW-Green Bay is an active partner in "TitletownTech," an innovation hub in the shadows of Lambeau Field that also involves the Green Bay Packers and other private partners.
- The UW-Whitewater Technology Park and Innovation Center is tied to the university's nationally regarded entrepreneurship program
- The WiSys Technology Foundation, which handles intellectual property spinoffs from UW campuses outside Madison and Milwaukee, has nearly tripled the number of invention "disclosures" by faculty and students over the past five years. WiSys, which is related to the Wisconsin Alumni Research Foundation in Madison, is launching a "VentureHome" pilot project that will allow entrepreneurs and businesses close to regional campuses to tap into those resources.
- Many of the state's major private universities have established relationships with UW System campuses, particularly Madison and Milwaukee. The private Morgridge Institute for Research on the Madison campus has served as a catalyst in several cases.

Would campus closings help improve the efficiency of higher education?

The answer is unclear. Most experts believe the short-term costs of closing a campus would be more than the long-term value.

However, many also suggest the real savings might come from more specialization of campuses, with less overlap between certain programs offered on multiple campuses. That approach must consider certain professions – teachers and nurses are examples – that are in steady demand everywhere.

There are already examples of Wisconsin Technical College System campuses and UW two-year campuses operating on shared or adjacent campuses. That trend should continue as the reality of declining demographics makes collaboration more necessary.

In the long run, the market will help make the hard choices of what programs to reduce or close and what programs to maintain or expand.

Improve Access to Capital

Here are principles to consider in weighing Wisconsin's next steps to enhance angel and venture capital.

1. **There is a need for a "next-gen" early stage investment strategy for the state of Wisconsin that presages economic development, but which should not be confused with it.** The goals of an investment strategy and an economic development strategy are not necessarily aligned. Investment requires an anticipated return on investment for those who risk money. If investors pick the right deals and return profits, economic development will follow through jobs created, an influx of capital and experience for the next wave of successful startups. Economic development can be done in other ways that don't require ROI in the traditional sense. Wisconsin can do both.
2. **While it should be recognized that Wisconsin has made steady progress over the past five years in attracting early-stage capital, we need to do better.** Plus, Wisconsin can do better, given trends that point to more investor interest in the Midwest in general. Our research at the Tech Council showed $454 million in total investment dollars across 121 deals in 2019, a record year but also a record year nationally. *https://wisconsintechnologycouncil.com/wp-content/uploads/2020/06/WIPortfolio-2020.pdf* Nearly half of the Wisconsin total was clustered in two companies, SHINE Medical Technologies and NorthStar Medical Radioisotopes, both in Rock County. That is good news because Wisconsin is positioned to become a national leader in medical diagnostic and therapeutic isotopes. It is also a sign that we need more major deals in years to come to keep pace. Most likely, those deals will be led by out-of-state investors building on earlier state-led rounds. Wisconsin may also find ways to use the existing Act 255 law to attract out-of-state investors at an earlier level, as Minnesota has done. (More detail below).
3. **In general, Wisconsin should be less parochial in its outlook.** Thanks to programs such as the Act 255 investor tax credits and aggressive private funds, there is more Wisconsin activity than ever before. There is also more "deal flow," meaning more young companies that come to the attention of investors. However, we need more outside capital that can bring those deals to the next stage and provide downstream returns of angel networks and funds, which often take the greatest risks only to be "stranded" in the financing continuum. Venture Investors LLC in Madison is the state's largest venture capital fund, but it is a medium-sized fund by national standards. Venture Investors LLC, Capital Midwest, HealthX Ventures and similar funds can only do so much. While our research shows that about 40 percent of Wisconsin deals attracted outside dollars in 2019, we need much more of the same. It is time to think bigger.
4. **Nearby states provide examples of thinking bigger.**

    - **Michigan** companies invested in the **Renaissance Fund** starting in 2008. It has raised $205 million over time (closing Fund III in 2018 at $81 million). For every $1 Renaissance has deployed over time, it has helped attract $15, or a total of $1.5 billion, back into the state of Michigan. Michigan has also seen strong growth in the number of venture capital firms with offices there, including Wisconsin's Venture Investors LLC. Renaissance CEO and fund manager Chris Rizik *https://www.renvcf.com/impact/* came to Wisconsin at the Tech Council's invitation a few years ago to talk about the model, which was adopted by Cintrifuse in Cincinnati, Ohio.
    - **Indiana** created its **Next Level Fund** by taking a portion of the money the state set aside from the $3.8 billion lease of the Indiana Toll Road and investing it with experienced money managers looking to support late-stage new businesses with Indiana connections.

The $250-million Indiana fund https://www.nextlevelindianafund.com/stakeholders is making a difference, with a sharp rise in investments in early and late-stage deals.

- **The Illinois Growth and Innovation Fund** is tied to the Illinois State Treasurer Office. https://www.ilgif.com/50southcapital. With roots dating back to the early 2000s, the Illinois fund was launched in 2015 when State Treasurer Michael Frerichs used past legislative authority to establish the $222 million Illinois Growth and Innovation Fund and began making investments in mid-2016. In 2018, Frerichs announced an increase to the amount of investment capital available in ILGIF, increasing the total beyond the existing portfolio to about $1 billion over 10 years.
- **Minnesota** has been a leader for 50 years in medical device innovation and related investment. In 2019, Minnesota was on the cusp of its lowest venture capital investment total since the Great Recession, but a flurry in medical devices and health-tech in the fourth quarter turned it in one of the best years ever, with more than $1.2 billion in total investments. That grew to $1.86 million in 2020. While Minnesota does not have a fund of funds, it basically copied Wisconsin's Act 255 law and added some "kickers" to attract more dollars – such as a state tax refund if credits exceed tax liability. According to the Minnesota Employment and Economic Development web site, in addition to the 25 percent credit being refundable, residents of other states and foreign countries are eligible. https://mn.gov/deed/assets/angel-tax-credit-fact-sheet_tcm1045-131769.pdf

Here is an outline for what could be called the "21st Century Wisconsin Fund of Funds."

1. The state invests $150 million over six years as a limited partner.
2. Through a process administered by the state Department of Administration with input from the State of Wisconsin Investment Board, a general partner is selected and must "match" the $150 million with private dollars. For sake of example, that private match may be $15 million.
3. Private-public match beyond that point could involve Wisconsin corporations not currently involved in the venture asset class; non-Wisconsin venture capital firms seeking to plant a flag in Wisconsin; the Land Conservation Fund administered through the State Treasurer's office; WARF, the UW Foundation and SWIB; and family funds.
4. The general partner is responsible for deploying the capital in a number of proven funds ("recipient funds") with a current or planned Wisconsin presence. The fund of funds commitment to recipient funds collectively would not exceed 25%. Thus, a $160 million "base fund" would lead to a combined total recipient fund size of at least $640 million.
5. Target investment size depends on the focus of the recipient funds, but they would ideally span the whole spectrum from pre-seed, series A to series B, C and D.
6. With the expectation that state government's committed capital is invested in Wisconsin, allow for investor friendly terms for the remaining committed capital to encourage out of state participation from funds, LPs and startups.
7. Continue to support the Badger Fund of Funds, which has made about two-dozen investments through its recipient funds, averaging about $500,000 each. It may be a recipient fund under the new fund or remain entirely separate.

