IronFlock

OPEN DEVOPS PLATFORM FOR IOT & AI

IOT APP HUB, EDGE DEVICE MANAGEMENT, INDUSTRIAL INSIGHTS
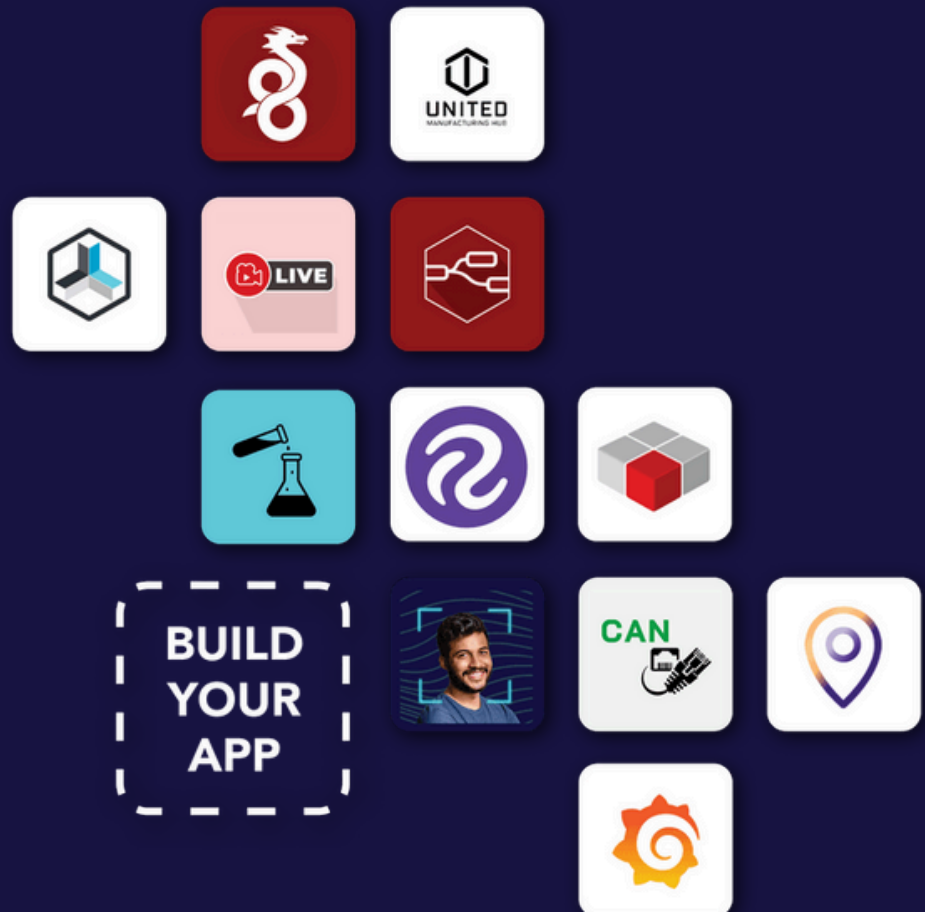
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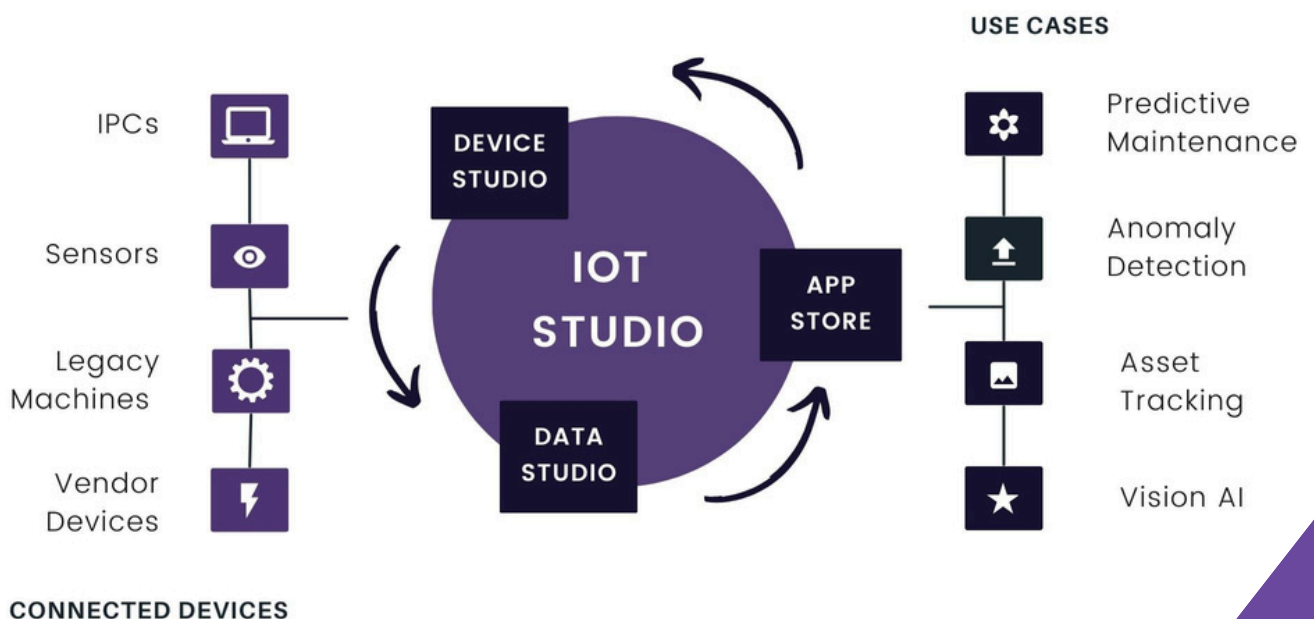
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INTRODUCTION

