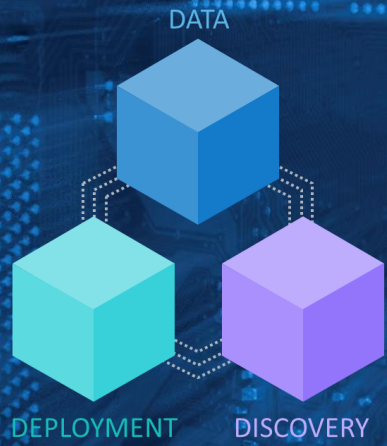
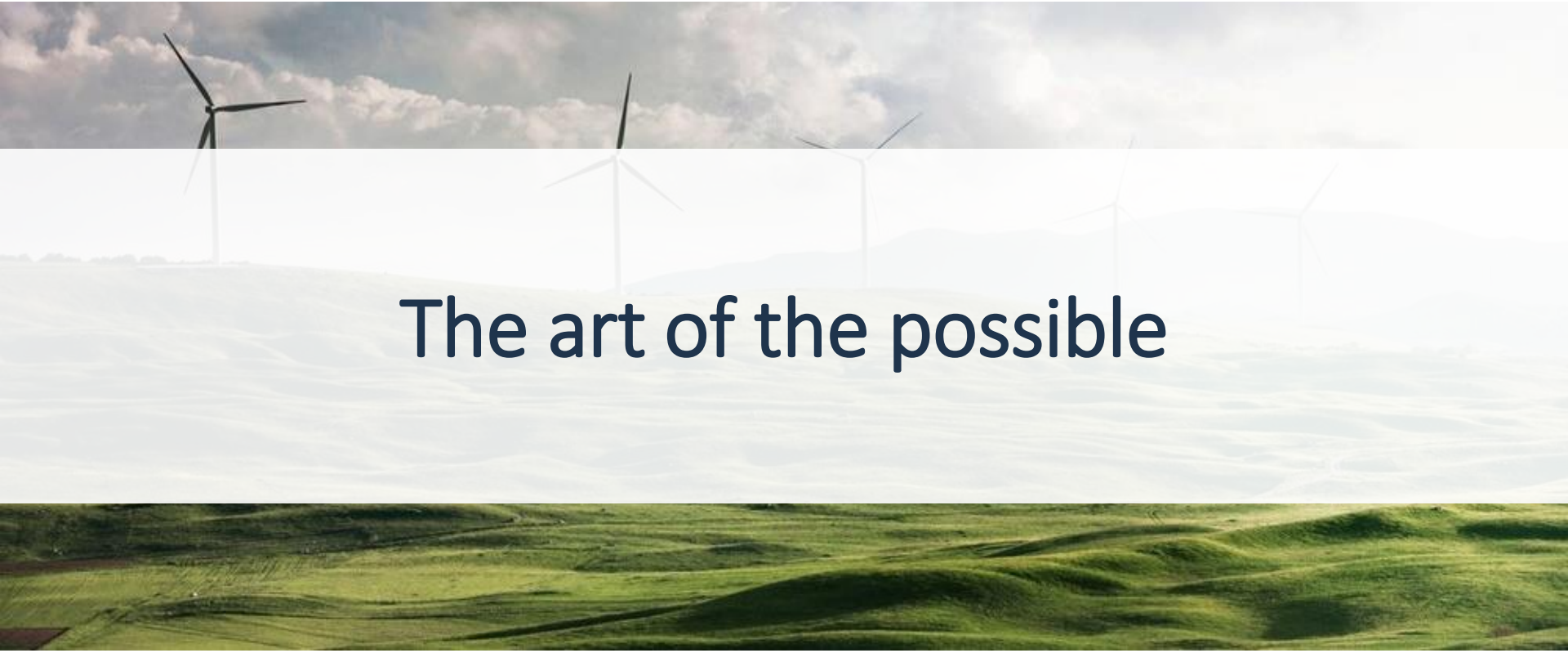
Meeting the Pace of Change

- *AI in the world of Energy and Utilities*

Antoine Coetzee (AJ)
Senior Manager, Customer Advisory



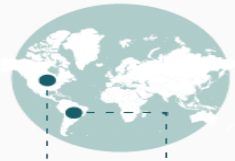


The art of the possible

AI in Utilities

Energy Theft Prevention

PAIN-POINTS



$100 billion is lost globally
every year

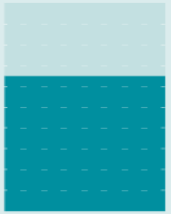
3rd most stolen item in US
($6 billion in lost revenue per year)

theft can account for
1/5 of all production
In developing countries like Brazil

SOLUTION

Entity - recognition
makes sense of mass data by compares billing data to usage data, flags any suspicious anomalies

Human experts provide live
feedback loops to train models
to get more and more accurate over time



Pilots already hitting with
65% accuracy

AI in Utilities

Digital Marketing

PAIN-POINTS

Time and money lost
every day

Companies lose clients
every day

SOLUTION

75%posivite
sentiment

Score your clients sentiment
on every interaction so that you can better
target marketing initiatives at specific customer

AI in Utilities

Virtual Agents and Chatbots

PAIN-POINTS

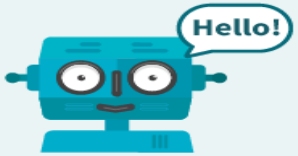
Globally, businesses spend
$1.3 trillion
on 265 billion
customer service calls each year

77% of consumers rank "value my time"
as their top customer service priority

In US, customer service reps
turnover at rates of 30-45%
double the national average of 15.1%

SOLUTION

End-to-end chatbot solution
entity-tagging, text variant collection = main workflows



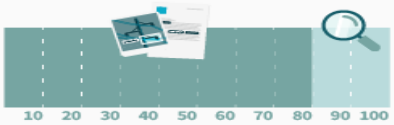
97% faster response times
from 10+ hours to just 5.4 minutes
on tier one inqueries

Chatbots eliminate
the "drudgery" by handling
80% of routine questions

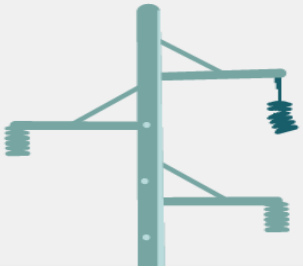
AI in Utilities

Predictive Maintenance

PAIN-POINTS



Maintenance team spend
80% of the time collecting data and
20% analyzing it



Reactive maintenance means more
unexpected equipment failures
which are highest maintenance cost.

