

# GEOSMART INDIA 2021

**THEME ADVANCING THE ROLE OF GEOSPATIAL  
KNOWLEDGE IN INDIAN ECONOMY**



24-26 August 2021



HICC Hyderabad, India

[CLICK TO KNOW MORE](#)

GE  
SMART  
INDIA 2019

11-13 February 2019  
Hotel Pullman  
New Delhi, India

VISION  
"NEW INDIA"

DIGITAL TRANSFORMATION THROUGH GEOSPATIAL INNOVATION

# Indshine

Transforming conventional industries



# The digital era

The First Industrial Revolution: 1760 – 1840

The Second Industrial Revolution: 1870 – 1914

The Third Industrial Revolution: 1969 – 2000

**The Fourth Industrial Revolution: the digital revolution** occurring since the middle of the last century

# The next technology wave is here

50%

Reduction in  
Time

25%

Reduction in  
Costs



# Large Numbers

**\$169 billion**

*Global cost of power & utilities sector losses related to network outages*

**\$609 million**

*Revenue opportunities related to improving reliability of power supply systems*

**5.9 million**

*Global length of power transmission lines (circuit kilometres)*

**\$9.46 billion**

*Estimate by PwC on the addressable market of drones powered solutions in the power & utilities market.*



# **Towards Energy Efficiency, Security and Resiliency**

# CASE STUDY I



पावरग्रिड

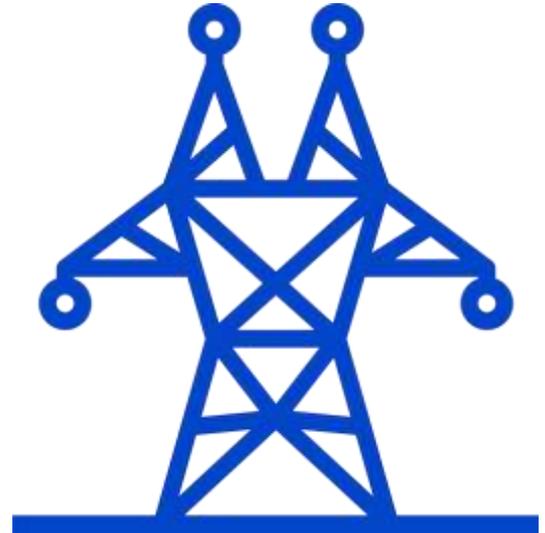
**Power Lines Inspection - Transmission**



## Problem Statement

To spot **an enhanced view of problems** in the transmission lines such as

- 1) **Foundation Damage**
- 2) **Infringement in the right of way**
- 3) **Broken insulators**
- 4) **Conductor/Earth wire damage**
- 5) **Transmission lines covered by foliage**
- 6) **Displacement of vibration dampers**
- 7) **Damage to split pins, Corona rings, spacers etc**



