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REAL-TIME REMOTE SENSING INTELLIGENCE

VM2.0 - THE FUTURE OF VEGETATION MANAGEMENT

PRESENTERS TODAY

ERIC WOODYARD

INNOVENTUM CONSULTING, LLC

- 18 years of UVM experience
- Remote sensing expert and solutions architect
- Certified Arborist and Utility Specialist; holds a B.A. in Biology and an MBA.

JOE PUROHIT

ECOLAYERS, INC.

- 25 years experience developing new technologies for utility and telecom
- Pioneering new class of software for managing environmental assets
- ME in Power Engineering with an MBA

TERO HEINONEN

AI4 TECHNOLOGIES, INC.

- Over 30 years of remote sensing experience
- Electric utilities and telecoms
- Inventor of over 25 patents in the remote sensing and data sciences

SAMUEL SALMENLINNA

AI4 TECHNOLOGIES, INC.

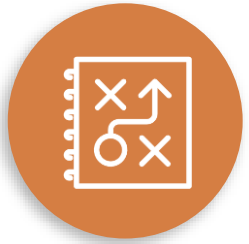
- Over 25 years of experience in GIS, CCC, remote sensing and other software business.
- Served in multiple start-ups and SMEs as CEO, COO or board member

AGENDA

Framework for remote sensing

Vision for VM 2.0

Role of data and automation



Key issues and challenges

Successful implementation

REMOTE SENSING

Definition

- Acquiring data and/or information about an object from afar

Remote Sensing Methods

- Satellite
- Aerial sensors
- Vehicle
- Power line sensors
- Smartphones

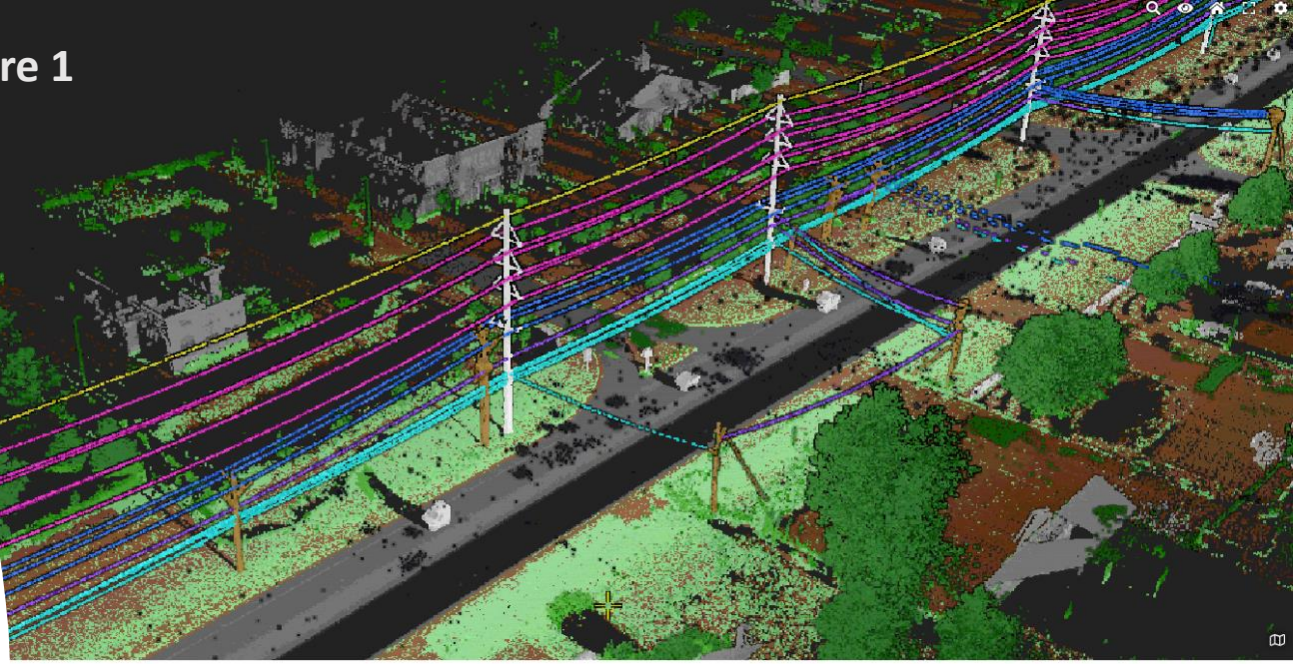


Figure 1

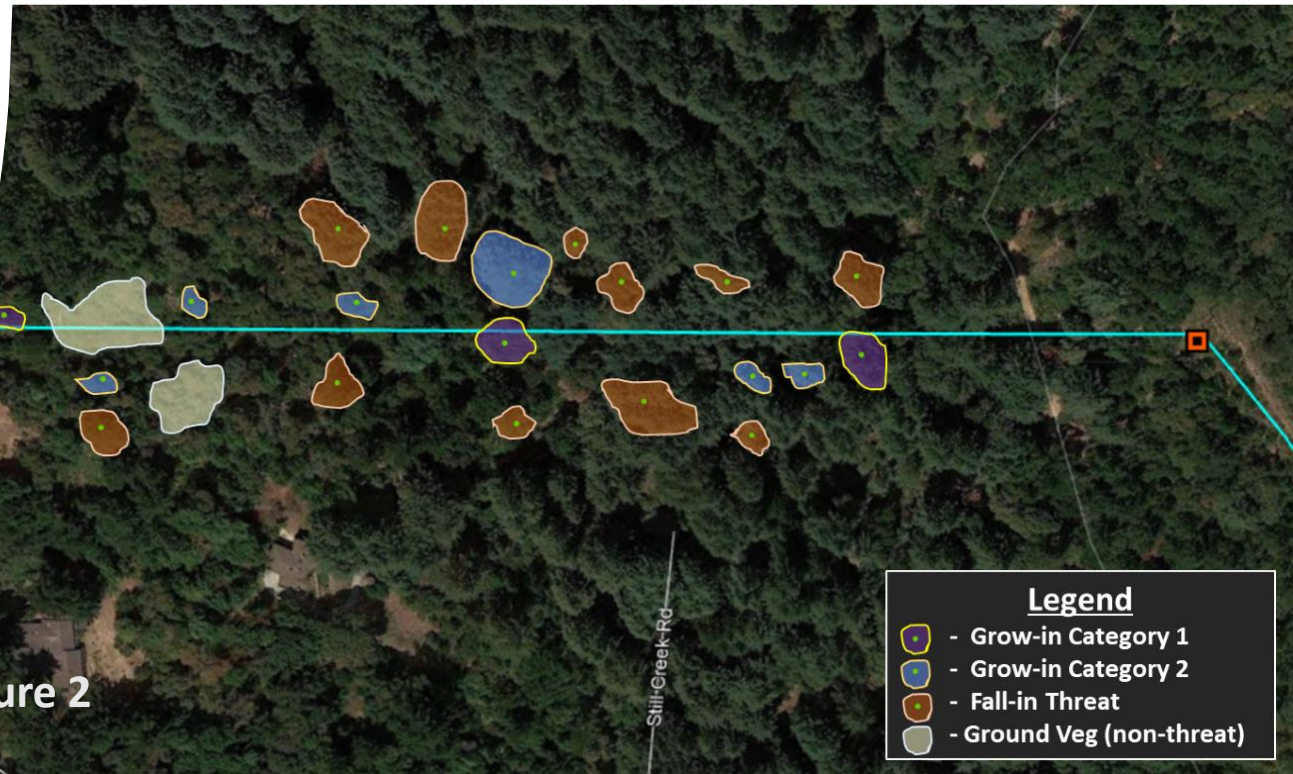
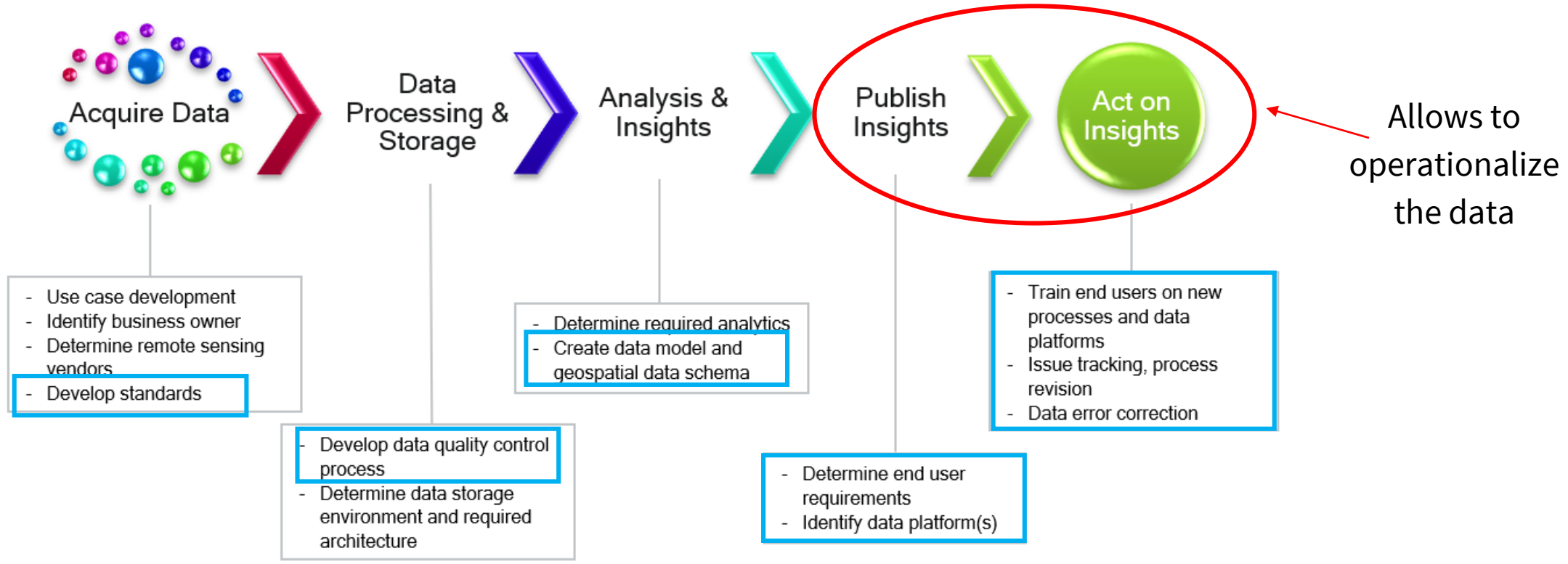