IronFlock is a collaborative SaaS platform for the development and operation of digital IoT services for industrial machines.

The easy-to-use platform serves as a foundation for a wide range of use cases and provides an enterprise-wide hub for the acceleration of IoT projects.

Projects ranging from simple data acquisition to complex computer vision are covered in the same environment.

CONNECTED DEVICES

IPCs

Sensors

Legacy Machines

Vendor Devices

DEVICE STUDIO

IOT STUDIO

DATA STUDIO

APP STORE

USE CASES

Predictive Maintenance

Anomaly Detection

Asset Tracking

Vision AI

DASHBOARDS AND DATA

Apps are delivered with automated ready-to-use dashboards and cloud data backends. The app data backend collects data histories from a fleet of edge devices in a dedicated fleet database. The app dashboard displays the fleets' data in real-time and with historical data.

On top of that, on-device dashboards are provided by apps for further details. They can be accessed through secure rendevous tunnel technology.

Users can use the low-code dashboard builder to combine data from different apps in one custom dashboard and provide sector-spanning insights.

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IOT APP HUB

The IoT app hub is a central hub for exchange between AI experts, software developers and industrial companies. This is where you publish and deploy industrial IoT apps:

- directly install apps on devices
- share private apps with clients
- manage app sales

You also manage the entire lifecycle of an app from development to release with app versioning for different hardware types and release management of public apps.

Secure remote maintenance
Remote maintenance apps give you direct access to your devices from anywhere and at any time

Remote maintenance apps
Control and monitor your devices from anywhere

Esta Monitor
Demo App for monitoring machine con...
Install Free

Node-RED
Low-code programming on your edge d...
Install Free

WireGuard VPN
Easily setup and manage a secure VP...
Install Free

Repetier 3DPrint
Repetier is the professional all-in-one s...
Install Free

GPS Tracker
The app tracks the devices location ba...
Install Free

CODESYS Control
A soft PLC according to IEC 61131-3 fo...
Install Free

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LARGE-SCALE IOT DEPLOYMENTS

You use public apps, self-developed apps and apps delivered by machine vendors side by side on the same platform.

