



Vital[®] Supervision:

Enhancing Radiological Instrument Monitoring

New from Mirion



MIRION
TECHNOLOGIES

Introducing The Vital Platform

Powering Integrated Operations for Nuclear Energy and Beyond



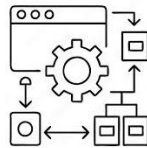
Challenges of Radiation Monitoring



- **Diverse Instrument Sets:** Many types of instruments are needed for monitoring at nuclear sites.
 - HP/RP equipment (dosimeters, handhelds, C&C, area)
 - I&C and RMS (particulate, noble gas, etc.)
 - Online spectroscopy (stack & process monitors)



- **Real-time data is critical:** Efficient and safe site operation relies on live analysis and alarm/event notifications



- **Centralized Radiological Data:** A single platform is needed to provide a single unified view for the site on intelligent radiological viewing, instrument performance, and state of health



- **Sharing Data with Functional Teams & Systems:** Many different teams and plant process systems need easy access to radiological data to efficiently operate.
- **Security and Control:** Data needs to be both accessible and secure without creating a large IT footprint.

INTRODUCING...



POWERED BY  **MIRION**

The Vital Platform

Digital Eco System:

- **Connected applications**

- Shared infrastructure - common instrument communications, data historian, user management, licensing, web UI, etc.
- Reduced software footprint - fewer applications to secure & maintain
- Scalable to manage all instruments and different radiological activities across the site

- **Consolidated radiological data:**

- A single unified view of data & instruments
- Simplified workflows to improve safety and optimize business operation
- Drive advanced analytics for operational performance monitoring

Vital Supervision



Centralized supervisory software for radiological instrumentation

- Real-time measurement data for monitoring and trending
- Instrument alarm and event management
- Remote operation of instruments
- Historical data retention and review

Applications

- **Dosimetry & HP monitoring** — remote live job coverage via telemetry
- **Process monitoring** — key plant radiological conditions
- **Effluent & environmental** — releases and site conditions
- **Instrument maintenance** — uptime to keep workers safe

Vital Platform – Starts With Vital Supervision

HP / RP

Telemetry/Dosimetry, access control, handheld, C&C, area monitors, Cameras



I&C, RMS & Environmental

CAMS, tritium, iodine, Flux, area, outdoor, perimeter monitors



Spectroscopic & NDA Systems

Stack monitors, in-Situ, CSM, Aegis, Lab Equipment



Defense/Security

Emergency response, event screening/monitoring, HLS



The first step in our Vital platform strategy

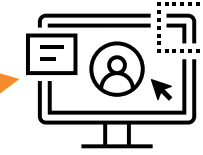


Plant Data
(flow, releases, etc.)

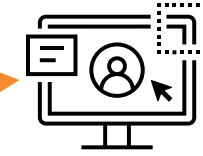
Radiological Data
& Alarm/Fault Info



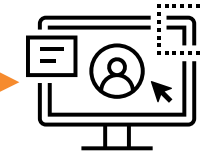
- Plant Computers
- Shared Data Platforms like CBRNResponder in Cloud



