Spatial Data Infrastructure

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over 45 years

innovation + development in Geospatial solutions

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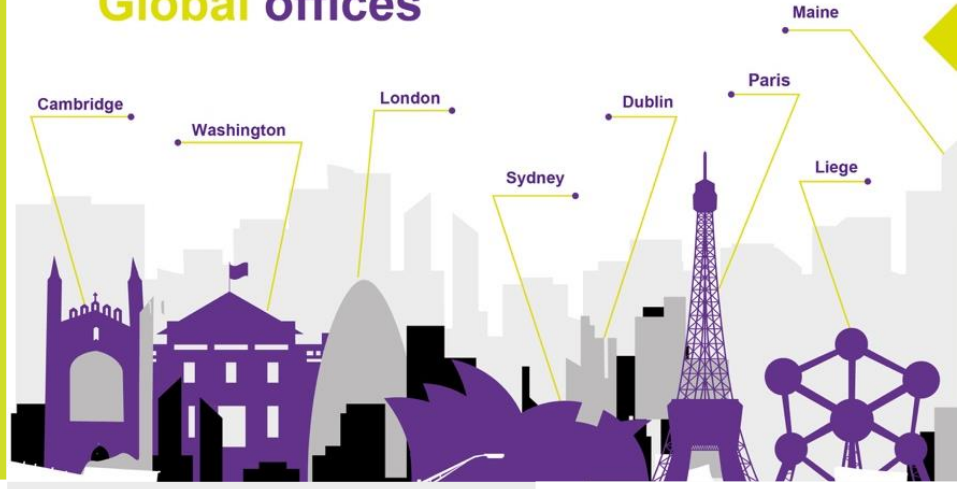
Industry Sectors

- Transportation
- Spatial Data Infrastructure
- Telecommunications
- Utilities
- Mapping Authorities
- Government

Global offices



Australia Customers

Endeavour Energy
Australian Government Department of Defence
SA Power Networks
Australia Post
PowerWater
Fortescue The New Force in Iron Ore
ACT Government
PSMA Australia

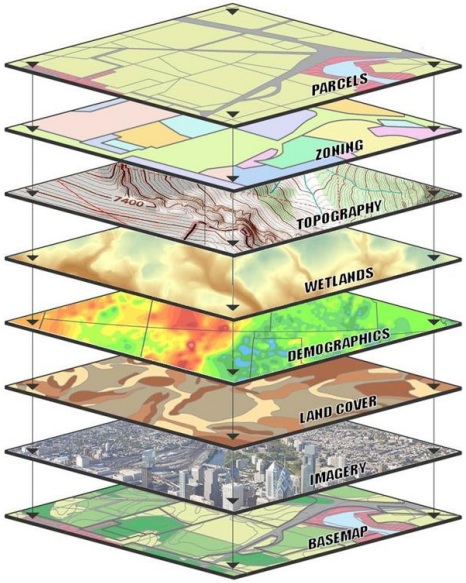
Global Customers

Ordnance Survey
Ordnance Survey Ireland
NetworkRail
vodafone
United Utilities
Tecteo Group
Northumbrian Water living water
Highways Agency

Technology Partners

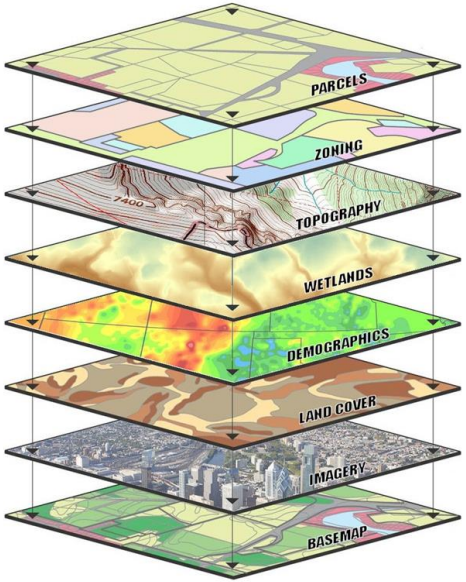
Microsoft
Latitude Geographics
ORACLE
esri
SAFE SOFTWARE
Trimble

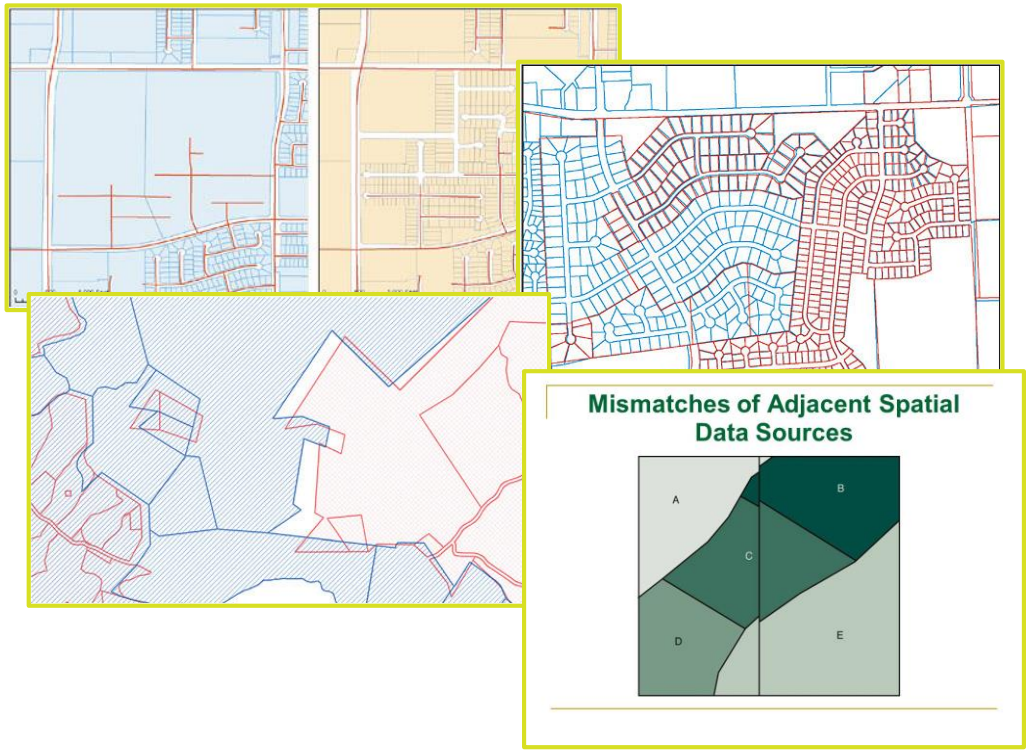
SDI – Tremendous benefit…..



