

Welcome to the 2024 VT Research and Innovation Symposium!

September 25, 2024

2024 VT AOT HYBRID RESEARCH & INNOVATION
Poster Symposium

Plenary Agenda, 10-11:30am

Moderator: Emily Parkany, Research Manager, VT AOT

10-10:15am VT AOT Policy, Planning, and Intermodal Development Division Director, FHWA VT Division Administrator Welcome

- Michele Boomhower, Policy, Planning, and Intermodal Development Division Director, VT AOT
- Randy Warden, Administrator, FHWA VT Division

10:15-11:15am Agency Innovation Cultures

- Keynote Speaker: Todd May, Director of Innovation and Process Improvements, Indiana DOT
- AOT Response: Amanda Gilman-Bogie, Continuous Improvement Section Manager, VT AOT
- Joint Questions and Answers

11:15-11:20am Brief Transportation Research Board Overview

- Katherine Kortum, Senior Program Officer, Transportation Research Board

11:20-11:30am Symposium Logistics

Michele Boomhower

VT AOT Policy, Planning, and Intermodal Development Division Director

Randy Warden

FHWA VT Division

Todd May

Indiana DOT Director of Innovation and Process Improvements

Culture of Innovation:

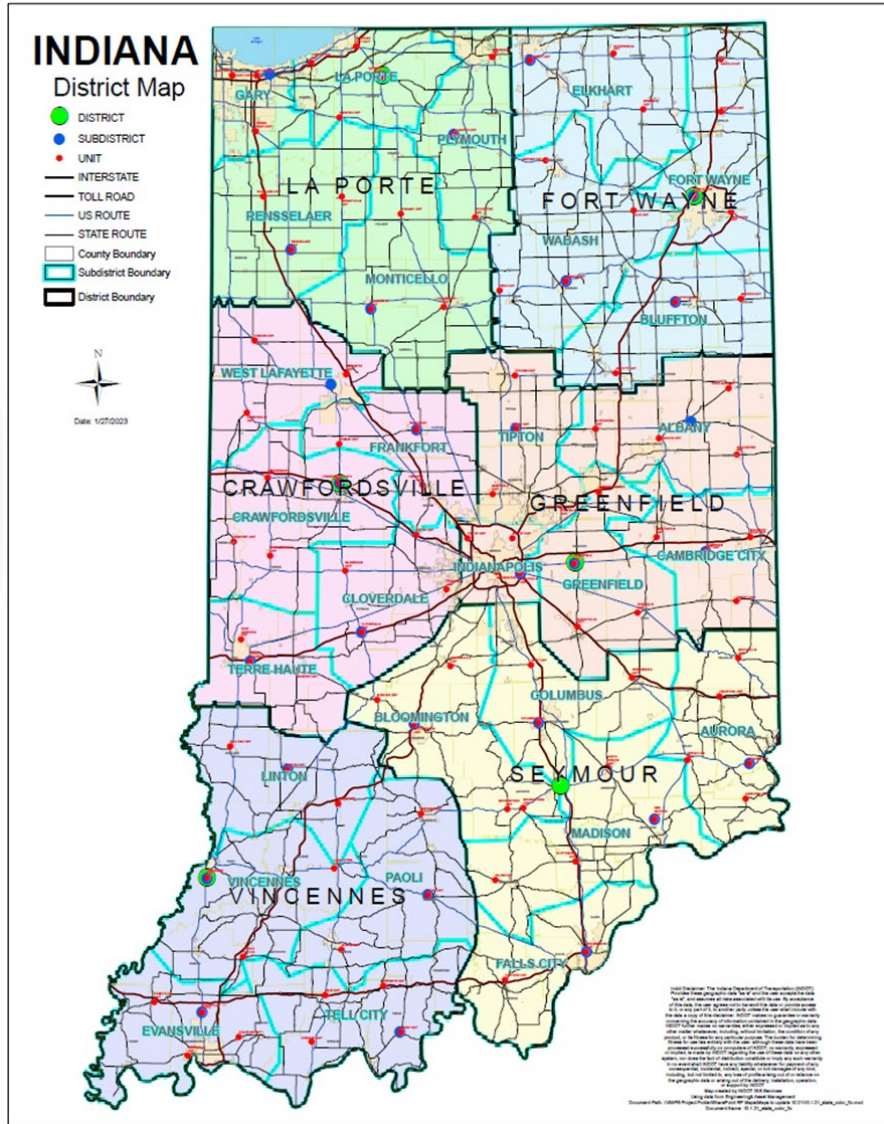
Fostering an environment of Trust

Todd May

Director of Innovation and Process Improvement

Indiana Dept. of Transportation

Indiana



4,774 Interstate Miles

28,945 State Routes

5,626 Bridges

8,379 Panel Signs

327,926 Road Signs

1 Asset

4,000 Employees

2018/2019 All Employee Survey



- Feedback was robust
 - 70%+ responded
 - Expected responses
 - More Resources
 - Increased Pay
 - Increased Training
 - Labor Shortage
- What we got
 - Workforce isn't heard
 - Management doesn't listen
 - NO ONE TRUSTS EACH OTHER
 - Communication is non-existent

Quotes

"The 4 Pillars (2019 goals) are pretty strategic, but that is at a 30,000 foot-level and it doesn't help me"

"EV and AV will happen, but we're just now getting to the level of spelling out how and when it will affect us..."

