

# INNOVATION STRATEGY



Learn More

[www. www.dot.state.mn.us/innovation](http://www.dot.state.mn.us/innovation)

Office of Research & Innovation  
Minnesota Department of Transportation  
395 John Ireland Blvd.  
St. Paul, MN, 55155

In a world of rapidly changing needs, government must operate effectively and efficiently to deliver today's services and plan for tomorrow.

#### INNOVATION STRATEGY MANTRA

Adopt a “Yes, and” rather than a “No, but” mentality.

## TABLE OF CONTENTS

Executive Summary	4
Introduction	7
Part One: Where We Are	12
Part Two: Where We Want To Go	24
Part Three: How We Will Get There	28
Part Four: Implementation	32
Conclusion	44

To request this document in an alternative format, such as braille or large print, call 651-366-4718 or 1-800-657-3774 (Greater Minnesota) or email your request to [ADArequest.dot@state.mn.us](mailto:ADArequest.dot@state.mn.us). Please request at least one week in advance.

## EXECUTIVE SUMMARY

In a world of rapidly changing needs, government must operate effectively and efficiently to deliver today's services and plan for tomorrow.

Government agencies are facing dwindling budgets, increased citizen expectations, and morphing societal needs. In response, leaders are increasingly seeing innovation as a mindset and process to help solve challenging problems and improve the lives of the people they serve.

The Minnesota Department of Transportation (MnDOT) is not immune from such challenges and in 2020 began the deliberative process of developing an innovation strategy to help the agency solve its greatest challenges and more effectively and efficiently deliver transportation services.

The innovation strategy outlined in this report provides an actionable roadmap for fostering and sustaining a culture of innovation. This will lead to novel and sustainable products, processes, and practices that further MnDOT's reputation as a national transportation leader.

To develop a successful innovation strategy, MnDOT first needed to assess its current innovation climate and address five critical questions:

- **Why** innovate (link to mission, vision, and values, defining success)
- **What** to innovate (innovation portfolio - scale, scope, type)
- **How** to innovate (process, procedures, methods, and performance metrics)
- **Who** innovates (culture of innovation and internal/external partnerships)
- **Where** to innovate (physical and virtual space for collaboration)

### Innovation Goals

A technical advisory panel of representatives from across MnDOT was formed to assess the agency's innovation climate and develop goals and objectives for an innovation initiative. The panel adopted five goals:

- Systemically integrate innovation into MnDOT's culture
- Accelerate, pilot, and scale innovations to improve efficiency, effectiveness, and customer service
- Innovate to position MnDOT as a national leader
- Grow and leverage strategic partnerships to broaden the impact of innovations
- Implement innovations to support a safe, equitable, and sustainable transportation system for all

## Innovation Climate

MnDOT has its own unique innovation culture. As compared to other sectors, employees rated MnDOT slightly higher than the average non-profit, but lower than industry and service organizations, when it comes to supporting and cultivating innovation.

Through assessment and discussions, the Innovation Technical Advisory Panel identified key innovation strengths and barriers to be considered when developing this innovation strategy.

Innovation Strengths	Innovation Barriers
Leadership support	Lack of time and confusion on how to access resources
Talented staff	Bureaucracy
National reputation	Organizational silos
Commitment to mission and public service	Lack of clear priorities and processes
Collaborative spirit	Risk aversion
Appetite for learning	Lack of people-centered focus

### Fostering an Innovative Culture

The technical advisory panel identified two key components to an innovative workplace:

- A culture that supports the creative capacity of people to develop new and compelling ideas
- Technical and managerial practices that support innovation

Fostering an innovative culture that adopts a creative problem-solving approach and utilizes human-centered design principles requires an E3 mindset of Empathy, Experimentation, and Empowerment.



#### Empathy

Focus on understanding the needs and desires of those we serve internally and externally.



#### Experimentation

Recognize success requires collaboration, rapid iteration, and patience.



#### Empowerment

Provide support and tools to get things done. Empower people to take calculated risks, voice dissenting opinions, and secure resources.

## Strategies and Objectives

MnDOT's goal is to nurture a climate that supports risk-taking, is change-oriented, and has a bias toward action.

The advisory panel established the following strategies and objectives as the key organizational steps needed to spur, cultivate, and sustain innovation at MnDOT.

Innovation is using critical & creative thinking to implement ideas that create value for the public we serve.

Strategies	Objectives	Key Actions
Leadership Support	Empower employees to innovate	<ul style="list-style-type: none"> <li>• Identify innovation as an organizational goal &amp; norm</li> <li>• Dedicate resources (time, funding, space) to "seed" innovations</li> <li>• Provide dedicated time for innovation (e.g. 3M model)</li> <li>• Create spaces (physical &amp; virtual) to inspire imagination &amp; creativity</li> <li>• Establish a Center for Innovation within the Research &amp; Innovation Office (R&amp;I) supported by an Innovation Team</li> </ul>
Customer Focus	Understand the needs of those we serve	<ul style="list-style-type: none"> <li>• Focus on stakeholders through human-centered design thinking</li> <li>• Co-create by involving stakeholders throughout the innovation process</li> </ul>
Experiment, Learn, and Share	Champion innovative ideas, develop innovative talent and transform services to better serve the public	<ul style="list-style-type: none"> <li>• Develop an idea pipeline</li> <li>• Compile a portfolio of innovations</li> <li>• Launch structures to rapidly identify, pilot &amp; implement innovations (e.g., innovation day(s), innovation summit, crowdsourcing)</li> <li>• Build a learning community through training, coaching &amp; mentoring (e.g., Community of Practice, Innovation Academy)</li> <li>• Develop networks &amp; platforms (internal &amp; external) for sharing knowledge and experience</li> </ul>
Evaluate and Measure	Track alignment with department strategic objectives	<ul style="list-style-type: none"> <li>• Record, evaluate and track innovation opportunities</li> <li>• Establish easily digestible metrics (e.g., dashboard)</li> </ul>
Reward and Recognize	Celebrate innovations & innovators	<ul style="list-style-type: none"> <li>• Innovation newsletter, website, blog, social media, webinars, podcasts</li> <li>• Innovation awards, incentives, and events</li> </ul>
Collaborate	Build relationships & connect innovators across sectors to build a more equitable and inclusive innovation ecosystem	<ul style="list-style-type: none"> <li>• Convene an Innovation Leadership Council (public/private partnership) to guide, support &amp; promote innovation</li> <li>• Build relationships with public, private &amp; philanthropic communities</li> <li>• Create and train a network of Innovation Ambassadors to break down organizational "silos"</li> <li>• Bring in outside experts and use professional networks to foster innovation</li> </ul>



“Innovation is occurring every day, in every corner of MnDOT. Having an innovation mindset equips us to better respond to a changing transportation environment and maximize limited resources for the good of all Minnesotans.”

- Margaret Anderson Kelliher,  
MnDOT Transportation  
Commissioner

# INTRODUCTION



The pace of change in our modern world is faster than at any time in human history. Evolutions in technology and society are forcing organizations from every sector to innovate and find new ways to respond and adapt.

Innovation isn't new to MnDOT— from being the first DOT to test autonomous vehicles in cold weather to providing real-time road condition information via snowplow cameras, innovation is already a part of how MnDOT achieves its mission.

Every day MnDOT employees use innovative and collaborative mindsets to find solutions that serve the public and help the agency achieve its vision of a transportation system that maximizes the health of people, the environment, and our economy.

The current pace of change shows no signs of slowing. Many organizations—even those with established innovation programs— must increase their investments to build a strong and healthy culture of innovation. Now is the time for MnDOT to double down and leverage its existing investments to cultivate a vibrant and high-functioning innovation ecosystem that continues MnDOT's standing as a place where innovative people solve significant challenges.

At its essence, innovation is about solving problems. It is the process of using critical and creative thinking to implement ideas that create valued outcomes.

Like many organizations, MnDOT recognizes that a thoughtfully designed innovation strategy is needed to solve transportation challenges effectively and efficiently.

Successful innovation strategy considers both the innovation tools available to employees, as well as the organizational behaviors and attitudes necessary to foster and cultivate innovation long-term. It requires embedding innovation into the core culture and providing resources that empower staff to imagine, create, and experiment.



Learn more about innovation at MnDOT

Visit [www.dot.state.mn.us/innovation](http://www.dot.state.mn.us/innovation)



# INNOVATION STRATEGY

Because innovation has become so essential to their success, many organizations in both the public and private sectors feel compelled to launch innovation programs. Unfortunately, many of these programs fall short of delivering the impact they are intended to provide. One of the most common faults found in innovation programs is a lack of clear strategic priorities.

It can be tempting to jump-start an innovation program by quickly launching idea-collection campaigns, soliciting innovation projects from anyone and everyone in the organization, and following up with scattershot resources. While there may be a temporary uptick in activity, those efforts usually don't coalesce into real sustainable organizational progress.

MnDOT's Innovation Strategy is centered on five key questions:

## WHY INNOVATE?

Innovation is needed to solve problems effectively and efficiently to further an organization's mission and vision. A clear understanding of business needs and strategic priorities is essential to focus and prioritize resources and innovation efforts for maximum effectiveness in furthering an organization's mission. "Random acts of innovation" do not always result in great outcomes when compared to innovations linked to an organization's business strategy.

Question 1

## WHO INNOVATES?

When focusing on innovation, organizations need to consider both the innovators and whom they are innovating for. Focusing on both aspects of innovation will promote a culture of innovation and ensure that the end users of the innovations are involved in the process.

Innovators come in many forms. They may be basic problem-solvers or creators of a new future. An innovation strategy should engage people and partners throughout the organization's ecosystem. It should be clear who those people are and what resources and skills they need to innovate successfully.

