

State of the ITS (TSMO) Workforce: Perspectives from Professional Societies and Associations

NOCoE

National Operations Center of Excellence

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The Context of our Discussion

“...it is increasingly important that educational institutions produce students with the competencies to perform entry-level ITS tasks. With the current shortages in the ITS workforce and the emergence of increasingly complex systems and technologies (such as connected vehicles), alignment between ITS workforce needs and education curriculum is essential.” [Background from the Workshop one-pager.]

The Creation and Role of NOCoE

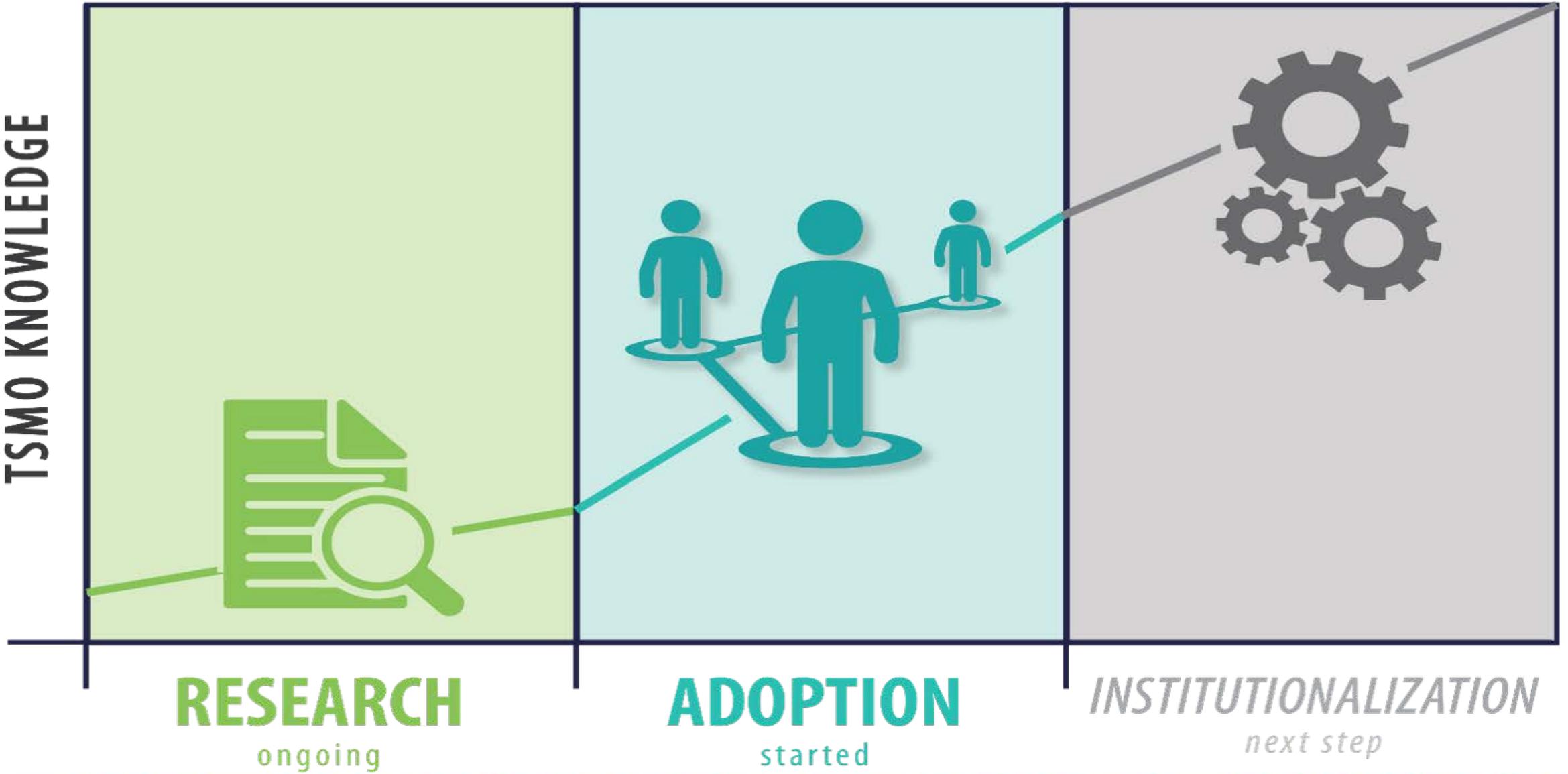
- The Center is a partnership of the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the Intelligent Transportation Society of America (ITSA) with support from the Federal Highway Administration (FHWA).
- Its mission is to empower the TSMO community to succeed by enhancing its knowledge, skills, and abilities.