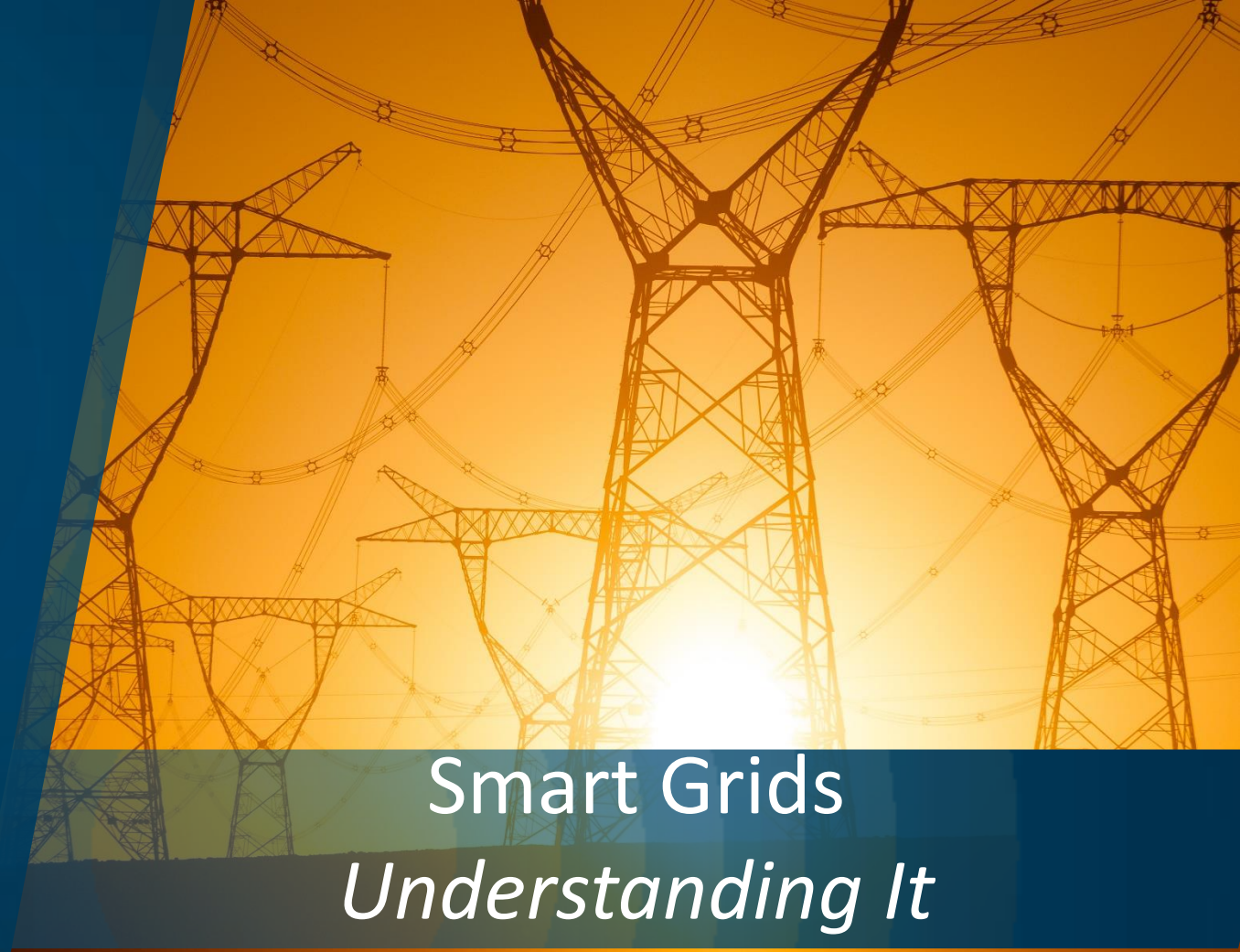
SOLUTION

Computer vision and pattern recognition
can handle equipment monitoring and relay data back to technicians

Monitor equipment vital signs
like load frequency, heat levels, vibration, etc...

20% reduction
in entire operational costs

Energy Distribuition



Smart Grids

Understanding It

ANALYTICS FOR OPERATING EXPENSE REDUCTION
VEGETATION MANAGEMENT OPTIMIZER

Solution Overview:

Provide the ability for utilities to reduce vegetation management expense. Combine agriculture growth prediction models with weather models, satellite imagery and UAV inspection footage, mobile laser inputs and photographs to predict timing and place of asset encroachment. Leverage scheduling application to optimize maintenance. Provides legal documentation support for private entities to clear right of ways. Reconciles maintenance spend to budget and contracts to performance.

ANALYTICS FOR OPERATING EXPENSE REDUCTION
VEGETATION MANAGEMENT OPTIMIZER

Use Cases:
As a Utility Asset Maintenance Director, I need to reduce operational expense by scheduling line walks, truck rolls and arborist, vegetation crew engagements more efficiently.

- Solution Acceptance Criteria for Utility:
- Scheduling system for vegetation management resources
  - Internal resources
  - External contracted resources
- KPI's to illustrate effectiveness in cost reduction
- Understand land parcel ownership and document encroachment for support in private entity maintenance requests

