



GWFF

GEOSPATIAL WORLD FORUM

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HEXAGON

Automation of mundane defence data

Multiple benefits for defence

Richard Goodman

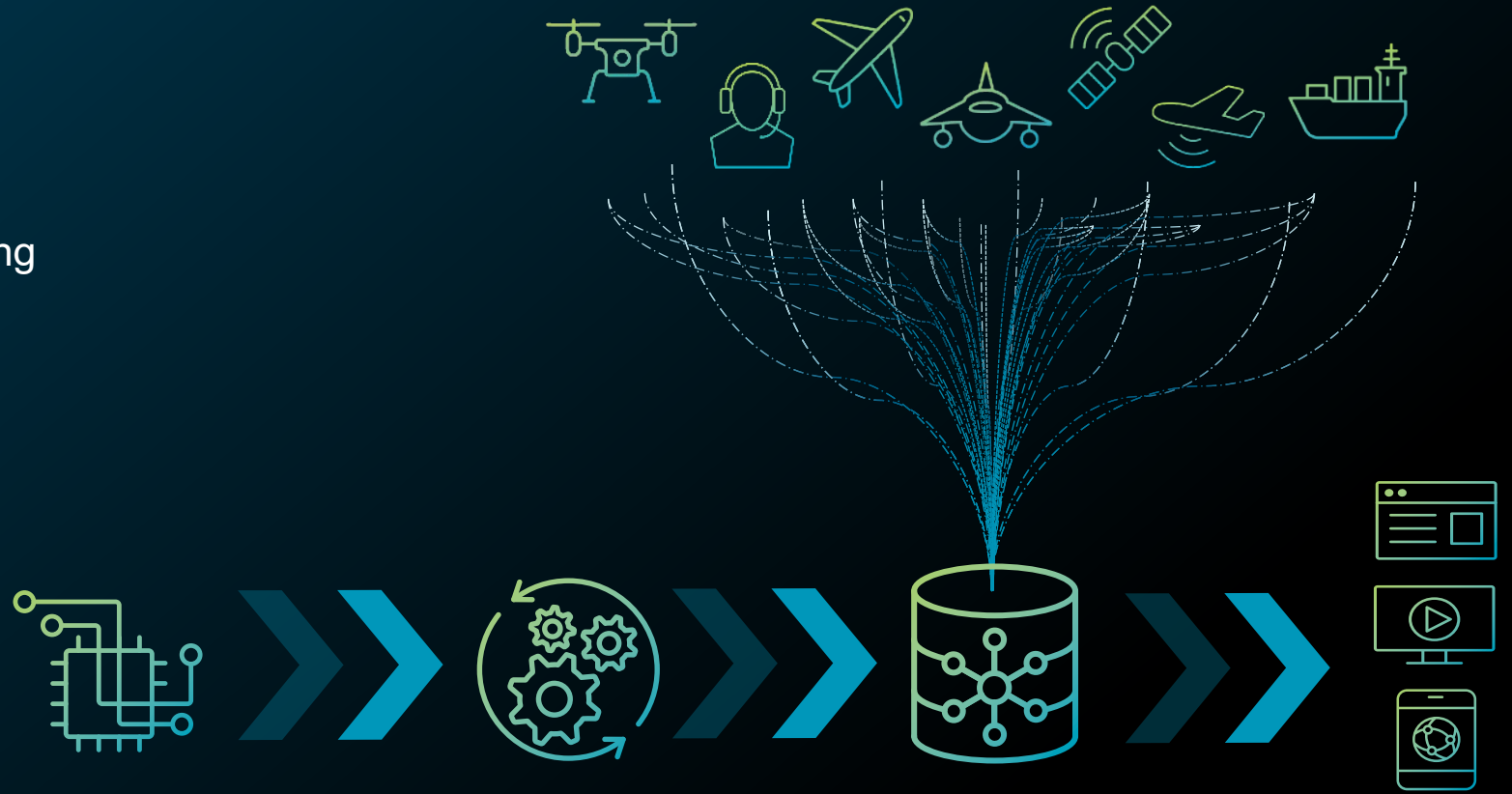
EMEA Defence Lead

Hexagon's Safety, Infrastructure & Geospatial division

Get the right information to the right people at the right time

Accelerate information extraction and delivery through automation

- ✓ Edge processing
- ✓ Automated information
- ✓ Automated discovery and cataloguing
- ✓ Wide-range data support
- ✓ Distribution through standards
- ✓ Off-the-shelf technology