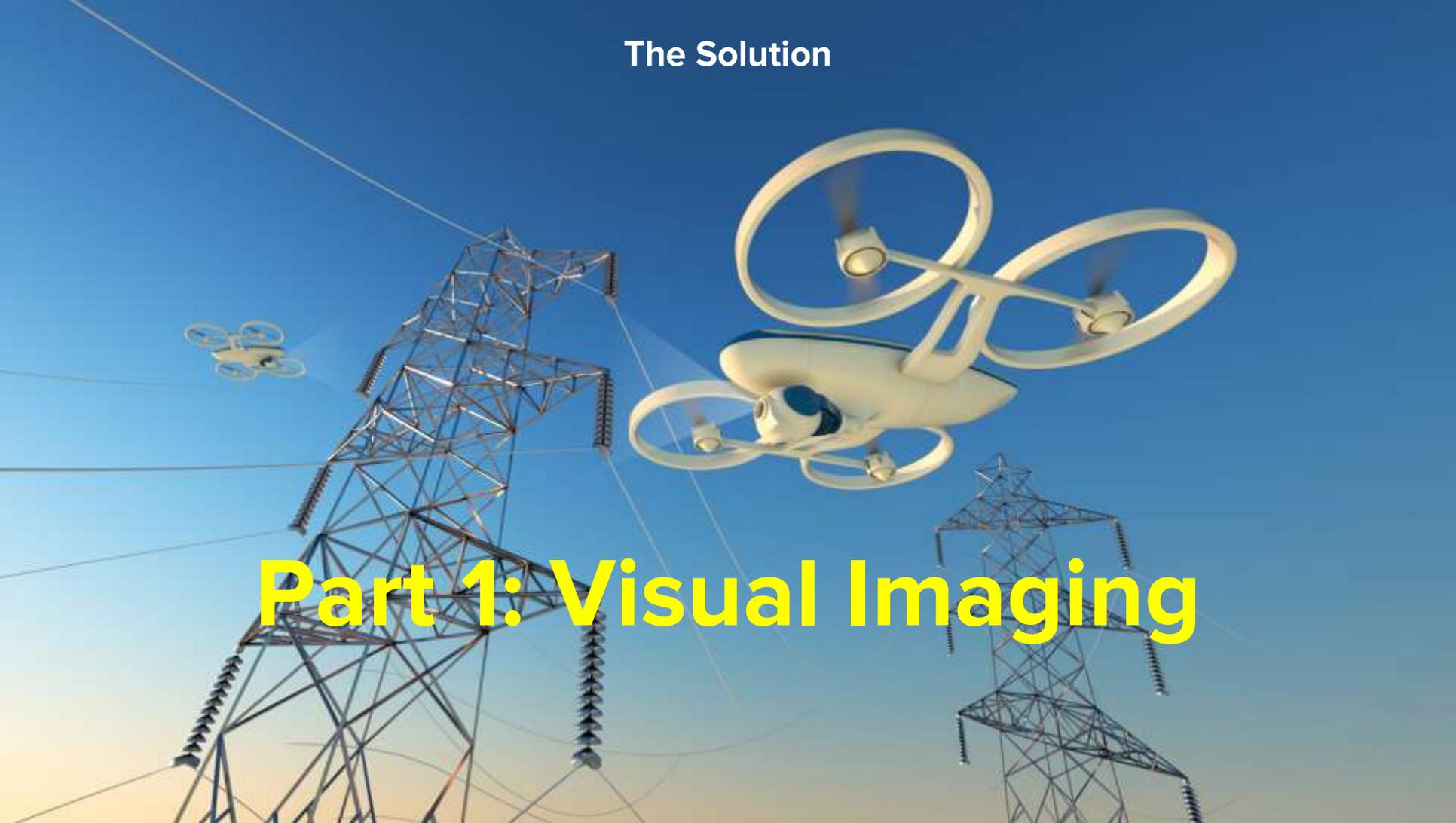
The Solution

**Thermovision scanning and  
visual imaging**



The Solution

# Part 1: Visual Imaging



# 4K Aerial Videography



In many a cases, we face farmer's agitation when we go to build the transmission towers and via this mapping, we know which stakeholders are affected.

*In Tamil Nadu, local agitation had delayed electrification by more than 18 months and they finally opted for drones which solved the problem in 15 days.*



# Thorough Inspection

Loose Bolts



Missing Bolts



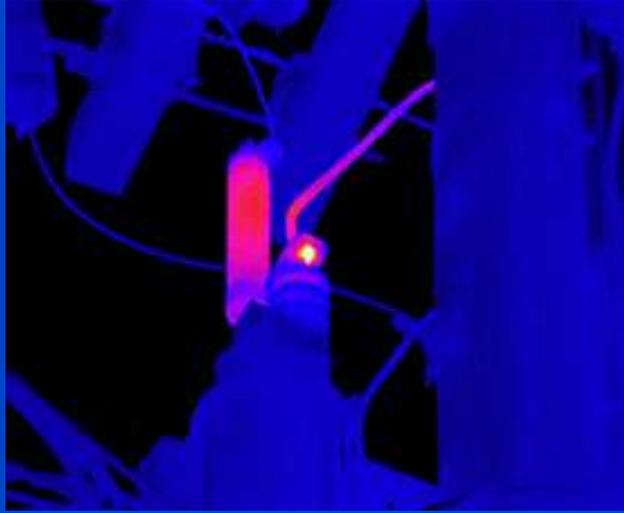
After capturing drone images for every tower built, we have a data bank of which bolt was loose, which member was bent, which part was rusted and have a clear accountability.  
*Our drones complete 12 towers per day which is 2X faster than manual inspection and captures flaws that were earlier missed.*

The Solution

# Part 2: Thermovision Imaging



# Thermovision Inspection



**Typically we focus on the most critical equipment, which if it fails, will result in a wholesale outage.**

Transformers not only fit into this group but also are very susceptible to heat-related failure. Oil-filled circuit breakers (OCB) and voltage regulators are also critical to operations and can suffer heat-related failures similar to transformers.

