AI Summit

Wednesday, January 29, 2025

- 11:00 a.m. - 2:00 p.m. ET
- 10:00 a.m. - 1:00 p.m. CT
- 9:00 a.m. - 12:00 p.m. MT
- 8:00 a.m. - 11:00 a.m. PT

Thursday, January 30, 2025

- 11:00 a.m. - 1:00 p.m. ET
- 10:00 a.m. - 12:00 p.m. CT
- 9:00 a.m. - 11:00 a.m. MT
- 8:00 a.m. - 10:00 a.m. PT

AI SUMMIT
TOP TECH

This program is sponsored by the APWA Technology Committee

Speakers and instructors for APWA education offerings are practitioners and experts in public works and infrastructure issues and solutions. Some may have proprietary interest in services and products used by public works agencies and professionals.

Speakers for APWA educational offerings agree to refrain from specific product or services endorsements or promotions during APWA educational offerings.

APWA Proprietary Interest Disclosure Statement

The AI Summit is eligible for .4 Continuing Education Unit (CEU) credits.

- A link to the program evaluation will be emailed to you after tomorrows program.
- To receive CEU's, you must correctly answer 80% of the questions.

ACCREDITED IACET PROVIDER

APWA has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102; (703) 506-3275.

APWA

RESOURCE CENTER

ONE PLACE where a member can access:

- Past Click, Listen & Learn (CLL) presentations
- Content from past conferences (PWX and Snow)

All searchable by topic. All without any extra fees beyond membership dues! No limits to how often you access or open the items in the Resource Center.

No travel. No scheduling hassles. No delays while waiting for someone else's approval. No waiting for registration payment to be processed.

For more information go online to
www.apwa.org/resources/resource-center.

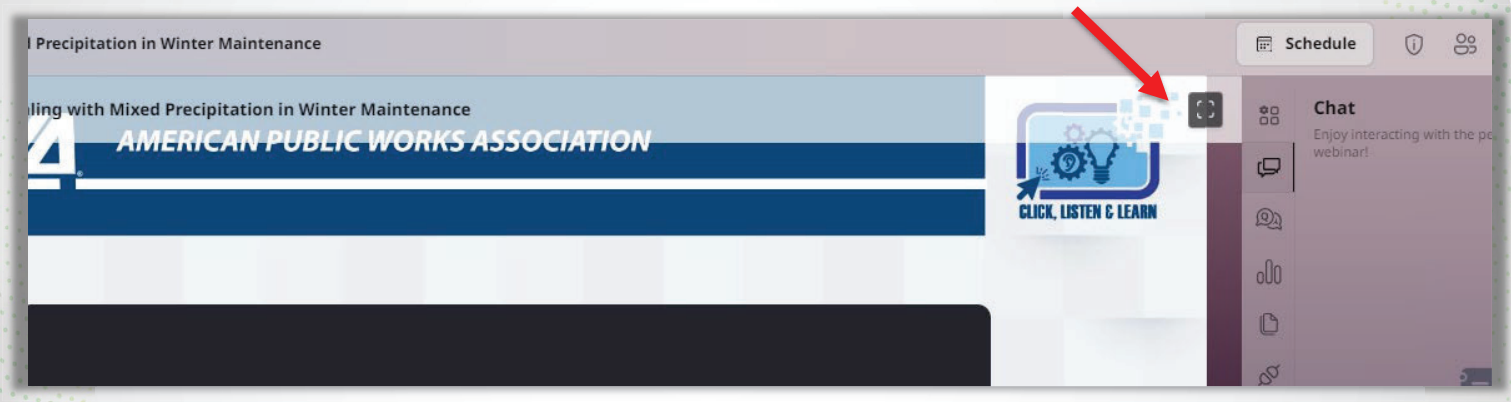
Handout for Today's Program can be download from the right-hand chat panel

