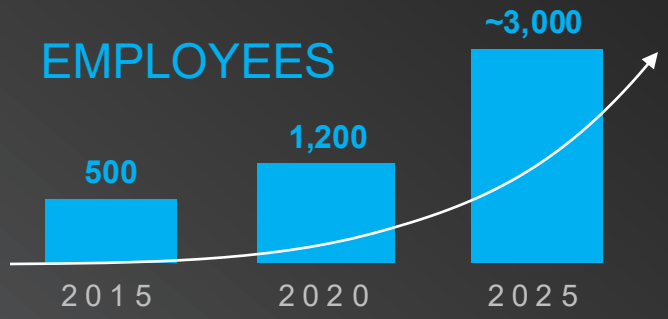

Optimizing
Infrastructure
Decisions for
Sustainable Growth

WOOLPERT

HIGHLY RATED, GLOBALLY RESPECTED

75+

Global Locations

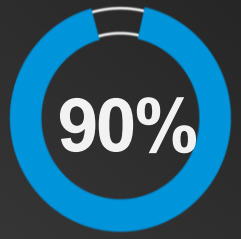


Our tech-enabled and global architecture, engineering, and geospatial (AEG) approach is unique and highly effective.

We have a strong, diverse portfolio across critical and growing end markets.

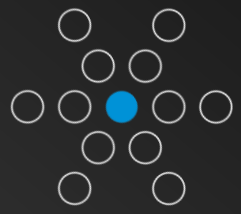
We focus on people, culture, and creating a Great Place to Work.

16
Companies Acquired Since 2019



Client Referral Rate

200K+



Projects Completed Across 6 Continents and 50 States

Years of Client Service

Global Top **100** Geospatial Company

GREAT PLACE TO WORK® 8 YEARS

2024 GEOAWESOMENESS AWARD GEO AWESOME

HOT FIRM ZWEIG GROUP RANKED #8 IN 2024

ENR Engineering News-Record 2025 ENR TOP US DESIGN FIRMS (#39)

Our Services

ARCHITECTURE

Advisory Services
Architectural Design
Conceptual Design
Facility Condition Assessment
Feasibility Studies
Interior Design
Landscape Architecture
Planning, Programming and Pre-design
Renderings and Design Visualization

ENGINEERING

3D Laser Scanning
Civil Engineering
Code and Life Safety Engineering
Communications Technology
Construction Services
Fire Protection
MEP Engineering
Road and Bridge Design
Sanitary Sewer Evaluation Survey *(SSES)*
Structural Engineering
Subsurface Utility Engineering *(SUE)*
Surveying
Water Monitoring and Modeling

GEOSPATIAL

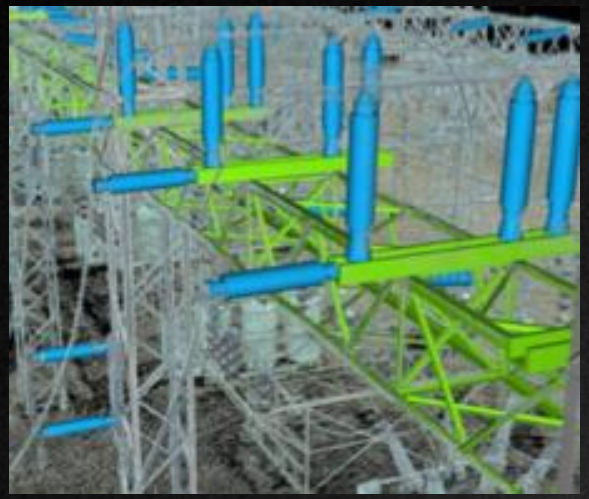
Cloud Solutions
Disaster Recovery
GIS Design and Development
Lidar
Maps API and Location-Based Services
Marine Capabilities
On-Site Support
Photogrammetry and Remote Sensing Survey
Technology Implementation Services
Uncrewed Aircraft Systems *(UAS)*

Infrastructure Sector Markets / Services

Architecture

AVIATION

AAM/UAS/eVTOL
Airport layout plans
Heliports/vertiports
Airspace obstruction surveys
Runway pavement design
CADD/GIS/BIM
Aviation Advisory Board



ENERGY

Oil and gas
Gas and electric
Renewables
Cloud solutions
Well pad development
Application development
Construction monitoring

TRANSPORTATION

Roadway engineering
Bridge analysis and design
Corridor, alignment studies
Transit
Traffic impact studies
Mobile mapping
Right-of-way plans

WATER

Stormwater management
Wastewater management
Hazard mitigation
Floodplain management
Hydrologic/hydraulic modeling
MS4 compliance
Water quality monitoring

Engineering

Building Sector Markets / Services

FEDERAL

Department of Defense (DoD)
Federal civilian
Military master planning
Area development plans
NEPA/EIAP

PRIVATE

Commercial
Hospitality
Mission Critical
Mixed-use/multi-family housing
Retail Rollout
Corporate
Industrial

PUBLIC

K12 education
Higher education/university
Parks and recreation
Libraries
State/local government
Transportation (land/air)
Civic

Geospatial Sector Markets / Services

Geospatial

STATE & LOCAL

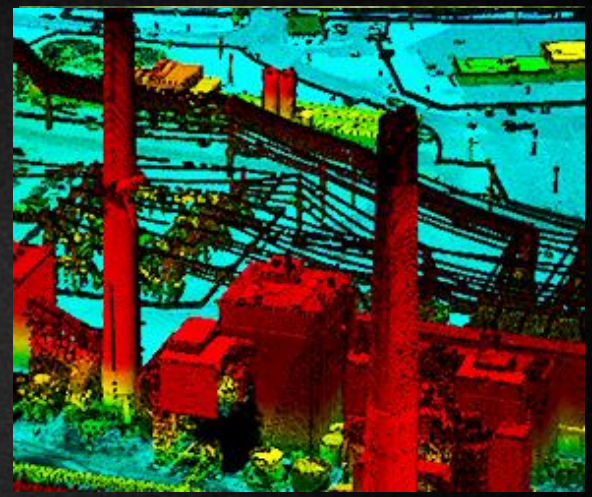
Aerial and mobile mapping
Enterprise GIS
Topographic lidar and imagery
3D modeling
Impervious surface delineation
Thermal imaging
Uncrewed aircraft systems
Geodetic survey

MARITIME

Hydrographic survey
Coastal, riverine resilience
Bathymetric lidar
Side-scan sonar, vessel-based
Critical infrastructure assessment, design
Habitat modeling
Nautical charting
Sediment management

NATIONAL SECURITY

Coastal management and restoration
Intelligence analysis
Secure software development
Data analytics, hosting
Cadastral research, survey
Topographic lidar and imagery
3D modeling
Emergency response support