Foundational Partnership



TIME

TSMO KNOWLEDGE



RESEARCH
ongoing

ADOPTION
started

INSTITUTIONALIZATION
next step

The NOCoE Theory of Change

- The visual depicts how TSMO knowledge increases over time through the phases of research, adoption, and institutionalization.
- The rate of adoption is influenced by the extent to which TSMO knowledge is shared around foundational strategies and practices and the lessons learned of utilizing new technology.
- NOCoE has focused on facilitating the sharing and transfer of TSMO knowledge amongst all the stakeholders in the industry to meet the adoption curve and to keep up with future technological advances.

ITS/TSMO Workforce Development: A NOCoE Priority

Identifying transportation workforce needs around ITS and TSMO has been an essential aspect of the Center's work to enable TSMO practitioners to save lives, reduce congestion, and enhance economic vitality.

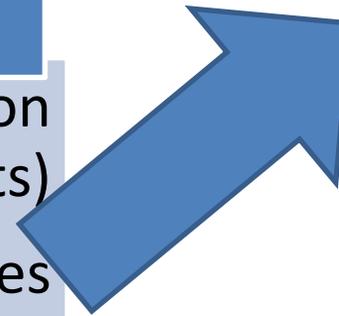
- **NOCoE WFD Summit and Implementation Plan**
- **Student engagement: the ePortfolio and Transportation Technology Tournament**

Context

The
Emerging
Role and
Importance
of TSMO

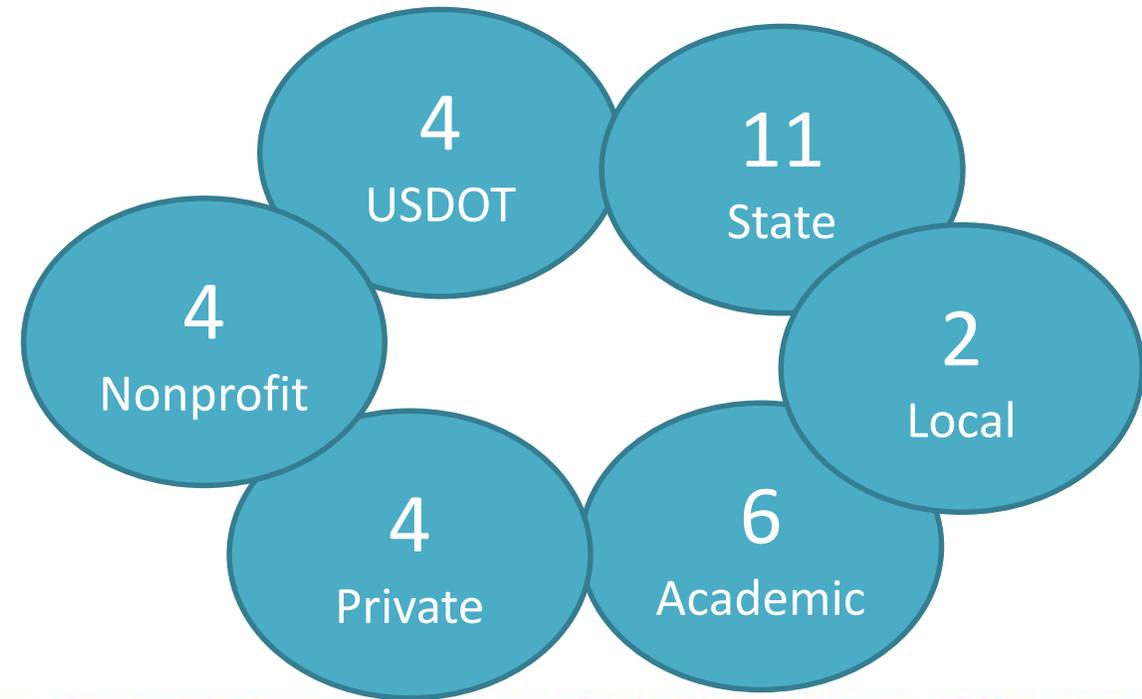
Topics

Pre-employment education
(generalists and specialists)
Knowledge, Skills, Abilities
Employment Training programs
Emerging Trends
Recruitment
Career Development
Retaining top performers
Professional Capacity Building



1st NOCoE Summit
**Workforce
Development**

June 22-23, 2016



From the Summit: 6 Implementation Items

1

- Association & Agency Debrief (and ongoing collaboration)