Question 2

## WHAT TO INNOVATE?

There is room for innovation in all realms of business processes from organizational structure to technology to customer engagement. Innovation spans beyond technology and products to people, processes and services. An innovation strategy clarifies the scale, scope, and types of innovation where the organization should focus and balances the level of risk that will be taken. These innovations will make up that organization's "innovation portfolio."

Question 3

## HOW TO INNOVATE?

An innovation strategy provides guidance on clear and effective processes that identify needs and opportunities, generate ideas, select and develop ideas into potential solutions, and scale successes for maximum impact.

Question 4

## WHERE TO INNOVATE?

An innovation strategy identifies spaces (virtual and physical) that foster innovative behaviors by creating environments that promote thinking, creating, problem-solving, and collaboration.

Question 5



# INNOVATION STRATEGY DEVELOPMENT PROCESS

In 2019, MnDOT established the Office of Research & Innovation and appointed a Director of Research & Innovation, elevating innovation throughout the agency. During the summer of 2020, MnDOT began developing a formal innovation strategy through organization-wide engagement, discovery sessions, and ideation workshops.

Developing an innovation strategy was already a top priority before the pandemic, but the changes to how people work and live since 2020 have only heightened the need for organizations to be able to respond and adapt to new challenges.

## Organizational Structure

The formulation of this Innovation Strategy was guided by an Innovation Technical Advisory Panel (TAP) assembled to work with Employee Strategies, Inc. to develop and provide recommendations to MnDOT's Senior Leadership Team (SLT). The Innovation TAP was supported by an Innovation Project Management Team (PMT) from the MnDOT Research and Innovation Office (R&I).

The TAP is composed of a diverse group of staff from across the agency assembled to provide guidance to the innovation consultant, promote and spread innovation, and support cultural change. The TAP also serves as the internal advisory group for the Innovation Strategy, providing guidance on the project's scope, goals, content, outreach and engagement (internal and external) and making recommendations to the SLT. The TAP also ensures that input from across the agency is received and incorporated into the process. The TAP met approximately monthly from August 2020 through November 2021, focusing on development of the MnDOT Innovation Strategy.

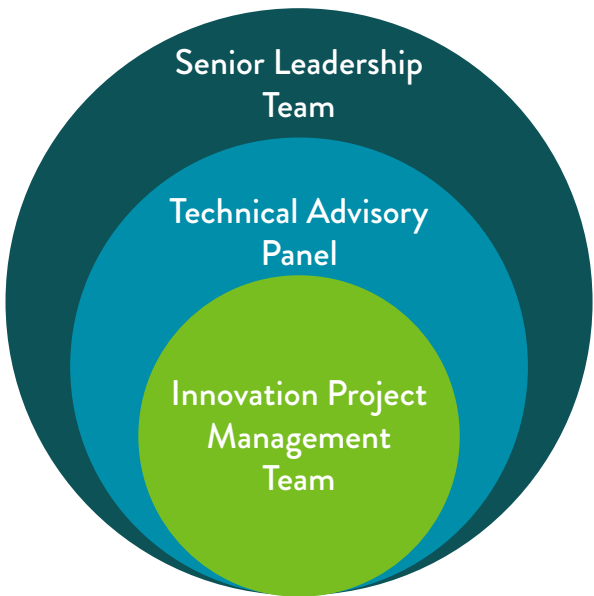


Figure: Organizational Structure



Figure: Key Activities

## Key Activities

An organization-wide survey was conducted to assess the current innovation culture at MnDOT and illuminate opportunities for future impact. Along with survey responses from more than 1,200 MnDOT employees, the Innovation TAP hosted eight work sessions and the PMT researched other innovation offices and initiatives across North America. Additionally, the PMT reviewed reports and recommendations from experts and consultants from outside the public sector on the best practices for instilling an effective innovation culture and strategy.

During the fall and winter of Fiscal Year 2021, project leaders discussed current innovation strengths at MnDOT, barriers to more effective innovation, and strategies for overcoming those barriers. By Spring 2021, project leaders began to outline the key strategies and objectives.

The PMT and TAP also began early-stage activities to help promote awareness and education around innovation. A subset of the Innovation TAP formed an Innovation Community of Practice Committee, and in June, the PMT hosted a workshop on human-centered design facilitated by Andy Zimney of Employee Strategies that was attended by 184 MnDOT employees.





# Part 1: WHERE WE ARE

Innovations can range from simple, handmade widgets to improve a product or a process, to large-scale technologies developed and deployed as the result of formal research studies.



To effectively chart a future path for innovation, it was important to first clarify the current state of innovation at MnDOT.

After all, it's hard to chart a path to the place you want to go without knowing where you're starting from.

When people hear the word innovation, they often think about physical objects built with the latest technology: your new watch with GPS and email built-in, that 4k television, or the tablet computer that is thinner than a school notebook.

But innovation can take many forms—whether it be a product, process, or a service. This Innovation Strategy considers the opportunities for innovation in all its forms.

## INNOVATION PORTFOLIO

Innovation may drive large-scale transformational changes with immense impact, but it may also be small and incremental adjustments that improve existing solutions.

An innovation portfolio describes the active innovations being tracked and supported by an institution's innovation program. Organizations that are successful at innovation often have a diverse portfolio of innovations. In our work, we identified three primary types of innovation (incremental, adjacent, and transformative).

## Types of Innovation

Innovation types reflect both the scope of resources necessary to implement the innovation and the scale of impact. These types can be categorized into three basic types: incremental, adjacent, and transformative.

Incremental innovations are typically minor enhancements to a process, product, or service already in place.

Incremental

Adjacent innovation typically involves leveraging something the organization already does well and applies it in a new space.

Adjacent

Transformative innovation represents the most impactful and highest risk portion of any organization's innovation portfolio.

Transformative

MnRoad, Minnesota's cold weather pavement testing facility.



Incremental Innovation

Incremental innovations are typically minor enhancements to a process, product, or service already in place. For example, moving a button on a website.

Because these sorts of innovations are relatively low risk, incremental innovation represents the majority of innovations in an organization. While the impact of a singular incremental innovation may be small, the accumulated impact of such innovations can be significant.

Adjacent Innovation

Adjacent innovation leverages something the organization already does well and applies it to a new space. For example, scaling an incremental innovation in one district or office to a larger footprint. Adjacent innovations may require an increase in resources to implement in a new space, but because they generally lean on proven results from smaller-scale, incremental improvements, they may still be considered a relatively low-risk component of an organization’s innovation portfolio.

Transformative Innovation

Transformative innovation represents the most impactful and highest risk portion of any organization’s innovation portfolio. Transformative innovation typically involves the implementation of cutting-edge technology or practices. They require a significant amount of time, money, or energy to put into place. Because they usually represent a significant shift from historical approaches and are likely to disrupt the status quo, these types of innovations can be met with the most resistance—both inside and outside the organization. When successful, however, these sorts of innovations will also have the most significant impact.

While transformative innovations may be driven internally as agencies recognize an emerging opportunity, very often, they are spurred by external demands that require a large-scale response. Examples of

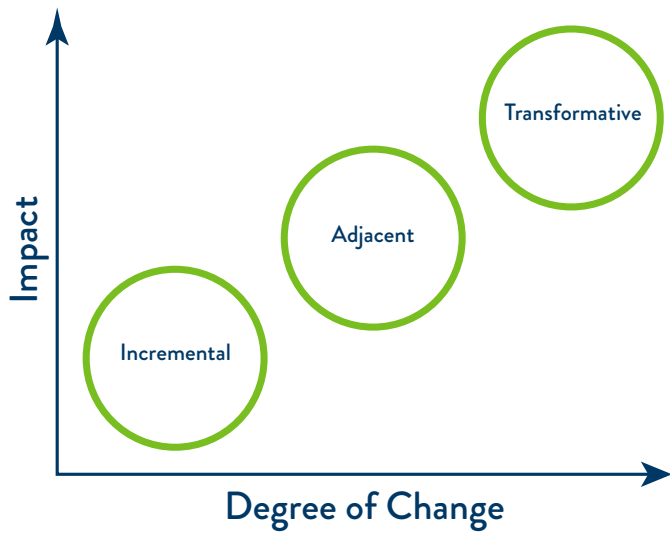


Figure: Types of Innovation

transformative innovation in the transportation sector include the shifts in personal mobility trends (Uber, Lyft, e-scooters, etc.), the impacts of climate change on transportation planning, and the emergence of autonomous vehicles.

An innovation portfolio is likely to include innovations from all three categories as MnDOT delivers on its innovation mission.

The relative allocation of innovations across these three types in an organization’s portfolio will likely shift over time. Especially in the early stages of an innovation program, there may be more emphasis given to lower-risk, incremental innovation. At certain times, a large-scale transformative project may garner most of the attention. At all times, however, the portfolio should align with the mission priorities of the agency. Additionally, leaders should consider the proper distribution of innovations to fit the nature of their organization and its internal offices. Currently, MnDOT is innovating its products, processes, and services with an emphasis on all three types of innovation. As its innovation portfolio matures, ensuring balance to manage risk and to meet agency objectives is critical.

	Incremental Innovation	Adjacent Innovation	Transformational Innovation
Description	Gradual, continuous improvements in products, services, and processes	Adapting successful innovations from other fields to MnDOT’s goals and projects	Radical, new ways of doing things that have significant impacts throughout the arena in which we serve
Types of Ideas	Established best practices and small enhancements	Technology, tactics, and techniques from other fields	New, cutting-edge ideas
When to use	When there is clear opportunity for optimization by applying familiar solutions to known problems	When the potential impact demonstrated in somewhat similar applications warrants prototyping and experimenting to uncover potential benefits for MnDOT	When changes in the environment demand a brand new solution
Risk	Low	Low/Medium	High
Reward	Low, but can accumulate to higher value	Medium	High

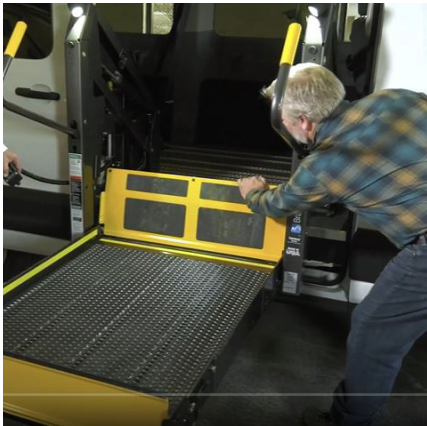
Table: The Innovation Portfolio

EXAMPLES OF MNDOT INNOVATIONS



Asphalt Delivery E-Tickets

Due to COVID-19, we sped up the adoption of electronic tickets (E-Tickets) for reporting the delivery of hot mix asphalt to construction sites, which not only reduces physical contact, but also increases the accuracy of records and speed of payments.