Figure 2

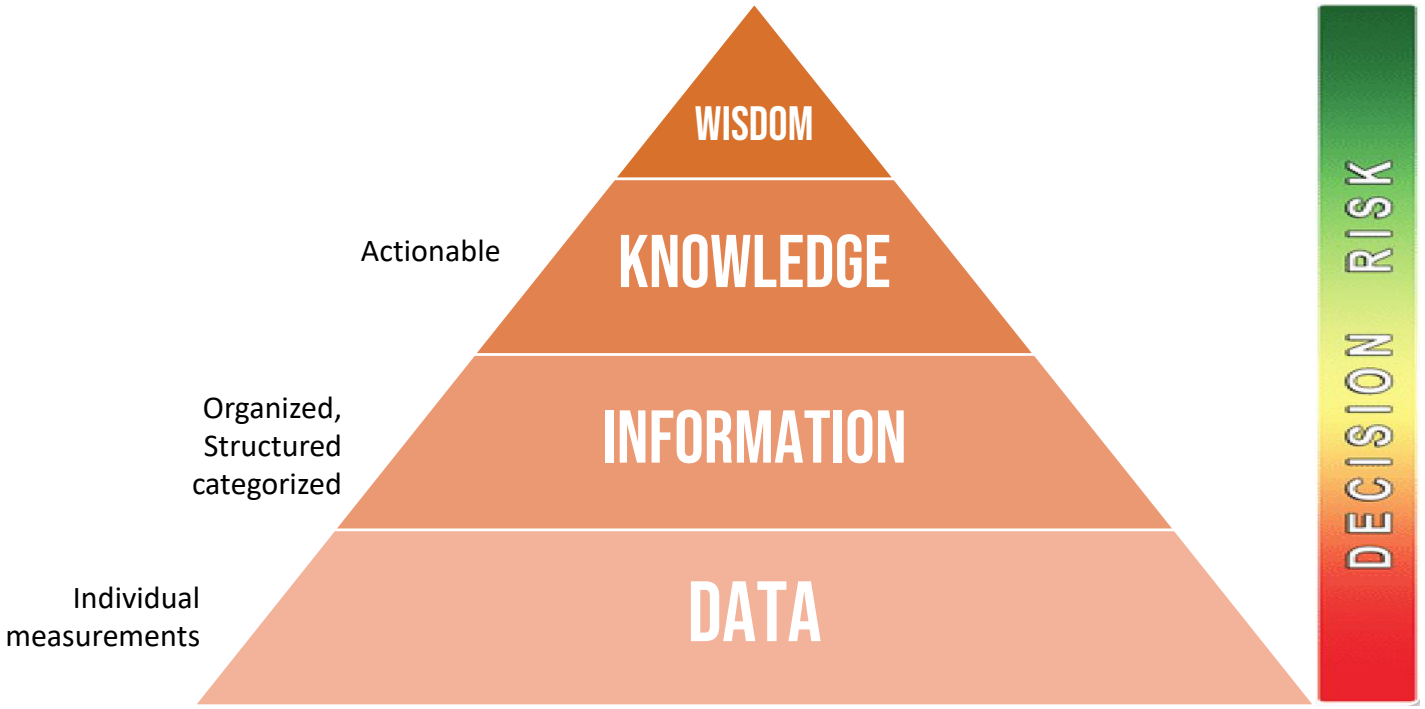
FRAMEWORK FOR ACTIONABLE REMOTE SENSING



VISION: VM 2.0

- Data and analytics will become more foundational to all UVM programs
- “Don’t work harder, work smarter.”
    - UVM arborists will become more specialized (“*techno-arborist*”)
- UVM programs will become consumers of enterprise data rather than siloed technology adopters
- The use of data and analysis will become programmatic
- More economical acquisition and access to data