"When these layers are drawn on top of one another, undetected spatial trends and relationships often emerge. This allows us to gain insight about relevant characteristics of a location."

SDI – Tremendous benefit….. but not without its challenges

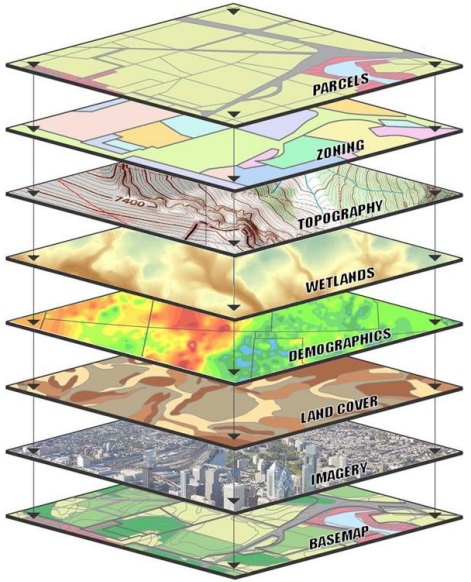




Spatial Data Infrastructure

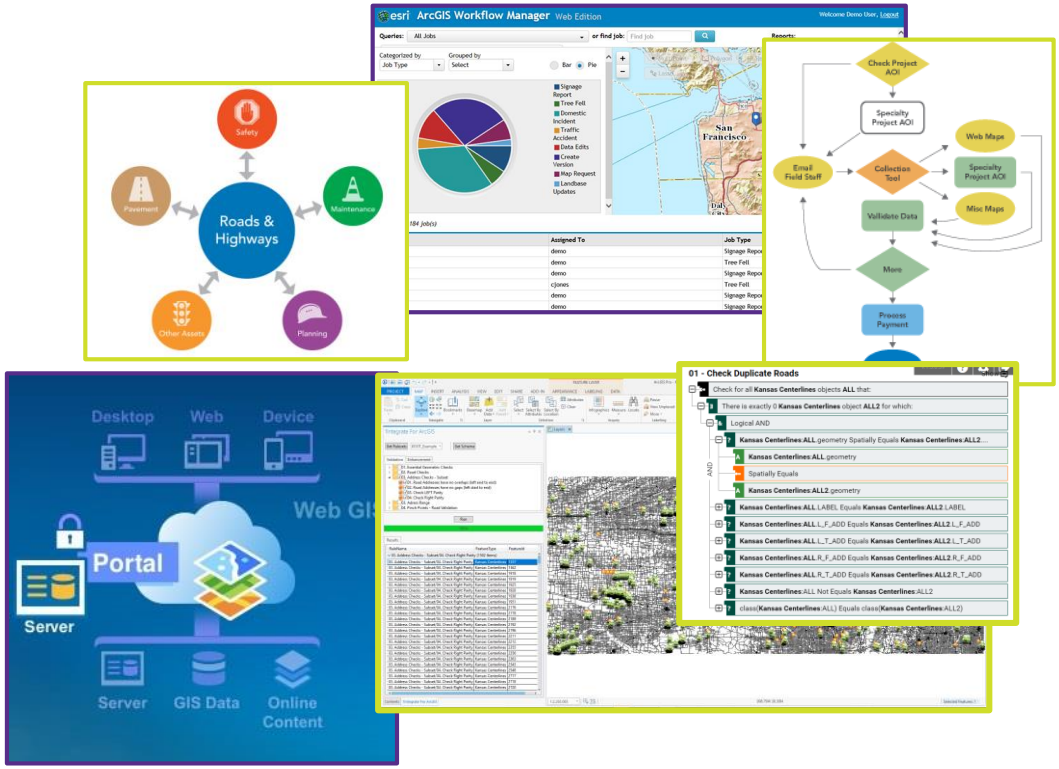
Why else build a SDI?

- Billions $$$ Spent on…
  - Redundant Systems, Processes and Workflows
    - Little Coordination between organizations, offices & programs
  - Occurs at all Levels of Government (Local, State, National)
    - City → County → State → Country
- New Requirements require collaboration
  - NG911, ARNOLD/HPMS
- Integration Challenges



Michigan SDI

- Integrate Multiple Layers
  - Roads, Addresses, Boundaries
- Validate
- Change Detection
- Integration



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Data Validation

Automate manual, time-consuming, subjective QA tasks. Certification required for proof of data quality (SLA's, legislation)

Data Integration

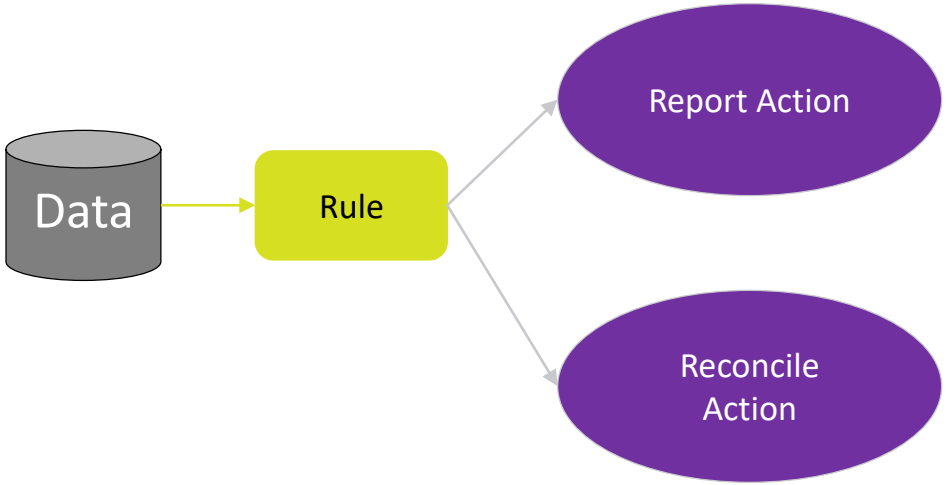
Maximize ROI through re-use, integration of data across the enterprise