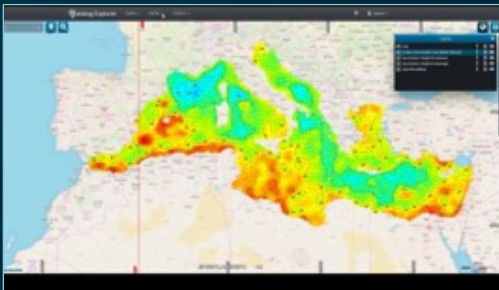
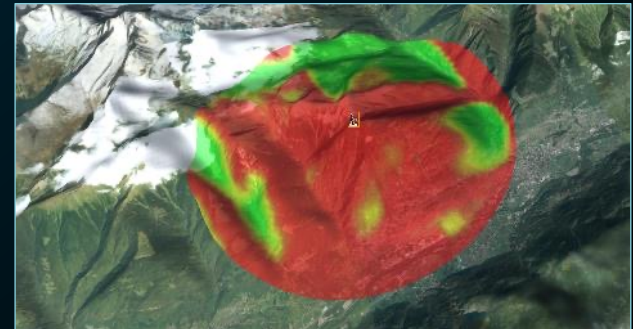
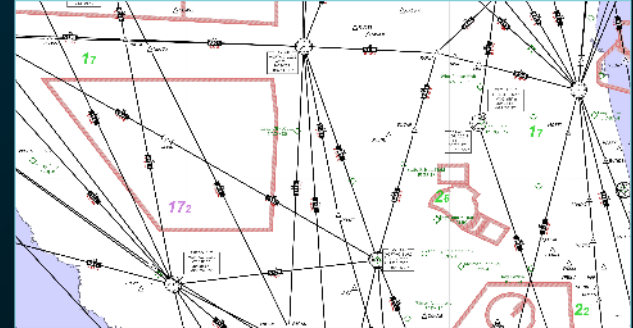
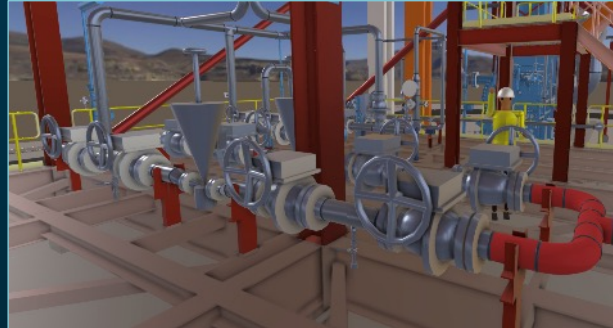
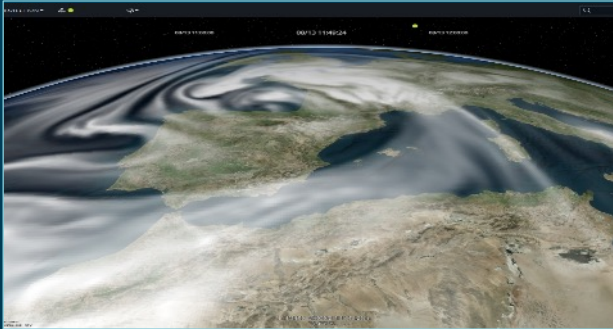




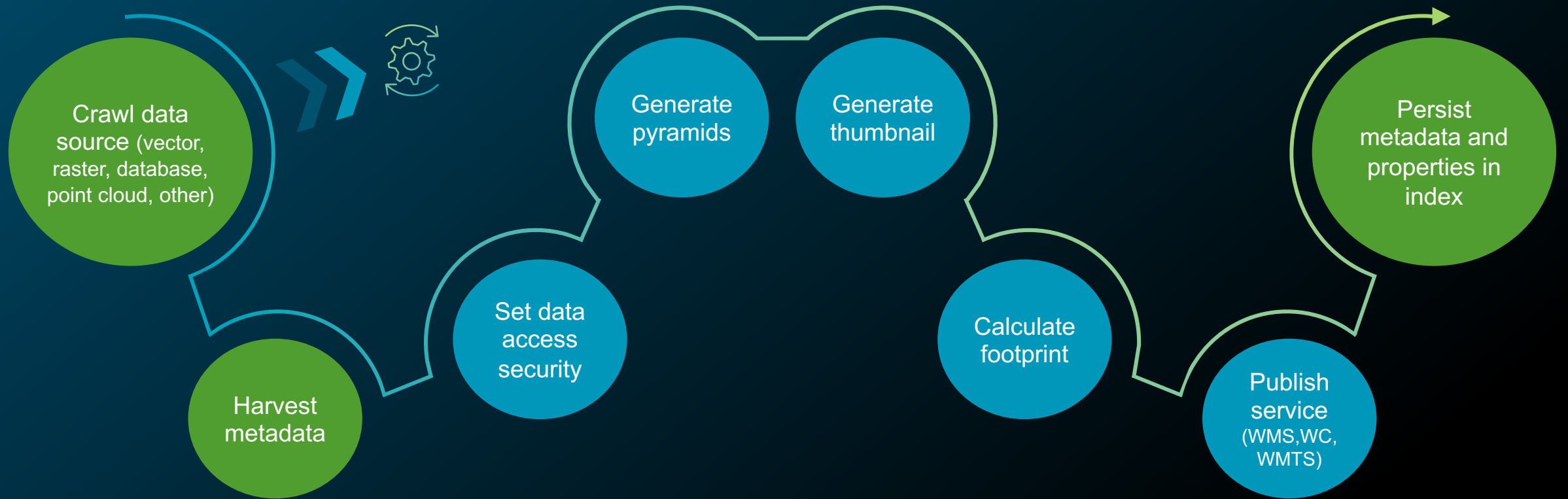
Data catalogue

- Enable enterprise data management, discovery and delivery
- Understand what data assets you have and provision them securely
- Provide value-added services

Catalogue holdings



Geospatial information crawler



- Mandatory process
- Optional process

Interoperability

Examples

- NetCDF-CF
- GRIB V1, V2
- GeoTIFF, Shape, PostGIS, HDF
- RESTFul API
- Excel, CSV, Doc, PPT, BMP
- OGC CSW, WMS, WFS(-T), WCS, WMTS connectors and services
 - GetFeatureInfo for WMS and WMTS
- OGC 3D Tiles
- OGC KML, GML
- OGC GeoPackage
- OGC SLD/SE
- OGC Filter 2.0
- ISO 19115 metadata
- OGC API-Records
- OGC API-Processing
- S-57 data format
- S-52 symbology
- S-63 decryption
- S-64 and IEC61174 compliant
- S-100s
- Additional military layers
- APP-6A/B/C/D
- MS2525B/C/D
- NVG
- DBDB-V
- LAS
- SAR