ROLE OF DATA AND AUTOMATION



DIKW pyramid. Source: researchgate.net

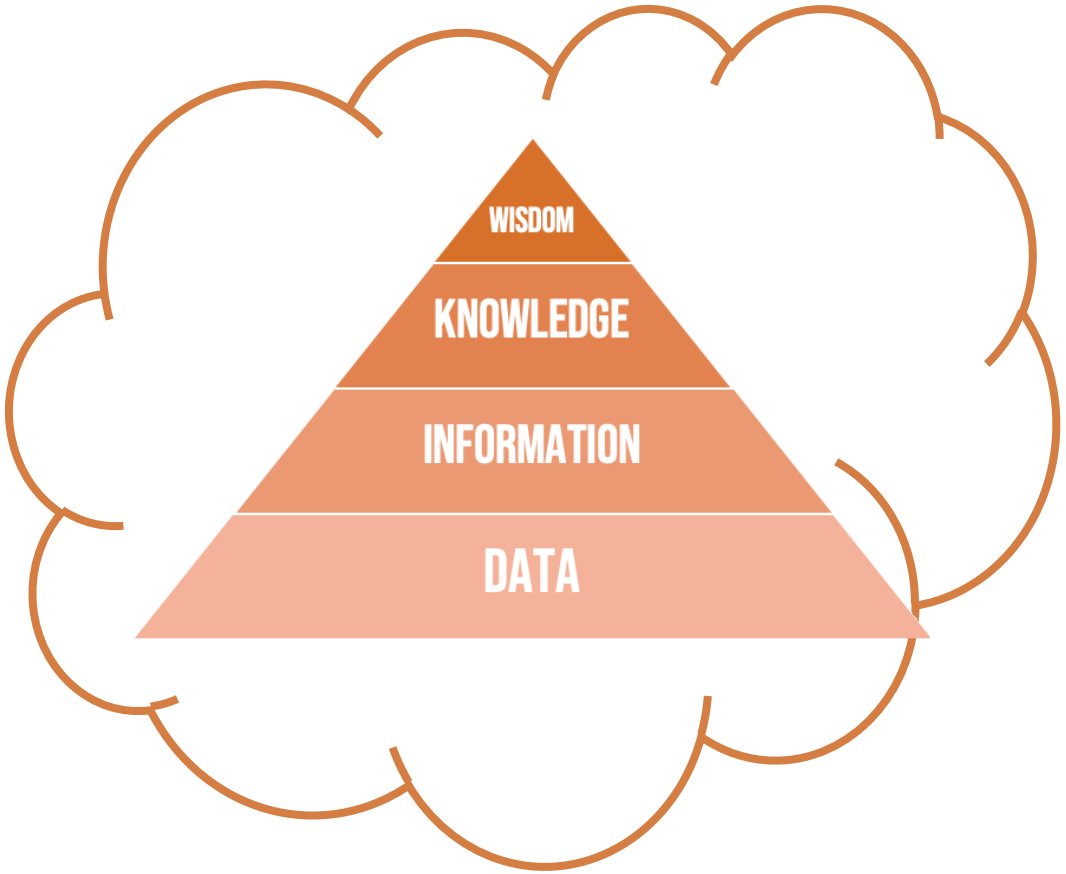
DATA ANALYSIS CHALLENGES

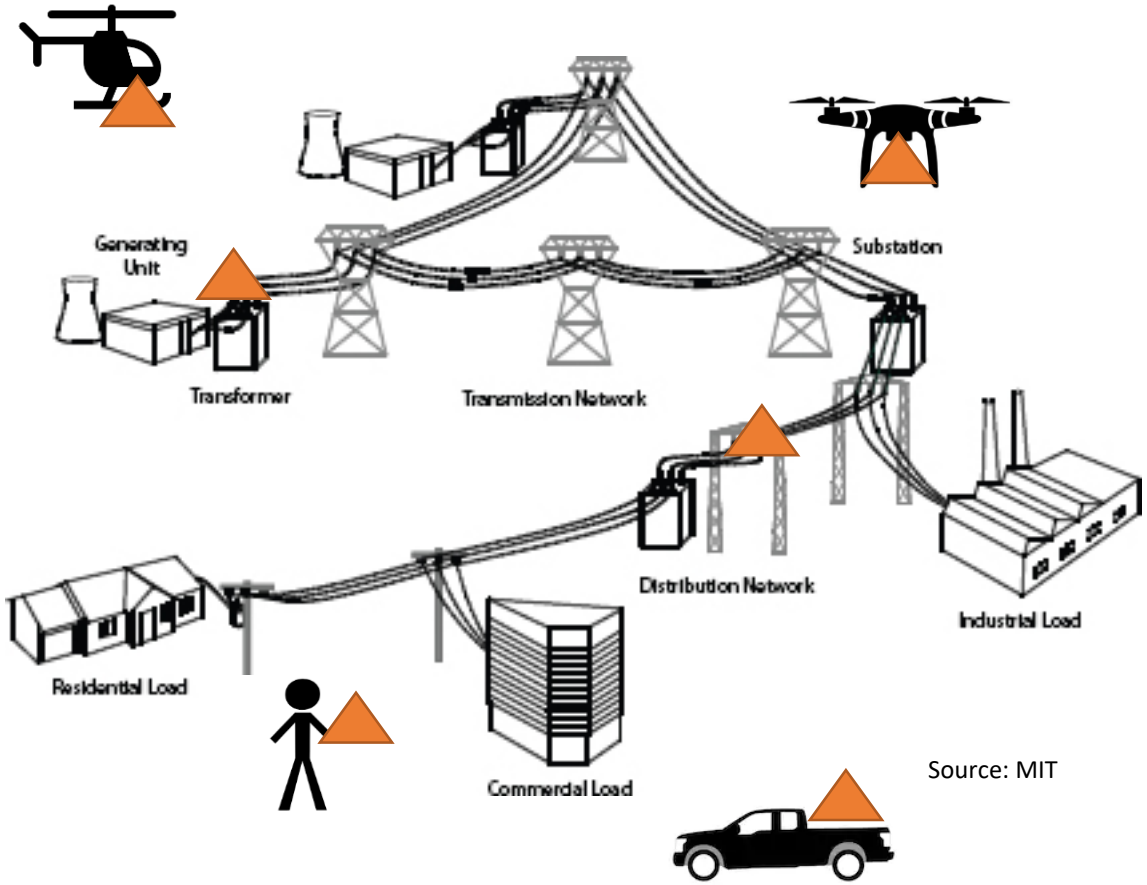
- Multiple sources of data
- Different formats of data
- Different quality of data

- Analyses work depend on data context and business need
- Typically: too many requirements (over engineering), not all is worth automation
- Labor intensive

