

The background of the slide features a series of high-voltage power line towers, also known as pylons, stretching across the horizon. The towers are silhouetted against a sky that transitions from a deep blue at the top to a warm orange and yellow near the horizon, suggesting a sunset or sunrise. The overall tone is dark and atmospheric.

The Vegetation Management System

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GIS Analyst/Developer

Collecting the Data



History of Digital Inventory

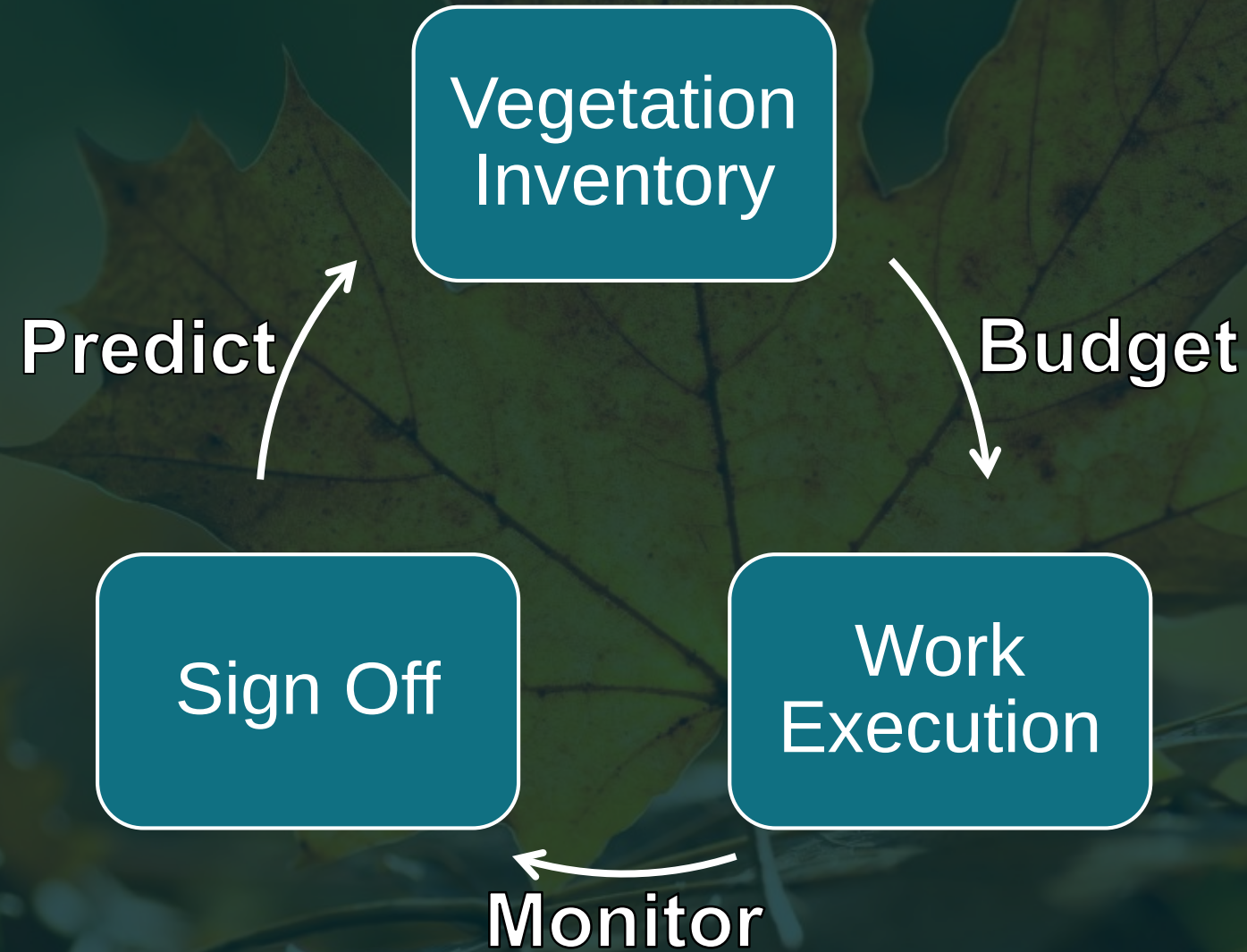
- *In 2008 the Vegetation Inventory Program (VIP) was deployed on the ArcPad platform.*
- *Attribute information over 12 years:*
 - *36,000 danger and threat trees*
 - *3,192 acres of mow*
 - *19,597 acres of foliar spray*