Here is a review of Wisconsin's Qualified New Business Venture law.

Wisconsin's Act 255 has been in force in Wisconsin since Jan. 1. 2005. It was revised in 2009, 2013 and 2018 with near-unanimous votes by the Legislature. The Wisconsin Technology Council was an early supporter of the program, which was initiated by then-Commerce Secretary Cory Nettles, then-DFI Secretary Lorrie Keating Heineman and the late Sen. Ted Kanavas.

The program provides tax credits to eligible angel investors and venture capital fund investors who make cash equity investments in qualified early-stage businesses. If all eligibility requirements are met, investors receive a Wisconsin income tax credit equal to 25 percent of the value of the investment made in the certified company. The investments incented by this program provide the capital necessary for emerging growth companies to develop new products and technologies, move products to market and provide high-quality jobs in Wisconsin.

Improve Access to Capital *cont.*

For companies to be QNBV certified, they must:

- Have a headquarters in this state.
- Have at least 51 percent of the employees employed by the business in this state.
- Have fewer than 100 employees at the time of initial certification.
- Have been in operation in this state for not more than 10 consecutive years at the time of initial certification.
- Have the potential for increasing jobs in this state, increasing capital investment in this state, or both, and any of the following apply:

Such a company must be engaged in, or committed to engage in, innovation in any of the following:

- Manufacturing, biotechnology, nanotechnology, communications, agriculture, or clean energy creation or storage technology.
- Processing or assembling products, including medical devices, pharmaceuticals, computer software, computer hardware, semiconductors, any other innovative technology products, or other products that are produced using manufacturing methods that are enabled by applying differentiating technology.
- Services that are enabled by applying differentiating technology.
- Undertaking pre-commercialization activity related to differentiating technology that includes conducting research, developing a new product or business process, or developing a service that is principally reliant on applying differentiating technology.
- Not primarily engaged (being "primarily engaged" means having greater than 50 percent of projected or reported revenue generated from) in real estate development, insurance, banking, lending, lobbying, political consulting, professional services provided by attorneys, accountants, business consultants, physicians, or health care consultants, wholesale or retail trade, leisure, hospitality, transportation, or construction, except construction of power production plants that derive energy from a renewable resource, as defined in $ 196.378 (1) (h), Wis Stats.

There are rules, as well, relating to the total amount of investment in a QNBV company that can be eligible for tax credits over time. The Legislature voted overwhelmingly in 2018 to change the threshold amount from $8 million for a lifetime "cap" to $12 million.

Here are ideas to improve the Qualified New Business Venture law:

- Ineligible exclusion removals. Allow participation of any business where innovative application of technology creates scalable business models. Removal of ineligible industry exclusions such as retail would allow participation in sectors where the impact of rapid innovation has become particularly evident during the COVID-19 crisis.
- Unify tax credit programs. Simplify the angel and early stage (venture) tax credits to one program, which could provide incentives for out-of-state investment.
- Adjust the percentage employment constraints to net new "in-state" growth conditions. For example, a Wisconsin firm otherwise now qualified under QNBV could expand elsewhere by adding sales teams or even acquiring a related business and its investors may no longer qualify for Wisconsin credits. That's an unintended penalty on growth.

WISCONSIN EARLY-STAGE INVESTMENT IN 2015-2019

2015 – $209,479,099
2016 – $276,541,739
2017 – $231,040,882
2018 – $300,713,497
2019 – $454,363,987

Number of Wisconsin deals per year ranged between 121 and 138

The National Venture Capital Association/Pitchbook study estimated 12,254 deals totaling $156.2 billion nationwide, a surprising increase in a pandemic year.

2020 Wisconsin figures are not final; about $273.1 million in venture deals only (no angel capital was included) were reported through NVCA/Pitchbook

Connect with WARF | warf.org

As the designated patenting and licensing organization for the University of Wisconsin–Madison, the Wisconsin Alumni Research Foundation has partnered with companies big and small to advance transformative discoveries to market for the past century.

WARF's refreshed website features

- Filterable lists of technologies and startups
- Opportunities to opt-in to WARF updates
- Improved search for WARF staff who are eager to connect with you

Visit warf.org/updates to

- Receive customized monthly alerts on newly patented technologies
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WARF
Wisconsin Alumni Research Foundation

Improve Tech Infrastructure

One of the components of a healthy economy and society is its infrastructure. Broadly defined, infrastructure is the basic physical and organizational structures and facilities – such as buildings, roads, airports, ports, rail lines and power supplies – needed for the operation of a society or enterprise.

In Wisconsin, a strong technology infrastructure touches many of those items and more.

A healthy tech infrastructure means telecommunications systems that will allow a greater number of Wisconsin citizens and businesses to benefit from the power of the internet.

It includes embracing innovative transportation systems for commerce and movement of people.

It means embracing competitive alternative energy sources. Platforms such as intrastate transmission, wind, solar, natural gas and "next-generation" nuclear power must be part of the long-term diversification strategy.

It includes continued efforts to ensure that Wisconsin is well-connected to major airports in the United States and the world.

It means maintaining a vigorous trade and foreign direct investment structure that recognizes Wisconsin's wide array of products, goods and services cannot be consumed entirely within our borders.

Here are core recommendations for building a long-term tech infrastructure for Wisconsin.

1. **Accelerate investments and welcome emerging platforms in broadband development.** This is a two-part recommendation. Wisconsin should enhance development of 5G coverage in urban centers and accelerate high-speed broadband deployment in rural and underserved settings. This will require money, of course, but also regulatory reform and adoption of new technologies where they make sense. The COVID-19 pandemic has reinforced the importance of broadband to healthcare, education, Main Street business prosperity, emergency services and more, especially in rural Wisconsin. However, "last mile" investments could be the most expensive while reaching the fewest people. The state Public Service Commission should be asked to estimate what it will cost to raise Wisconsin's broadband access ranking from 30th (September 2020, Broadband Now) to 25th by 2023 and 20th by 2025.
2. **Enhance access to clean power.** Wisconsin must steadily reduce its reliance on coal-based power generation, which is the biggest single contributor to man-made climate change worldwide. Wisconsin remains one of the 15 most coal-dependent states in the country in relative terms. As Wisconsin is slowly weaned from coal, however, energy use is not likely to diminish – even with conservation efforts. More people using more devices equals more energy use. That means welcoming out-of-state power generated from alternative sources and promoting efficient "green" energy use, such as solar and wind power. In percentage terms, solar energy is the state's fastest-growing alternative source. Wisconsin should also support the Nuclear Regulatory Commission's review of an application to extend the life of the Point Beach Nuclear Plant, which remains a reliable source of emissions-free energy.
3. **Embrace innovation in transportation,** such as electric vehicle charging stations in appropriate areas; openness to autonomous and connected vehicles; considering other "people-moving" strategies; and continuing freight moving and rail safety technologies to reduce accidents while improving efficiency. It should be noted that electric vehicles will require an infrastructure that will use more electric power over time. Autonomous connected vehicles will also require reliable 5G connections.