Classification models are just a subset of ML and DL

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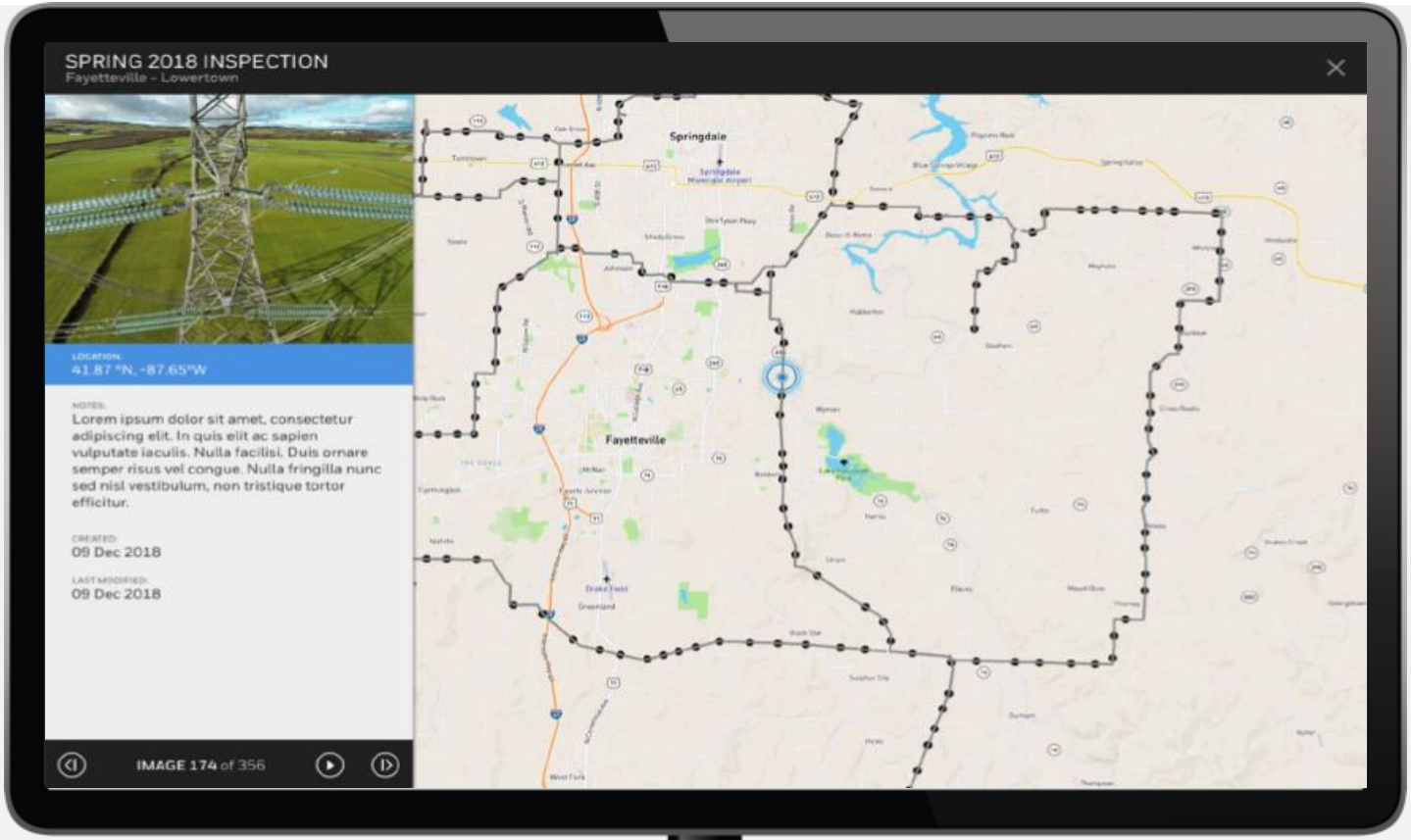


