

## MEETING NOTES

### Iowa Advisory Council on Automated Transportation (ATC)

#### Economic Development (EcDev) Subcommittee Meeting

Tuesday, May 25, 2021

10-11 am CT

#### Action Items:

- Explore opportunities to align AT workforce needs with statewide education programs (certificate and degree programs, summer camps, STEM outreach, internships, etc.)
1. Welcome and introductions – Rick Peterson, Economic Development Subcommittee Chair
    - a) Attendees – 17 attendees
      - Rick Peterson (Economic Development Subcommittee Chair) – Iowa Economic Development Authority
      - Chris Hadfield – Minnesota Transportation Center of Excellence (TCOE)
      - Jill Lippincott – Iowa Economic Development Authority (Iowa EDA)
      - Robert Denson – Des Moines Area Community College (DMACC)
      - Mickey Shields, Erin Mullenix – Iowa League of Cities
      - Nathan Fulk – Iowa State Patrol
      - Peter Rafferty – Gannett Fleming
      - Neal Hawkins, Skylar Knickerbocker – Iowa State University, Center for Transportation Research and Education
      - Dan McGehee, Omar Ahmad, Jacob Heiden – University of Iowa, National Advanced Driving Simulator
      - Troy Jerman, Tim Simodynes, Peggi Knight, Adam Shell – Iowa DOT
  2. Work Plan & Tactical Actions Update - Adam Shell (Iowa DOT)
    - a) [Iowa's Automated Transportation Vision](#) was completed in March of 2020 and identified tactics for Iowa to pursue. These tactics align with the ATC subcommittees and working groups. Work plans were developed to guide next steps and identify deliverables, leads, resources, and timelines for actions.
    - b) The Economic Development Work Plan is a living document that provides flexibility to shift when needed. Some tactics for the Economic Development subcommittee have been moved to inactive as efforts will be focused on other tactics now. The inactive tactics will still be important to Iowa moving forward, and currently they are as follows: *Implement Pilot Program*, *Assess Platooning Corridors*, and *Initiate Platooning Study*. A new tactic has been added to the work plan to *Assess AV/AT-related Iowa Workforce*. No subcommittee members had comments or feedback on the current work plan.
  3. Minnesota CAV Advisory Council – Labor & Workforce Development Committee: An update from 10,000 feet from the land of 10,000 lakes – Chris Hadfield, Minnesota State Transportation Center of Excellence (TCOE)
    - a) Chris Hadfield is the Executive Director of Minnesota TCOE. He also co-chairs the Labor & Workforce Subcommittee of the Minnesota CAV Advisory Council. He has a decade of experience in automotive technology instruction and has worked for an automotive technician in various sectors.
    - b) The Minnesota State TCOE is funded through the state legislature and through the state university and college system. Their mission is to enhance education, engage employers, and inspire students. They cover all transportation pathways in Minnesota with education partners in K-12 through post-secondary school. The TCOE has industry partners that include state associations, original equipment manufacturers (OEMs), national associations, and employers.