4. **Support efforts to enhance Wisconsin's computing capacity.** These include efforts to make computer science classes more available in K-12 and higher education, and not just to those students who are majoring in the subject. Computer education must move beyond the typical "Friday afternoon elective" in today's K-12 curriculum and take on the weight of a full course. Computer science programs at the UW-Madison, the UW-Milwaukee, the Milwaukee School of Engineering, Marquette University and beyond have strong working relationships with Wisconsin industry. They are also reputed nationally. They are resources that need nurturing if Wisconsin is to continue to produce skilled engineers and computer scientists.
5. **Embrace a national solution to data privacy.** The United States was a leader in data privacy laws decades ago, but not enough is being done at the federal level today to prevent personal information from being misused. The European Union's General Data Protection Regulation aims to harmonize privacy laws across the EU, but critics say it continues practices that have long stifled innovation in Europe. China's data privacy protocol is even more far-reaching and, some argue, even dangerous, given fears of cyber-snooping on U.S. tech companies. The next president and Congress should adopt reasonable federal standards that would pre-empt 50 different state privacy laws, an outcome that would make a mess of interstate commerce while confusing consumers.
6. **Examine steps that could attract hyperscale data centers.** Hyperscale data centers can be major business attractors. Every state surrounding Wisconsin has attracted at least one such center. Those states have sales and use tax exemptions on personal property for data centers, something not currently in place in Wisconsin. Private studies now underway may help determine the cost-benefit relationship of such an exemption for Wisconsin.
7. **Enhance flight connections beyond Wisconsin.** Before COVID-19 altered the airline industry and air travel, Wisconsin was making steady progress toward becoming more of a "one-flight state" for connections. It will be important to maintain those connections to major tech hubs once the recovery gets underway.
8. **Ensure an open environment for trade and foreign direct investment.** Recent years have brought uncertainty to Pacific Rim markets, which is a disadvantage to parts of the Wisconsin economy. On the plus side, adoption of the U.S.-Mexico-Canada Trade Agreement covers the state's two leading trade partners and replaces the North American Free Trade Agreement. Wisconsin has slipped a bit among the 50 states in its export rank in recent years, but it may be poised to rebound post-COVID. Beyond exports, foreign direct investments in Wisconsin are vital to the economy. As of early 2020, there were 720 companies in Wisconsin backed by foreign owners, with nearly half in manufacturing (48 percent) and the rest spread among wholesale trade, finance, insurance, retail trade, technical services and more. Collectively, those companies accounted for 108,000 Wisconsin jobs in 2019, according to the Wisconsin Economic Development Corp. Select USA estimates 119,000. Policymakers should take care not to erect barriers to foreign direct investments and to support export training for companies, such as what is delivered through ExporTech.

Networking matters.

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** GWS OneScore, September 2019*

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Make it Easier to be an Entrepreneur

For an economy to flourish and constantly refresh itself, new ideas, products and companies must rise to take the place of the old. It's a phenomenon economist call "creative destruction" and it has driven the American and Wisconsin economies for generations.

Startups and scale-ups push up from below in the economy, creating most net new jobs in the United States as older companies mature, sometimes shedding jobs or shutting down.

The number of U.S. business one year old or younger has been tracked by Statistica since 1994, when the total was roughly 570,000. It rose sharply in the late 1990s and early 2000s, beginning to fall again in the late 2000s as the Great Recession took its toll. From a low of 560,000 in 2010, the total has climbed somewhat steadily ever since to 804,000 in 2020.

In Wisconsin, the growth in startups has been less robust, although the survival rate of those young companies is among the nation's strongest, according to sources such as the Ewing Marion Kauffman Foundation and the Wisconsin Department of Revenue.

Still other organizations have pointed to specific metro centers in Wisconsin as hub of tech-based growth. Recent examples include the Brookings Institution, the Chicago Council for Global Affairs and CompTIA, which named the Madison area as one of the 20 most vibrant information technology hubs.

Whatever the rankings, Wisconsin can do more to establish itself as a state that values entrepreneurs, startups and scale-ups. Here are some recommendations.

Avoid state-based research restrictions.

The entrepreneurial spirit of any state revolves around the level of innovation that is fueled with public and private support. One way to ensure this spirit remains alive in Wisconsin is to ensure a reasonable regulatory environment around research activities. With a strong research foundation embodied in many public and private institutions and companies, it is imperative that Wisconsin maintain a hands-off policy as it relates to state-based research restrictions. This is a reiteration of policy statements made by the Wisconsin Technology Council since 2001.

On a regular cycle, state government and other partners should validate Wisconsin's level of regulation relative to other states to ensure it maintains an open and competitive innovation environment for entrepreneurs already in our state – as well as attracting entrepreneurs to Wisconsin.

Compare "fence-me-in" regulations in Wisconsin with those in other states.

Ensure that professional and occupational licensing isn't a "fence-me-in" strategy to exclude new entrants to the marketplace. It may be advisable to compare Wisconsin's licensing and certifications requirements to those of other Midwestern states.

This issue seems to have arisen from a Kauffman Task Force on Entrepreneurial Growth Study entitled "License to Grow: Ending State, Local, and Some Federal Barriers to Innovation and Growth in Key Sectors of the U.S. Economy." January 2012. A follow up report was issued on December 2, 2014 was called "Occupational Licensing: A Barrier to Entrepreneurship." These materials imply that overly burdensome and expensive licensing requirements inhibit entrepreneurial growth. Closer to home, organizations such as the Badger Institute have called for licensing reforms and noted that 10 other states have successfully implemented reciprocity agreements that improve talent attraction.

Our recommendation is to review Wisconsin's professional and occupational licensing and certification requirements to ensure that they are not overly burdensome or expensive. Consider providing (1) additional exceptions or exemptions to people who are already licensed in other states (provided that the public interest in the health and safety of residents is protected) and (2) lower annual fees for new professionals.

Be open to remote worker attraction.

One trend not likely not to fade away after COVID-19 passes is people working at home. Employers report remote workers are generally as productive as they were while working in office settings. Many workers report enjoying it more than imagined when the pandemic forced the issue.

While a hybrid approach could likely emerge, Wisconsin's head start on remote work could prove to be a talent attractor for companies of all sizes and stages.

Milwaukee and Madison are regularly ranked as top destinations for workers, with Milwaukee near the top of the list (#2) for remote workers, according to the Milwaukee Tech Hub. Madison was ranked #1 for "net inflow" of tech workers in a recent survey published by BigTechnology-Substack. Both Madison (#5) and Milwaukee (#13) rank among the top growth cities in the recent U-Haul survey of interstate moves.

