SuSaati | Your water meter, now in your pocket.

END-TO-END SMART WATER MANAGEMENT

# Smart water, from field to decision

From LoRaWAN gateway installation to remote meter reading, from the utility dashboard to the citizen app. One team, one point of accountability, vendor-neutral.



Field network · Remote reading · Meter compatibility · Utility dashboard · SuSaati app · Water loss analytics

01 · OVERVIEW

# SuSaati at a glance: one platform, one team

### Field network

Your own LoRaWAN network: gateways on rooftops and towers, with overlapping coverage.

### Remote reading

Meters are read automatically every day; data is validated and flows into billing.

### Utility dashboard

Operations, alarms, leaks, outages and finance on one screen.

### Citizen channels

SuSaati app, kiosks and digital payment, for card and smart meters.

**ALL IN-HOUSE** Survey and RF planning · gateway and meter installation · integration · training · operation and support

**Vendor-neutral:** meters and gateways from different manufacturers run on one platform; existing investments are protected.

01 · THE NEED

# The invisible loss: nearly a third of the water

**126 billion m³**
of non-revenue water worldwide, every year

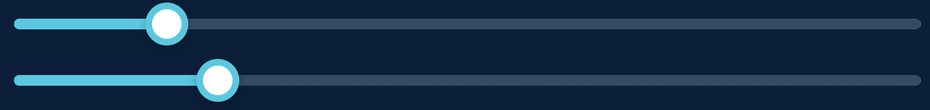
**≈ 30%**
global average loss rate

**31.6%**
Türkiye average, 2024

**25%**
Türkiye's legal cap for metropolitan utilities, 2028

**50** million m³ annual supply, **5**-point lower loss rate

## ≈ 2.5 million m³ of water a year




≈ 1,000 Olympic pools · 5% of annual supply

## The reality in the field

- Periodic manual, drive-by or drone reading
- Estimated bills and disputes
- Leaks noticed days later
- High field and collection costs

Sources: Liemberger and Wyatt (2019), World Bank study · Su Verimliliği Genel Müdürlüğü (Türkiye) · Official Gazette of Türkiye, 31 Aug 2019

01 · SOLUTION

# End-to-end architecture: from meter to decision

1 · FIELD

## Meter

Smart, prepaid card or mechanical meter; LoRaWAN communication module

EU868 · AES-128

→

2 · ACCESS

## Gateway

On rooftops and towers, with overlapping coverage; connected via fibre or LTE

Carrier-grade

→

3 · NETWORK

## Network server

Deduplication, adaptive data rate (ADR), device keys, downlink commands

Open standard

→

4 · PLATFORM

## SuSaati

Validation, alarms, leak analysis, remote credit, reporting

REST · SSE · RLS

**Channels fed by the platform**

Utility dashboard | SuSaati app | Kiosks and payments | Billing/CIS · SCADA · GIS · ERP

01 · SERVICE MODEL

# Turnkey: one team, one point of contact

### 1 Survey and RF planning

Meter inventory, building types, rooftop and tower candidates; coverage simulation and field measurement.

### 2 Gateway installation

Mounting, antenna and cabling, fibre or LTE backhaul, backup power and lightning protection.

### 3 Meter commissioning

Smart meter and module installation, network registration, reading and signal tests.

### 4 Platform and integration

Dedicated set-up for your utility; links to billing/CIS, SCADA, GIS, ERP and payment systems.

### 5 Training and transition

Training for dashboard users, field crews and the call centre; phased roll-out.

### 6 Operation and support

Network and signal monitoring, maintenance, software updates; support backed by an SLA.

**ONE CONTRACT** Hardware, installation, software, integration and support under one roof; responsibility is never split.

02 · FIELD NETWORK · LORAWAN

# Why LoRaWAN: a network designed for meters

### Long range

Several kilometres in urban areas; wide coverage with few gateways.

### Years of battery life

Low-power communication; meter modules run for years, depending on reading frequency.

### Deep indoor reach

The 868 MHz band gets through walls, basements and shafts better.