- c) Minnesota is preparing for connected and automated vehicles by observing trends and advancements in automation and technology. The Minnesota DOT Connected and Automated Vehicle Office (CAV-X) is the convening office for the state's CAV transportation engagement, policy, testing, and partnerships. The MN CAV-X Council is governor appointed and made-up stakeholders from private, public, and nonprofit sectors. The council is comprised of five committees: safety & law enforcement, labor & workforce development, connectivity & data, infrastructure investment, and education & outreach. The CAV-X council recently published their [annual report](#).
  - d) Chris co-chairs the Innovative Labor & Workforce Development committee with the vice-president of the Polaris organization. This committee presents opportunities to reskill and upskill workers, attract new talent, and develop jobs of the future while supporting the jobs of today. They also focus on evaluating the state's STEM (Science, Technology, Engineering, and Math) programs to create CAV education materials. Members are committed to intentional job creation by supporting and preparing employers and employees for the CAV careers of today and tomorrow. The people on the committee have interdisciplinary backgrounds focused on safety, partnerships, job creation, and leadership.
  - e) The CAV-X Labor & Workforce Development committee has short term goals to get the group off the ground, grow a diverse and engaged set of members, remain focused on their specific tasks, and identify clear deliverables. The committee's work plan priorities are to communicate, understand & research, develop CAV workforce data, present pilot project, and develop messaging.
  - f) Minnesota and Iowa have similarities in their transportation, education, and economic development and labor needs. There should be intentional efforts to have these sectors working smoothly with each other toward common goals.
  - g) Minnesota state university and college system rely on collaborations to synergistically advance both research and workforce development needs. Aligning STEM initiatives and summer camps with transportation is crucial for the diverse careers that today's students will be pursuing. University research programs usually work decades ahead of production, and there is opportunity to align future workforce needs based on the forward-looking research happening today. Universities, colleges, and employers can work together to lead states' efforts advancing transportation technologies and future workforce. Funding opportunities are available on various levels through grants and partnerships.
4. Automated Transportation (AT) Labor Market Analysis – Jill Lippincott (Iowa EDA)
- a) Jill Lippincott is the innovation team lead at the Iowa EDA. She also handles an extensive amount of work in workforce training and data analytics. The Iowa EDA uses the [Future Ready Iowa Plan](#) to identify and invest for future high-demand workforce needs in the state. There is alignment between the plan and an AT-ready Iowa, based on standard occupation codes for the AT economy.
  - b) In addition, there are new skills and occupations emerging due to AT. The Economic Growth Institute at the University of Michigan released the report titled [Understanding the Middle-Skill Workforce in the Connected & Automated Vehicle Sector](#). This report explores the development and evolution of the middle-skill jobs to support AT. Workers in these careers need to be multiskilled labor. This is also seen in [Iowa's Advanced Manufacturing 4.0 report](#). There is work needed to determine how to classify these multiskilled occupations of the future. There still will be engineers designing the AT systems, and there will also be new paraprofessional jobs to support the AT environment as described in the [National Operations Center of Excellence white paper](#). Iowa can build toward these multiskilled occupations of the future that require critical thinking.
5. AT Labor & Workforce Open Discussion – Jill Lippincott (Iowa EDA) & Rob Denson (DMACC)
- a) Workers will require wide-ranging skills for these future careers. Iowa has established training programs already. AT training can be implemented and embedded in existing programs, whether it be part of a certificate program or transferred into a degree program. Iowa can also align curriculum with current summer camps and STEM initiatives.

- b) The Iowa Department of Education established college and career transition counselors to engage with students specifically on what occupations they want. Many counselors must focus efforts on student mental health, and these career counselors will focus on what the students want to do beyond high school. One-third of Iowa graduates don't go to college, and we can reach those individuals to help provide the needed training for current and future careers.
- c) There is a need to get the messaging to the right people when they need it. We not only need to reach the young population, but we also need to engage with the incumbent active workers who will be an important sector of future work.
- d) Opportunities exist in Iowa, both in already-developed programs and future programs. Iowa can partner with schools, universities, colleges, and businesses to advance and prepare for an AT-ready state.

6. Open Discussion – All subcommittee members

7. Information and key upcoming dates

- a) Policy & Legislation Subcommittee Meeting - Wednesday, June 2nd, 1-2PM
- b) Public Safety & Enforcement Meeting - Wednesday, June 9th, 10-11AM
- c) AT Council Meeting - Late July or Early August 2021



# ATC SUBCOMMITTEE MEETING

Economic Development  
May 25, 2021



### Automated drive

Destination: 50° 43' 50.34" N - 6° 10' 55.294" E  
Arrival: 08:55 pm - Distance 783 miles

TCP/IP: 192.56.327.684.1  
SYNC: **enabled** | Sensors: **active** | Cameras: **active**

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# MEETING AGENDA

1. Welcome and introductions – Rick Peterson, Economic Development Subcommittee Chair
2. Work Plan & Tactical Actions Update - Adam Shell (Iowa DOT) (5 minutes)
3. Minnesota CAV Advisory Council – Labor & Workforce Development Committee: An update from 10,000 feet from the land of 10,000 lakes (25 minutes)
  - Chris Hadfield - Executive Director, Minnesota Transportation Center of Excellence | Labor & Workforce Subcommittee Co-Chair, Minnesota CAV Advisory Council
4. Automated Transportation (AT) Labor Market Analysis – Jill Lippincott (Iowa EDA) (10 minutes)
5. AT Labor & Workforce Open Discussion – Jill Lippincott (Iowa EDA) & Rob Denson (DMAACC) (15 minutes)
  1. Missing job sectors?
  2. Identified gaps?
  3. Timeframe for implementation?
  4. Opportunities? (e.g. Alignment, Education, Partnerships)
6. Open Discussion – All subcommittee members (5 minutes)
7. Information and key upcoming dates
  1. Policy & Legislation Subcommittee Meeting - Wednesday, June 2nd, 1-2PM
  2. Public Safety & Enforcement Meeting - Wednesday, June 9th, 10-11AM
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# WELCOME AND INTRODUCTIONS