Virtual Inspection of Motor Carriers

Early on in the COVID-19 pandemic, MnDOT turned to virtual inspections to conduct safety audits that couldn’t be delayed. Inspection procedures used a streaming chat application to inspect wheelchair restraints on Special Transportation Service vehicles for the elderly and disabled. A [short video](#) was created to explain the process to customers.



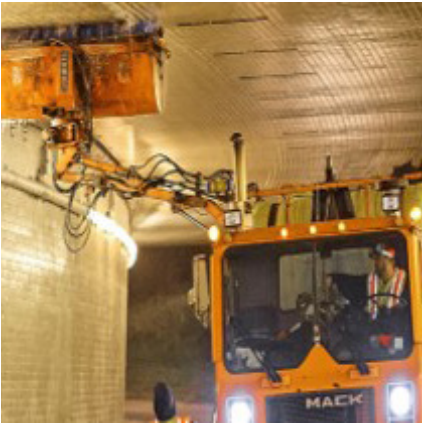
Pilot Testing New Snowplow Technologies

In a research implementation project, MnDOT pilot tested five new pieces of snowplow equipment: two slurry spreaders, a two-way reversible plow, an underbody scraper and a true-float wing.



Wrong-Way Driver Detection

MnDOT is testing a system that detects drivers going the wrong way on ramps that handle traffic coming off the freeways and into downtown. It hopes to learn whether “Wrong Way” signs equipped with flashing lights are effective in grabbing the attention of wayward motorists and getting them to reverse course before tragedy strikes.



Homegrown Tunnel Washers

Faced with the enormous cost of buying a new tunnel washing machine or contracting out, the service employees in two MnDOT districts have saved the agency hundreds of thousands of dollars by building their own specialized tunnel-washing machines.



Drone Live-Streaming of Project Sites

To reduce physical interaction at project sites during COVID-19, MnDOT leveraged drone resources so teams can remotely view infrastructure with drone video, instead of an on-site meeting. Typically, 5-7 people visit a site – including consultants, MnDOT engineers and local officials. Only 2 are needed to fly a drone. We’ve been able to observe 30 sites over four months this way. The drones have also been very helpful in visualizing roundabouts, collecting more and different types of data, and supporting safety in roadside operations.



## INNOVATION ECOSYSTEM

Like any organization, MnDOT operates in a complex ecosystem of internal and external players. Like a natural ecosystem, these entities are constantly in relationship with one another and impact the work of each other. Whether these players are partners, colleagues, professional associations, producers, customers, researchers or advisers, they all play a role in the overall culture and effectiveness of innovation at MnDOT.

Internal examples of MnDOT innovators include:

- *Connected and Automated Vehicles Office*: Hosts CAV Challenge, an open solicitation for CAV solutions to improve safety, efficiency, equity, outreach and mobility.
- *MnROAD*: A cold-weather live pavement test facility that opened in 1993, with high-volume and low-volume test tracks and over 50 test cells. MnROAD evaluates different pavement types and treatments in collaboration with other states, universities and industries.
- *Office of Maintenance*: Supports a variety of “on-the-road” research projects to spur innovation in maintaining state highways.
- *Office of Traffic Engineering*: Supports research directly related to its mission of increasing the safety of our roadways.

### MnDOT’s Innovation Ecosystem

MnDOT’s innovation ecosystem is highly talented. In fact, the highest-scoring metric on our innovation culture assessment was in response to the statement, “We have the internal talent to succeed in our innovation efforts.”

Despite MnDOT’s robust innovation ecosystem and talented staff, there is more that can be done to improve the agency’s effectiveness. The majority of MnDOT employees indicated that the community does not yet speak a shared language about innovation and more work is needed to leverage the differences.



“We have the internal talent to succeed in our innovation efforts.”  
–Highest-scoring element on MnDOT’s Innovation Culture Assessment

# INNOVATION CULTURE

How innovation happens is more than a matter of process. Certainly, an organization should provide the tools and resources to achieve its innovation goals. It should also have clear processes for collecting, filtering, developing, implementing, and scaling innovative ideas. But it is just as important, if not more, to cultivate the right values, behaviors, and habits to support innovation. Without these cultural foundations in place, it is unlikely that an organization will be able to optimize the tools and resources at its disposal.

To assess the current culture of innovation at MnDOT, we deployed employee surveys. Over 1,200 employees participated to help paint a current picture of the state of MnDOT's culture of innovation.

The survey itself is based on a model developed by professors at Babson College and research by culture and innovation experts at MIT. The survey assesses an organization's strengths around six key building blocks that the developers have identified in their research as being critical to effective innovation cultures. Three of those building blocks center around more easily quantified, tools-oriented aspects of innovation: resources, process, and success. The other three look at the more people-oriented dimensions of values, behaviors, and climate.

## Innovation Building Blocks



Figure: Innovation Building Blocks

- *Resources* is a measure of how an organization leverages its people, systems, and projects.
- *Processes* describes the route innovations follow as they are developed (how ideas are generated, filtered, tested, and scaled).
- *Success* is a measure of how an organization's relationship with recognition—both internal and external—supports innovation.
- *Values* describes how learning, creativity, and entrepreneurship are represented.
- *Behaviors* assesses how people act in the cause for innovation and how well leaders inspire, challenge, and support innovative efforts.

- *Climate* describes what level of trust, integrity, and openness exist in the organization, as well as how effective it is at collaboration and reducing unproductive bureaucracy and red tape.

## MnDOT's Innovation Culture

By aggregating the scores from each building block, the survey designers can score an organization's Innovation Quotient™ on a 5-point scale.

MnDOT's cumulative score on a similar survey was 2.71. When compared to other sectors, MnDOT scores slightly higher than the average non-profit (2.63) but lower than the average industry (3.31) or service (3.26) organizations. (No comparison data was available for government agencies at the time of this report.)

Globally, innovation scores for all organizations ranged from as low as 2.36 to as high as 4.3.

In both our objective assessment and in discussions and interviews, there seem to be clear indicators that there is untapped potential for MnDOT to enhance its culture of innovation.

## Innovation Assessment Scores

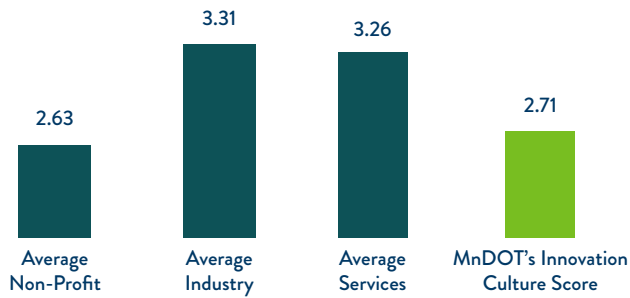


Figure: MnDOT's Innovation Score Compared to Other Sectors

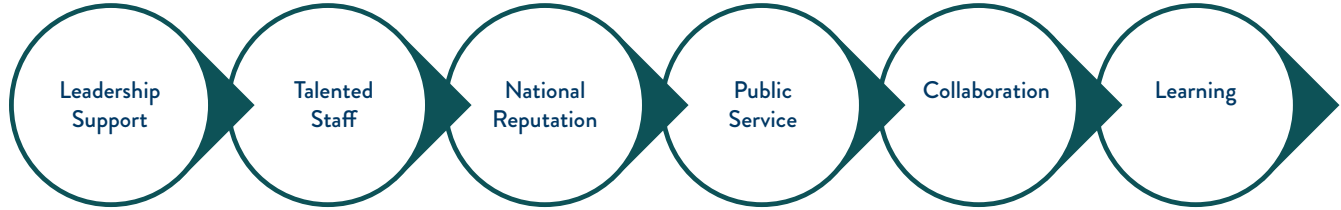
# INNOVATION STRENGTHS AND BARRIERS

Using the survey data as a starting place, the Innovation TAP and other key leaders and influencers at MnDOT were asked the following questions:

- What are MnDOT's innovation strengths that we can lean on as we continue to evolve as an organization?
- What barriers to innovation currently exist in MnDOT's culture? (In other words, why isn't MnDOT innovating more already?)
- What strategies should MnDOT consider to make the most of its strengths and overcome its barriers?

Innovation is not a new concept to MnDOT. MnDOT already has a number of strengths that can support an effective innovation strategy and future innovation program. Through assessment and discussions, we identified six key strengths that will provide a solid foundation for future innovation efforts.

# STRENGTHS



The Innovation TAP identified MnDOT's six top innovation strengths:

## Leadership Support

Staff pointed to an increase in messaging about innovation from top leadership in recent years. This impression is backed up by the assessment results with some of MnDOT's higher marks related to leaders' ability to provide an inspiring vision for the future and willingness to challenge current thinking.

## Talented Staff

The high level of technical expertise in the organization was consistently noted in both interviews and TAP discussions. The highest-scoring metric in the innovation assessment was related to the quality of current staff and their ability to succeed at innovation efforts.

## National Reputation

MnDOT is regarded as a national leader when it comes to addressing state transportation needs. It is already regarded as an innovator and many states refer to the research and products coming out of this agency. In interviews and discussions, participants frequently referenced the pride they take in MnDOT's role as an influencer in the transportation field.

