MEETING NOTES: CTB Innovation Subcommittee

DATE: Tuesday, February 18, 2025

TIME: 8:30 a.m.

LOCATION: Virginia Department of Transportation
Central Office Old Highway Building
1221 East Broad Street
Richmond, Virginia 23219

The meeting of the IT Subcommittee of the Commonwealth Transportation Board was called to order at 8:30 a.m. Members present included:

Mr. Scott Kasprowicz
Ms. Becky Norton Dunlap
Dr. Ray Smoot
Mr. Rex Davis
Mr. Tom Folkes
Mr. Wayne Coleman
Mr. Fred Stant
Ms. Laura Sellers

Approval of meeting notes from July 2024 subcommittee meeting – Mr. Kasprowicz moved approval of the notes, Dr. Smoot seconded. Motion carried unanimously.

Update on DRIVERS initiative - Hari Sripathi, Director, Office of Strategic Innovation, provided an update on VDOT's initiative to encourage and support an environment of innovation across the agency. Several members asked questions about the program including:

- whether VDOT has a policy on intellectual property (we are reviewing the Commonwealth policy)
- how innovative ideas can be captured (and incentivized) from both VDOT employees and our embedded contractors
- what mechanisms could be implemented for independent validation and verification of the "success" of the program

Mr. Sripathi indicated that he will come back with an update in the next few months. His presentation is included here for reference.

Artificial Intelligence Pilots – Cathy McGhee, Chief Deputy Commissioner provided an overview of a recently initiated effort to pilot the application of artificial intelligence (AI) to improve business practices and decision-making in the agency. Ms. McGhee stated that VDOT is in a good position to implement AI now given our ongoing commitment to improving our data collection and management. Increasing construction costs make it even more important to make the best decisions possible with respect to our investments. For that reason, the pilots will focus on cost estimation and pavement management.

Mitch Ball, State Cost Estimating Engineer, and Harold Caples, Cost Estimating Data Analytics & Technology Program Manager explained what they hope to accomplish with the pilot including a better understanding the factors that influence project costs and the way those factors can vary geographically or otherwise. Committee members asked whether things like optimal work flow and complex modeling for traffic flow during construction could be included. This will be considered with the project team.

Rob Crandol, Assistant State Maintenance Engineer, spoke to the members about the pavement management pilot and what he hopes to accomplish. There are many factors that can impact the durability (lifecycle) of a pavement and although we have extensive data, we don't have a complete understanding of how those factors work together to extend or shorten the life of a pavement segment. Committee members asked about information VDOT receives from the public on potholes and whether this could/would be useful as a data input. Discussion around data sources including cell phone/probe data that could more accurately quantify volume by vehicle type could be leveraged.

Due to time constraints, discussion on future topics was deferred. The meeting was adjourned at 9:50.

DRIVERS

Renewed Focus on Innovation/Continuous Improvement

Hari Sripathi, P.E.

February 18, 2025

Intentional Innovation

INNOVATION DEFINITION

- *Something new or different introduced;*
- *The act of innovating; introduction of new things or methods*