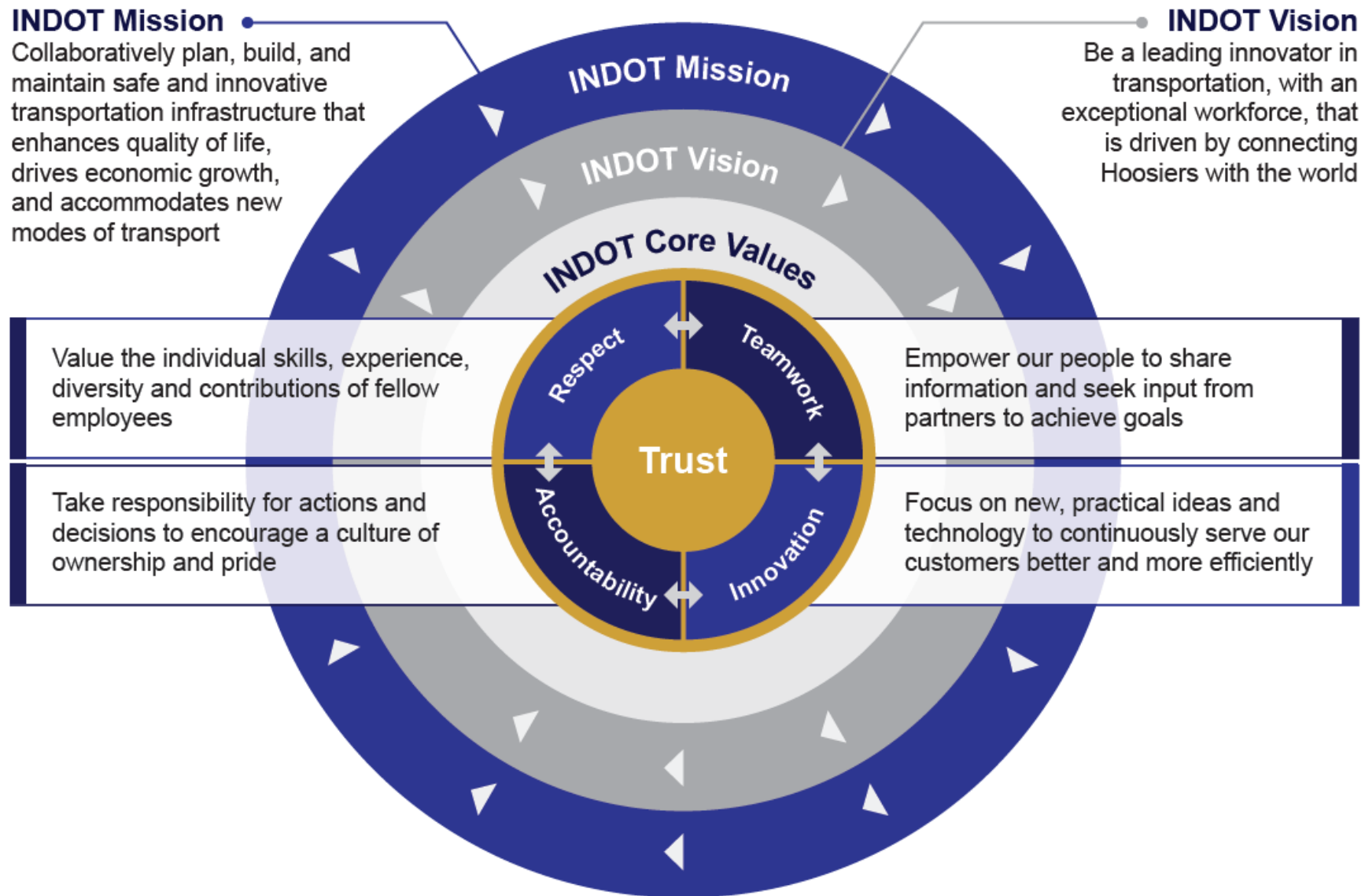
"When feedback is given nothing is done with it."

"Trust is a 2-way street. If the field force isn't trusted then we don't trust."

"The higher you go up in the organization the more they think there is a clear strategy"

"It is difficult to understand strategy if it doesn't cascade down to the 'doers'."