*All these devices depend on the spring tension of the metal to maintain viability of the electrical contact, and at temperatures as low as 93C, annealing begins to occur and performance degrades. Drones spot them before they show signs of annealing.*



## CASE STUDY II



KEC INTERNATIONAL LIMITED

**Pre-construction and investment monitoring (Substations and Lines)**



# Problem Statement



**Slow Planning**



**Lack of  
Communication**



**Unexpected  
Roadblocks**



**Unnecessary  
Field Trips**



**Cost Overruns**

**Stages of Projects**



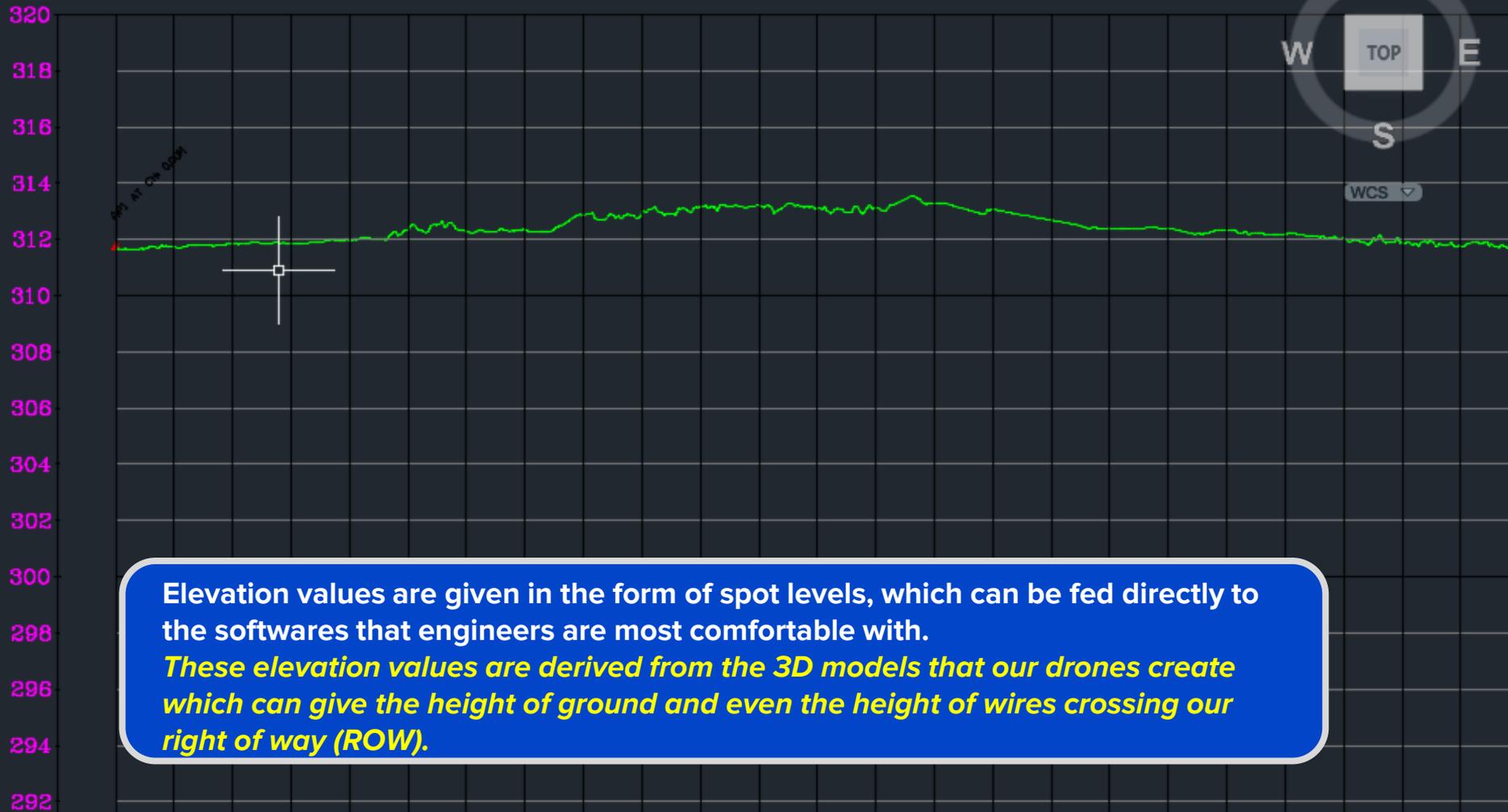
Map

Satellite

The Solution

# Orthomosaic and Spot Levels

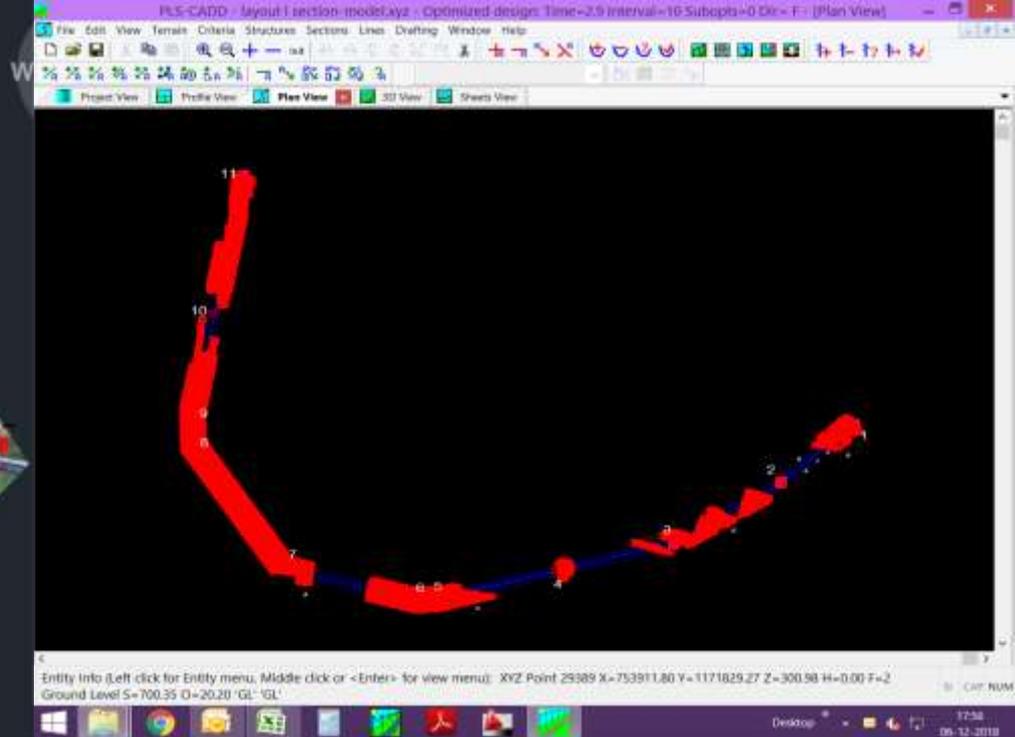
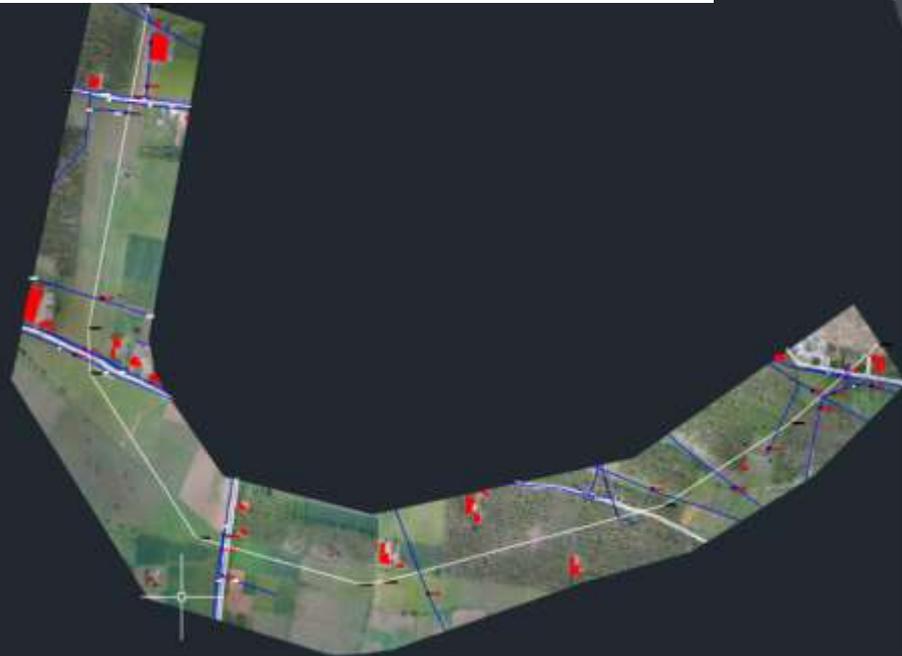
## L section with spot levels



Elevation values are given in the form of spot levels, which can be fed directly to the softwares that engineers are most comfortable with.

