MODERNIZING YOUR GIS REQUIRES A FIRM FOUNDATION NOT JUST TECHNOLOGY AND PRODUCTS:

Ken Bryant – Account Executive

AGENDA

- Importance of reliable data
- Automation Driving Safety and Efficiency
- Use Cases
- Data Governance
- Questions

Cost of Poor Data Quality

$3.1 Trillion a Year(1)

- **Time Waste**: users validate and correct data themselves, without feeding corrections back
- **Lost of Revenue**: **Wrong address information is costly. Not knowing where your assets are drives up costs.**
- **Resources wasted** through acting on decisions built on bad data
- **Lives put at risk** through the inaccurate plotting of utility networks or the misrouting of emergency services.

(1) IBM, Extracting business value from the 4 V's of big data (2016), http://www. ibmbigdatahub.com/infographic/extracting-business-value-4-vs-big-data

Make your data fit for purpose

Data Quality can be effectively managed when you know…

- **Where you are** (the current state of your data)
- **Where you need be** (the desired state of your data)

The key is to set up a **Data Governance Plan** that fits the **exact business requirements** to define quantitative quality metrics

Which rules are mandatory\optional with acceptable conformance levels for each rule

Definition of Data Quality

Fitness of use for specific purpose

IBM projected that by 2025 the amount of data created, consumed, copied and stored would reach more than 180 zettabytes.

With such high volumes of data, maintaining data quality is increasingly essential and difficult to maintain data quality.

Why is data Quality important?

Bad data carried over to the new system does not solve the performance problem.

If your data is of low quality, everything that relies on that data will be compromised.

United Kingdom's National Underground Asset Registry (NUAR)

- 4 million kilometres of buried pipes and cables in the UK
- 4 million holes dug every year
- c. 60,000 accidental strikes per year
- Planners and excavators need the data to do their jobs safely and efficiently
- Data is held by over 650 organisations
- Asset owners are legally required to make their data available for free to statutory undertakers

The Basics

The National Underground Asset Register (NUAR) is an interactive, digital map of underground pipes and cables that will revolutionize the way we install, maintain, operate and repair buried infrastructure.

NUAR is expected to deliver around £350 million per year in benefits

Streamline the way data is shared between owners of underground assets and those who dig up the ground (‘statutory undertakers’).

Presenting data in a single format with consistent colour coding, symbolisation and scaling.

Data from 650+ asset owners will be shown.

Alleviating the administrative burden of contacting all owners who have, or may have, data in the area.

Providing data owners access to regular feedback on their data, both from a standards perspective and from excavators in the field

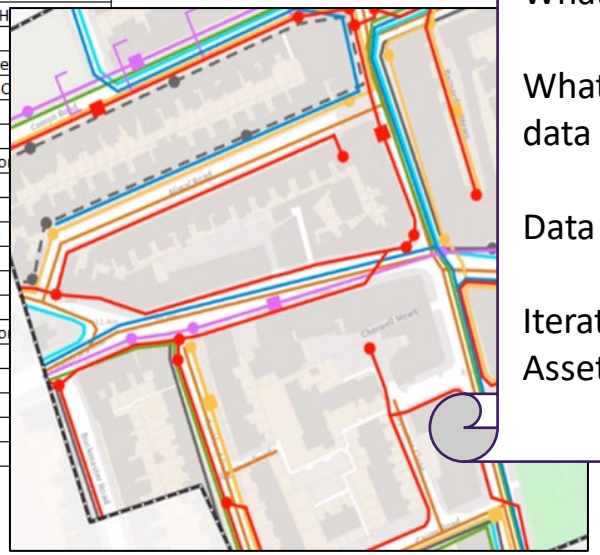
The Process

Data Ingestion Specification (DIS)

Data Check → Schema Mapping → Share Mappings → Transform& Validate → DIS → Re-Supply