INDOT Established and Empowered Innovation



THE CASE FOR CHANGE

- By including Innovation as one of the values within the Strategic Plan, INDOT recognizes a need to enhance these capabilities
- This will be necessary to navigate a rapidly-changing environment
- Innovation will be increasingly important to everyone's roles, regardless of where they sit

First Steps

Committee

Establish committee to drive and coordinate innovation efforts throughout INDOT



Idea Collection

Develop an internal webpage to collect ideas



Bonuses

Introduce a targeted bonus program to reward our staff for identifying and deploying innovations



Almost Immediate Resistance

- Tried it before and it failed
- Flavor of the Day
 - Lean Systems
 - Toyota 5S
 - Six Sigma
 - Kaizen
- Tradition
- Pride
- Comfort
- Another Central Office initiative

NOW WHAT???

Communicate!!!!!!



DEPARTMENT OF

JUST LOUDER!!!!

Committee

Establish committee to drive and coordinate innovation efforts throughout INDOT



Idea Collection

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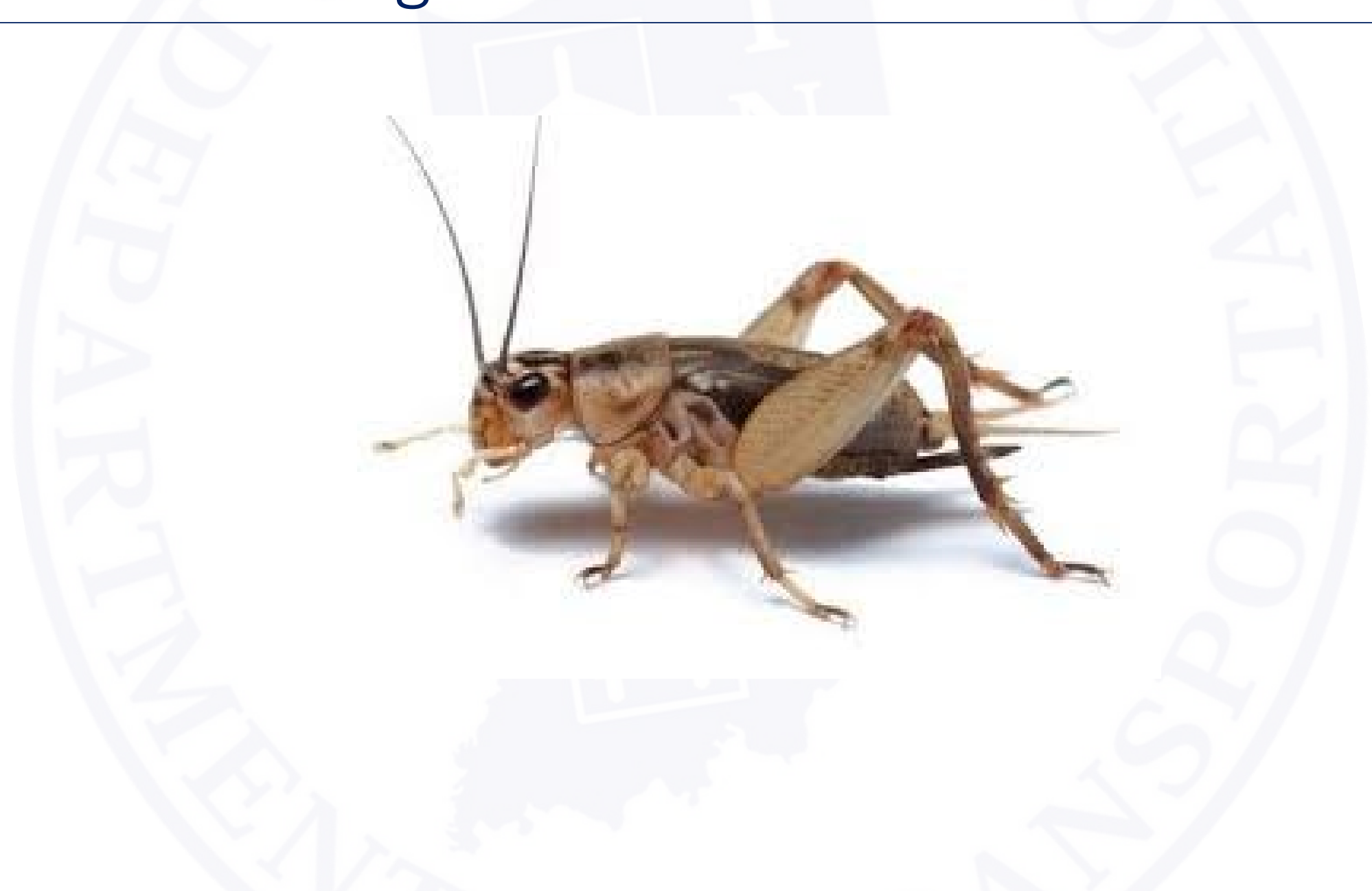


Bonuses

Introduce a targeted bonus program to reward our staff for identifying and deploying innovations



What did we get????????????????????