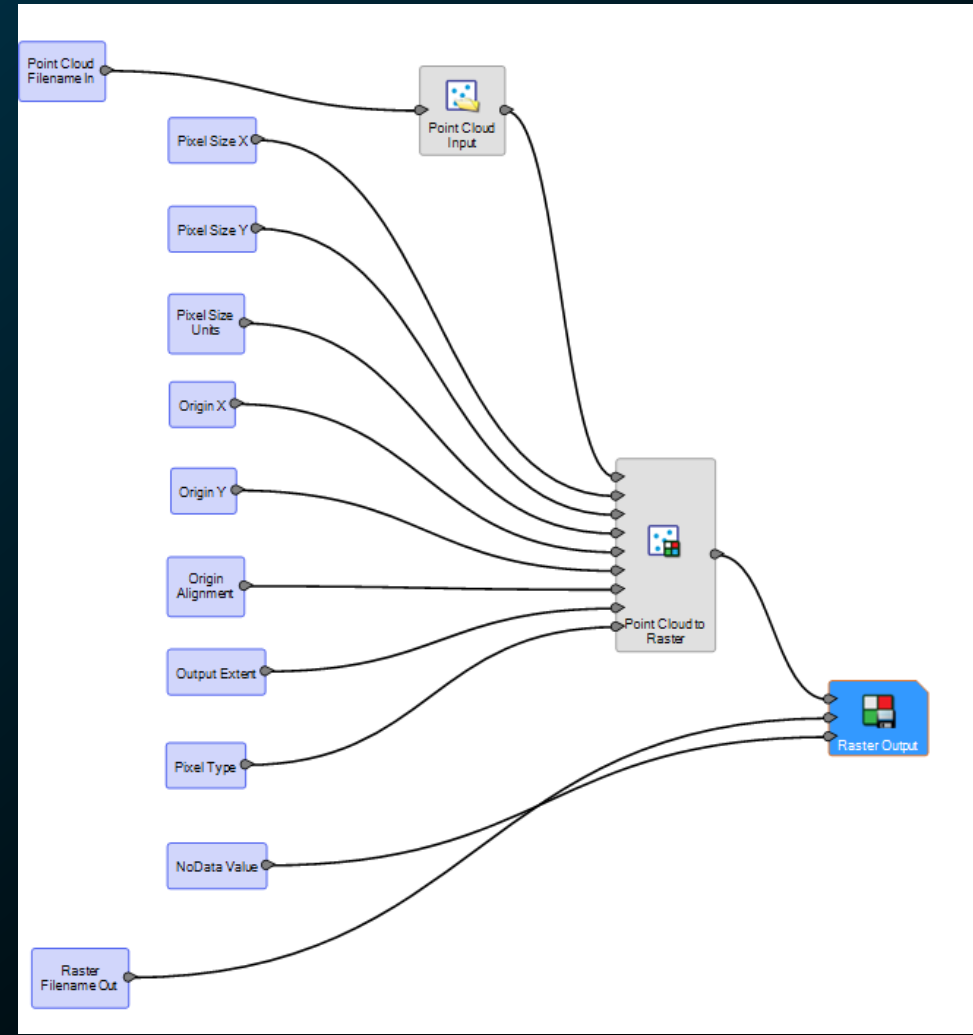
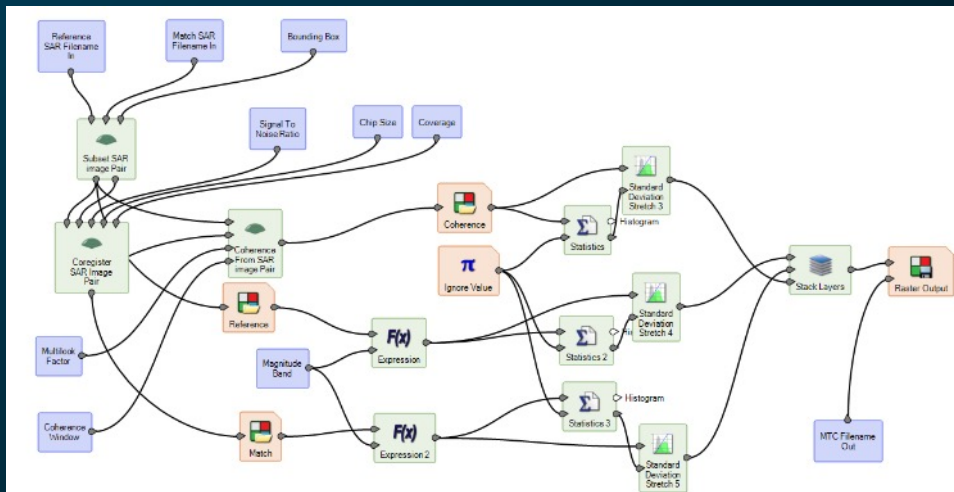
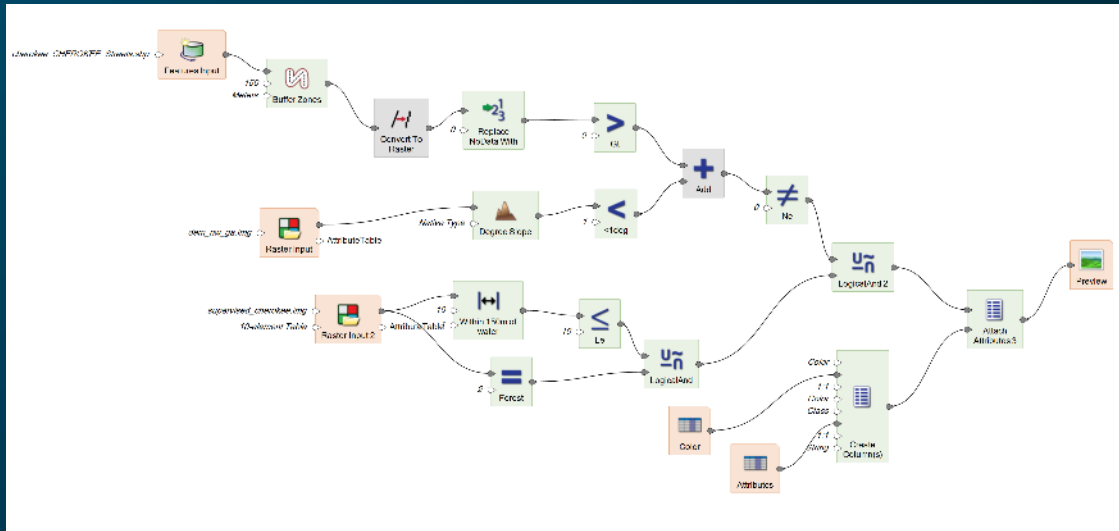