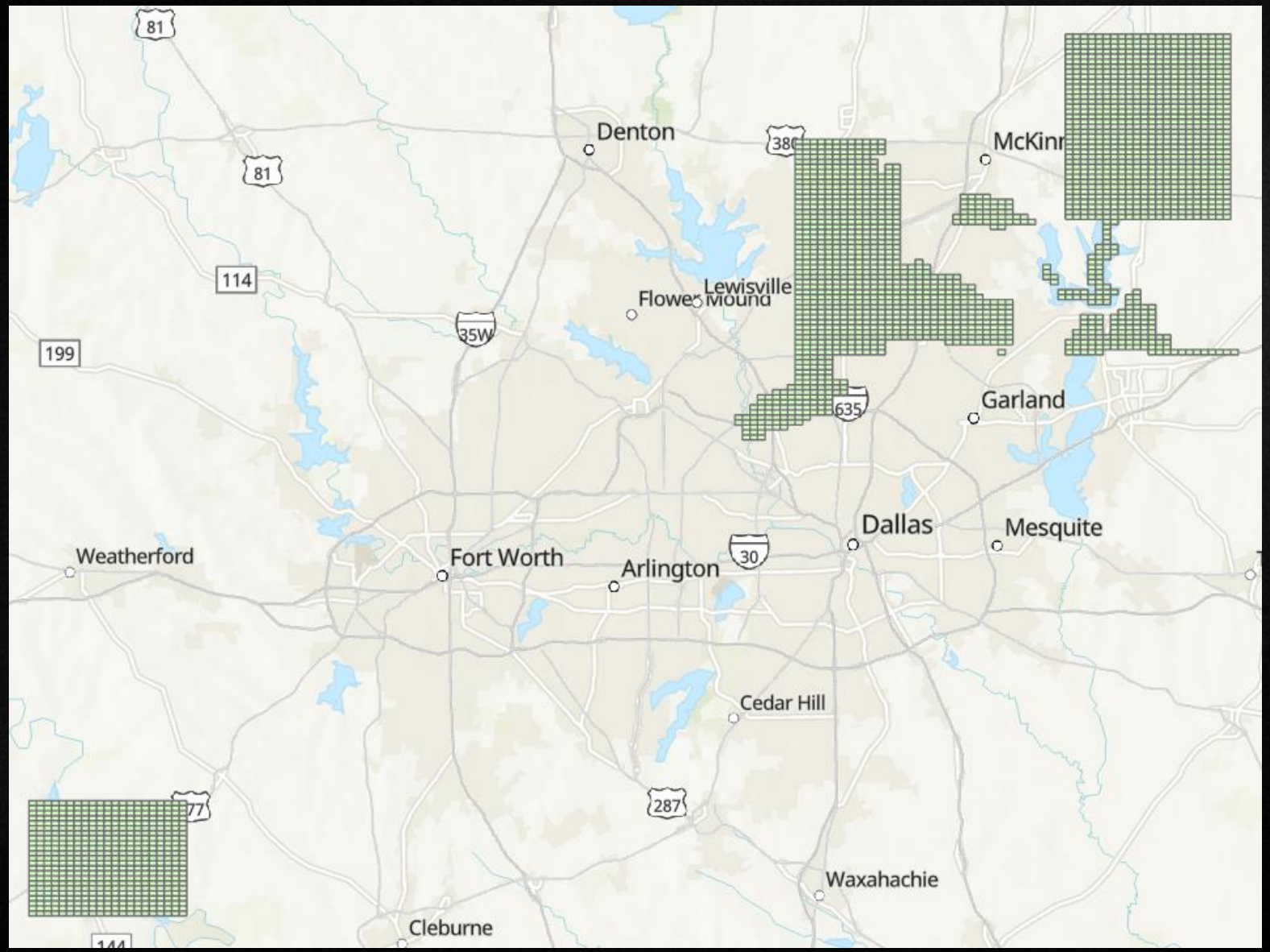


UTILITIES / TELECOM

High-density lidar mapping electrical poles, wires
Broadband network expansion
Aerial imagery
Survey-grade 3D modeling
Telecom analysis and engineering, consulting
Digital twin development
Enterprise GIS

Lidar AOI’s for 2026
QL1 (8ppsm) lidar

Geospatial

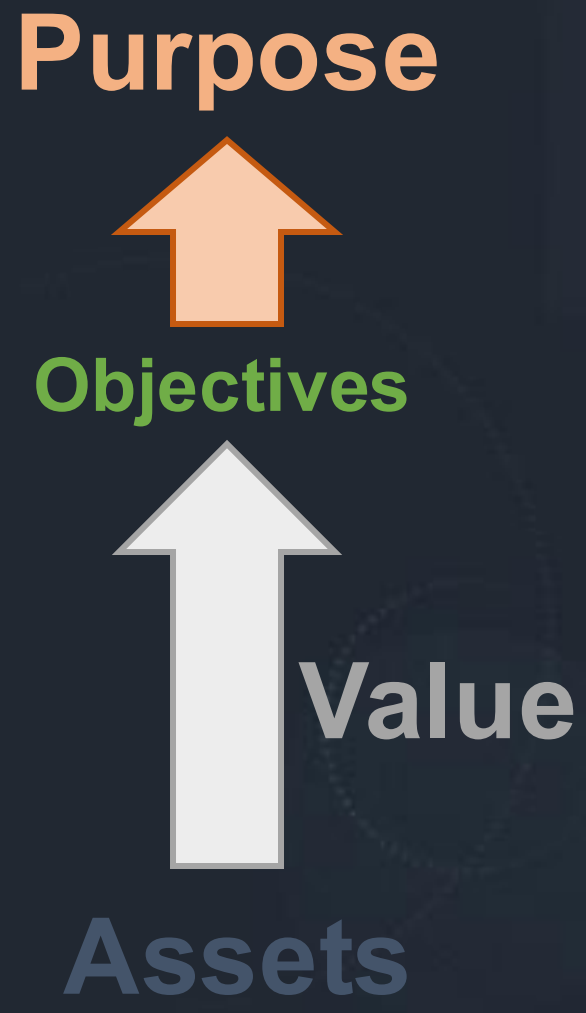


What is Asset Management?

- Asset Management:

  "The coordinated activities of an organization to realize value from assets"