Data Enhancement

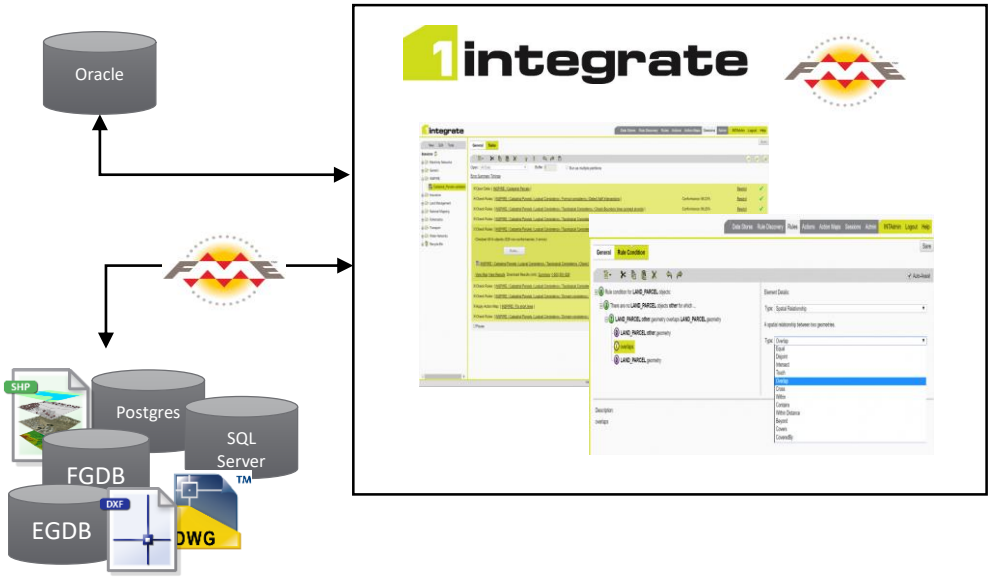
Automate cleaning tasks, create new data, construct repeatable, non-subjective corrective actions.

Rules-based Processing Paradigm

1. Fact – Pattern – Action
2. Given some facts, if they meet any of the patterns/rules, perform the defined action
3. Declarative – rule separated from processing - *Positive Declarative Approach*
4. Pluggable actions – reporting/ reconciliation



- Connects to many enterprise systems (CAD, CRM, BI, GIS, Asset Management…)
- Run centrally managed business rules against multiple sourced spatial and non spatial data
- Scalable Data Management – queue added



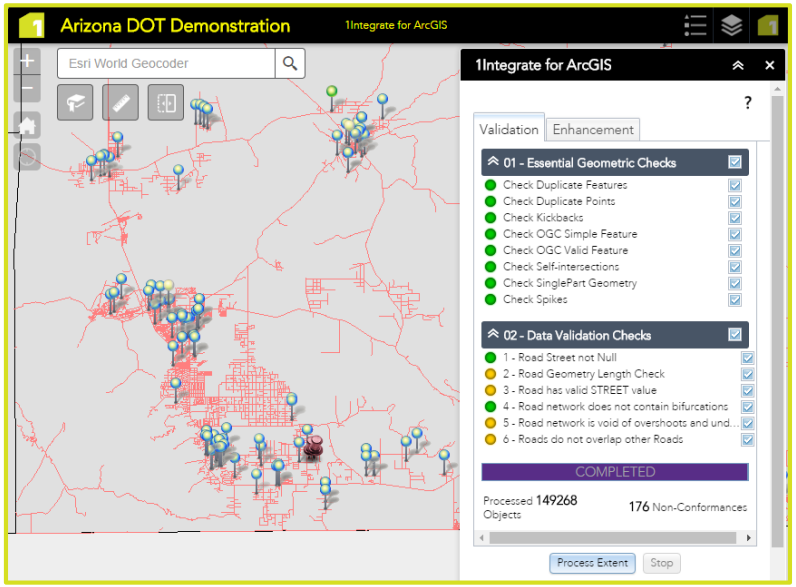
Use Case: Road Validations

Validations

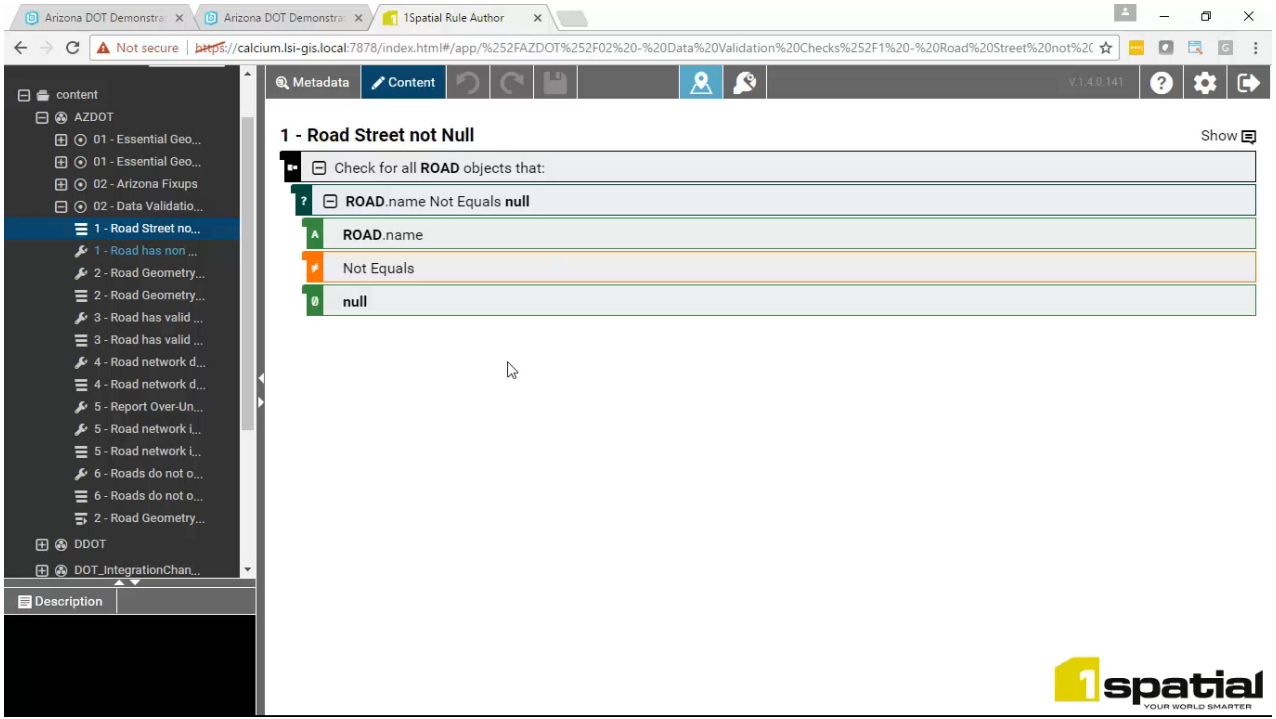
- Geometric Checks – Spikes, Dup Feats
- Attributes Checks: Street Names not NULL & Valid
- Street Length
- Overshoots, Undershoots, Overlaps
- Branching