Tools of the Trade

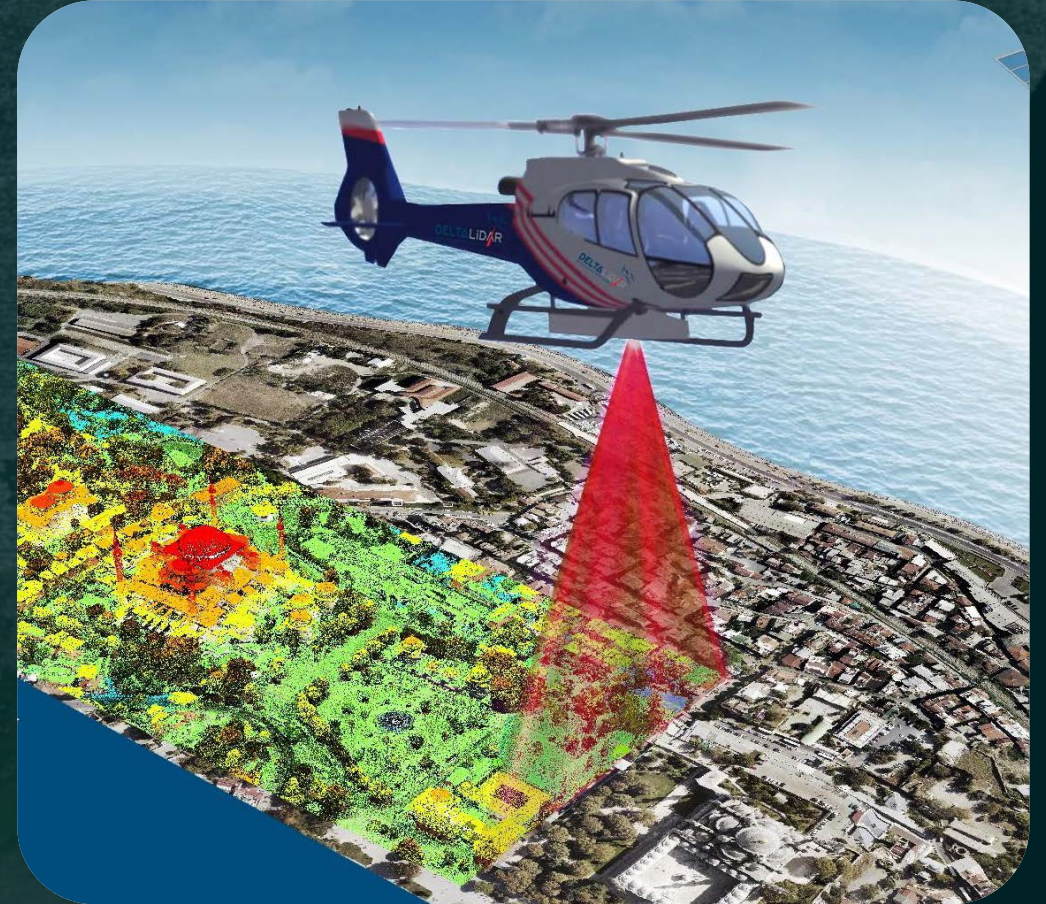
- *Data is collected on ruggedized laptops with the ArcPad software installed.*
- *Recently iPads have been deployed to determine field effectiveness.*
- *Soon to be deploying a new work management system*
 - *Expand usable devices and data access*
 - *Automate work tracking and reporting*

The Work Management Cycle



LiDAR at VELCO

- **LiDAR** Light Detection And Ranging
- Helicopter Based
 - Low and slow
 - Higher detail
- Leaf Off Conditions
- Support:
 - Vegetation management
 - Engineering models
 - ROW encroachments



Vegetation Applications



Current Deliverables:

- *Vegetation Canopy Mapping*
- *Right of Way Features*
- *Classified Point Cloud*

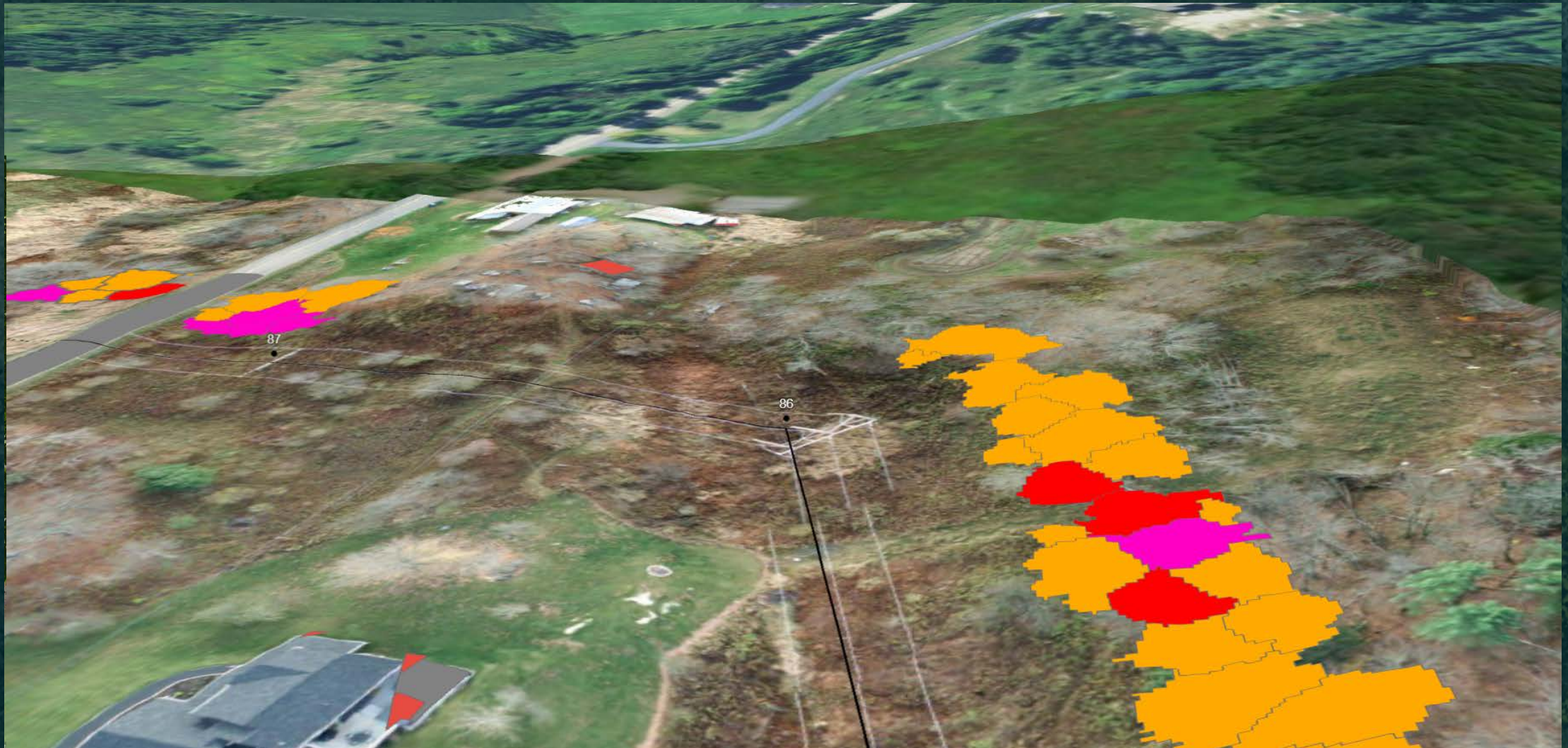


Drawbacks:

- *Data is limited to specific devices and applications.*
- *Two Dimensional features can be challenging to identify.*



