



Sensors
Converge

Archimedes Controls A150 and ARCOS IIOT platform

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- June 20–22, 2023 | Santa Clara, CA

Company's Vision, Mission and Value

- Our Vision – **IoT Everywhere**. The rising popularity of IoT devices and edge computing are becoming the main driving force for ever increased needs for application specific sensors and gateways powered by cloud-based IoT services.
- Our Long Term Mission and Commitment - **Innovation**. Archimedes Controls is committed to develop, build and offer our customers the most reliable and cost-effective IoT services and products through continuous innovation and operational excellence.
- Our Value – **Simplicity**. Our cloud-based IoT platform ARCOS™ is a universal control platform supporting organically developed as well as 3rd party devices through a secured https link for analog and digital sensors, cameras, gateways and alarm devices with a few minutes of setup time.

Vertical Applications

Data Center and Edge Security



- Per-user, per-rack and security protected environmental, assets and access monitoring.
- Reduces the number of on-site visits.
- Secures and provides detailed health information about the edge data center's environment and physical security.
- Protects remote IT equipment operating conditions under 24 x 7 x 365 surveillance.
- 10-year battery operated wireless sensors.
- Integrated IP security cameras.
- Warnings and alarms notification and records.

Industrial Controls & Automation



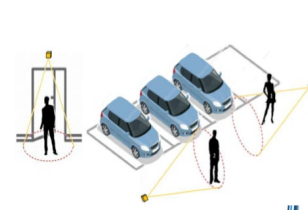
- Temperature and humidity monitoring.
- Water leak detection monitoring.
- Real time power consumption monitoring.
- Metal detection or separation for structural monitoring.
- Vibration, tamper, shake, move, tilt detection for physical security.
- IP security cameras.
- Pre-set warning triggers and notification.
- Analytics and AI tools for data analysis and prediction.
- 3rd party devices support.
- Historic data recording for audit and compliances.

Agriculture & Food Safety



- Mission critical temperature and humidity monitoring.
- Airborne particle counts and air quality PM1.0, PM2.5 and PM10 for nearby wildfire monitoring.
- Smoke detection.
- Liquid level monitoring for fuel and any liquid tanks and storages.
- Water leak detection.
- Tamper and break-in detection.
- 2G, 3G, 4G/5G cloud-based.
- Data access from anywhere in the world.
- 24x7 automatic monitoring, recording and warning messaging.
- Analytics and AI tools for analysis and prediction.

Environmental & Transportation



- Temperature and humidity monitoring.
- Airborne particle counts and air quality PM1.0, PM2.5 and PM10.
- Smoke detection.
- Explosive gas detection.
- Water leak detection.
- HVAC performance monitoring.
- Metal detection or separation for structural monitoring.
- Vibration, tamper, shake, move, tilt detection for physical security.
- Traffic flow analysis.
- Parking garage/lot safety and security.
- Automated parking assistance.

A150 System Platform



Vertical Applications



Co-Lo or Private Data Center

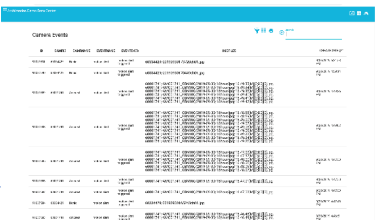


IoT Server



SMS/Email

https/



SENSING PROBE EXAMPLES

Visitor Sign-in Kiosk with NFC & Fever Det



Temp & Humid Mon



Power Current



Access/Door Det



Water Leak Det



Tamper/Move/Tilt/Shake Det



Vibration@xxxxHz



4G/5G
WiFi/ETH

- Built-in Wireless Sensors:**
- Temperature/Humidity
 - Vibration/Move/Tilt/Shake
 - Rock, Tree, Object Fall
 - Mud/landslide/Disaster
 - Water Leak
 - Per Request (Brightness, CO2, etc.)



Disaster Detector



Wireless Sensor with 2AA Batteries and 2 IO Ports

Power Consumption/
Wire Overheating



WiFi, Eth(SSL), 4G/5G

Up to hundreds of sensors to 0.5 mile

Swarm LEO SATELLITES



A150 CONTROLLER



- Built-in Sensors:**
- Temp/Humidity
 - Airborne Particles
 - Air Quality
 - Smoke
 - Nearby fires
 - Explosive Gasses
 - CO2
 - HCOC
 - Panic button

4 IO Ports for Sensing Probes and 3rd Party Control Devices



Airflow Speed

Under Ground/Above Ground Water Level/Fuel Level

Introducing A300 Satellite IoT CPE

NEW

Applications:

- Connecting IoT Gateways to Swarm LEO Satellites
- National Strategic Fuel Reserve and Assets Monitoring
- Security Tracking in Desert, Mountains and Ocean
- Granary Monitoring and Food Safety
- Global Emergency Alert and Notification