Corrections

- Auto-Fix Geometric Errors
- Update Branching

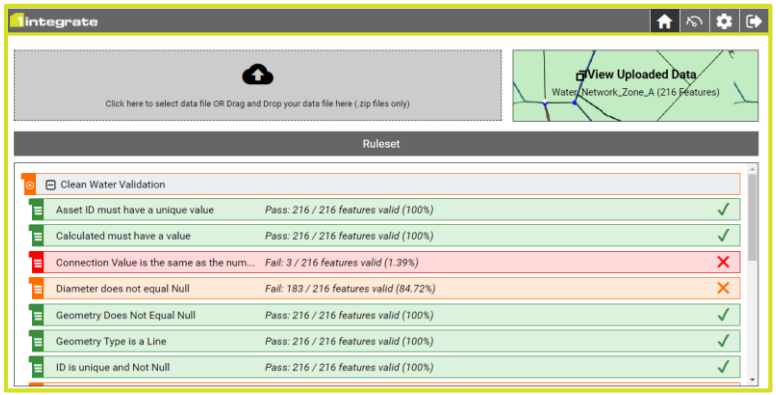


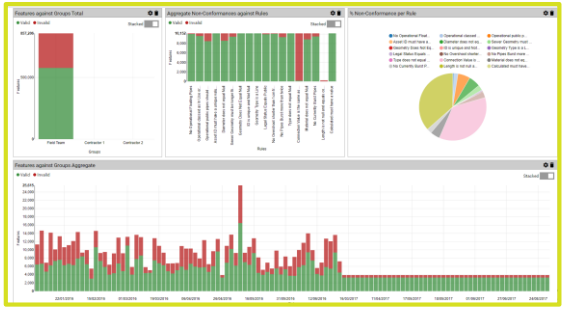
Use Case: Road Validations



Data Submission Portal

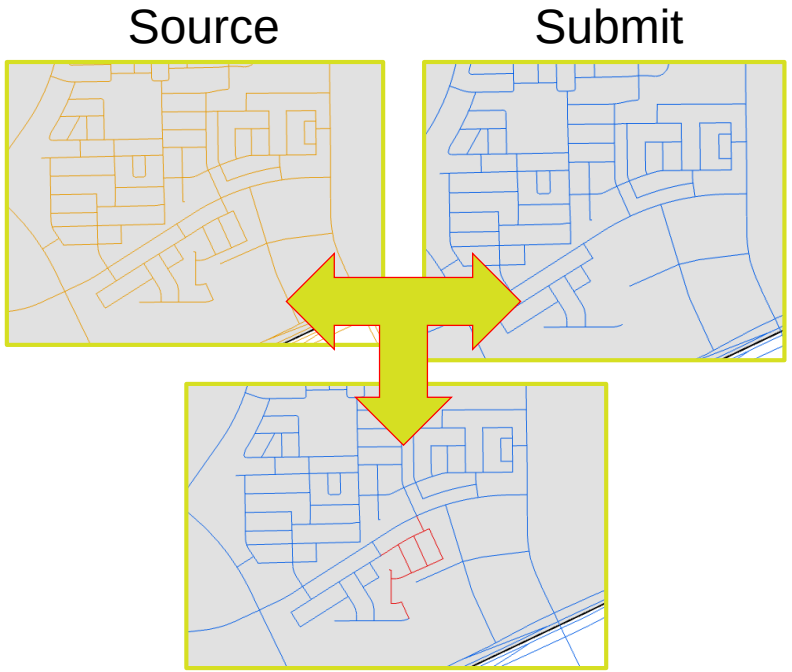
- User Interface for data providers to submit data
- Validates submitted data
- Provides reports on data submitted
- Returns Markups showing problematic locations for the data provider to fix





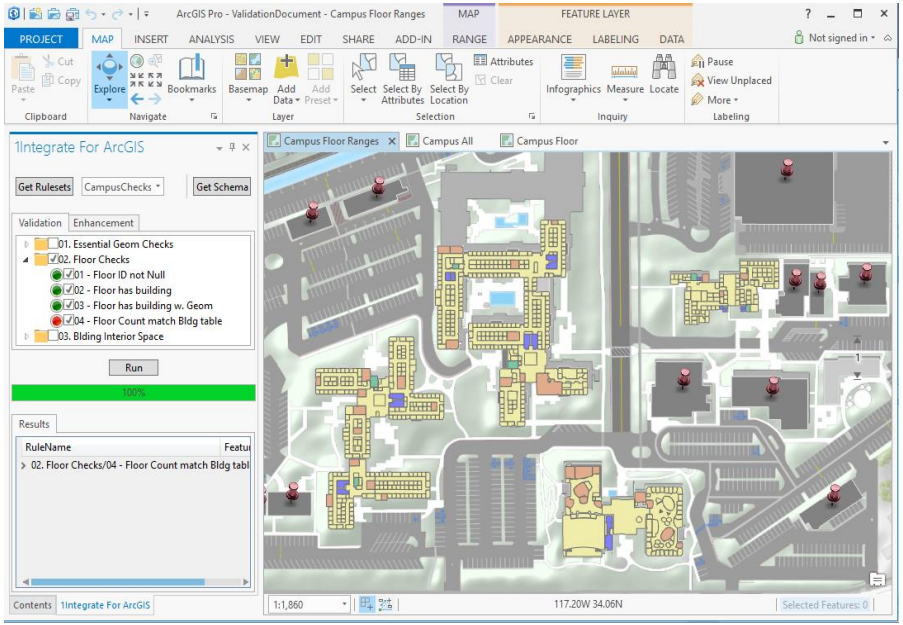
Use Case: Change Detection

- City → County → State → Country
- **NOT** Same Schema
- Only Edit Changed Features
- Use 1Spatial COTS products to detect and update only what's changed



