ZABBIX 26 CONFERENCE Germany, Berlin

Brownfield Machines as IoT Assets

MeshWave & LoRa Mesh
integrated via EixM into ZABBIX

Agenda

Brownfield IoT with EixM & ZABBIX

01 **The Challenge**

Brownfield & Legacy Machines in Industrial Environments

02 **MeshWave & LoRa Mesh**

Wireless Retrofit Without Machine Modification

03 **Architecture**

From Sensor to NMS – The Data Path

04 **EixM as Integration Layer**

Data Collection, Event Triggering & ZABBIX Integration

05 **ZABBIX**

Extended Infrastructure Monitoring

06 **AI Extension**

Analytics, Chat with Data & Optimisation Management

07 **Live Demo & Q&A**

Questions and Discussion

The Challenge

01

Brownfield industrial environments have reliable machines — but they were never designed for IoT.

No IP Connectivity

Legacy PLCs & machines lack modern interfaces — no Ethernet, no cloud

High Replacement Cost

Replacing brownfield equipment is expensive and operationally disruptive

Isolated Data Silos

Valuable process data (temperature, vibration, runtime) stays invisible

Hidden Downtime Risk

No predictive maintenance possible — failures happen unexpectedly

➤ **The Solution: Retrofit without machine modification using MeshWave & LoRa Mesh**

MeshWave & LoRa Mesh

02

Retrofit Without Machine Modification

- Sensors capture vibration, temperature, current, runtime
- Digital/analogue signal processing without PLC change
- Hop-by-hop mesh transmission — no direct gateway needed
- Works in large halls, shielded industrial areas
- Robust against individual node failures
- Suitable for: Industry · Logistics · Energy · Brownfield

LoRa Mesh in Practice

Long Range

Excellent penetration in industrial environments — concrete, metal, machinery

Low Energy

Battery-powered sensor nodes run for years without maintenance

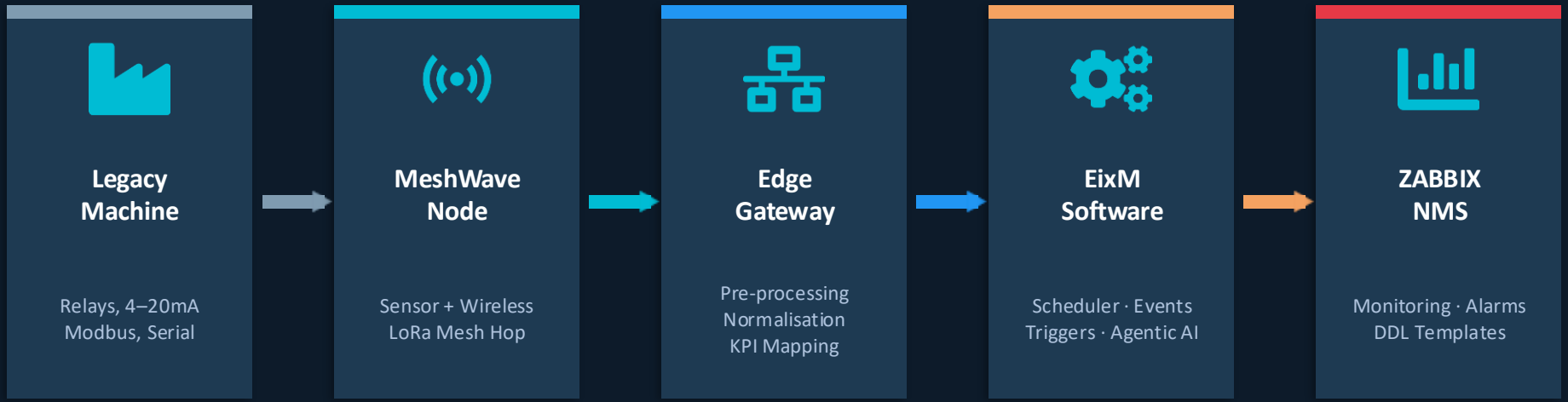
Low Data Rate

Ideal for telemetry: heartbeat, status, thresholds — not video/audio

Proprietary Stacks

Not an official standard — manufacturer-specific implementations (be aware of lock-in)

Architecture: From Sensor to Dashboard



EixM — The Integration Layer

EixM is the central UI and orchestration layer — it collects data from Mesh, ZABBIX, evaluates it, and provides the results via DDL templates to ZABBIX.