Data processing

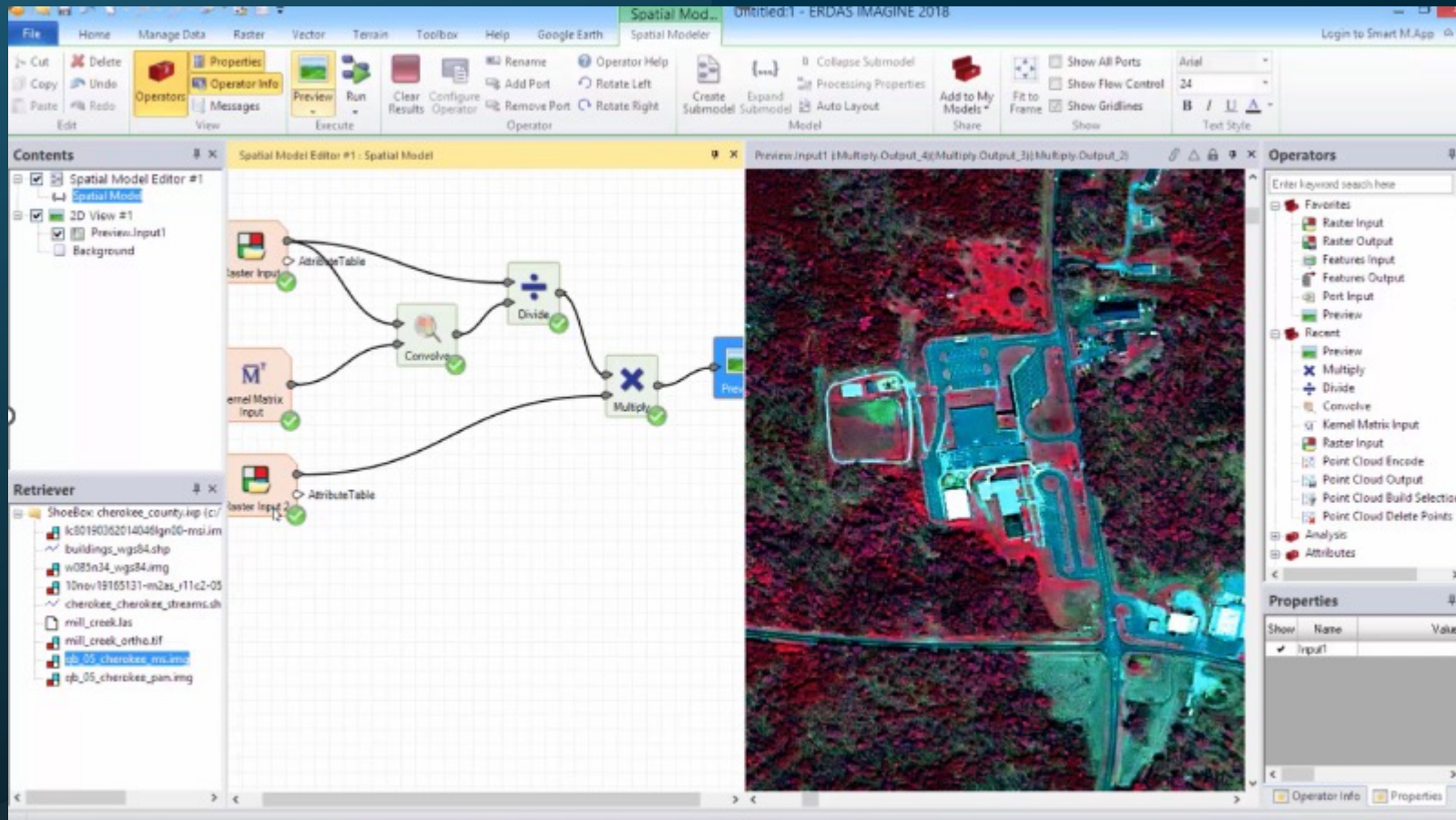
- Enable enterprise data analysis
- Allow users to answer questions
- Process ad-hoc, on demand

