Infrastructure Asset Management Enterprise Software

PMS to AMS – Kentucky Experience

KYTC's Road Towards Better Pavement Management

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KENTUCKY TRANSPORTATION CABINET

Overview

- Introduction AgileAssets Enterprise
- KYTC Implementation
- Overview of Pavement Analyst
- Problems faced and driver for a solution
- Goals of PMS Implementation
- Process of implementing solution
- Outcomes and achievement of goals

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AgileAssets Enterprise Asset Management System

Overview

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AgileAssets Core Purpose

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AgileAssets Platform

AgileAssets Transportation Asset Management Solution

Planning and Analysis

- Portfolio Analyst™
- Summit™
- Pavement Analyst™
- Structures Analyst™
- Safety Analyst™

Operations Management

- Maintenance Manager™
- Structures Inspector™
- Fleet & Equipment Manager™
- Facilities Manager™
- Right-of-Way Manager™
- Sign Manager™
- Signal and ITS Manager™

Foundation

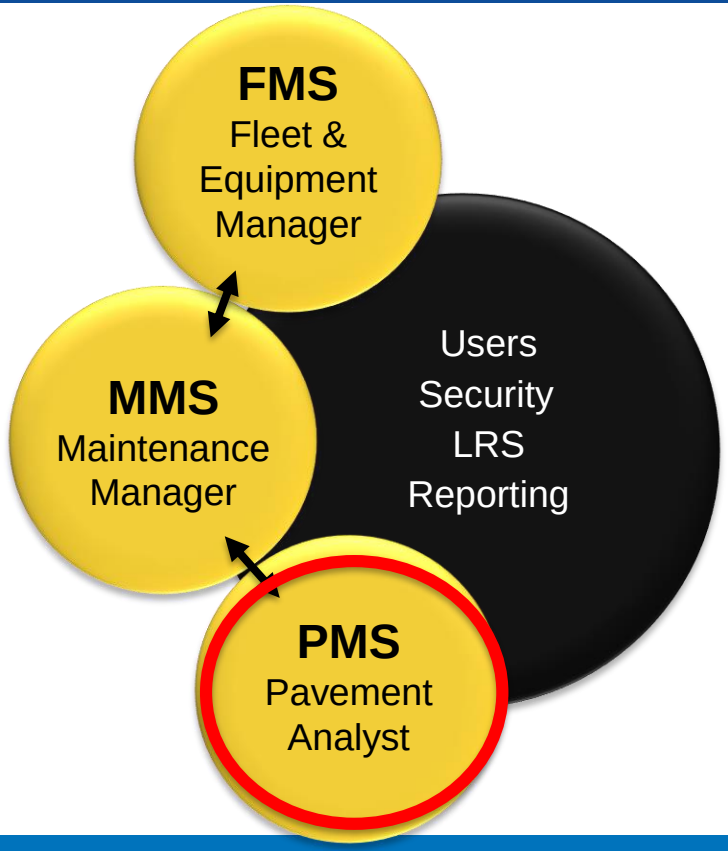
System Administration • Security • Configuration • Reporting