Rick Peterson –  
Economic Development  
Subcommittee Chair



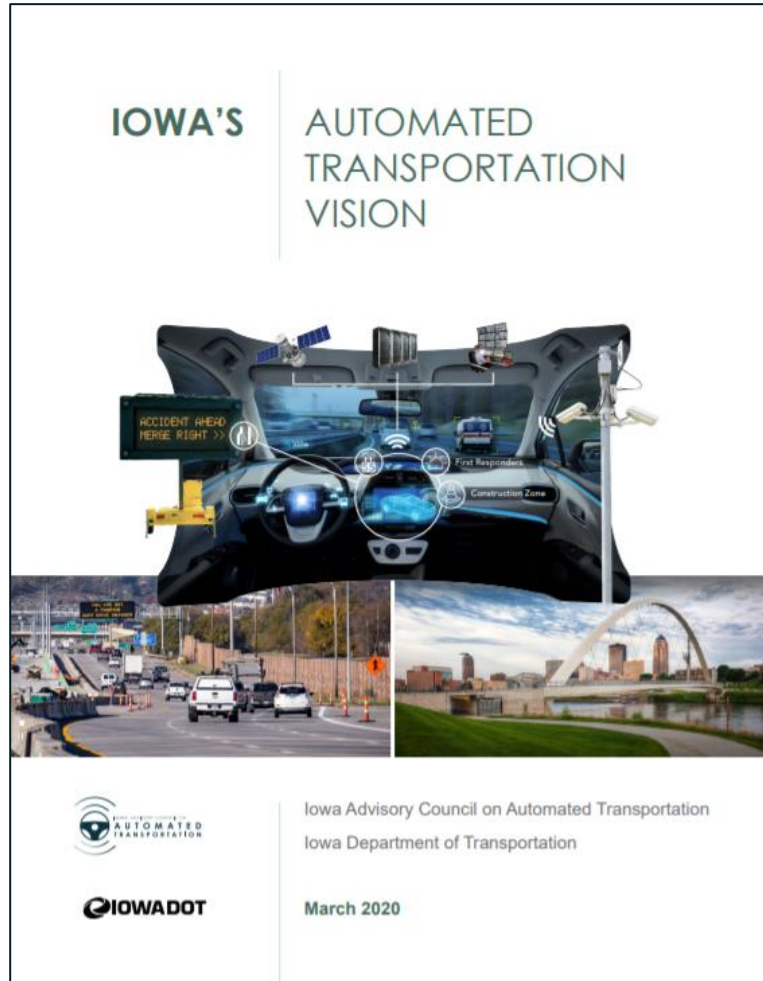


# ECONOMIC DEVELOPMENT WORK PLAN & TACTICAL ACTIONS

Adam Shell, Iowa DOT



# IOWA AUTOMATED TRANSPORTATION VISION



Objective Areas	Tactics
Infrastructure Readiness	<ol style="list-style-type: none"> <li>1. Assess &amp; Advance AT Readiness</li> <li>2. Improve Pavement Marking</li> <li>3. Build Out Fiber Backbone</li> <li>4. Implement Pilot Program*</li> <li>5. Define Data Systems Architecture</li> </ol>
Policy & Legislation	<ol style="list-style-type: none"> <li>1. Bolster State Leadership</li> <li>2. Monitor Legislation</li> <li>3. Modify Administrative Rules</li> <li>4. Ensure CAT in Planning</li> <li>5. Improve Equity &amp; Accessibility</li> <li>6. Implement Pilot Program*</li> </ol>
Economic Development	<ol style="list-style-type: none"> <li>1. Assess Platooning Corridors</li> <li>2. Initiate Platooning Study</li> <li>3. Engage with Iowa Businesses</li> <li>4. Engage with Iowa Community Colleges</li> <li>5. Implement Pilot Program*</li> </ol>
Public Safety & Enforcement	<ol style="list-style-type: none"> <li>1. Develop Following Distance Guidelines</li> <li>2. Explore Vehicle Automation Indications</li> <li>3. Capture AV Crash Data</li> <li>4. Inform TIM &amp; Safety Community</li> <li>5. Address VRU Safety</li> </ol>