*These elevation values are derived from the 3D models that our drones create which can give the height of ground and even the height of wires crossing our right of way (ROW).*

# Orthomosaic of the alignment



Orthomosaics, like elevation values, are accurate to 5cm, which allows our engineers to bring out CAD drawings from them.

*This is a 2X faster process to get the layout, ground clearances, crossing lines in a way that is not only visually easy to understand, but accurate enough to require no other survey for the same purposes.*



# Asset Mapping



Key challenges faced by distribution utilities is that they often do not know the correct location and details of all their electrical assets deployed in the field

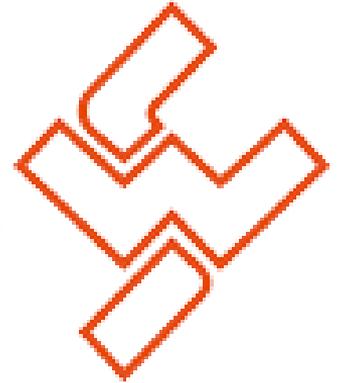
*Now with drones, asset mapping is 3X faster.*



## CASE STUDY III

# STERLING & WILSON

---



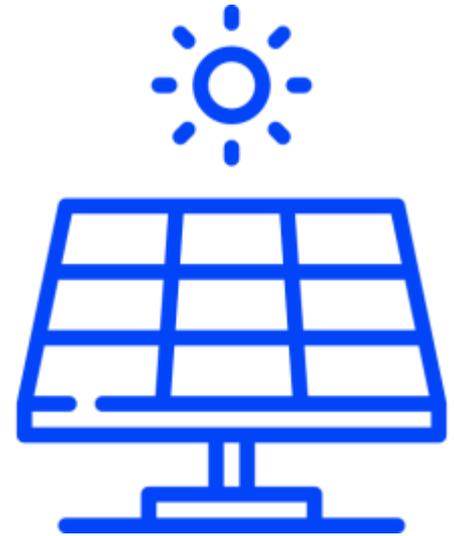
**Thermal Inspection (Solar Panels)**



## Problem Statement

To spot a **solar panel hotspot** in the solar panels which can cause

- 1) Fall in overall power production since cells consume power instead of producing
- 2) Power consumption continues to heat up cells and affect the production of neighboring cells

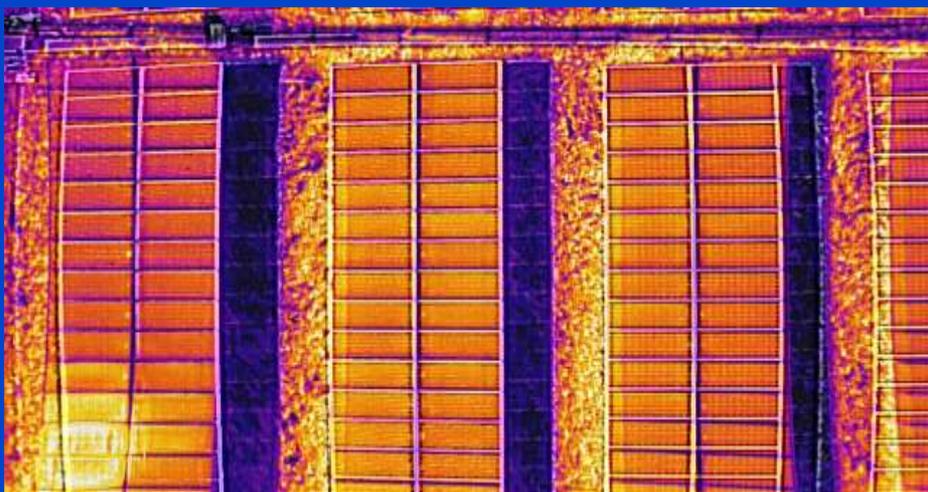
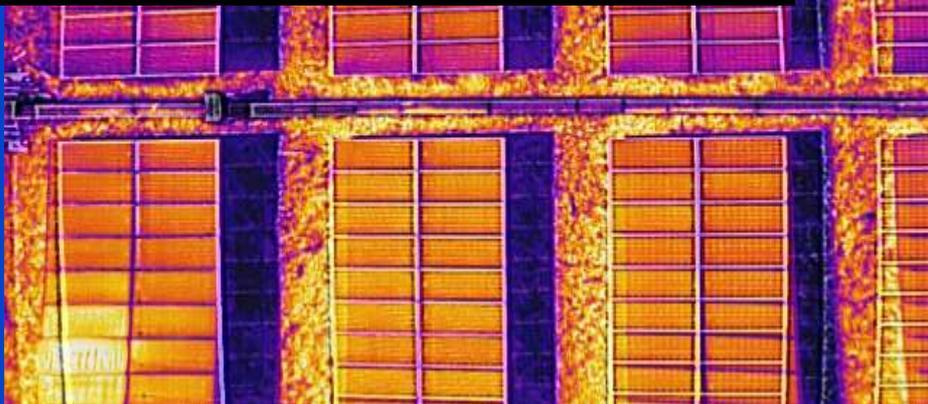