The End Product

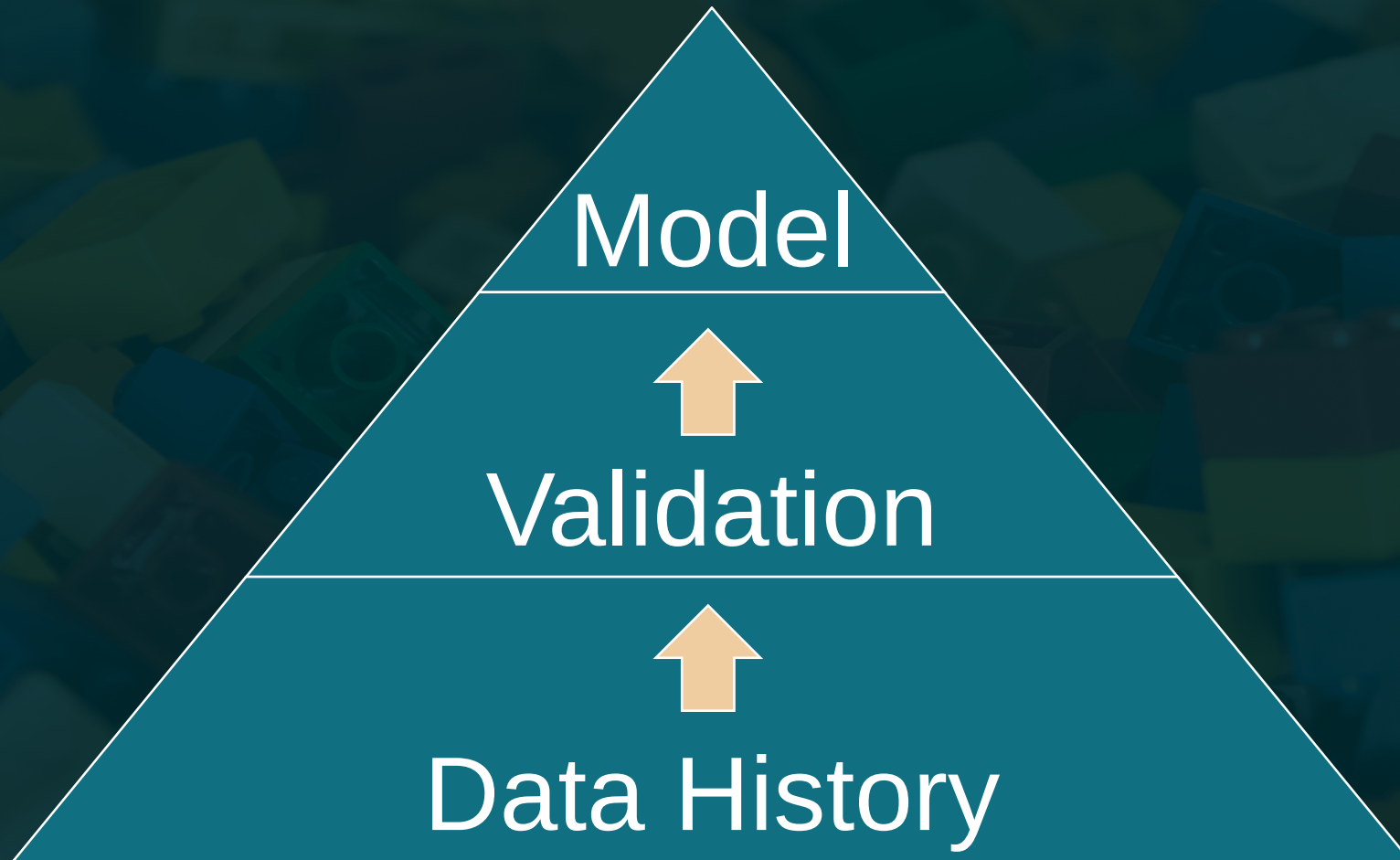


Live Demo!