2

- Pre-employment Education – Generalists and Specialists

3

- Repository of Position Descriptions and KSAs

4

- Post-Hiring Education producing TSMO professionals

5

- Recruitment, Retention and Career Development

6

- Develop a Strategy to elevate TSMO as a core Function

2

Pre-employment Education – Generalists and Specialists

- 1 • Identify DOT/University TSMO Collaboration models, best practice s
- 2 • Create Comm. College technical programs with industry certification
- 3 • Encourage role for outside classroom learning, web-based hub
- 4 • Outreach to non-civil engineering academic disciplines, guest TSMO experts
- 5 • Student fellowship opportunity to gain industry knowledge
- 6 • Contribute to TSMO curriculum development from practitioner/employer POV
- 7 • Analyze issues regarding lack of TSMO in course content

3

5

TSMO WORKFORCE GUIDEBOOK

- Sign up for the NOCoE Newsletter at <https://transportationops.org/> to learn on the availability and use of the Guidebook on the website!
- More Info Tomorrow!! – Stay Tuned

4

Post-Hiring Education producing TSMO professionals

- Industry Training Database
- Initiative to Support DOT Staff Individual Development Plans (IDPs) to meet personal, organizational, and career goals
- US DOT/University Collaboration Case Studies
- Regional Operations Leadership Forum (to equip managers and leaders with tools and knowledge necessary to become TSMO champions) (FHWA/AASHTO)

4

Industry Training Database

Events, Contests, and Success Stories

NOCoE ePortfolio Contest
 Transportation Technology Tournament

Upcoming Events

Center News

Contact Us

Tweets by @NOCoEOps

NOCoE
 @NOCoEOps

New Webinar! Join us on April 23 at 2 p.m. when @kittelson and @USDOTFHWA explore research and the decision making process for Part-Time Shoulder Use as well as existing implementation! Register now bit.ly/2Fz2e1Y #TSMO #Transportation #MoveOver #THISisITS #TrafficOps



Data Management

Course Name	Archived Data for Planning, Operations, and Safety
Description	This course is designed to help you understand the benefits of creating an open and accessible data archive of your agency's data.
Organization	CITE Consortium
Website	http://www.citeconsortium.org/course/archived-data-planning-operations-s...

Course Name	Connected Vehicle Professional III - Data, Markets, Policy and Regulations
Description	Connected Vehicle Professional III – Data, Markets, Policy and Regulations focuses on data generated by connected vehicle and data security with an introduction to the development, implementation and regulation of connected vehicles
Organization	Connected Vehicle Trade Association/Mobile Comply /Society of Automotive Engineers (SAE)
Website	mobilecomply.com/product/cvp203-cvp-iii-data-markets-policy-regulations/

Course Name	Connected Vehicle Professional III - Data, Markets, Policy, and Regulations
Description	Connected Vehicle Professional III – Data, Markets, Policy and Regulations focuses on data generated by connected vehicle and data security with an introduction to the development, implementation and regulation of connected vehicles. Learners

- <https://transportationops.org/workforce/training>

6

Develop a Strategy to elevate TSMO as a Core DOT Function

- 2018 NOCoE Summit—Institutionalizing TSMO: Actions
 - Find and transfer up-to-date content on TSMO strategies and practices
 - Develop TSMO Champions outside of DOT
 - Engage non-operations practitioners within DOT
 - Explore multimodal connection with TSMO
 - Regional collaboration models
 - Workforce Development
 - CEO Mainstreaming Handbook

To support the Knowledge Transfer of academic and training opportunities, We need your Help

- <https://transportationops.org/workforce/communitycolleges>
 - Community colleges provide a crucial role in education TSMO professionals but also have the ability to directly support local, regional, and state DOT's by providing curriculum focused on training current and future TSMO professionals.
 - This is all we got right now....
- <https://transportationops.org/workforce/university>
 - Collection of Resources for Teacher/Professors and Students

Reaching out Directly to Students!

The TRB E-Portfolio Contest

- This yearly competition is open to any student looking to start a career in transportation systems management & operations (TSMO). Students are asked to submit their ePortfolio to demonstrate their desire to work in the TSMO industry and to demonstrate their communications and creativity skills to prospective employers. Entrants should develop or update their current ePortfolios to ensure they clearly demonstrate an interest in TSMO and showcase their academic or professional experience relevant to a potential TSMO position.
- Winners receive free travel to TRB, participate in discussions and one-on-one meetings with TSMO industry leaders, and participate in select NOCoE and TSMO activities.