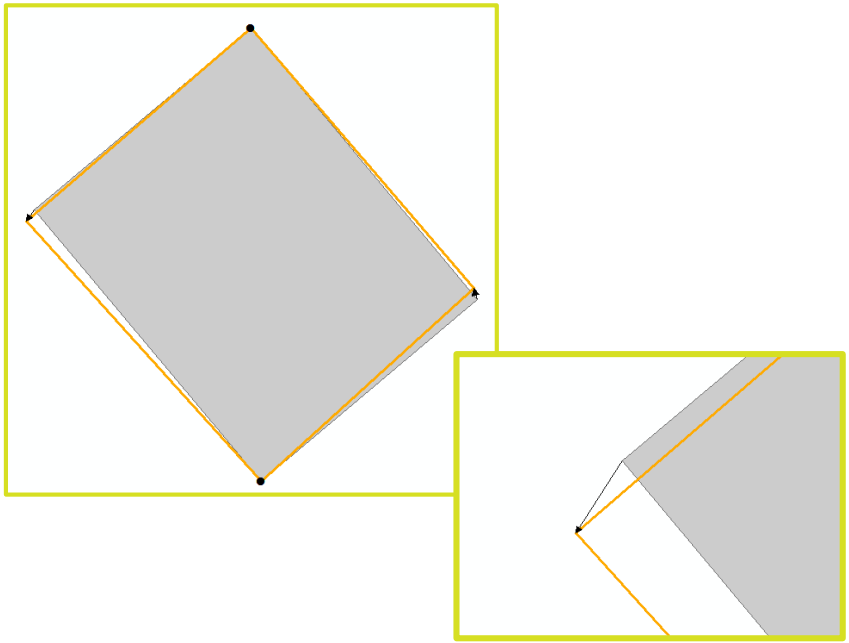
Use Case: Facilities GIS

- CAD to GIS Geometric Errors
  - CAD schematic representations
  - Data Alignment
- Traditionally Manual Process
  - Can take months getting everything geometrically correct
- Leverage 1Integrate to identify and fix issues - Automated

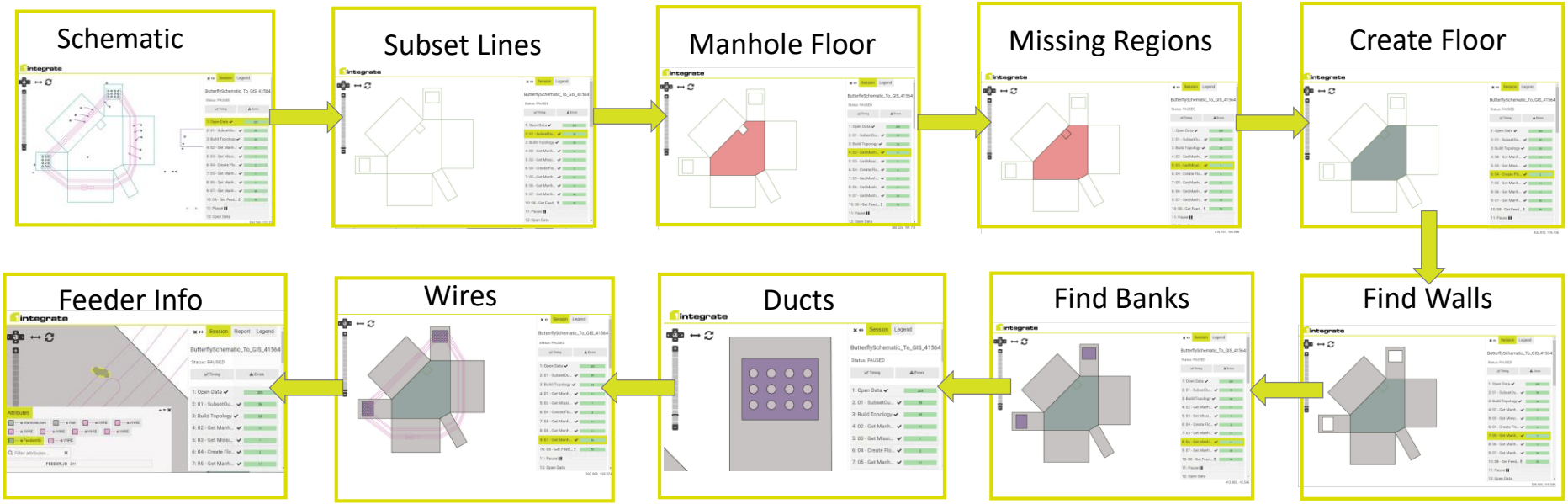


Use Case: CAD → Alignment

- Converting CAD to GIS
  - CAD isn't always in Projected Space
  - WLD files provided (sometimes only one or two refence points)
- CAD doesn't align to GIS
- Shifting the Data
  - 1Integrate has Shifting algorithms
  - Generates Shift Vectors
  - Shift all data with Shift Vectors