## Commitment to Mission and Public Service

Employees at MnDOT feel a good deal of commitment to public service and MnDOT's mission to "connect and serve all people through a safe, equitable, and sustainable transportation system." A clear purpose that goes beyond the individual and aspires to the greater good is certainly a key strategic advantage when trying to build aligned teams with focus on innovation.

## Collaborative Spirit

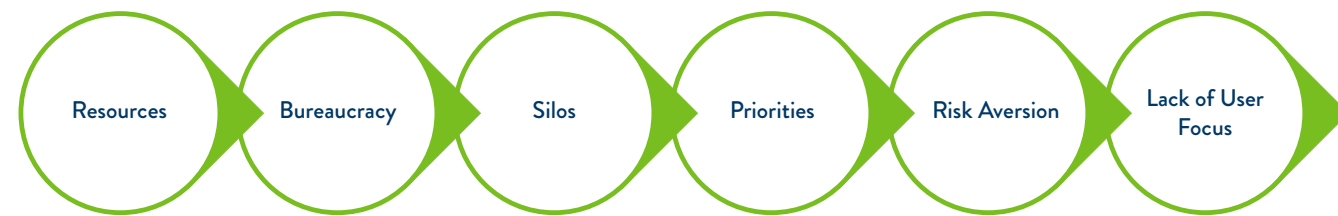
Staff regard themselves as having an ability to work in teams. In our discussions and interviews, participants also cited a strong spirit of collaboration. Staff recognize that strategic partnerships, both internal and external, have helped advance the goals of the organization in the past and that addressing structural barriers to collaboration can only make greater use of this strength.

## Appetite for Learning

The TAP identified an appetite to learn and experiment as one of MnDOT's key strengths. This was also supported by the survey results which gave some of their highest marks to the department's orientation towards learning. In particular, survey respondents gave higher scores to MnDOT's ability to ask questions in pursuit of the unknown and its consistency in using experimentation as a key innovation tool.



## BARRIERS TO INNOVATION



Every human and organizational behavior is regulated by two forces: drivers and barriers. Drivers incentivize a certain way of doing things. Barriers inhibit behaviors. Too often, culture change initiatives focus on drivers and fail to take stock of the barriers that may bog down even the best-intended efforts. When working to create changes in behaviors, it is worth asking a very simple question: If the behaviors we are working to incentivize are so positive, why aren't employees doing them already?

In most organizations, there are already employees present who are oriented towards innovation, but structures within the organization's culture slow down or stop those innovation efforts. For this reason, it is essential that any organization wishing to develop a more innovative culture look not only at the behaviors and results they are looking to drive, but also what barriers might inhibit people from innovating more freely.

Six key barriers to innovation at MnDOT were identified during the development of this strategy:

### Ad Hoc Resource Allocation

TAP members identified and the survey results support a "lack of time and confusion on how to access resources" as a chief barrier to progress on innovation projects in their areas.

In the employee survey, responses indicated that securing funds to support innovation efforts could be difficult and confusing. Almost half (49%) of survey respondents reported little or no access to dedicated funds to pursue new opportunities. When funds weren't already explicitly allocated, staff had little direction on the process for requesting financial support. This results in a dynamic found in many organizations without centralized structures for supporting innovation efforts: project success depends on the project champion's creativity, force of personality, and capacity to navigate a complex network of gatekeepers. The result is inefficient innovation investments without a strategic gravitational center.

Like any organization, people at MnDOT have a finite amount of time, money, and energy. At the same time, MnDOT is a very large state agency with an equally large pool of money and talent dedicated to accomplishing its mission.

The key for most organizations in this predicament is not as simple as finding more resources. It is often more about refining their strategy around how resources are allocated.

### Bureaucracy

In our survey work, 72% of respondents reported that MnDOT's rules, policies, bureaucracy, and rigidity present significant barriers to innovation. Only 16% indicated that they were confident staff knew how to start and move initiatives through the organization. In one conversation, a staff member stated that the fate of many ideas at MnDOT was "death by committee." Like many large government agencies and private sector businesses without clear processes for developing and scaling ideas, MnDOT can struggle to both capture ideas and develop ideas into actionable innovation projects.

### Silos

A common concern raised in interviews and discussions was the often-siloed nature of work that happens at MnDOT and its impact on innovation. Functional work tends to happen in separate physical locations. When an innovation is developed in one district, it is often not shared or scaled across other districts to expand its impact. Some employees referenced the layout of the Central Office building as a barrier to collaboration as staff from one office are unlikely to cross paths with members from another office for more happenstance connection and information-sharing. Innovation TAP members also indicated a lack of regular interaction between districts. Additionally, districts and Central Office are organized differently. The ultimate impact of these silos is a landscape where fewer ideas are sparked through dialogue between different areas and innovations have a smaller reach than they otherwise could.

### Lack of Clear Innovation Priorities & Processes

The majority of MnDOT survey respondents agreed that the agency does not select innovation priorities from a clearly articulated risk portfolio. Until recently, innovation has not been articulated as a core value of the organization and strategic innovation priorities have not been articulated.

### Risk Aversion

A regular theme in discussions and interviews was a general aversion to risk in the MnDOT culture. In our innovation culture assessment, employees scored the statement "We reward people for participating in potentially risky opportunities, irrespective of the outcome" as 2.2 out of 5, the lowest scoring statement on the entire assessment. While other scores related to learning were stronger, less than 25% of MnDOT employees agreed with the statement, "We are not afraid

to fail, and we treat failure as a learning opportunity."

Some of this aversion to risk can be attributed to the strengths of an organization that values accuracy and preciseness and a workforce that is generally encouraged to quantify and minimize risk whenever possible. Taken too far, however, participants described a common experience of organizational analysis paralysis. In addition, participants reported a concern that attention is sometimes disproportionality put towards mistakes and failures than towards recognizing innovation successes and learnings. As one assessment responder put it, "We are good at coming up with ideas, but many of them never seem to go anywhere. Although we don't have specific punishments, mistakes and failures are held against employees for a long time and prevent them from getting additional chances to try something new."

Other participants described this culture as a "No, but..." rather than a "Yes, and..." culture, indicating that when new ideas are raised, they are often met with concern and skepticism first. Rather than focusing on potential benefits and building from there, new ideas are screened for flaws first and dismissed before getting full consideration. The end result leaves many participants with the impression that new ideas are assumed to be riskier than they actually are and that good ideas are unnecessarily held back from becoming valuable innovations.

### Lack of People-Centered Focus

Like many technical organizations, there can be a strong emphasis on technical solutions with less consideration given to the user experience. Technical solutions can certainly provide innovative advances in solving problems, but they sometimes neglect other opportunities to enhance user access, functionality, engagement, and satisfaction. This barrier is not unique to MnDOT. Many government agencies have recognized a need to increase their efforts to engage and collaborate with constituents to find more effective solutions. Even before launching this examination of innovation at MnDOT, efforts were under way to bring a more human-centered focus to MnDOT's work, but there is still room to grow.

85% of employees do not know how to get started & move innovations forward  
92% feel that rules, policies, & bureaucracy present real barriers to innovation



# INNOVATION MATURITY

In an [article published in the London School of Economics' Business Review](#), authors Cris Beswick, Dan Toma, and Ricardo Vargas describe four basic levels of an organization's innovation maturity.

Novice	Competent	Expert	Leader
At the novice level, an organization may have spurts of innovation activity, albeit ad-hoc. Innovation may come up as an occasional topic of conversation with the leadership team, but organizations at the novice level stop short of developing an innovation strategy or sponsoring specific innovation initiatives. Any positive innovation outcomes are generally low-value and may even be accidental.	At this level, we begin to see changes in the organization's culture and leadership approach. Innovation has generally been recognized as a necessary component to future success. Competent organizations may have a basic innovation strategy and are prepared to sponsor limited innovation initiatives. Some innovation training has usually taken place and basic innovation tools are being considered, but despite these advancements, competent organizations have not fully aligned their innovation strategy with the broader organizational strategy and are focused on short-term wins.	Expert organizations have moved beyond seeing innovation as an add-on. Instead, they see it as essential to their development and success. Leadership visibly sponsors innovation and innovation processes begin to be embedded throughout the organization. In these organizations, teams and projects are managed to support innovation more effectively and the line-of-sight rises from short-term to mid-term goals. The innovation toolbox becomes more robust and key performance indicators are used to help guide decision-making.	At the highest level of maturity, innovation leaders have fully embedded innovation into the culture and strategy of the organization. The organization will have long-term innovation goals articulated with useful metrics and performance indicators. In these organizations, management and engagement practices support innovation at all levels and employees are empowered to innovate without fear of failure.

## MnDOT's Innovation Maturity

Today, we would say that MnDOT is at a “Competent” level of maturity and on its way to “Expert.” Sponsorship and engagement in this project clearly demonstrate a strong commitment to making innovation a more robust force in MnDOT’s work. R&I has taken steps towards a healthy innovation presence, including a quarterly innovation newsletter and hosting a human-centered design workshop. Still, more can be done to establish a more effective innovation process and align people and strategies around long-term innovation goals.

## BEST PRACTICES: PRIVATE AND PUBLIC SECTOR

Prior to diving into an innovation strategy, the Innovation TAP wanted to learn from the experience of others in both the private and public sectors. Employee Strategies provided a set of private sector resources including an IDEO video, articles (Harvard Business Review and others), podcasts, web links, and a series of books for the TAP. Review of public sector innovations included a literature review by MnDOT Library Services, National Cooperative Highway Research Program publications on government innovation, lessons learned from the Federal Highway Administration (FHWA) Innovators group, and FHWA-sponsored Peer Exchanges on innovation.

