

MAY 14-16, 2024  
ORLANDO, FL



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# Ask Different Questions of Your Data with Artificial Intelligence

## Speakers:

- **Ben Graf**, Senior Data Science Consultant, Matrix Design Group
- **Matt Stahl**, AI/Infrastructure Management Team Leader, Half Associates, Inc.
- **Lt Col Pat Grandsaert**, Deputy Chief, FSRM policy, USAF Dept of Civil Engineers

Moderator: Victoria Mechtly, TranSystems

May 15, 2024, 3:00 p.m.



# HOUSEKEEPING ITEMS

Take Note of Exits

Silence Your Mobile Devices

Presentations and Audio Recordings will be available in the Attendee Service Center until August 30, 2024

Download your PDH record in the Attendee Service Center before August 30, 2024





**Ben Graf**  
Senior Data Science  
Consultant  
*Matrix Design Group*



**Matt Stahl, PE, CFM,  
AWAM, PGP-ML**  
AI/Infrastructure  
Management Team Leader  
*Half Associates, Inc.*



**Lt Col Pat Grandsaert**  
Deputy Chief, FSRM policy  
*USAF Dept of Civil  
Engineers*

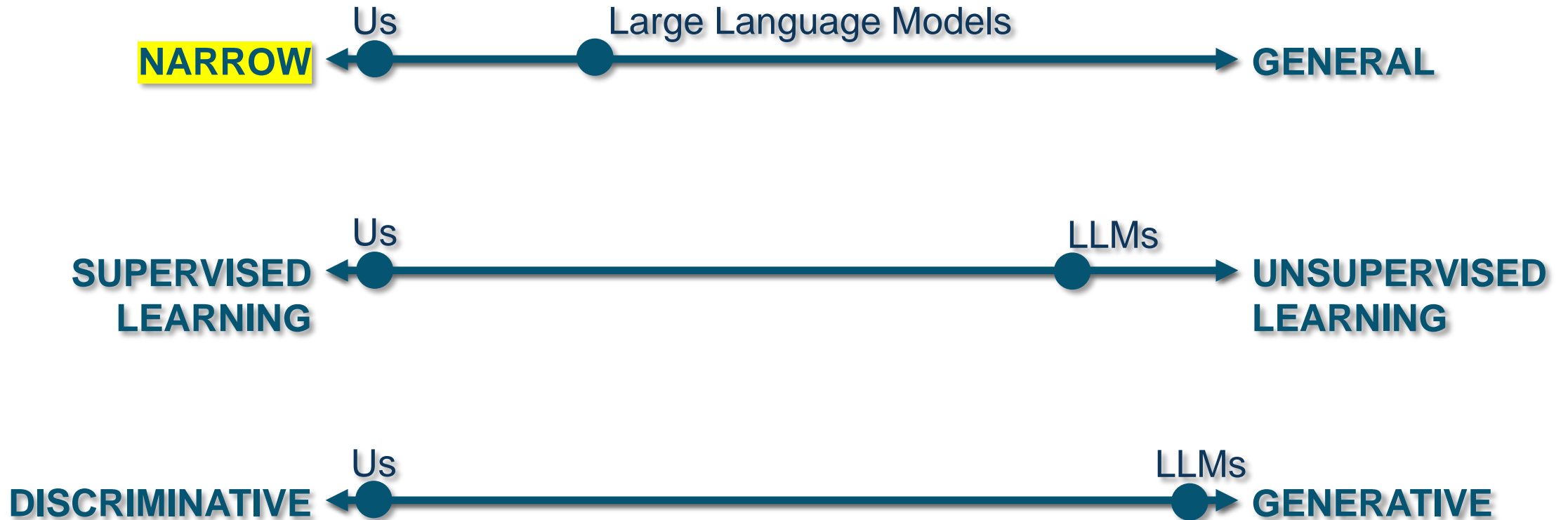
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# Application of AI