You benefit from:

- robust over-the-air updates on all layers
- mass deployments and mass updates
- tenant and fleet management
- easy scaling from 1 to 1,000 devices
- user-controlled maintenance windows
- transfer of asset ownership
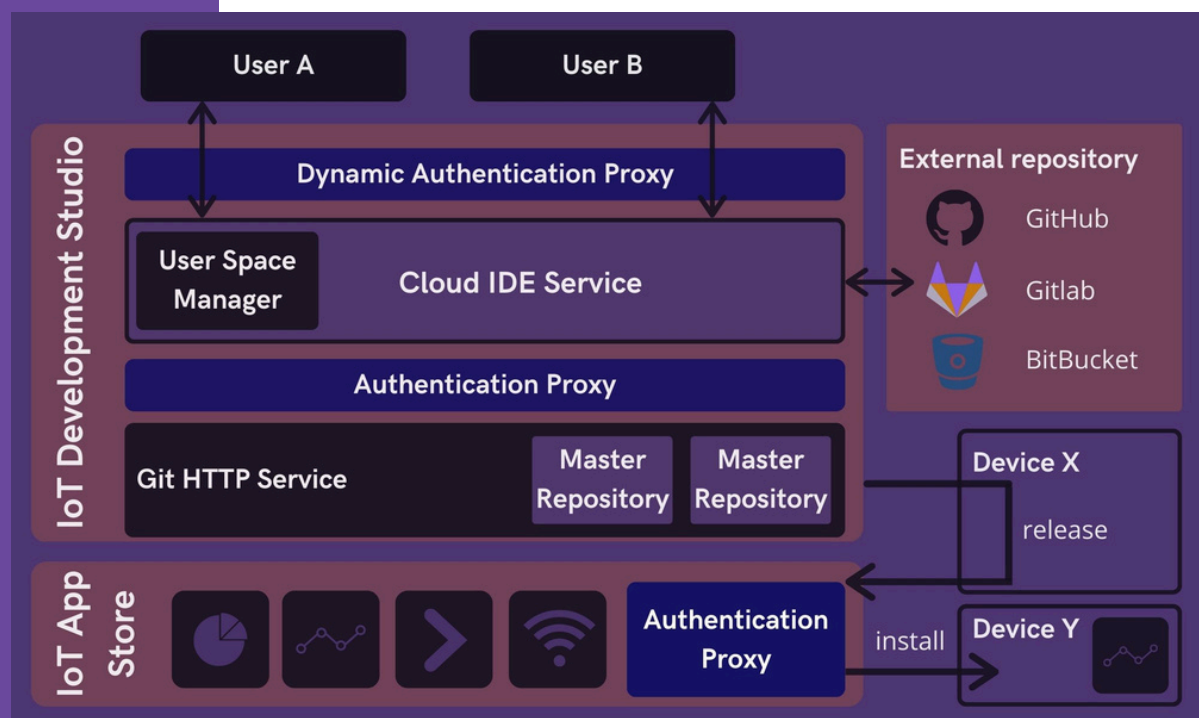
IOT APP DEVELOPMENT & INTEGRATIONS

IronFlock has an integrated development environment (IDE) where you create applications (edge apps) using any programming language.

Here you connect apps to professional coding platforms like GitHub or GitLab and employ solid release processes for large-scale production use.

- remote edge development
- seemless integration into existing setups
- all programming languages (Docker-based)
- access and collaboration management
- app release management