Many of the best practices for innovation that exist in the private sector can be directly applied to public sector work. Indeed, the barriers to innovation referenced earlier in this report are not unique to the public sector. Plenty of private sector organizations have struggled to define clear innovation priorities and break down silos across functional areas. Like many government agencies, many private businesses find they do not have the resources or leadership capacity that they would ideally like to dedicate to their innovation efforts. Innovators in large private sector organizations, like their public sector colleagues, can find themselves caught up in red tape and fighting gatekeepers.

In addition to these shared challenges, however, government agencies typically face a much higher level of public scrutiny. This can amplify an already strong tradition in government of generally risk-averse cultures that favor sure wins rather than uncharted waters where their failures may end up in the newspaper or an opponent’s campaign ad.

Despite these distinctions, however, ignoring innovation as an organizational priority poses ever-increasing risks in public sector work. Ironically, the same public scrutiny that historically has tamped down innovation efforts is now often pushing government workers in the other direction. While government agencies do not compete the way private sector groups might battle over segments of the market, there is an ever-increasing public expectation that governments provide a similar level of quality and ease of service as their private sector counterparts. Government groups that don’t innovate effectively risk diminishing their perceived competence and credibility.

The need for innovation within the public transportation sector and a summary of innovation strategies and practices being adopted by state DOTs are further addressed in the U.S. Department of Transportation Volpe Center’s March 2021 report, “[Lessons Learned from State DOTs on Innovation and Knowledge Management Programs](#).”

In public sector, it is mission, not market, that drives innovation.





# Part 2: WHERE WE WANT TO GO

## Innovation Mission

We innovate to solve complex problems, creating value for our organization and customers.

*"I dream of a wild future where I can comfortably walk anywhere I desire. Walking contributes to my mental and physical health. Living in a future where I can walk to work, to shop, to the daycare, and to fulfill all my daily needs is truly a WILD dream."*

Participant response from an "I Dream of Wild \_\_\_" exercise led by MnDOT's artist in residence during their annual fall workshop.



So, what does that picture of success at MnDOT look like?

## INNOVATION SUCCESS DEFINED

We asked our Innovation TAP members to imagine themselves five years from now picking up their local newspaper and reading a front-page headline about innovation at MnDOT.

Here are some of the headlines they came up with:

- MnDOT Innovation Positions Minnesota as Best in Nation
- MnDOT's Innovative Culture Leads to Transformative Solutions to Minnesota's Transportation System
- MnDOT Steps Up to Stop Work Zone Crashes
- MnDOT Leverages Public's Ideas to Become Innovation Leader



## MNDOT'S MOTIVE FOR INNOVATION

The TAP also discussed WHY they believe innovation is critical for MnDOT and identified three primary motives:



Mission Success



National Leadership



Recruit & Retain Top Talent



## Mission Success

First and foremost, contributors to this effort described innovation as essential to MnDOT's mission success. Because innovation is ultimately about finding better solutions to current or emerging challenges, it is only natural that public sector agencies would seek to build innovative practices into their operations to maximize the impact of their efforts.

Bottom line: private sector entities innovate because they believe there to be more effective and valuable ways to deliver on their brand promise to their customers. Public sector groups must innovate to more effectively fulfill the mission promise they've made to the public.

## National Leadership

MnDOT is regularly cited as a national leader among state transportation agencies. Beyond the immediate satisfaction this recognition brings, maintaining and even enhancing its esteem can create a positive "flywheel effect" as employees' commitment to innovation and outstanding results grows. Recognition makes innovation more sustainable because it encourages more of the same in the future. The credibility that comes with this national reputation allows MnDOT to influence a concerted transportation agenda beyond just the state transportation system. It is also able to support and drive efforts in cities and counties.

## Recruit & Retain Top Talent

As millennials become an ever-increasing part of the workforce and more and more baby boomers retire, the market for top talent is shifting. Many organizations, both public and private, are giving serious thought to how they recruit and retain the talent necessary to do their work.

The shifting landscape of work during the pandemic and subsequent labor shortage has only amplified the competition for workers. Many employees have put more attention than ever towards work satisfaction and finding jobs that align with and support their personal values.

While the public sector may find it difficult to compete with private sector enterprise on salary alone, a culture of innovation and strong mission are key advantages when attracting top performers.

Innovative culture routinely ranks high on the list of desirable workplace attributes for today's workers. A study by Ernst & Young indicates that 69% of American professionals would leave their current job for a similar role at another organization they believed was an innovation leader. The combination of a service-oriented mission with a culture aimed towards innovation, progress, and change is a powerful recipe for hiring and retaining talented and committed staff.

## INNOVATION MISSION

In the course of its work, the Innovation TAP identified areas where MnDOT should focus its innovation efforts and crafted an innovation mission statement linked to MnDOT's overall mission to "connect and serve all people through a safe, equitable, and sustainable transportation system."

The Innovation TAP said MnDOT's innovation mission is "to innovate to solve complex problems that create value for our organization and customers."



It should be noted that this mission indicates both internal and external focuses for innovation at MnDOT. An internal focus (organization) will promote more efficient practices, culture change initiatives, and clearer innovation processes. An external focus (customers) will promote civic engagement and strategic partnerships.





# Part 3: HOW WE WILL GET THERE



Innovation is using critical & creative thinking to implement ideas that create value for the public we serve.



So, with all we've learned about where we are and where we want to go—the obvious next question is, How do we get from here to there?

MnDOT's Innovation Strategy rests on a basic definition of innovation, a set of key mindsets, and slate of innovation goals and strategies.

## DEFINITION

One of the first challenges to designing an innovation strategy is to align on a shared understanding of what is meant by innovation. There is no universal, agreed-upon definition for the word "innovation." For as frequently as the word innovation gets used in modern corporate cultures, leaders often have a difficult time succinctly describing what they mean by the word. A simple Google search will reveal dozens of definitions ranging in lengths from a full paragraph to a short phrase of just a few words.

When crafting MnDOT's definition for innovation, the contributors to this project sought to encompass the wide range of forms that innovation can take. Additionally, the team desired a definition that was simple, straightforward, and concise. Finally, MnDOT's definition needed to be able to support the broader mission and goals of the organization.

## MnDOT's Definition

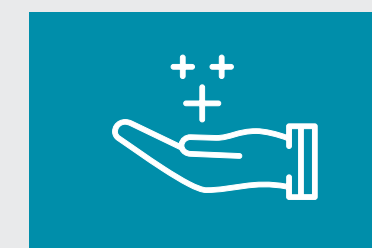
Innovation is the process of using critical and creative thinking to implement ideas that create valued outcomes. This definition reflects three core elements:



Innovation is more than creativity



Innovation is about implementation



Innovation should create value



### Three Core Elements

*Innovation is more than creativity.* While creativity is certainly a critical ingredient to successful innovation, creativity is distinct from innovation. The value of creative works may be entirely subjective and may exist for their own sake. Innovation, on the other hand, pairs creativity with critical thought to examine how effective those creative ideas are at addressing a specific need.

*Innovation is about implementation.* While innovation may begin at a conceptual level with idea harvesting and brainstorming, eventually ideas must be implemented to be considered an innovation. Like any other implementation, innovation is most effective when robust systems are in place to facilitate the efficient and effective realization of ideas into applied solutions.

*Innovation should create value.* While not all innovations will succeed, the ultimate goal of innovation in any organization is to solve problems and bring new value to the organization, its mission, and the people it serves.

### GOALS

During these efforts, the following five goals were drafted to ensure alignment of the innovation strategy with MnDOT’s mission:

- Systemically integrate innovation into MnDOT’s culture
- Accelerate, pilot, and scale innovations to improve efficiency, effectiveness, and customer service
- Innovate to position MnDOT as a national leader
- Grow and leverage strategic partnerships to broaden the impact of innovations
- Implement innovations to support a safe, equitable, and sustainable transportation system for all

### THE E3 MINDSET

As we have described, truly innovative organizations have more than a set of tools and programs—innovation becomes a core part of their culture. While we all have experienced the power of culture in our communities, families, and workplaces, culture can be an elusive topic. Culture is like the current in a river, silently pushing those in its path in a set direction. We can observe that culture through an organization’s behaviors, systems, symbols, and rituals—but the engine behind those traits is much more fundamental.

These invisible but essential aspects can be described as mindsets. A mindset describes a basic set of core beliefs and values that guide our attitudes, how we make decisions, how we set expectations, and where we direct our time and energy.

MnDOT’s innovation program is founded on what we call an E3 Mindset of Empathy, Experimentation, and Empowerment:

### Empathy

Innovation leaders like [David Kelly](#), founder at IDEO, a highly respected design firm that has contributed to innovations like the computer mouse, iPhone, easy-to-use defibrillators, and airplane bathroom “occupied” signs, have long touted empathy as the birthplace for effective innovation. As Kelly says, “An empathetic approach fuels our process by ensuring we never forget we’re designing for real people. And as a result, we uncover insights and opportunities for truly creative solutions.”

Innovation ultimately is about creating solutions that give people more of what they value. To innovate effectively, MnDOT must focus on understanding the needs and desires of the public they serve and the various stakeholders in its ecosystem.

A mindset of empathy will support MnDOT’s efforts to direct innovation efforts towards more effective and meaningful solutions to the challenges they face.

### Experimentation

Scientists have long understood the immeasurable value of experimentation. When seeking the most effective ideas, it’s only natural to consider many sorts of ideas. While most of us understand the benefits of trial and error, we still cling to the hope that we might skip over the error part if we can. Trial and success certainly sounds like a more appealing methodology, but failure is an inevitable part of the innovation game. Organizations that struggle with innovation often have a long-standing tradition of minimizing risk. Failed endeavors are regarded as failures that should be avoided at all costs.

In strong innovation cultures, however, failed experiments are regarded as great sources of new data and insights. Innovators expect a certain degree of failed experiments as they iterate towards more and more effective solutions. The focus is not on winning or losing, succeeding or failing—it is on learning. This sort of experimentation is not reckless. Low-cost prototypes can be used to gain insights without wasting stores of precious resources.