### Open standard

Devices from different manufacturers on one network; no vendor lock-in.

### End-to-end security

AES-128 encryption, per-device keys, protection against replay attacks.

### Two-way, and yours

Remote credit and valve commands; your own network on licence-free spectrum, no per-device fees.

# Gateway installation: overlapping, redundant coverage

## At least two gateways hear every meter

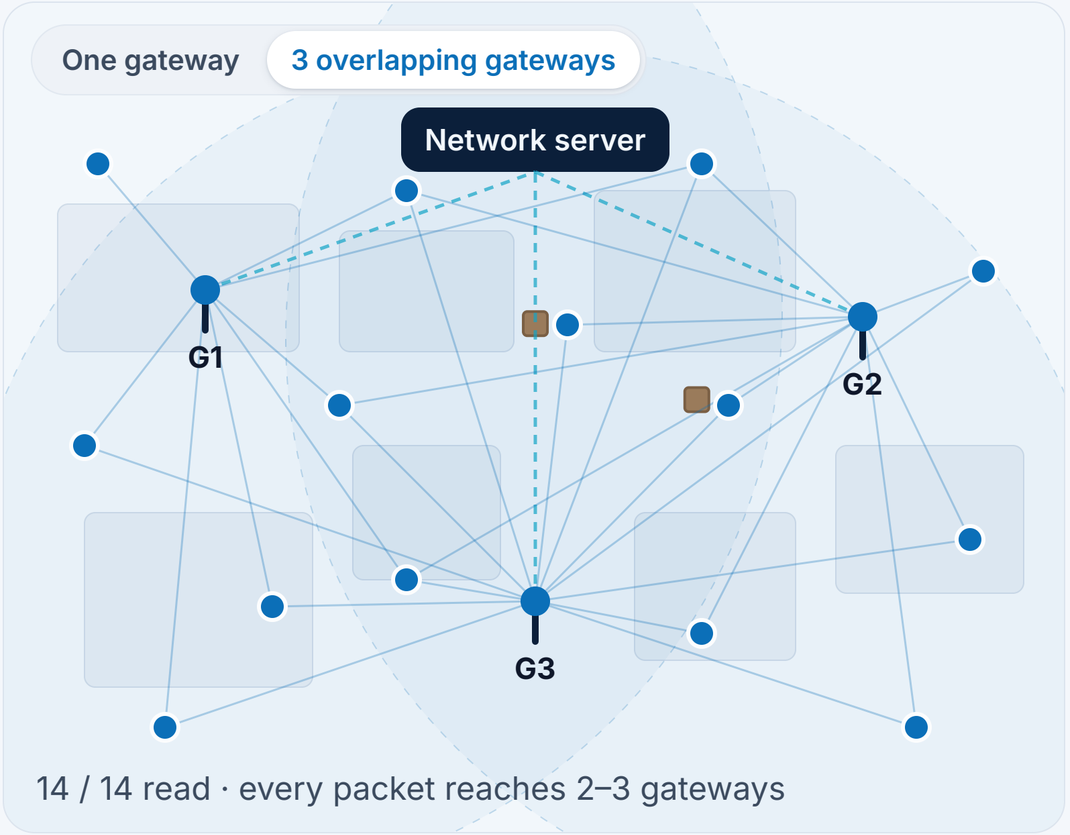
Packets reach every gateway in range, and the network server removes duplicates. If one fails, data keeps flowing.

## Sites are chosen by measurement

Rooftop and tower candidates are selected through RF planning and field measurement; nothing is left to guesswork.

## Capacity is not an issue

A single gateway can receive about 1.5 million packets a day; thousands of meters are handled with ease.