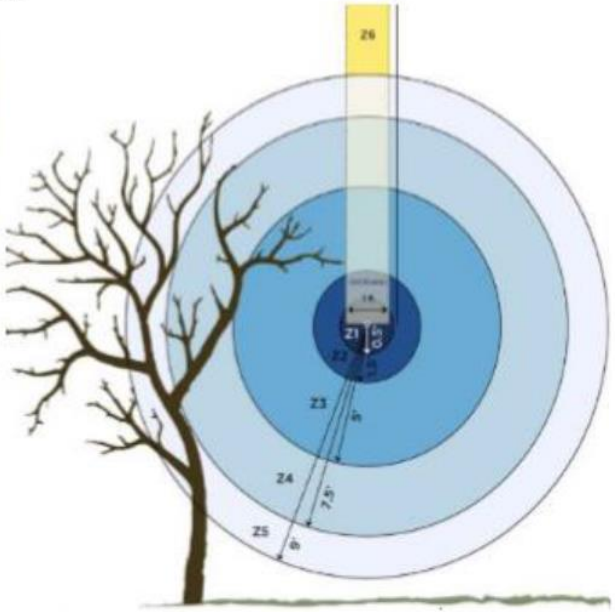
«*Silicon Valley*» Season 4, Episode 4

VEGETATION ANALYSIS
HYPERSPECTRAL ANALYSIS WITH LIDAR

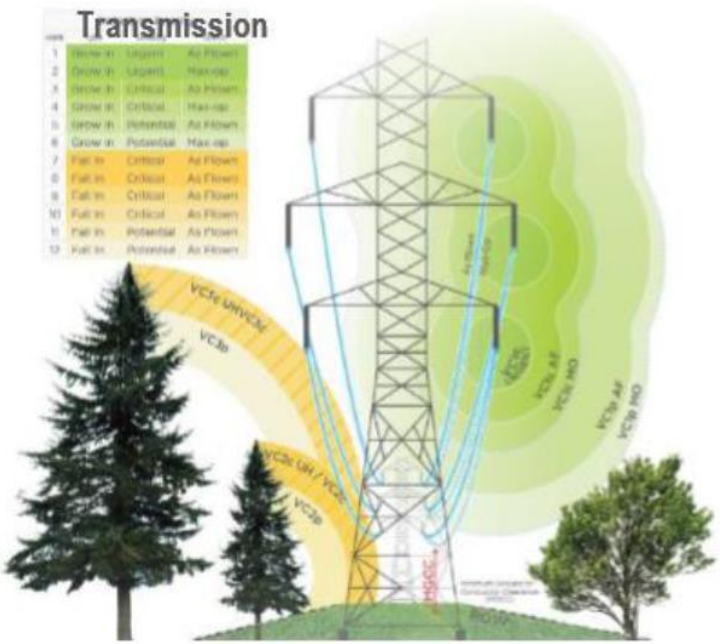
Applying LiDAR Analytics

Distribution

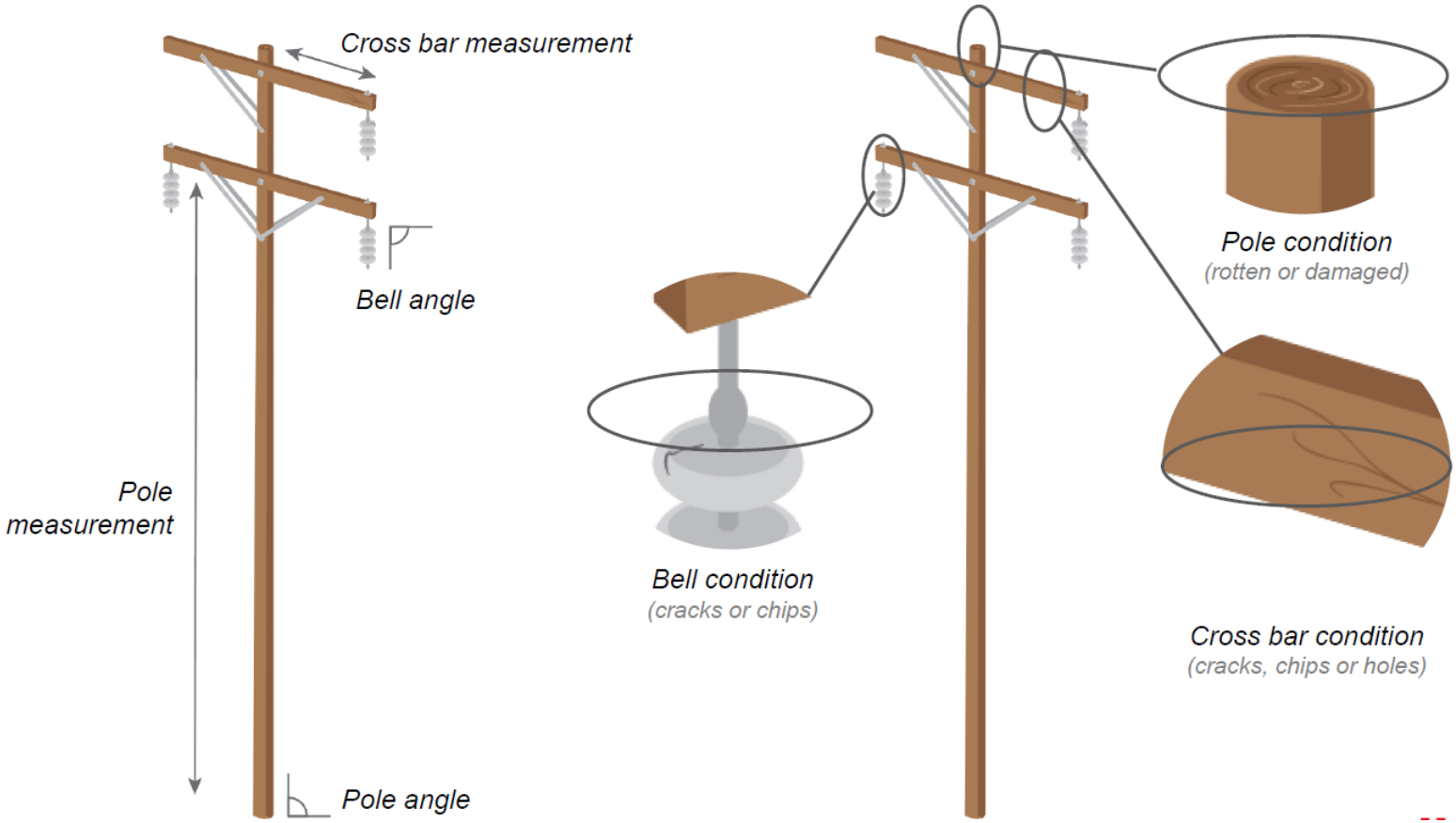
Zone	Clearance
1	0 - 0.5 ft
2	0.5 - 1.5 ft
3	1.5 - 5 ft
4	5 - 7.5 ft
5	7.5 - 9 ft
6	Overhang