Several months

TOWARDS DISTRIBUTED PROCESSING

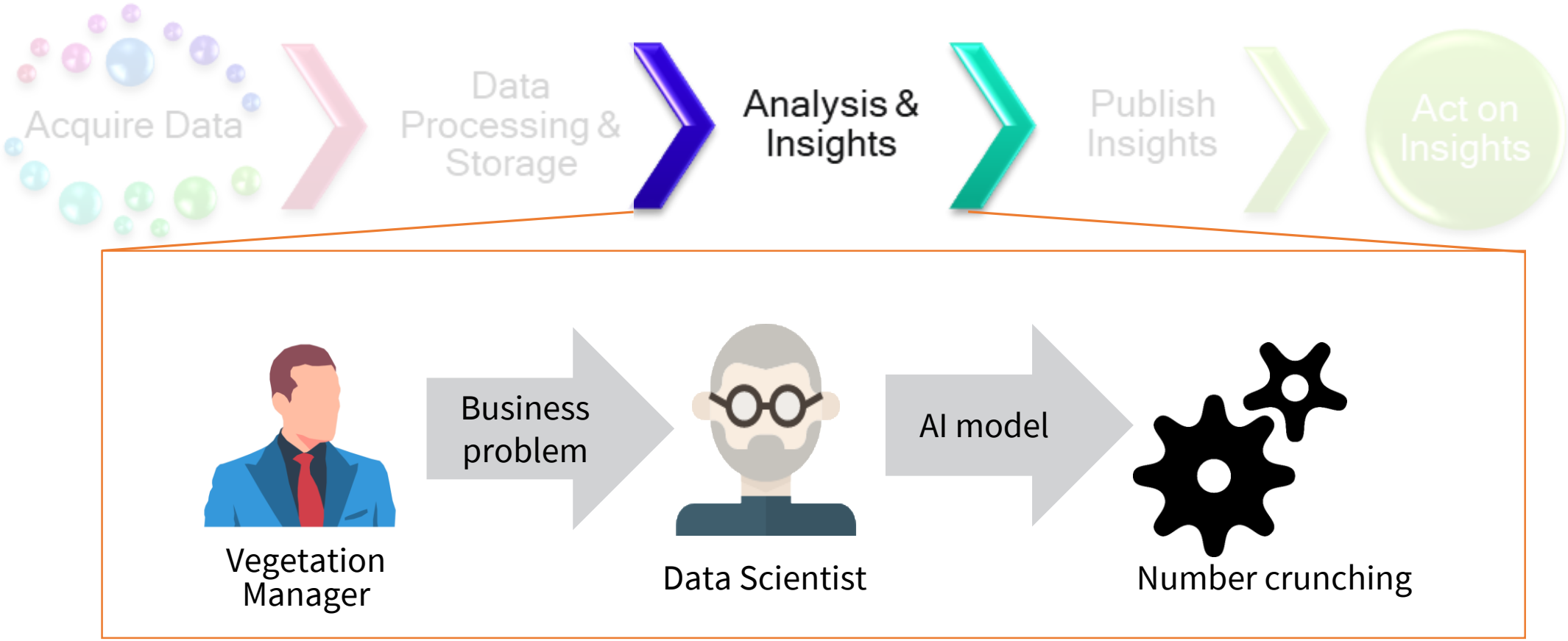




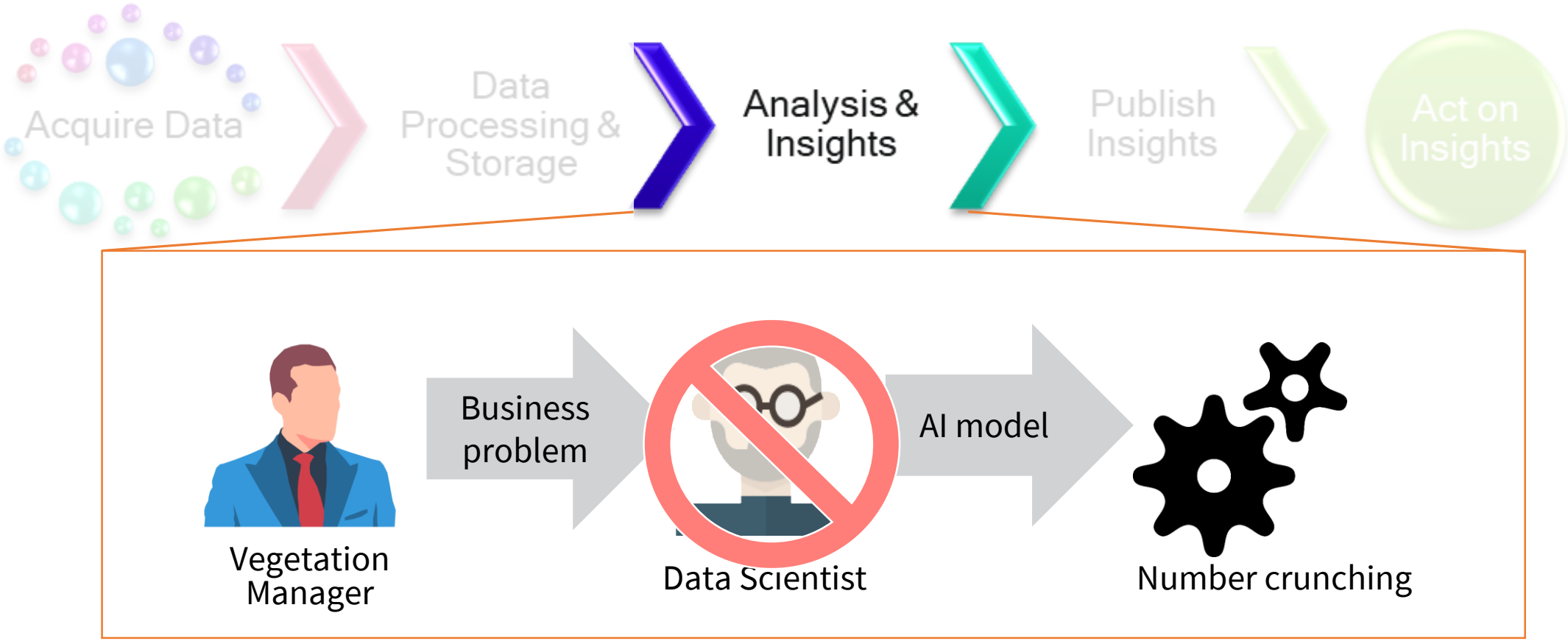
Source: MIT

MODERN PLATFORMS FOR REMOTE-SENSING INTELLIGENCE

APPLYING ARTIFICIAL INTELLIGENCE NOW

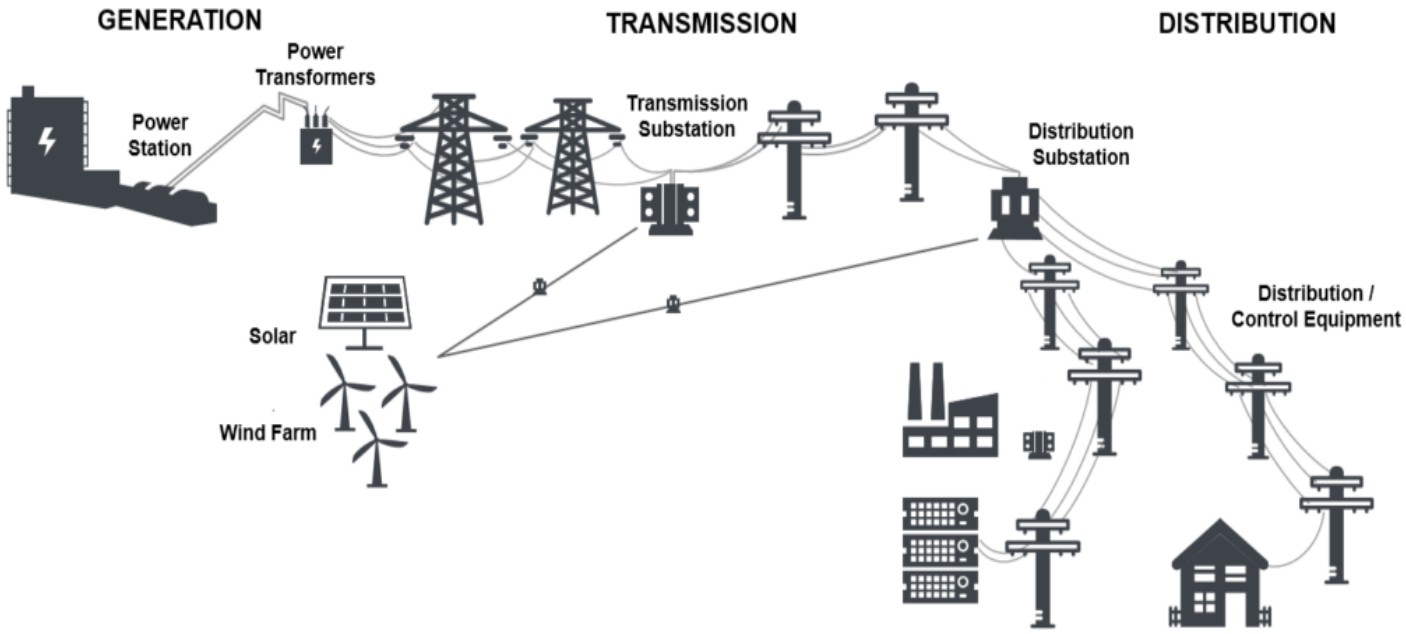


WHAT WE WANT FROM REMOTE SENSING INTELLIGENCE



DATA ANALYSIS TRENDS

- Part of analysis tasks can be automated and distributed
- Some tasks remain centralized and manual
- Time to result from months to minutes
- Apply different data strategies in different areas and needs
- Smarter AI increases business flexibility (control the AI yourself)



LIMITATIONS WITH THE CURRENT USE OF REMOTE SENSING DATA

Platforms

Satellite • Fixed wing

Terrestrial • UAV

Pole mounted

Sensors

LiDAR • IR • Wind

RGB • UV • Humidity

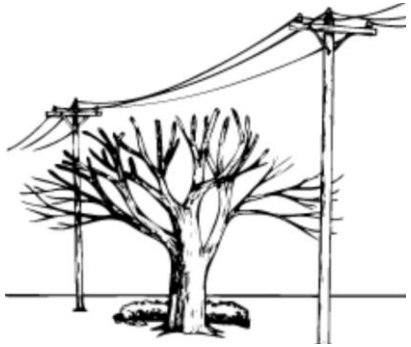
Temperature

Programmatic use of data (Silos)