The Solution

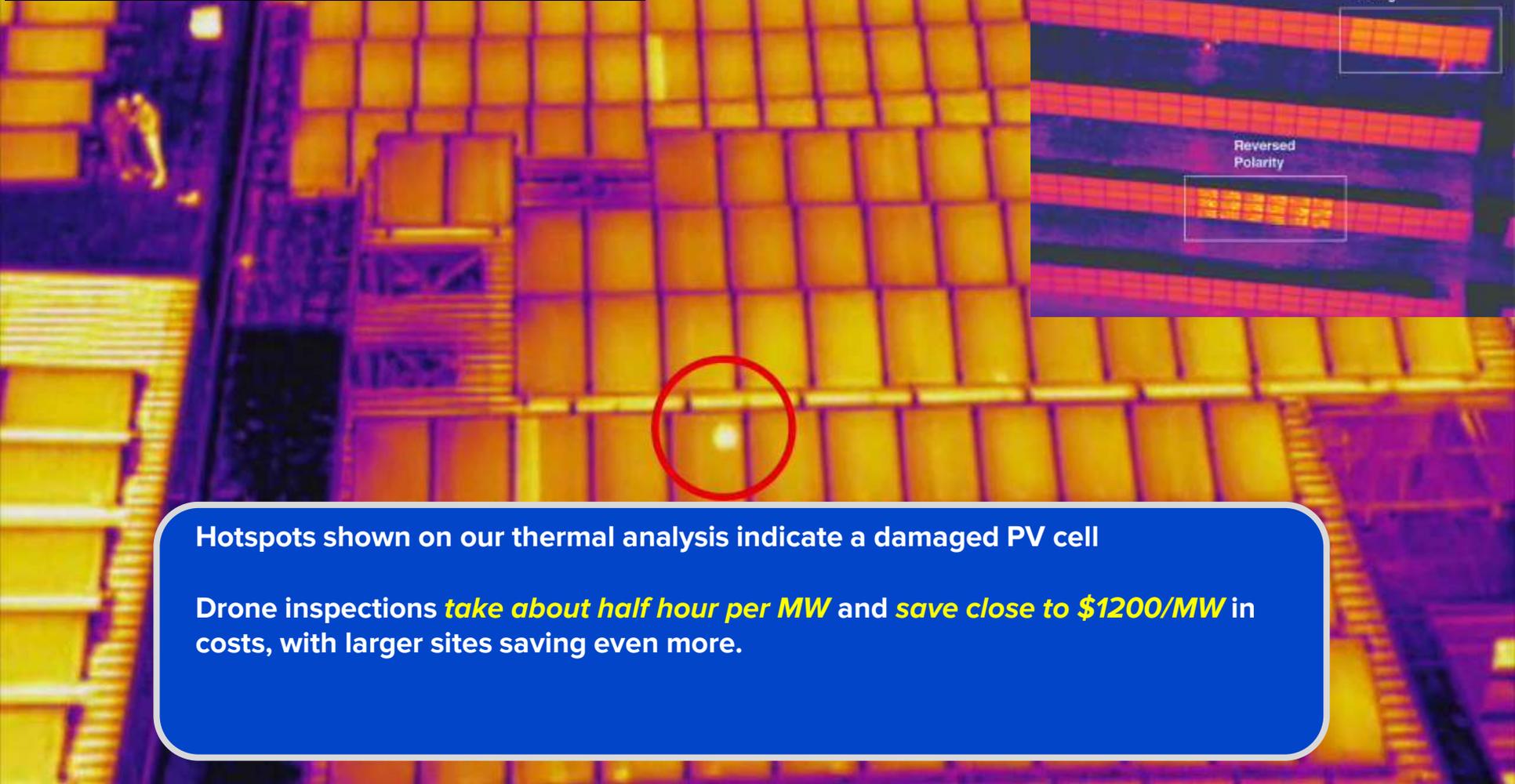
# Thermal-Radiometric Inspections

An aerial photograph of a large solar farm at night. The solar panels are arranged in long, parallel rows, and they are illuminated from below, causing them to glow in various shades of orange, yellow, and red. The surrounding landscape is dark, and some distant lights are visible on the horizon.