# Application of AI





# Application of AI



# What problem are you trying to solve?



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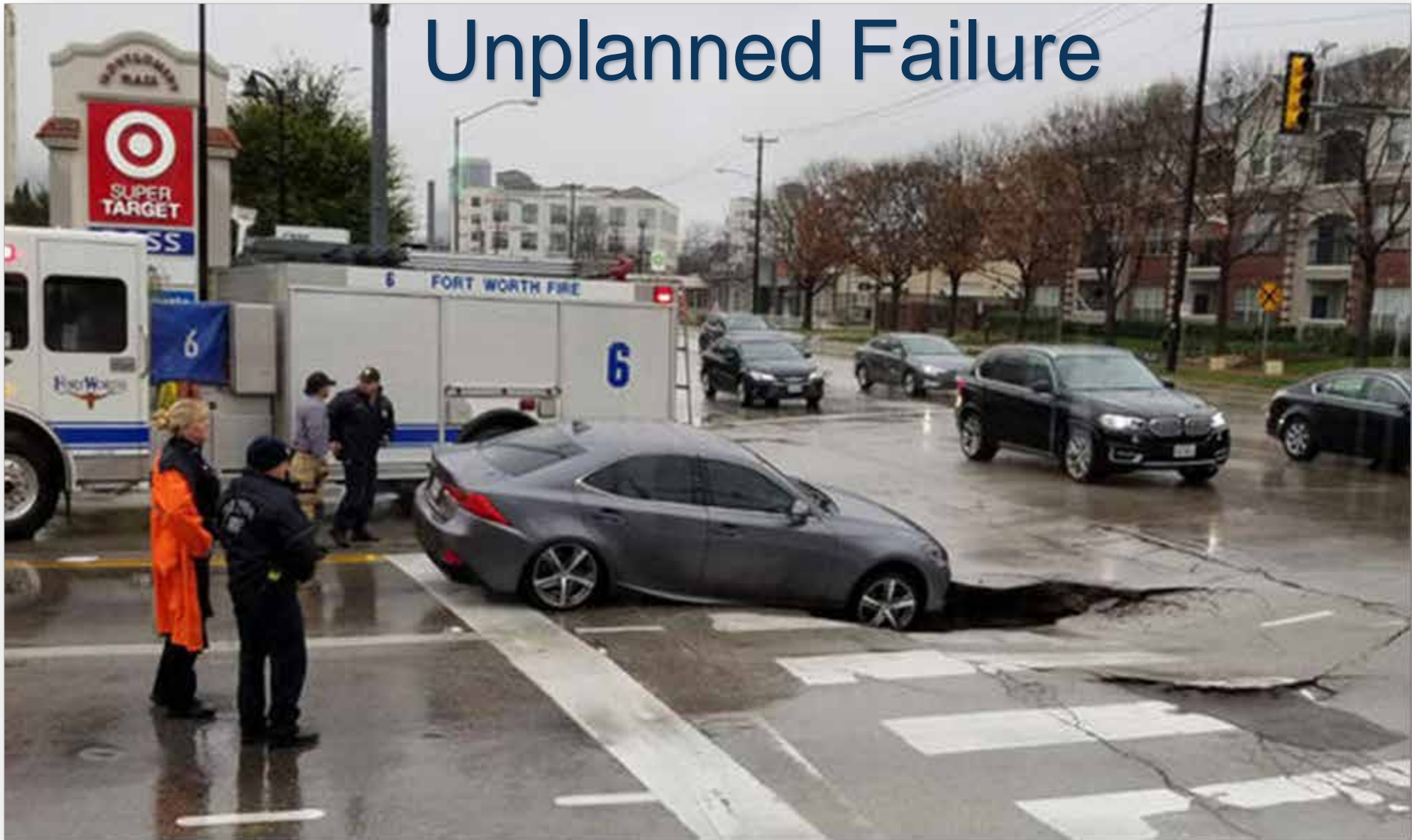


VS





# Unplanned Failure



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**What are the characteristics  
of the situation or issue that  
is a good fit for an AI  
solution?**



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# Characteristics for AI Solutions