AI SUMMIT TOP TECH

We Welcome Your Participation

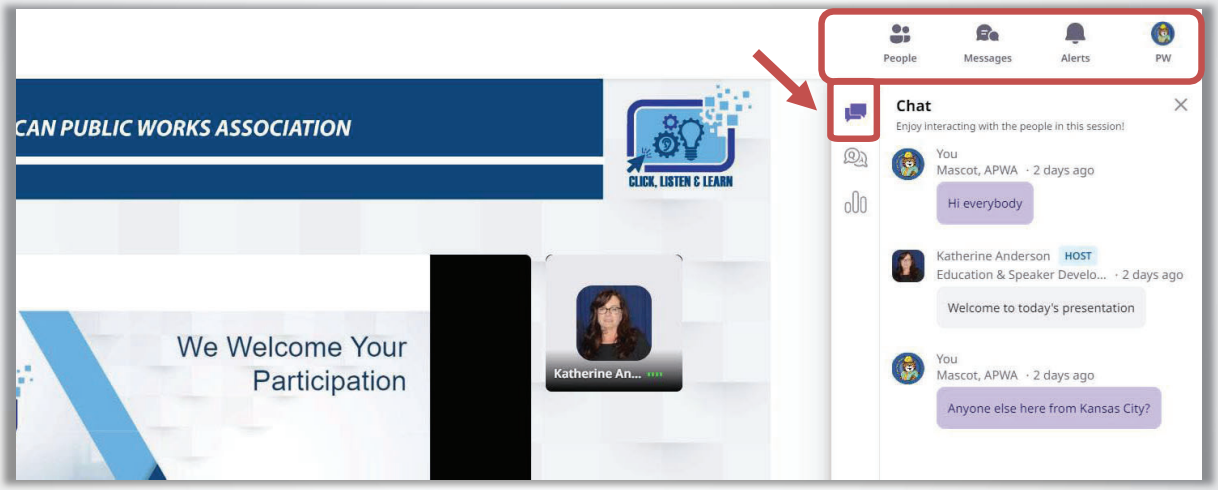
AI SUMMIT TOP TECH

Viewing the Presentation



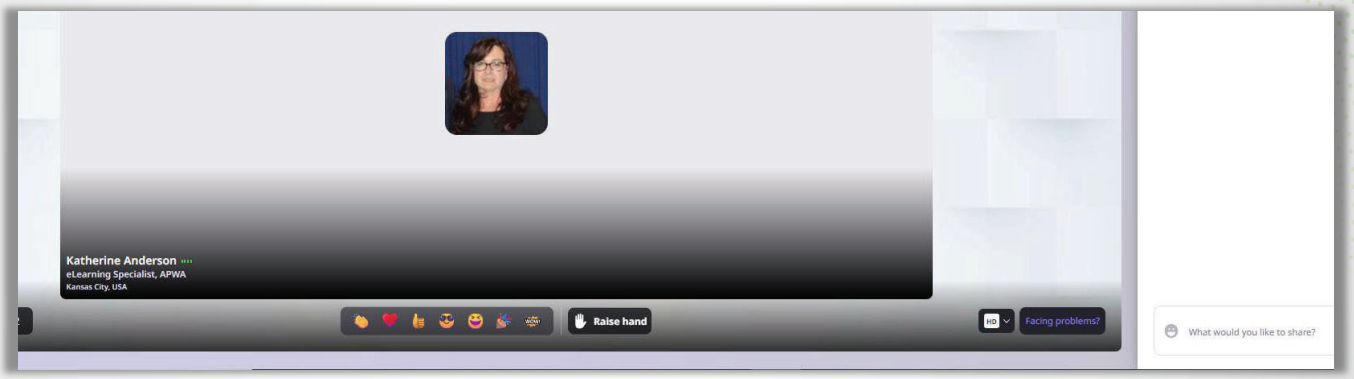
AI SUMMIT TOP TECH

Communication & Engagement Opportunities



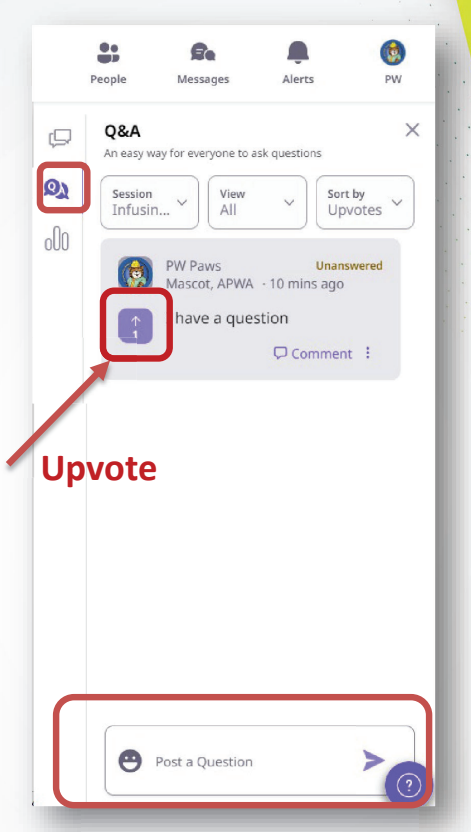
AI SUMMIT TOP TECH

Reactions



AI SUMMIT
TOP TECH

APWA



Program Questions

1. If you have questions for our speakers, you may ask them using the Q&A feature.

2. Choose to **Upvote** a question that is the same as your question.

Today's Moderator

Tracy Warner, PE

Deputy Director of Development Services

Pima County

AI SUMMIT TOP TECH

Polls

AI SUMMIT TOP TECH

We look forward to seeing you tomorrow at 10 am CT

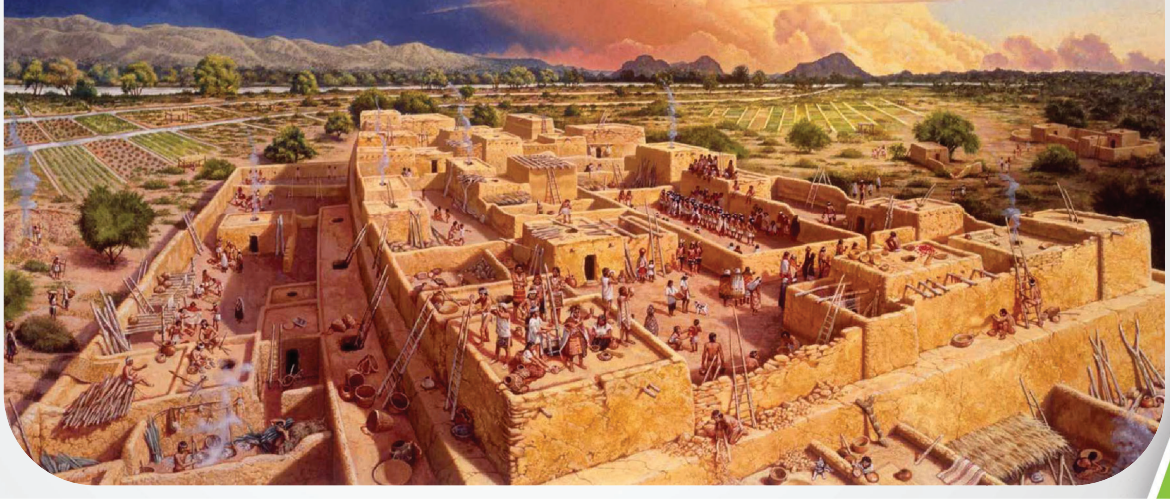
AI SUMMIT TOP TECH

AI SUMMIT TOP TECH

Chris Ewell
Assistant Public Works Director
Facilities Management
City of Phoenix

Phoenix-1200CE

- Population: 80,000
- Canals: 217 kilometers
- Trade as far away as Central America



AI SUMMIT TOP TECH

Phoenix-2025

- Population: 1,625,000 (4.8M+ metro)
- Area 518 square miles
- 5th largest city in the United States
- Age: 142 years old

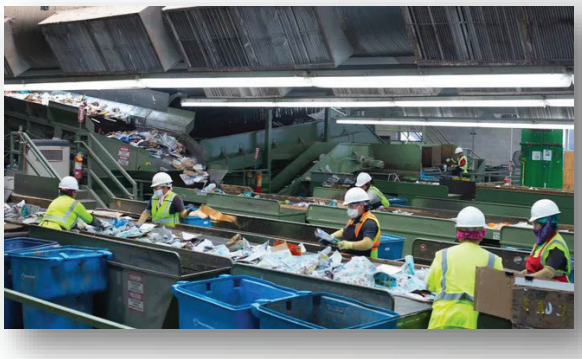
AI SUMMIT TOP TECH

City of Phoenix Public Works

- 1,100+ employees
- Three main functions:
  - Solid Waste Utility - 48K+ households served daily.
  - Fleet - Maintain and fuel over 8K+ pieces of equipment.
  - Facilities - Maintain over 800+ general fund facilities.
- *Mission: To improve the quality of life in Phoenix through efficient delivery of outstanding solid waste, fleet, facilities and energy management services.*

AI Tools Used

- Current:
  - Vehicle routing software
  - Trash sorting
  - Data evaluation
  - Writing in limited cases
  - Condition assessment
- Future:
  - Predictive maintenance
  - Realtime routing changes
  - Building controls automation



How is it going?

- New employees excited.
- Existing employees cautious, anxious, or even unreceptive.
- City is slower to adopt new technology:
  - Cost
  - Data security
  - Bias introduced
  - Who are the experts?
- Unions/employees concerned:
  - Potential job losses
  - Skills required
  - Who trains them?

City of Phoenix AI Policy

Administrative Regulation 1.65-Use of Generative Artificial Intelligence (AI) for City Business:

- Effective April 5, 2024
- Does not include non-generative AI guidance.
- Supports the “responsible use of Gen AI, while mitigating the associated risks.”
- “All employees who use Gen AI technologies to create content in the course of performing their jobs will be held accountable for its proper use.”

City of Phoenix AI Policy

Administrative Regulation 1.65-Use of Generative Artificial Intelligence (AI) for City Business:

- **Gen AI Executive Committee**-Serves as the governing authoritative body pertaining to City use of Gen AI technologies and associated work products, across all City departments and functions.
- **Gen AI Technical, Security, and Privacy (Gen AI TS&P) Subcommittee-** The role of the Gen AI TS&P is to serve as a technical, security, and data privacy advisory body that provides recommendations to the Gen AI Executive Committee as they evaluate procurement, development, and use of all Gen AI tools.
- **Information Technology Services-**ITS is responsible for developing and maintaining City IT policies and standards for all Gen AI technologies used within or on behalf of the City.

City of Phoenix AI Policy

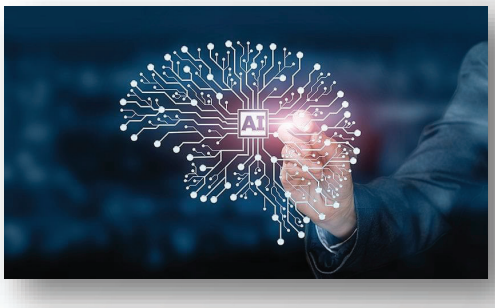
Requirements for leveraging Gen AI Technology:

- **Human Ownership:** Human ownership is required for accountability.
- **Transparent:** The City shall be transparent when using Gen AI to foster public trust.
- **Protection From Harm:** Ensure the prevention of algorithmic discrimination.
- **Equitable:** Gen AI system responses are based on patterns and relationships learned from large datasets derived from existing human knowledge.
- **Opt Out:** Where feasible, City residents should be able to opt out from automated systems in favor of a human alternative to receive or request a City-provided public good or service, where appropriate.