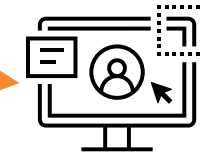
Facility or
Outage Control
Center



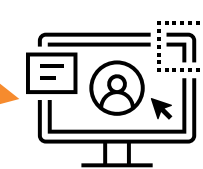
HP/RP
Control Room



RP Mgr Desk,
Event Review



Instrument
Maintenance



Crash Cart,
Portable /
Situational
Station

Vital Supervision

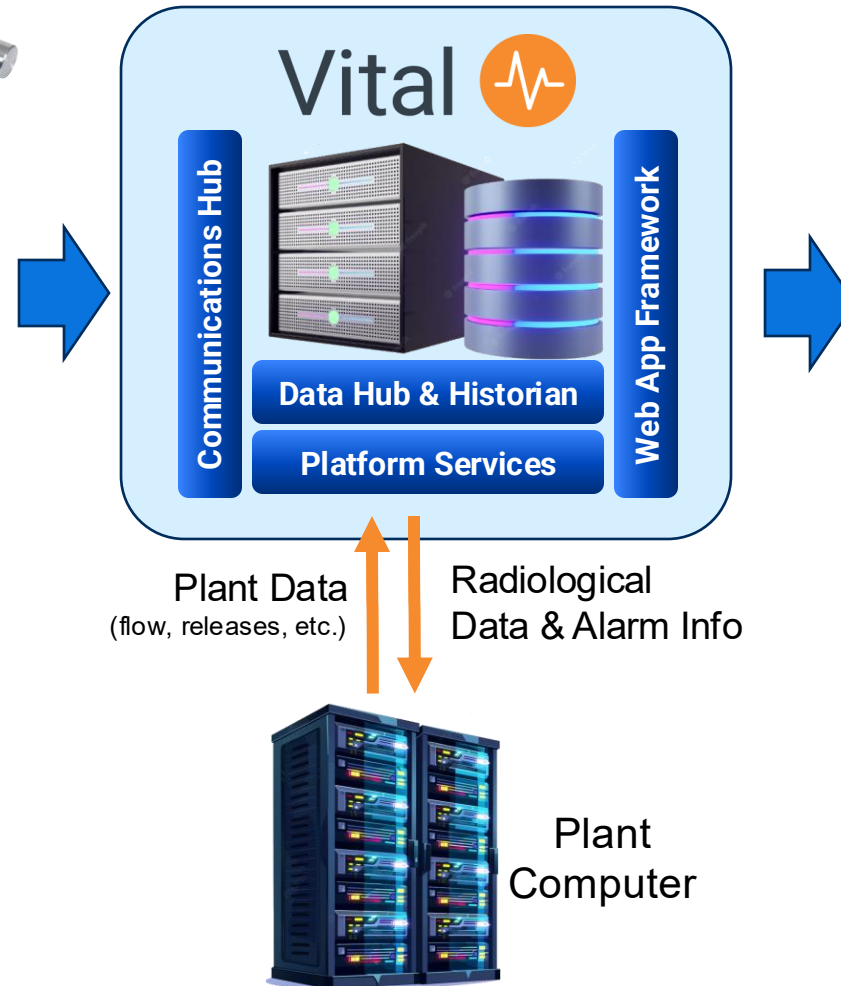
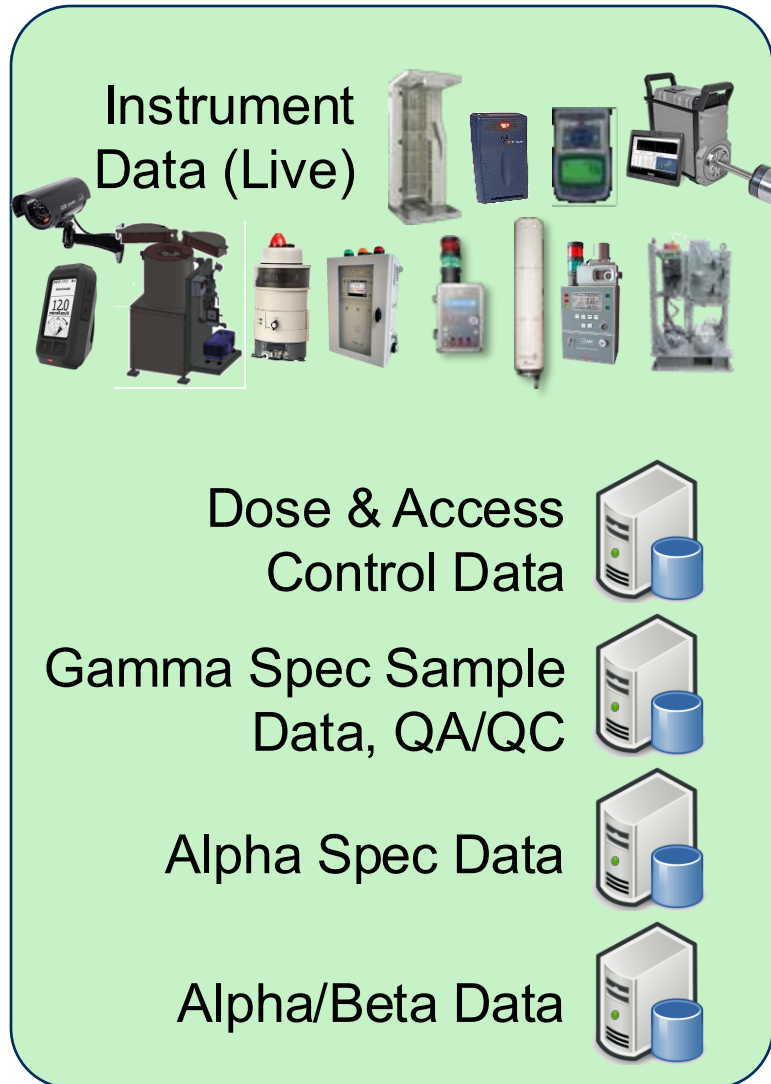
Releases:

- V1.0 – March 2025 – Initial release of platform & base instruments
- V1.1 – Aug 2025 – Addition of additional HP telemetry instrumentation (dosimetry, handhelds, area monitors, and mobile RMS systems via telemetry)
- V1.2 – Apr 2026 – Access control integration & legacy telemetry devices, iCAM via Ethernet
- V1.3 – Q3 2026* – G64, more telemetry instruments, enhancements
- V1.4 – Q1 2027* – Ramsys monitors, and continuous spectroscopy systems