Create & Find Objects



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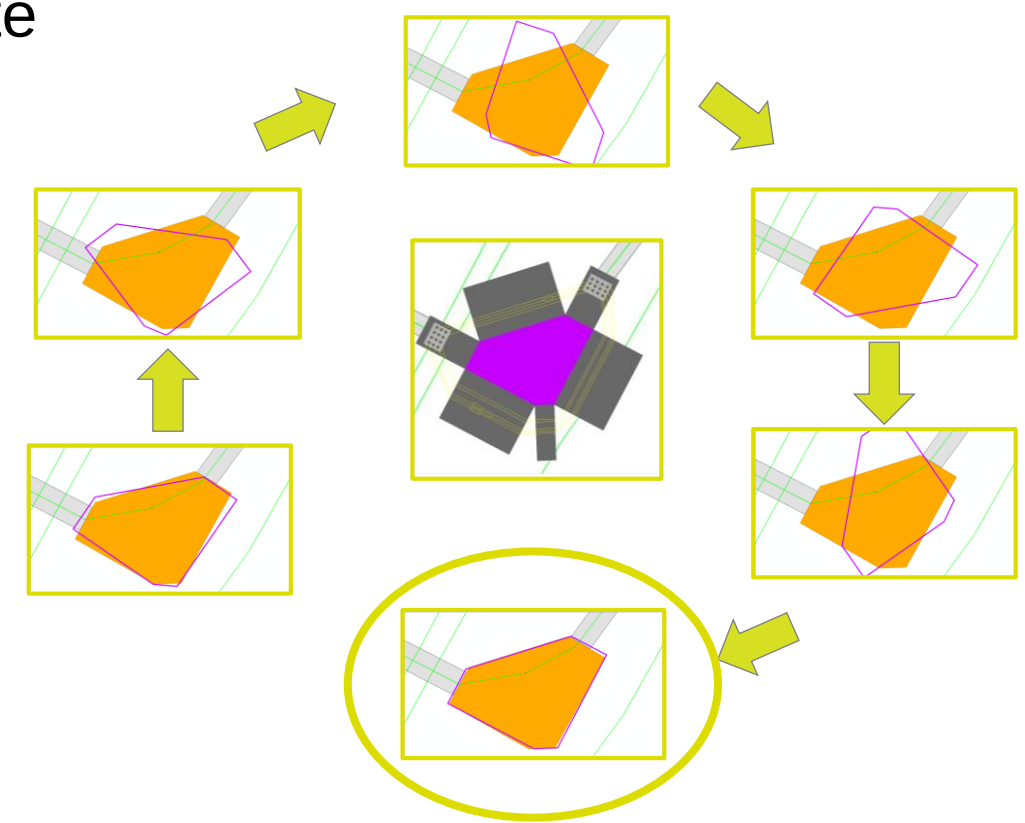
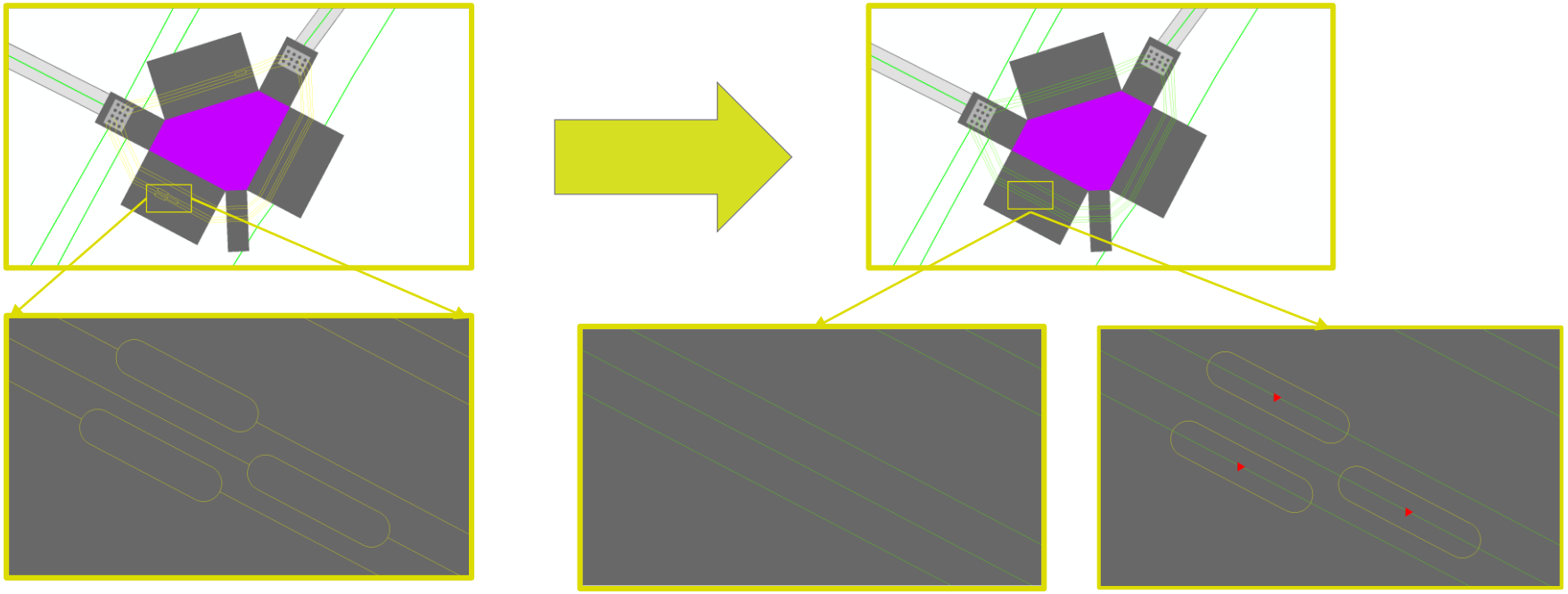
Shift, Scale, Rotate