		Present
1	Drainage	✓
2	Tree Preservation	✓
3	Archaeology	✓

SourceClass	SourceAttribute	SourceValue	TargetAttribute	TargetValue
AbandonedPipe	PRESSURETIER	I	conveyancemethod	Intermediate Pressure
AbandonedPipe	PRESSURETIER	L	conveyancemethod	Low Pressure
AbandonedPipe	PRESSURETIER	M	conveyancemethod	Medium Pressure
AbandonedPipe	PRESSURETIER	RH	conveyancemethod	Regional H
AbandonedPipe	DIAMETERUNITS	I	insidewidth_unitofmeasure	Inches
AbandonedPipe	DIAMETERUNITS	M	insidewidth_unitofmeasure	Millimetre
AbandonedPipe	MATERIAL	AS	material	Asbestos C
AbandonedPipe	MATERIAL	CI	material	Cast Iron
AbandonedPipe	MATERIAL	CO	material	Concrete
AbandonedPipe	MATERIAL	DI	material	Ductile Iro
AbandonedPipe	MATERIAL	PE	material	Plastic
AbandonedPipe	MATERIAL	PV	material	PVC
AbandonedPipe	MATERIAL	SI	material	Spun Iron
AbandonedPipe	MATERIAL	ST	material	Steel
AsBuiltPipe	MATERIAL		material	
AsBuiltPipe	MATERIAL	CI	material	Cast Iron
AsBuiltPipe	MATERIAL	DI	material	Ductile Iro
AsBuiltPipe	MATERIAL	FP	material	
AsBuiltPipe	MATERIAL	pe	material	Plastic
AsBuiltPipe	MATERIAL	PE	material	Plastic
AsBuiltPipe	MATERIAL	SI	material	Spun Iron
AsBuiltPipe	MATERIAL	ST	material	Steel