* Future releases - exact scope & timing not published yet

Vital Eco System

Data Sources



Vital Applications

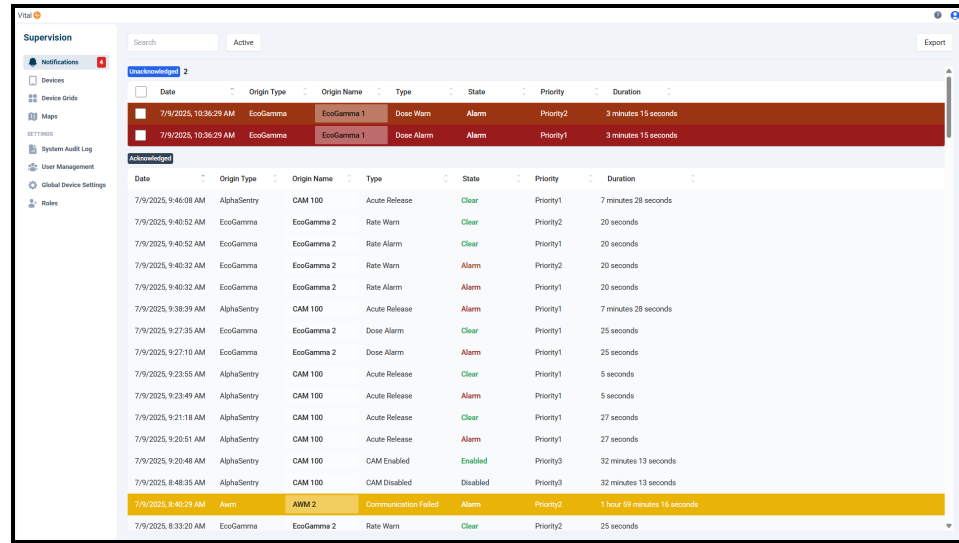
- 
- This section lists the applications supported by the Vital system, each preceded by a blue circular icon containing a white monitor symbol:
- Supervision
 - Dose Management
 - Asset Management
 - Instrument QA/QC
 - ALARA Planning
 - Training & Simulation
 - Analytics
 - Incident Reporting
 - Surveys
 - RWP Reporting

Vital Strategic Goals

- One cohesive software suite for a Nuclear site
- Modern, secure platform (NEI 08-09, NIST 800-53,82, SBOM, PKI, etc.)
- On-prem and Cloud deployments in the future (e.g. Predictive Maintenance)
- Scalable, high performance instrument communications (10,000+ instruments)
- Connections to related data sources (lab data, access control, dosimetry results, service logs, etc.)
- Modern, clean, efficient UI (Web Based) – Provides easy/fast deployment to those who need it
- Simple, centralized deployment, configuration, licensing & updates
- **Common Data Repository (it's key to the Vital strategy)**

Real-Time Monitoring Features

Notifications - Alarm and Event Management



The Notifications interface displays a list of events and alarms. The top section shows a summary of active notifications, including a search bar and an 'Active' filter. Below this, a table lists individual events with columns for Date, Origin Type, Origin Name, Type, State, Priority, and Duration. The events are color-coded: red for alarms and yellow for warnings. A sidebar on the left contains navigation links for Notifications, Devices, Device Grids, Maps, and various settings.

Date	Origin Type	Origin Name	Type	State	Priority	Duration
7/9/2025, 10:36:29 AM	EcoGamma	EcoGamma 1	Dose Warn	Alarm	Priority2	3 minutes 15 seconds
7/9/2025, 10:36:29 AM	EcoGamma	EcoGamma 1	Dose Alarm	Alarm	Priority1	3 minutes 15 seconds
7/9/2025, 9:46:08 AM	AlphaSentry	CAM 100	Acute Release	Clear	Priority1	7 minutes 28 seconds
7/9/2025, 9:40:52 AM	EcoGamma	EcoGamma 2	Rate Warn	Clear	Priority2	20 seconds
7/9/2025, 9:40:52 AM	EcoGamma	EcoGamma 2	Rate Alarm	Clear	Priority1	20 seconds
7/9/2025, 9:40:32 AM	EcoGamma	EcoGamma 2	Rate Warn	Alarm	Priority2	20 seconds
7/9/2025, 9:40:32 AM	EcoGamma	EcoGamma 2	Rate Alarm	Alarm	Priority1	20 seconds
7/9/2025, 9:38:39 AM	AlphaSentry	CAM 100	Acute Release	Alarm	Priority1	7 minutes 28 seconds
7/9/2025, 9:27:35 AM	EcoGamma	EcoGamma 2	Dose Alarm	Clear	Priority1	25 seconds
7/9/2025, 9:27:10 AM	EcoGamma	EcoGamma 2	Dose Alarm	Alarm	Priority1	25 seconds
7/9/2025, 9:23:55 AM	AlphaSentry	CAM 100	Acute Release	Clear	Priority1	5 seconds
7/9/2025, 9:23:49 AM	AlphaSentry	CAM 100	Acute Release	Alarm	Priority1	5 seconds
7/9/2025, 9:21:18 AM	AlphaSentry	CAM 100	Acute Release	Clear	Priority1	27 seconds
7/9/2025, 9:20:51 AM	AlphaSentry	CAM 100	Acute Release	Alarm	Priority1	27 seconds
7/9/2025, 9:20:48 AM	AlphaSentry	CAM 100	CAM Enabled	Enabled	Priority3	32 minutes 13 seconds
7/9/2025, 8:48:35 AM	AlphaSentry	CAM 100	CAM Disabled	Disabled	Priority3	32 minutes 13 seconds
7/9/2025, 8:46:29 AM	Awm	AWM 2	Communication Failed	Alarm	Priority2	1 hour 55 minutes 16 seconds
7/9/2025, 8:33:20 AM	EcoGamma	EcoGamma 2	Rate Warn	Clear	Priority2	25 seconds