With more companies and workers considering an exodus from traditional West Coast tech centers, Wisconsin should be prepared to welcome them and provide help where needed.

Create clear paths for talent creation for foreign-born talent.

Wisconsin members of Congress should create a clear path for a federal Startup Visa and establish Global EIR programs in the state's universities leveraging existing immigration law. Also, Congress should be encouraged to create new visas for U.S.-educated students and entrepreneurs through legislation such as the "Immigration and Innovation" act at the federal level.

Many foreign entrepreneurs are interested in starting businesses in the United States and are unable to do so because of immigration regulations. The U.S. does not currently have a visa program that supports business creation by foreign entrepreneurs. Attempts to pass this type of legislation have failed in the past but may enjoy a warmer reception in the Biden administration.

Our neighbors to the north in Canada have a startup Visa Program. Under the Canadian program, a foreign entrepreneur can apply for a visa if they meet the following requirements:

1. Have a letter of support from a designated organization within Canada. A designated organization is from an approved list of venture firms, banks, angel investors, business incubators who commit to invest in the entrepreneur's venture.
2. Show proficiency in English or French.
3. The applicant must own at least 10 percent of the proposed venture and the applicant and the designated organization must own more 50 percent of the proposed venture
4. The applicant must demonstrate enough financial resources to support themselves and their families while the venture gets underway.

The Canadian model was a success during its trial run. It is now a permanent program. The United States should enact legislation akin to the Canadian program. It will support business and job creation as well very low-risk immigration of successful well-educated people.

Many highly talented students come from around the world to Wisconsin to attend our universities and graduate schools. Many of these students are engaged in highly scientific and technical fields. Upon completion of their courses of study many of them have no opportunity to utilize their skills through employment or by starting a business because of their inability to obtain a U.S visa. The economy that these people would create through innovation and expertise leaves with them when they leave the country.

The Wisconsin Technology Council recommends that state leaders foster and specifically target retention of highly qualified foreign students and graduates and allow them to remain in Wisconsin. The Tech Council has supported such efforts in the past in concert with the Tech Councils of North America, or TECNA, which represents about 64 organizations in the United States and Canada.

Legislative update:

Tech Caucus launched in state Capitol.

Four veteran state lawmakers who have served as leaders on bills advancing Wisconsin's tech-based economy over time will act as co-chairs of a new "Tech Caucus" within the Wisconsin Legislature.

Sens. Dan Feyen, R-Fond du Lac, and Janis Ringhand, D-Evansville; and Reps. Mike Kuglitsch, R-New Berlin, and Tip McGuire, D-Kenosha, will help to periodically convene like-minded, bipartisan lawmakers to hear about emerging issues in Wisconsin's tech sectors.

The goal of the caucus, which is not a formal committee of the Legislature, is to work together along bipartisan lines to bring ideas and information to the attention of state policymakers.

The creation of the caucus will deepen the Tech Council's commitment to bringing carefully vetted data, briefings, policy ideas and science-driven information to the state and its policymakers. The Tech Council will work with Tech Caucus leadership on educational events, legislative briefings and more.

"Wisconsin's economy is increasingly driven by technology in all sectors, including agriculture, manufacturing, tourism and natural resources," Feyen said. "It is important for lawmakers to hear trends that can affect businesses and constituents, wherever they live."

"The COVID-19 pandemic has deeply affected the Wisconsin economy, and technology will help lead the economy and our people back to health in the months and years ahead," Ringhand said.

"Investing in Wisconsin has climbed steadily over time since the Legislature passed initiatives such as the Act 255 tax credits, the Badger Fund of Funds and more," Kuglitsch said. "We need to build on that progress as we move ahead."

"A rising technology tide will lift all boats, from those in our cities to those in rural areas," McGuire said. "The Tech Council has been for years an effective voice for the entrepreneurs who have been rowing and steering those boats."

How past white papers have helped.

Formed as an independent, non-profit organization in 2001, the Tech Council has served as a policy advisor to the governor, the Legislature and related state agencies for nearly 20 years. Its recommendations have helped lead to initiatives such as:

- Wisconsin's landmark investor tax credits program, which has been emulated nationwide;
- Creation of the Badger Fund of Funds, which is actively investing in young companies across Wisconsin;
- Language making it clear that insurance company investments in Qualified New Business Ventures are eligible for tax credits against gross premium tax payments;
- Elimination of a unique, longstanding fee on angel and venture capital investments – or "paid-in capital" – into certain foreign C Corporations that meet Act 255 standards;
- Repeal of the shareholder wage lien law, which discouraged investment in Wisconsin startup companies;

- Improvements in laws governing entrepreneurial activity by University of Wisconsin faculty; most recently, this involved passage of the "Mark Cook" bill regarding faculty conflict-of-interest reviews by the Board of Regents.
- Improvements in processes and regulations vital to expanding broadband availability, especially in rural Wisconsin;
- Extension of the "single-sales factor" sales apportionment for corporate income to technology and service firms in Wisconsin;
- Passage of legislation that allows the UW System to pursue classified research projects through a mechanism that allows for faculty governance with regular reporting to the Legislature;
- Extension of funding for the WiSys Technology Foundation, which assists UW System campuses in transferring technology to the marketplace;
- Streamlining regulations that allow for broader deployment of 5k digital access networks;
- Creation of the Tech Council Investor Networks, which expanded from a half-dozen networks and funds in 2004-2005 to about 40 early-stage investor groups today;
- Expansion of the scope of allowable bonding projects for the Wisconsin Health and Educational Facility, creating more leeway for research-based projects;
- Enactment of an Education Tax Credit to assist employers in hiring and training workers;
- Support for the "Emerging Technology Centers" concept within the UW System, which was first envisioned as Centers of Excellence in the Tech Council's Vision 2020 report;
- Support for an Interdisciplinary Research Center, also through Vision 2020, which materialized in the form of the Wisconsin Institutes for Discovery and the Morgridge Institute for Research;
- Broader recognition of the economic value of academic research and development in Wisconsin, which attracts about $1.5 billion in sponsored research each year;
- Creation of the I-Q Corridor branding concept and support for multi-state partnerships.

TAX BURDEN CONTINUES TO FALL

For the ninth straight year, state and local taxes paid by Wisconsin individuals and businesses dipped as a share of income, according to a recent report from the Wisconsin Policy Forum.

The 2021 report found both state and local taxes grew 2.3 percent to $31.7 billion in fiscal year 2019-20. However, income growth, including wages, employer benefits and business income, outpaced the increase in tax collections, helping drive down the tax burden.

A slowdown in state tax collections also impacted the calculation. They grew 1.5 percent in 2020 to $20.7 billion, the smallest increase in a decade.

For 2019-20, state and local taxes accounted for 10.2 percent of personal income, down from 10.3 percent the year before. The Wisconsin Policy Forum said it was the lowest burden since at least 1970, when it began tracking the numbers.

U.S. Census Bureau figures showed the state ranked 23rd highest in 2018 for the state-local tax burden. That was down from 17th highest the year before.