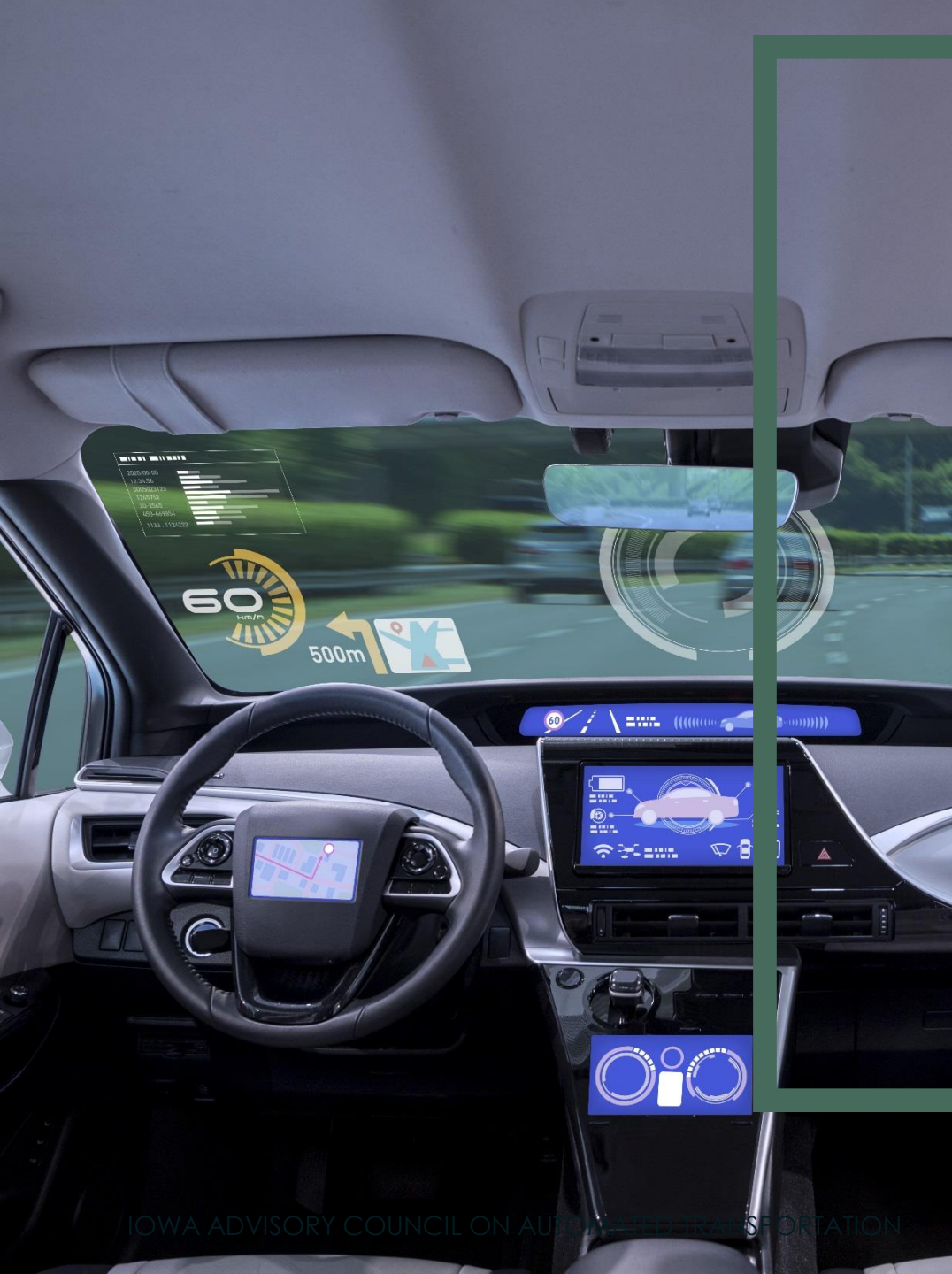
<https://iowadrivingav.org/pdf/ATC-Vision.pdf>



# WORK PLAN & TACTICAL ACTIONS

	<b>Deliverables</b>	<b>Lead(s)</b>	<b>Resources</b>	<b>Scenarios</b>	<b>Timeline</b>
<b>Engage with Iowa Businesses</b>	Targeted engagements	Rick Peterson (IEDA)	Staff time	Impacts of pandemic, derecho	Ongoing
<b>Assess AV/AT-related Iowa Workforce</b>	Jobs classifications Gap analysis Draft opportunities	Jill Lippincott (IEDA)	Staff time	N/A	2021
<b>Engage with Iowa Community Colleges</b>	Targeted engagement (IACCT)	IEDA (TBD)	Staff time	Possible workforce emphasis	2020 webinar series

<i>Inactive Tactics</i>					
<i>Implement Pilot Program</i>	<i>New program established Targeted deployments</i>	<i>IEDA (TBD)</i>	<i>Seed funds to be identified</i>	<i>Funding dependent</i>	<i>Ongoing, pending resources</i>
<i>Assess Platooning Corridors</i>	<i>Assessment Plan for next steps</i>	<i>DOT (TBD)</i>	<i>Staff time</i>	<i>Platooning tactics may be combined with one another and/or with the broader readiness assessment (led by Infrastructure Readiness)</i>	<i>2019 discussion and legislation</i>
<i>Initiate Platooning Study</i>	<i>Scope Study Recommendations</i>	<i>DOT (TBD)</i>	<i>Staff time and/or consultant support</i>		<i>2019 discussion and legislation</i>