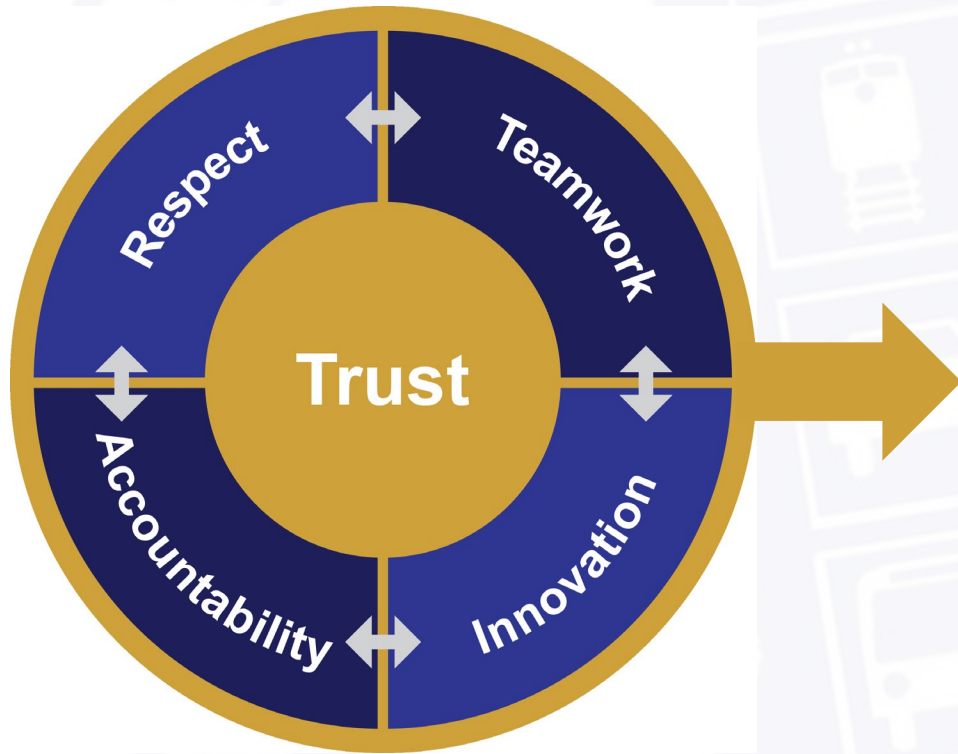
We/I had not built trust nor listened!!!!

"When feedback is given nothing is done with it."



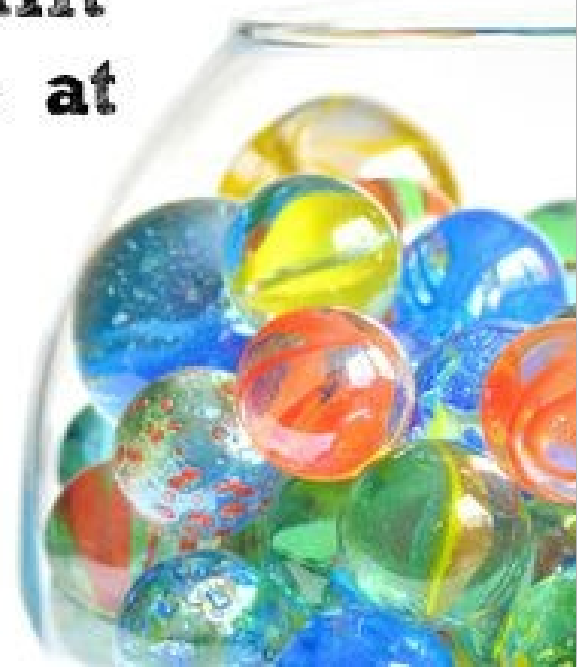
"Trust is a 2-way street. If the field force isn't trusted then we don't trust."

We will all need to work on rebuilding trust



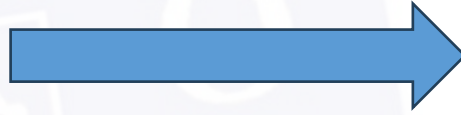
**"Trust is built
one marble at
a time."**

Brene Brown



Establish Trust

- Be Present





Achieving our goals will require getting 5 key factors right

**Being
Change
Agents**

**Think differently
and replace
resistance to
change with
openness.**

NO isn't an option.

How might we?

**Creating a
"Why-Friendly"
Culture**

**Employees are
empowered to ask
"why", and it not
be interpreted as a
challenge**

Check our ego!