Maps – Site Awareness



Device Grid – Situational Awareness

Vital

Supervision

Notifications

Devices

Device Grids

Maps

SETTINGS

System Audit Log

User Management

Global Device Settings

Roles

DEVICE GRIDS / RWP 57

RWP 57

Search

AlphaSentryCam

Name	Plutonium Dac/hr	Americium Dac/hr	Uranium Dac/hr	Status	Last Update
CAM 100	7 DAC/Hr	24 DAC/Hr	38.5 DAC/Hr	Alarm	7/9/2025, 8:45:25 PM
CAM 2	7 DAC/Hr	27 DAC/Hr	38.5 DAC/Hr	Normal	7/9/2025, 8:45:24 PM

AbpmWrm

Name	Last Update	Channel A	Channel B	Channel C	Channel D	Status
ABPM	7/8/2025, 10:03:37 PM	100 nc	95 nc	90 nc	85 nc	Normal

Dmc3000

Worker ID	RWP	Task	Primary Dose	Primary Rate	Secondary Dose	Secondary Rate	Status	Last Update
333418	57	12	8.31 µSv	14.92 µSv/h	8.11 µSv	15.42 µSv/h	Normal	7/9/2025, 8:30:09 PM
234672	57	12	9.97 µSv	9.87 µSv/h	9.76 µSv	10.82 µSv/h	Normal	7/9/2025, 8:27:49 PM
722484	57	12	5.67 µSv	9.83 µSv/h	5.04 µSv	10.31 µSv/h	Normal	7/9/2025, 8:31:49 PM
579198	57	12	7.46 µSv	15.37 µSv/h	7.03 µSv	15.37 µSv/h	Normal	7/9/2025, 8:36:30 PM
155446	57	12	11.68 µSv	10.99 µSv/h	11.5 µSv	9.29 µSv/h	Normal	7/9/2025, 8:33:50 PM
918746	57	12	13.399999 µSv	30.290003 µSv/h	13.18 µSv	30.01 µSv/h	Normal	7/9/2025, 8:45:20 PM

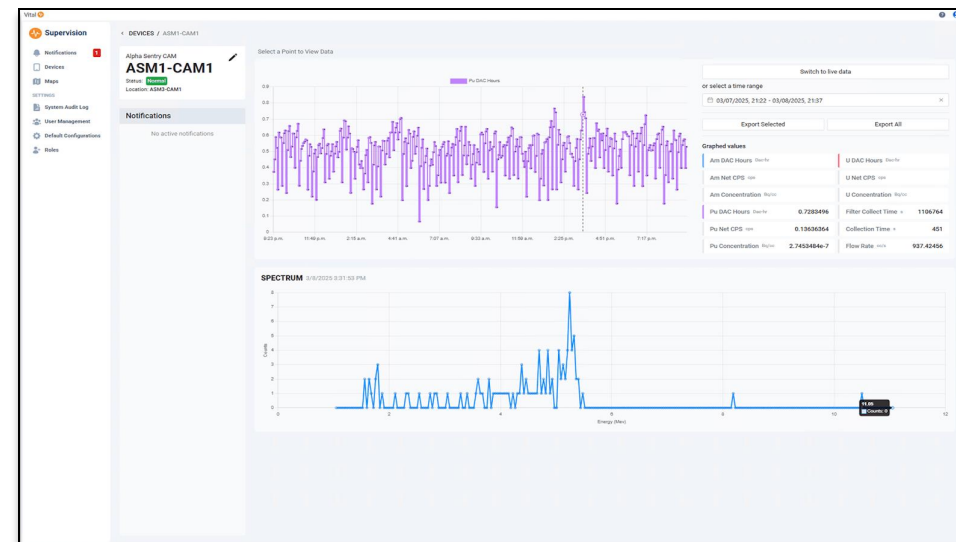
EcoGamma

Name	Last Update	Dose	Rate	GM Tube Voltage	LVPS Voltage	Temperature	Status
EcoGamma 1	7/9/2025, 8:45:21 PM	6.1564 µSv	5.1165 µSv/h	418	0	6.00 °C	Alarm
EcoGamma 2	7/9/2025, 8:45:21 PM	9.2964 µSv	9.2864 µSv/h	346	0.75	4.00 °C	Normal