# MINNESOTA CAV ADVISORY COUNCIL – LABOR & WORKFORCE DEVELOPMENT COMMITTEE: AN UPDATE FROM 10,000 FEET FROM THE LAND OF 10,000 LAKES

Chris Hadfield

Minnesota Transportation  
Center of Excellence Director

Minnesota CAV Governor's  
Council, Labor and Workforce  
subcommittee chair



# *Minnesota CAV Advisory Council – Labor & Workforce Development Committee: An update from 10,000 feet from the land of 10,000 lakes.*



**MINNESOTA STATE**  
Transportation Center of Excellence



THE FUTURE OF MOBILITY  
COMES TO MINNESOTA



**NATIONAL CENTER  
FOR  
AUTONOMOUS TECHNOLOGIES**

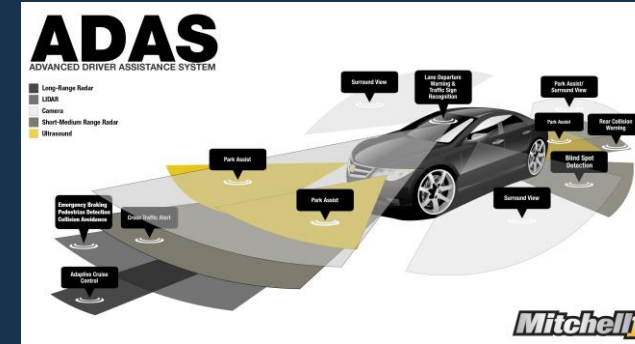


**MINNESOTA STATE**  
Transportation Center of Excellence



**SCAN  
ME!**

# Overview of the TCOE and My Role

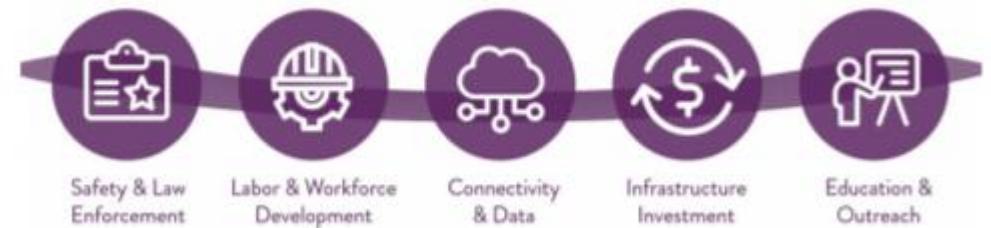
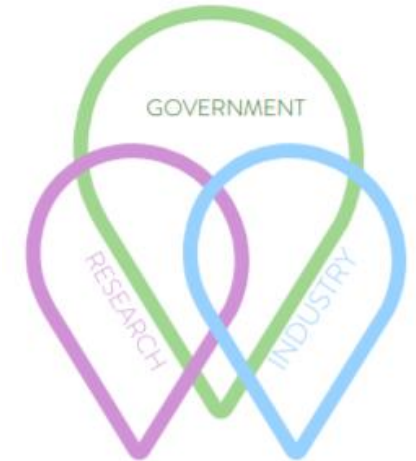


- TCOE Mission: Enhance Education, Engage Employers, Inspire Students
  - The TCOE covers all transportation career pathways in MN.
  - Education partners include all K-12 transportation programs and post-secondary Minn State
  - Industry partners include state associations, OEM's, national associations, and employers
- My Role(s):
  - Executive Director of the Minn State Transportation Center of Excellence (TCOE)
  - Co-PI of National Center for Autonomous Technologies (land side) and Co-PI of ISA-TOPE Project
  - Co-Chair of MN-DOT CAV-X Innovative Labor and Workforce Development Committee



# Overview of MN-DOT CAV-X & Committee

- CAV-X Council
  - Minnesota is preparing for connected and automated vehicles by observing trends and advancements in vehicle automation, connected vehicle technology, and other emerging trends. MnDOT's Connected and Automated Vehicle Office (CAV-X) is the convening office for the state's connected and automated vehicle transportation technology engagement, policy, testing and partnerships.
  - Annual Report Link (Feb 2021)  
<http://www.dot.state.mn.us/automated/docs/2021-gac-on-cav-annual-report.pdf>