Data Sources

- MeshWave / LoRa Mesh sensors
- NMS / ZABBIX metrics
- SAP business data
- External REST APIs

EixM Core Functions

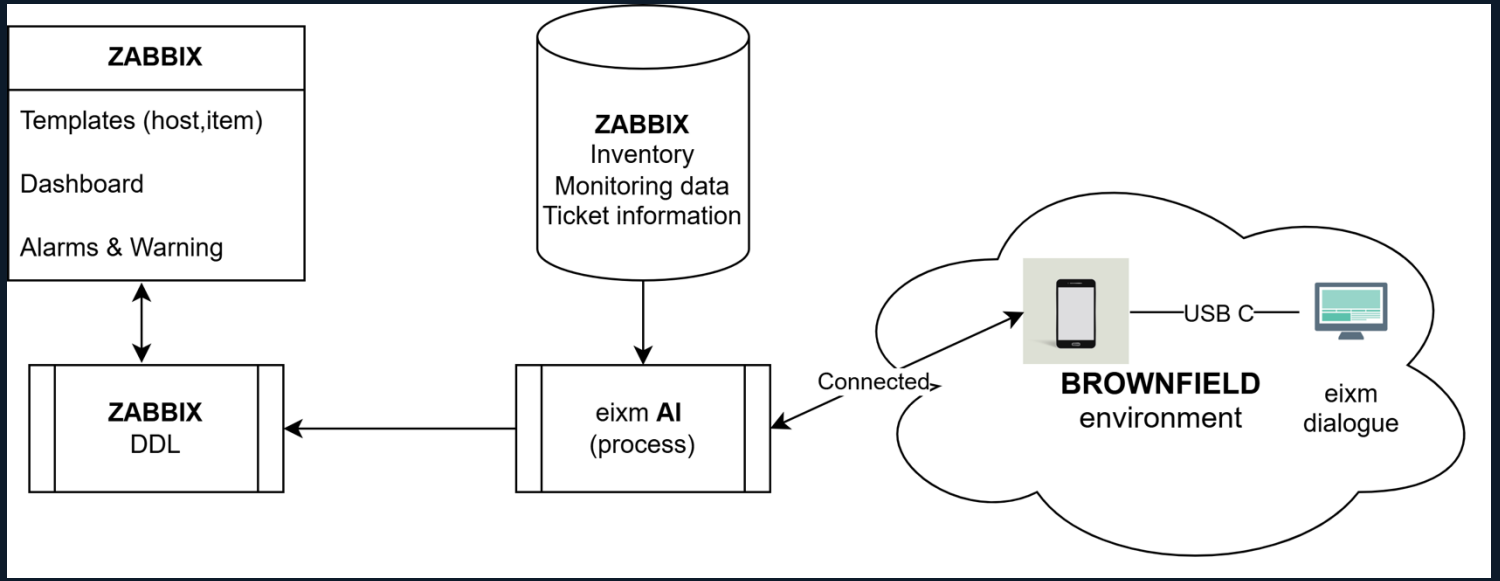
- Agentic AI
- REST API calls
- Data aggregation & normalisation
- MESH – dialogues & functions
- Powerful independent Scheduler
- Agile boards & reporting

ZABBIX

- Trapper triggers
- REST API calls
- DDL Template to retrieve EixM data
- Alarm events & thresholds
- Trend data injection
- Operational dashboards