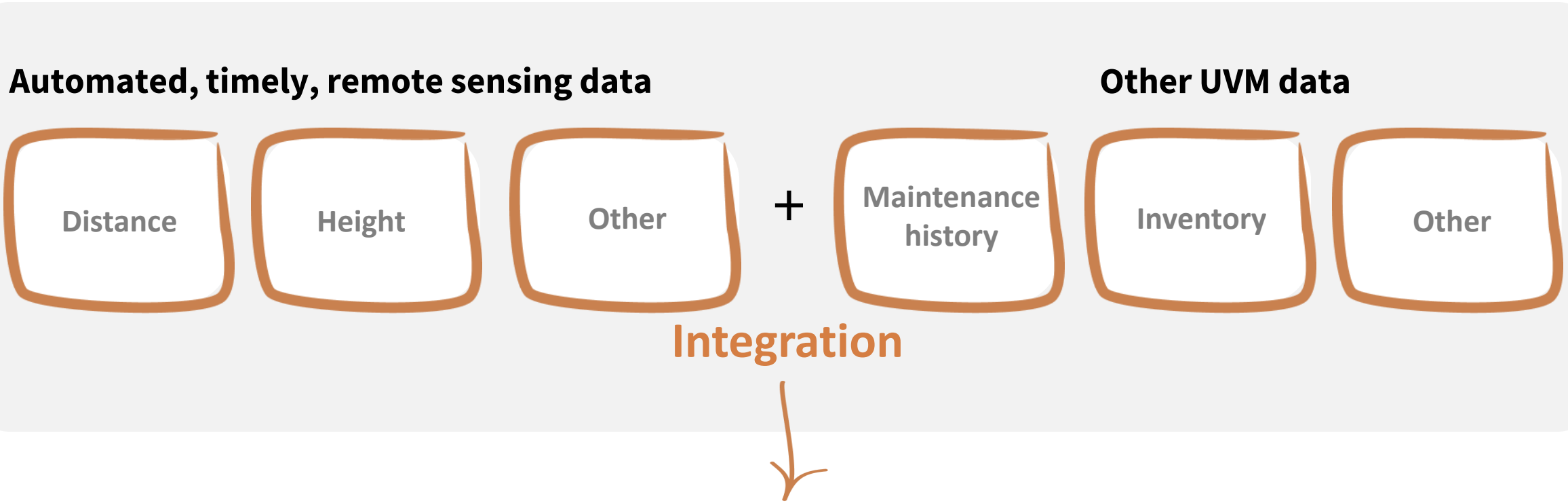
- **Line clearance**
- **Imagery**
- **Utility** assets

Danger trees

Treat vs. Prevent



INTEGRATING REMOTE SENSING WITH OTHER UVM DATA



KEY TAKEAWAYS FOR VM 2.0

1 | **Smarter data collection**

Collect data how, when and where needed

2 | **Execute UVM strategies efficiently and effectively**

Trim, removal, mow, herbicide, TGR, IVM…..

3 | **Comprehensive data management**

Create better decision support and management tools

4 | **Holistically assess risk, impacts and strategies**

Traditional UVM + Environment + Utility assets + Operations + Risk management

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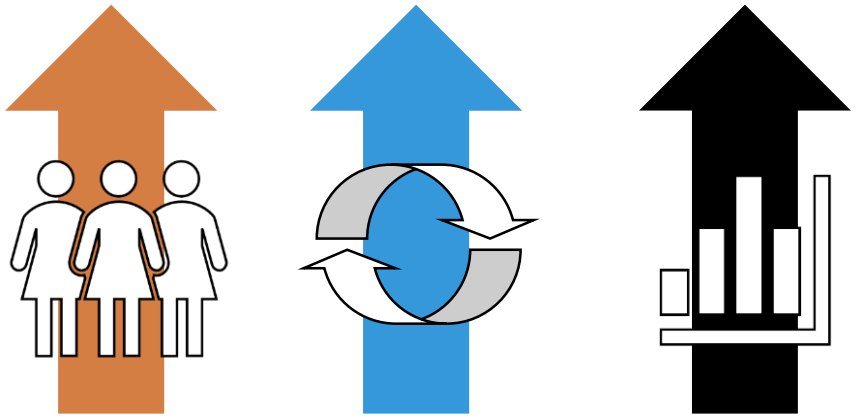
CHALLENGES WITH IMPLEMENTING VM 2.0

- Data is useful only when put into practice
- Most of the existing VM processes do not support the use of continuous stream of data and insights
- Real-time data can both support existing processes and helps to create new data-centric processes



IDENTIFYING THE BEST VALUE FOR AUTOMATION

Which insights I **NEED**?

Which insights can I **AUTOMATE**?