**Rejecting the
Status Quo**

**Find ways to replace
"what we've always
done" with how it
needs to be done**

**A Drive to
Stay Relevant**

**We have to create
a willingness to
look externally
and change as the
world changes
around us**

**Be Intentional
partnerships**

**Focus On
Recognition**

**Recognize employee
contributions to
innovation**

Spot Bonuses

Trust is the secret sauce

- Be present and known
- Walk the Walk
- Check egos at the door
- A why-friendly culture
 - Gives employees permission to question longstanding systems, processes or approaches
- Equally important is a “how might **we**” or “how can **we** be better or do things differently”
- Failure is ok, 90% of the time

Involvement “Must Have’s”

- Executive level buy in
- Embrace at all levels
- Walk the walk
 - Be curious
 - **How Might WE????**
- Not the flavor of the day
 - Innovation is happening everyday as a ‘work around’
- Assume good intent and check your ego at the door
 - If it is new to us is absolutely an innovation for us
- Recognize innovation is uncomfortable and that’s ok it’s meant to be
 - The ‘good ole days’
 - We’ve always done it that way
 - Don’t want to get in trouble
 - HR issues = 0!!

Entering our 5th full year

PUSH TO 1000

INNOVATION Improvement
Education Deliverable
Accountability Creativity
Strategic **INDOT** Cost Effective
Great Service Trust *Service* Quality
Respect Expertise Performance
Safety Mobility Diversity **21st Century Workforce**
Efficient Communication
Responsibility
Vision Partnership
Excellence Mission





PRIDE



TRUST



IMPACT



Thank You



Todd May

***Director of Innovation and Process Improvements
Indiana Dept. of Transportation***

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Simple is Often the Path

Napkin Engineering



Solutions don't need to be complicated: Air Hose Support



- Bridge and roadway applications utilize a trailered air compressor
- Air hose dragging on the ground quickly deteriorates
- Ergonomically challenging
- Downtime reduces productivity

Trust: Air Compressor Arm



This is post innovation implementation.

In testing, they realized that it truly did save the workers back and cause much less wear on the hose. This is saving taxpayer dollars and fatigue to the worker.





Wireless Blow Count Devices for Pile Driving

- Counts number of blows on a pile and generates an accurate report.
- Information can be uploaded digitally to our major systems.
- This system will be required in bridge contracts, it is not necessarily for INDOT use other than as subject matter expert use.



Amanda Gilman-Bogie

VT AOT Continuous Improvement Section Manager



Driving Innovation: Building and Sustaining a Culture of Progress at AOT

Insights and Strategies for Fostering Innovation in Vermont's Agency of Transportation
– A Response to INDOT's Success Story

Innovation as a Core Value



Innovation

We support innovation through process improvement, data utilization, continuous improvement, collaboration, and new technologies.