DICTIONARY.COM

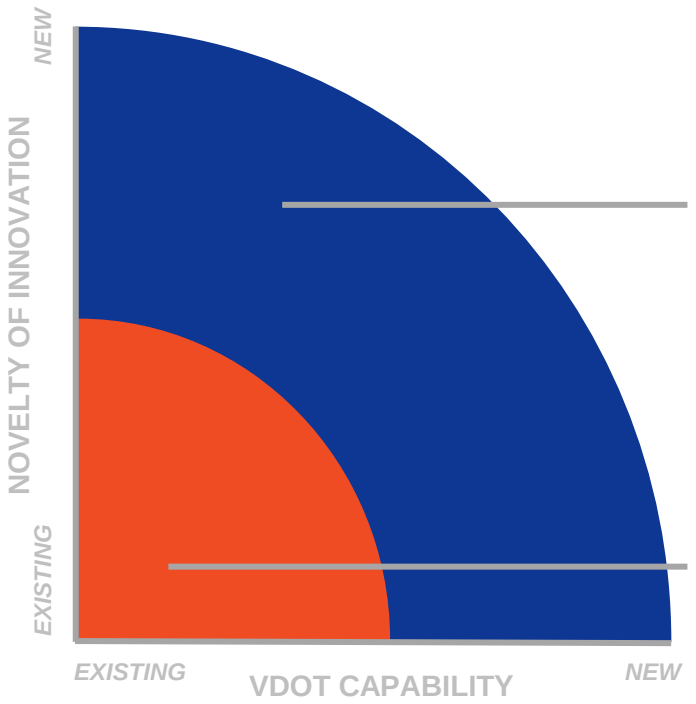
VDOT

- Employs approximately 7,800 people full-time
- 250 locations statewide
- 70K miles or 129K lane miles

TYPES OF INNOVATION

1. **Improvements to internal business processes**
   E.g., the way we manage the snow operations
2. **Improvements to the citizen experience**
   E.g., partnering with other agencies and private sectors to create Connected Mobility