- Realization of value requires optimization of performance, cost and risk



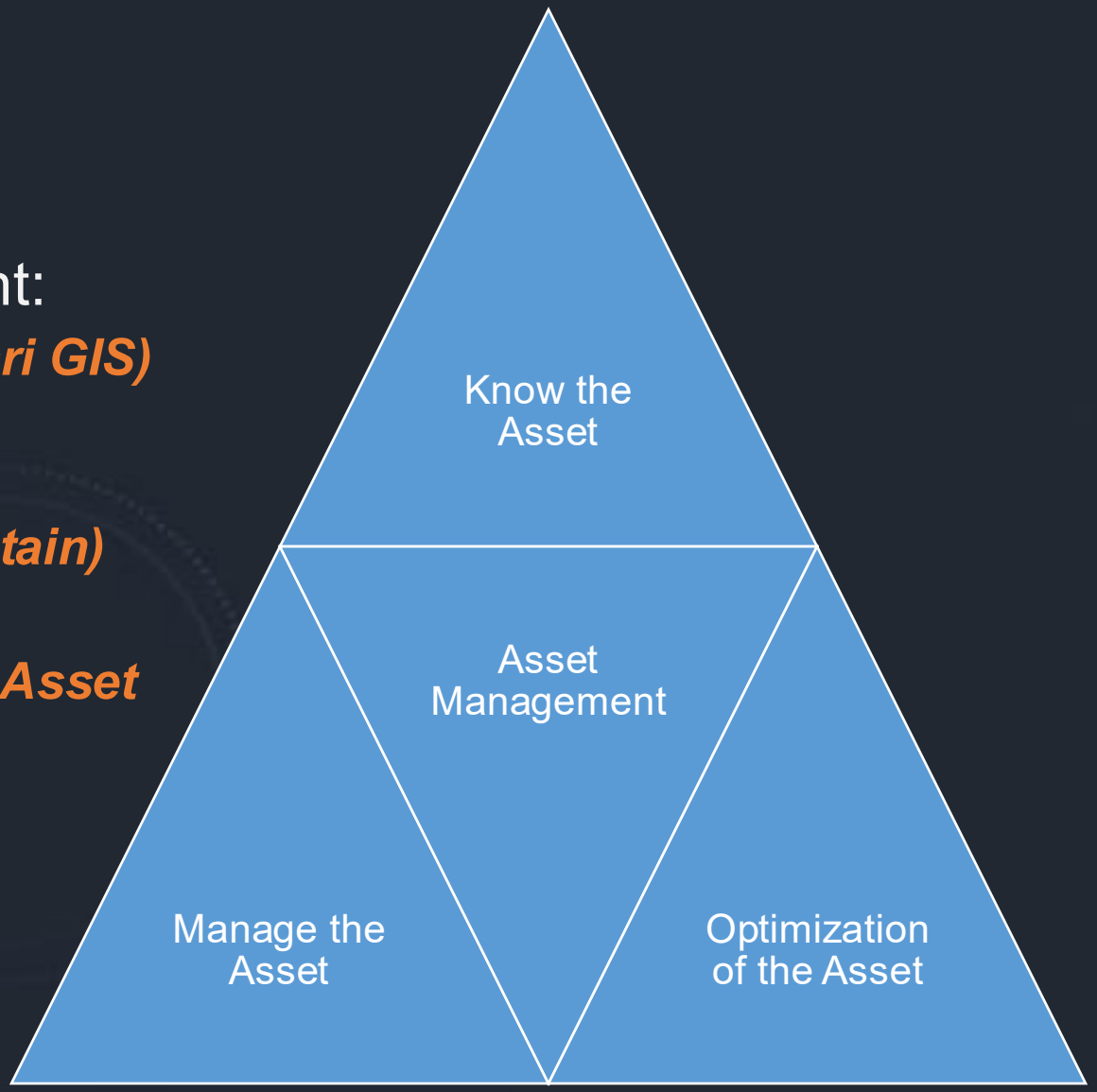
How do you realize of value?

- Asset Management:

  Know the Asset (Esri GIS)

  Manage the Asset (Trimble Unity Maintain)

  Optimization of the Asset (DOT-US)



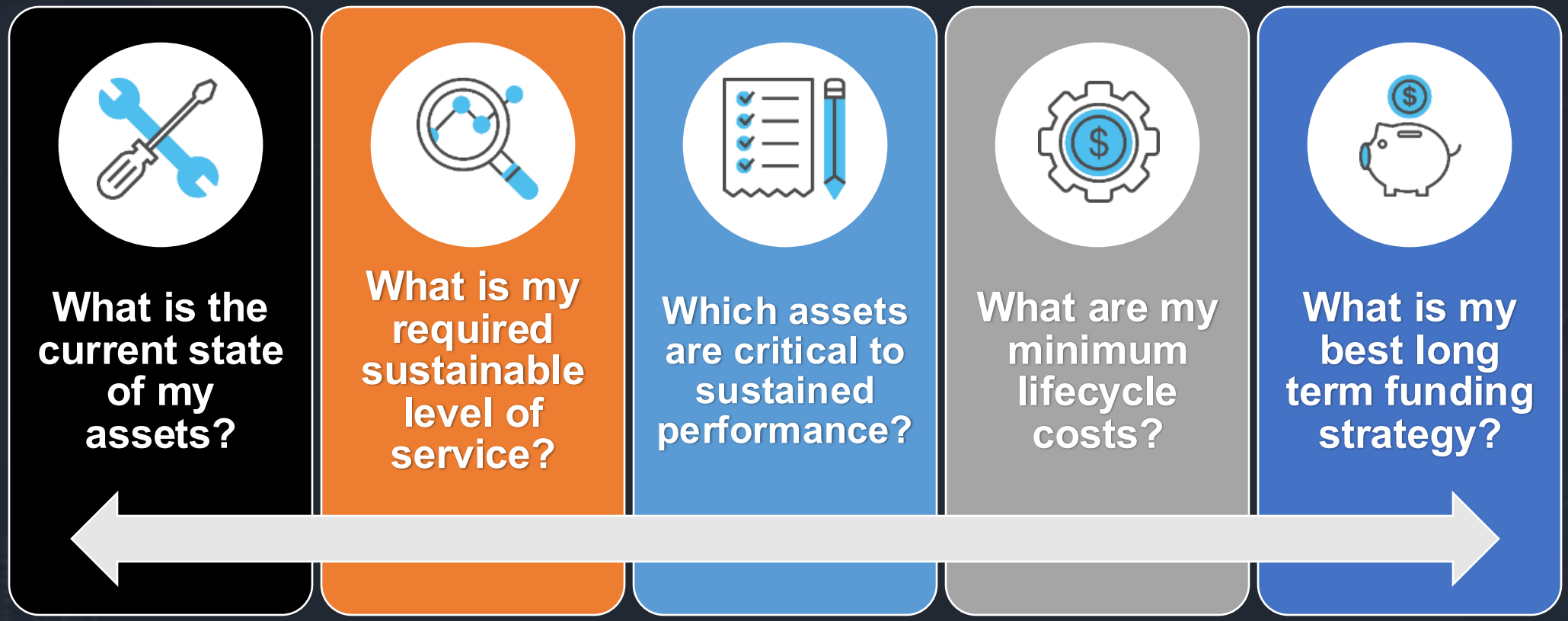
Purpose

Objectives

Value

Assets

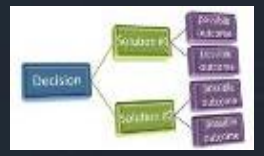
EPA “5 Questions” Asset Management Best Practices & Framework



Source: EPA Guidance on Asset Management Best Practices

Why is Asset Management Important?

Improve Financial Performance



Informed Asset Investment Decisions

Manage Risk

Improved Services and Outputs

Demonstrate Compliance

Enhanced Reputation

Improved Organisational Sustainability

Improved Efficiency and Effectiveness

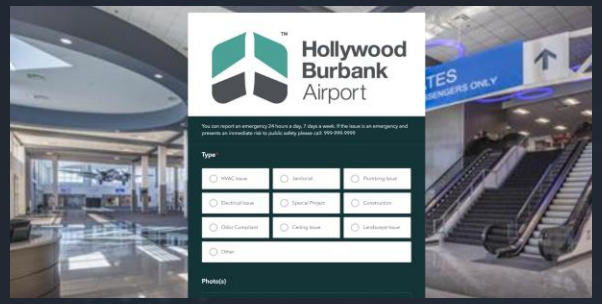
USEPA estimates that improved asset management will result in savings of at least 20% of the costs of asset ownership.