- Clear/Specific Objectives



# Characteristics for AI Solutions

- Clear/Specific Objectives
- **Sufficient TIME** to develop





# Characteristics for AI Solutions

- Clear/Specific Objectives
- Sufficient TIME to develop
- Quality Data





# Characteristics for AI Solutions

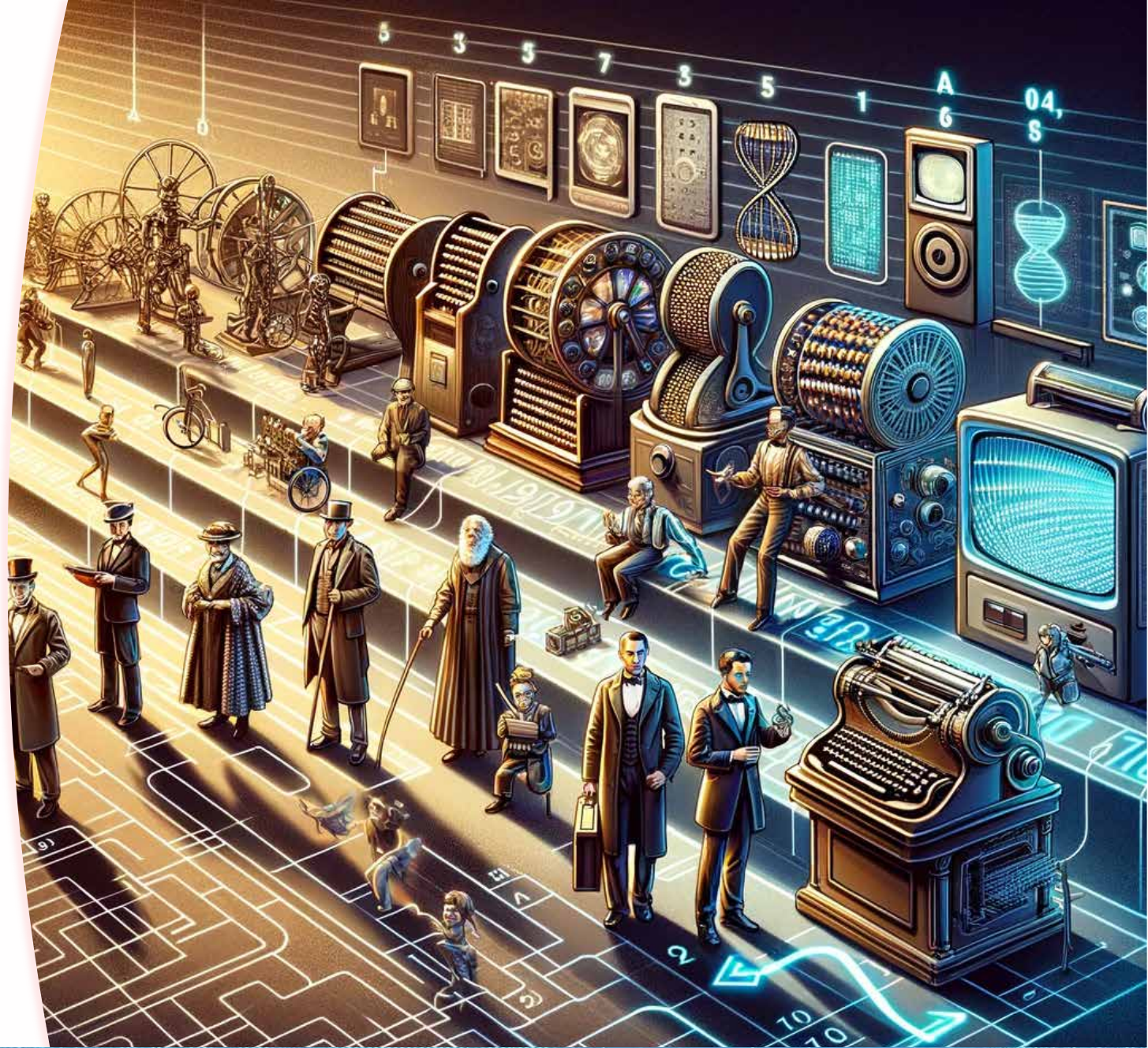
- Clear/Specific Objectives
- Sufficient TIME to develop
- Quality Data
- Frequency





# Characteristics for AI Solutions

- Clear/Specific Objectives
- Sufficient TIME to develop
- Quality Data
- Frequency
- **Benchmarks**





# Characteristics for AI Solutions

- Clear/Specific Objectives
- Sufficient TIME to develop
- Quality Data
- Frequency
- Benchmarks
- **Gaining Buy-In**





# What is needed to get started?



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# Labeling Data



TO PROVE YOU'RE A HUMAN,  
CLICK ON ALL THE PHOTOS  
THAT SHOW PLACES YOU  
WOULD RUN FOR SHELTER  
DURING A ROBOT UPRISING.





# Data Labeling

*Does this project involve work on Taxiway pavements?*

- Repair old joints to prevent sink holes and further damage to airfield. The old stormwater system is deteriorating which has led to cracks and a sink hole in the airfield area. One failure currently exists about 150ft from taxiway Bravo. Failure at Bravo would require aircraft to taxi back to Charlie.

# Data Labeling

*Does this project involve work on the Fire Protection system?*

- Completely renovate interior finishes, plumbing, HVAC, and electrical in dorm.