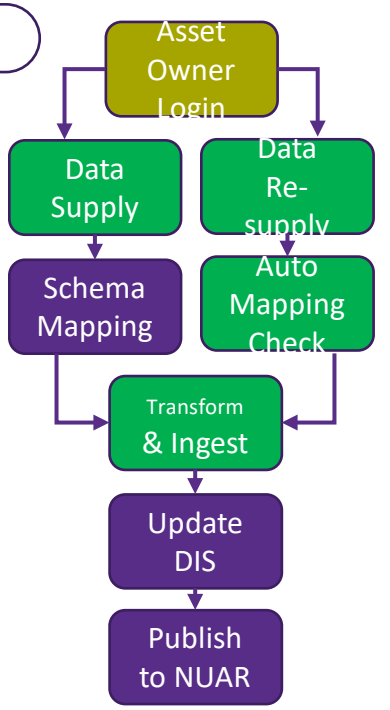
Change Control Doc

What was provided

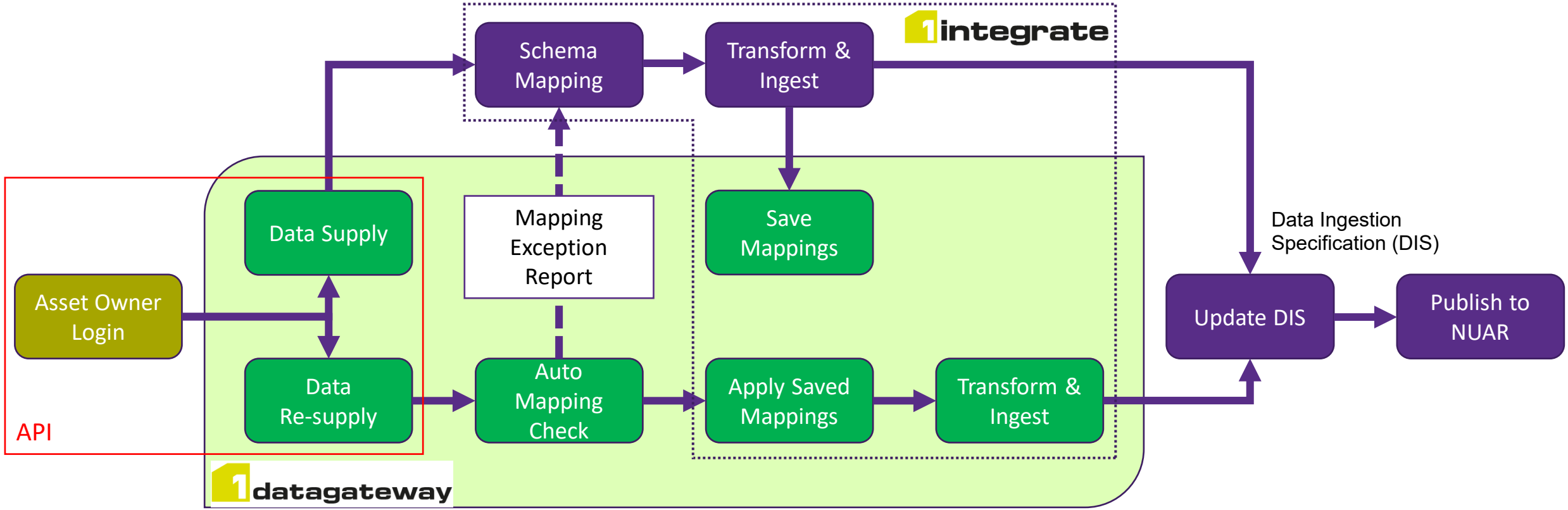
What we did to the data

Data Feedback

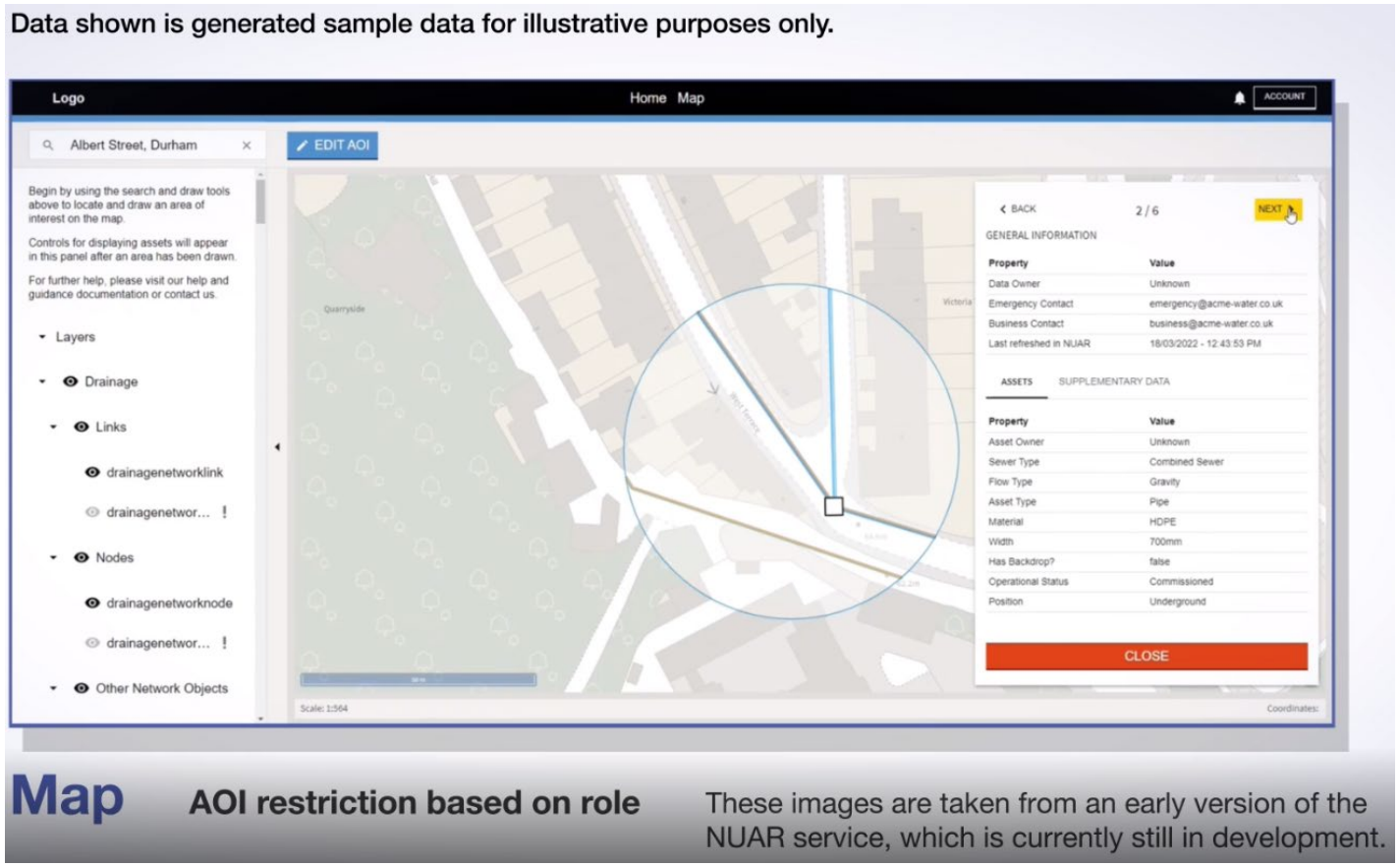
Iteratively agreed by Asset Owner



Simple & Secure Future Supply & Re-Supply



NUAR Data Explorer



https://youtu.be/rrKtex65Png

Data Users

City Planners, Any Excavators, Utilities, MTA, Builders, Etc....

Data Suppliers

Utilities, Metropolitan Transit Authority, City and Others

- **Low barrier to entry: Asset owners provide data in their structure and format, we'll do the rest**
- **Low burden: Re-upload is simple, secure and at the asset owners' agreed frequency**
- **AO engaged process: Schema Mappings shared with Asset Owners facilitating early feedback**
- **Documented Transformations: Data Ingestion Specification (DIS) agreed by Asset Owner**
- **Complimentary Data Analysis: Feedback provided on data quality, errors and exceptions**
- **Promotes more coordination between organizations when planning excavations.**