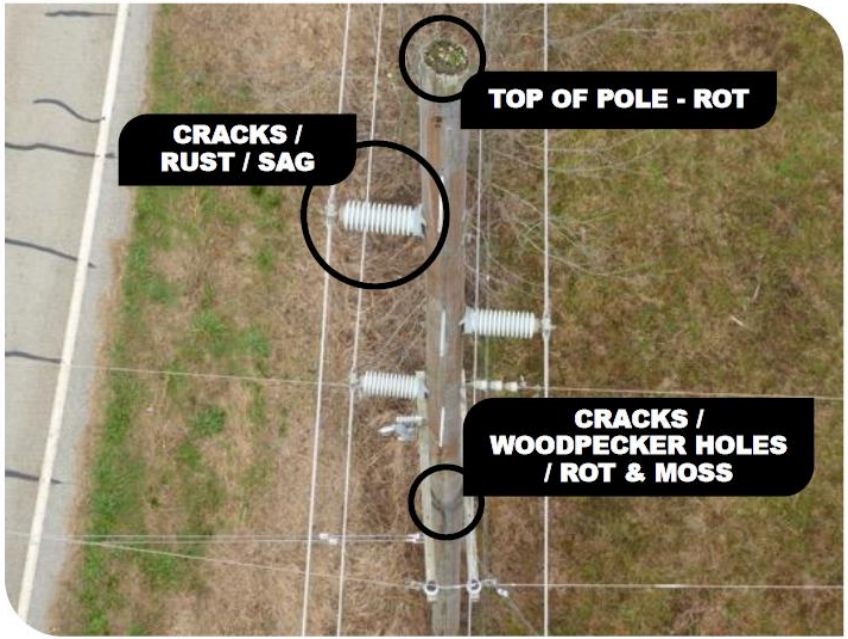
Transmission

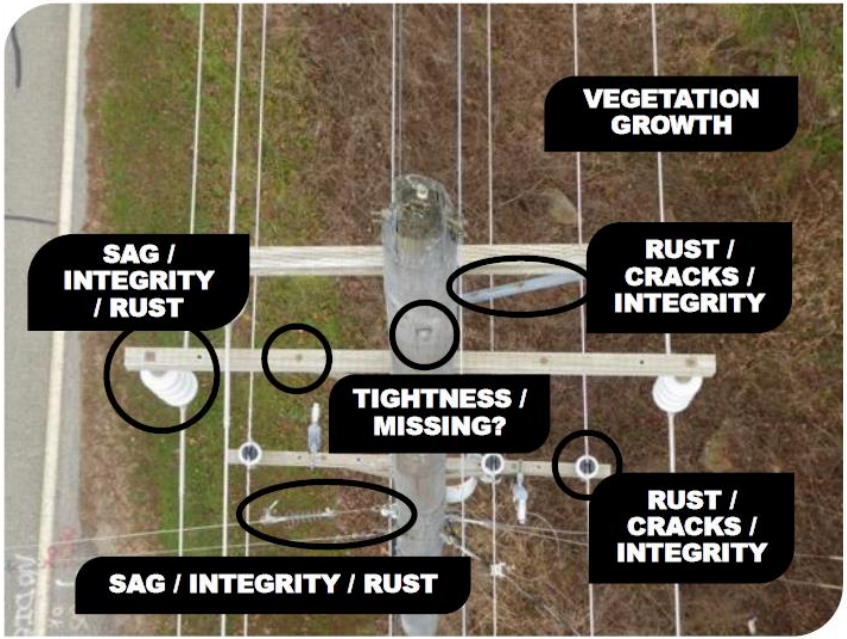


Pole measurements



Assisted Power Lines Inspection





Transformation in Water Management : Smart City Imperative

Connected Intelligence for Smart Cities

Smart City Goals

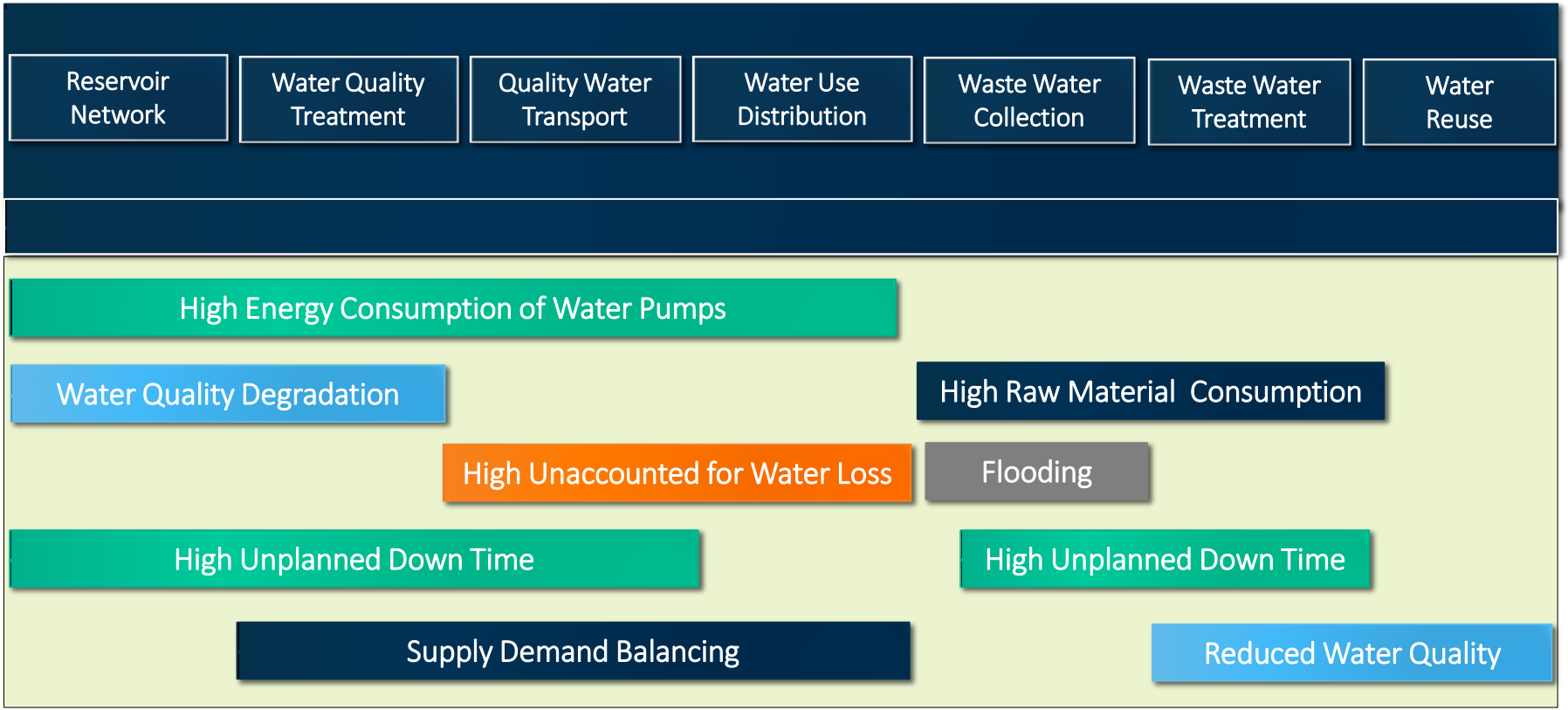
Sustainable Development

"There is a water crisis today. But the crisis is not about having too little water to satisfy our needs. It is a crisis of managing water inadequately that billions of people - and the environment - suffer badly." World Water Vision Report

"Water is everybody's business"

