CHANGEAERIAL

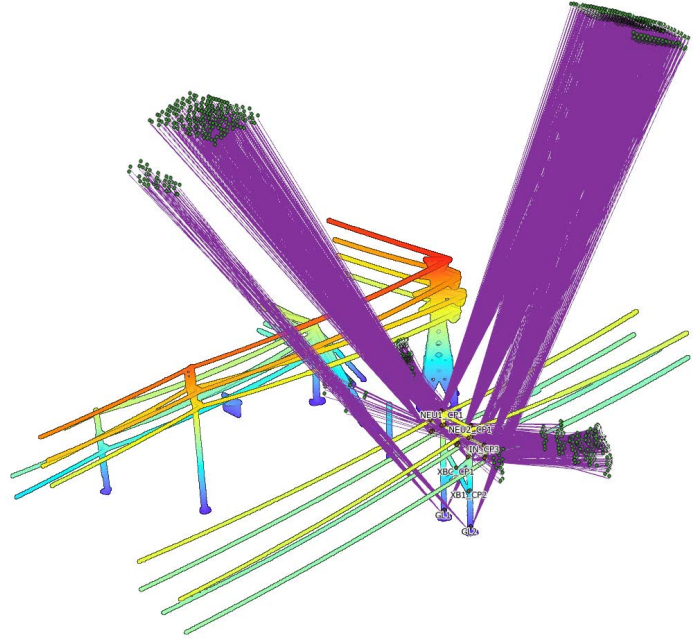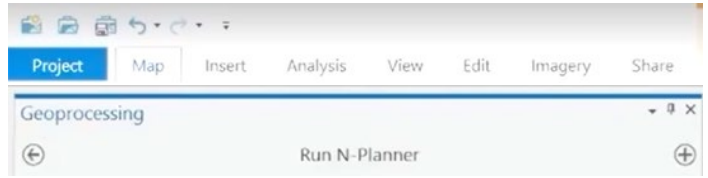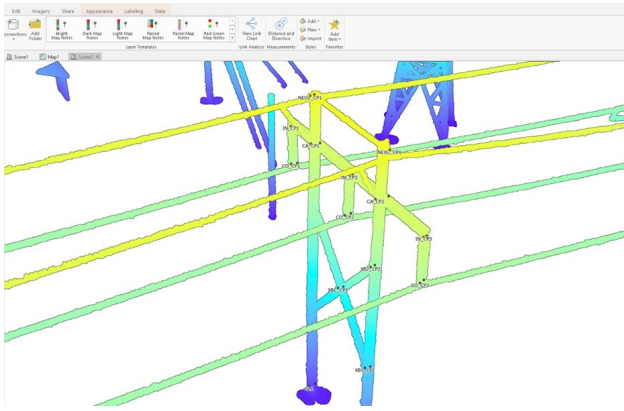## Tools for Automated Drone Inspections

N-PLANNER

GIS-based drone flight planning
- 3D points define targets
- Specify the desired:
  - view angles
  - spatial resolution
- Select sensor type
- Hit "go" to generate flight plan
- Load plan & fly automatically

Flight planning options
- QuickShot: automate existing shot sheets
- Optimizer: less images more features

Automated flights using your GIS data
High quality image capture
- Exact views
- Exact spatial resolution
- Pinpoint precision
Repeatable imaging on a schedule:
- Daily, weekly, yearly, etc.

COST & QUALITY VALUE BENEFITS

New levels of precision, efficiency & timeliness
25% improvement - in navigation accuracy[1]
> 25% reduction - in OpEx with 15%- > 50% FTE
300% faster - in image collection speed
compared to manual flights
30% faster - compared to typical automated flights
40-60% reduction - in image capture cost
> 40% increase - in productivity and capacity

esri Partner Network Startup

SOUTHERN CALIFORNIA ENERGY INNOVATION NETWORK

Imperial | Riverside | San Bernardino | San Diego

N-PLANNER - Cost and Quality Value Streams

ChangeAerial's patented RSI technology exploits survey-grade GPS positioning and repetitive imaging to optimize precise repeat image collection for downstream manual and/or *automated analyses*. Location-based flight planning combined with high-accuracy repeat imaging (returning the camera to the same position over time for monitoring purposes) is foundational to image quality regardless of drone model and camera quality/resolution. See *N*-SPECT for a*nalyzes* & better detection accuracy.

Precision - dependent on use case and characteristics
25% improvement in UAS navigation accuracy[1] using RSI © location-based imaging & RTK navigation vs not. UAS navigation impacts multi-date image co-registration accuracy enabling
- Improved repeat navigation precision supporting higher accuracy image registration for existing photogrammetry workflows and new use case applications
- Precision at greater distance supporting optimal flight path efficiencies

Efficiency - dependent on use case and characteristics
- **40% to > 60% reduction in image capture cost per asset** relative to asset size, distance, and # of features
- **> 25% reduction in overall operating expense** 15 to > 50% reduction in FTE, based on manual or automated flight missions with BVLOS impacting pilot, spotter, and engineer/analyst roles & or reassigned resources benefits with opportunity to increase frequency or coverage
- **300% faster in image collection speed** compared to manual flights
- **30% faster in image collection speed compared to alternative automated flights,** due to optimized and reduced number of planned camera station waypoints
- **> 40% increase in capacity** for more effective use of limited flight time