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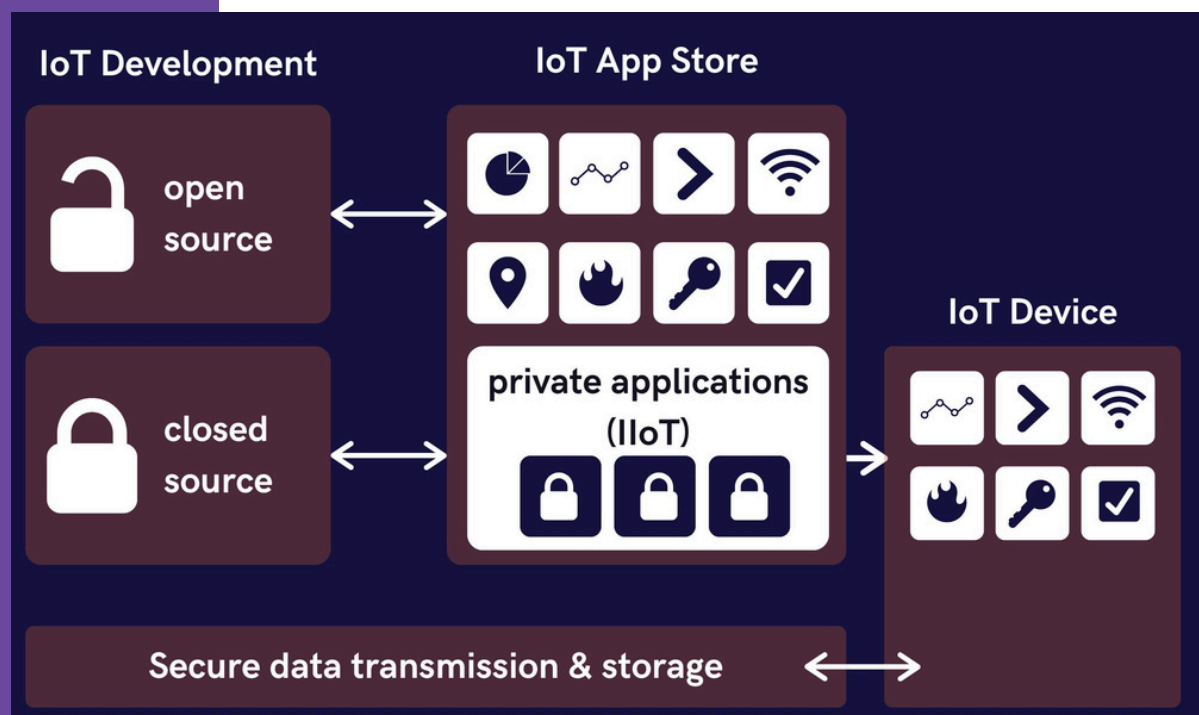
DEVICE MANAGER

Here you connect and manage IoT devices with unparalleled ease of use. Monitoring and operating apps on devices or organizing assets in groups requires no IT know-how.

Devices represented as digital twins of the physical devices can be operated on at any time. The digital twins are continuously synchronized with the physical devices to provide a precise real-time representation of your machines.

- operate apps on devices
- enable/disable remote access
- manage privileges
- organize assets in groups
- remote device configuration