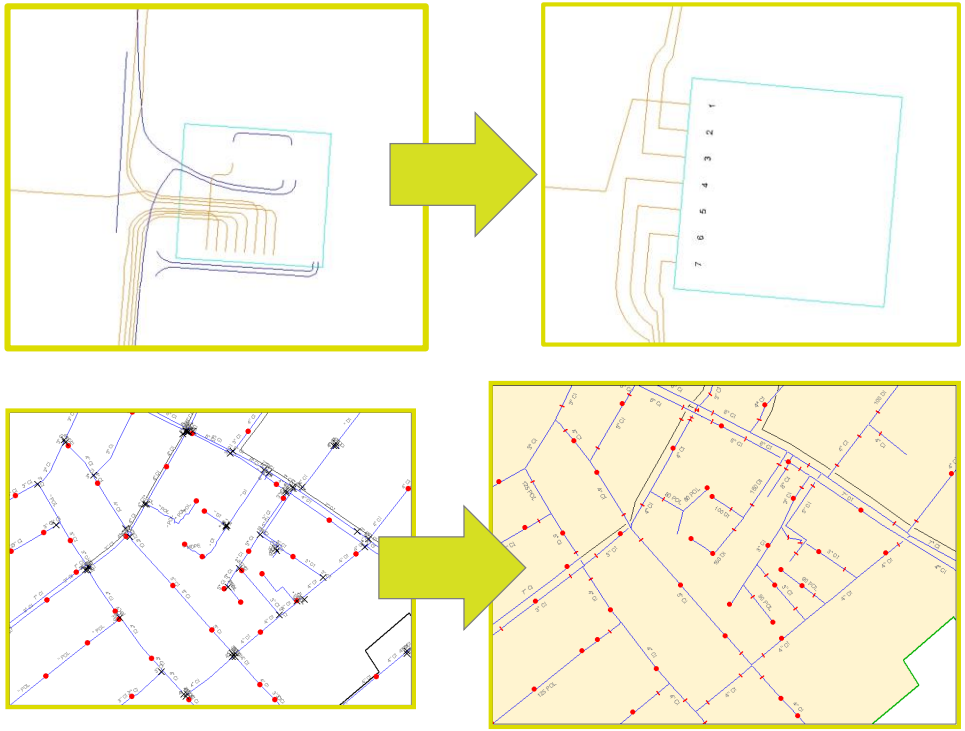


Connect Wires & Add Splices



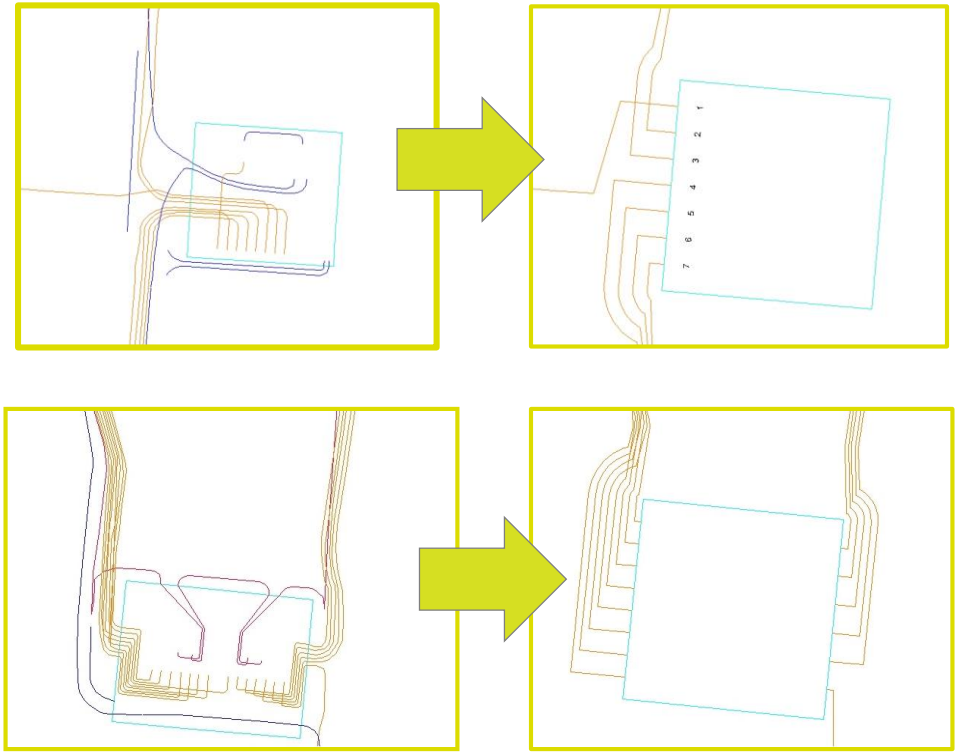
GIS to Geo-schematic

- Issues
  - GIS great for analysis not always for visualization
  - GIS Objects can be cluttered
  - Difficult to read
- **1Integrate\1Generalise**
  - Generalize Features
  - Spread out objects
  - Rules Based Generalization



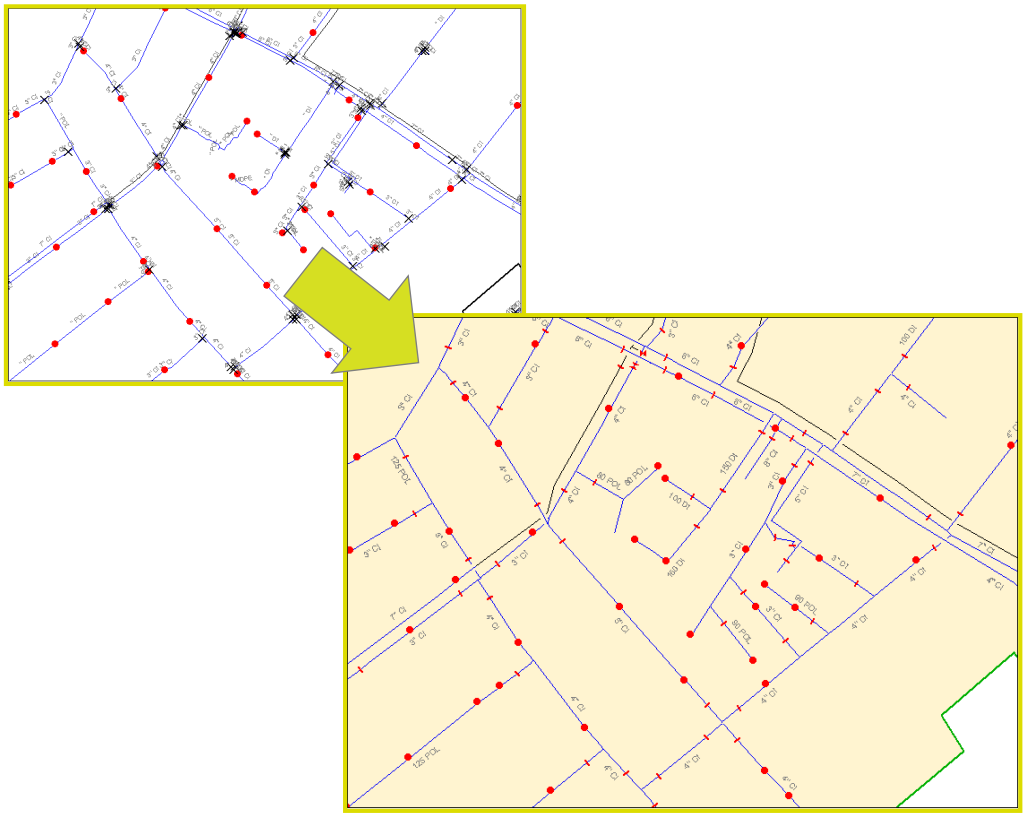
Electricity substation cable approach

1. Create simplified square asset
2. Identify low voltage cables
3. Re-route in to correct side, in correct order, spread out evenly
4. Add numbering for each connection