# Overview of MN-DOT CAV-X & Committee

- Innovative Labor and Workforce Development Committee
  - CAVs present opportunities to reskill and upskill workers, attract new talent, and develop jobs of the future while supporting/protecting the jobs of today.
  - Co-chaired by TCOE and Polaris, with strong support from the state's Department of Employment and Economic Development (DEED), workforce advocates, CAV technical consultants, NSF, and leaders from the state's Auto Dealers and Trucking Associations.
  - The committee is focusing on evaluating the state's STEM programs to create CAV educational materials to help individuals learn about CAV careers, working with DEED to develop data to track CAV occupations in Minnesota, upskilling and reskilling workers, and developing a CAV skills pilot programs.
  - Members are committed to intentional job creation by supporting employers and employees to prepare understand and prepare for CAV technology impacts jobs of today, while planning for jobs of the future with our education system.





# Why are People on the Committee

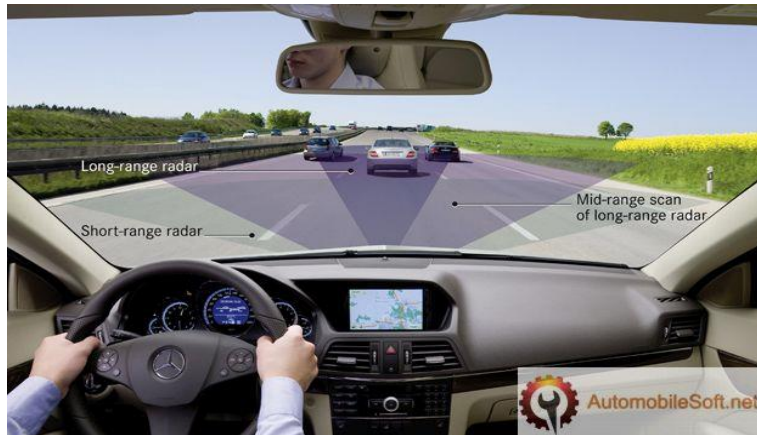
- **Safety**
- **Partnerships**
  - Need to partner to train workforce, technicians, engineers need to learn how to safely work on automated vehicles and technologies
- **Job creation**
  - Need to be intentional about jobs that will be created by technology and understanding which jobs may be displaced.
- **Leadership**
  - Put Minnesota on the map and build partnerships



# Overview and Summary of Committee Activities

## Short Term Goals

1. Get committee up and running
2. Grow membership and participation
3. Remain “granular” and specific, while being aware of other committees’ work (e.g. Education and Outreach)
4. Identify clear deliverables

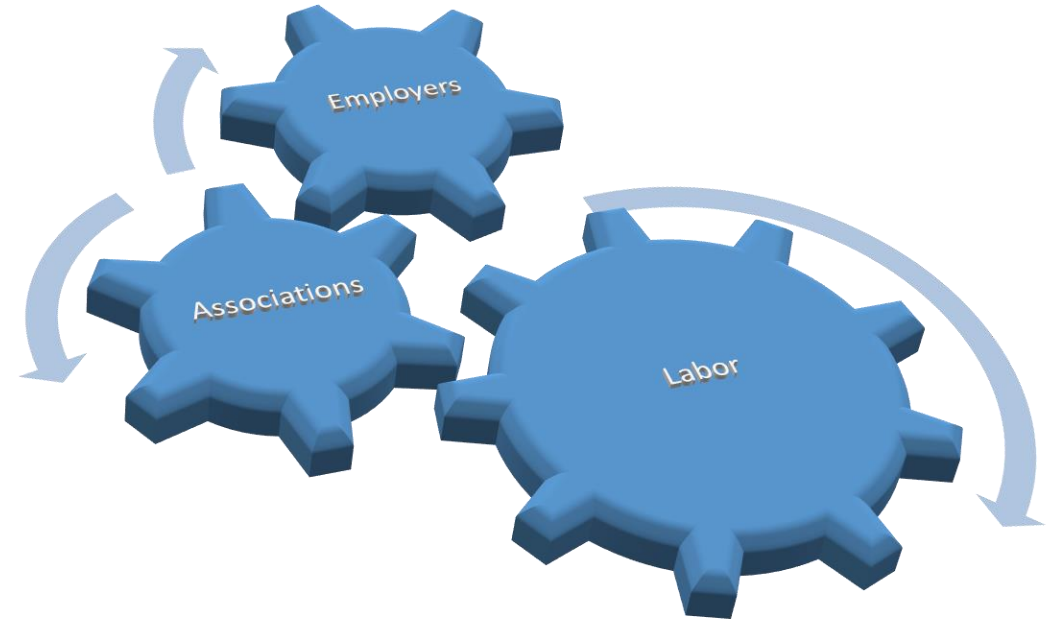


## Work Plan Priorities

1. **Communicate** CAV job creation & transition re-skilling and upskilling specific to Minnesota
2. **Understand and research** ongoing Minnesota CAV curriculum and CAV STEM outreach and developing a summary report/white paper. Establish a framework for public-private partnership for CAV curriculum (similar to Futures Command/Carlson school) by March 2021.
3. **Develop CAV workforce data**
4. **Present pilot project** idea/framework at December Council meeting; conduct a pilot project and preliminary findings by March 2021.
5. **Develop messaging** and talking points focusing on “these jobs are not going away; rather the jobs as we know it are changing...”