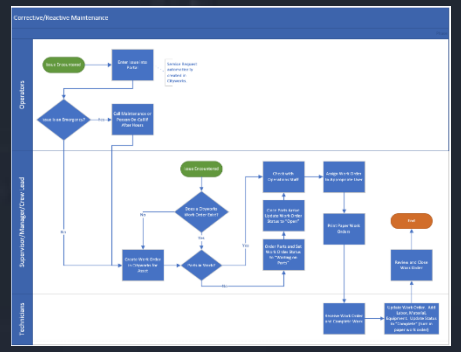
Asset Lifecycle

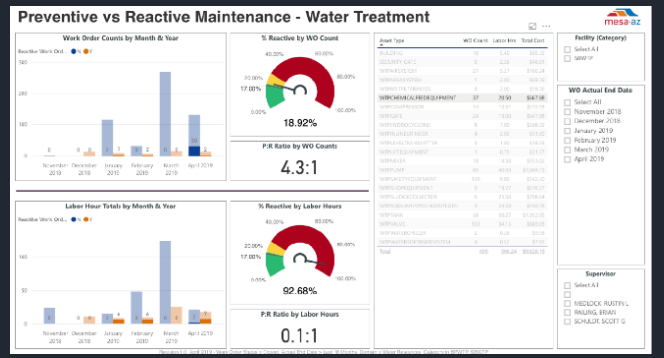
RECIPES FOR SUCCESS

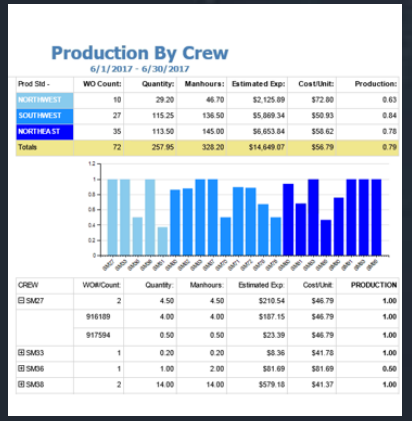
A SUCCESSFUL EAMS IMPLEMENTATION DELIVERS:

- Ease of use → Streamlined configuration based on your business processes
- Off the shelf → Core software configuration (minimal customization)
- Regulatory compliance → Accurate work tracking
- Reporting capacity → Clearly defined metrics – reporting & dashboards
- Sustainability → Knowledge transfer – sys. admin & role-based training