LEO Satellites



A300 Satellite IOT CPE

A300 Satellite IoT CPE

NEW



Remote Weather Station



Mudslide/Landslide Detection



Disaster Detection



Unmanned Station



https, emails, SMS



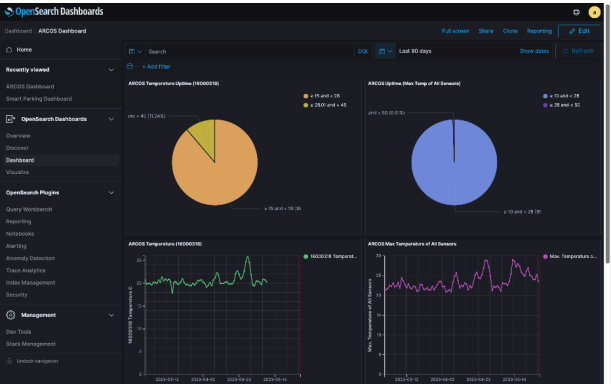
LEO Satellites

Up to hundreds of sensors to 1 km

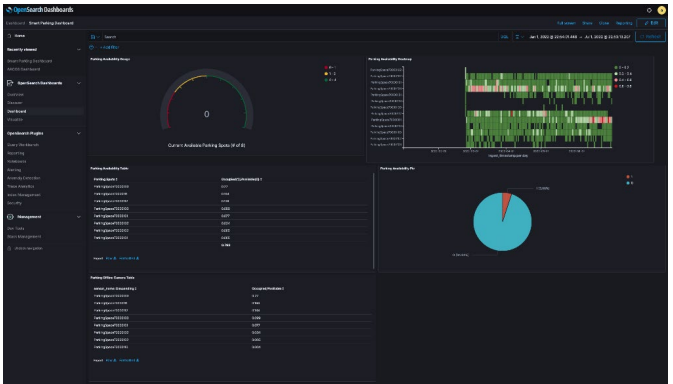


A300 Satellite IOT CPE

Fully Integrated Analytics - OpenSearch

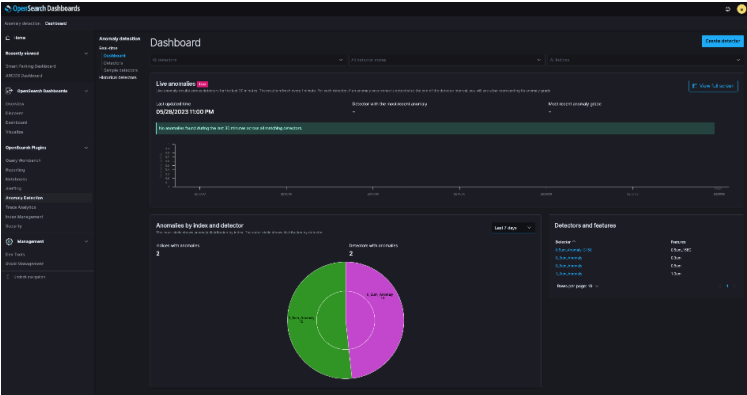


- OpenSearch provides custom reports, charts, dashboards, histograms, data graphs, heatmaps, and measure analysis, warnings, etc.



Machine Learning (ML) Based Anomaly Detection

- Integrated powerful machine learning (ML) based Anomaly detection with anomaly grade and confidence level and warnings



The screenshot shows the 'Detectors (4)' list in OpenSearch Dashboards. The table contains the following data:

Index	Index	Detector state	Anomalies last 24 hours	Last anomaly occurrence	Last updated time
0_Sum_Anomaly-CISG	a15C_app@95_arc...	Running	0	0	12/01/2022 10:40 PM
0_Sum_Anomaly	a15C_app@95_arc...	Running	0	06/25/2022 3:28 PM	12/01/2022 10:40 PM
0_Sum_Anomaly	a15C_app@95_arc...	Running	0	06/25/2022 3:28 PM	12/01/2022 10:40 PM
1_Sum_Anomaly	a15C_app@95_arc...	Running	0	06/25/2022 10:30 PM	12/01/2022 10:40 PM



ARCOS[®] Cloud Service

- Offers both SaaS and Purchase options for hardware sensors, gateways and cloud software
- Silicon Valley, US based data center for extra security
- Supports all Archimedes platform and sensor data globally
- Global 24x7 remote physical security monitoring
- Dedicated server for each customer
- Customer access at any time from anywhere in the world



Use Case – Security Monitoring

Camera Events

ID	CAMRID	CAMRNAME	EVENTNAME	EVENTDATA	IMGFILES	CREATEDATE
91037591	60334429	Honic	motion alert triggered	60334429/20190930173720ch01.jpg		
91037590	60334429	Honic	motion alert triggered	60334429/20190930170449ch01.jpg		
91037589	60001741	Amcrest	motion alert triggered	60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.33[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.34[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.35[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.40[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.41[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.42[M][0@0][0].jpg		
91037588	60001741	Amcrest	motion alert triggered	60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.48.58[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.48.59[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.00[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.07[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.08[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.09[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.23[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.24[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.49.25[M][0@0][0].jpg		9/30/2019, 4:49:02 PM
91037585	60001741	Amcrest	motion alert triggered	60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.47.02[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.47.37[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.48.00[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.48.05[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.48.06[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.48.07[M][0@0][0].jpg		9/30/2019, 4:47:50 PM
91037586	60001741	Amcrest	motion alert triggered	60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.47.01[M][0@0][0].jpg		9/30/2019, 4:47:50 PM
91037587	60001741	Amcrest	motion alert triggered	60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.47.03[M][0@0][0].jpg		9/30/2019, 4:47:50 PM
91037584	60334429	Honic	motion alert triggered	60334429/20190930165243ch01.jpg		9/30/2019, 4:47:48 PM
91037583	60001741	Amcrest	motion alert triggered	60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.46.48[M][0@0][0].jpg, 60001741/AMC01741_GBN10Q/2019-09-30/16hour/jpg/16.46.49[M][0@0][0].jpg		9/30/2019, 4:46:51 PM