# Thoughts About Iowa. . .





# Thank You!

**Chris Hadfield**

Executive Director, MN TCOE

Co-PI, NCAT

Co-PI, ISA-TOPE

✉ Co-Chair, MN-DOT CAV-X Innovative  
Labor and Workforce Committee  
[chris.hadfield@dctc.edu](mailto:chris.hadfield@dctc.edu)

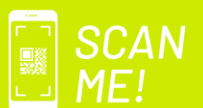
## Reference Web Links:

- <https://www.minntran.org/>
- <http://www.dot.state.mn.us/automated/index.html>
- <https://ncatech.org/>
- <https://pavecampaign.org/public-sector-advisory-council-minnesota-dot-office-of-connected-and-automated-vehicles/>



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Some of the content acquired in this presentation was provided by grant funding from the National Science Foundation.  
**NCAT NSF Abstract #1902574    ISA-TOPE NSF Abstract #2054997**



# AUTOMATED TRANSPORTATION (AT) LABOR MARKET ANALYSIS

Jill Lippincott, Iowa  
Economic Development  
Authority



# AT LABOR MARKET ANALYSIS

## Systems

40-9743 Computer and Information Systems Managers

## Technology

15-1241 Database and Network Administrators and Architects

15-1244 Network and Computer Systems Administrators

15-1251 Computer Programmers

15-1252 Software Developers

15-1253 Software Quality Assurance Analysts and Tester

17-2061 Computer Hardware Engineers

17-2071 Electrical Engineers

17-2141 Mechanical Engineers

17-3027 Mechanical Engineering Technicians

17-3023 Electrical and Electronic Engineering Technologists and Technicians

17-3024 Electro-Mechanical and Mechatronics Technologist and Technicians

17-3026 Industrial Engineering Technicians

## Maintenance

47-4051 Highway Maintenance Workers

## Automotive

49-2096 Electronic Equipment Installers and Repairers, Motor Vehicles

49-2097 Audiovisual Equipment Installers and Repairers

49-3023 Automotive Service Technicians and Mechanics

49-3031 Bus and Truck Mechanics and Diesel Engine Specialists

49-3040 Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics

53-3000 Motor Vehicle Operators

## Infrastructure

17-1012 Landscape Architects

17-1022 Surveyors

17-2050 Civil Engineers

17-3022 Civil engineering Technologists and Technicians

49-2093 Electrical and Electronics Installers and Repairers, Transportation Equipment

