



DATE: July 20, 2016
TO: Transportation Commission
FROM: Amy Ford and Michael Lewis, Deputy Director
SUBJECT: Workforce of the Future

Purpose

To familiarize the Transportation Commission with the Workforce of the Future.

Action

Informational item.

Background

As emerging technology and external forces change the way we travel, Departments of Transportation, including CDOT, must innovate, evolve their workforce in order to embrace this change to better serve their customers. CDOT engaged Price Waterhouse Cooper to evaluate how influencing factors may impact key business functions and subsequent employee skill needs, by:

- Developing future state scenarios based on influencing factors
- Analyzing emerging technologies and their relevance to CDOT and the transportation industry
- Identifying future employee roles and skillset needs, factoring in projected attrition a scenario planning process to

Details

Other state DOTs around the country are looking at CDOT's Workforce of the Future study and following the process and outcomes of its evaluation. To conduct the evaluation, PwC conducted a current state analysis, future state scenarios and concluded by building a future scenario that looks at more realistic 10 year future scenario.

Major conclusions from the scenario planning:

- Technology advancements disrupt the status quo with significant technologies coming into play in the next decade including telematics, active traffic management, drones, vehicle to vehicle/infrastructure operations, mobile asset management and big data
- The workforce and workplace landscape is changing and in the next 10 years 50% of the CDOT workforce is eligible for retirement
- The role of the DOTs is evolving from design and build to also include operate and maintain. Key roles of the work force: (Strategic/Core Support/Fundamental/Specialist) will be evolving as the organization needs to upskill workers to take on more specialty roles like IT/data and core support roles like operations.

Next steps include a variety of different opportunities related to program development and workforce development including enhancing employee access to technology to new training programs and partnerships with universities/talent hubs.



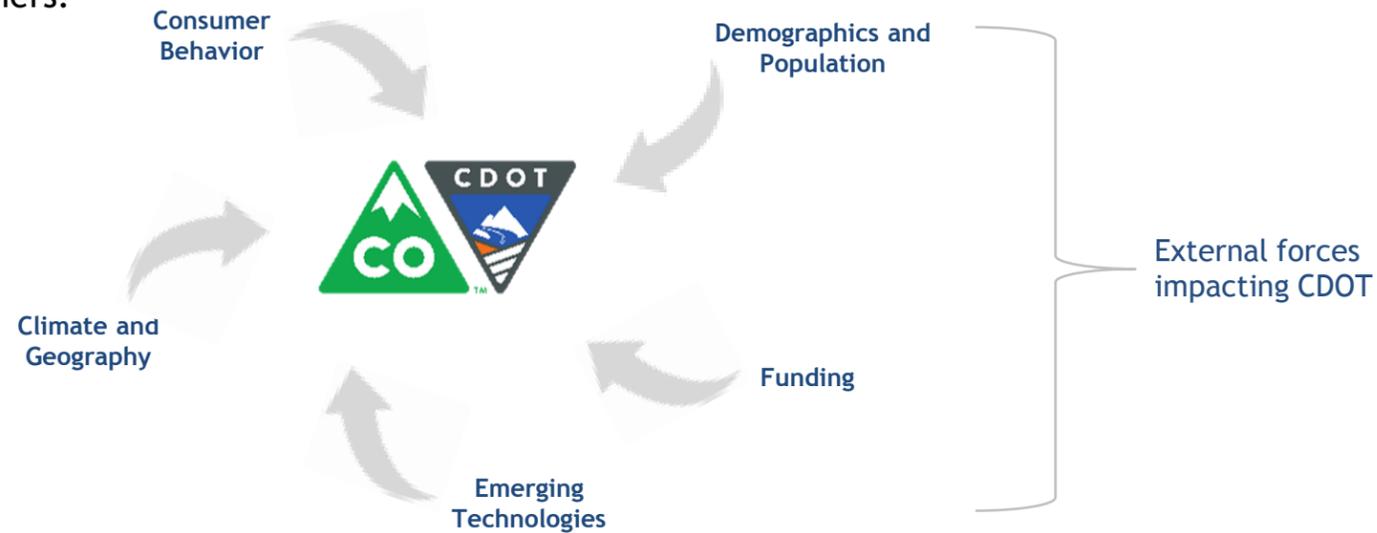


Preparing for CDOT's Workforce of the Future

Project Overview

The Need

As emerging technology and external forces change the way we travel, Departments of Transportation, including CDOT, must innovate, evolve their workforce in order to embrace this change to better serve their customers.



Engagement Request

There is an opportunity for CDOT to become the most innovative DOT in the country by integrating new technologies and transforming its workforce.

To assist CDOT in planning for its Workforce of the Future, PwC was engaged to evaluate how influencing factors may impact key business functions and subsequent employee skill needs, by:

- Developing future state scenarios based on influencing factors
- Analyzing emerging technologies and their relevance to CDOT and the transportation industry
- Identifying future employee roles and skillset needs, factoring in projected attrition

Our Approach



- Project Kickoff
- Discovery Interviews

- Regional Visioning Sessions
- Current State Pivotal Role Analysis and Workforce Supply/Demand Model
- Emerging Technology Inventory and Analysis
- Three Strawmen Scenarios
- Blended Scenario

- Integrated Pivotal Role Analysis and Workforce Supply/Demand Model
- Workforce and Workplace Technology Enablers
- Execution Roadmap