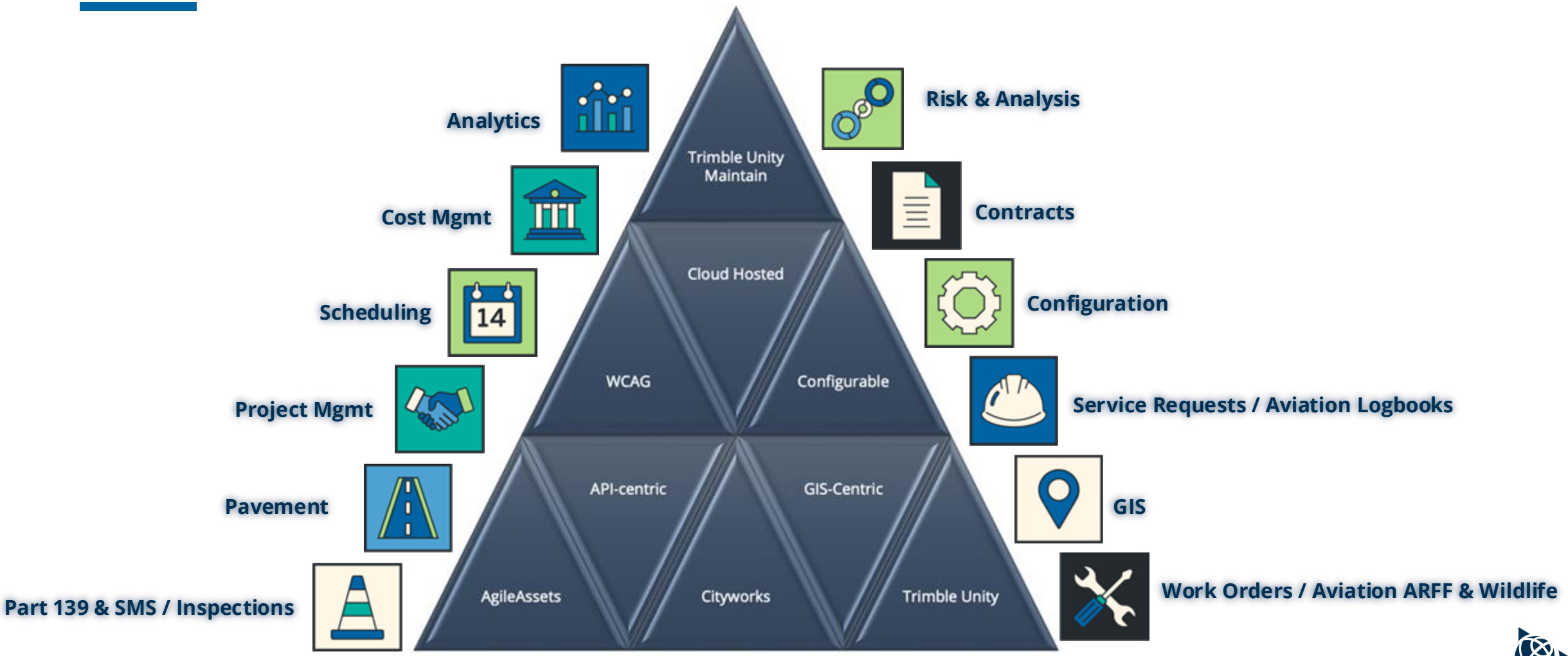




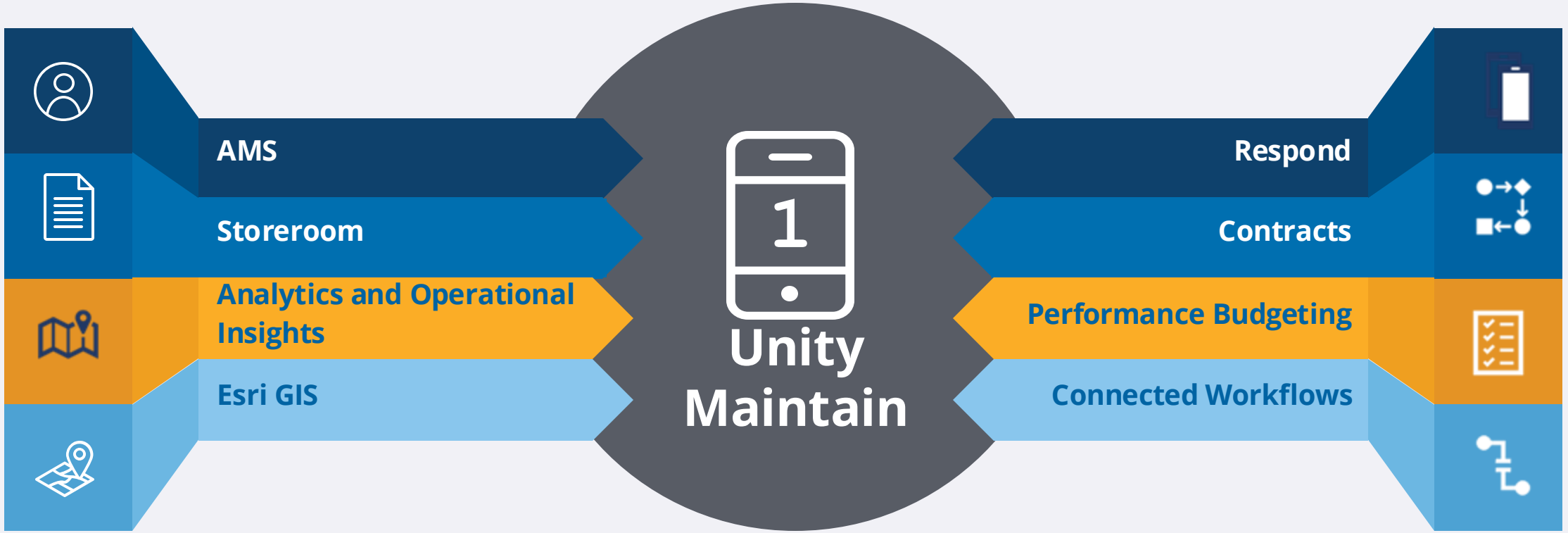
What is Trimble Unity Maintain?

Trimble Unity Maintain is a new Trimble capability intended to combine the functionalities of current Enterprise Asset Management (EAM) offerings from AgileAssets, Cityworks, and Trimble Unity Work Management into one seamless product.

What is Trimble Unity Maintain?



Evolving Enterprise Asset Management



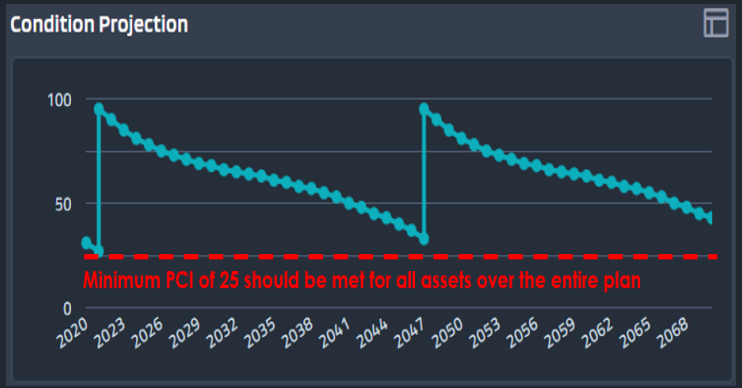
Decision Optimization Technology (DOT™)

DOT

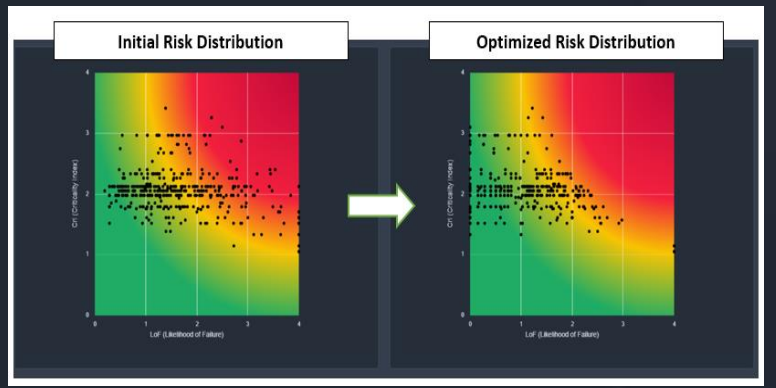
DOT Value Modeling Software Components

Performance Indicators (unlimited)

Level of Service Constraints

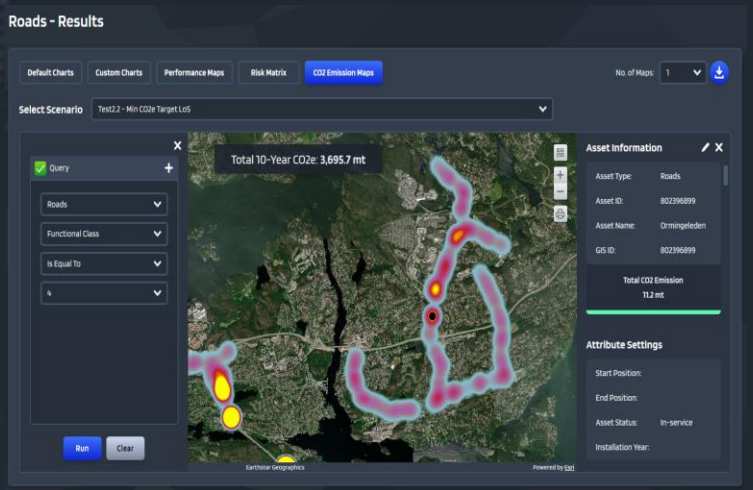


Risk and Criticality Models



Improvement Effect and Predictive Modelling for any Performance Indicator

CO2 Emission and other ESG Factors



Policy Impact Factors (Scio-Economic Criteria)

DOT™ Scenario Optimization

Scenario Objectives & Constraints

Community Benefit | Level of Service | Project Alignment | Long-term Objectives

Engineering Models

Decision Trees | Performance Models | Treatment Options

Extremely **high level of flexibility** in scenario settings with the ability to incorporate **community benefit** considerations into the decision-making process.

Optimization Engine

- Perform Mixed-Assets Analysis
- Maximize Long-Term Performance
- Minimize Cost & Risk Impact
- Target Levels of Performance
- Satisfy Multiple Constraints
- Investment Timing & Delays
- Maximize Operational Efficiency