SEE THE REPORT:

https://wispolicyforum.org/research/state-tax-burden-and-ranking-fall-again/

Vision 2020

Vision 2020: A look at the goals

In late 2003, the Wisconsin Technology Council issued "Vision 2020: A Model Wisconsin Economy" as a blueprint for the state's future. It was ambitious. It was detailed. It has been a touchstone for our policy work and publications ever since.

Most important, Vision 2020 set specific goals for boosting economic output, educating more "knowledge workers" for 21st century jobs and fostering the growth of investment capital.

As 2021 unfolds, it's time to draw some conclusions about how the state has performed over time – and what that means for a future temporarily sidetracked by COVID-19.

Economic output in Wisconsin has grown very much as predicted, with the Vision 2020 goal for that year ($345.2 billion) exceeded at the close of 2019 ($347.3 billion), according to Federal Reserve estimates. The only catch is that Wisconsin hasn't budged in the 50-state rankings. It was 20th in the base year of 2000 and was 20th in 2019.

Exports tell a similar story. The total dollar value of Wisconsin exports was $21.7 billion in 2019, up from $10.8 billion in Vision 2020's base year, and just outside the top 20 among all states. That's compared to 19th in the base year of 2000. A truce in the trade wars and full implementation of the U.S.-Mexico-Canada Trade Agreement, which includes Wisconsin's two leading trade partners, may move the dial in the years ahead.

Per capita personal income has grown from $28,100 in 2000 to $53,583 in 2019, according to the Fed, but still ranked 23rd among the states and the District of Columbia.

So, if Wisconsin is stuck in neutral in those major categories, is it making progress – or falling short – in others?

Our Vision 2020 report set a stretch goal of $500 million in annual **early-stage capital** investment by 2020, using a three-year average.

Wisconsin hits $454 million in total angel and venture capital investments in 2019. The three-year venture capital average was $60 million in 2005 and $294.4 million in 2019.

While that's progress, Wisconsin will never be California, Massachusetts, New York or Texas when it comes to venture capital. Those four states represent about 80% of all U.S. venture capital investments. However, Wisconsin should aspire to match Minnesota and Indiana, which have roughly the same population.

The growth in **high-tech jobs** has been significant, according to a mix of recent reports. Vision 2020 forecast a total of 310,000 "high-tech occupations," and whether that goal was met depends on how jobs are counted.

Total direct tech jobs in Wisconsin were 263,997 at the end of 2019, counting life sciences jobs included in the BioForward report (46,160) and other tech jobs (217,837) covered in the national Cyberstates report. Counting indirect jobs, the total is 336,442. For purposes of this report, we're splitting the difference at roughly 300,000.

Jobs growth has been strongest in the Madison region, where there was a 120 percent surge in "computer and mathematical" jobs between 2008 and 2018, according to the nonpartisan Wisconsin Policy Forum. In Milwaukee, the increase was more than 25 percent, compared with 56 percent in the Green Bay area and nearly 50 percent for the state overall.

Vision 2020 also issued goals for the growth of "**knowledge workers**" and creative workers, who are essential to the growth of a tech-based economy. Here are goals set in 2003:

- College graduates (bachelor and graduate) – 1,248,000 by 2020
- College grads as a percentage of over-25 population – 30%
- Doctoral scientists and engineers – 15,500
- Arts, design, entertainment, and media workers – 60,000
- Overall workforce education rank – 15th

Here are results that capture recent data years (2018 and 2019):

- College graduates – 1,266,000 (2019)
- % of grads of over-25 population – 30%
- Doctoral scientists and engineers – 11,950
- Arts, design, entertainment, media workers – 52,055
- Overall workforce education rank – 25th

The first two metrics represents goals that were met. The second two metric fell short of marks set in 2003. The final goal, overall education rank among the 50 states, is largely unchanged from the base year. That is because Wisconsin is not an island. Other states recognized the challenges of creating an educated workforce, as well, and developed their own strategies to keep pace.

The Vision 2020 report also set goals for measuring "annual net business formations," a factor of new business created and old businesses dying. The 2020 goal was 1,000 net business formations. The U.S. Census Bureau total for Wisconsin in 2019 was 863. Statistics collected in the early 2000s do not match those available from federal sources in 2021, however, so an "apples to apples" comparison isn't possible.

What may be just as important is the "survival rate" over time of young companies. In other words, how many firms are left standing after one year, three years, five years or longer? By that measure, Wisconsin has performed better. Here are some of top-line findings by John Koskinen, chief economist for the state Department of Revenue, as of January 2020:

- Wisconsin is 17th among the 50 states in overall private establishment growth in the past decade or so.
- Wisconsin is 2nd best among the states in "firm exits," which means young companies that have gone out of business.
- Wisconsin was 16th among the states in net business creation in 2016, which was tied with California. Later figures are not yet available.

That last statistic suggests that while Wisconsin is down the 50-state list in raw business creation (33rd according to Revenue), it's in the top third of the class when it comes to keeping them alive.

Other highlights:

- Wisconsin's overall R&D spending has increased, although not as much as projected because of declines in federal and state investment. Industry R&D spending has improved, however, and the state stands roughly where it did in 2000.
- The goal for issued patents fell short, as well. The decline is tied, in part, to the fact most software innovations don't require patents. Again, Wisconsin's relative position is largely unchanged.