Key Themes that Emerged



64 Individual and Group Discovery Interviews



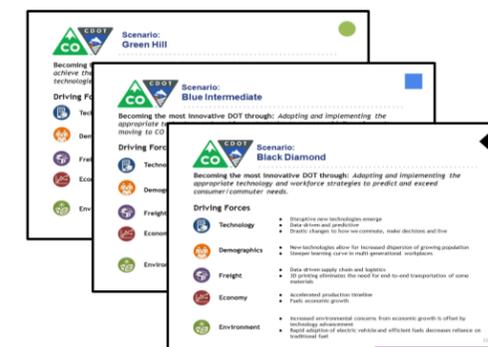
5 Regional Visioning Sessions

Key Themes from Discovery Interviews and Visioning Sessions

Leadership:	Increasing accountability and equipping leadership with tools and resources to define and drive CDOT's strategy
Culture:	Creating a culture that embraces change, and encourages creativity and innovation at all levels of CDOT
Processes:	Streamlining existing processes to increase efficiencies and maximize resource outputs
Training:	Ensuring that all CDOT staff have the skillsets and knowledge needed to succeed in their current and future roles
Technology:	Equipping all CDOT staff with the appropriate tools and support they need to make CDOT the most innovative DOT, and embedding technology across the system to enable the use of data to drive decisions

Scenario Development

We arrived at a blended scenario by analyzing common threads between the hypothetical scenarios to craft one comprehensive vision that CDOT can identify *specific actions* to proactively take in order to be the most innovative DOT in the country.



Three Strawmen Scenarios



Blended Blue Diamond Scenario

Blended Blue Diamond Scenario

- Utilizing data and analytics to enhance connectivity in the shared economy
- Increased demand for multi-modal and public transportation options
- Increased transportation of goods, and streamlined manufacturing processes

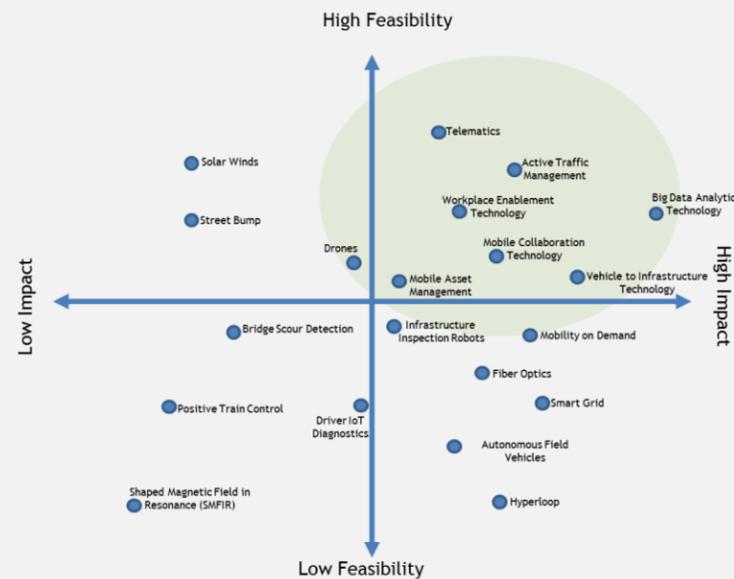


As technology and demographic influencing factors evolve, CDOT must consider three key areas of change

1

Technology advancements disrupt the status quo

In depth review of technology advancements and industries to determine the most likely and impactful tools for CDOT



Technology Enablers*

*Case studies found in supplemental materials

Telematics	Active Traffic Management	Drones
Vehicle to Infrastructure / Operations	Mobile Asset Management	Big Data

Program Opportunities for CDOT

- **Enhanced mobility:** Pilot and leverage technology through programs like Road-X
- **Remote access:** Remote surveying and monitoring
- **Real-time communications:** Actionable updates to traveling public and vehicles
- **Increasing Technology:** More efficient equipment and tools to get the job done

2

The workforce and workplace landscape is changing

The "Next Generation" workforce

75% of the workforce will be made up of millennials

Projected attrition at CDOT over the next ten years

25% of CDOT's workforce is eligible for full or partial retirement now

50% of CDOT's workforce is eligible for full or partial retirement in ten years

Flexible and Collaborative Workplace

Creating a collaborative and flexible workplace and teaming environment

Desk Centric Staff	Tele-Workers	Field Staff
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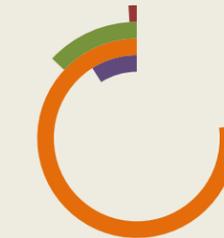
Workforce Opportunities for CDOT

- **Technology enablers:** Provide relevant technology enablers and tools to all CDOT staff
- **Development opportunities:** Launch training programs in alignment with career pathways
- **Retain institutional knowledge:** Implement mentorship programs to retain institutional knowledge
- **Upskill existing workforce:** Train for specific skillset development, including: project management, analytics and leadership
- **Partnership opportunities:** Partner with universities and talent hubs to improve training program and curricula
- **Hybrid positions:** Address staffing gaps by creating blended teams or hybrid positions

The role of DOTs is evolving

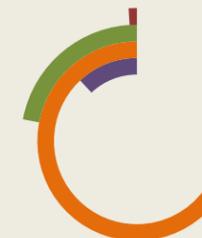
Design and Build » Maintain and Operate
Limited (~20%) change in future state workforce roles with an emphasis on skill advancement

Current State Role Segmentation



Role Segment	%
Strategic/Critical**	1%
Core Support	13%
Fundamental	77%
Specialist	9%

Target Future Role Segmentation



Role Segment	%
Strategic/Critical**	1%
Core Support	22%
Fundamental	65%
Specialist	12%

Role Segment

Role Examples

Strategic/Critical	EMT, RMT
Core Support	Project Management, Operations, Analytics
Fundamental	Construction, Highway Maintenance
Specialist	IT, Electrical and Electronics, Access

**Excludes regional RMT

Through a strategic execution plan and appropriate project and change management, CDOT can effectively evolve its workforce and organizational culture to become the most innovative DOT