AgileAssets API

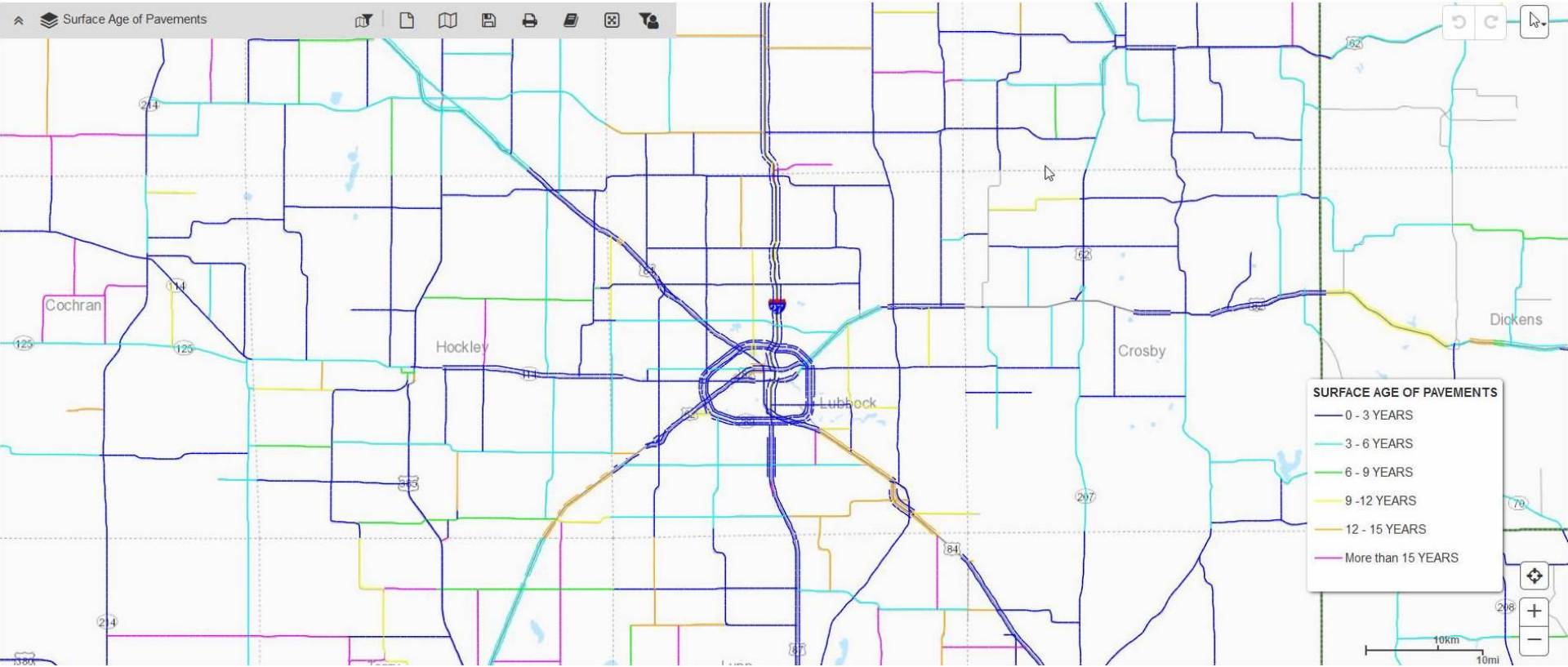
Third-Party Integration

- ERP
- Financial
- Purchasing
- Materials
- LRS/GIS

Kentucky's AgileAssets EAMS Deployment



Pavement Inventory



Pavement Structural History

Location Actions ▾

Route	IS00064EB
Direction	Increasing
Lane	1
Begin Mile	0
End Mile	100
Show Layers Since	All Years
Only Approved?	

<< < 1 > >> Row 1 of 1 total rows

Layers Actions ▾

Contract ID	Contract Name	Year Completed	Treatment	Layer	Material Code	Thickness (in.)	Work Type	Color
2603148	2603148	1995		1	SM-2A	2	R	
2603148	2603148	1995		2	IM-1B	2	R	
2603148	2603148	1995		3	H-3 (3)	5.5	R	
2603148	2603148	1995		4	Select Type I	6	R	
2603148	2603148	1995						

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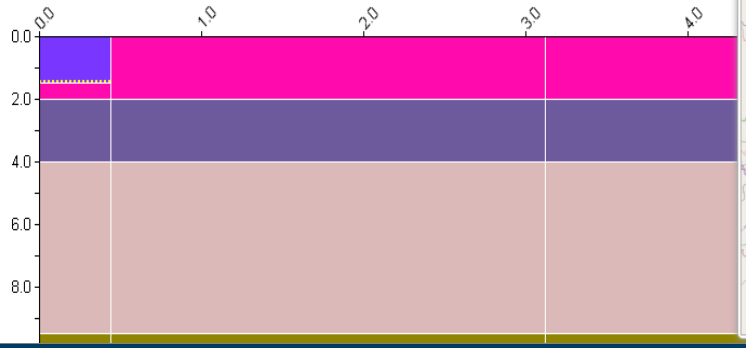
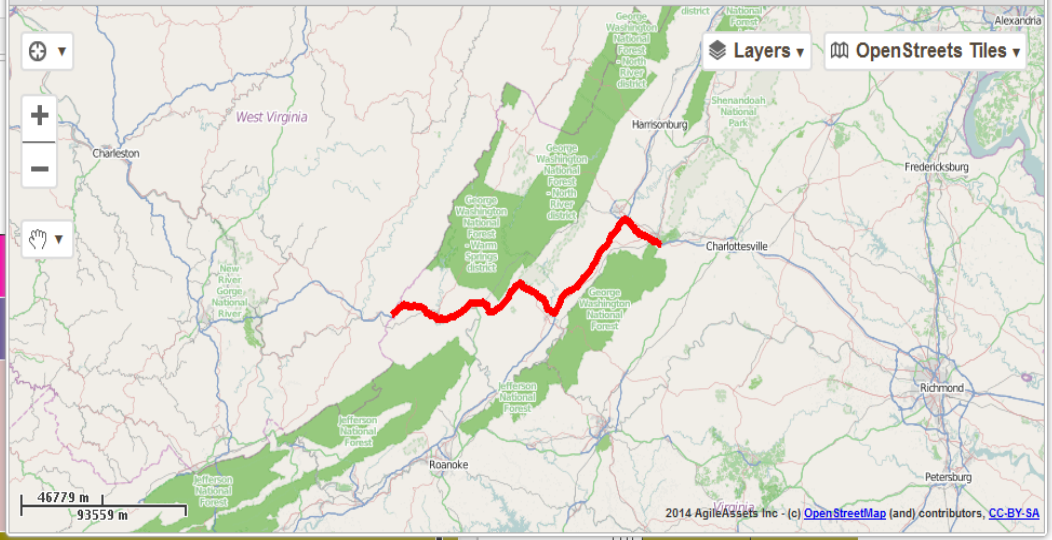
0.44 to 3.121