CoServ and 1Spatial

Migrating to the Utility Network Model

Gas and Electric Distribution

Current ESRI Geometric Network Users

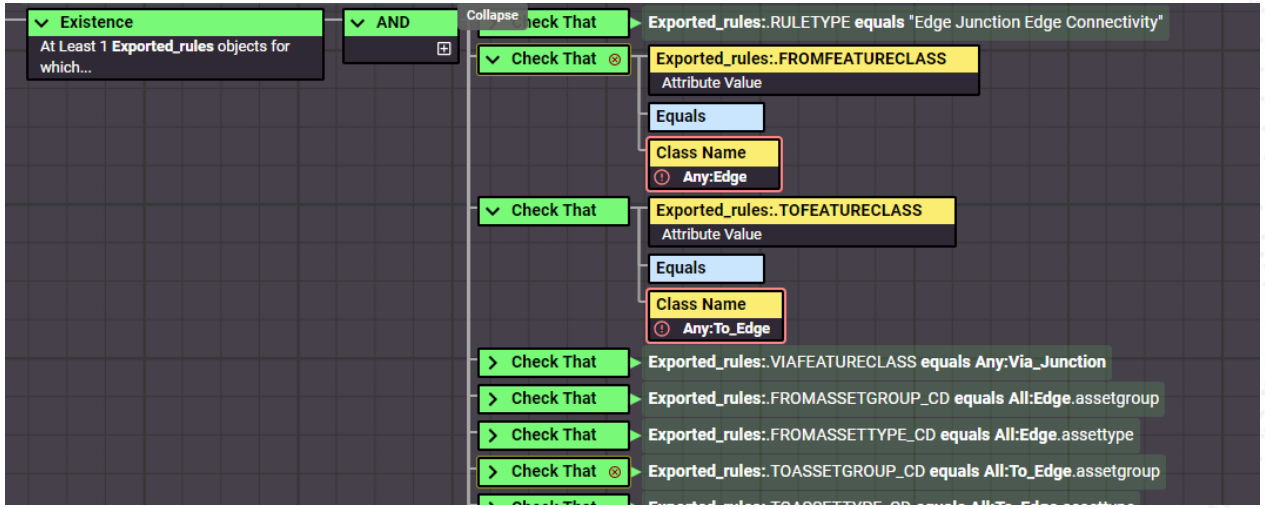
1Spatial's Role

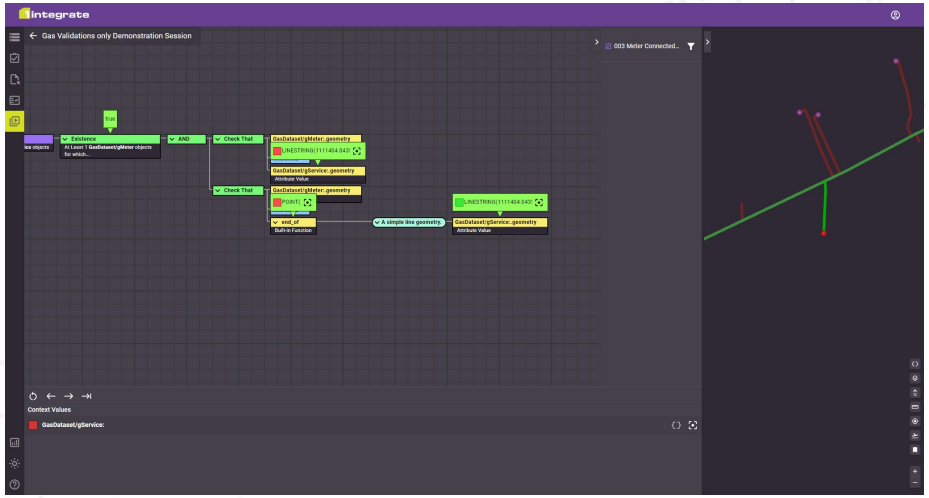
Data Discovery

- Understanding schema differences
- Workshopped with GIS team
  - GIS team worked with users

Migration

- Configurable Schema transformation
- Automated rule discovery
- Applying changes and importing data



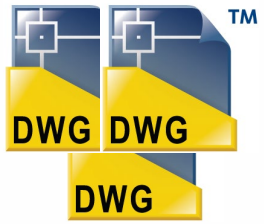


Google and 1Spatial

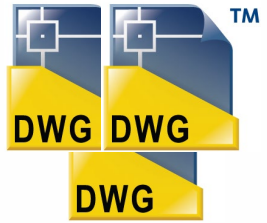
Customer Challenge – CAD\Asset Data Supply Chain Gaps

Engineers not notified until FM team manual validates: **Takes time & the data changes!**

Engineers create drawings



REWS Contractors Validates\Cleans drawings



TRIRIGA

End Users

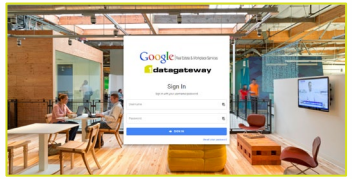
End users discover faulty data in system **Erosion of trust and credibility with stakeholders**

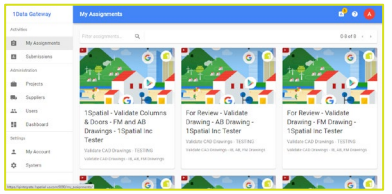
Google | Real Estate & Workplace Services