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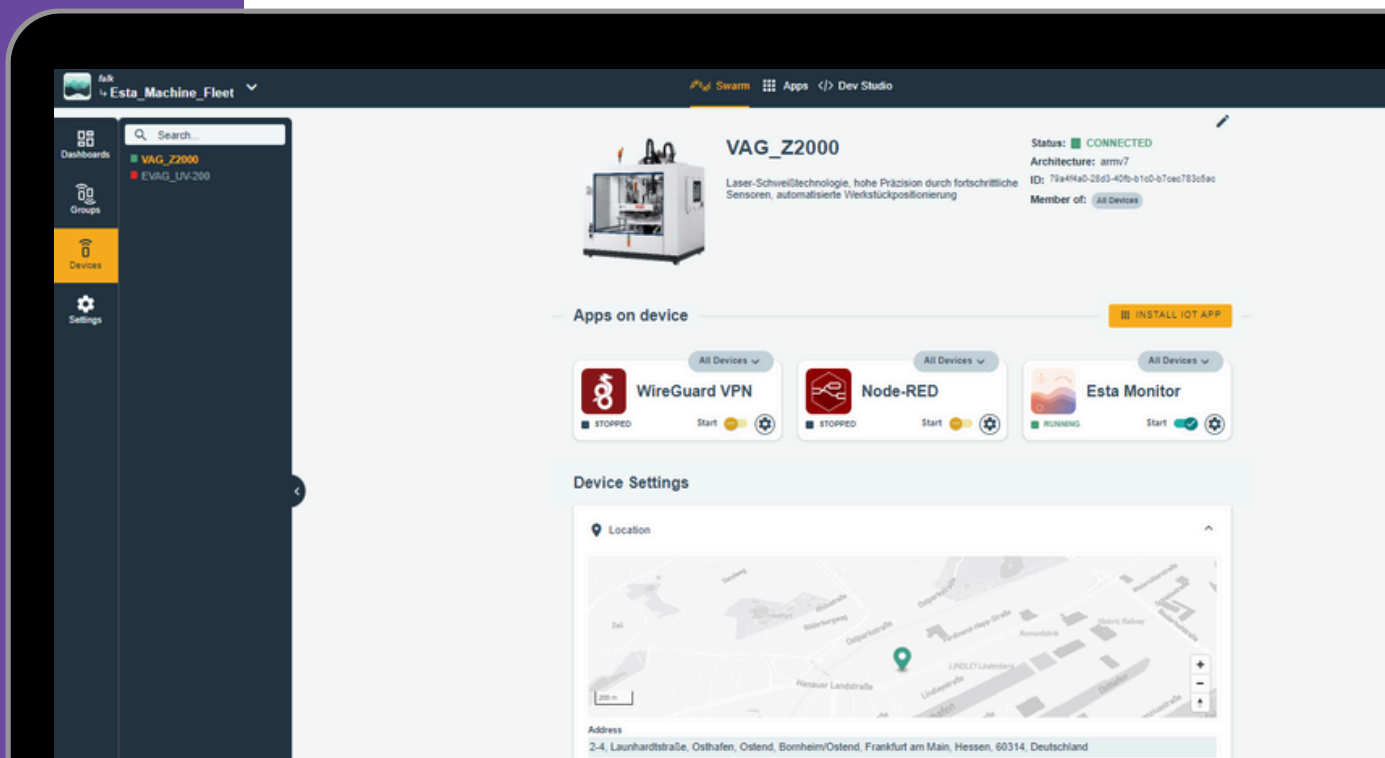
OVERCOMING INITIAL IMPLEMENTATION CHALLENGES

Often IoT initiatives start out with a single use case to get familiar with the complexity involved. Kickstarting a project with a custom selection of technical components results in a presentable pilot but also leads to an unscalable initial design. This approach results in the discontinuation of 74% of all pilots.

" *The first step in any IoT initiative is getting the foundation right.* "

This is why IronFlock supports development efforts from day one. Everything you do in the IoT Studio will be scalable and deployable in production environments.

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OPEN DEVEOPS PLATFORM FOR IOT & AI AT THE EDGE: THE BENEFITS

Companies can benefit from an IoT studio that provides all the necessary infrastructure to launch IoT initiatives.

A successful deployment depends on the ability to connect to all existing industrial PCs, PLCs, machines, sensors, and other assets, work with a clearly structured data management pipeline, build on existing use cases, and integrate various third-party applications.

IronFlock delivers an enterprise-level infrastructure that allows you to perform analytics on the fly, manage the rollout of devices effortlessly, and facilitate the creation and maintenance of an array of digital IoT services that can be conveniently packaged and rolled out as industrial apps.

This allows companies to move from PoC to scaling in a matter of days.

Achieve hardware independence

Using the FlockFlasher, you turn just about any Linux-capable device into an IoT device. This open-code approach enables you to use any protocol, to connect to any hardware, integrate into any system (MES, ERP), or connect to any cloud.

Add one use case at a time

Add use cases step by step to advance in your digitization strategy. For example, you start with energy management and continue with quality control. Then you tackle OEE and, maybe after that, worker safety.

Additionally, machine builders and software experts offer an array of digital services in the App Hub. These are ready-to-use solutions that require no upfront investment.

Integrate into your existing system setup

IronFlock is integrated in existing system environments (MES, ERP, WMS) using the platform API. This open-code approach allows you to adapt to any future or niche software.