Route:IS00064EB Direction:Increasing Lane:1 Begin Mile:0

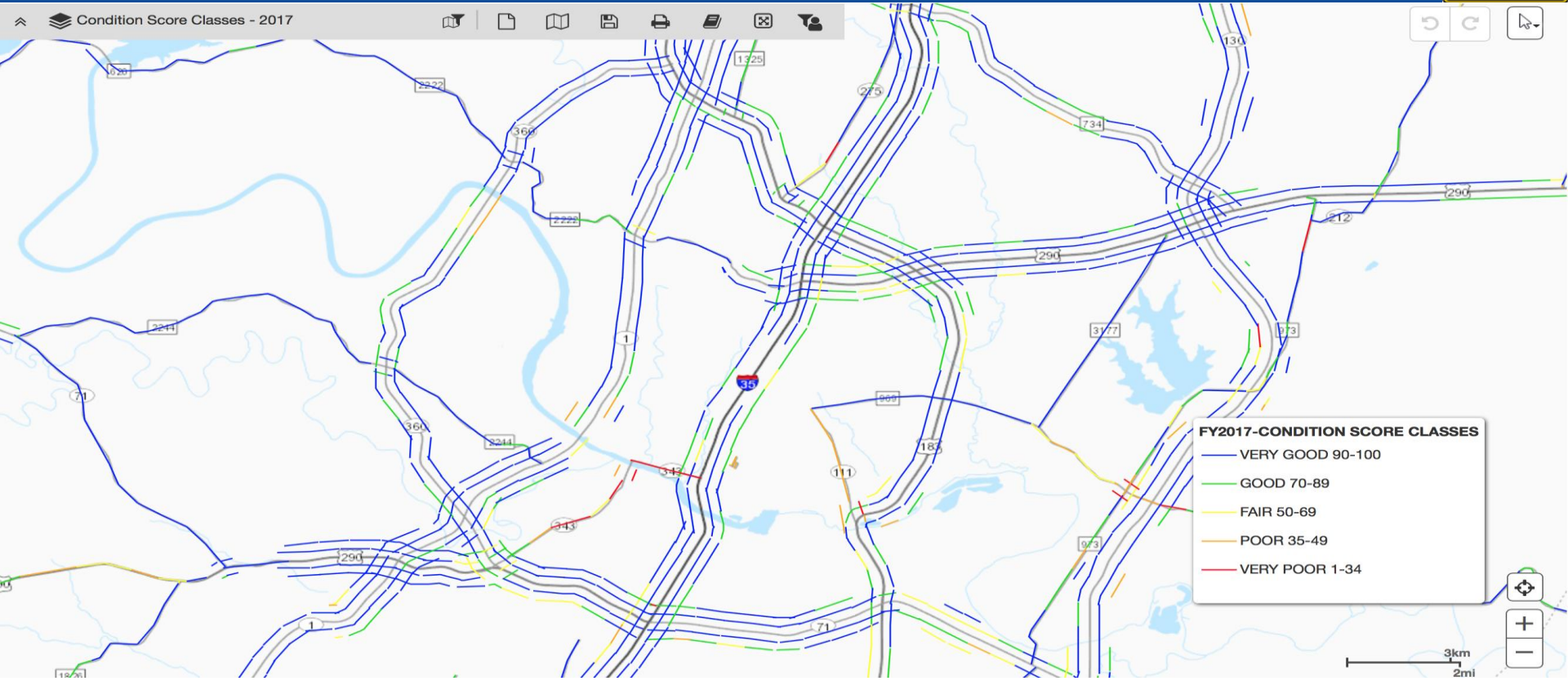


Floating Map

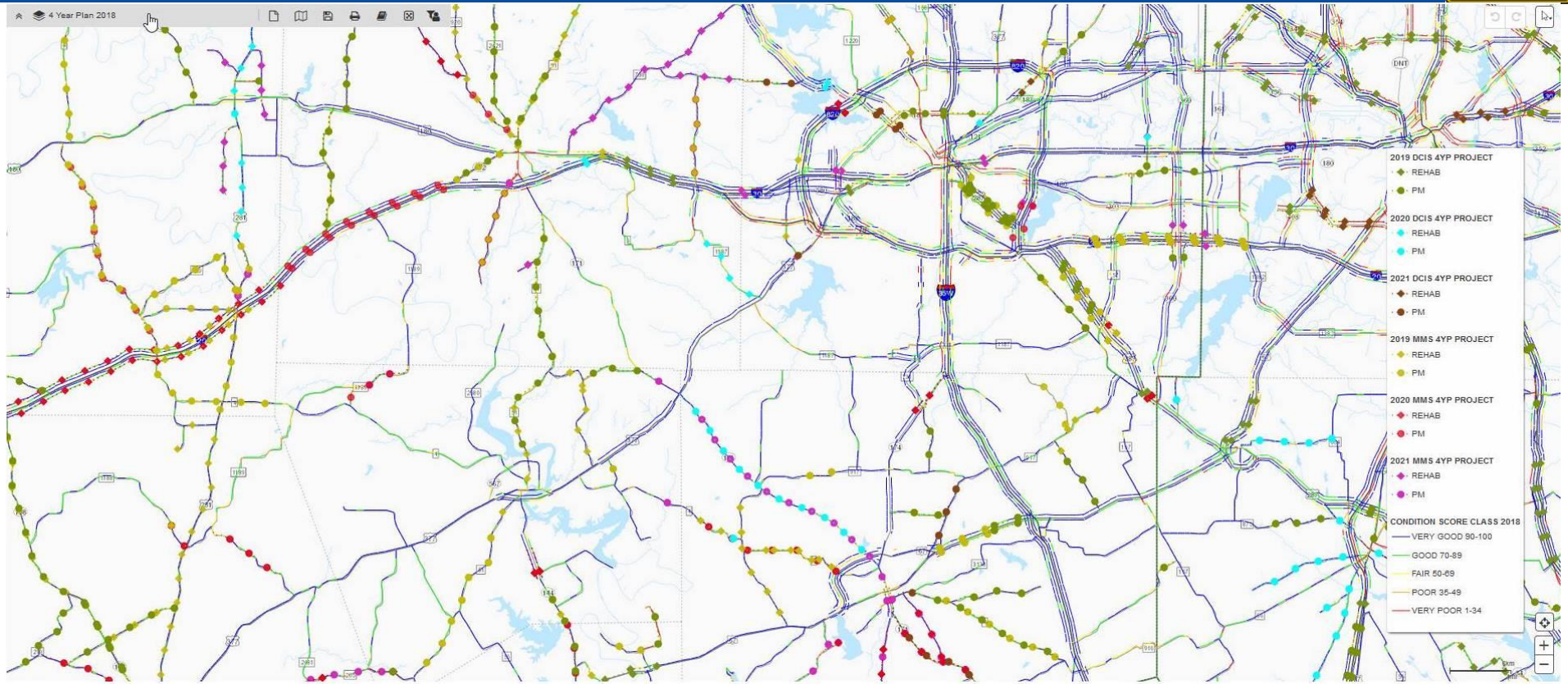
Map Actions ▾



Pavement Condition and Deterioration

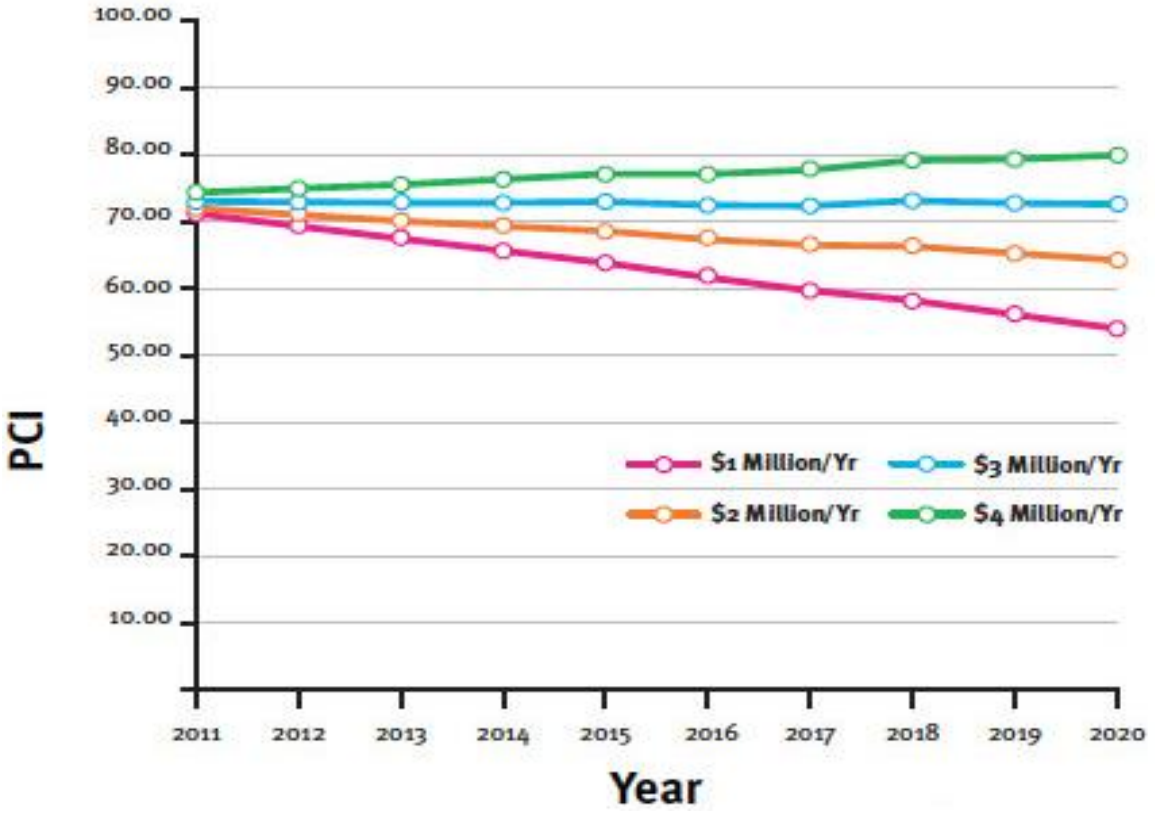


Multi-year Work Program