City of Phoenix AI Policy

Additional Requirements for leveraging Gen AI Technology:

- **Beneficial to Residents**
- **Public Safety of Residents**
- **Safe and Effective Systems**
- **Resident Privacy First**
- **Data Subject Consent**
- **Disclosure of Use**
- **Procurement Rules**
- **Use Limitations and Purpose Specification**



AI SUMMIT TOP TECH

Focus on AI Bias

AI Bias:

Computational bias is a systematic error or deviation from the true value of a prediction that originates from a model's assumptions or the data itself.

Cognitive bias refers to inaccurate individual judgment or distorted thinking.

Societal bias leads to systemic prejudice, favoritism, and/or discrimination in favor of or against an individual or group.

AI SUMMIT TOP TECH

Focus on AI Bias

AI Bias:

- Bias can impact outcomes and pose a risk to individual rights and liberties.
- Can lead to unintentional, or even intentional, algorithmic discrimination.
- Proactive, human assessment measures required to avoid.

AI SUMMIT
TOP TECH

Thank You!

AI SUMMIT
TOP TECH

Smart Communities Start with Supported Public Agencies: AI & the Future of Public Services

Stephen Williams M.S., PLS GISP
GIS Director & *Government Services Practice Leader*
G3 Engineering & Surveying

AI SUMMIT TOP TECH

Stephen Williams M.S. PLS GISP

G3 Engineering & Surveying
- *Government Services Practice Leader*
- *GIS Director*

APWA
- *Asset Management Committee - Vice Chair*

swilliams@G3engineering.org
linkedin.com/in/stephenwilliamsms

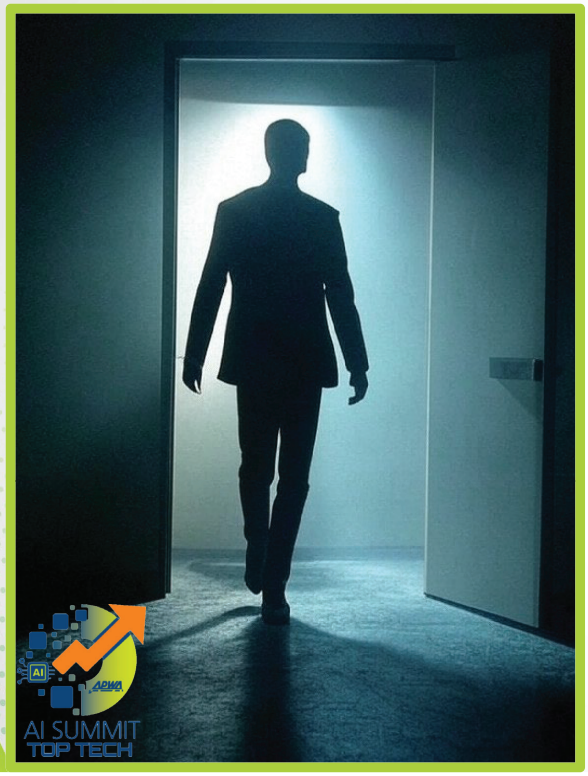
Introduction

Today's Public Service Reality
- Public infrastructure majority managed by small agencies
- Growing demands vs shrinking resources
- Technology gap a factor in talent exodus?

The AI Opportunity
- Alleviate mundane tasks
- Reducing the resource divide
- Simplify working with complex data

Asset Management Transformation
- From manual to automated processes
- Putting asset management to work
- Building future-ready organizations

Demands vs Resource Reality



Transportation Stats

www.transportation.gov

- ≈5% US roads = major highways carrying 55% of traffic
- Rural communities of <5,000 people = > 70% of public roads/infrastructure
- Traffic costs ≈$154 billion in wasted time & fuel

The Growth Challenge

Placing a premium on Asset Management

- Public works budgets growing ≈2-3% annually
- Traffic increased to 3.2 trillion miles (2016)
- Congestion grew from 5.6B to 6.7B hrs (2002-2012)
- Average city manages 30% more assets vs 20 years ago
- Water infrastructure backlog >$1 trillion (EPA, 2022)

The Public Sector Talent Challenge

Market Reality

- 15-30% wage gap (BLS, 2023)
- Salary challenges = must innovate
- Empower staff with modern tools

High Stakes

- 35% retirement eligible (BLS, 2023)
- Private sector rapidly adopting AI
- Small local government tech adoption typically slow

Staffing & Retention

- Support employees or watch them leave
- Technology gap will further drive exodus
- AI adoption is about efficiency and retention

AI Policy: Time for a New Approach

Traditional Challenge vs New Reality

- Government moves at policy speed, not technology speed
- AI capabilities evolving quarterly
- Can't wait for perfect policies

Public Sector Advantages

- Most government data is already public
- Fewer privacy barriers than private sector
- Opportunity for further transparency

Path Forward

- Start small, iterate, learn quickly
- Flexible vs rigid policies, reviewed quarterly
- Focus on outcomes and responsible use

AI as a Force Multiplier

Accelerate Daily Work

- 30-minute tasks to 30-seconds
- Automate routine report writing and analysis
- Free staff to focus on critical thinking

Practical Application

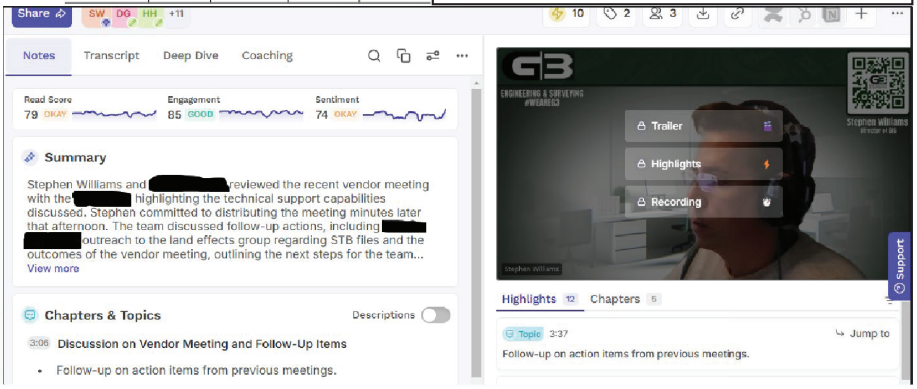
- Automate routine data clean-up
- Simplify reporting processes via meeting transcriptions to minutes & agendas
- Support decision-making with existing data
- Make documents conversationally accessible

Enable Better Service Delivery

- Faster response to citizen needs
- More time for strategic work
- Improved Asset Management (AM)