# Thermal-Radiometric Inspection vs RGB Images



# Hot Spot Detection



Hotspots shown on our thermal analysis indicate a damaged PV cell

Drone inspections *take about half hour per MW* and *save close to \$1200/MW* in costs, with larger sites saving even more.

# The data solution.

Bring a *Drone* to the *Field*



Bring the *Field* to the *Office*



## What does the future look like?

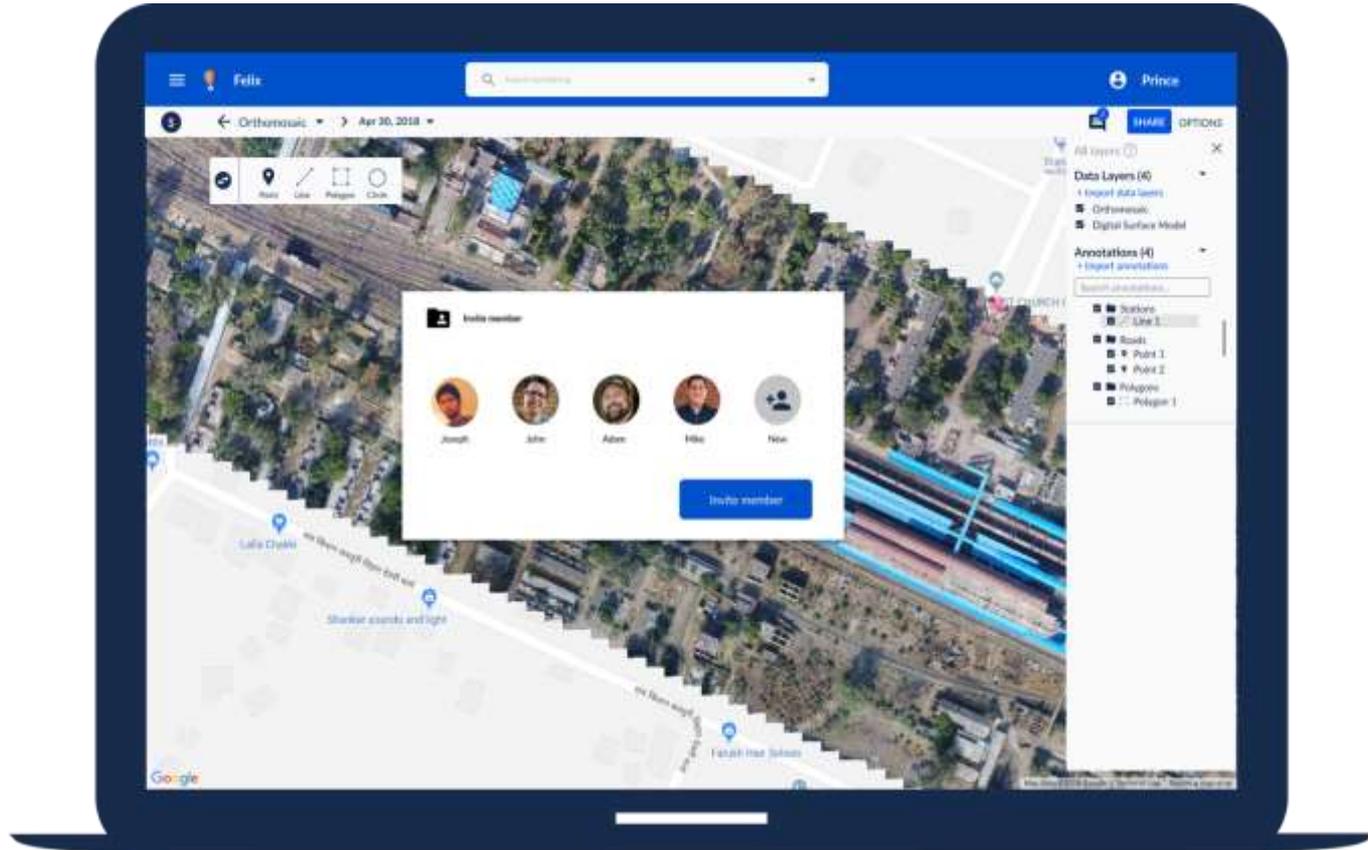
*“**Machine learning** and **artificial intelligence** tools can be taught not only to identify issues, exceptions or problematic patterns but it can also be vital by **automating a response** (e.g., creation of work orders) to address the critical business needs”*