Overview of Pavement Analyst

objectively evaluate agency's pavement management program

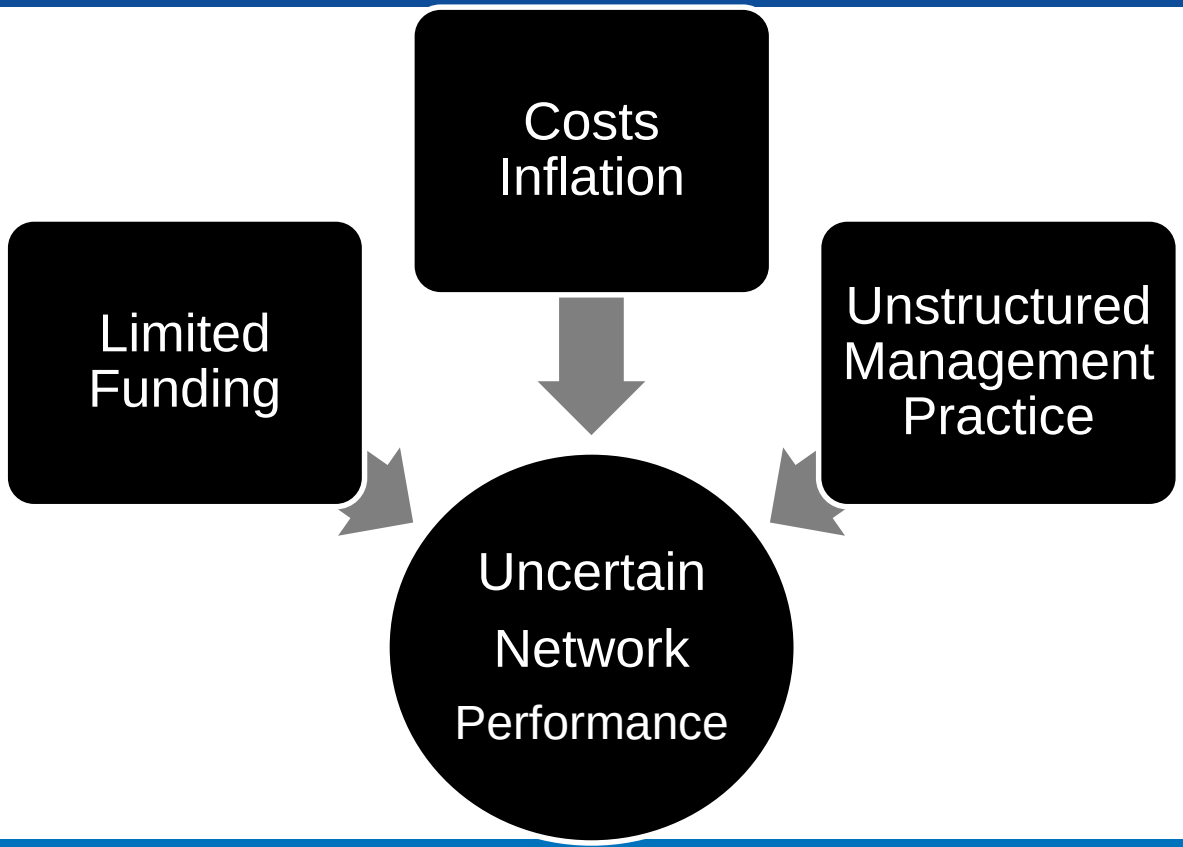


KYTC's Road Towards Better Pavement Management

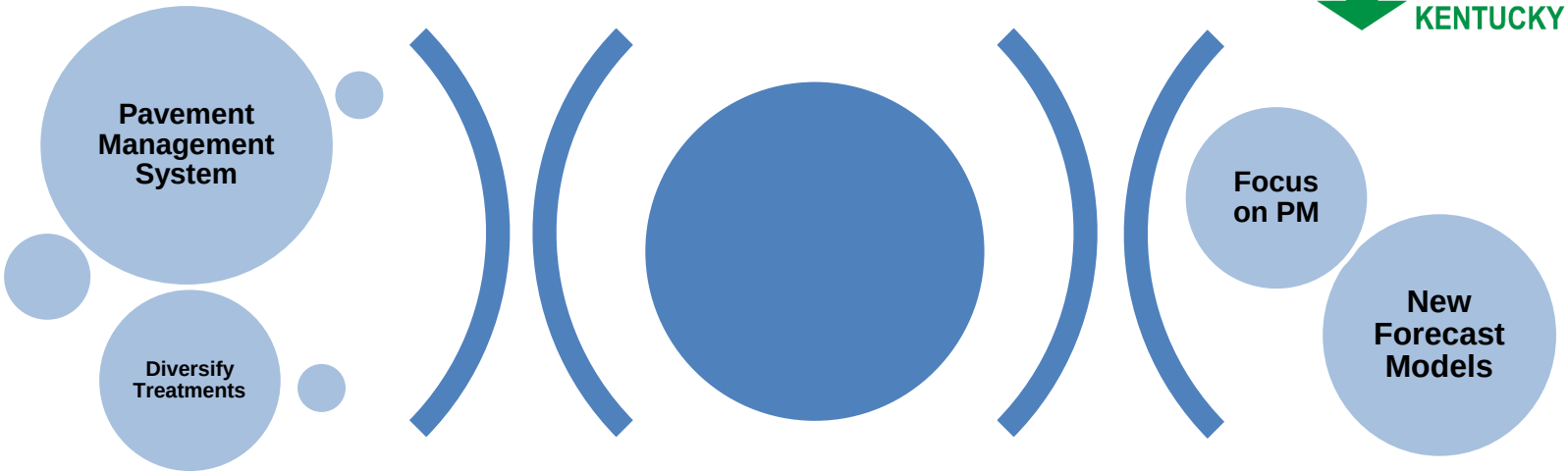
KENTUCKY TRANSPORTATION CABINET

AGILEASSETS

Business Driver



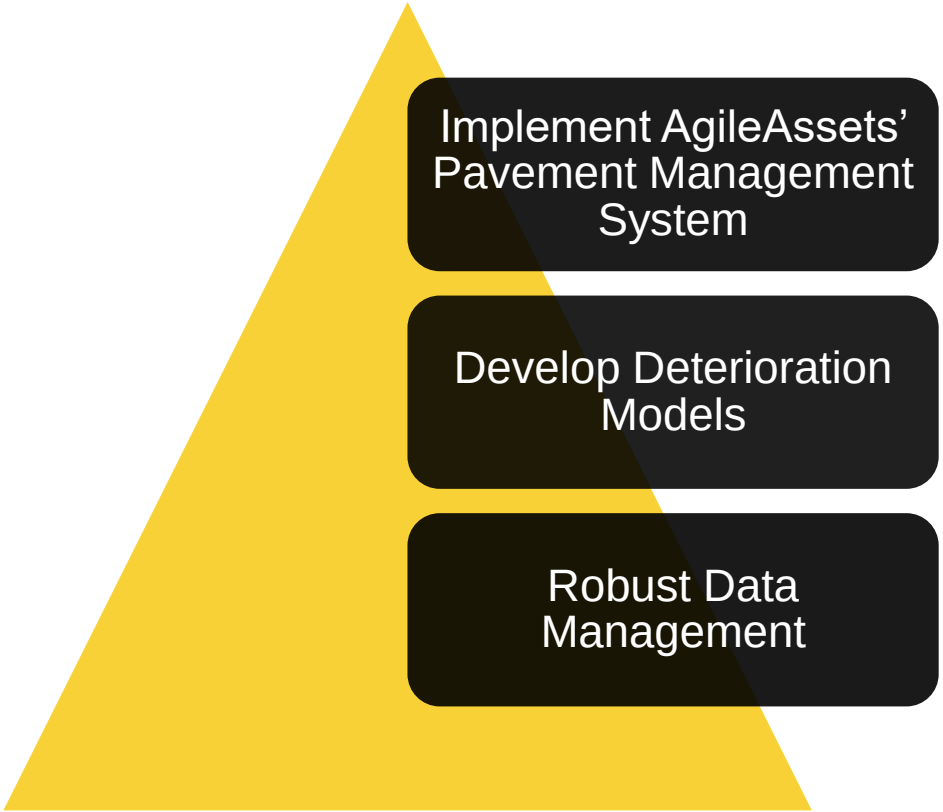
Strategic Goals



Pavement Management Goals

- Automated Data Collection and Management
- Forecasts of Pavement Condition
- Generate Multi-Year Workplans
- Optimized Treatment Selection and Application Interval
- Focus on Preservation
- Performance Reporting Towards Objectives