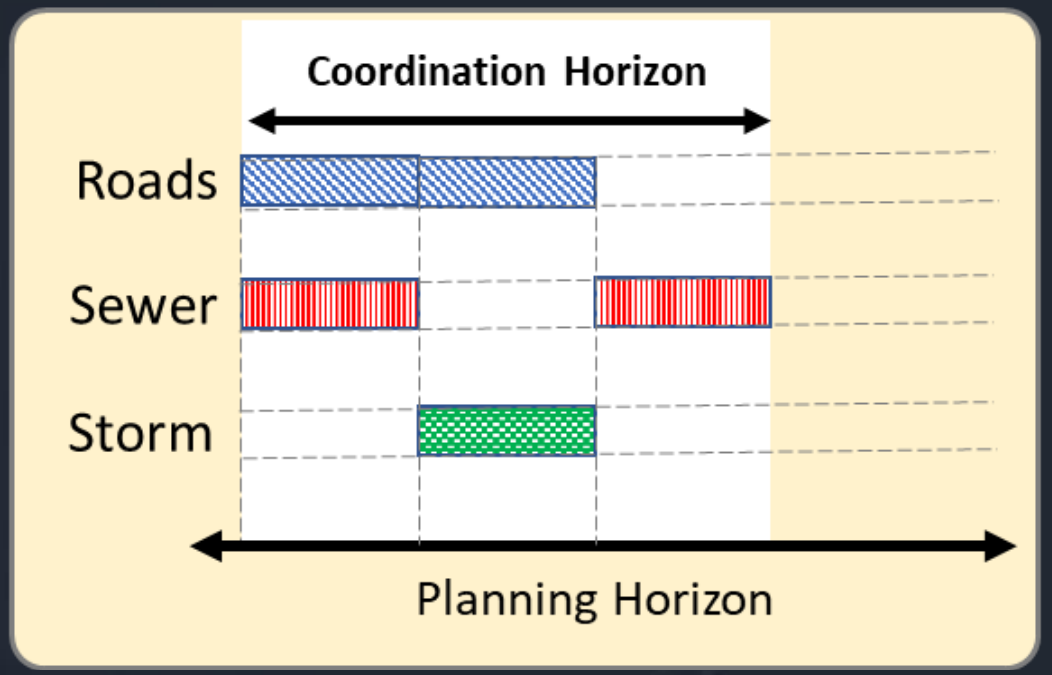
Maximum ROI Investment Plan

Decision Variables

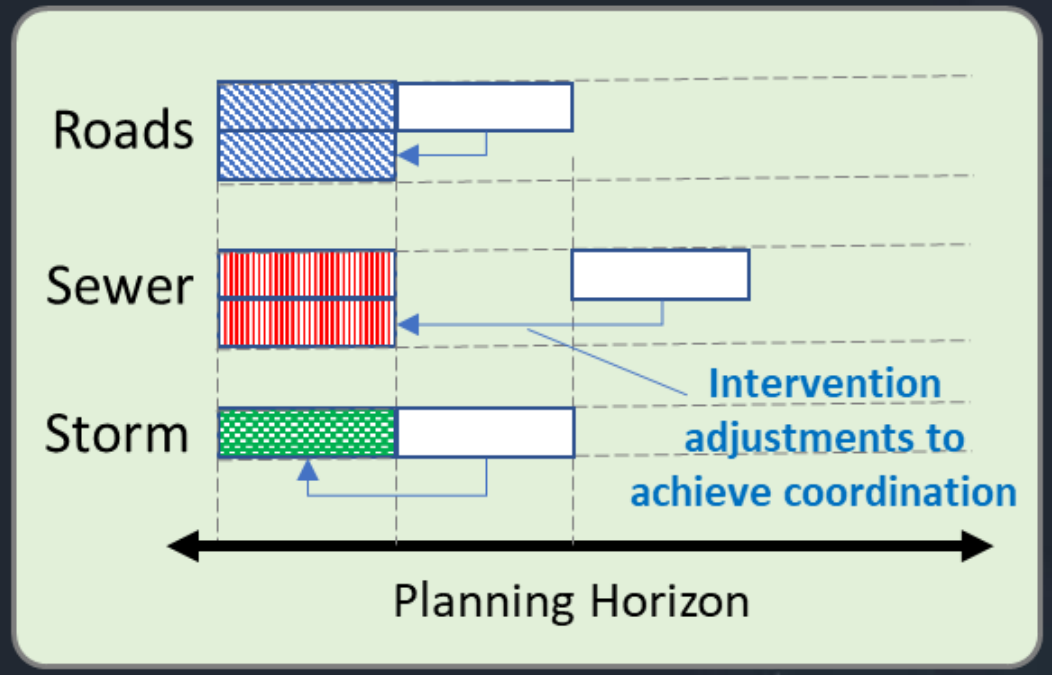
- ✓ Asset Types
- ✓ Asset IDs
- ✓ Treatment Types
- ✓ Treatment Alternatives
- ✓ Budgeted Costs
- ✓ Intervention Timings

DOT

DOT™ Mixed Asset Analysis



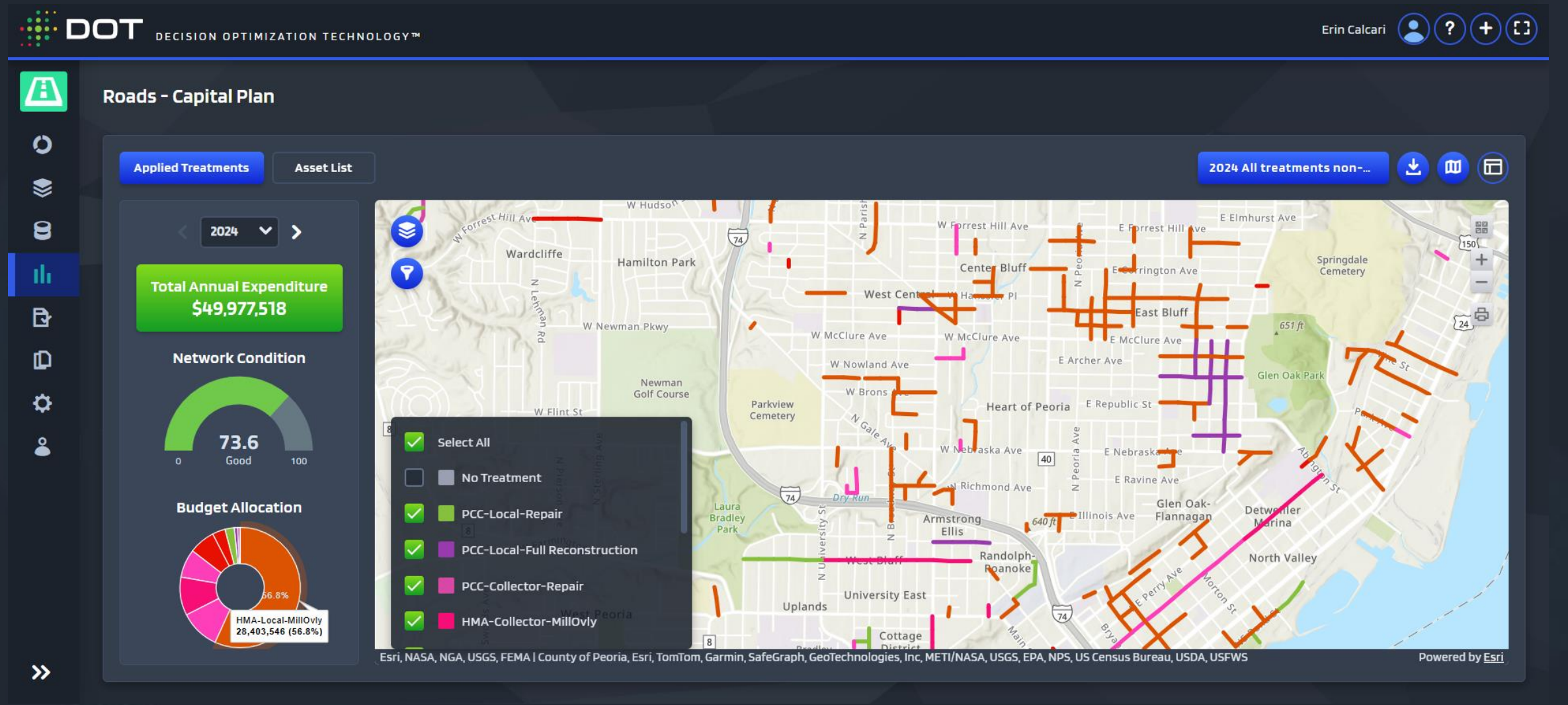
Dispersed activities over the next years



Coordinated intervention plan

DOT

DOT™ Capital Plan



DOT

DOT™-Unity Maintain Integrated Workflow (High-Level)

Unity Maintain

- Create Work Orders
- Track WO Updates
- Inspections and Closure Dates
- Cost Information

WO Updates: Status, Actual Cost, Tasks, etc.