Workflows

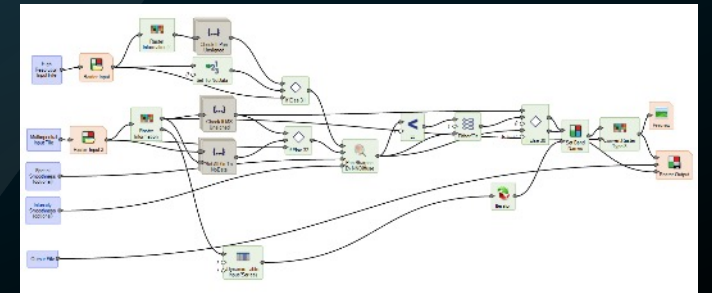


Improving data

Pan sharpening



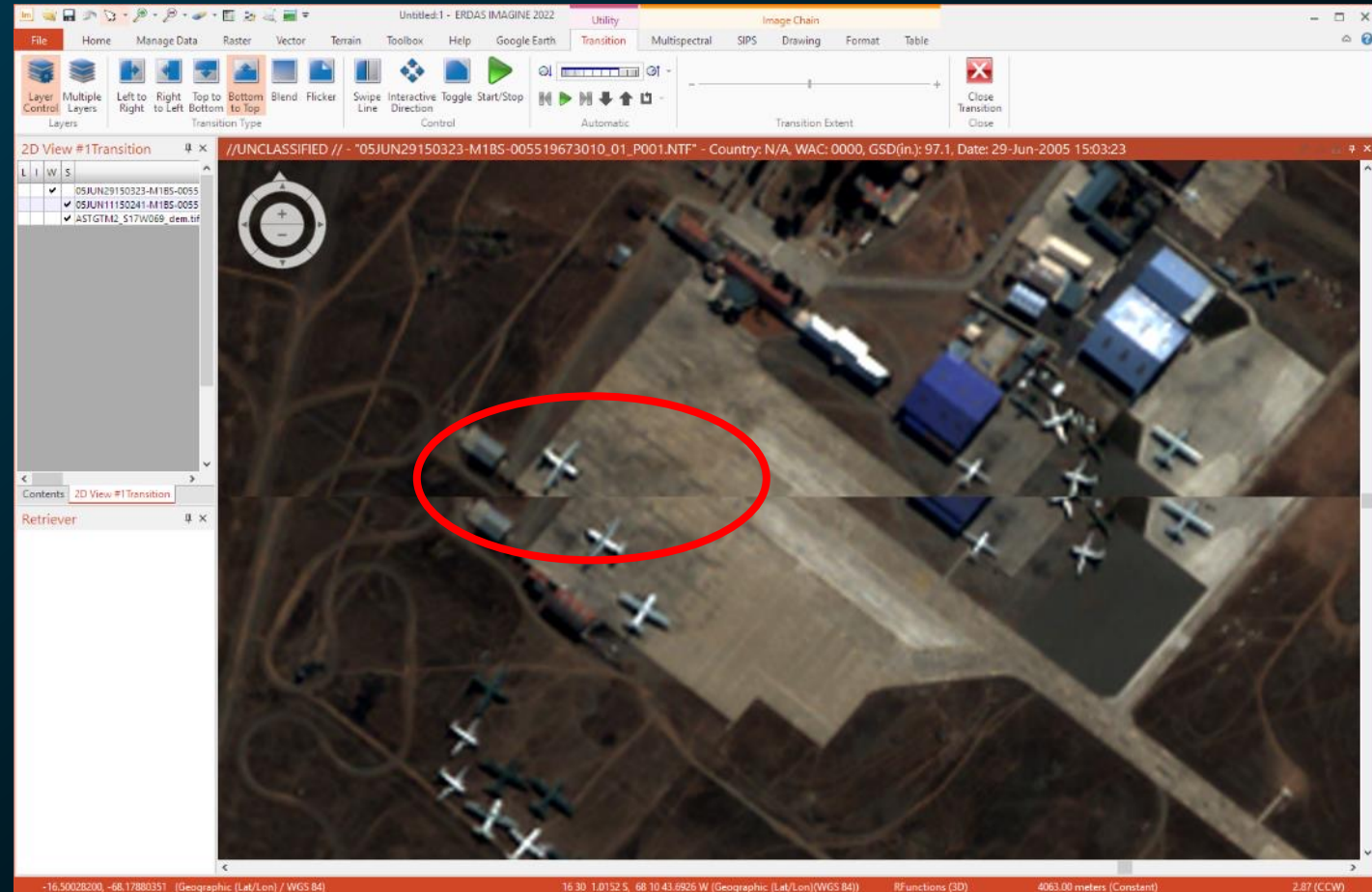
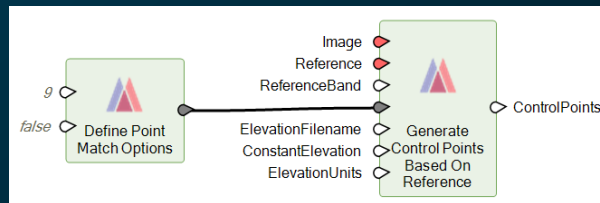
Real-time pan sharpening