AI SUMMIT TOP TECH

VIN	Year	Make	Model	Type
HGCM8263JA	2022	Hondaa	Accord	Sedannn
V1CZ91H6T1	2010	Volvoo	XC90	SUVvv
HMCG5550XC	2015	Hondaa	Civc	Coupe
LAT872D9FE	2018	Toyoota	Camry	Sedan
G1WF52K0X9	2005	Chevvy	Impalaa	Sedan
VDBRF52J65A	2012	Merc	C230	Sedan
D7LU38C3YG	2016	Dodgge	Ram	Pickupp
FTSW31P96E	2011	Fordd	F-350	Pickup
VDCYC6FE6GX	2020	Merc	GLC	SUV
YJ3E1EA6HF	2017	Tesl	Model 3	Sedan
9UUA8F57FA	2014	Accur	TLX	Sedan
M1BL1U76C1	2009	Mazd	Mazda6	Sedan
MHCT4AE9HU	2013	Hyunda	Accent	Hatchbacck
G11B5SL6FF	2016	Chev	Malibuu	Sedannn
VBANV1C53AC	2019	BMW	750i	Sedannn
TDKK3DC2FS	2015	Toyotaa	Siennaa	Minivannn
N1BJ0HP1CM	2018	Infinitt	Q50	Sedannn
C3CDXBGJKH	2017	Chryslerr	300C	Sedan
M8J3CA27JU	2016	Hyundaa	Santa Fee	SUVvv
M1GJ1V53G1	2015	Mazddaa	CX-5	SUVvv
N4AL3AP9DN	2013	Nissann	Altima	Sedannn
GNSKBKC4HR	2017	Chevv	Tahoe	SUVvv
J4GW48S4YC	2004	Jeep	Grand Cherok	SUV
HNYD186X4H	2004	Acuraa	MDX	SUVvv
AJWA0HB1CL	2012	Jaguar	XF	Sedan
G1ZD5ST9QF	2015	Chevyy	Malibuu	Sedannn
VWD17AJ7HM	2017	Volkswagenn	Jetta	Sedan
N1AZ4EH1EM	2014	Infinitti	Q60	Coupe
LN6L2GK6DR	2013	Lincolnn	MKZ	Sedan
NDJN2A20F7	2015	KIAA	Soul	Hatchback



Bridging the Asset Management Divide

Rural Community Challenge

- >70% of public roads and infrastructure in small rural communities
- Many still struggling with basic inventories
- Limited staff, budget, & technical resources

Starting the Journey

- Need to walk before running with big data
- Need to develop and implement a plan
- Limited capacity and expertise

Where AI steps in!

- Simplify inventory creation & data collection
- Make complex analysis more accessible
- Help small teams do more with less

AI Impact on Asset Management

Evolution of AM Infromation Systems

- From reactive to predictive maintenance
- Moving from manual to automated
- Real-time monitoring and alerts

What's Changing

- AI processing vast amounts of existing data
- Analyzing photos/video to actionable insights
- Accelerating condition assessments

Real World Transformations

- Pavement management modernization
- Fleet predictive maintenance
- Improving infrastructure inspections

Courtesy: loticiti.com

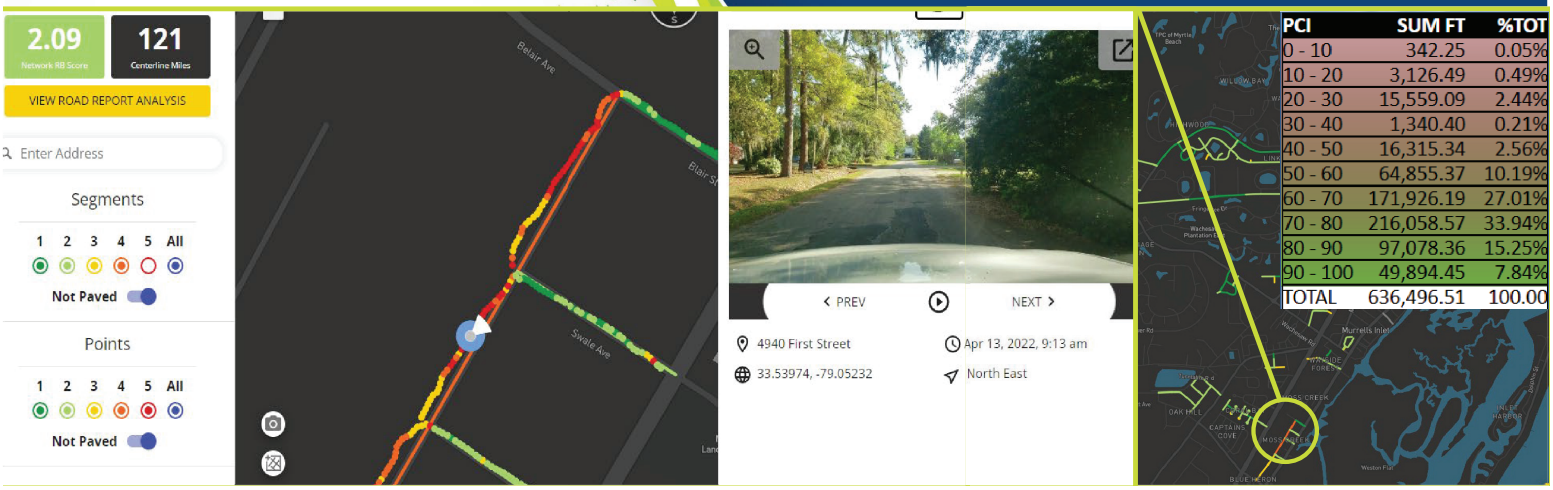
AI in Pavement Condition Inspections

Baseline (Manual Method)

- 120 Centerline Miles
- ≈$120,000 in costs

AI Solution

- Less than $10,000 per year
- Results within 9% of manual scoring
- Validated through manual scoring verification



PCI	SUM FT	%TOT
0 - 10	342.25	0.05%
10 - 20	3,126.49	0.49%
20 - 30	15,559.09	2.44%
30 - 40	1,340.40	0.21%
40 - 50	16,315.34	2.56%
50 - 60	64,855.37	10.19%
60 - 70	171,926.19	27.01%
70 - 80	216,058.57	33.94%
80 - 90	97,078.36	15.25%
90 - 100	49,894.45	7.84%
TOTAL	636,496.51	100.00

Optimizing Fleet & Waste Operations

Smart Fleet Management

- Real-time vehicle monitoring and diagnostics
- Predictive maintenance alerts
- Driver behavior insights

Smart Waste Collection

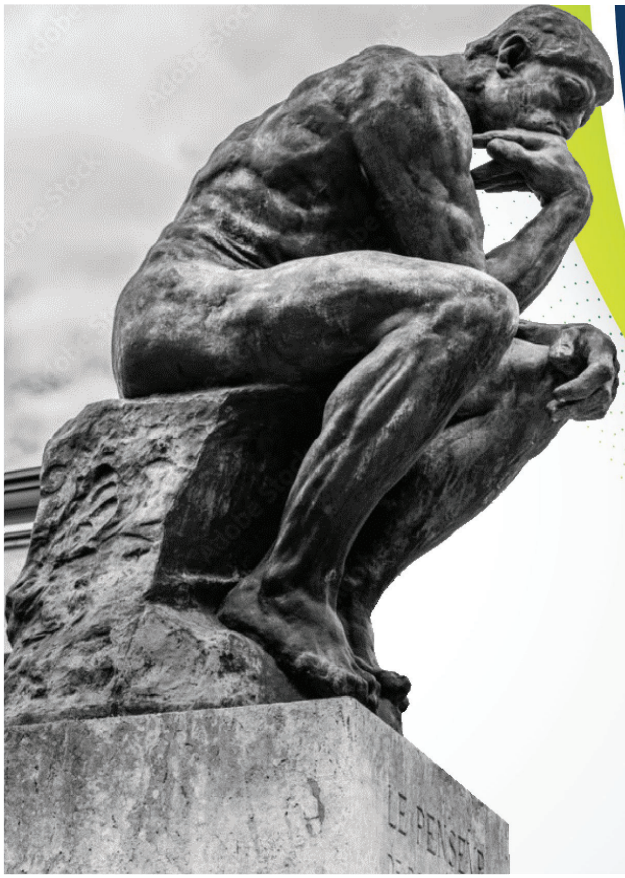
- Container fill-level monitoring
- Automated collection triggers nearing capacity
- Resource allocation based on demand