-Matt Labovich – Analytics Leader, US Industrial Products and Services

## Our Offerings

**What can Indshine provide above all this?**

# Indshine removes hidden Costs and Worries



Live collaboration among all stakeholders via Felix



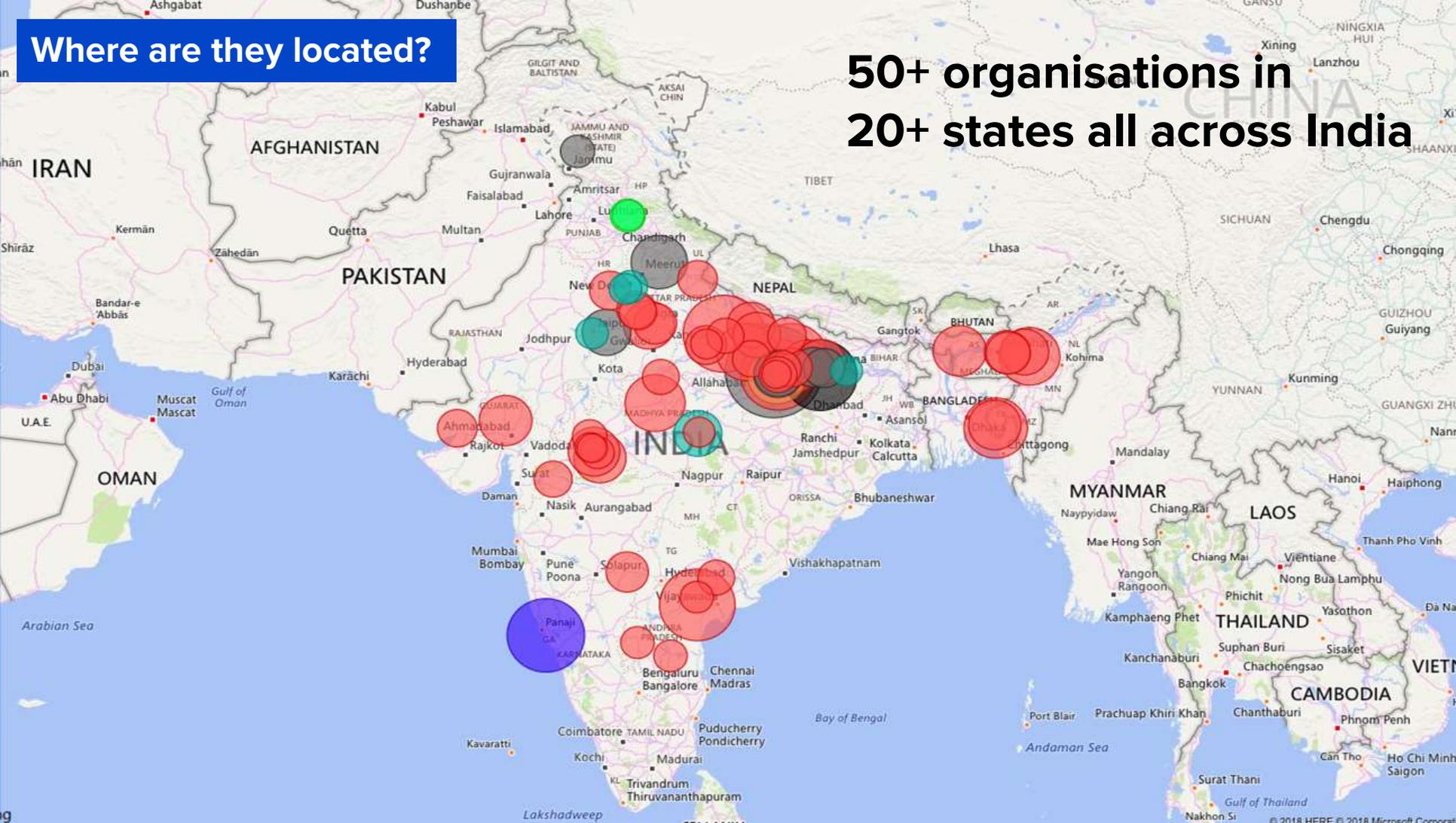


# Who all are currently using Indshine?



Where are they located?

50+ organisations in  
20+ states all across India



***“Data is a precious thing and will last longer than the systems themselves.”***

***– Tim Berners-Lee, inventor of the World Wide Web.***

Contact Us

**Saksham Bhutani**

**+91 78971 85566**

**Indshine, 1013, 10th floor,**

**B3, Spaze IT Park,**

**Sohna road, Gurugram**