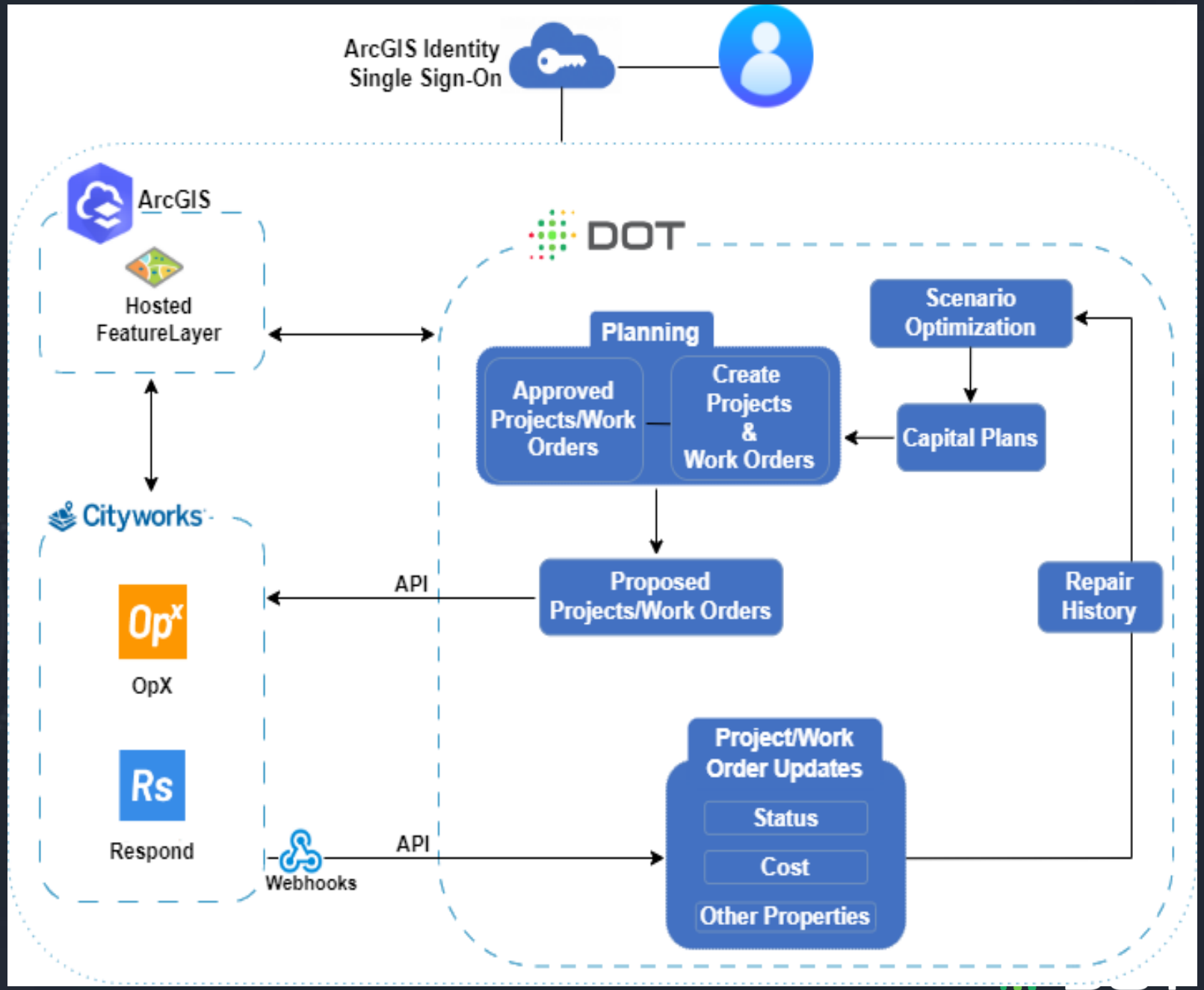
Proposed list of WOs: Treatments, Budgeted Costs, Asset List, etc.

DOT

- Analyze Investment Scenarios
- Produce a list of proposed Work Orders and Projects
- Update Repair History against all assets

DOT

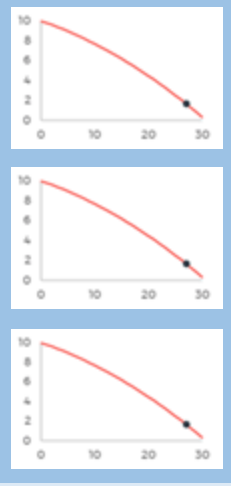
DOT™ ArcGIS & Unity Maintain Integrated Workflows



DOT Value Modeling and Investment Planning Framework

- Budget Limits
- Target LoS
- Project Alignments
- Planning Horizon
- Capacity Limits
- Other Parameters