Pavement Management Solution



Robust Data Management

Robust Data Management

Transportation Data Enterprise

- Functional Classification
- NHS vs State Highway System
- Pavement Type & Other Attributes
  - Number of Lanes
  - Lane Width
  - AADT + Truck Traffic
- Route Log (Termini Description)
- HPMS Evaluation Section

Robust Data Management

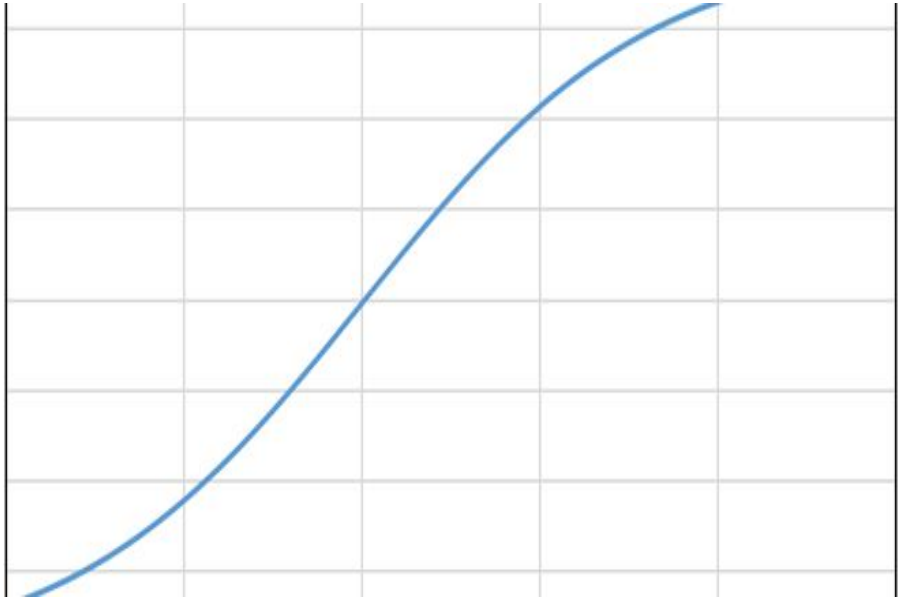
- IRI
- Rutting
- Faulting
- GPS
- Texture
- Curve
- Grade
- Cross Slope
- Lane Width
- AASHTO Distress Report
- HPMS Distress Report
- Crack Width Severity Report

Develop Deterioration Models

Develop Deterioration Models

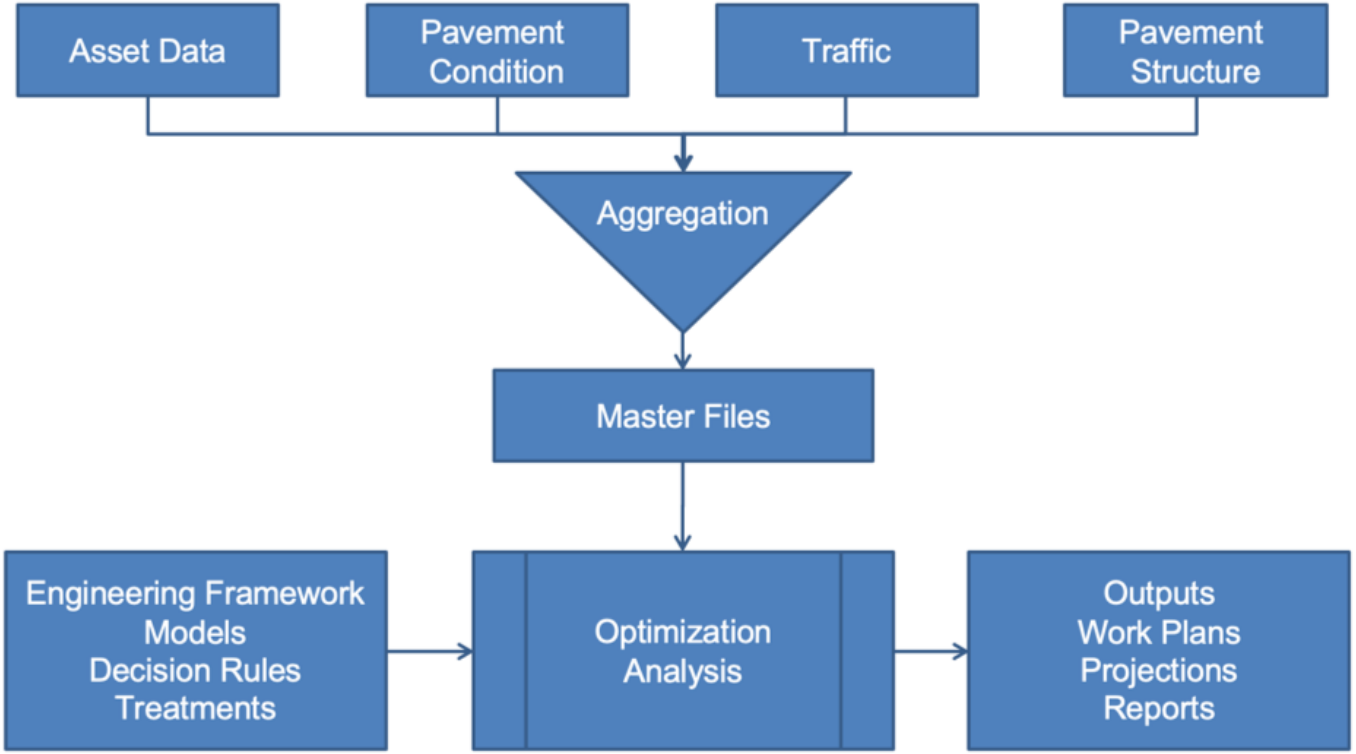
Partnership with University of Louisville