How it works

EixM manages the brownfield environment (inventory), provides the necessary dialogues and makes their data available in near real time via DDL-based templates

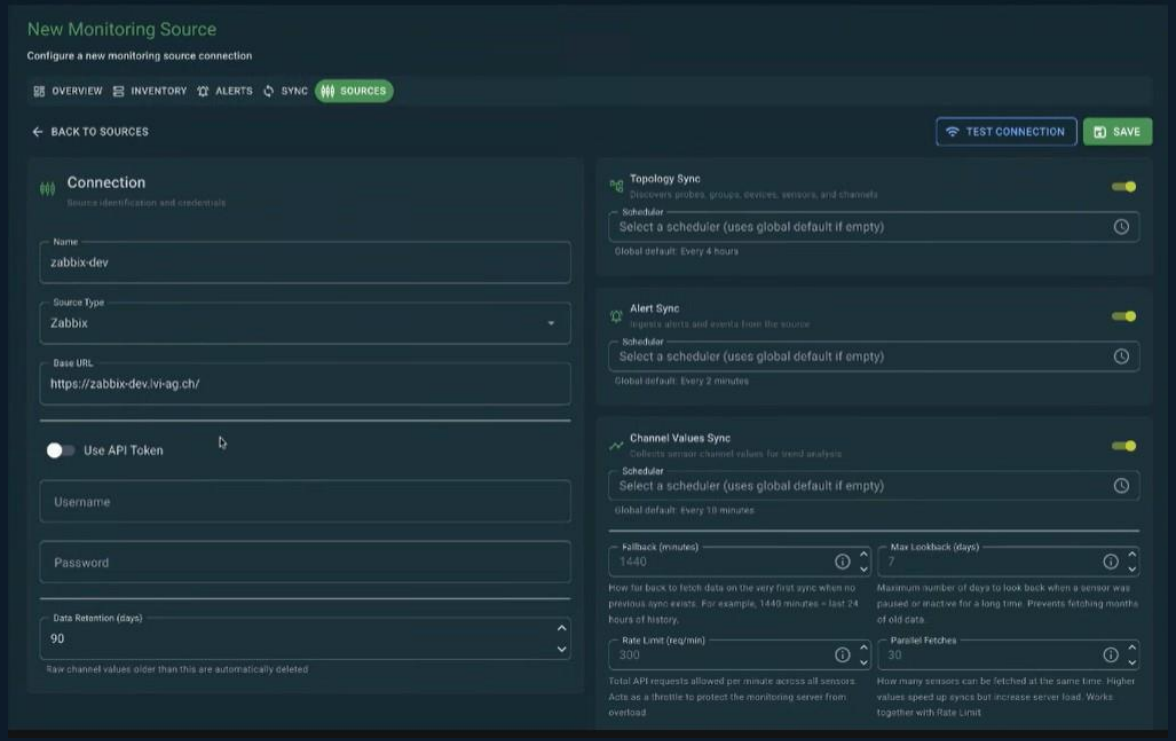


DDL template sample for ZABBIX SAP Monitoring


```
zabbix_export:
  version: '7.0'
  template_groups:
  - uuid: a571c0d144b14fd4a87a9d9b2aa9fcd6
    name: Templates/Applications
  templates:
  - uuid: 62c8dd945b4748ecab2441099792418d
    template: SAP MONI Auto-Discovery
    name: SAP MONI Auto-Discovery
    description: |
      # Summary
      SAP Monitoring template with Low-Level Discovery (LLD).
      Automatically discovers all metrics from SAP MONI API sensor responses. No manual item creation needed — channels are discovered dynamically.
      Monitors 17 SAP sensors: batchjobs, bufferstat, certificates, dialog, idoc, parameters, rfc, shortdump, slg1, spool, status, syslog, syslogms
vscan, workflowlog, workprocess.
      Includes alerts for: failed batch jobs, expiring/expired certificates, dialog response time, short dump spikes, spool errors, IDoc errors, wo
errors, buffer statistics, and work process availability.

      # Prerequisites
      - SAP MONI API accessible from the Zabbix server/proxy
      - Valid API key configured in SAP MONI
      - SAP MONI profile created for the target SAP system

      # Deployment details
      Required macros (must be set per host):
      - {$SAP_MONI.URL} — SAP MONI API base URL (e.g. https://sapmoni.example.com)
      - {$SAP_MONI.API_KEY} — API key for authentication (X-API-Key header)

      Optional macros (have defaults, override per host if needed):
      - {$SAP_MONI.PROFILE} — SAP MONI profile name (default: host name)
      - {$SAP_MONI.CERT_PSE} — PSE name for certificate check (default: SAPSYS.pse)
      - {$SAP_MONI.RFC_NAMES} — RFC destinations to check, semicolon-separated
      - {$SAP_MONI.PARAMETERS} — SAP parameters to monitor (format: PARAM==val or PARAM>>min or PARAM<<max)

      # Known problems and limitations
      - Discovery rules do not filter channels — all channels returned by the SAP MONI API are discovered

      # Compatibility
      - Zabbix 7.0 and later
      - E(i)xM 2026.3.27.1 and later
    vendor:
      name: LVI AG
      version: 1.0.0
    groups:
    - name: Templates/Applications
    macros:
    - macro: '{$SAP_MONI.URL}'
      description: Base URL of the SAP MONI API (e.g. https://sapmoni.eixm.local)
    - macro: '{$SAP_MONI.API_KEY}'
      type: SECRET_TEXT
```

How AI supports

EixM requests of ZABBIX inventory, monitoring data and alarms. You can integrate as many ZABBIX server you`ve, other NMS and data sources for analysis, enterprise dashboards and reporting