How We Define Innovation

Knowledge, Science, Research

Customer Needs

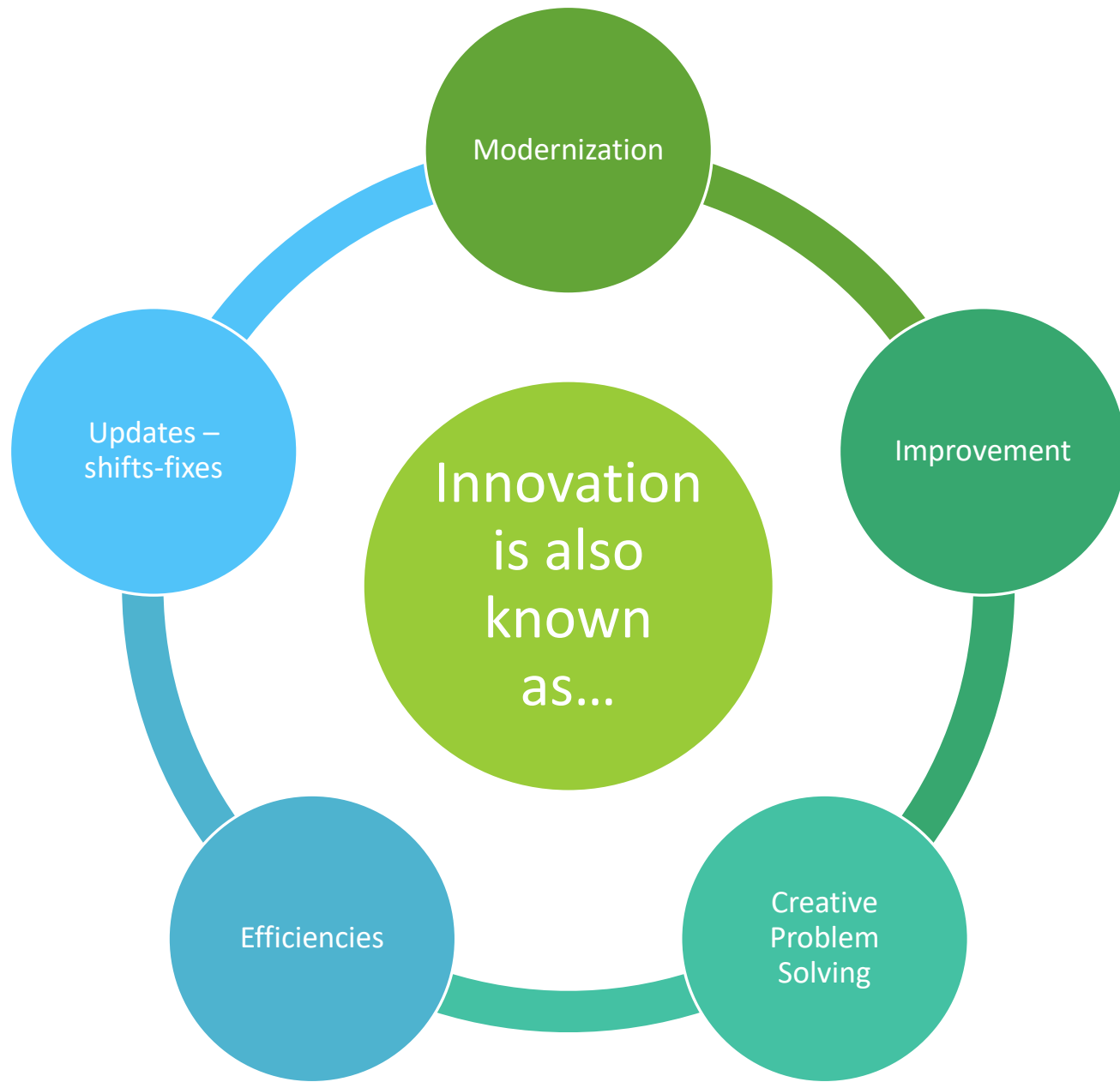
Invention- Bright new ideas

Technology

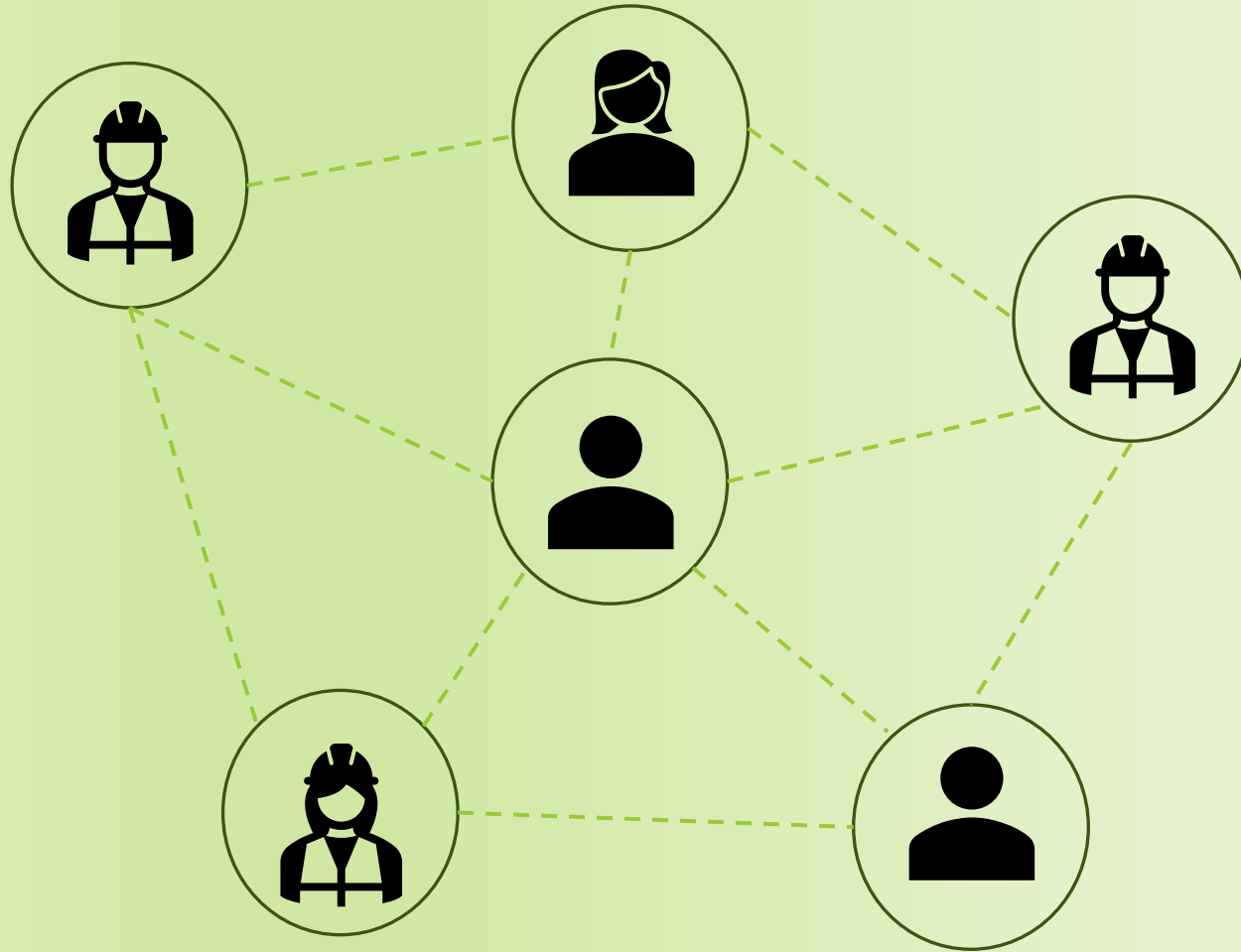
Radical Change

Incremental Change





Connecting the Dots: Innovation Principles Embedded in Vermont's Strategic Planning, Vision, etc.



Empowering Voices: Harnessing Employee Insights to Foster Innovation

- **New Strategic Workforce Committee on Innovation (Launching October 2024)**
- **Annual Employee Engagement Survey**
- **Focus Groups**

We want to hear from you & we would love to meet with your teams!



Failing Forward: Lessons from Our Innovation Journey

OUR ORIGINAL INNOVATION PORTAL

KEY LESSONS LEARNED

^ [Submit Your Ideas and Innovations](#) ⇄



Click above to send your idea directly to our team!