NgmWrm

Name	Last Update	Channel A	Channel B	Channel C	Channel D	Status
NGM	7/9/2025, 8:45:22 PM	555 Bq/m3	601 Bq/m3	731 Bq/m3	115 Bq/m3	Normal

Device Detail – Live and Historical Data



System Features



- **Role-Based Authentication & Authorization**

- Quickly at new users who need to make use of the information



- **Audit Log:**

- Full System & User Traceability



- **Simplified Device Configuration**

- Fast, scalable deployment & configuration
- Scale up - customers can easily add new instruments to live system



- **Modern Cybersecurity & Quality Compliance**

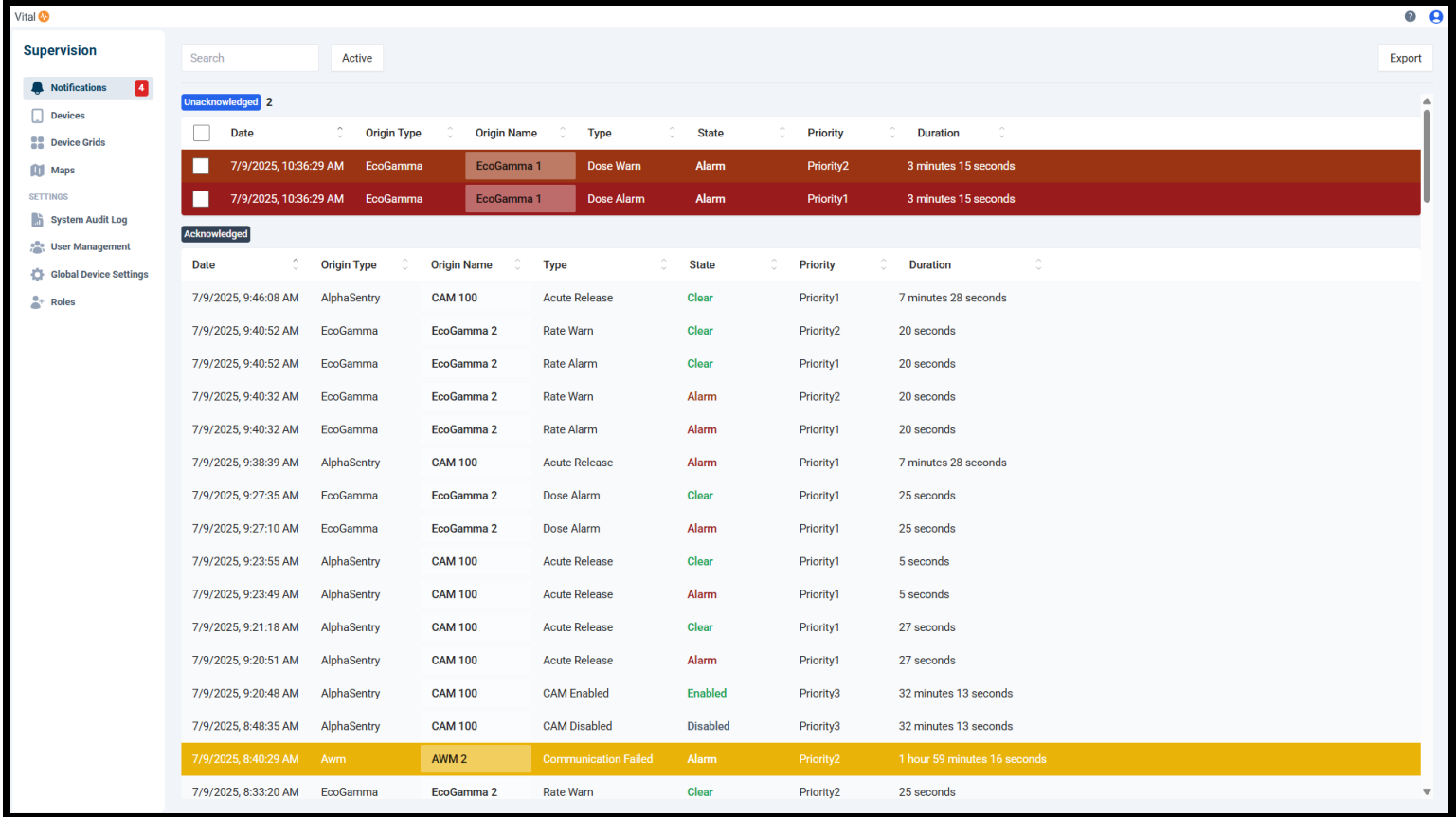
- Security guided by NEI 08-09, NIST 800-53,82 (SBOM, PKI, etc. Encrypted clients)
- NQA-1-2019 and NQA-1-2022