Model Scenarios



Deterioration Models

Historical Condition & Repairs Data

Treatment	Reset	window	Cost
A	100	0-30	$$
B	80	30-70	$
C	75	65-85	$

Inventory and GIS Data

Performance Indicators

Risk & Criticality Models

Treatments Models

Objective Function

Constraints

AIP Optimization Model

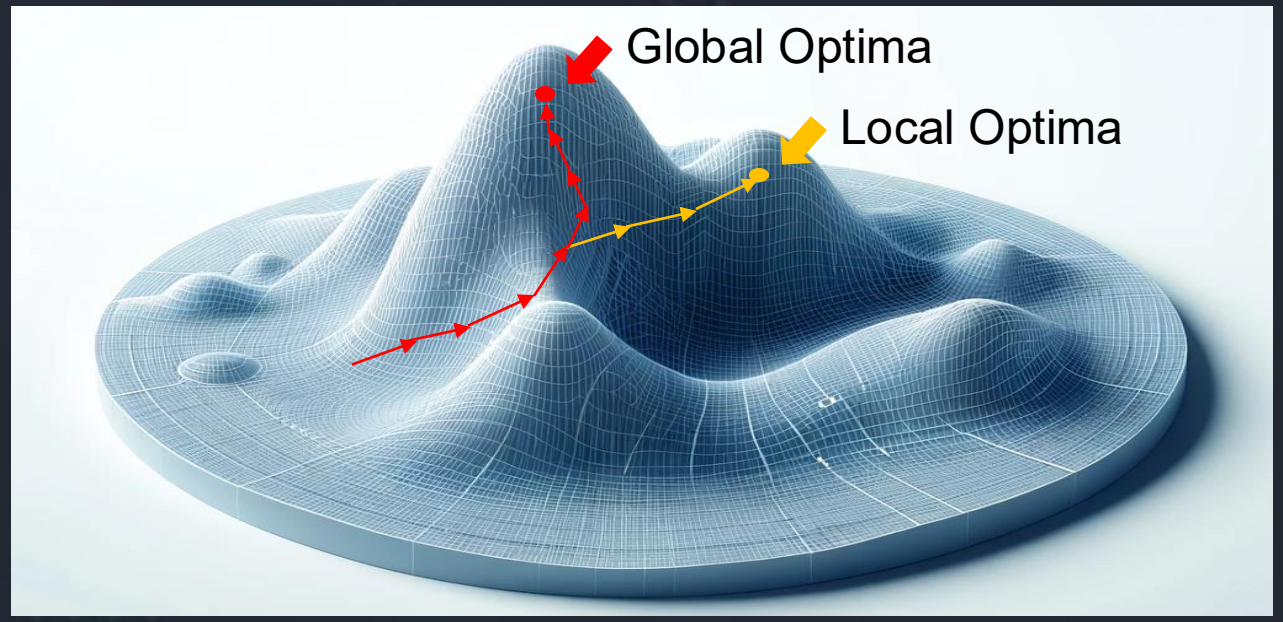
Capital Investment Plan

Asset Selection	Treatment Selection	Intervention Timing

24

True Mathematical Optimization

Mathematical Optimization (MO) is a branch of mathematics that develops and studies analytic tools to model and solve complex optimization problems arising in real world applications. **It focuses on decision problems where scarce resources need to be allocated effectively, in complex, dynamic and uncertain conditions**.



- ✓ Linear Programming (LP)
- ✓ Gradient descent/ascent
- ✓ Nonlinear Programing (NLP)
- ✓ Quadratic Programming
- ✓ Dynamic Programming
- ✓ Integer Programming
- ✓ Mixed-Integer Programming
- ✓ Stochastic Programming

~~Prioritization~~

~~Ranking~~

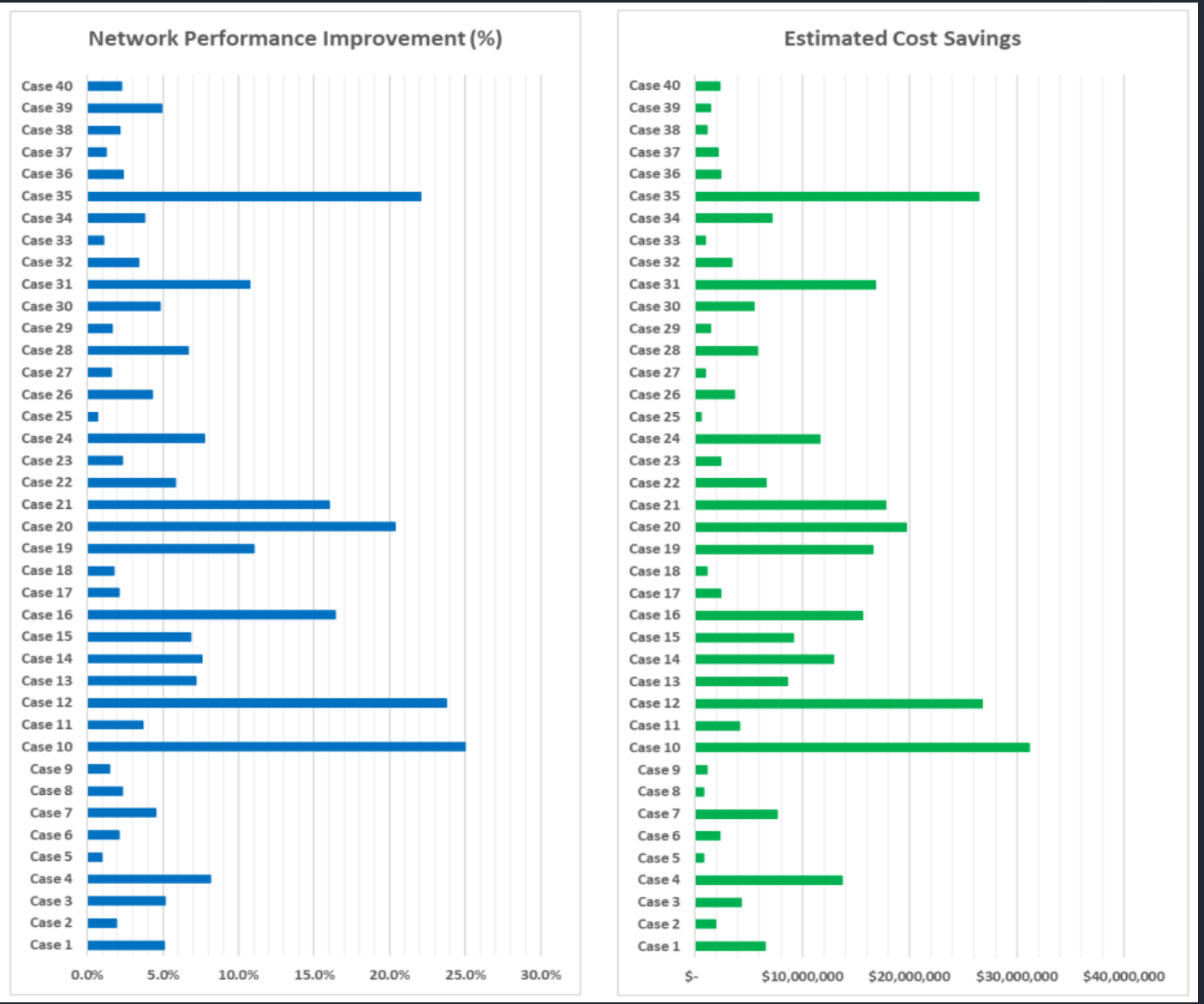
~~Cost-Benefit Analysis~~

Not a True Optimization method

DOT

True Optimization vs. Traditional Methods

- 40 Comparisons
- Consistently outperforms other methods
- **Up to 25% added performance**
- **Results in millions of dollars in cost-savings**



Solving the Investment Planning Problem

SIMPLE RANKING

Sections are ranked and investments are determined based on current asset condition (worst first). Budget is used until it is fully exhausted. This results in the lowest level of investment efficiency.

- x Multi-criteria analysis
- x Guaranteed best performance setting
- x Target level of performance
- x Considering multiple constraints
- x Investment timing and delay analysis

PRIORITIZATION & CBA

Sections are prioritized using multiple criteria such as condition or risk or based on a cost-benefit analysis. The analysis is performed on a year-by-year basis to identify projects.

- ✓ **Multi-criteria analysis**
- x Guaranteed best performance setting
- x Target level of performance
- x Considering multiple constraints
- x Investment timing and delay analysis

TRUE OPTIMIZATION

A true multi-constraint multi-year analysis that results in a scientifically proven and mathematically guaranteed best possible solutions.

- ✓ **Multi-criteria analysis**
- ✓ Guaranteed best performance setting
- ✓ Target level of performance
- ✓ Considering multiple constraints
- ✓ Investment timing and delay analysis

DOT