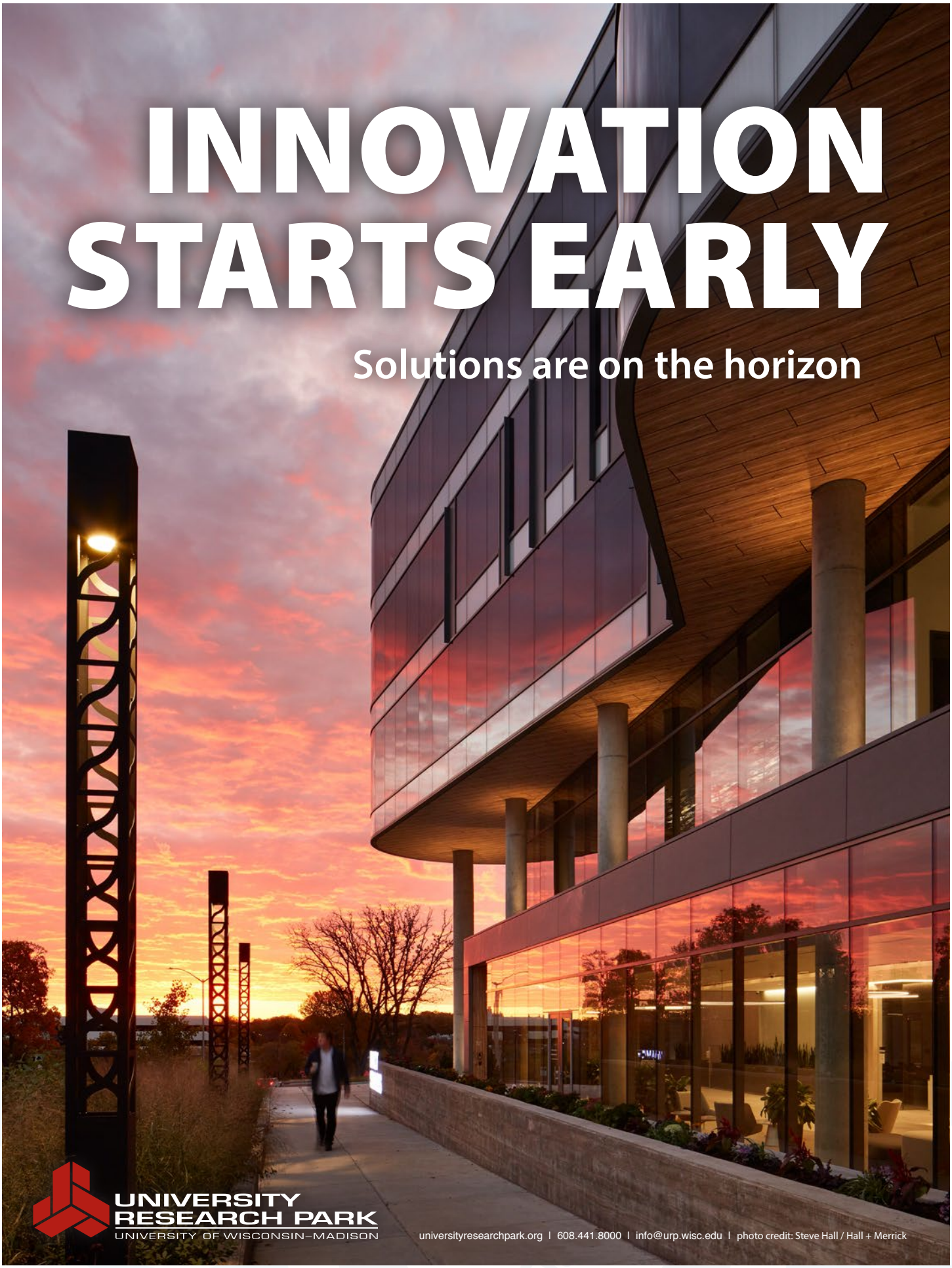
In the years ahead, technology will continue to drive innovation across virtually every sector of Wisconsin's economy. We will use the yardstick of "Vision 2020" to measure where the state has been, and to provide guidance on where the path should lead.

The road to prosperity: Vision 2020 goals and results

CATEGORY	STATE RANK	2000 ACTUAL	2020 GOAL	ACTUAL*	STATE RANK (latest year varies)
Economic output					
Gross state product ($ millions)	20	$173,478	$345,185	$347,306	20
Total exports ($ millions)	19	$10,858	$31,067	$20,504	23
Per capita income	22	$28,100	$48,817	53,583	23
Knowledge workers					
College grads (bachelor & graduate)	31	827,000	1,248,000	1,266,128	26
College grads as % of over-25 population	31	24%	30%	30%	27 (tie)
Doctoral scientists & engineers	21	9,740	15,500	11,950	24
Arts, design, entertainment & media workers	17	29,910	60,000	52,005	N/A
Overall workforce education rank	25	25	15	25	25
Knowledge & technology					
Patents issued	16	2,078	8,000	3,015	19
High-tech occupations	NA	203,000	310,000	300,220	19
R&D expenditures ($ millons)	22	$2,640	$8,630	$7,541	20
Business & finance					
Annual venture capital investment (3-yr, average; $ millions)	29	$60	$500	$294	29
Foreign direct investment (# workers employed)	34	77,600	150,000	119,500	26
Annual net business formations	19	579	1,000	863	16**

Vision 2020 Graph Sources:

- * Figures in the "Actual" column are generally from 2018 and 2019; 2020 data had yet to be released as of Jan. 31, 2021.
- ** From 2016 data.
- Sources: U.S. Patent and Trade Office; National Science Foundation/ Higher Education Research and Development report; Federal Reserve Bank of St. Louis/ Economic Research; National Venture Capital Association; U.S. Department of Commerce/Bureau of Economic Analysis; Commerce/U.S. Census Bureau; Cyberstates (publication of CompTIA); U.S. Bureau of Labor Statistics; Global Business Alliance; Wisconsin Economic Development Corp.; U.S. News & World Report; New York Times; Tech Councils of North America (TECNA); Wisconsin Department of Revenue; The Brookings Institution; The Chicago Council for Global Affairs; the Ewing Marion Kauffman Foundation; Wisconsin Association of Independent Colleges and Universities; The Badger Institute; SelectUSA.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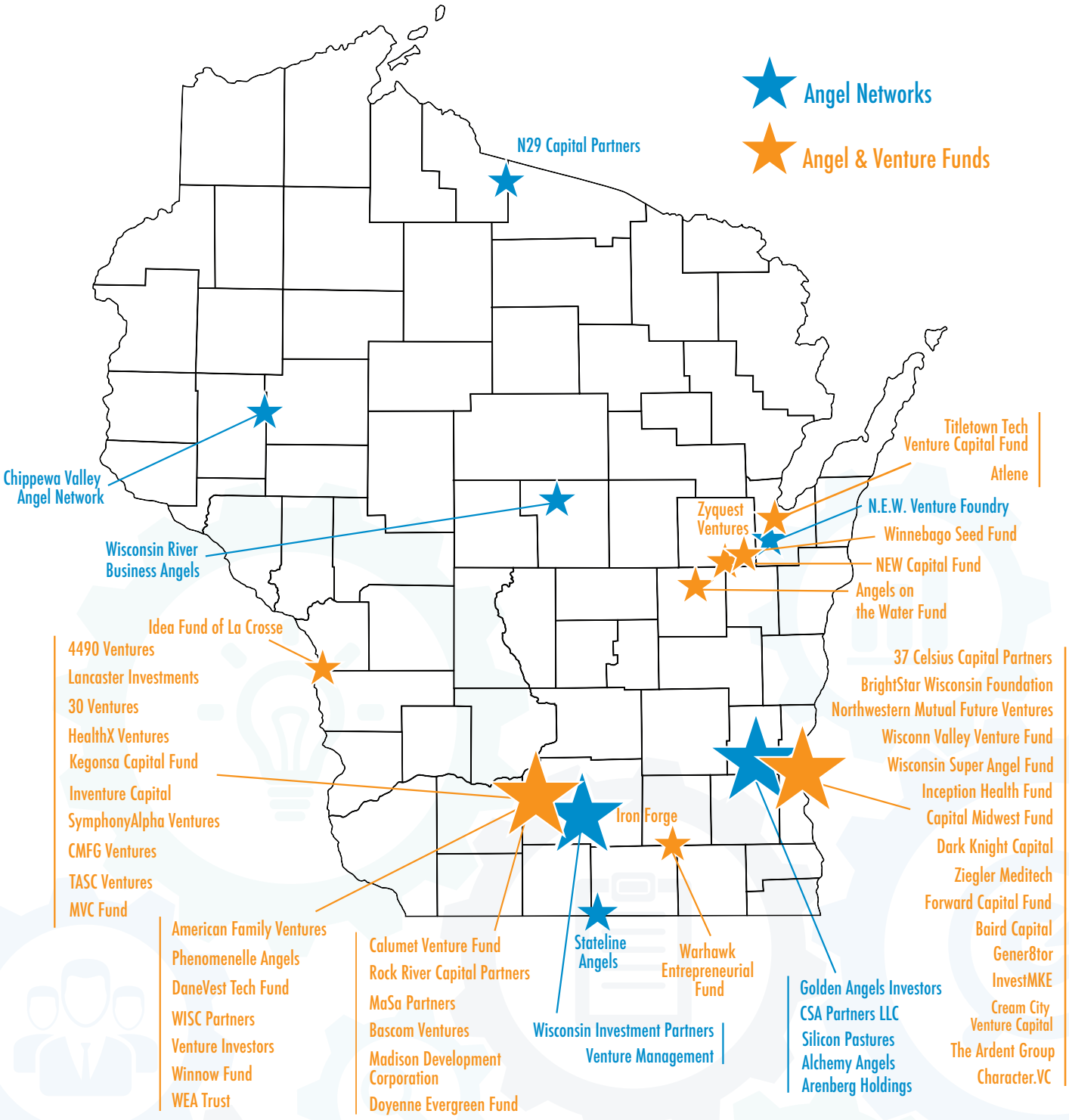
Tech Council Investor Networks