Notifications | Drive Informed Action & Decisions

Visualize events clearly:
Instantly see alarms, alerts,
and faults

Act Fast: Identify the source,
priority, and duration of each
event

Stay Informed: Authorized
users can acknowledge events
and access full details anytime
from this dashboard



Date	Origin Type	Origin Name	Type	State	Priority	Duration
Unacknowledged 2						
7/9/2025, 10:36:29 AM	EcoGamma	EcoGamma 1	Dose Warn	Alarm	Priority2	3 minutes 15 seconds
7/9/2025, 10:36:29 AM	EcoGamma	EcoGamma 1	Dose Alarm	Alarm	Priority1	3 minutes 15 seconds
Acknowledged						
7/9/2025, 9:46:08 AM	AlphaSentry	CAM 100	Acute Release	Clear	Priority1	7 minutes 28 seconds
7/9/2025, 9:40:52 AM	EcoGamma	EcoGamma 2	Rate Warn	Clear	Priority2	20 seconds
7/9/2025, 9:40:52 AM	EcoGamma	EcoGamma 2	Rate Alarm	Clear	Priority1	20 seconds
7/9/2025, 9:40:32 AM	EcoGamma	EcoGamma 2	Rate Warn	Alarm	Priority2	20 seconds
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7/9/2025, 8:48:35 AM	AlphaSentry	CAM 100	CAM Disabled	Disabled	Priority3	32 minutes 13 seconds
7/9/2025, 8:40:29 AM	Awm	AWM 2	Communication Failed	Alarm	Priority2	1 hour 59 minutes 16 seconds
7/9/2025, 8:33:20 AM	EcoGamma	EcoGamma 2	Rate Warn	Clear	Priority2	25 seconds

Maps | Gain Real-Time Visibility & Navigation

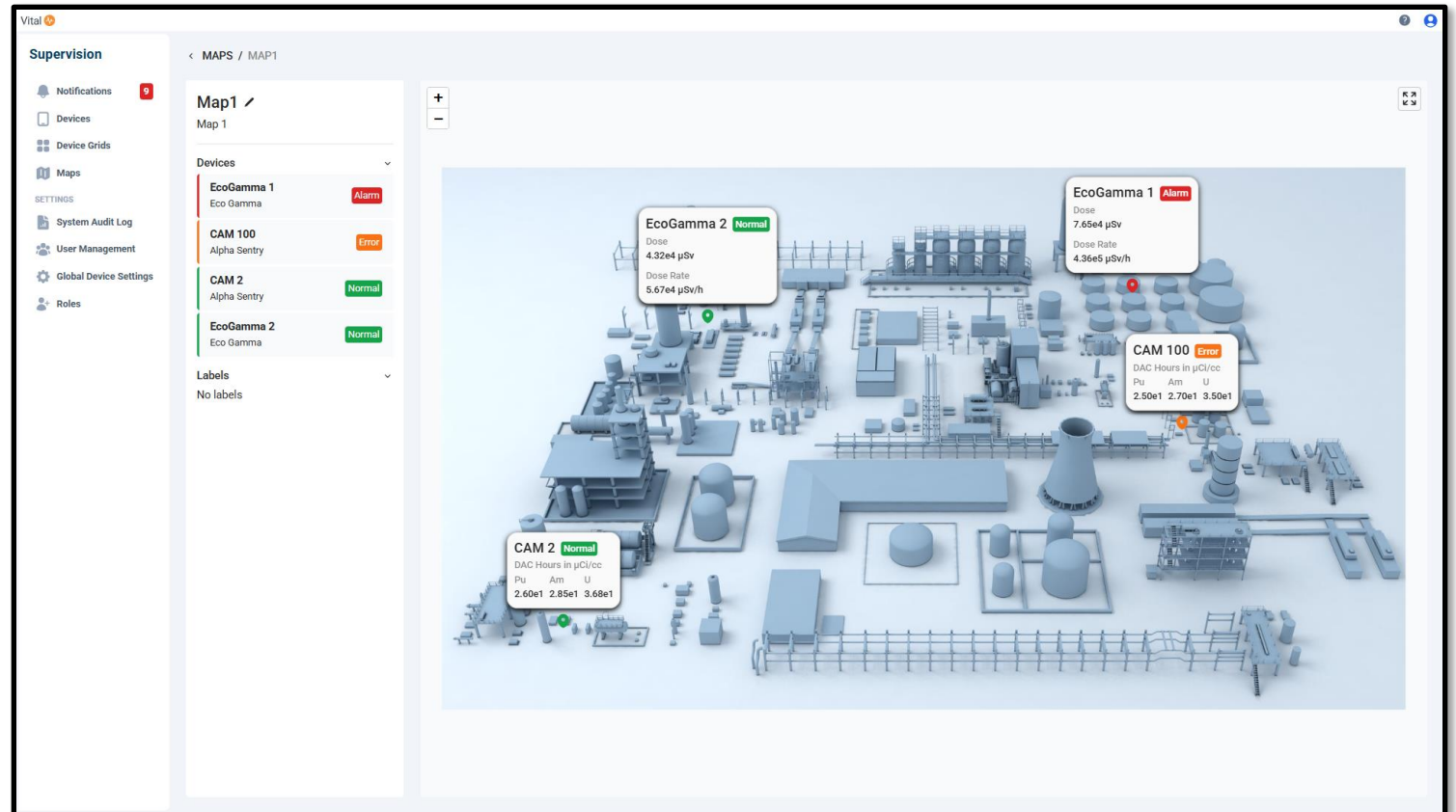
Sitewide Visibility: Monitor instrument status and location across your facility