NATURE OF INNOVATION

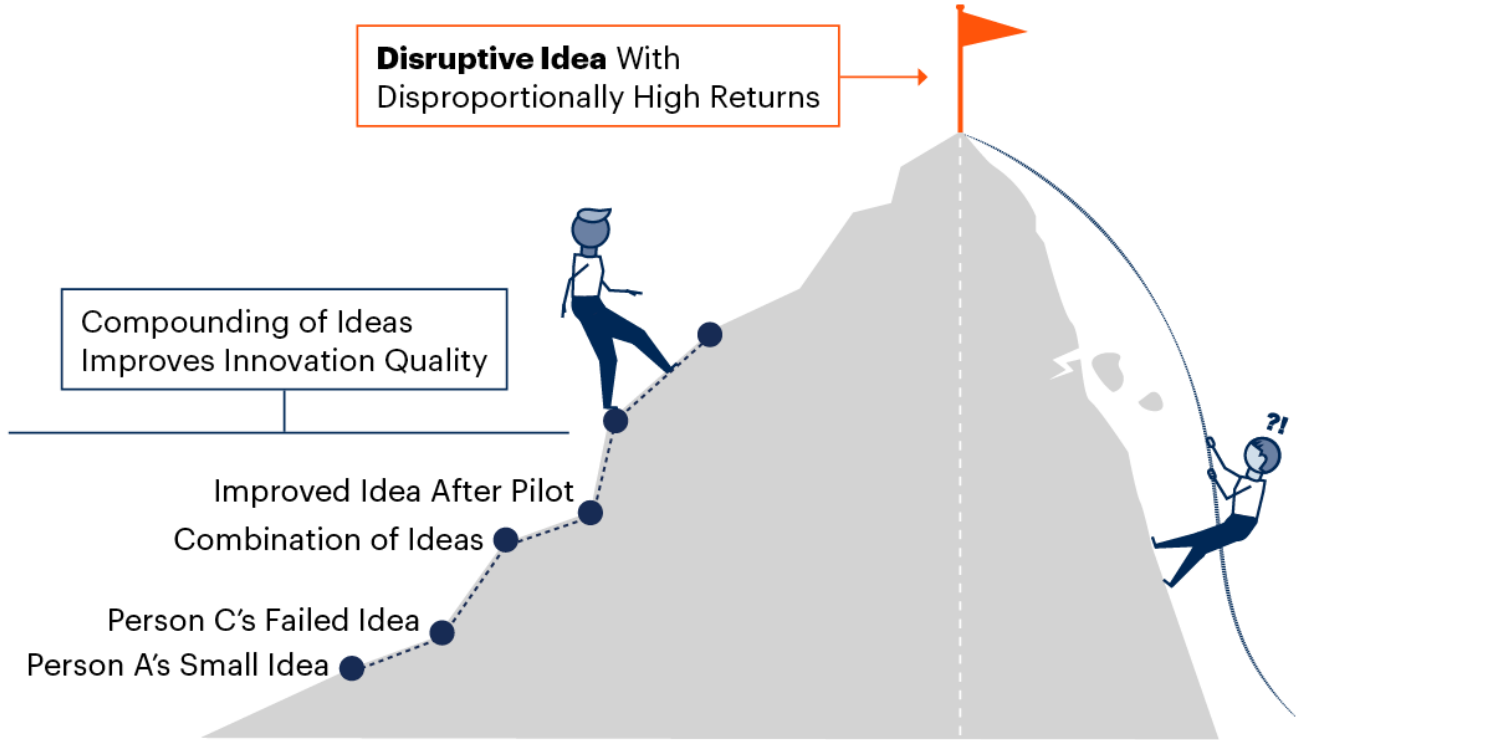


TRANSFORMATIONAL
Development or application of disruptive innovations to transform service delivery.

CORE
Innovation to update current VDOT services with small-scale innovations that make them more efficient, safer, etc.

Approach to Intentional Innovation

Iteration in Pursuit of Disruptive Innovation



Source: Adapted From Boehringer Ingelheim

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Boehringer Ingelheim

Gartner

Overview

DRIVERS

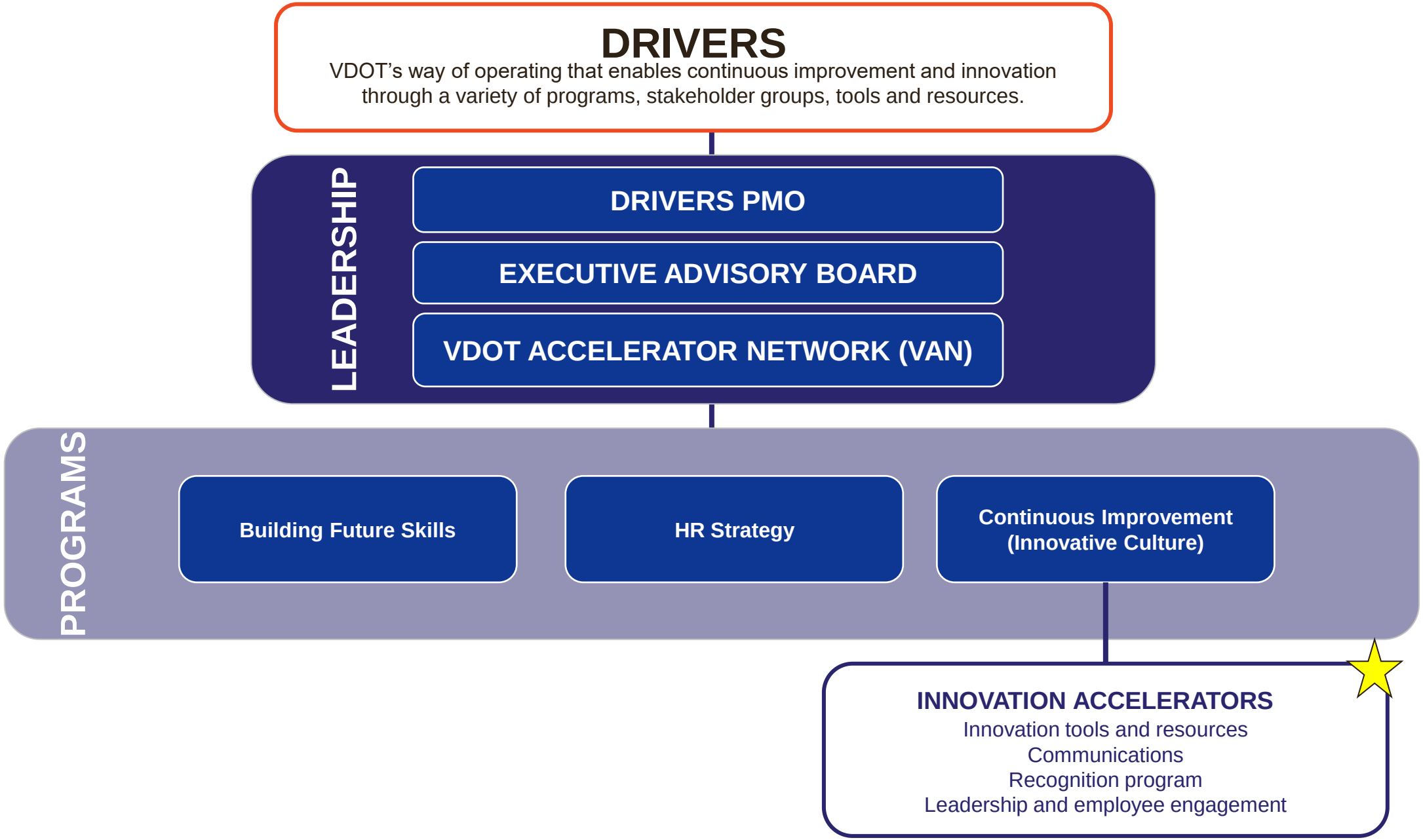
The force behind VDOT's innovative efforts.