Improving data

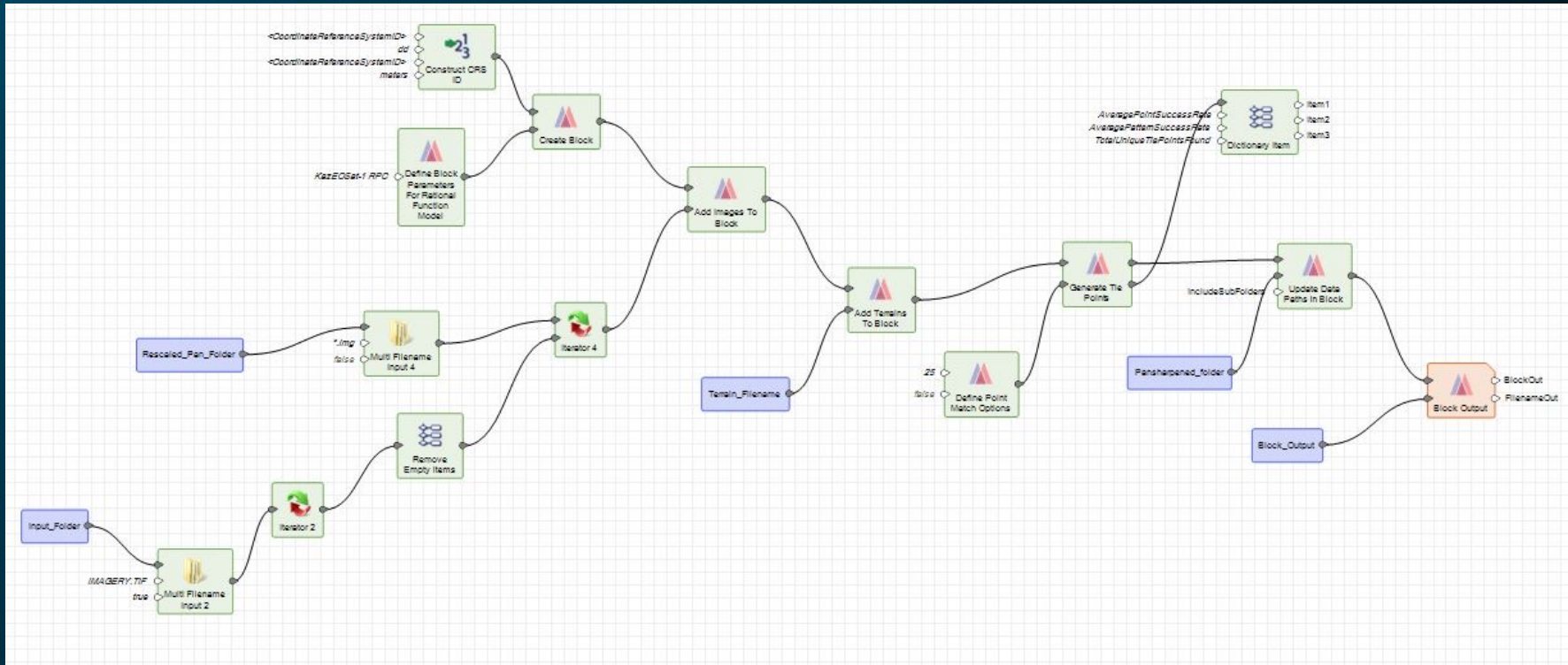
Co-registration of imagery

- Comparing images requires co-registration
- Images taken at different times will have displacements
- Operators provide tools to build automatic co-registration into Spatial Modeler workflows



Photogrammetry

Automate satellite data processing

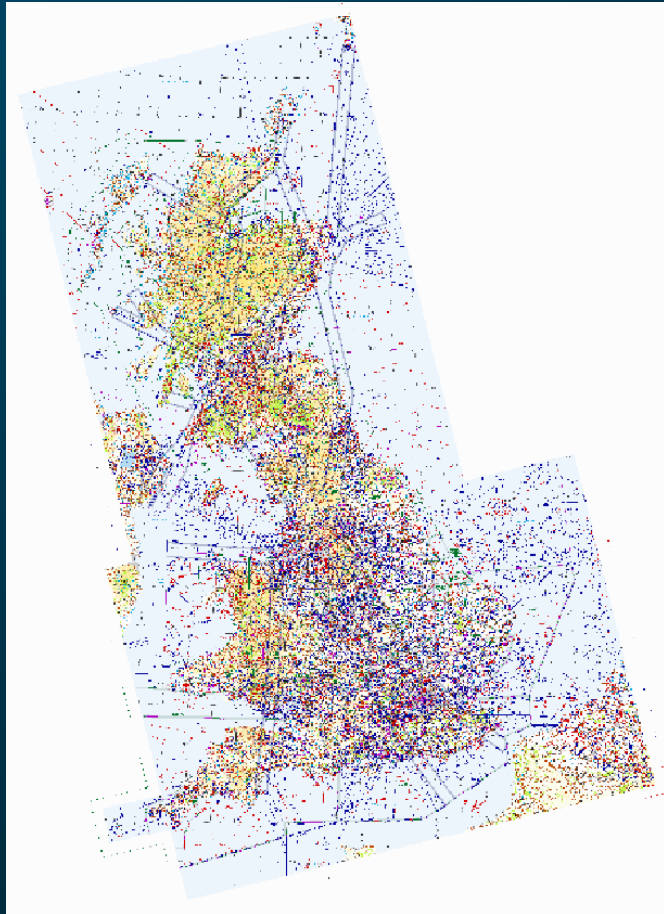


- Create block
- Automatically add images to block
- Add terrain
- Create tie points