The important thing is to shift the lens from a win/lose view to one of curiosity. A mindset of experimentation reminds innovators that successful innovation requires collaboration, rapid iteration, and failure as catalysts for change.

### Empowerment

Finally, to be successful, leaders in innovative organizations must provide their people with the support and tools to get things done. Managers must empower their teams to take calculated risks, encourage diversity of opinion, and secure the resources necessary to properly invest in progress.

A mindset of empowerment promotes active leadership throughout the organization. Employees see that they can all contribute to innovation, regardless of their role or position in the hierarchy.



### STRATEGIES, OBJECTIVES AND KEY ACTIONS

Along with the E3 Mindset, the Innovation TAP identified a set of core strategies. These strategies reflect many of the best practices and approaches included in other innovation programs from both the private and public sectors while also recognizing the specific needs of MnDOT and its current strengths and barriers.

As you read ahead, we will describe each of these six strategies in more detail, including the basic objectives associated with each strategies and actions to implement the strategy over the next several years.

Strategies	Objectives	Key Actions
Leadership Support	Empower employees to innovate	<ul style="list-style-type: none"><li>• Identify innovation as an organizational goal &amp; norm</li><li>• Dedicate resources (time, funding, space) to “seed” innovations</li><li>• Provide dedicated time for innovation (e.g. 3M model)</li><li>• Create spaces (physical &amp; virtual) to inspire imagination &amp; creativity</li><li>• Establish a Center for Innovation within the Research &amp; Innovation Office (R&amp;I) supported by an Innovation Team</li></ul>
Customer Focus	Understand the needs of those we serve	<ul style="list-style-type: none"><li>• Focus on stakeholders through human-centered design thinking</li><li>• Co-create by involving stakeholders throughout the innovation process</li></ul>
Experiment, Learn, and Share	Champion innovative ideas, develop innovative talent and transform services to better serve the public	<ul style="list-style-type: none"><li>• Develop an idea pipeline</li><li>• Compile a portfolio of innovations</li><li>• Launch structures to rapidly identify, pilot &amp; implement innovations (e.g., innovation day(s), innovation summit, crowdsourcing)</li><li>• Build a learning community through training, coaching &amp; mentoring (e.g., Community of Practice, Innovation Academy)</li><li>• Develop networks &amp; platforms (internal &amp; external) for sharing knowledge and experience</li></ul>
Evaluate and Measure	Track alignment with department strategic objectives	<ul style="list-style-type: none"><li>• Record, evaluate and track innovation opportunities</li><li>• Establish easily digestible metrics (e.g., dashboard)</li></ul>
Reward and Recognize	Celebrate innovations & innovators	<ul style="list-style-type: none"><li>• Innovation newsletter, website, blog, social media, webinars, podcasts</li><li>• Innovation awards, incentives, and events</li></ul>
Collaborate	Build relationships & connect innovators across sectors to build a more equitable and inclusive innovation ecosystem	<ul style="list-style-type: none"><li>• Convene an Innovation Leadership Council (public/private partnership) to guide, support &amp; promote innovation</li><li>• Build relationships with public, private &amp; philanthropic communities</li><li>• Create and train a network of Innovation Ambassadors to break down organizational “silos”</li><li>• Bring in outside experts and use professional networks to foster innovation</li></ul>



# Part 4: IMPLEMENTATION



Concurrent with the development of this Innovation Strategy, the Research and Innovation Office staff began early-stage activities to help promote awareness and education around innovation.

Examples include collection of COVID innovations in 2020; launching an innovation newsletter, formation of an Innovation Community of Practice Committee, and a June workshop on Innovation Through Human Centered Design facilitated by Andy Zimney of Employee Strategies and attended by 184 MnDOT employees.



## COVID Innovations

The COVID-19 pandemic, on top of social unrest and climate events, presented new and unprecedented challenges, and MnDOT staff stepped up to address these challenges head-on with passion, ingenuity, and a commitment to public service.

During the summer of 2020, we surveyed staff to:

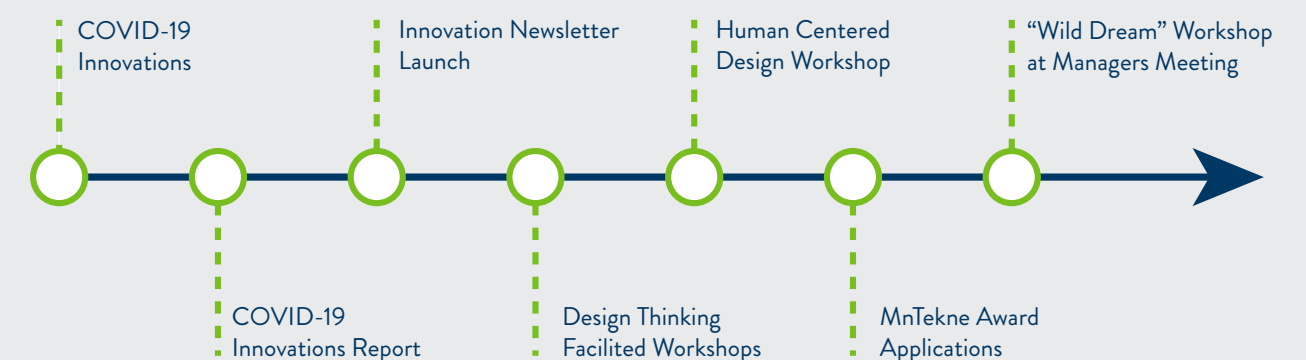
- Capture and celebrate MnDOT employees' creativity and resilience in response to COVID-19
- Understand and document impacts to MnDOT customers and stakeholders
- Identify efficiencies, cost-savings, and service improvements.
- Share best practices across MnDOT.
- Evaluate and recommend long-term service delivery changes.

In 2020, staff shared over 90 COVID-19 innovations — everything from electronic asphalt delivery tickets to online payments for billboard permits.

While some changes are temporary 80-percent of these innovations have been so successful, staff are permanently integrating them into our business practices to improve service delivery.

## Initial Innovation Strategy Implementation Activities

This timeline illustrates key activities from 2019-2021:





Trying to build a strong innovation culture without effective leadership is like attempting to construct a building without a foundation.

To innovate, employees must be supported with the proper training, resources, and encouragement. Innovative organizations have leaders that encourage innovative behaviors by explicitly calling it out as an organizational value and expectation. They provide concrete resources like funding, space, and relevant professional development opportunities. It is only natural for organizations that don't provide consistent support from leadership to revert to the status quo, whereas organizations with leaders who consistently stress innovation as a strategic imperative see a stronger level of commitment throughout the enterprise.

It is the job of a leader to promote and support innovation through leading by example; establishing a safe innovation space built on trust and the dismissal of hierarchies; rewarding and recognizing employees; and promoting collaboration internally and externally.

Key Actions	Timing		
	2021	2022	2023
Identify innovation as an organizational goal & norm			
Establish a Center for Innovation within the Research & Innovation Office (R&I) supported by an Innovation Team			
Dedicate resources (time, funding, space) to “seed” innovations <ul style="list-style-type: none"> <li>Provide dedicated time for innovation (e.g. 3M model)</li> <li>Create spaces (physical &amp; virtual) to inspire imagination &amp; creativity (e.g., library conversion to an Innovation Center/Lab)</li> <li>Establish seed funding for targeted innovations</li> </ul>			

## LEADERSHIP SUPPORT KEY ACTIONS

### Identify Innovation as an Organizational Value

Articulated core values are one of the cornerstones of any workplace culture. They provide prospective employees with a clear idea of what the organization values most and affirm current employees' understanding of how to spend their time and energy as they approach their work.

As MnDOT works to update its Strategic Operation Plan, innovation is already being incorporated as a core value. In the course of its work, the Innovation TAP provided input into the draft innovation value statement:

Innovation is using critical and creative thinking to provide value for the people we serve. We support searching for new ideas and solutions, experimenting to learn and grow, and leading with action.

The Innovation TAP identified simple rules for incorporating innovation into our daily work:

- Embrace curiosity and challenge ourselves to continuously improve
- Understand a problem, analyze a problem, and solve it
- Find creative solutions and leverage new technology

Innovation is already included in MnDOT performance review assessments with the following description: “Inspires others toward improvement. Operationalized creative ideas into the structure and function of the work unit, sought out by others for creative problem-solving skills.”

MnDOT leadership will continue to reinforce innovation as a core value in its communication and decision-making.

### Establish a Center for Innovation

To provide more centralized leadership around innovation, MnDOT will dedicate a space designed to support innovators in their work. This space will create an environment for effective collaboration, brainstorming, and prototyping. Additionally, this center will provide both in-person and virtual training to employees throughout MnDOT.

Creating spaces, both physically and virtually, for organic and structured collaborations around innovation is critical to fostering a culture of innovation and empowering staff to innovate. Creation of an innovation center at the Central Office building along with traveling innovation resources to facilitate innovation throughout the state are creative initial steps in creating the space for innovation to flourish.

### Dedicate Resources to “Seed” Innovations

For innovations to flourish, they must be supported with funding, time, and space.

A dedicated innovation fund should be established to help seed innovation projects that align with established strategic goals and priorities.

Many organizations—especially in the private sector—have established specific expectations around time used for innovation work. For example, 3M has instituted what they call a “15% Culture” that encourages employees to set aside time (approximately 15% of their workweek) to proactively cultivate and pursue innovative ideas that excite them. While coordinating with their manager to ensure day-to-day responsibilities are still executed, employees get the space to think creatively and challenge the status quo.

Innovation doesn't happen without leaders who embrace it, nor can it happen without people who have ideas and are willing to risk failure to experiment with them.