Empower employees to bring forward their best ideas.

Enable employees to be agile and resilient.

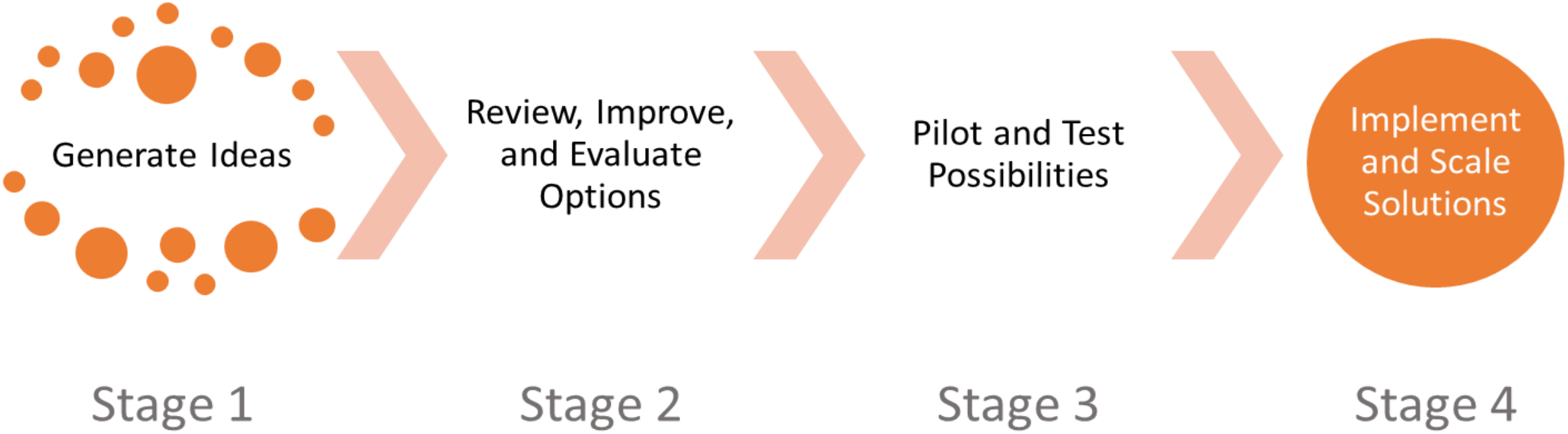
Encourage employees to pursue professional development.

Improving operational efficiency and **excellence**.


DRIVERS
VDOT's way of operating that enables continuous improvement and innovation through a variety of programs, stakeholder groups, tools and resources.
LEADERSHIP
DRIVERS PMO
EXECUTIVE ADVISORY BOARD
VDOT ACCELERATOR NETWORK (VAN)
PROGRAMS
Building Future Skills
HR Strategy
Continuous Improvement (Innovative Culture)
INNOVATION ACCELERATORS
Innovation tools and resources
Communications
Recognition program
Leadership and employee engagement