- Data Conversion
- New Deterioration Models



Implement AgileAssets Pavement Analyst

Implementation Details



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Implementation Details

Data Import Interface

Updated Treatment Types

New Decision Trees

Performance Analysis

Condition Improvements from Treatments

Treatment Types

Non-PM

- Replace
- Structural Overlay
- Thick Overlay (> 4.5”)
- Intermediate Overlay (> 1.5”)
- Thin Overlay
- Repair (PCC)

PM

- Thinlay ($^{5}/_{8}$”or $^{3}/_{4}$” HMA)
- Micro Surface (Single&Double)
- Chip Seal (Scrub Seal)
- Cape Seal
- Diamond Grind (PCC)
- Crack Seal

Treatment Selection

- Mix of Category and Treatment Specific
- PM and Thin Overlay Determined by PMS Data
- All Other Treatments Grouped as “Further Investigation”
- Rehab Projects Require Data not Currently in PMS to Determine Exact Treatment
- Exploring Traffic Speed Deflection Testing to Better Predict Rehab Type Projects

Trigger Values

- Trigger Values for all PM Treatments Based on Historic Data & Expert Review
- Trigger Values for Thin Overlay Based on Historic Data
- Trigger Values for all Other Treatments In-Progress

Decision Trees

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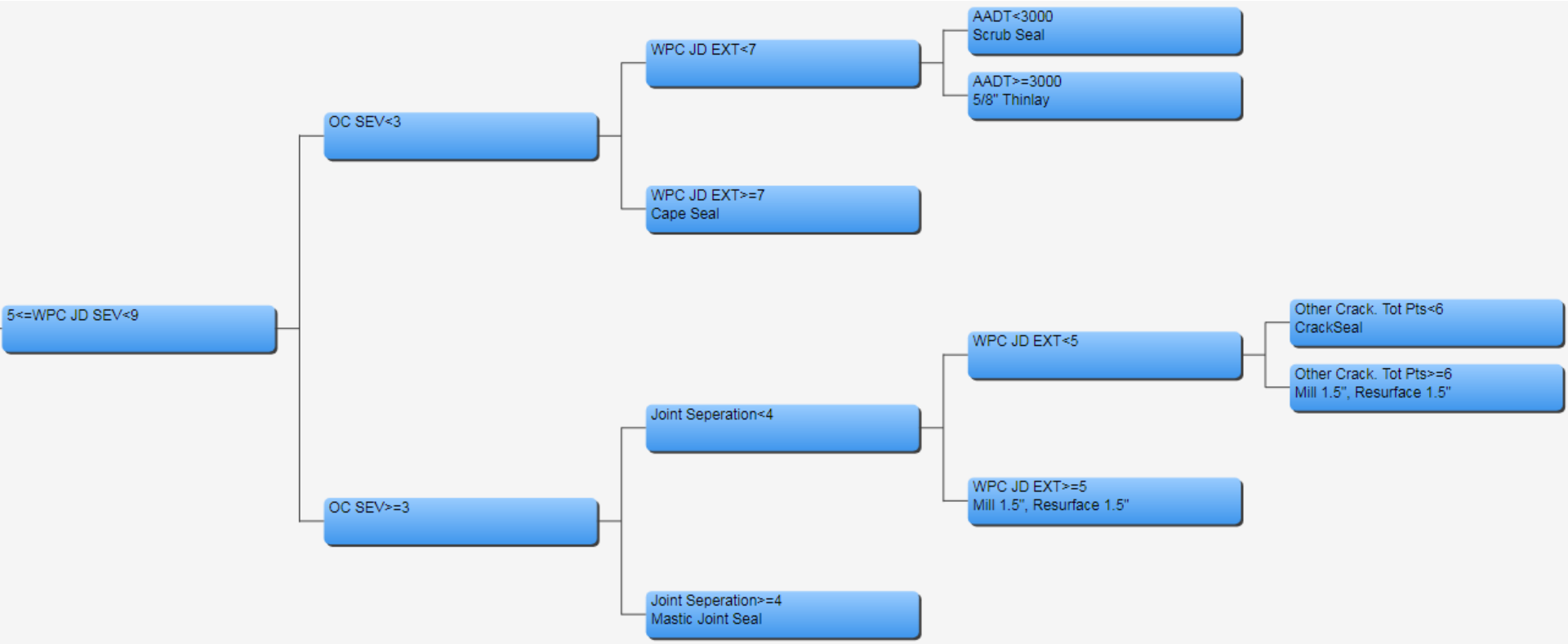
Decision Trees