Use Case – Fuel Supply & Demand Management

- Smart gas station fuel usage management for major fuel suppliers and government monitoring
- Smart fuel delivery tracking via mobile network
- Virtual geofencing, line crossing detection, vehicle recognition



Smart Fuel Tracking and Monitoring System

Use Case – Disaster Monitoring and Alert



Use Case – Agriculture, Granary

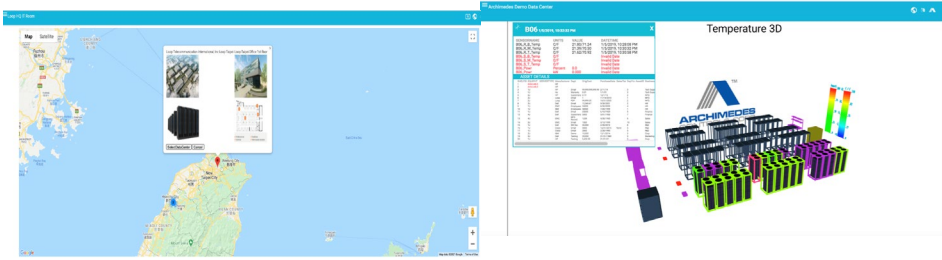
- Grains such as wheat, corns and soy beans considered national strategic economic resources, along with its storage environment such as granary's temperature, humidity and surrounding air composition are a few very important environmental parameters in modern agriculture.



- In a typical granary, grains are safely stored and kept for 2 to 5 years for many reasons. Due to specific security requirements, reliability, ultra low power, automatic 24x7 monitoring and wireless all the way are critical and desirable at all levels.

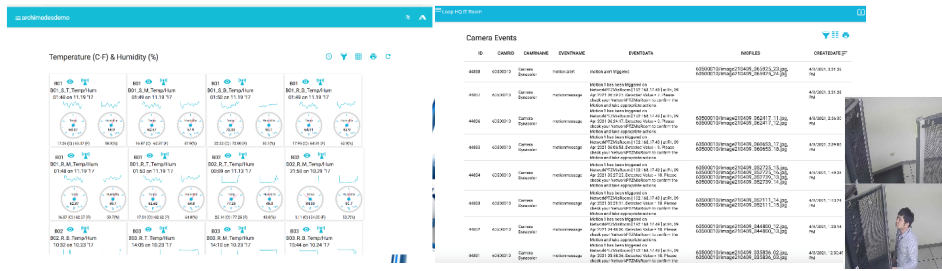
Use Case - Private Cloud Control Center

- ❑ Private cloud-based software management
- ❑ Site view, dashboards, 3D heat map, warnings, historic charts, property assets management, etc.
- ❑ Accessible from anywhere via secured link for alarms, videos, data
- ❑ Alerts to emails and mobile phones via SMS
- ❑ User privileged accounts
- ❑ AI and ML based video detection
- ❑ Supports integration to existing warning system



Archived Warnings

ID	TIME	SEVERITY	MESSAGE	IDENTIFY	OPERATOR	UNITTYPE	THRESHOLD	OK
453001	2023-07-10 10:00:00	WARNING	Temperature 3D	453001	ADMIN	TEMP	100.0	OK
453002	2023-07-10 10:05:00	WARNING	Temperature 3D	453002	ADMIN	TEMP	100.0	OK
453003	2023-07-10 10:10:00	WARNING	Temperature 3D	453003	ADMIN	TEMP	100.0	OK
453004	2023-07-10 10:15:00	WARNING	Temperature 3D	453004	ADMIN	TEMP	100.0	OK
453005	2023-07-10 10:20:00	WARNING	Temperature 3D	453005	ADMIN	TEMP	100.0	OK
453006	2023-07-10 10:25:00	WARNING	Temperature 3D	453006	ADMIN	TEMP	100.0	OK
453007	2023-07-10 10:30:00	WARNING	Temperature 3D	453007	ADMIN	TEMP	100.0	OK
453008	2023-07-10 10:35:00	WARNING	Temperature 3D	453008	ADMIN	TEMP	100.0	OK
453009	2023-07-10 10:40:00	WARNING	Temperature 3D	453009	ADMIN	TEMP	100.0	OK
453010	2023-07-10 10:45:00	WARNING	Temperature 3D	453010	ADMIN	TEMP	100.0	OK





Archimedes Controls

**A150 Wireless Sensors/Gateway System
and
ARCOS® IoT Cloud Service**

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June 2023



**Sensors
Converge**