Implemented an Orderly Process

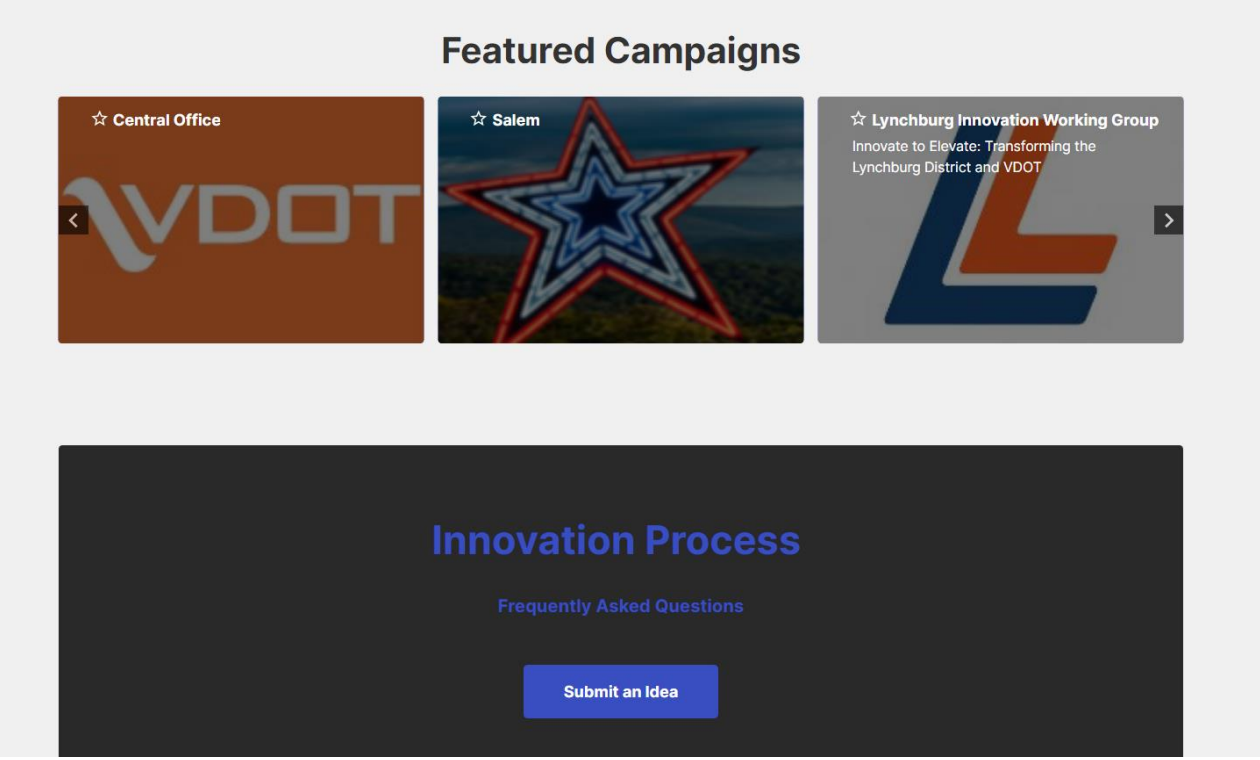
Conducted Focus Group meetings to identify areas of improvement