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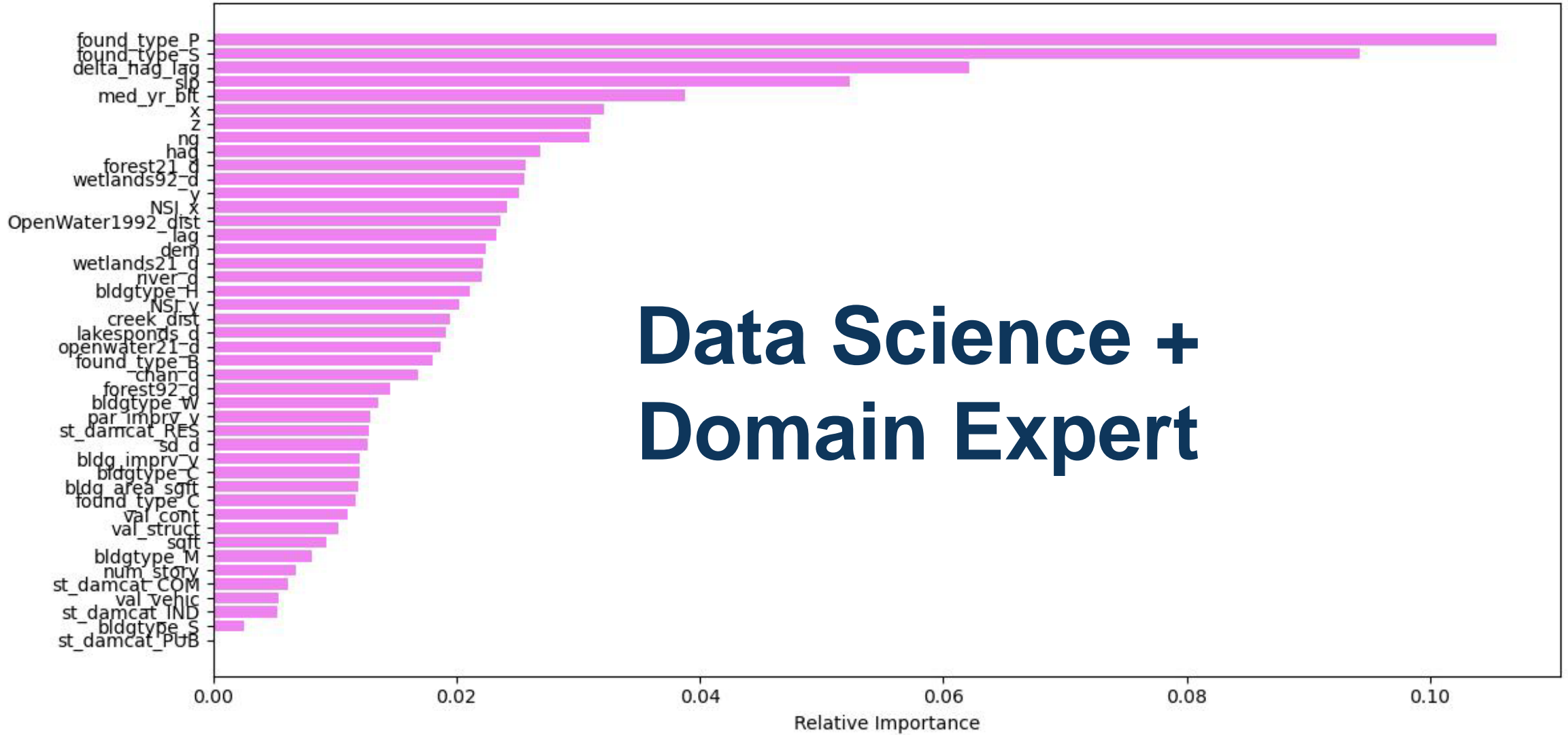