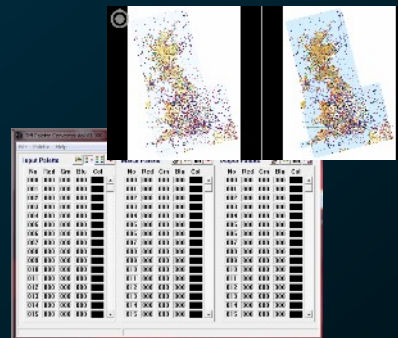


Data manipulation

Automation of raster editing



- Scanned raster map
- Thematic
- Non-georeferenced
- Various steps



4 steps



5 steps



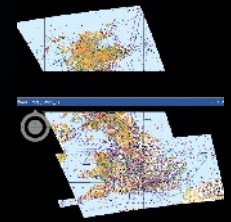
7 steps



9 steps



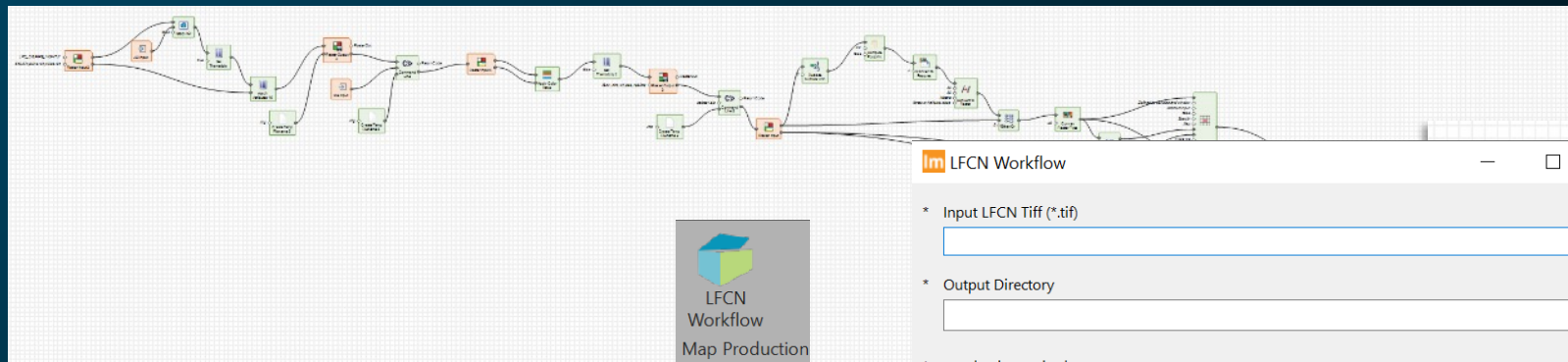
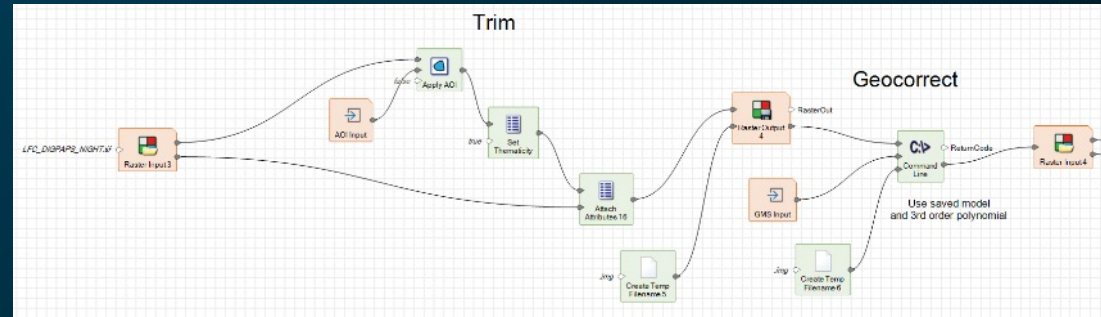
11 steps



15 steps

Data manipulation

Automation of raster editing



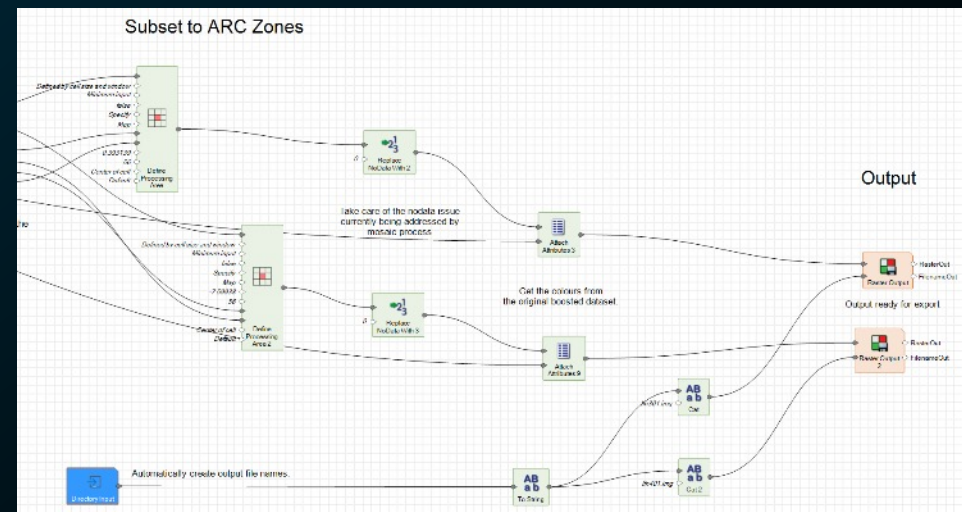
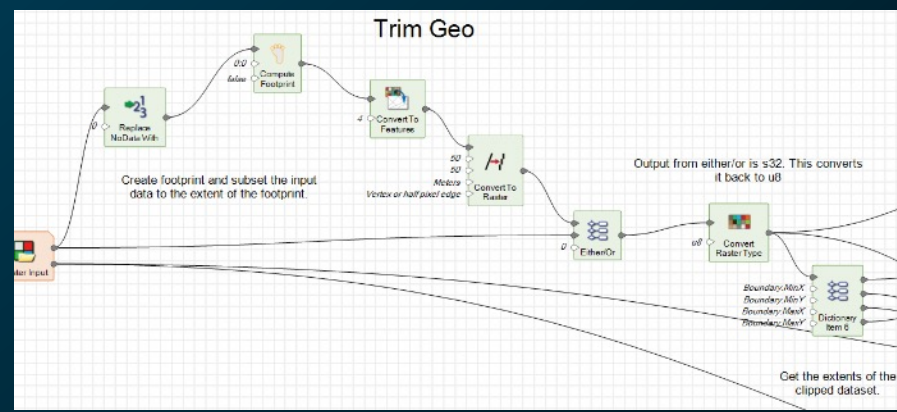
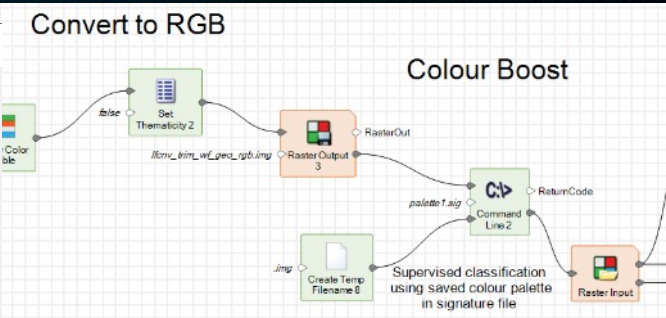
LFCN Workflow