## CUSTOMER FOCUS

Focus on understanding the needs of those we serve

Using empathy as a guide to solve essential problems and challenges, MnDOT will enhance its understanding of its customers and stakeholders to develop more impactful solutions. When innovative leaders focus on asking questions and listening, key challenges become clearer, and creative ideas and solutions emerge from those closest to the problems.

Key Actions	Timing		
	2021	2022	2023
Co-create by involving stakeholders throughout the innovation process			
Focus on stakeholders through human-centered design thinking			

### CUSTOMER FOCUS KEY ACTIONS

#### Co-Create with Stakeholders

Co-creation refers to inviting stakeholders (usually customers) to participate in a design or problem-solving process to produce a mutually valued outcome.

When partners actively collaborate to create and deliver customer-centric products and services, they capture greater value more rapidly and at lower risk than traditional product-development approaches. Organizations that cocreate effectively can engage a broad set of stakeholders to support their innovation needs, including customers, suppliers, competitors, academic institutions, nonprofits, and government agencies. Co-creation can help accelerate and de-risk innovation.

#### Benefits of cocreation



**Reduced time to market**  
Faster product development cycles resulting in lower concept-to-launch lead times



**Access to diverse capabilities and resources**  
Breadth of competencies and resources that enable new or enhanced services/products through partnerships with diverse players



**Risk- and cost-sharing**  
Managing risks (e.g., slow product adoption or changing market trends) and reducing costs of supporting multiple business models



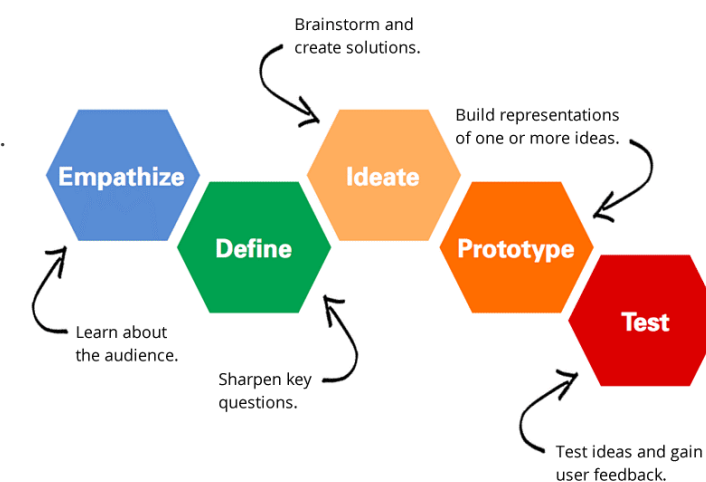
**Brand-building in adjacent markets**  
Building brand awareness with new consumers in markets that may otherwise be harder to access

Source: Deloitte Insights

### Provide Training and Facilitation Around Human-Centered Design

The Human-Centered Design process has become a standard innovation practice in the private sector because practitioners can develop more effective solutions more efficiently by involving the end-users in the development process from the very beginning. Human-Centered Design typically includes 5 key stages:

- Empathize: Learn about the audience
- Define: Sharpen key questions
- Ideate: Brainstorm and create solutions
- Prototype: Build representations of one or more ideas
- Test: Test ideas and gain user feedback



Source: Institute of Design at Stanford

Through rapid iteration of this process, project teams can quickly develop innovative solutions to complex problems.

Human-Centered design is an approach to problem-solving commonly used in design and management frameworks that develops solutions to problems by involving the human perspective in all steps of the problem-solving process.

Human-Centered Design workshops and innovation sessions that have already been hosted at MnDOT have been very positively received. Here are some of the comments received after recent sessions:

- “It asked questions from our customers’ perspective, not something our department does very often.”
- “Provided a process to push deeper into really examining the relationships/processes that are part of our everyday work. We accidentally get lazy (efficient!) and take emotional shortcuts—this was a guided way to slow down and really consider why the words and emotions matter.”
- “Formalizing the process is helpful. We skip to the end/result/takeaway too often. There’s value in doing the work along the way. Makes us better at our work and provides a better product/process for the community.”

Continued investment in Human-Centered Design training and facilitation will promote more innovative problem-solving.





## EXPERIMENT, LEARN & SHARE

*Champion innovative ideas, develop innovative talent and transform services to better serve the public*

MnDOT's innovation strategy will provide more robust processes for collecting, filtering, testing, developing, and scaling innovative ideas and solutions. It will also build a stronger sense of community around MnDOT's work where innovators feel safe to take appropriate risks in the interest of learning and progress. The cultivation of this community will also support more effective sharing of insights and information throughout MnDOT's ecosystem.

Key Actions	Timing		
	2021	2022	2023
Develop an idea pipeline			
Launch structures to rapidly identify, pilot and implement innovations (e.g., innovation day(s), innovation summit, crowdsourcing)			
Build a learning community through training, coaching and mentoring (e.g., Community of Practice, Innovation Academy)			
Develop networks and platforms (internal & external) for sharing knowledge and experience			

## EXPERIMENT, LEARN & SHARE KEY ACTIONS

### Develop an Idea Pipeline

By building simple and accessible ways to collect new ideas and assess their alignment with organizational priorities, MnDOT can take better advantage of the diversity of perspectives at MnDOT. For example, a simple online landing page could serve as a hub for crowd-sourcing ideas and connecting internal innovators with the support they need.

#### Welcome to the MnDOT Innovation Program!

*What do you need?*

I have an innovation idea and I need some resources to pull it off.	I did something innovative and want to share it!
I have an idea, but I don't know what to do next.	I'm interested in some innovation training for myself or my team.

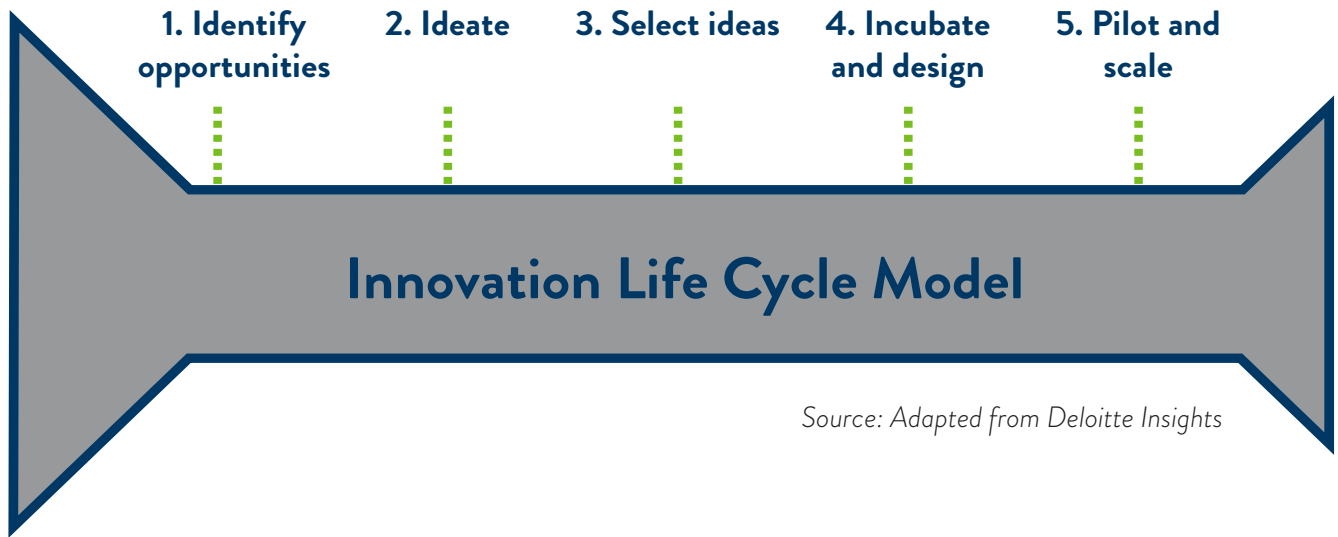
Figure: Example of a simple landing page for an innovation program website

## Launch Structures to Rapidly Identify, Pilot and Implement Ideas and Innovations

MnDOT will create processes to move good ideas forward by identifying key needs and opportunities, collecting ideas through various means, selecting qualified ideas to develop, designing and iterating solutions based on those ideas, piloting innovations, and scaling success.

Many innovative organizations sponsor dedicated "innovation days" to facilitate rapid design sprints around selected innovation ideas to help vet their value and viability while also engaging a diverse set of contributors. Other ideas may be supported by assembling a small "skunkworks" team to pilot a dedicated innovation project.

The Innovation TAP will evolve to play a key role here to filter ideas and match key opportunities with the support they require.



## Build a Learning Community through Training, Coaching and Mentoring

Beyond the financial and time resources discussed earlier, MnDOT can provide additional support to enhance employees' understanding and skills related to innovation.

Work has already begun to develop an Innovation Community of Practice where those interested in innovation can learn about tools and processes while also connecting with fellow innovators.

Developing an Innovation Community of Practice can be a powerful way to develop innovative leaders throughout the organization by providing training on specific topics such as Human Centered Design, Applied Improvisation, Supporting Psychological Safety, and Agile Workplaces.

## Develop Networks and Platforms for Sharing Knowledge and Experiences

By participating in existing associations and partnerships and building and expanding new ones, MnDOT will more effectively leverage learning across different offices, districts, and sectors.





## EVALUATE & MEASURE

*Track alignment with department strategic objectives*

What gets measured gets done. Evaluating and measuring key performance indicators will support accountability and more nimble adaptation as the innovation program evolves.

The main role of innovation metrics is to make sure you're doing enough of the right activities to reach your goals. These metrics can typically be divided into two different categories: **input metrics** (what goes into your innovation process) and **output metrics** (what comes out of it).

Input metrics measure if you're doing enough of the right activities to reach your goals and whether you've allocated your resources properly. They are typically actionable and will direct much of the day-to-day activity of the innovation program. Output metrics measure whether these activities and resources have had the desired impact on your innovation process.