WISCONSIN TECHNOLOGY COUNCIL
The Tech Council is the science and technology advisor to Wisconsin's governor and Legislature. It is an independent, non-profit and non-partisan board with members from tech companies, venture capital firms, public and private education, research institutions, government and law. The Tech Council Investor Networks (see below) is among its programs.
Tom Still, president
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TECH COUNCIL INVESTOR NETWORKS (TCIN)
A program of the Wisconsin Technology Council, the mission of the TCIN is to fuel the growth of entrepreneurial, early stage financing throughout Wisconsin. TCIN produces and provides resources to the early stage investing community. Those resources include the "Deal-flow Pipeline," an online connection point for investors and entrepreneurs; assisting with angel network and early stage fund formation; facilitating investor collaboration, investor education events, communications, and other resources designed to help entrepreneurs seeking capital.
Joe Kremer, director
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STATE OF WISCONSIN INVESTMENT BOARD (SWIB)
SWIB is the state agency that invests the assets of the Wisconsin Retirement System, the State Investment Fund and other state trust funds. As of December 31, 2017 SWIB managed about $117 billion in assets.
Chris Prestigiacomo, portfolio manager, private markets group
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WISCONSIN ALUMNI RESEARCH FOUNDATION (WARF)
WARF is a non-profit organization that supports research, transfers technology and ensures that the inventions and discoveries of UW-Madison benefit humankind. The UW-Madison is a premier research institution with world-class faculty and staff who attract more than $1 billion in sponsored research each year. WARF receives about 350 disclosures per year and has taken an equity share in 38 active companies.
Erik Iverson, managing director
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WISCONSIN SYSTEM TECHNOLOGY FOUNDATION (WISYS)
WiSys is a non-profit WARF subsidiary established to identify innovative technologies developed beyond the UW-Madison campus, primarily within 11 other UW System campuses and the UW Extension. It helps to bring those technologies to the marketplace for the benefit of the inventors, their universities, Wisconsin's economy and society.
Arjun Sanga, executive director
(608) 316-4015 | ASanga@wisys.org | wisys.org

UWM RESEARCH FOUNDATION
UW-Milwaukee has annual research expenditures of about $60 million. UWM Research Foundation's mission is to foster research, innovation and entrepreneurship at the UW-Milwaukee. The Foundation manages a growing portfolio of patents, with more than 100 issued or applied-for patents. The UWMRF Catalyst grant program has provided about $4 million to seed projects with strong commercial potential.
Brian Thompson, president
(414) 906-4653 | briant@uwmfdn.org | uwmfdn.org

WISCONSIN DEPARTMENT OF FINANCIAL INSTITUTIONS (DFI)
DFI's mission is to ensure the safety and soundness of Wisconsin's financial institutions, to protect the consumers of financial services and to facilitate economic growth. The agency regulates and licenses financial service providers who do business in Wisconsin.
Kathy Blumenfeld, secretary
(608) 264-7800 | dfisecretary@wisconsin.gov | wdfi.org

WISCONSIN ECONOMIC DEVELOPMENT CORP.
This agency offers technology loans and grants to qualified companies, assists in site and location matters, and manages the Qualified New Business Venture (QNVB) program for investor tax credits, among other programs.
Missy Hughes, chief executive officer and secretary
(608) 210-6701 | Cassie Frey | cassie.frey@wedc.org
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MEDICAL COLLEGE OF WISCONSIN OFFICE OF TECHNOLOGY DEVELOPMENT
The MCW Office of Technology Development is responsible for managing the discoveries, inventions and other intellectual property assets of the Medical College of Wisconsin and advancing these discoveries. The MCW conducts about $140 million in sponsored research each year.
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(414) 955-4381 | kpboggs@mcw.edu
mcw.edu/departments/technology-development

WISCONSIN MANUFACTURING EXTENSION PARTNERSHIP / Center for Manufacturing and Productivity
The WCMP is part of a 59-center national network set up by the Department of Commerce to help small and medium manufacturers stay competitive. We are a true public-private partnership that delivers exceptional results for our clients. Our manufacturing specialists have created more than $3.5 billion of impact for our clients.
Buckley Brinkman, chief executive officer/executive director
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GENER8TOR
gener8tor is a Wisconsin-based accelerator that invests its community, capital, expertise, mentorship and network in capable, early-stage entrepreneurs with innovative business models. gener8tor works with the startups in its portfolio to create successful, scalable companies. Sponsored by American Family Insurance, gener8tor seeks to invest in technology-enabled businesses. Accepted companies receive $70,000 and 12-weeks of mentorship-driven programming.
Troy Vosseller, co-founder; Joe Kirgues, co-founder
(414) 502-8880 | troy@gener8tor.co | joe@gener8tor.com | gener8tor.com