When you submit an [Idea Suggestion](#) a member of Performance Team will be in touch to help you move your idea forward. **Share your ideas big and small!**



Thank you for being a problem-solver and innovator!
Sharing your innovation successes will help others with similar processes, services, and products.

Not Quite There Yet



- Understanding Employee Preferences
- Tech Limitations in the Field
- Adapting for Future Success



Lessons From Other DOTs and Federal Partners



Innovation Programming Under Development

24-25 Innovation feedback



We want your
input and
feedback –
please take this
virtual survey

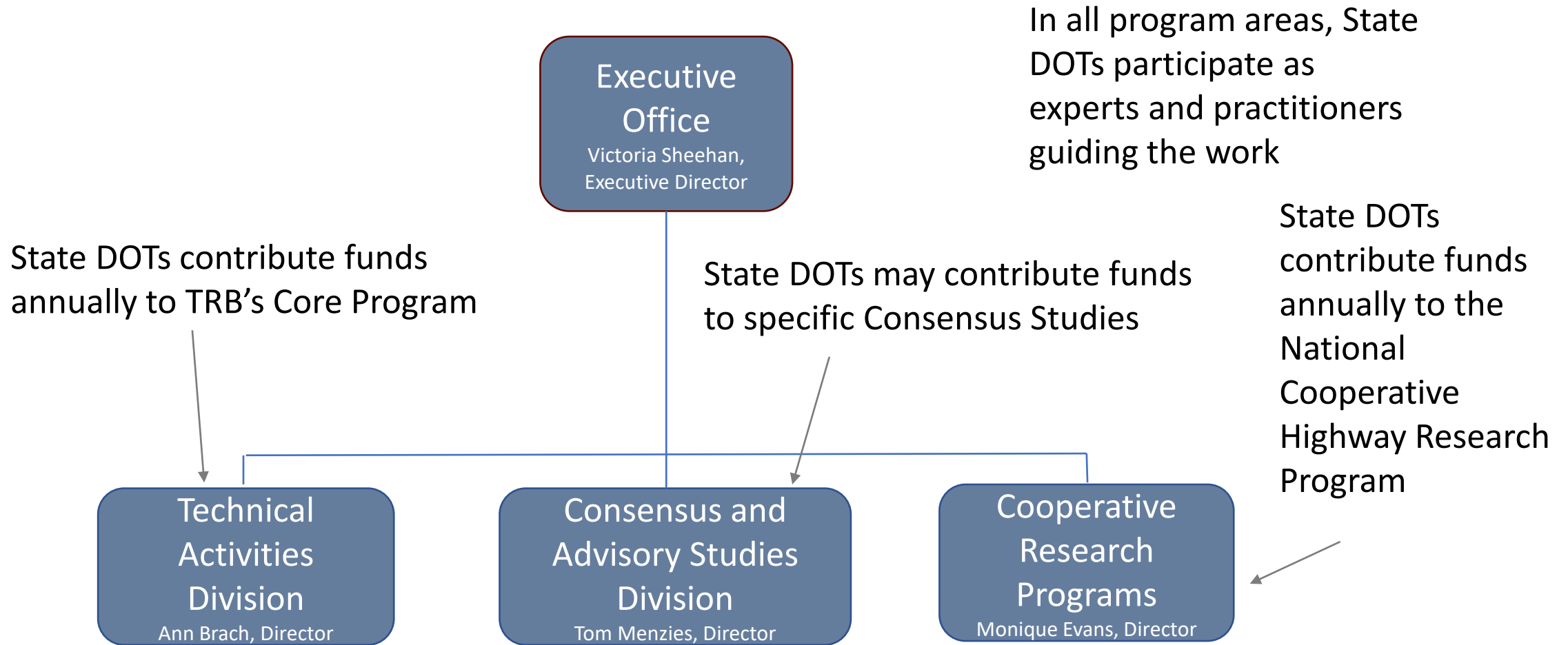
Katherine Kortum

Transportation Research Board Senior Program Officer

Transportation Research Board (TRB)