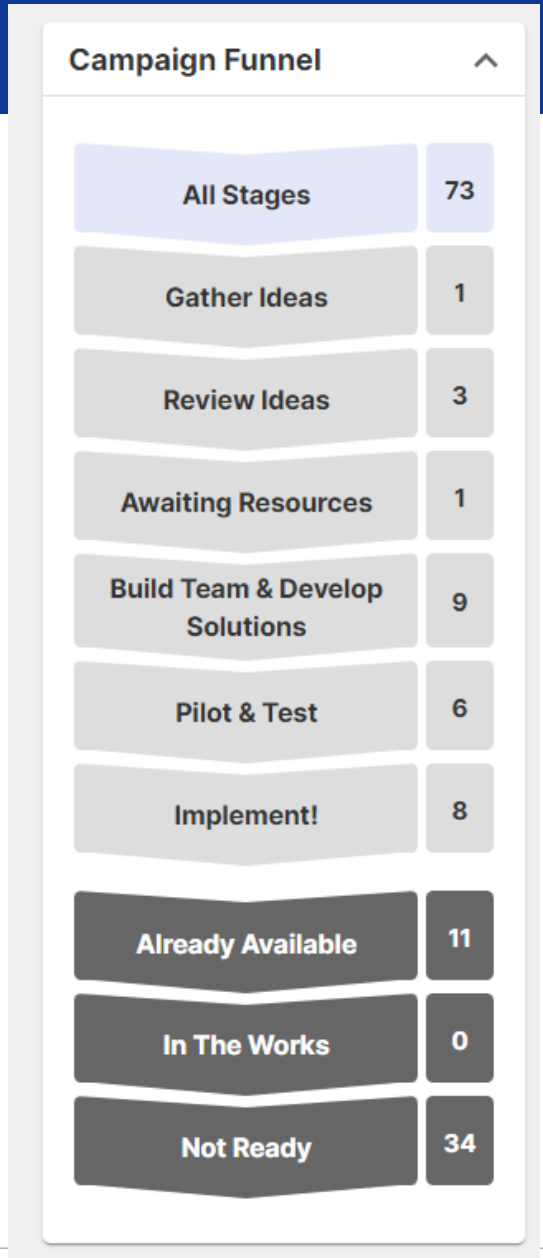


An orderly process is crucial.

ideaDRIVER – Idea Management Platform

- Each district and CO as different buckets
- Other special targeted campaigns
- Startup Culture in corporate structure





VDOT Audiences for targeted communications and tools

- Front-line field staff
- Front-line office staff
- Managers
- Senior leaders and executives

Key Messaging

- Make your job easier, safer, or better.
- No one knows your job better than you do.
- No solution or idea is too small.
- Incremental improvements to your job contribute to overall success.

Innovation Tools and Resources

Tools to Accelerate the Adoption of the DRIVERS Mindset.

VDOT Innovator Pins with DRIVERS Lanyards

- Pilots

Just Sayin' cards for implemented ideas

- District/CO implementations

Day Off or Bonus for implemented ideas

- Statewide/impactful implementations

VDOT Innovator Pin

Channels

Currently the most common channels at VDOT
Newsletters
Email correspondence
Intranet (DOTi)
EBBs
Information fliers/documents/one-pagers
VDOT events
Meetings and trainings

DRIVERS Communication Resources Toolkit

Supporting leaders and VAN with Communication resources and materials toolkit. Examples …

- **DRIVERS** fliers/poster templates
- 800-FOR-ROAD flier
- ***ideaDRIVER*** flier
- Printable idea/problem submission form
- ***ideaDRIVER*** FAQs
- DRIVERS infographic

Employee and Leadership Engagement

- VAN Quarterly lunch with the executive
- Sessions in various statewide and local meetings/workshops
- Roadeo and safety events
- Site visits
- Other local and statewide events

National Innovation Day

- Observed on February 16th
- Sent an email last week
- Posters in the lobby

Measuring Success

- Dashboard and metrics are developed
- Collecting data and will share it monthly with the executive team
- We will bring it to the next meeting


VDOT
Virginia Department of Transportation

Between Q4 of 2020 and 2023, highway construction costs rose by a staggering 68.2%† as a result of factors such as:

- Record-high fuel costs
- Supply chain disruptions
- Labor shortages
- Unpredictable weather events
- Material and labor price increases

Due to these and other factors, the task of maintaining the Commonwealth's roads and highways has become increasingly expensive and difficult to accurately forecast years in advance.

†*Transportation Statistics Annual Report 2024, Bureau of Transportation Statistics*

Enter VDOT AI for Performance Insights

This project builds upon the IT advancements in data management and tech services that enable VDOT's mission, by building new AI capabilities for efficiency and mission impact.