Portal for ArcGIS

Predictive Building Blocks



The Archive

Geographic Information System

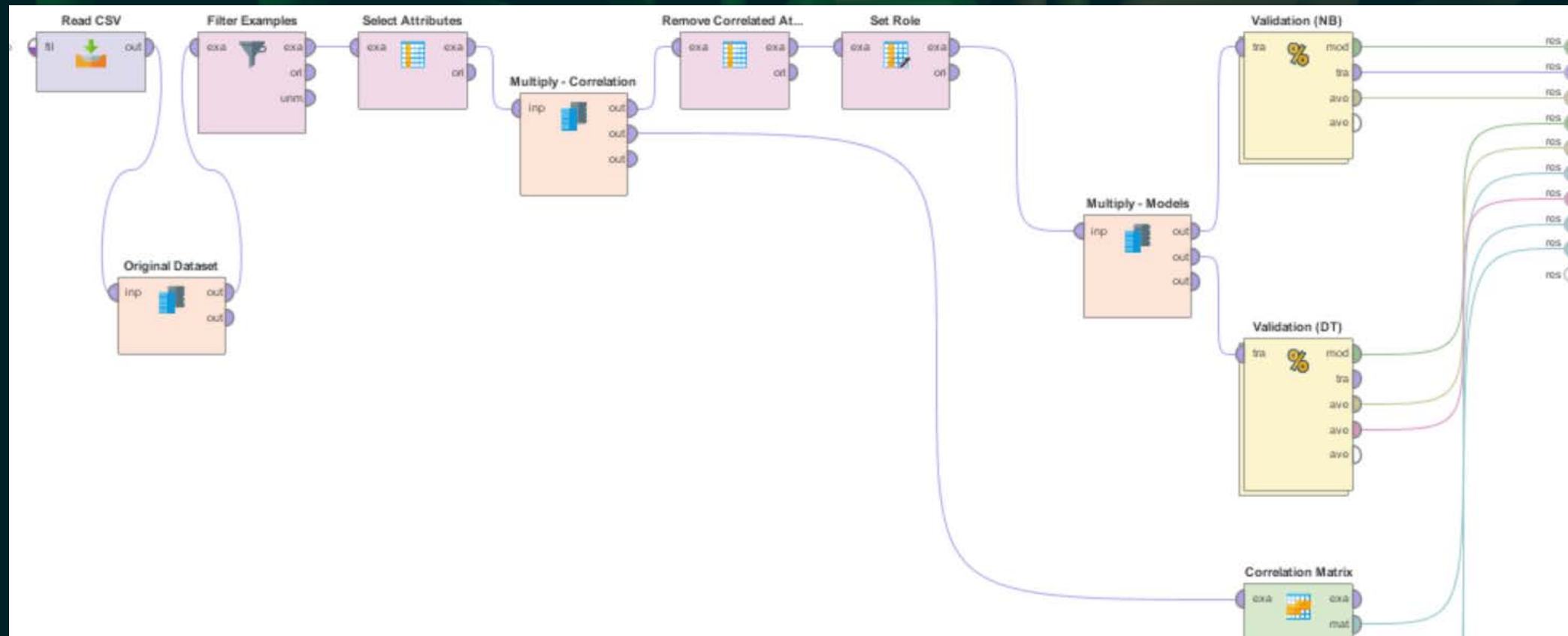
VELCO				USGS		VCGI			
Tree Inventory		LiDAR		Multispectral Imagery		Environmental Profile			
Cut / No Cut	Species	Average Height	ETC.	NDVI	Avg. NDVI	Flooding	Density	Soil Drainage	ETC.

Final Table

24 Attributes

80,175 Records

The Model



Uncertainties

- Cut tree location can be inaccurate
- Trees can be cut preemptively without showing risk factors
- LiDAR does not represent every tree
- LiDAR can treat low vegetation as a tree
- Multispectral imagery provided has low resolution
- NDVI is impacted by seasonality
- NDVI is impacted by tree species
- Environmental factors are not focused on specific tree location

Next Steps

- ✓ Quantify Storm Related Data
- ✓ LiDAR Derived Tree Morphology
- ✓ Sonic Tomography and Wood Decay
- ✓ Partnership Opportunities



Data as a Strategy



Directed Data Collection

Making a conscious decision to collect operational information.



Information Accessibility

Maintaining a large store of data that is well understood and accessible.



Beyond Compliance

Using information for analytics and make verifiable predictions.



Dynamic Toolset

Maximizing value by analyzing data on multiple platforms.



Thank You!

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