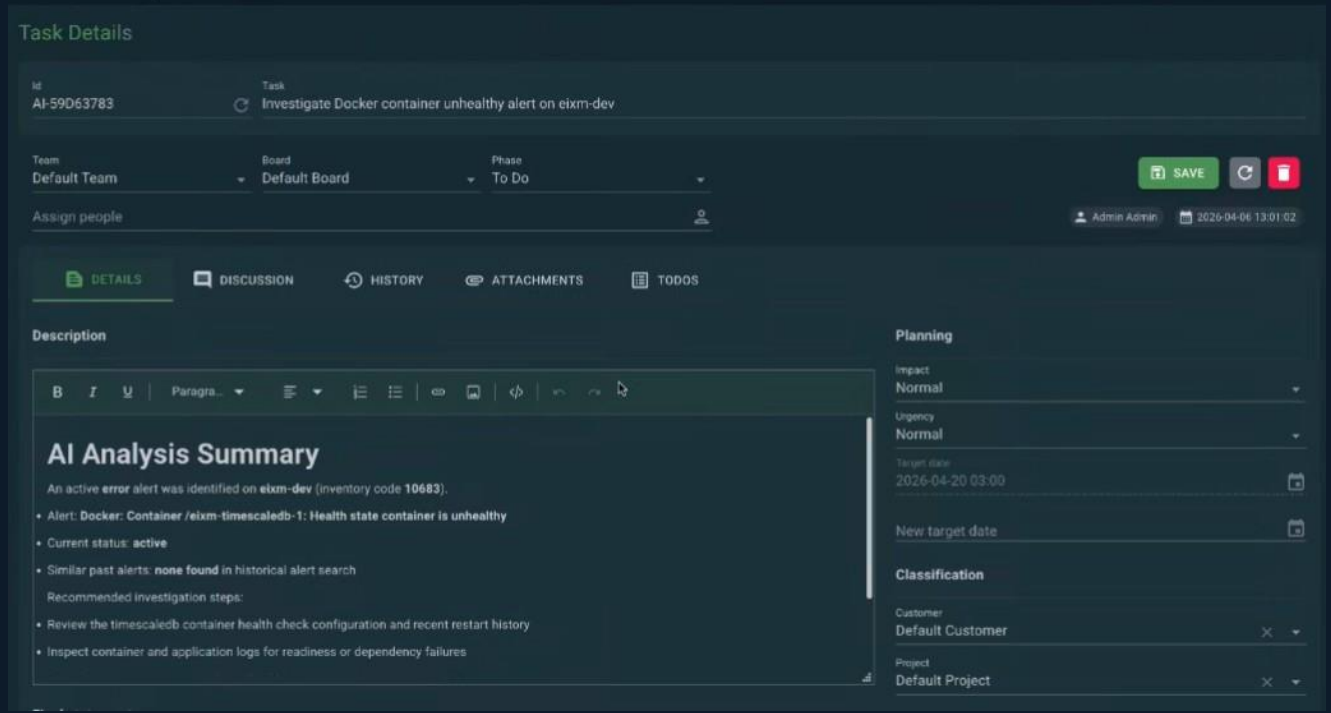


How AI supports

EixM requests of ZABBIX inventory, monitoring data and alarms. Based on agentic AI the data are analyzed, visualised and improvements suggested as tasks assigned to the correct teams. It delivers an enterprise dashboard above all!

How AI supports

If EixM AI detects an issue it creates a task, assigns it to an appropriate agile board, team and/or team-member



ZABBIX — Extended Infrastructure Monitoring

Why ZABBIX?

Open Source — Zero Licence Costs

Especially attractive vs SaaS alternatives in price-sensitive markets

Database-Backed & API-Rich

Time-series historisation, REST API, Zabbix Trapper support

Monitoring, Alarms & Trends

Operational view: thresholds, availability, SLA metrics

On-Premises & Air-Gap Capable

Runs fully local — no cloud dependency, GDPR compliant

What ZABBIX covers:

- Centralised view of distributed assets
- Time series data & historisation
- Threshold values & alarms
- Availability & status monitoring
- 70–80% of operational IoT use cases

EixM fills the gaps:

- Complex event processing
- Semantic machine modelling
- Business-oriented dashboards
- SAP & multi-source integration

EixM AI Extension

When operational monitoring is not enough — EixM AI connects NMS, Mesh and other sources for advanced analytics.

AI Analysis Platform

Integrated AI solution for analysing data from NMS, Mesh, and other. Automatic pattern detection, anomaly identification and optimisation suggestions.