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## Feature Importance



# Data Science + Domain Expert



# Are there limitations with this data?



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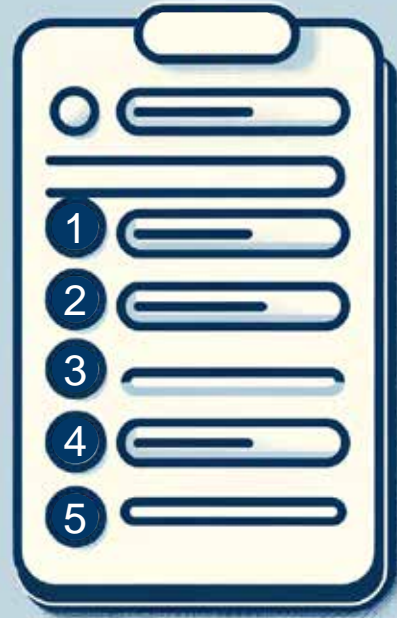
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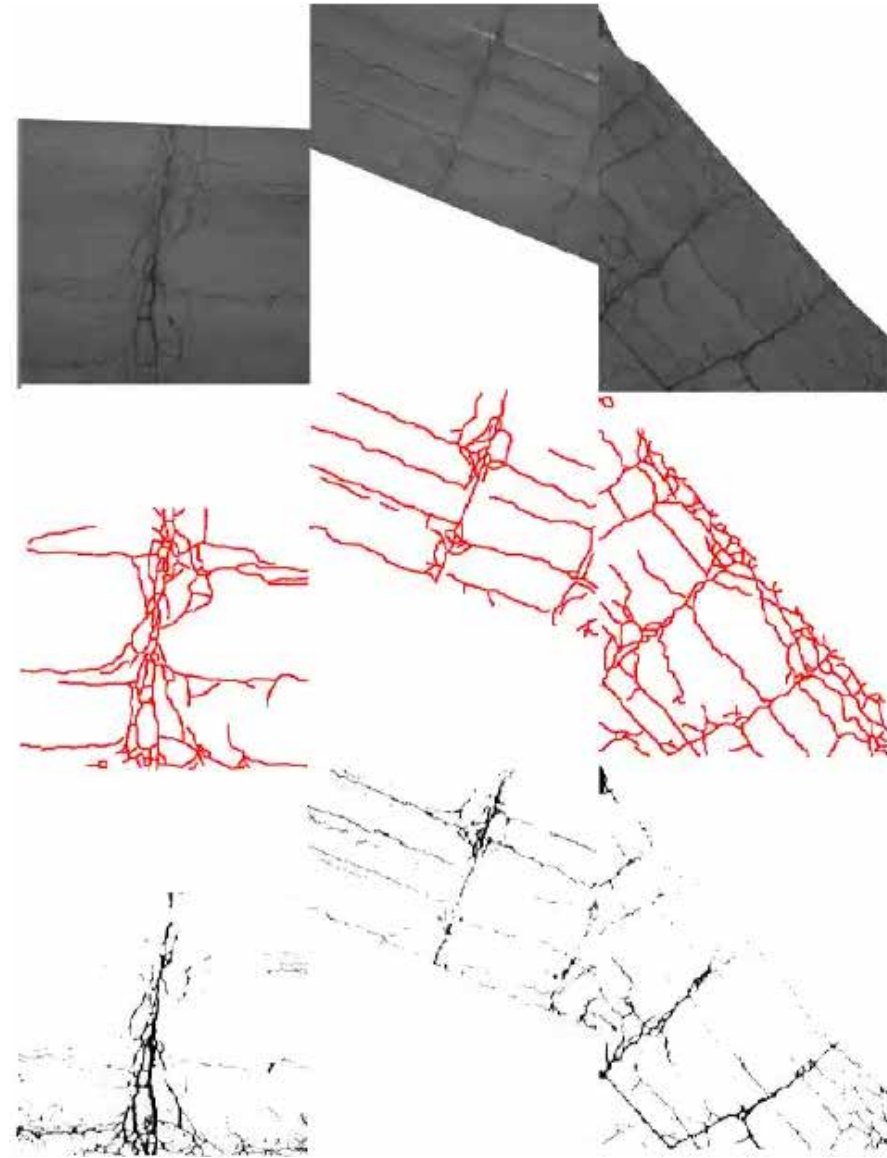


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# How do you gain buy-in from an organization or a client?



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# What expectations should I have?