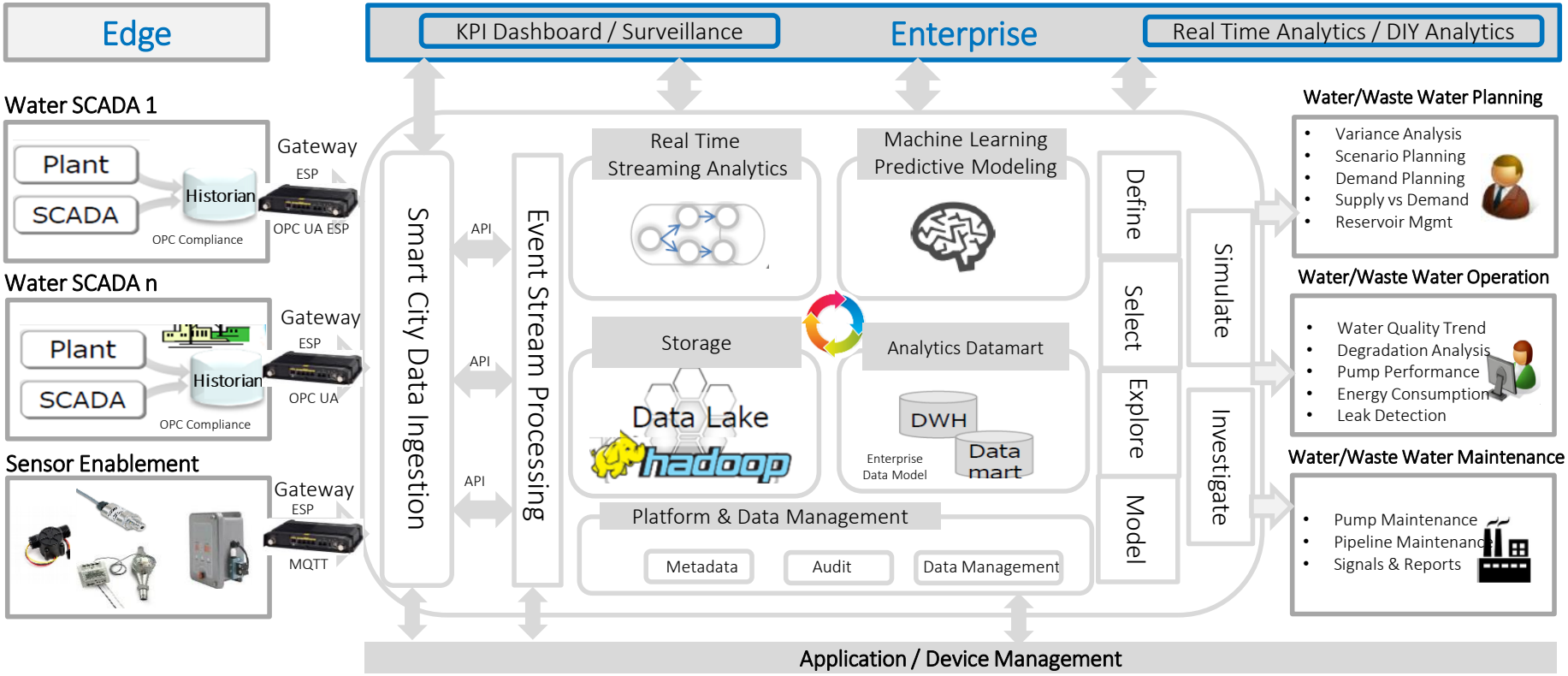
Water Management in States & Cities

Challenges in the Value Chain



Transformation of Water Management

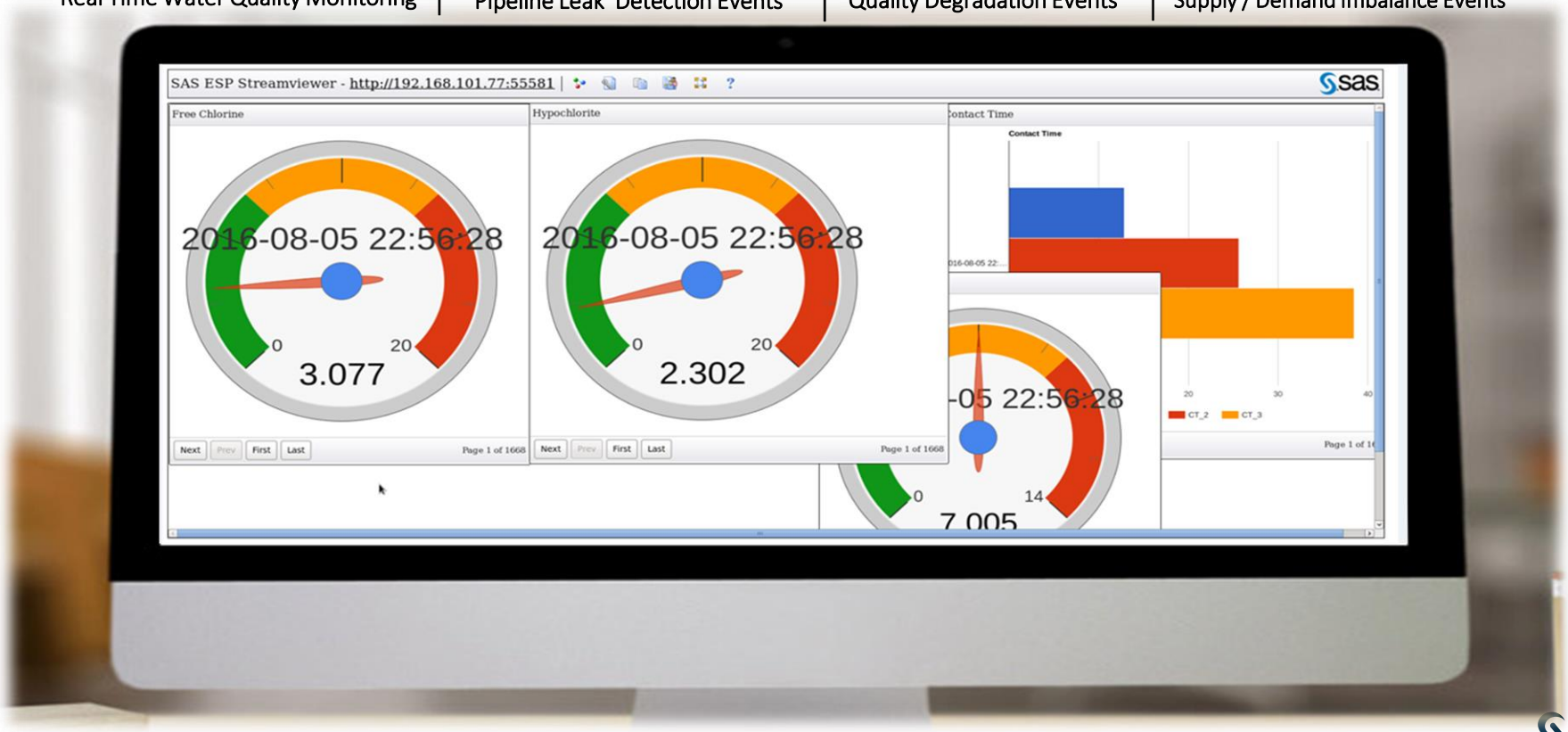
Edge to Enterprise Analytics Platform



Smart Water

Edge Analytics in Action

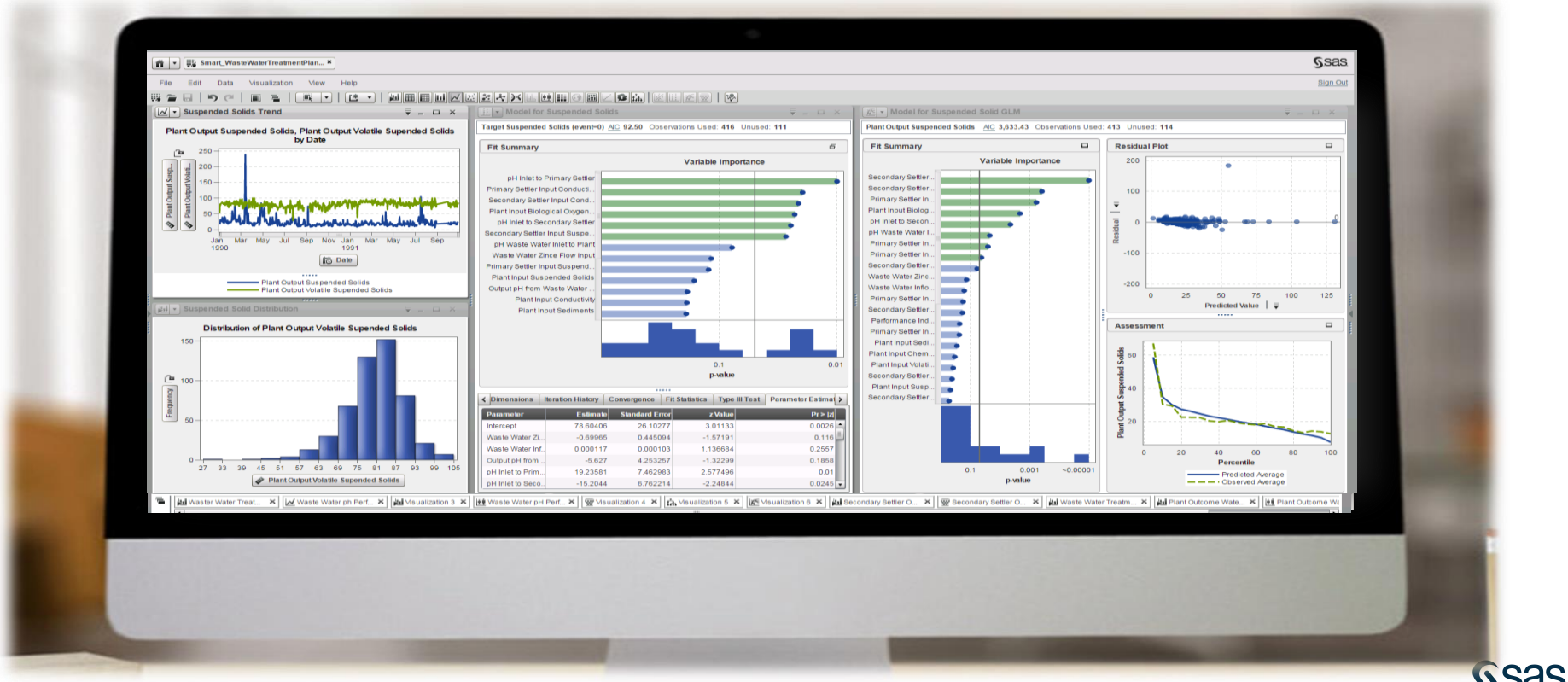
Real Time Water Quality Monitoring | Pipeline Leak Detection Events | Quality Degradation Events | Supply / Demand Imbalance Events