Dashboards & Summary Views

AI-generated summaries displayed in customisable dashboards. Management reports with business KPIs beyond technical metrics.

Chat with Your Data

Natural language interface to query your operational data. Ask questions, get answers — no SQL, no complex queries required.

Optimisation Management

AI-detected improvements are tracked as tasks in EixM. Agile boards, project management and internal/external billing included.

Who Benefits?

Target Industries & Strategic Value

Manufacturing

OEE tracking, predictive maintenance, machine condition monitoring without PLC changes

Energy

Substation & grid monitoring, consumption metering, brownfield SCADA integration

Logistics

Warehouse monitoring, cold chain, asset tracking across large brownfield facilities

ASEAN / SME

Cost-efficient open-source stack ideal for price-sensitive markets & smaller companies

Key Value: Explainable · Operationally Accepted · Cost-Efficient · On-Premises · Quick to Implement

Let's Talk in Berlin!

📍 Zabbix Summit · 28.–29. April 2026 · Berlin

- MeshWave & LoRa Mesh — Retrofit brownfield machines without modification
- EixM — Collects, evaluates and triggers events into ZABBIX
- ZABBIX — Extended infrastructure monitoring, alarms, trends, SLA
- AI Extension — Advanced analytics, optimisation management & Chat with your Data

We look forward to the exchange!

#Zabbix #ZabbixSummit #IoT #IndustrialIoT #Monitoring #LoRa #Mesh #Industry40