Operational Impact

- Optimized vehicular routing
- Reduced fuel consumption
- Lower maintenance costs

Courtesy: loticiti.com

AI SUMMIT TOP TECH



QUESTIONS

COME SEE ME IN THE LOUNGE OR REACH OUT:

swilliams@g3engineering.org

AI SUMMIT
TOP TECH

Tyler Bandemer -
Solid Waste Management Superintendent at City of Loveland, CO

> Artificial intelligence (AI) is a machine's ability to perform the cognitive functions we usually associate with human minds.
>
> **- McKinsey**

Three Applications of AI in Public Works

1. AI to Reduce Overages in Waste Collection
2. AI to Improve Waste Sorting in Material Recovery Facilities
3. AI to Improve The Safety of Public Transportation

AI SUMMIT TOP TECH

1. AI to Reduce Overages in Waste Collection (1/2)

- Waste haulers face the challenge of overflowing bins while collecting waste
- With 20-30% of bins regularly overflowing, waste haulers incur additional landfill fees for the excess weight they transport and dump.
- With landfills charging from $50 to $85 per ton, this translates to approximately $3M in excess annual landfill fees per 1,000 trucks.
- Overflowing bins slow down waste collection and lead to operational hazards for drivers.

AI SUMMIT TOP TECH

Image credit: Photo by Alan Stanton on Flickr

1. AI to Reduce Overages in Waste Collection (2/2)

- AI can help detect overflowing bins by applying computer vision on truck cameras
- The customer details can be identified using customer ID read from images, or using technologies such as RFID
- When bins are found to be overflowing or loaded with extras, the AI can alert the drivers
- Once the driver confirms, the communication can be automatically sent to the customer with picture evidence
- This real-time intelligence helps drivers enforce policies, drive swift action transparently and automatically

AI SUMMIT TOP TECH

Image credit: Photo by Alan Stanton on Flickr

Case Study: AI-driven overages detection at Loveland

(Click to play video)

2. AI to Improve Waste Sorting in Material Recovery Facilities (1/2)

- Haulers drop-off the recyclables load collected from customers to Material Recycling Facilities (MRFs)
- MRFs face challenges in efficiently sorting recyclable materials due to contamination, manual errors, and the complexity of waste streams
- Such inefficiencies results in recyclables ending up in landfills
- The Environmental Protection Agency (EPA) estimates that about 75% of all waste generated is recyclable, yet only 32% of municipal solid waste (MSW) was recycled or composted

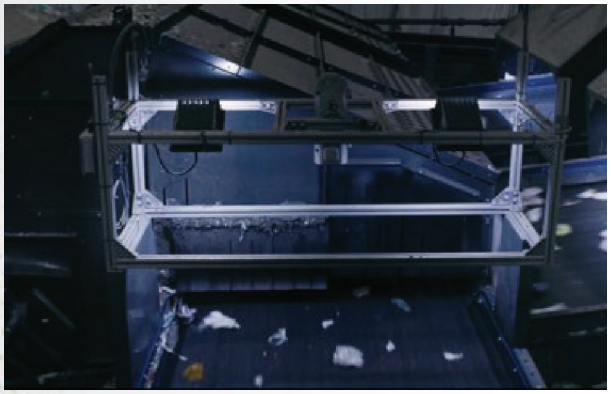
Image credit:Photo by engin akyurt on Unsplash; 2. blog on rts; 3. article by EPA

2. AI to Improve Waste Sorting in Material Recovery Facilities (1/2)

- AI-powered sortation systems work by using advanced sensors and algorithms to identify and classify materials in real time
- Robots, guided by AI, precisely separate items like plastics and remove contaminants, ensuring high-quality output
- These systems adapt dynamically to changing waste streams, continuously optimizing performance for efficient and consistent recycling operations.
- As a result, such systems improve material recovery rates, reduce contamination, and lower operational costs.

Image credit:Photo by engin akyurt on Unsplash; 2. blog on rts; 3. article by EPA

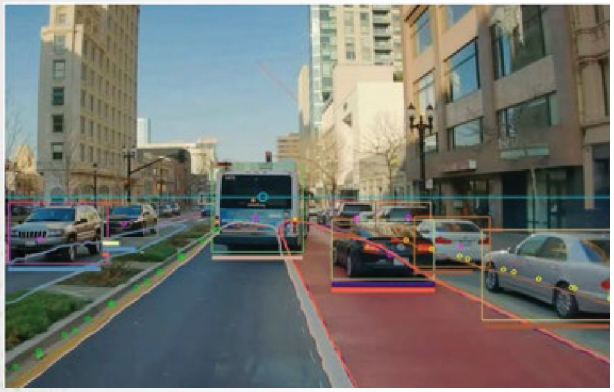
Case Study: Napa Recycling increased recovery with AI-guided robotics



- Evergreen is among the nation's largest recyclers of polyethylene terephthalate (PET) and producers of recycled PET (rPET)
- It struggled with labor shortages as manual sorting required long, tedious shifts. Also challenging was ensuring high-quality food-grade flake production
- The solution uses AI-driven algorithms and computer vision to identify and sort PET bottles by color and clarity. Robots equipped with vacuum suction mechanisms pick and separate materials with precision
- Results: Capture rates increased by 200%, with robots sorting up to 120 bottles per minute and removing 90% of contamination

Image credit: AMP; A customer case study by AMP sortation

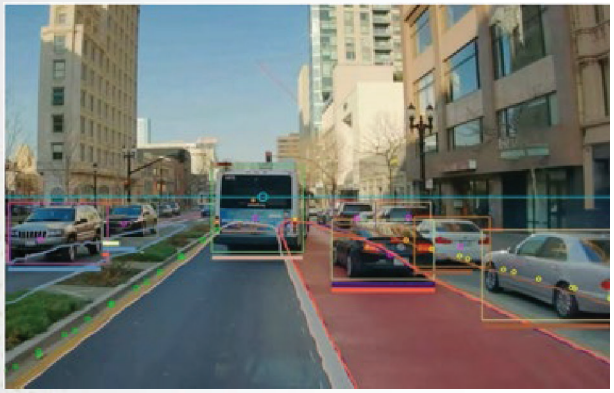
3. AI to Improve the Safety of Public Transportation (1/2)



- Vehicles blocking bus lanes not only disrupt public transit efficiency but also pose safety hazards
- These obstructions lead to delays, passenger frustration, and unsafe conditions
- In a study conducted by Southeastern Pennsylvania Transportation Authority (SEPTA), ~36,000 violations were recorded over a 70-day pilot program, with about 50% of all bus stops experiencing blockages by unauthorized vehicles
- Research indicates that when bus lanes are obstructed, delays can increase by 0.5 to 1.0 minutes per mile
- Traditional enforcement methods, such as manual ticketing, are often slow, inconsistent, and ineffective in deterring violations

Image credit and stats: An article on nextcity.org

3. AI to Improve the Safety of Public Transportation (2/2)



- AI-powered solutions offer a transformative approach to this challenge
- Advanced camera enforcement systems equipped with AI algorithms detect unauthorized vehicles in bus lanes, analyze footage in real-time, and automatically issue violations
- By leveraging object recognition and location data, these systems ensure precise identification and consistent enforcement without requiring extensive human intervention.
- Such systems lead to fewer accidents, faster bus speeds and on-time service

Image credit and stats: An article on nextcity.org

Case Study: New York City's (MTA) reported 20% fewer vehicle collisions using AI

- Public transit efficiency, reliability, and safety are hindered by vehicles obstructing bus lanes
- Hayden AI has developed a vision AI system that it's deploying in numerous US cities to solve this challenge
- The system uses cameras mounted on buses to monitor bus lanes, capture images, apply algorithms to the images, and collect evidence of parking violations in bus lanes that it then sends to the relevant authorities
- Result: New York City's Metropolitan Transportation Authority (MTA) reported a 5% improvement in bus lane speeds along enforced routes, as well as 20% fewer vehicle collisions

Image credit and case study: An article on techbrew

Next Steps: How can you apply AI in your department?