Smart Water

Enterprise Analytics - Waste Water Management

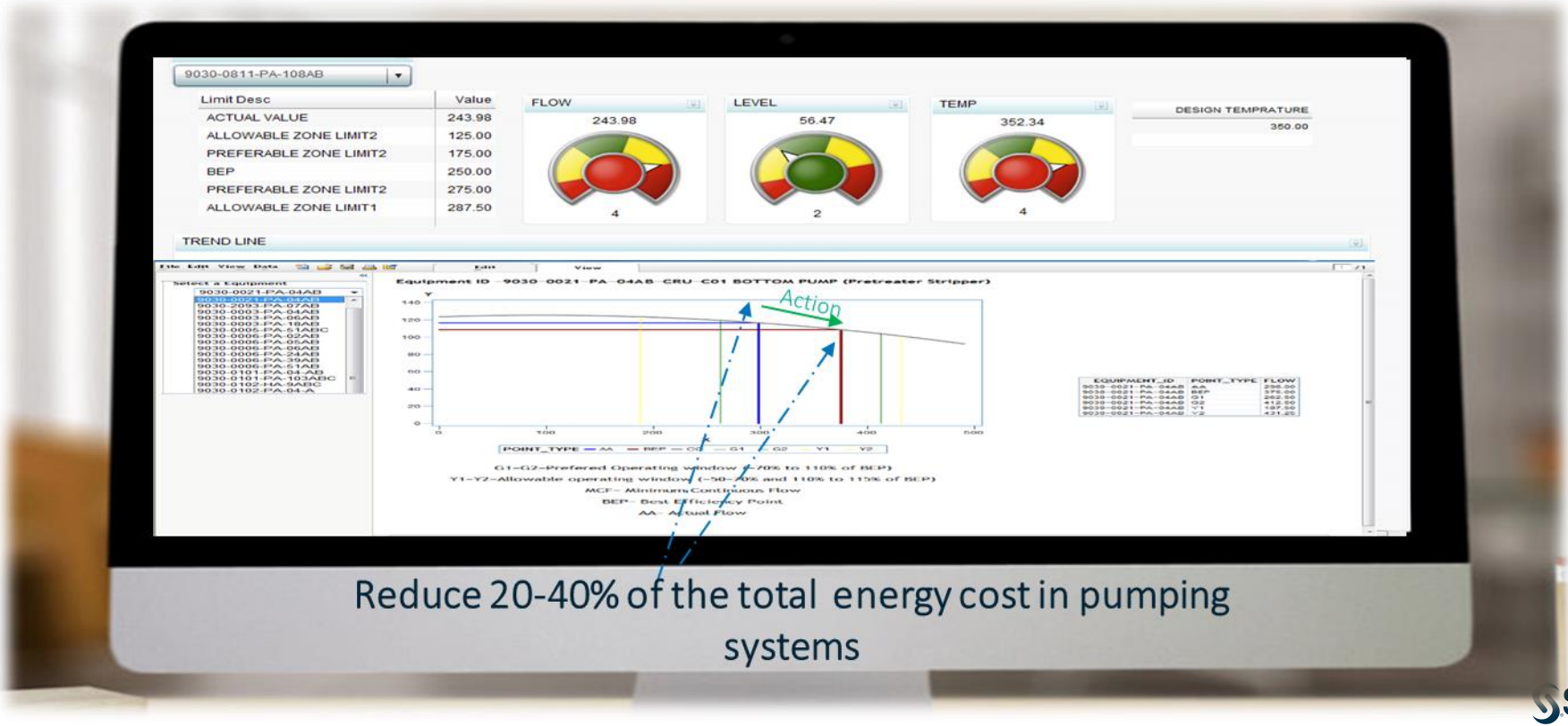
Flow & Quality Parameters Surveillance | Quality Data Benchmarking | Quality Degradation Exploration | Predictive Modelling



Smart Water

Enterprise Analytics – Water Pump Monitoring

Pump Performance Monitoring | Pump Efficiency Curve Modeling | Pump Efficiency Degradation Alert | Pump Condition Anlytics



Smart Water Analytics Command Center

Powered by SAS Edge to Enterprise Analytics for IoT Platform

Smart Water Analytics

Benefits to Water Utilities

- Ensure 24 * 7 Quality Water supply
- Uncovering insights how water is used
- Identifying leaks in pipeline and home network in advance
- Operating Waste Water Treatment plants optimally

- Reduce Non Revenue Water by upto 30%
- Reduce Water Footprint by upto 50%
- Recycling up to 80% of waste water
- Achieve higher City Sustainability

It all about that Data

Want the full ROI from AI?

Start with a trusted data management foundation

Artificial intelligence is shifting from fantasy to reality:

By 2025, the AI market will surpass **$100 billion**.[1]

72% of business leaders believe AI will be fundamental in the future.[2]

[1]Source: Constellation Research.

[2]Source: PwC.