Interactive Maps: Navigate buildings, floors, and rooms with custom site and floor maps

Live Insights: View real-time readings and alarm status directly on the map

Quick Access: Click on any instrument to jump to detailed data and controls

Flexible Setup: Add multiple maps with graphical overlays to match your site layout



Device Grids | Oversee Dynamic Telemetry Work

Customizable Monitoring: Create multiple data grids, monitor specific instruments based on various criteria.

Live Dynamic Filtering: Automatically include new devices that meet defined filter criteria, ensuring all relevant instruments are monitored in real-time.

Warning Thresholds: Set customizable alert levels for key instruments to notify users of rising dose rates, enabling proactive responses.

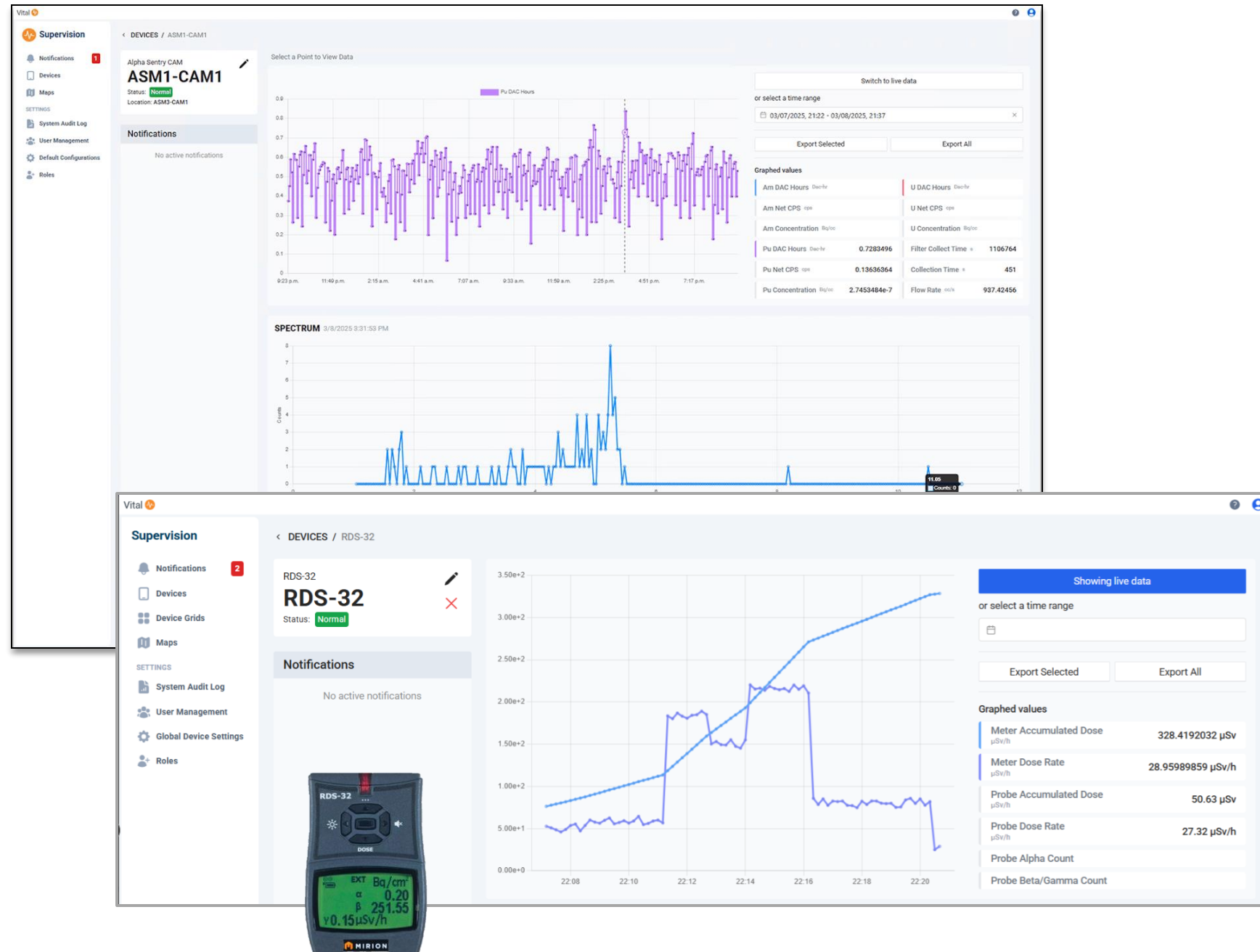
The screenshot displays the 'Vital' interface for 'RWP 57'. The left sidebar contains navigation links for Supervision, Notifications (2), Devices, Device Grids, Maps, and Settings (System Audit Log, User Management, Global Device Settings, Roles). The main content area shows several data grids:

- AlphaSentryCam**: A table with columns Name, Plutonium Dac/hr, Americium Dac/hr, Uranium Dac/hr, Status, and Last Update. It lists CAM 100 (Alarm) and CAM 2 (Normal).
- AbpmWrm**: A table with columns Name, Last Update, Channel A, Channel B, Channel C, Channel D, and Status. It lists ABPM (Normal).
- Dmc3000**: A table with columns Worker ID, RWP, Task, Primary Dose, Primary Rate, Secondary Dose, Secondary Rate, Status, and Last Update. It lists several workers with their respective dose and rate data.
- EcoGamma**: A table with columns Name, Last Update, Dose, Rate, GM Tube Voltage, LVPS Voltage, Temperature, and Status. It lists EcoGamma 1 (Alarm) and EcoGamma 2 (Normal).
- NgmWrm**: A table with columns Name, Last Update, Channel A, Channel B, Channel C, Channel D, and Status. It lists NGM (Normal).

Device Detail

Quickly access a detailed view of any instrument within the network.

- **Review live details:** measurement data is plotted to show trends with customizable plot
- **Historical data:** review historical data for any instrument by setting a date range.
- **Export:** displayed data can be exported for reports and further analysis



Critical Control



Secure, Role-Based
**Authentication
& Authorization**



Full System &
User Traceability
Audit Log



Fast, Scalable Setup &
Simple Management
Device Configuration



Security & Scalability
Excellence
Cybersecurity

Integrated Instruments & Application Features





DMC 3000™

Personal Electronic Dosimeter

Proven Personal Dosimeter, with Reliable Ecosystem

- Rugged and durable for 3,000+ hours continuous use
- Superior X-ray and gamma energy response: Hp(10) and Hp(0.07)
- Simple, user-friendly, easy to use
- Comprehensive ecosystem for heightened safety and efficiency
- Add-on telemetry modules



Location
Telemetry
(LTx)



Enhanced
Telemetry
(eTx)



Neutron
Telemetry
(nTx)



RDS-32™ & 31 Connected Ecosystem





DRM-3000™ & EcoGamma™-g Environmental Area Monitors

Dose Rate & Gamma Monitoring

- Dose rate meter supporting up to 4 detectors simultaneously (DRM-3000)
- Dual detector, environmental gamma monitor (EcoGamma-g)





iCAM™

Alpha/Beta Particulate Monitor

Continuous Alpha/Beta Air Monitoring

- Alpha MCA spectroscopy and separate beta discrimination
- Auto-adaptive spectrometric compensation for radon/thoron
- Low energy beta performance down to 50 keV
- 3-6 months data archive with detailed event log





NGM & ABPM

Airborne Radiation Monitoring

Noble Gas Monitoring

- Dynamic gamma radiation compensation
- Shielded gas detection sensor

Alpha Beta Particulate Monitoring

- Dynamic compensation of radon and thoron solid progenies
- Dynamic gamma background compensation
- Optimized beta measurement for environments with low radon rates





Alpha Sentry CAM

Airborne Radiation Monitoring

Alpha Particulate Monitoring

- Patented radon reduction screen
- Spectroscopic precise radon stripping algorithm
- ASM2000 controller manages up to 8 CAM heads
- Local display for reviewing status before entering a room
- Connection to Vital Supervision records measurement data, alarms/events and spectra for each analysis



Technical Platform

- **Operating System:** Windows Server 2022 (needed for secure web capabilities)
- **Database:** SQL Server 2025 Standard Edition
- **Hardware:**
 - Can be installed on a physical computer or in a VM
 - Recommended for medium to large systems: CPU: i7 class or higher with 10+ cores, RAM: 64GB, Storage: 4TB for 10+ years of history
- **Clients:** UI is fully web based. Web browsers supported: MS Edge, Google Chrome
- **Instrument Communication:**
 - Communications module handles diverse communication protocols for all supported instruments
 - Instruments can be on isolated LAN from server, but firewall between networks would need exceptions for all instrument protocols in use (firewall info can be provided for each)
 - Vital server can be on same LAN as instruments, but if clients are on a separate Business LAN, the firewall will need to allow secure client browser connections from business LAN
- **QA Testing:** Complies with NQA1 and ISO 9001:2015
- **Cyber Security:** Guided by NEI 08-09, NIST 800-53,82 - SBOM, PKI, etc. Encrypted clients





See is in the
Technology Hub

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