WHAT IF

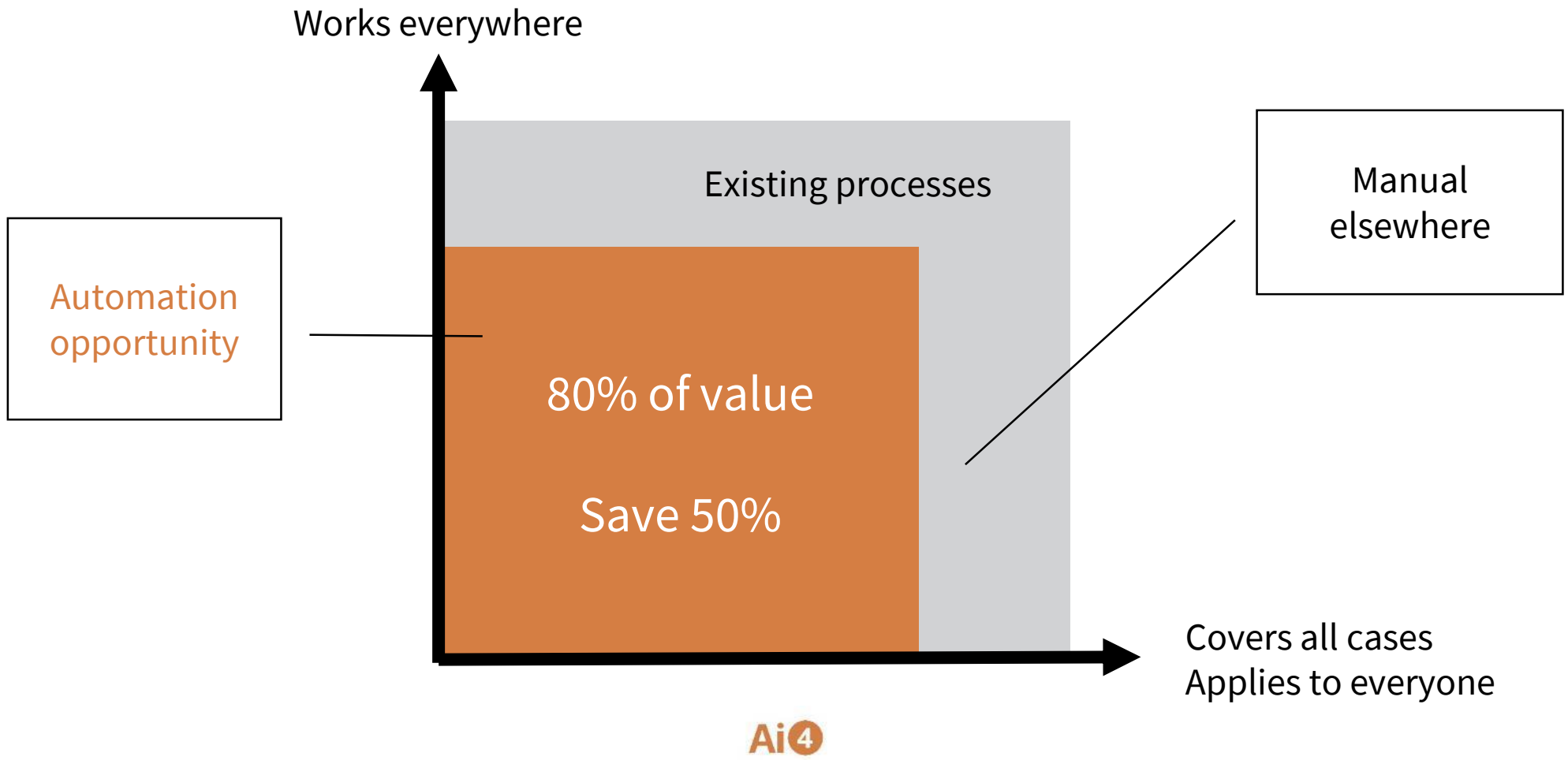
I only use what I can automate?

How much does the gap matter?

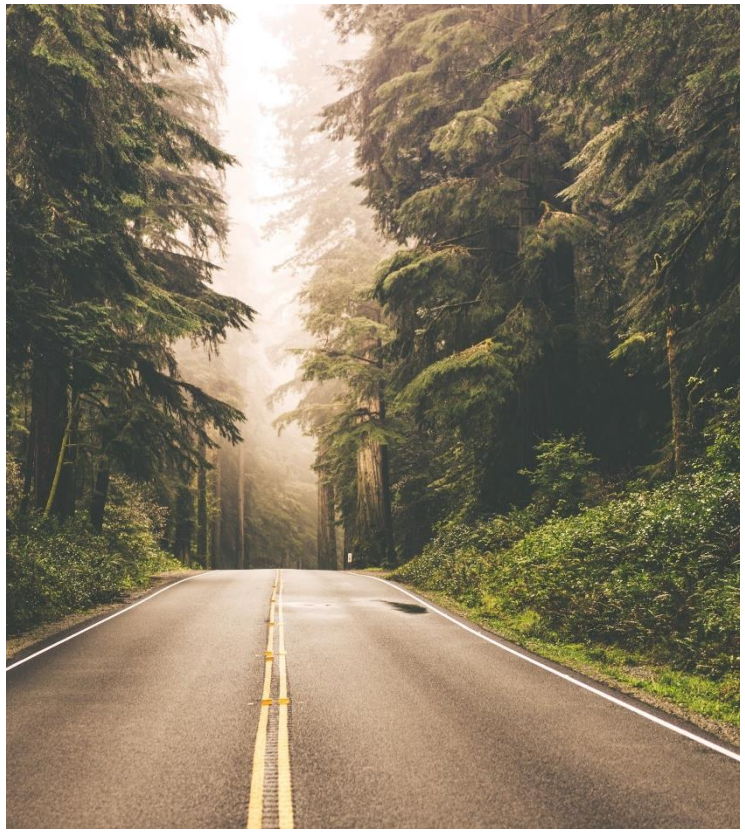
Make decisions and act on **AUTOMATED** data

Make decisions and act on **MANUAL** data

CREATE VALUE WHERE IT MATTERS



IN SUMMARY



Traditional VM strategies have reached diminishing return

We need to go beyond and redefine the problem

We can create a holistic risk-based approach

Remote sensing intelligence is a key enabler

The tools and technologies are there today

QUESTIONS AND ANSWERS

WE HAVE SHARED OUR VIEW

NOW IT'S YOUR TURN!

THANK YOU!




WE REALLY APPRECIATE YOUR TIME, INTEREST, EXPERTISE AND ATTENTION!

We would love to continue the conversation!

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