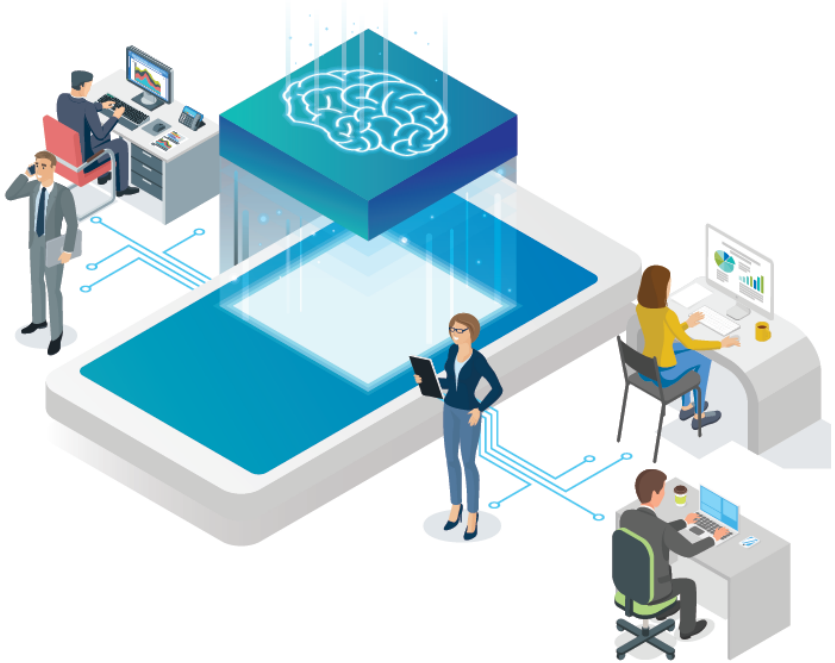
AI handles tactical tasks, freeing time for strategic activities:

Top reason business executives turn to AI is to alleviate repetitive, menial tasks.

AI presents challenges – poor data management is often the cause:

- AI amplifies the "garbage in, garbage out" data quality mantra.
- Companies that skip a data management strategy will see inferior results.
- Data integration, data quality and governance are key to trustworthy AI.

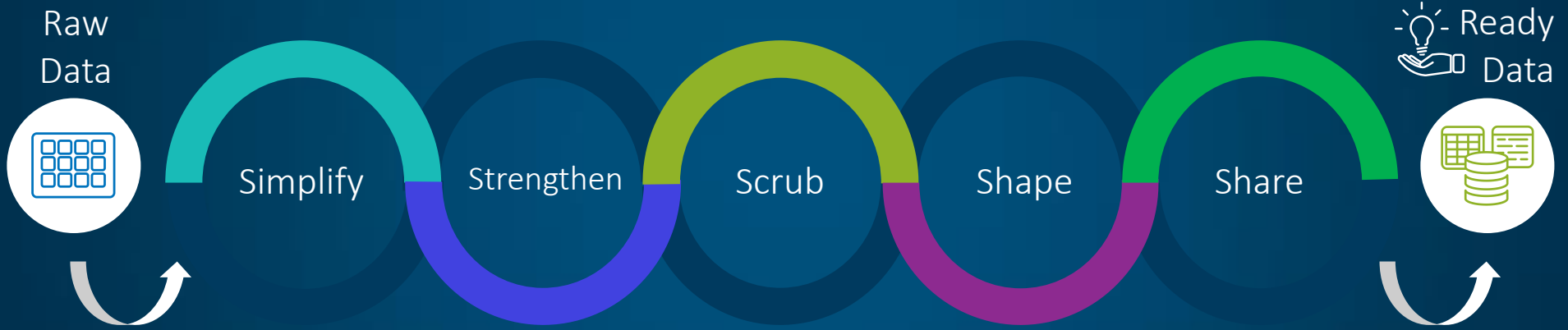
Leading companies can succeed with data management for AI if they:

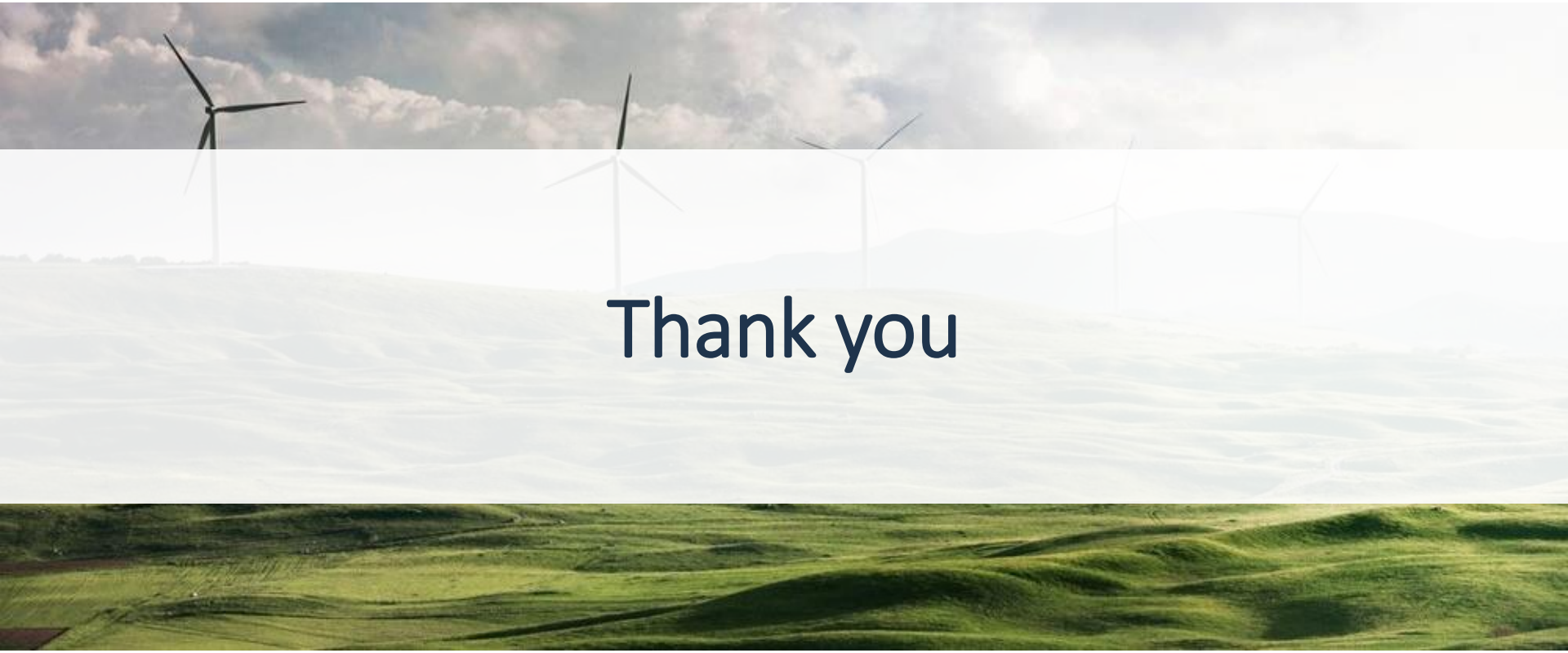


- Simplify access to traditional and emerging data.
- Drive smarter integration with statistical AI.
- Scrub data to build quality into existing processes.
- Shape data using flexible manipulation techniques.
- Share metadata across data management and analytics domains.

Data Management For Artificial Intelligence

Five Best Practices





Thank you