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# Utility (Manhole-Pipe) Structural Failure







# When should I buy an AI solution versus building it myself?



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Myrtle Spurge Identified in 2022



Flight Area



Jefferson County Open Space

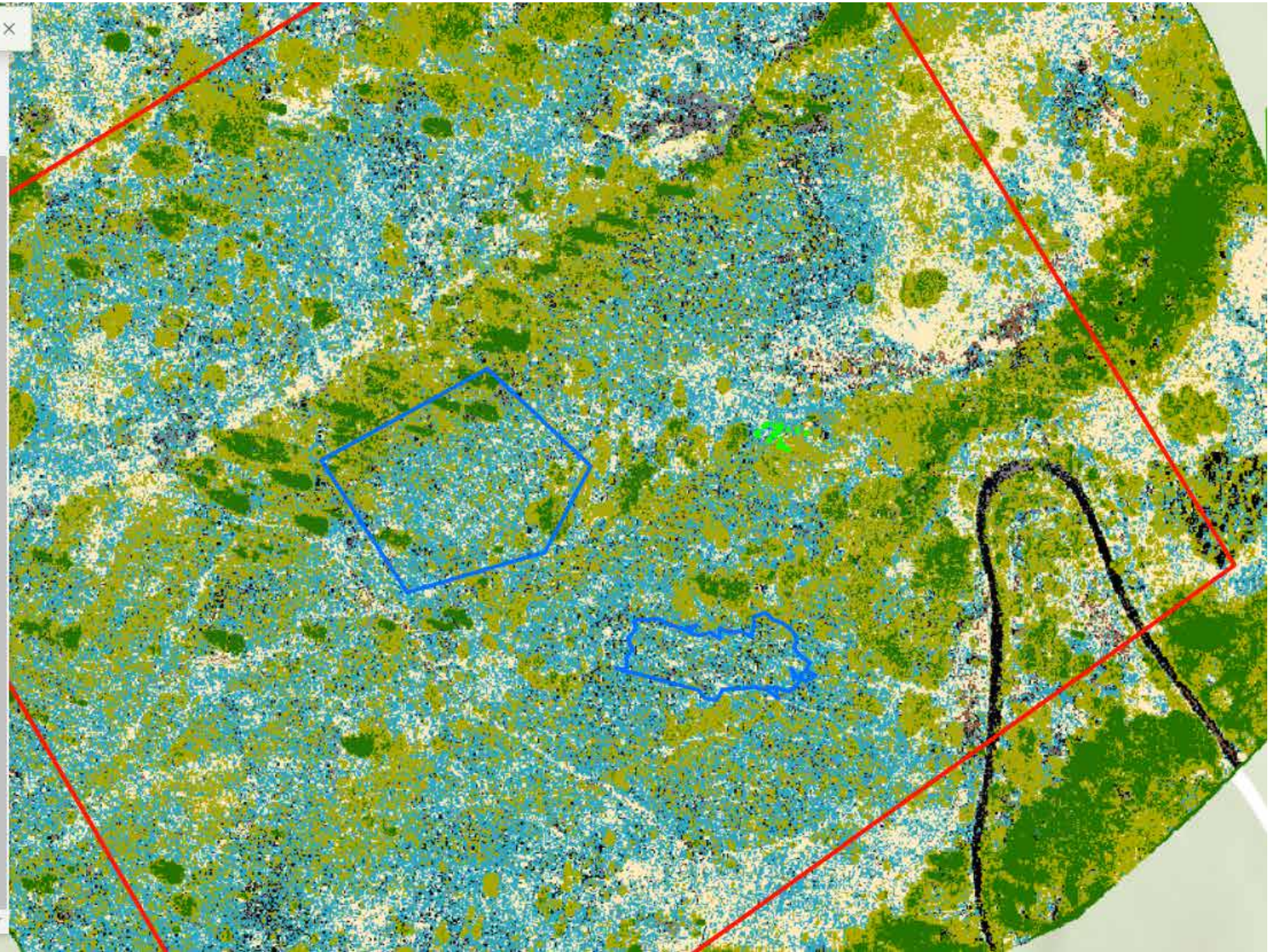


Apex Park Supervised Classification Raster Layer

Apex Park Supervised Classification

Class Name

-  Myrtle Spurge
-  Grass
-  Tree
-  Shrub/Bush
-  Soil
-  Rock
-  Road





## Ask Different Questions of Your Data with Artificial Intelligence

Q&A

- Ben Graf,  
[ben.graf@matrixdesigngroup.com](mailto:ben.graf@matrixdesigngroup.com)
- Matt Stahl,  
[mstahl@halff.com](mailto:mstahl@halff.com)
- Lt Col Pat Grandsaert,  
[patrick.grandsaert.1@us.af.mil](mailto:patrick.grandsaert.1@us.af.mil)

Ask Different Questions of Your Data with  
Artificial Intelligence

# THANK YOU

Please take a few minutes to complete a short survey about this session. Your feedback will help us improve future programming for JETC.

 **conferences i/o**



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