Tyler Bandemer
Solid Waste Management Superintendent
City of Loveland, CO
Tyler.Bandemer@cityofloveland.org
970-962-2609

AI in Public Works Roadway Asset Management: PAVEMENT INSPECTION

AI SUMMIT
TOP TECH

Mark Nassar, PE, MBA
Vice President
Program Management
Harris & Associates

Outline

- About Roadway Pavement
- Objective of Pavement Asset Management
- Pavement **Condition Inspection**
- AI's Contribution
- Considerations when using AI

AI SUMMIT TOP TECH

APWA

The Importance of Roadways

AI SUMMIT TOP TECH

APWA

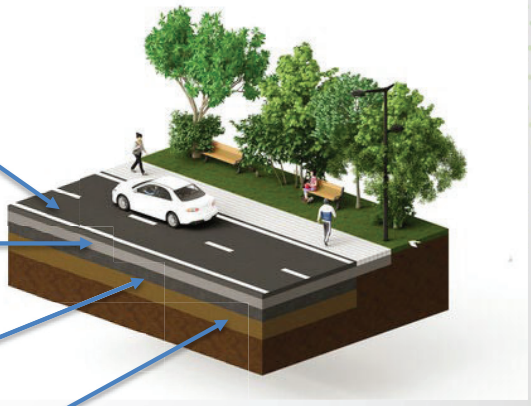
Anatomy of Pavement

SURFACE
- Asphalt (or concrete)
- Provides smooth driving surface for traffic

BASE
- Aggregate (mixture of sand, crushed stone and gravel)
- Provides a stable foundation for the pavement surface

SUB-BASE
- Stabilized layer
- Spreads the load of the roadway onto the subgrade

SUBGRADE
- Natural or compacted soil
- Provides a stable foundation for the entire roadway



AI SUMMIT TOP TECH

APWA

Types of Pavement Failures/Distress


Longitudinal Cracking


Traverse Cracking


Alligator Cracking


Block Cracking


Edge Cracking


Slippage Cracking

Joint Reflection Cracking

Raveling


Potholes

AI SUMMIT TOP TECH

APWA

Pavement Inspection/Rating

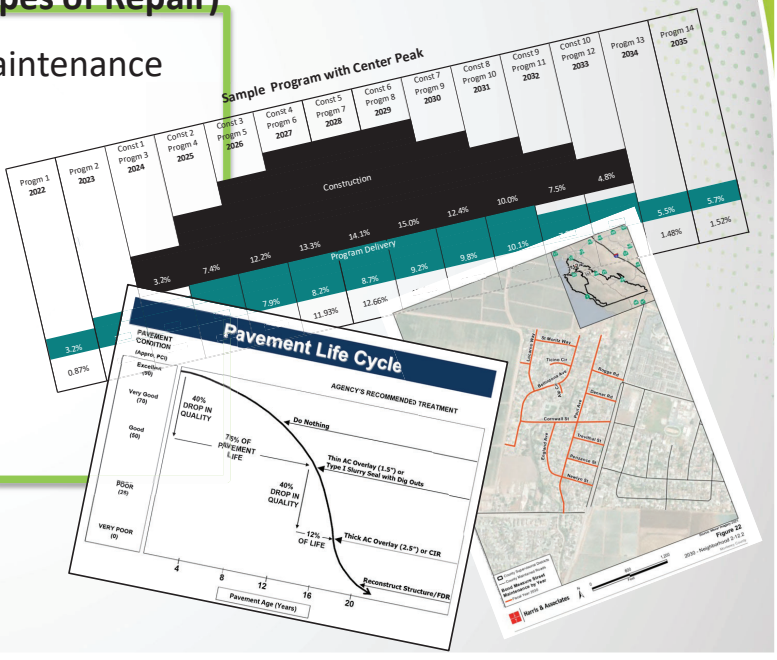
PAVEMENT CONDITION INDEX (PCI)

PCI RATING

AI SUMMIT TOP TECH

AM - Treatment/Repair Strategies

PCI RATING	TREATMENT STRATEGY (Types of Repair)
Excellent	Do nothing/ Corrective maintenance
Very Good	Preventative Maintenance
Good	Resurface
Fair	Rehabilitation
Poor	Reconstruction
Very Poor	
Failed	



AI SUMMIT TOP TECH

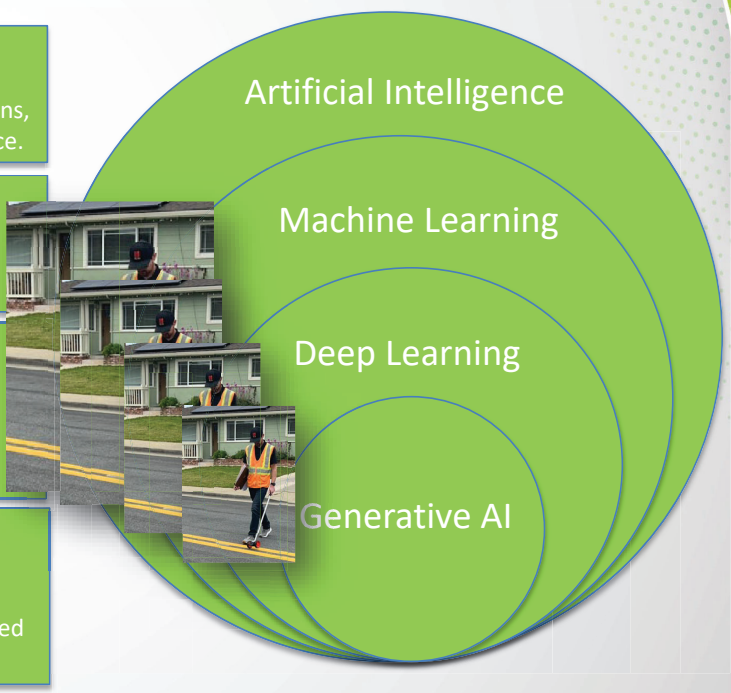
AI Recap

AI - Artificial Intelligence
Involves techniques that equip computers to emulate human behavior, enabling them to learn, make decisions, recognize patterns, and solve complex problems in a manner akin to human intelligence.

ML - Machine Learning (subset of AI)
Uses advanced algorithms to detect patterns in large data sets, allowing machines to learn and adapt.

DL - Deep Learning (subset of ML)
Uses neural networks for in-depth data processing and analytical tasks. DL leverages multiple layers of artificial neural networks to extract high-level features from raw input data, simulating the way human brains perceive and understand the world.

Generative AI (subset of DL)
Generates content like text, images, or code based on provided input. Trained on vast data sets, these models detect patterns and create outputs without explicit instruction, using a mix of supervised and unsupervised learning.



