# Kaleidoscope | IoT Industry Use Case Collections

# IoT sensor & integration use cases for the connected world

www.kaleidoscopeiot.com

# Agriculture

*Precision farming uses sensors for data gathering and decision making via the Kaleidoscope Platform. This customizes application inputs specific to many applications such as local soil conditions and micro climates.*



Deployment of soil sensors determining moisture levels and Ph, can help manages water resources by indicating quantity and areas for irrigation.
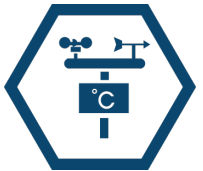
Weather stations located throughout agricultural area micro-climates updates Kaleidoscope as to the real time status of the environmental conditions. This data, guides farm managers on the deployment of day-to-day operations (spraying/fertigation/basal application) and their effectively on output.

Online real time and historical data from weather patterns to volume cycles provides executive management with the information needed to maximize yield, decrease expenses and optimize processes through the Kaleidoscope Platform.

# Mining

*Mining operations are remote, complex, high risk and cost intensive. By deploying new sensors and integrating existing sensors & data sources seamlessly with our Platform, monitoring of operations and assets can done remotely, enabling real time informed decisions to be safely executed.*
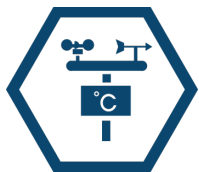
Weather stations along with water, flood and soil sensor deployment together with combined Neural Network (AI) monitoring can aide management to prevent erosion, formation of sinkhole and contamination of groundwater by chemicals from the mining process. Water with harmful concentrations of minerals and heavy metals can be detected early on.

Air sensors can detect from underground mining toxic compounds in the air sending alerts on site and through Kaleidoscope's platform in real time before threshold levels are reached.

Pro-active maintenance through our Kaleidoscope Fleet Management integration with proprietary vehicle protocols or standard protocols such as Modbus/CANbus can detect the status of the equipment and retrieve historical maintenance data. This data is transmitted remotely to our platform and used to recommend maintenance schedules and alert teams; thus reducing downtime while increasing mining output. Replacement parts and fluids can be automatically ordered through your ERP in advance to avoid downtime due to unavailability and delivery scheduling.

# Logistics & Port Facilities

*Terminals, yards and warehouse management are constantly active and dynamic with a 24 hour operating period. use Kaleidoscope's end-to-end IoT to integrate all of your various sensors and external data sources into a single platform, streamlining your enterprises performance.*

In addition to standard sensors such as fleet management & environmental monitoring, Kaleidoscope's Computer Vision at the gate or wharf side enables facilities to perform IoT tasks with intelligence at the edge. Critical tasks such as the recording of container number's, weight along with prime mover and trailer plates can be detected and integrated to our Cloud with Computer Vision, ensuring that the right container finds its way to the right place as efficiently and quickly as possible.
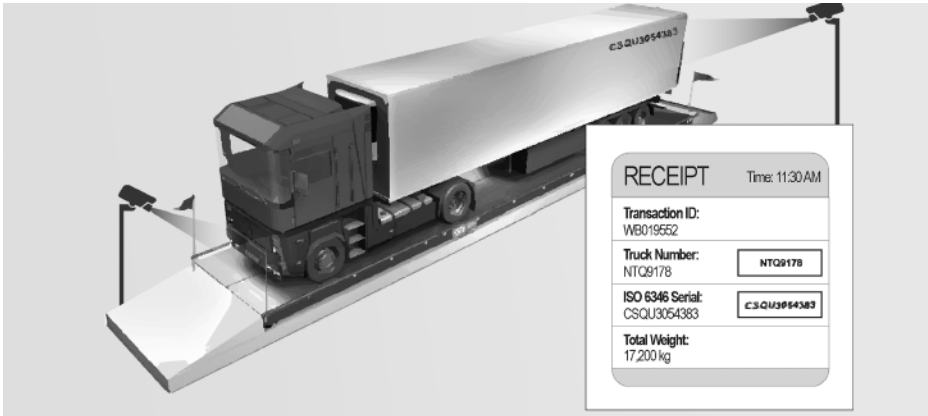
By deploying IoT Systems such as our Computer Vision Engine, Port and logistics facilities further:

- Increase container moves per hour

- Increase overall throughput

- Decrease in truck turnaround time

- Increase yields due to improved efficiency and manpower reduction

*"Use IoT to better streamline your warehouse monitoring, asset maintenance, vehicle tracking, automated encoding, container ingress and egress and more. Enterprises globally are leveraging IoT to reducing errors, maximize efficiency and accuracy, and minimize handling & downtime at the lot".*

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# Hospitality & Retail

*Ask what is the biggest challenge in hospitality & retail, and the answer is seamless – Analytics. Kaleidoscope's People Tracking Technologies offer the ability to capture and manage data bridging the gap between the physical and digital worlds.*

Kaleidoscope's device Fingerprinting SBC's can be used to track consumer patterns in real-time, gathering business critical analytics such as foot traffic, heat-maps, commercial 'hot' and 'dead' zones, bottlenecks, behavior analytics, visitor data profiles (such as age, gender, etc) and more.