E-Portfolio Contest



21 Submissions



32 Submissions

NOTABLE INCREASES IN APPLICATIONS

Florida Int'l U: 1 to 4



Louisiana St.: 2 to 2



Texas A&M: 2 to 3



E-Portfolio Contest: 2018 Winners



E-Portfolio Contest and TSMO Awards: 2019 Winners



Reaching out Directly to Students: The Transportation Technology Tournament

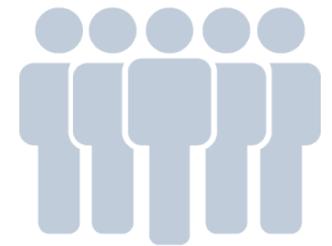
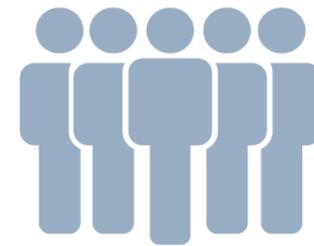
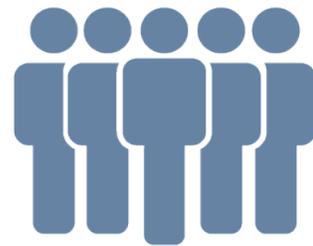
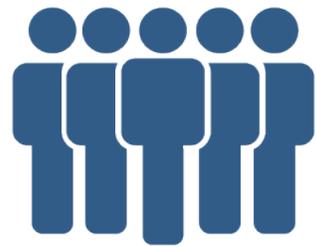
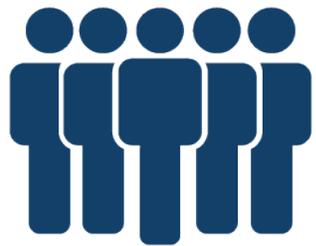
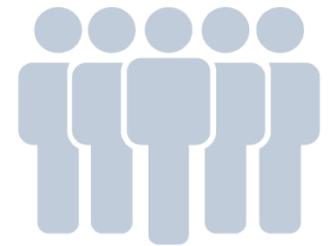
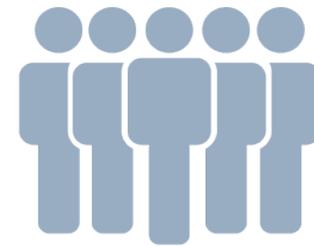
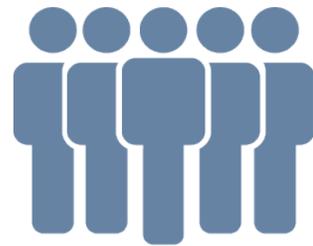
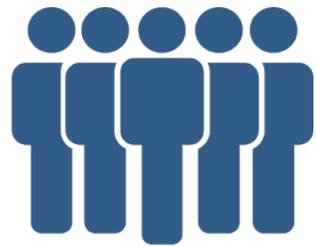
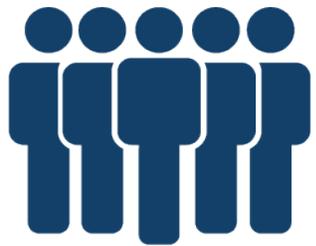
- NOCoE and the U.S. DOT ITS JPO PCB program are hosting a competition for students to work directly with public agencies to solve real-world transportation problems utilizing ITS and TSMO solutions.
- Student teams will assemble to work with a State or local DOT, MPO, or transit agency to define a transportation problem. After submitting an initial contest application identifying the team and the problem, students will work with academic advisors to learn about potential ITS and TSMO solutions via online training opportunities.

Reaching out Directly to Students: The Transportation Technology Tournament

- Teams will then utilize their experience, education, and new coursework to develop a solution or suite of solutions to directly address the originally defined problem. Students will submit their solutions via a proposal.
- Finalist teams will develop a presentation and then participate in a live event at [ITE 2019 in Austin, TX](#). Travel, lodging, and registration fees will be funded by the tournament organizers. At ITE, teams will give a presentation in front of a panel of judges made up of leaders in the ITS and TSMO community. One team will then be selected as the 2019 Transportation Technology Tournament Winner.

2018 Transportation Technology Tournament

2018 SUBMISSIONS: 10 TEAMS



15 DIFFERENT MAJORS

28 PHD *18 in transportation
5 in civil*

9 MASTERS

12 BACHELORS

Transportation Technology Tournament: 2018 Winners





THANK YOU