Benefits of AI Inspection

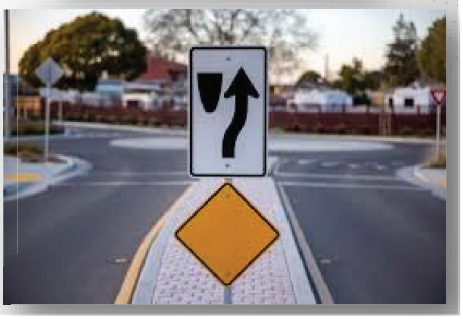
- **SAFETY**
  - Minimizes the need for/exposure of inspectors working in traffic hazards.
  - Minimizes risk to the public
- **TIME - Significant Reduction in Time**
  - Perform the inspection in a fraction of the time
  - Streamlines Onboarding and Training
    - Reduces need for specialized skills where training can be lengthy
    - Reduces onboarding time for faster deployment

COST - Reduced Travel and Inspection Costs
- AI enables Consultants to conduct inspections in remote or hard-to-reach areas
- Reduces the need for travel, cutting down on related expenses.

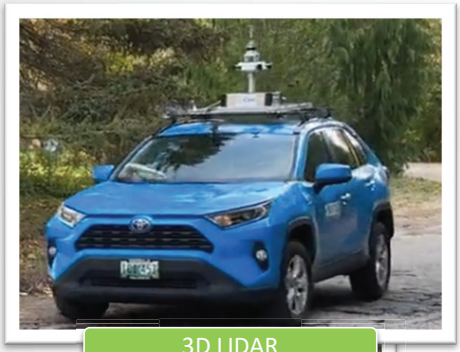
- **SCOPE - Enhanced Data Accuracy**
  - Ensures Consistency
  - Minimizes mistakes
  - Removes subjective judgement/variation
- **Enhanced Operational Efficiency**
  - Less traffic disruption
  - Increases capacity of consultants to do work (especially geographically)
  - Faster turnaround times to Public Agency/Owner

AI SUMMIT TOP TECH

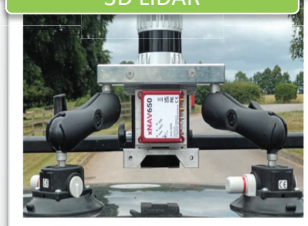
Inventories comprehensive other asset types in R/W

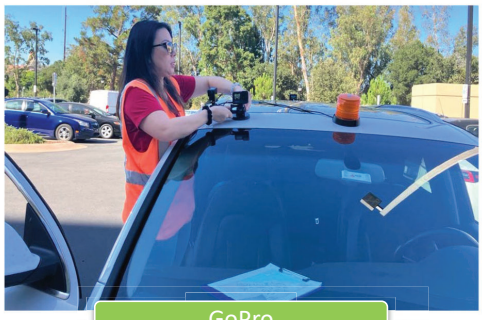


Types of AI Inspection Equipment

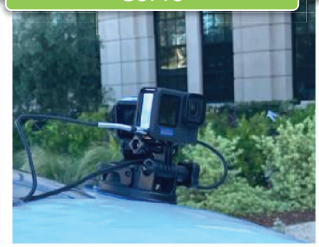


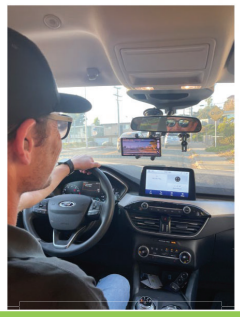
3D LIDAR





GoPro





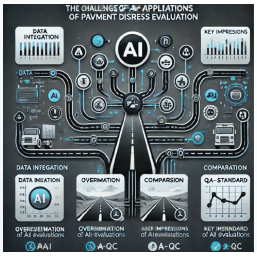
SMART PHONE

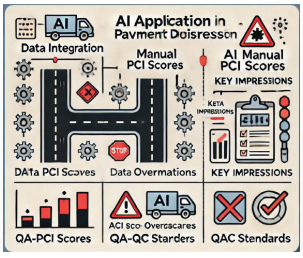
AI SUMMIT TOP TECH

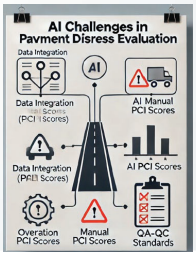
AI Application Challenges Encountered

- **AI PAVEMENT DISTRESS EVALUATION**
  - **Data Integration**: AI-generated distress data was imported into the Pavement Management Program (PMP)
  - **Comparison**: PCI scores from AI were compared against PCI from manually collected data

- **KEY IMPRESSIONS OF AI EVALUATIONS**
  - **Variations**: Significant differences between AI and manual PCI scores
  - **Overestimation**: AI inconsistent and often overestimated medium and high distress levels
  - **QA-QC Standard**: AI data did not meet the required QA-QC standards



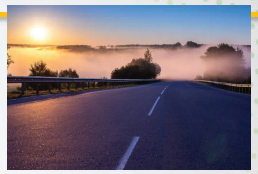




AI SUMMIT TOP TECH

Challenges To Be Prepared For

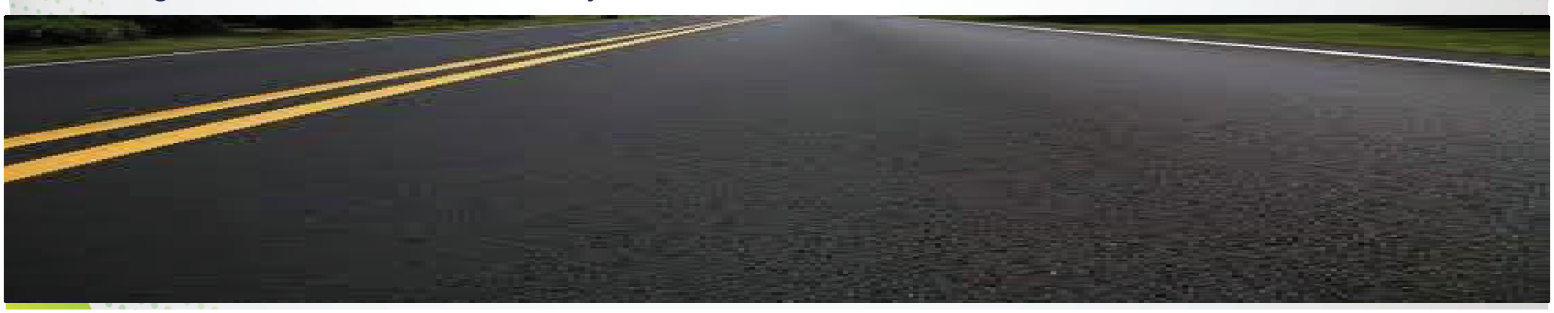
- **Operation**
  - Time of day impacts visibility – optimal performance midday
  - May need multiple passes for full coverage
  - Tracking and managing routes is challenging
- **Data Collection**
  - Equipment can malfunction and cause missed data capture
- **Tech Support**
  - Can be lacking and slow, especially if overseas
- **Security/ Liability**
  - Concern over loss of high value equipment
  - Concern over improperly secured equipment falling off an causing a safety hazard



AI SUMMIT
TOP TECH

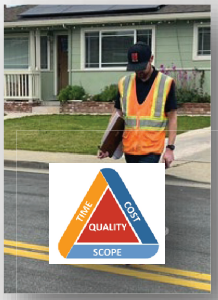
Ongoing AI Refinement Efforts

- **Development Status:** AI is still evolving and is expected to be fully reliable in 2025
- **AI Continuous Refinement**
  - Iterative Data Importation: Continuous comparison between AI and manual data
  - Algorithm Refinement: Enhancing distress identification and classification with each iteration
  - Adapting Across Terrains: Testing algorithms for adaptability and reliability in diverse terrains
  - Maintaining Standards: Ensuring AI aligns with engineering standards
- **Cost Implications:** Current costs are comparable with manual methods but offer long-term savings due to increased efficiency and reduced labor needs