Google and 1Spatial

Solution – Validate incoming CAD data

1integrate +
1datagateway





Google BigQuery

Engineers create drawings

REWS Contractors Validates\Cleans drawings

TRIRIGA

End Users

Google | Real Estate & Workplace Services

Arizona DOT and 1Spatial

Arnold Conflation – Vintage over Vintage

Project

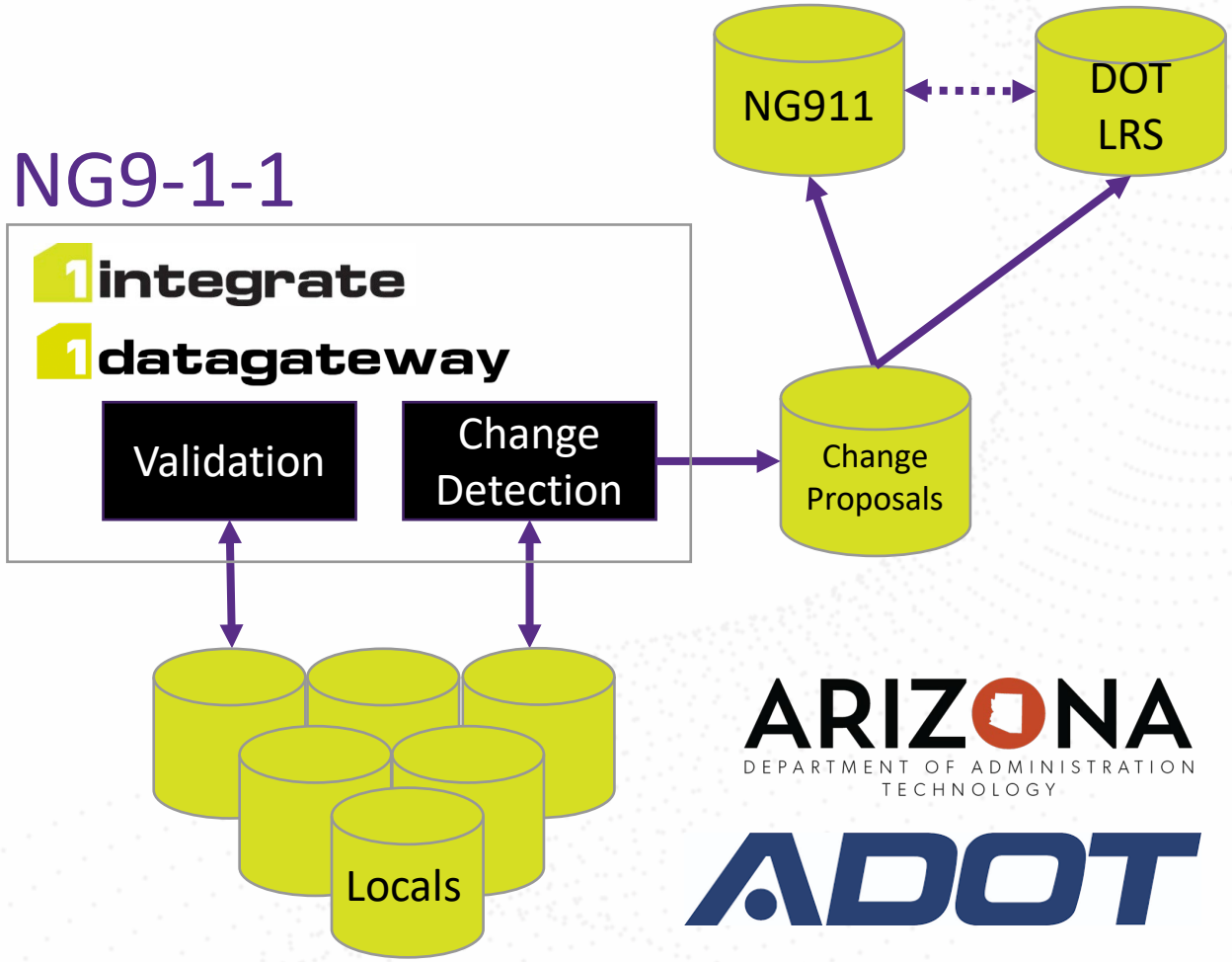
- **Collect Data from locals (Counties) for ARNOLD**
- **Integrate data into LRS System**