ANGEL CAPITAL ASSOCIATION
ACA is a collective of accredited investors that supports the success of angel and private investors in high-growth, early-stage ventures. The organization is the source for critical information and data that aligns the needs of angels, entrepreneurs, and the startup support community. Among its members are more than 240 angel groups and platforms and more than 13,000 individual accredited investors.
Sarah Dickey, ACA membership director
(913) 894-4700 | sdickey@angelcapitalassociation.org
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TITLETOWNTECH
Formed out of a partnership between The Green Bay Packers and Microsoft, TitletownTech seeks to build, enable and invest in early-stage and existing businesses through its Innovation Lab, Venture Studio and Venture Fund. Located in Titletown, west of Lambeau Field, it is uniquely situated at the heart of a transformative project that is receiving national attention.
Craig Dickman, managing director
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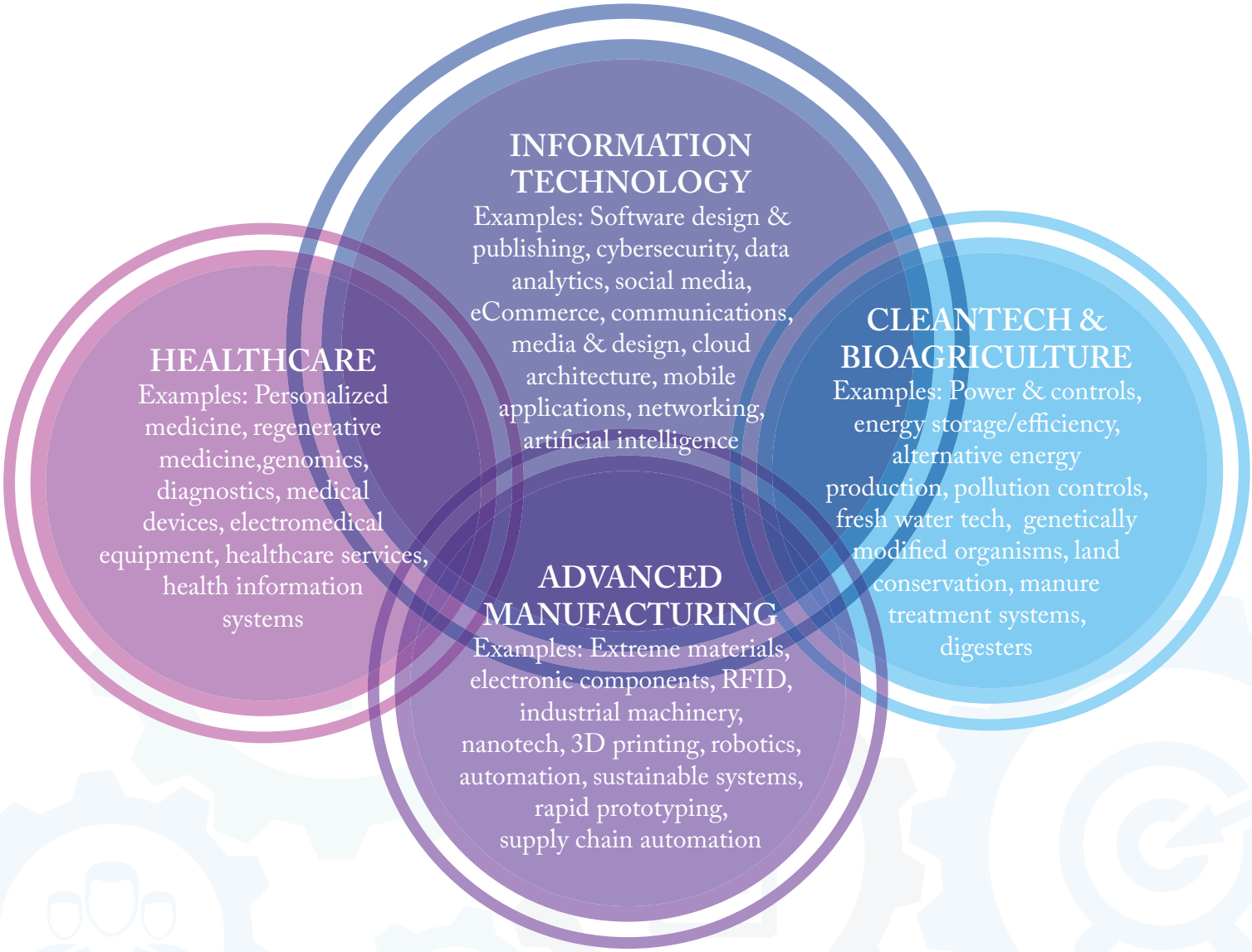
Wisconsin's Interdisciplinary Technology Clusters

The model below shows how Wisconsin's top industries connect across different sectors, with information technology increasingly playing a larger role in massive markets such as healthcare, advanced manufacturing and energy technologies.

Many of the recommendations in this publication are ways state policymakers can continue to support existing growth industries while emphasizing the skills, programs and investments needed for future jobs in Wisconsin.



Tech Council Affiliations

The Tech Council's national affiliations

The Wisconsin Technology Council is a member of the **Tech Councils of North America**, which includes similar state, regional and community organizations in most of the 50 states and all Canadian provinces.

TECNA regularly engages on issues that come before Congress and federal agencies, providing a valuable industry perspective from more than 20,000 members spread across 64 TECNA affiliates

In 2019, the Wisconsin Technology Council hosted the summer conference of TECNA in Madison, thanks to local sponsors such as Epic, Promega, UBS/The Burish Group, Alliant Energy, WARF, Wipfli, Exact Sciences and the Wisconsin Economic Development Corp.

TECNA's policy priorities have included the "CHANCE in Tech Act," which aims to streamline the tech apprenticeship process for companies by allowing state "intermediaries" to work with the U.S. Department of Labor, businesses, schools and more. Other priorities have included digital privacy rules, opening markets to trade, immigration reform and extending competitive broadband to rural America.

Over time, the Wisconsin Technology Council has taken part in live "fly-ins" in Washington, D.C., to keep in touch with the state's congressional delegation.

The Tech Council is also a member of the **Angel Capital Association**, a collective of accredited angel investors across the United States and beyond. The ACA represents 250 angel groups, accredited investor platforms and family offices with a combined 14,000 members.

ENDLESS FRONTIER ACT AMONG FEDERAL BILLS IN HOPPER

Proposals pending in Congress could address continued progress in America's technology and entrepreneurship sectors. They include the Endless Frontier Act, IGNITE American Innovation Act, Startup Act, American Innovation and Jobs Act, the DEAL Act, and the Energy Sector Innovation Credit Act.

"The Endless Frontier Act," (H.R. 6978 and S.3832) would spend up to $100 billion over five years to boost science and technology research, revive American manufacturing and create innovation hubs nationwide. Introduced in 2020, the bill has sharpened national discussion about U.S. tech and manufacturing primacy in the 21st century.

The bill would create a new technology directorate within the National Science Foundation to focus on 10 areas viewed as most important to American security and prosperity. They are: artificial intelligence and machine learning; high-performance computing, semiconductors and advanced computer hardware; quantum computing; robotics, automation and advanced manufacturing; natural and man-made disaster prevention; advanced communications; biotechnology genomics and synthetic biology; advanced energy technology; cybersecurity, data storage and data management; and materials science and engineering.

The act envisions partnerships between universities, government and industry, with 10 interdisciplinary research hubs to transfer science and technology into innovative goods and services while boosting metro, state and regional economies. Among the four main sponsors is U.S. Rep. Mike Gallagher, R-Wis.

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