49-9041 Industrial Machinery Mechanics

49-9052 Telecommunications Line Installers and Repairers

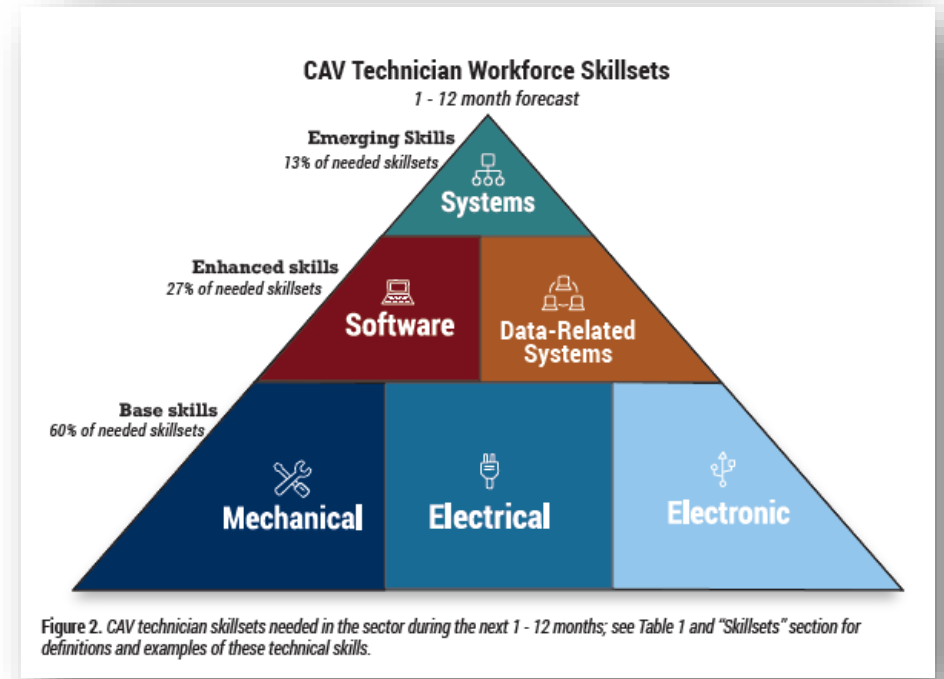
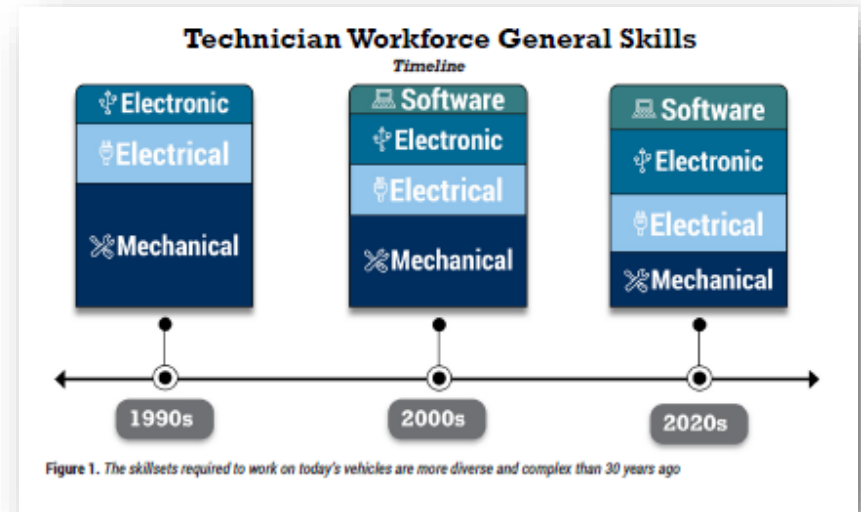
53-6040 Traffic Technicians



# AT LABOR MARKET ANALYSIS



Source: [Economic Growth Institute - University of Michigan](#)



# AT LABOR MARKET ANALYSIS

## TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS (TSMO) PARAPROFESSIONAL WORKFORCE DEVELOPMENT

WHITE PAPER

**NCoE**  
National Operations Center of Excellence

As it relates to TSMO, there is no prior research establishing the definition of a TSMO paraprofessional. This, in part, has to do with the relatively recent emergence of a range of transportation technologies to help manage operations as well as the consequent provision of more and better data that needs to be made sense of. Paraprofessionals are key to the application of technologies and their effectiveness. With so many now in place in the TSMO workforce, the following definition is proposed.

### TSMO PARAPROFESSIONAL DEFINITION

A TSMO paraprofessional is a position supporting the management and operations of transportation infrastructure. A TSMO paraprofessional may exert a high level of judgment in the performance of their work. TSMO paraprofessionals can comprehend and apply knowledge of basic engineering principles in the solution of broadly defined TSMO problems at a cursory level. TSMO paraprofessionals provide traffic management center operations services and a variety TSMO field services.

Source: National Operations Center of Excellence

# EXPECTED WORKFORCE NEEDED:

## Skills

- Dedication
- Scheduling
- Sorting
- Data Management
- Logistics
- Customer Service
- Cybersecurity
- Cloud Computing
- Machine Learning

## Jobs of the Future to Support AT

- Connected and Automated Vehicles Program Manager
- Transportation Data Ethicist
- Transportation Systems Management and Operations (TSMO) Modeling Specialist
- Visualization Specialist
- Artificial Intelligence Scientist
- Surface Weather Specialist





# AT LABOR & WORKFORCE ROUNDTABLE DISCUSSION

Jill Lippincot – Iowa  
Economic Development  
Authority

Rob Denson – President,  
Des Moines Area  
Community College

# AT LABOR & WORKFORCE ROUNDTABLE DISCUSSION

- Missing job sectors?
- Identified gaps?
- Timeframe for implementation?
- Opportunities?



# OPEN DISCUSSION





# INFORMATION AND KEY UPCOMING DATES

- Policy & Legislation Subcommittee Meeting – Wed., June 2nd, 1-2PM
- Public Safety & Enforcement Subcommittee Meeting – Wed., June 9th, 10-11AM
- AT Council Meeting - Late July or Early August 2021



**THANK YOU**