To ensure that MnDOT's innovation strategy stays on track, a basic set of metrics will be identified for the program at large and for individual innovation projects as appropriate.

Key Actions	Timing		
	2021	2022	2023
Assemble a portfolio of innovations			
Record, evaluate and track innovation opportunities			
Establish easily digestible metrics (e.g., dashboard)			

## EVALUATE & MEASURE KEY ACTIONS

### Assemble a Portfolio of Innovations

While organic, incremental innovations will continue to emerge throughout the MnDOT ecosystem, it will be helpful for this innovation program to collect a formal innovation portfolio of the innovative products, processes, and services it is developing. To begin, MnDOT should catalog the various innovations currently in development. From there, the Innovation Team and Innovation TAP can work to balance the portfolio of incremental, adjacent, and transformative innovations it sees fit to support. [Many organizations will aim for a 70-20-10 distribution of innovations](#)—70% incremental, 20% adjacent, and 10% transformative—but every organization will right-size their portfolio to fit their organization best.

In the early stages of an innovation program, it is typical for portfolios to be weighted towards incremental innovations. Since they are typically lower risk, this focus allows an innovation program to build momentum and settle into new processes. As the program evolves, more weight will be given to adjacent and transformative innovations. Once the portfolio of innovations has been finalized, a dashboard can be drafted to track the progress and outcomes of those innovations.

## Record, Evaluate, and Track Innovation Projects

Once innovation projects have been selected for the innovation portfolio, there should be regular checkpoints set to track that project's progress. Successful projects should be scaled appropriately. Projects that do not prove to present adequate value should be sunsetted in a timely manner. Whether successful or not, all innovation projects should provide new learnings and insights that should be captured so they can be applied to future iterations or other related projects.

## Establish Easily Digestible Metrics

Many well-intentioned innovation efforts have found themselves over-burdened by minute analysis and reporting procedures that end up taking a disproportionate amount of time and energy from the overall program goals. While too little evaluation can lead to wasteful uses of resources, over-evaluation can have similar consequences.

To this end, program leaders will establish a basic dashboard that can be used to easily communicate the innovation program's activities and outcomes. Metrics on this dashboard may include:

### Inputs:

- \$ invested in innovation projects
- # of innovation projects in current portfolio and/or pipeline
- # of employees who have received training and tools
- # of hours dedicated to innovation time
- # of new partnerships established
- # of employee recognition events or activities

### Outputs/Outcomes:

- \$ or time saved from new innovations
- Customer satisfaction ratings
- Innovation culture assessment scores
- # of new partnerships established
- Adoption rate of innovations
- # of innovation and awards received



## **REWARD & RECOGNIZE** *Recognize and celebrate innovations and innovators*

Rewarding and recognizing key behaviors and accomplishments is key to cultivating an intentional workplace culture. Furthermore, [research has consistently shown that employees who feel valued](#) by their organizations perform at higher levels and stay committed to employers for the long term. They also act as brand ambassadors, spreading the good word to friends and colleagues. This makes it easier for organizations to attract new and diverse talent.

New ideas, new products, new processes: every business needs them to succeed, and leaders know that with talented and motivated human capital they can unlock creativity and innovation in their organizations. To create a culture of innovation, organizations need to make innovation a human capital issue embedded in everyone's jobs.

By supporting forms of recognition that make sense for MnDOT, the agency will encourage the behaviors that matter most while also supporting employee engagement and satisfaction.

Key Actions	Timing		
	2021	2022	2023
Innovation newsletter, website, blog, social media, webinars, podcasts			
Innovation awards, incentives, and events			

### REWARD & RECOGNIZE KEY ACTIONS

#### Innovation Newsletter, Website, Blog, Social Media, Webinars, Podcasts

Innovation can be incentivized by making it more visible through various communication initiatives. An innovation newsletter, Innovation Focus, is already in production that keeps internal MnDOT employees and other external stakeholders informed of various happenings and opportunities regarding innovation. Innovation Focus is published quarterly in an online format.

Other communication tools like a website, blog, or podcast can provide more in-depth conversation and education to those especially interested in developing their innovation skills and mindset. Finally, external-facing tools like social media and other campaigns may be used to raise awareness and appreciation for MnDOT as an innovative presence in the state and nationally.

#### Innovation Awards, Incentives, and Events

One of the lowest scoring items on the innovation culture assessment was related to rewarding innovative activity. By celebrating the innovation accomplishments of individuals and teams at MnDOT, the agency can reinforce our commitment to this strategy.

At a very basic level, innovation should be added to the job descriptions and work expectations of employees. As an identified organizational core value, employees should understand how innovation is expected to show up in their work and be recognized for their contributions to innovation goals.

Pursuing innovation awards given by outside organizations could also serve as a way to raise awareness about the work being done at MnDOT and affirm its value to MnDOT employees. For example, each year the [Tekne Awards, presented by the Minnesota Technology Association](#), shine a spotlight on Minnesota's science and technology community by honoring innovation across numerous industries. The annual Tekne Awards gala draws Minnesota's most influential business, educational, and government leaders together to celebrate the state's science and technology-based economy and can serve as a tremendous platform for MnDOT's work.

MnDOT may also want to develop its own internal awards program to recognize the contributions of innovators throughout the organization.

## **COLLABORATE** *Build relationships & connect innovators across sectors to build a more equitable and inclusive innovation ecosystem*

Recognizing that innovation flourishes when diverse viewpoints are considered, MnDOT should focus on cultivating a vibrant community of partners and stakeholders—both new and old. Much can be done to break down internal silos as well as to expand MnDOT's ecosystem of external partners.

Key Actions	Timing		
	2021	2022	2023
Build relationships with public, private & philanthropic communities			
Convene an Innovation Leadership Council (public/private partnership) to guide, support & promote innovation to fill a role of the State Transportation Innovation Council			
Create and train a network of Innovation Ambassadors to break down organizational "silos"			
Bring in outside experts & use professional networks to foster innovation			

### COLLABORATION KEY ACTIONS

#### Build Relationships with Public, Private and Philanthropic Communities

By expanding its network of partners, MnDOT can leverage a broader scope of perspectives and solutions.

#### Convene an Innovation Leadership Council

An innovation leadership council, comprised of leaders from both the public and private sectors, could fulfill the role of the State Transportation Innovation Council (STIC). It would help guide, support, and promote innovation throughout the transportation sector and support consistent innovation leadership throughout the ecosystem.

#### Create and Train a Network of Innovation Ambassadors to Break Down Organizational "Silos"

Too often innovations fail to flourish at MnDOT, not because of a dearth of ideas, but because idea champions aren't sure how to move ideas forward. Innovation Ambassadors can help guide would-be innovators by connecting them with resources, partners, and training.

#### Bring in Outside Experts and Use Professional Networks to Foster Innovation

Leveraging the knowledge and skill in its expanding ecosystem, MnDOT will tap outside expertise as needed to complement the core strengths in its organization.



## CONCLUSIONS

In a world of rapid change, innovation is not an optional activity. To effectively respond to the evolving needs of Minnesotans and to fulfill its mission to connect and serve all people through a safe, equitable, and sustainable transportation system, MnDOT must cultivate a vibrant culture of innovation.

The benefits of these efforts will not only support MnDOT's mission. They will also enhance its national reputation as a leader in the transportation field and help it to compete in a job market where emerging talent are seeking innovative and values-driven employers.

With the support of leadership and external and internal partners, we expect MnDOT will build on the core strengths of the agency while also addressing key barriers to more effective and innovative problem-solving.

This work of cultivating a strong innovation culture is itself an act of innovation. MnDOT's E3 Mindset of Empathy, Experimentation, and Empowerment will continue to guide the evolution of this program.

The first stages of this project to develop an Innovation Strategy were guided by Empathy as we listened to stakeholders describe their desires around innovation and the current challenges in their work. As MnDOT moves into the implementation stages, it will continue to listen with an empathetic ear to learn what is needed next.

This program will launch with a spirit of Experimentation. We fully expect that some ideas and approaches will need to be adjusted, amplified, or dropped as program leaders learn what works and what doesn't. Like any scientist, MnDOT should expect to learn as it goes and maintain a spirit of curiosity.

Throughout this endeavor, MnDOT should work to empower all MnDOT employees and partners to innovate in incremental and transformational ways. It will share what it learns with others so that they may build off its experience and continue to enhance the effectiveness of its work.

Innovation can occur in every role at MnDOT and in every relationship and partnership. While the scope and scale of innovation will vary accordingly for various functions, every area can benefit from recognizing areas of opportunity and implementing new ideas to improve outcomes.

As we said at the beginning of this report, innovation is not new to MnDOT. And we expect it will never become old either. By practicing innovation every day, in all corners of its work, MnDOT will be ready to venture down the new roads that tomorrow presents.

## ADDITIONAL READING AND RESOURCES

- "Public Sector Innovation: From Ideas to Action," Ernst & Young, [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_ca/topics/government-and-public-sector/ey-innovation-public-sector-en.pdf](https://assets.ey.com/content/dam/ey-sites/ey-com/en_ca/topics/government-and-public-sector/ey-innovation-public-sector-en.pdf)
- "Fostering Innovation within State Departments of Transportation," Caltrans Division of Research, Innovation and System Information, <https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/preliminary-investigations/fostering-innovation-pi-2015-07-28-a11y.pdf>
- "Developing a Culture of Innovation," MnDOT Office Policy Analysis, Research & Innovation, <https://www.dot.state.mn.us/research/TRS/2010/TRS1003.pdf>
- "Innovation Programs: Inquiry of No Boundaries Member States," <https://www.dropbox.com/s/bx85qmmsqkdfwrn/Innovation-Programs-Inquiry-of-No-Boundaries-Member-States.pdf?dl=0>