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DATA & DASHBOARDS

DATA COLLECTION

Automated edge data collection

Automated private data storage per tenant

Private pub/sub broker realm for each tenant

Data normalization / consolidation

Monitoring & control of data streams

DATA INTEGRATION

Any data collection endpoint (e.g. Azure, AWS, SAP)

Any data transfer technology (e.g. MQTT, Kafka, REST)

Any BI tool (e.g. Power BI, Qlik)

Data integration to any system

Manage API keys for REST data access

DATA ANALYTICS

Edge analytics with easy-to-use tunneling

Cloud-based data science

High-performance scalable cloud databases

Preinstalled standard analytical tools (e.g. Polars, Pandas, SciPy, PyTorch, TensorFlow)

High-performance data storage for advanced analytics

DASHBOARDS

Ready-to-use, near-real time, low-latency dashboards

Scheduled data transformations and aggregations

Times series data collection

Dashboard widget integrations

No-code custom dashboards

Dashboard-only user roles

DEVICES

CONNECTIVITY

LTE, Wi-Fi, and LAN connectivity out of the box

Connect any Linux-capable asset

Remote configuration via secure tunnels

Pre-registering OEM devices for a plug & play experience

Remote configuration via secure tunnels

USER & TENANT MANAGEMENT

White-labeling and custom domain name

User role-based access (e.g. dashboard-only, developer access)

Transfer of device and tenant ownership

Clear definition of device and tenant ownership

LIFECYCLE MANAGEMENT

Location management and map view of all devices

Device grouping and group management

Real-time monitoring & control, full audit history

Device sharing & collaboration with privilege management

Full device updates at OS, agent, and app levels

APPS ON DEVICES

Instant installation from app store

Remote HMI machine operation

Offline operation

Bulk OTA updates, mass rollouts, and configuration

Live logs of all apps on devices

Full API REST interface for device and app management

Tunneling service (TCP, HTTP(S), UDP, SSH, VNC, VPN)

14 PLATFORM FEATURES

APPLICATIONS

APP DEVELOPMENT

Any programming language with Docker-based app containers

Dockerfile and Docker Compose can be used for an app

GitHub and GitLab integrations

Live coding, logs and terminals on remote devices with cloud IDE

Development toolkits (e.g. Node Red available as app install)

APP MANAGEMENT

Lifecycle management

Release management

Bulk OTA updates

Privilege structure

User-based access & UI

SECURITY

No open ports

Device authentication

Encrypted connections

Two-factor user authentication

Login with Google, Microsoft, GitHub (OIDC)

Global user session management with active session invalidation

Data backups

Tunneling service architecture

Separate databases for each tenant

Private message broker realms for each tenant

APP STORE

APP USERS

Directly install public & private apps

Deploy and run containerized edge applications

Real-time monitoring & control of app status and logs

Self-controlled maintenance with OTA updates

Auto-generated private cloud datastores per app and tenant

Deployment history

Remote user interfaces

Out-of-the-box and no-code custom dashboards

APP CREATORS

Sell public & private apps

Seller dashboard

Configure pricing model & set license

Fully managed usage-based billing for tenants

Global payment solution

App encryption & copy protection

Create private use-case specific apps for tenants

HOSTING

SaaS in the public cloud (default)

Private operation in virtual private cloud (VPC)

Private operation on-premises (local hardware)

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ABOUT US

Behind IronFlock stands a team of data engineering and edge computing experts with hands-on experience in industrial IT and AI technology.

One of our core missions is to provide user-centric technology to enable everyone to participate and benefit from complex distributed IoT solutions. Our vision for the platform is to serve as an enabler and an open foundation for the future of industrial operations.

www.ironflock.com

Represented by:

Dr. Marko Petzold

Contact:

Email: info@record-evolution.de

Phone: +49 69 4699 4602

Record Evolution GmbH

Hanauer Landstr. 146

60314 Frankfurt am Main

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Hard Hat Detection
Optimizing workplace safety with artificial intelligence

Pump Monitoring
Remote monitoring of pump efficiency in factory systems

Smart water metering
AI controlled water metering sensor for predictive analytics

Logistics asset tracking
Asset traking for a streamlined production