Water Network

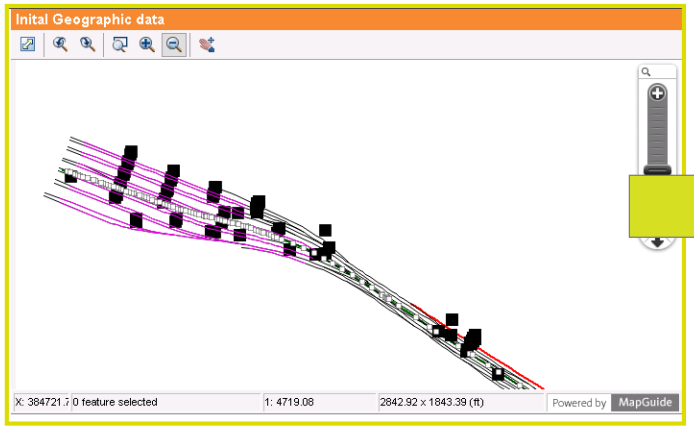
1. Pipe straightening
2. Pipe separation
3. Point asset separation
4. Create perpendicular valve symbols as lines
5. Label generation and intelligent placement
6. Gap creation at crossing pipes

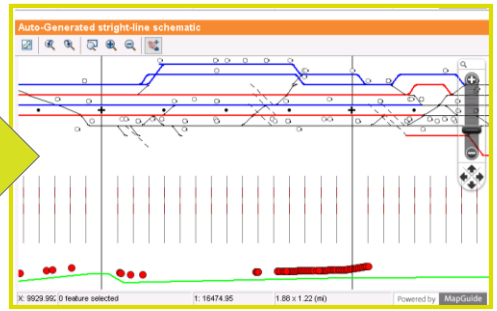


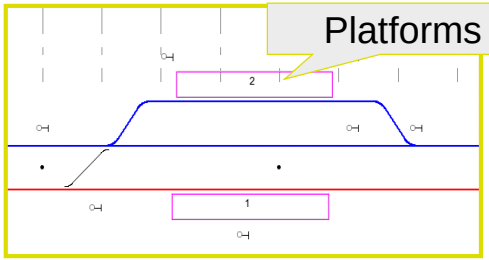
Network Rail

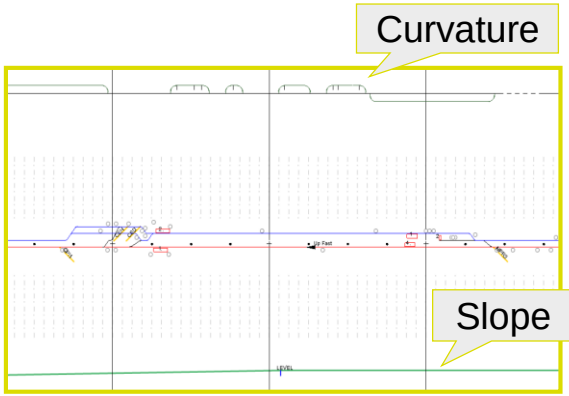
GIS to Schematic

- Auto Generate 5 Mile Line Diagrams
- Assets placed at the correct LRS

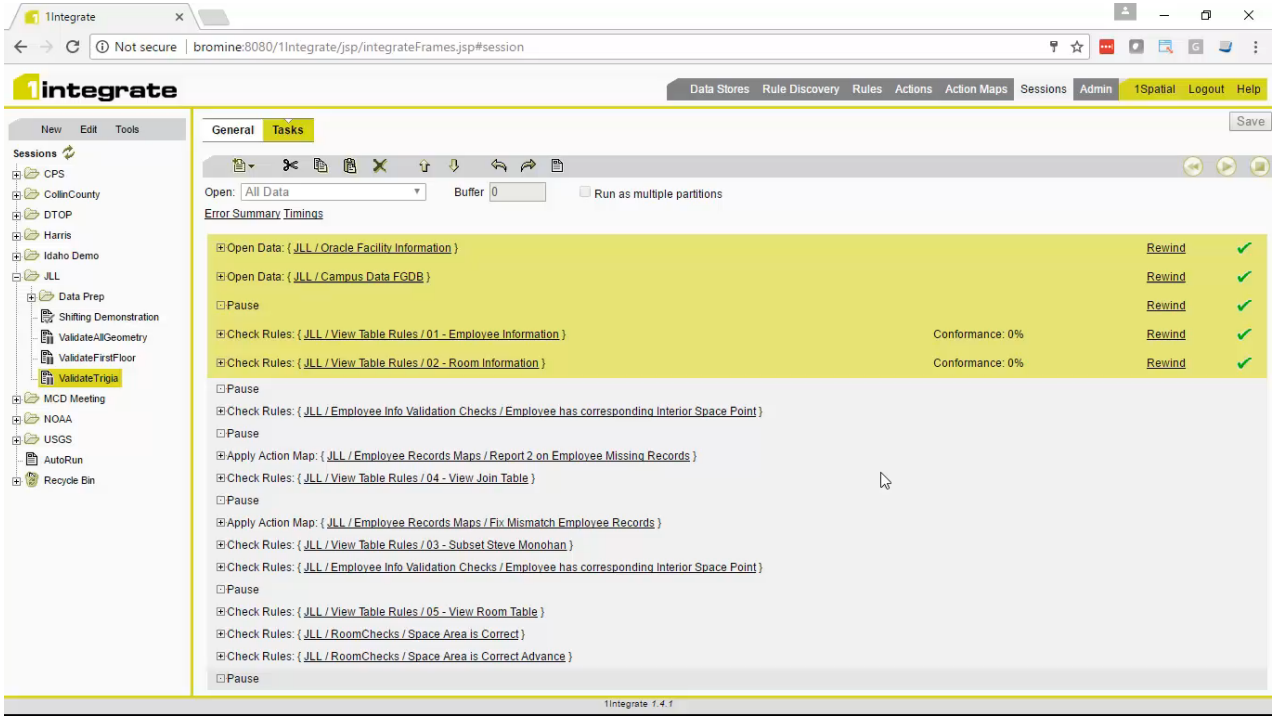








Use Case: Across the Enterprise



Spatial Data Infrastructure Questions?

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