Integrations to existing advertising networks and other third party systems such as digital signage can be deployed based upon several factors such as recognized beaconing patterns & devices which allow for "location aware advertising".

Kaleidoscope's Fingerprint data empowers retail and hospitality marketers alike to identify and understand in-store visitors in order to create more relevant campaigns with improved spend and effectiveness. Mall/building owners may also use fingerprint data for tenant rent justification, and providing tenant tools to increase retail revenue and determine space values.

# Smart Cities

*Gartner predicts that the second-largest adopters of IoT ecosystems will be government's, with the focus on increasing productivity, decreasing costs, and improving citizens quality of life.*

See: Kaleidoscope IoT Connected World infographic for more sensor examples.
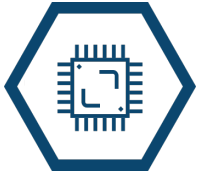
Combine data from multiple sources into our single unified IoT platform. Use our vast range of environmental sensors, integrations with your cities existing sensors, and software API integrations to third party data sources to allow your cities assets and operations to better communicate with each other in real-time.

Monitor and control your traffic congestion using a combination of IoT sensors, predictive analytics, and existing infrastructure (such as your CCTV combined with our Computer Vision AI). Enabling real-time monitoring of your cities key infrastructure and routes allows decision makers to better re-route vehicles and pedestrians where needed optimizing driving and walking routes & aiding city planning for future development.

Integrate Kaleidoscope with local carriers to deliver automated and intelligent warnings to citizens and authorities notifying of diversions, flooding, and other critical statuses from our network of sensors and external third party data sources, improving both productivity and safety of your city.

# Manufacturing

*In the age of "Industry 4.0" and the digital transformation of manufacturing, the manufacturing industry is the market where most Industrial IoT (IIoT) projects are realized and IoT is a core component of industrial transformation efforts across the globe*
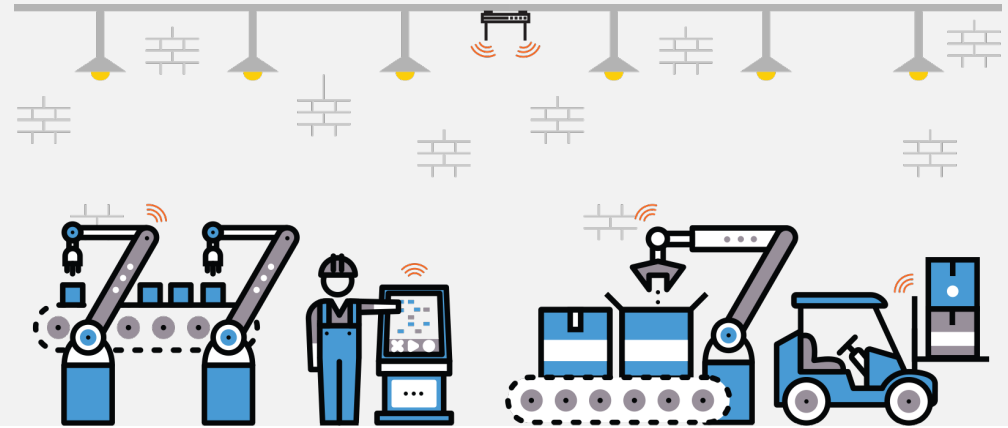
Leverage IoT in your manufacturing operations by integrating both existing and new sensors to your plant to better track asset management, performance optimizations, monitoring, planning, and human-machine interactions. Combining data from your many complex operations into Kaleidoscope's single platform allows your operations to quickly improve how processes are monitored, managed, and optimized universally.

Provide pro-active management and maintenance in several areas across your facility such as quality, performance, potential damages & breakdowns, bottlenecks, and more. Additionally, integration of your machines through existing standard protocols such as Profibus/Modbus/CANbus/DP enables quicker deployments of Kaleidoscope allowing for seamless integrations to third party systems such as your ERP.

Embed Kaleidoscope's SBC framework into your products to transmit operational information to partners (i.e. OEM) and to field service engineers for remote process automation, optimization, and servicing, providing a pro-active service schedule whilst increasing margin.

# Additional Resources & Material

## Infographics:

- The Kaleidoscope IoT Connected World (Infographic with various IoT sensor examples)
- Where is the value of potential of the Internet of Things?

## Data Sheets, Guides & Reports:

- The Kaleidoscope Value Proposition
- Introduction to the Internet of Things
- Precision OCR & Image Recognition using Kaleidoscope Computer Vision

### Questions?
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