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Condition Improvements

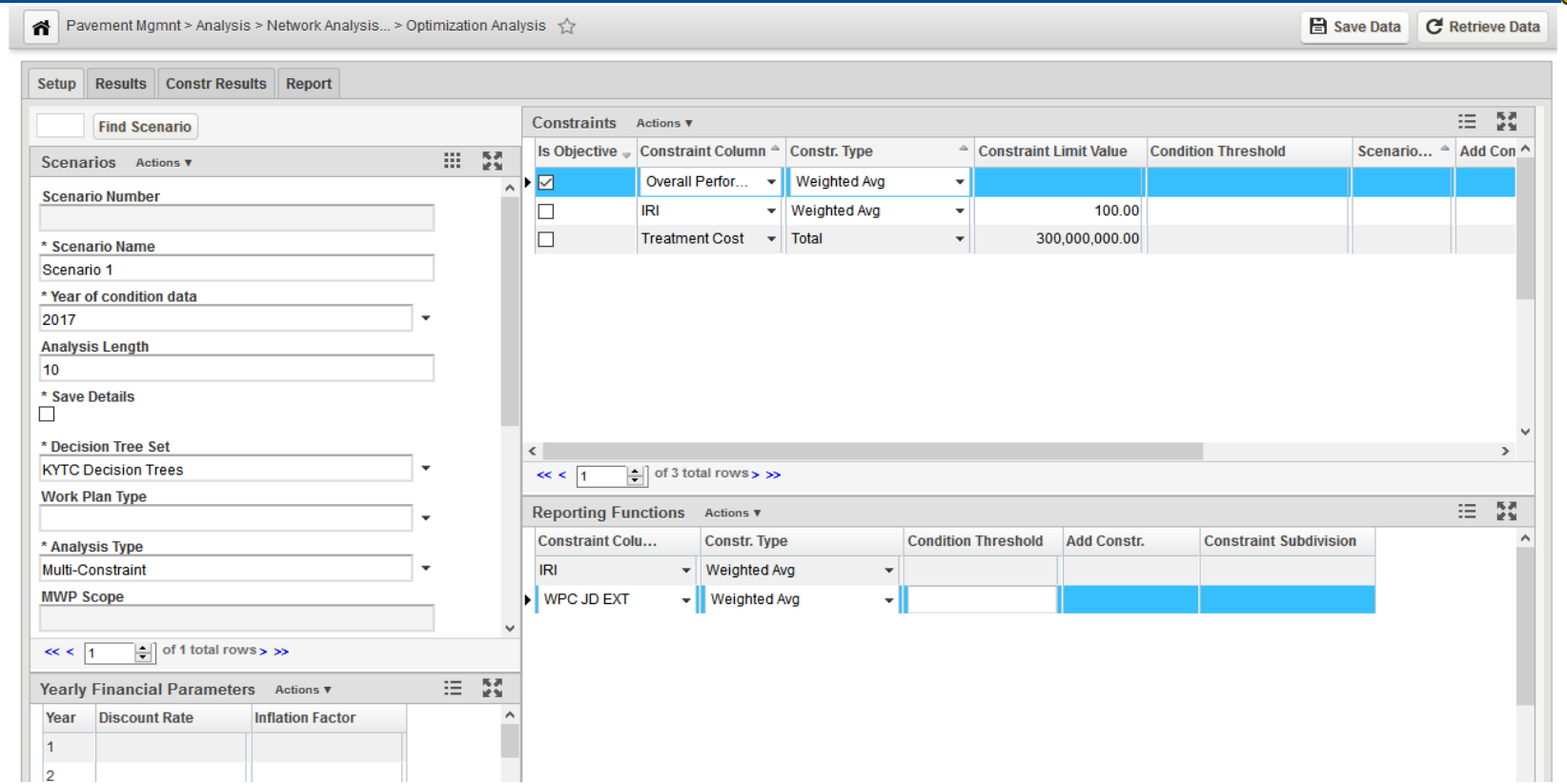
Chip Seal

* Changing Attributes	Condition Improvement Script Other
Appearance	KYTC Custom: Set to 1
Joint Seperation	KYTC Custom: Set to 0
OC EXT	KYTC Custom: Set to 0
OC SEV	KYTC Custom: Set to 0
OS P EXT	KYTC Custom: -1
OS P SEV	KYTC Custom: -1
R F EXT	KYTC Custom: Set to 0
R F SEV	KYTC Custom: Set to 0
WPC JD EXT	KYTC Custom: Set to 0
WPC JD SEV	KYTC Custom: Set to 0

Thin Overlay

* Changing Attributes	Condition Improvement Script Other
Appearance	KYTC Custom: Set to 0.5
IRI	KYTC Custom: IRI - 30, min 60
Joint Seperation	KYTC Custom: Set to 0
OC EXT	KYTC Custom: Set to 0
OC SEV	KYTC Custom: Set to 0
OS P EXT	KYTC Custom: -2
OS P SEV	KYTC Custom: -2
R F EXT	KYTC Custom: Set to 0
R F SEV	KYTC Custom: Set to 0
WPC JD EXT	KYTC Custom: Set to 0
WPC JD SEV	KYTC Custom: Set to 0

Performance Analysis



Results

Analysis Scenarios

Software Driven

Is Objective	Constraint Column	Constr. Type	Constraint Limit Value	Constraint Subdivision
☑	Overall Performance Index	Weighted Avg		
☐	Treatment Cost	Total	136,000,000.00	

Funding Restricted

Is Objective	Constraint Column	Constr. Type	Constraint Limit Value	Constraint Subdivision
☑	Overall Performance Index	Weighted Avg		
☐	Treatment Cost	Total	2,100,000.00	Crack Seal
☐	Treatment Cost	Total	107,900,000.00	All Other Treatments
☐	Treatment Cost	Total	26,000,000.00	Budget Group: MP Preventive Maintenance

Results

Funding Not Constrained	
Treatment	**Miles**
3/4" Thinlay	0.404
5/8" Thinlay	264.282
Cape Seal	118.571
Crack Seal	1129.442
Double Microsurface	4.892
Mill 1.5", Resurface 1.5"	498.994
Scrub Seal	246.664
	2263.248

Funding Constrained	
Treatment	**Miles**
5/8" Thinlay	221.428
Cape Seal	9.252
Crack Seal	398.779
Mill 1.5", Resurface 1.5"	663.362
Mill 3", Replace 3"	14.833
Scrub Seal	83.825
	1391.478

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Comparison

- How does this compare to our current program?
- What changes should be made?
- Where should research time be focused?

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Questions

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