Conclusion: Calibrate Early/ Check Often/ Verify Always

- **KEY:** Establish and routinely apply a QAQC plan
  - Don't expect AI to print out a perfect answer
- Partnership approach between Public Agency (Owner), Consultant and Tech Firm
- Budget time for early calibration and routine reviews (an iterative process)
  - Start with a small representative percentage of the network
  - Continuous comparison between AI and manual data
- Monitor for AI challenges in distress identification/classification
  - Especially in differing terrains
  - Verify anomalies flagged by the AI tool
- **Embrace innovative advances but never let go of your QAQC role**



AI SUMMIT TOP TECH

Mark Nassar, PE, MBA
Vice President
Program Management
Harris & Associates
CALIFORNIA
Mark.Nassar@WeAreHarris.Com
619-200-6442

Thank You For Your Time

AI SUMMIT
TOP TECH

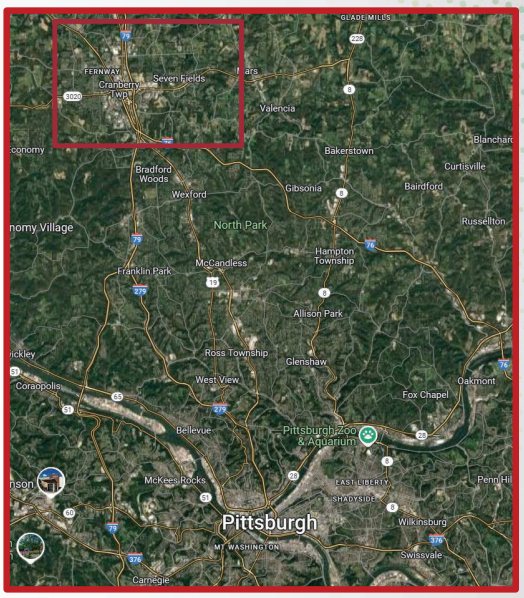
Kelly Maurer, P.E.
Director, Public Works
Cranberry Township, PA

Cranberry Township, PA

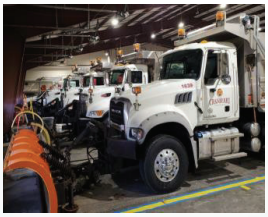
- 20 miles north of Pittsburgh
- 23 square miles
- Population 33,000
- Growth from less than 15,000 in 1990

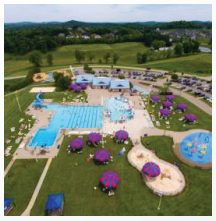
Public Works

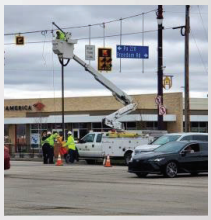
- Street, Fleet, Traffic, Grounds, Facilities
- 27 Crew, 4 Managers, 3 Admin



Research – Development - Deployment





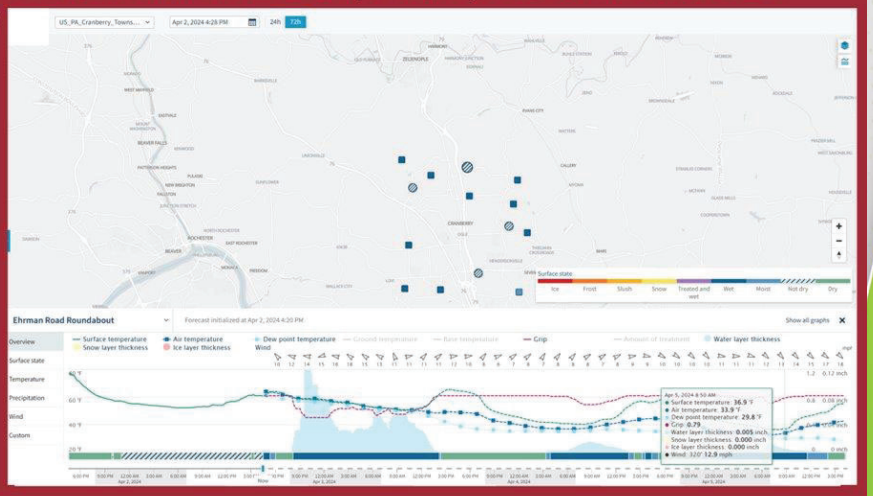


Pilot Project

GroundCast Road Sensors

Pilot Project in 2023-2024

- Predicts Pavement Temp for 72-hours to help manage OT and salt usage.
- Estimated savings of $160,000 in Winter 2023-2024 (7 events) in labor and materials.
- Environmental savings
- Work/life balance with 24/7 Phone App
- Deployment Partner



AI SUMMIT TOP TECH

Application of AI

- Begins with reliable and trusted sensing technology to collect data, filling in gaps from broader infrastructure.
- Using a method called “deep learning,” the unique observation data is integrated with other datasets such as global models, measurements from satellites, and connected car data. The localized data is continuously fed into the model, helping it to “learn” the area and its surroundings.
- The result: highly localized and more accurate predictions.

AI SUMMIT TOP TECH

Other Applications

Traffic Operations Center (TOC)

The Township utilizes a Centracs Advanced Transportation Management System headquartered in the largest municipal owned Traffic Operations Center (TOC) in Pennsylvania.

Cranberry's Traffic Management System is responsible for the maintenance and programming of:

- 43 signals along state and local roads in the Township
- 10 signals in four neighboring communities.

Cranberry Township also partners with CMU Traffic 21/Safety 21 on deployment initiatives and testing opportunities.

➡ The use of AI is shown in our predictive model of incident management on the limited access roadways adjacent to the Township.

AI SUMMIT TOP TECH

APWA

Other Applications

Paving Plan

INVENTORY ➡ ANALYZE ➡ PLAN

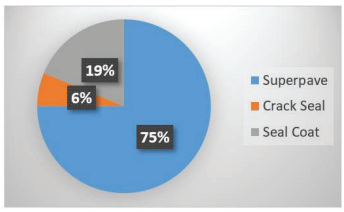
RoadBotics

MICHELIN MOBILITY INTELLIGENCE

2024 ROAD INVENTORY COMPLETE

Roadsoft

2024 Paving Budget



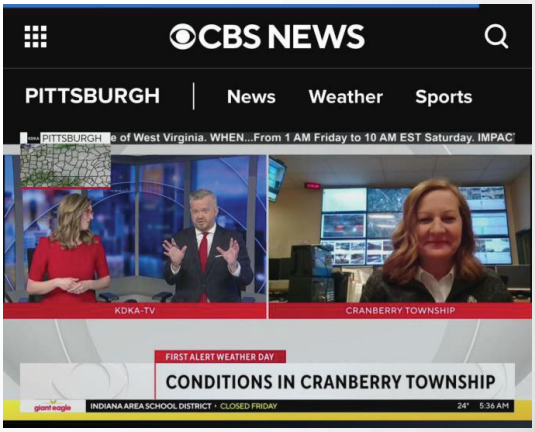
2025 PAVING BUDGET
$1,625,000

AI SUMMIT TOP TECH

APWA

Lessons Learned

- Saves Resources - $$$ and Time
- Try New Technologies
- Be a Deployment Partner During Development
- Involve your Team
- Share Success



AI SUMMIT TOP TECH

KELLY MAURER, P.E.
Director Of Public Works
Cranberry Township, PA
Kelly.Maurer@CranberryTownship.Org
724-776-4806 ext. 1164