TRB Program Leadership and State Contributions



Consensus and Advisory Studies (CAAS)

Key characteristics of study reports:

Independent

Objective

Evidence-based

Thorough and fair

Non-partisan

Compliant with FACA

CAAS conducts studies on complex and controversial transportation issues at the request of the Congress, federal agencies, states, and other sponsors.

CAAS studies draw upon the nation's leading experts in transportation and related fields to:

- assess the technical bases of policy and regulatory decisions across all modes;
- analyze the potential effects of policy alternatives on mobility, safety, the environment, and the economy; and
- review specific research programs and projects.

CAAS committees are the only TRB committees authorized to provide advice to government agencies and other entities.

Cooperative Research Programs (CRP)

Applied research

Administered by TRB

Conducted by research institutions under contract to TRB

Strong stakeholder/user involvement from beginning to end

~150 products:

- Research reports
- Syntheses of practice
- Legal research digests
- White papers
- Research road maps and more

Program (Scope)	Funded Since	Annual Budget*	Partners
NCHRP (Highways)	1962	\$40M	State DOTs, FHWA, AASHTO
TCRP (Transit)	1992	\$5M	FTA, APTA
ACRP (Airports)	2004	\$12M	FAA, ACI, AAAE
BTSCR (Behavioral Traffic Safety)	2017	\$2M	NHTSA, GHSA

*From 2022 TRB Annual Report

Technical Activities Division: A cast of thousands, literally

177 Standing Technical Committees in all modes of transportation and a wide range of disciplines

4 Coordinating Councils and other formal volunteer groups

200+ informal subcommittees

5,000+ appointed committee members

15,000+ Friends of committees

TAD develops activities that attract and enable experts of all types to come together to solve critical and emerging transportation issues in an independent, non-partisan environment.

What we do—formal activities:

- Annual Meeting every January
- 10-15 smaller, focused conferences each year
- Webinars
- *Transportation Research Record* & other publications
- Research Needs Statements
- Sponsor/state visits

What we do—informally:

- Continually grow and develop a broad and diverse transportation community that is passionate about research and innovation.
- Develop and enrich individual careers through knowledge growth, relationship-building, and mentoring.

People's Choice and Symposium Feedback Survey



Vote for your favorite project in these four categories:

- Biggest "WOW" Factor
- Most connection to your work or most interesting
- Best "Poster Plus"
- Best Technical Session Highlights Presentation

We are also asking for Symposium Feedback.

Symposium Agenda

7:45am Registration starts/Breakfast available

8-8:30am Posters/Networking

8:30-9:30am Technical Sessions A and B

- A: Planning and Safety, Barre Auditorium
- B: Materials and Structures, Alumni Hall

9:30-10am Posters/Networking

10-11:30am Plenary Session, Barre Auditorium

11:30am-12:15pm Posters/Networking/Lunch

12:15-1:15pm Technical Sessions C and D

- C: Asset Management, Environmental, and Resilience, Barre Auditorium
- D: EVs and GHG Plus, Alumni Hall

1:15-1:45pm Posters/Networking

1:45-2:45pm Ask TRB Session

Technical Sessions C and D, 12:15-1:15pm

Session C: Asset Management, Environmental, and Resilience (Auditorium)

- Developing Prediction Models for Pavement Management
- Simplified Approach to Culvert Inspection Robot Design
- Advancing the Use of Drinking Water Treatment Residuals (DWTRs) in Stormwater Treatment Features to Enhance Phosphorus (P) Removal for Transportation Projects
- Implementing the Vermont Forest Futures Strategic Roadmap
- Quantifying Bridge Risk Using NOAA's Rainfall Data

Session D: EVs and GHG Plus (Alumni Hall)

- Capital Program Greenhouse Gas Reduction Modeling
- Evaluation of Battery Electric Vehicle (BEV) Performance in Mountainous Regions and Cold Climates
- Vehicle Ownership and Use in VT Travel Model
- A Spatial Analysis of the Fuel Economy Rebound Effect in Vermont
- Electric and Autonomous Vehicles, Housing Location Choice and the Potential Impacts on Travel Demand in Chittenden County
- Advancing Equitable Electric Vehicle Adoption: Addressing Home Charging Barriers and Costs