* Input LFCN Tiff (*.tif)

* Output Directory

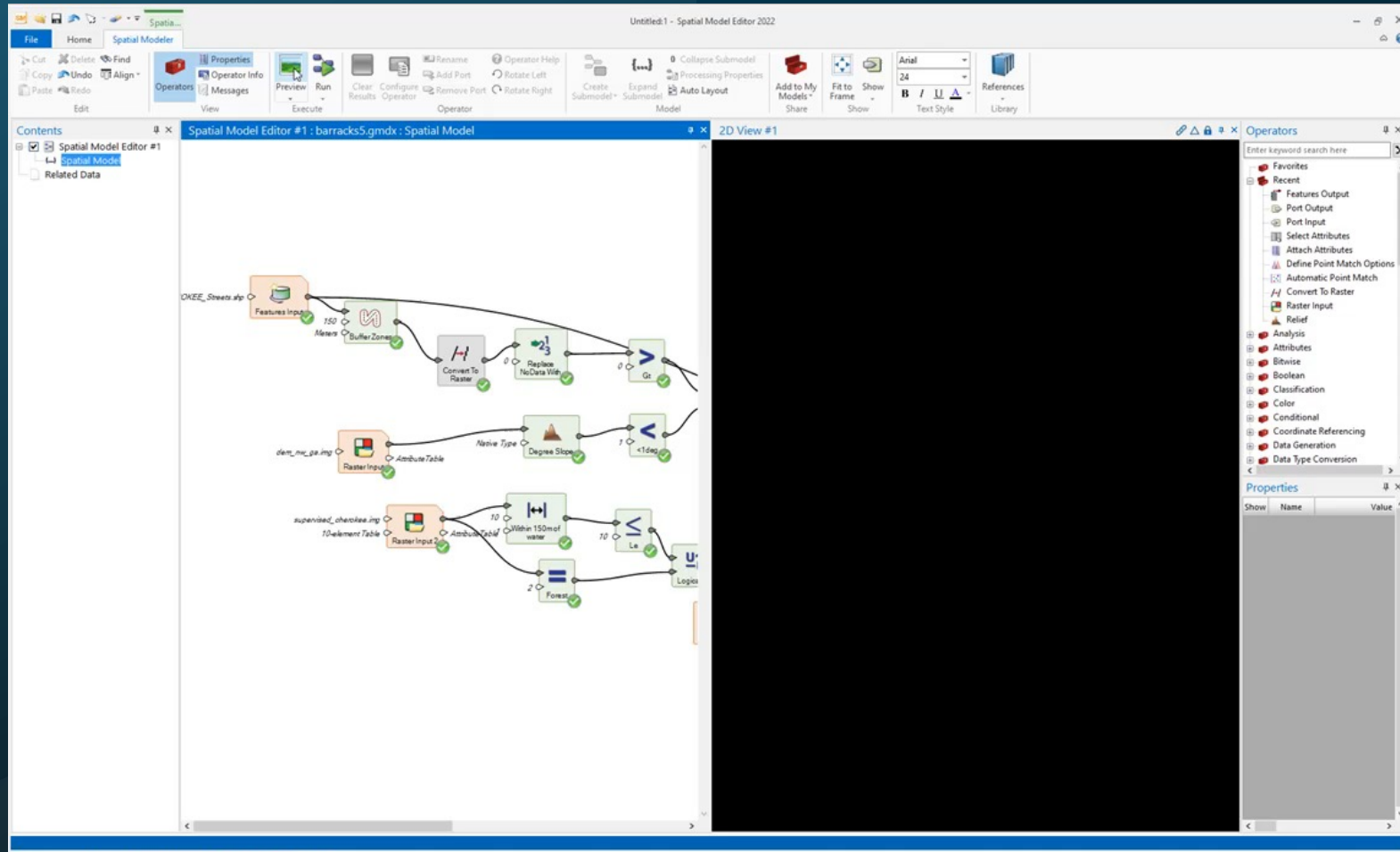
* = a value is required

Buttons: View, Preview, Run, Batch, Cancel, Help



Terrain analysis

Camp placement



- Assess
 - Terrain
 - Water source
 - Land classification





“

Automation applied to an inefficient operation will magnify the inefficiency.”

Bill Gates



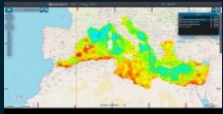
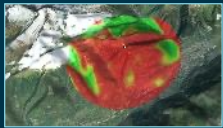
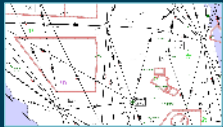


Data Dissemination

- Enable controlled sharing
- Deliver data and added value
- Reduce delivery overheads

Via standards

OGC



- OGC CSW
- OGC WMS
- OGC WFS(-T)
- OGC WCS
- OGC WMTS
- OGC 3D Tiles
- OGC KML, GML
- OGC GeoPackage
- ISO 19115 metadata
- OGC API-Records
- OGC API-Processing



Automation of mundane defence data

Digital transformation

Catalogue

- Record data and information holdings
- Retrieve
- Decrease duplication
- Federated stores

Process

- Capture analysts' knowledge
- Lower training burden
- Spread capability
- Ease workload

Share and consume

- Avoid duplication
- Quicker decisions
- Inform users
- Common understanding



Automation of mundane defence data

Digital transformation



Thank you!

Richard Goodman

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