VISION

Improve VDOT's understanding of performance insights through initial efforts with the **project cost estimation** and **pavement management functions,** supporting development of an AI POC for these and future use cases

OBJECTIVES

Develop a strategic plan for executing on VDOT's AI Proof of Concepts (POC) to deliver **key performance insights**, drafting **Artificial Intelligence (AI) execution considerations**, and providing a phased approach to strategic areas for implementation

VALUE

Through this initial strategy and POC development, we'll build capability for these priority initiatives and **build AI-capacity and capabilities** to support future use cases that improve upon mission delivery

Nationally, DOTs are modernizing and VDOT is already leading the way

A holistic approach with a focus on next gen, modular architecture allows VDOT to see gains in…

Mission Outcomes

Unlock the ability to answer new questions by aggregating data across previously unconnected systems

Efficiency

Refine processes and utilize automation made possible through modern systems to optimize staff utilization

Consistency

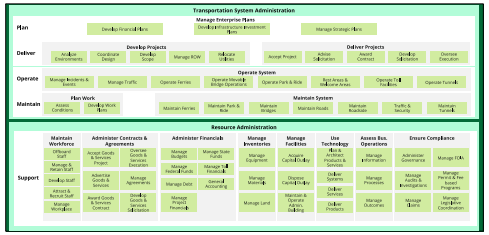
Data-informed decision making that is defensible and traceable, utilizing enterprise data that you can trust

Scale

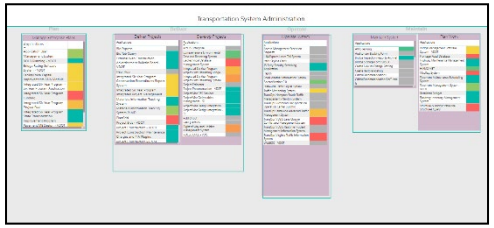
A unified, Future-Proof Architecture that can adapt to new demands on the Department

VDOT has already started down this journey

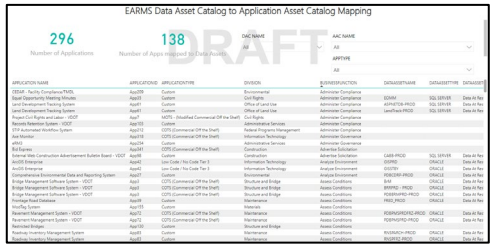
Mature Business Capability Matrix



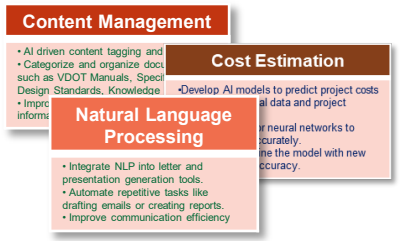
Complete App to Capability Mapping



Detailed Data Mapping



Identifying Initial Priority Use Cases



Initial VDOT Strategic Initiatives

The following mission critical interdisciplinary projects have been selected to serve as focus initiatives to pilot platform development of these new AI capabilities.

1 COST ESTIMATION AND FORECASTING

High level goal: better predict costs based on historical data, project parameters, and external factors, so that Project Managers can take proactive actions**.**

Example topics of exploration:

- **Planned and actual costs** for projects of similar scope
- **Constraints** for similar projects
- **Systematic characteristics** that impact estimations
- **Specific people or geographies** that over/under bid
- **Limitations** with construction availability
- **External factors** (including cost indexes, equipment costs, regional labor market trends, regulatory changes, seasonal variations) that could affect project delivery
- **Unique cost drivers** for different types of projects
- Supplier and contractor **performance metrics** impacting project costs

2 PAVEMENT MANAGEMENT

High level goal: understand failure of pavements and discover durability improvement measures; predict potential pavement failures due to factors such as rainfall and storms and identify proactive measures.

Example topics of exploration:

- **Frequency of failure** of pavements by geography
- **Cost of building and maintaining** different pavement treatments
- **Causes for failure** of pavements
- **Traffic patterns** in areas with high failure rates
- **External factors (including seasonal, subgrade conditions)** effecting performance of different pavement treatments
- **Mix design** in areas with high failure rates
- **Optimal time for maintenance and rehabilitation** to maximize pavement lifespan and minimize costs

These two initial efforts will serve as a proof point for the broader possibilities of building upon existing data and systems to bring new AI-driven capabilities.

VDOT