Challenges

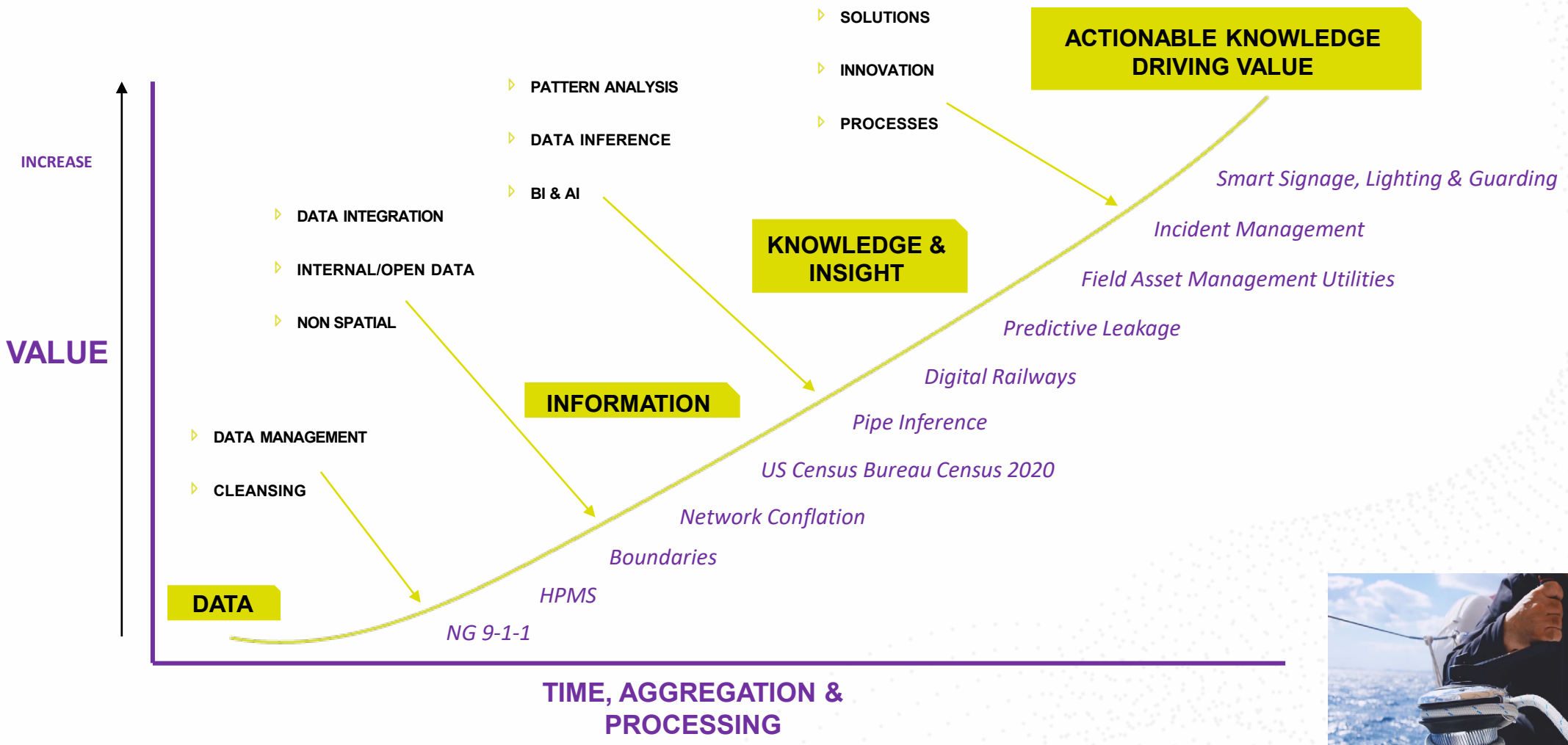
- **Each data supplier using own tech (Pro, ArcMap, QGIS)**
- **Data is not in the same schema**
- **GUID's not handled by data suppliers**

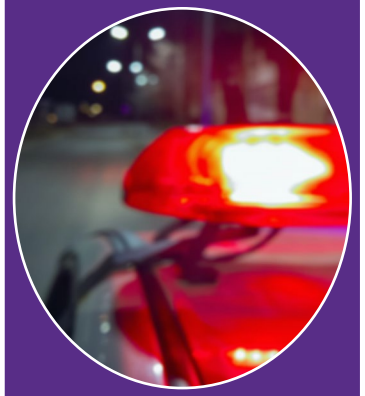
Solution

- **Vintage Over Vintage Change Detection**
- **Identifies Adds, Deletes, Splits, Extends, Attribute Changes**
- **Changes (Deltas) entered into LRS**



Automation Driving Safety and Efficiency





Creates an **authoritative**, set of data layers

- Emergencies, pollutants, roads, etc. don't stop at boundaries
- Data funnels from the locals (who are the SME's on their locales) to the state

Makes the data more accessible

- Increasing the value of your data assets
- Build once, use many

Reduces duplication of efforts

- Data development efforts
- Data sharing efforts

Drives collaboration

- Between Local entities
- Between Local and State entities

Economic benefits

- Data available for businesses to make decisions on location

Potential to lay the groundwork for a TRUE National Spatial Data Infrastructure

- Data flows from locals to state to fed

Data Governance is key!

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Questions?