14 / 14 read · every packet reaches 2–3 gateways

02 · FIELD NETWORK · HARDWARE

# Carrier-grade hardware, chosen to suit each area

| Gateway class | Where | Key features |
|---|---|---|
| **Outdoor (rooftop)** | Housing estates and building rooftops | IP67 enclosure, 8 channels, Ethernet + 4G, PoE |
| **Macro (tower)** | Towers and high points, wide areas | 16+ channels, high sensitivity, cellular interference filter |
| **Solar-powered** | Sites without mains power | Solar panel, battery backup, cellular backhaul |
| **High-capacity** | Dense city centres | 32+ channels, carrier-scale traffic |

### The right antenna

Wide-beam antennas (≈2.5–3 dBi) for nearby tall blocks, high-gain (≈6 dBi) for flat, open areas.

### Installation quality

Low-loss cable, waterproof connectors, lightning protection; adequate clearance from metal.

### Vendor-neutral choice

LoRaWAN gateways from different manufacturers on one network; chosen on technical criteria.

# Proven solutions for difficult sites

### High-rise blocks and basements

Rooftops are natural towers; LoRaWAN relays or external antennas for basements and shafts.

### Industrial and metal-dense areas

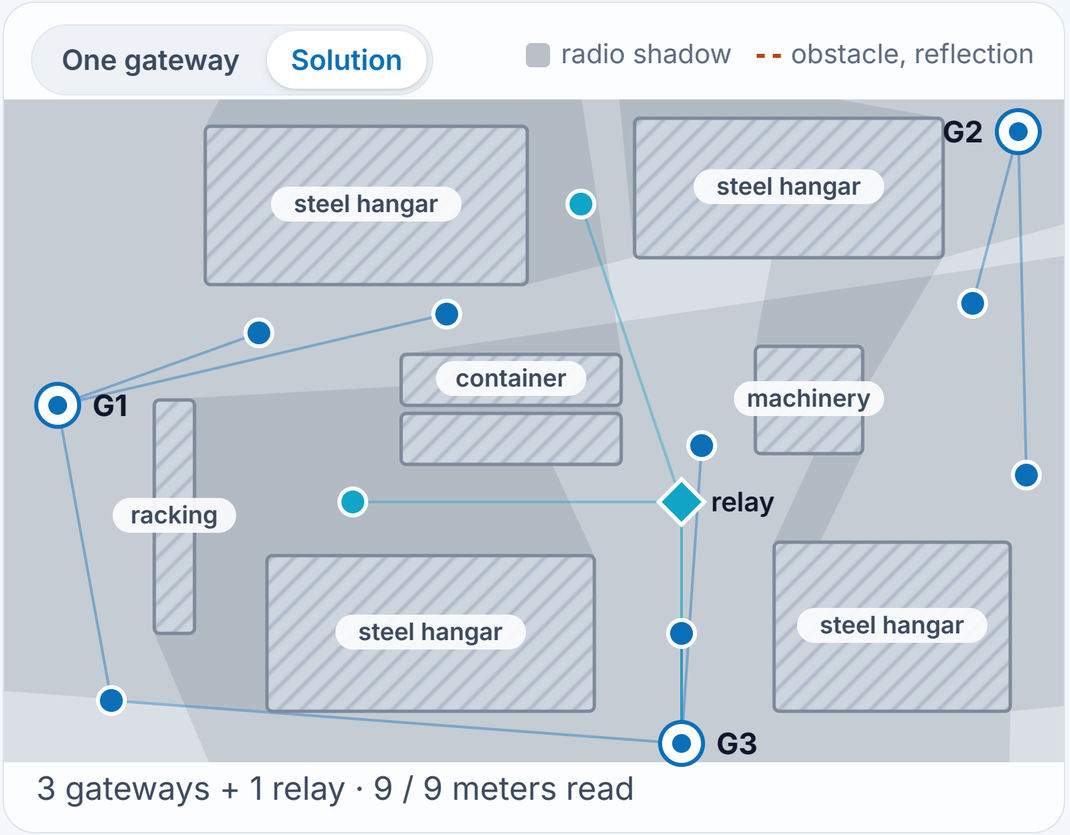
Gateways listening from different directions, plus relays, break the radio shadow of metal structures.

### Rural and scattered settlements

Macro gateway and high-gain antenna on high ground; solar-powered gateway where there is no mains power.

### Meters obstructed after installation

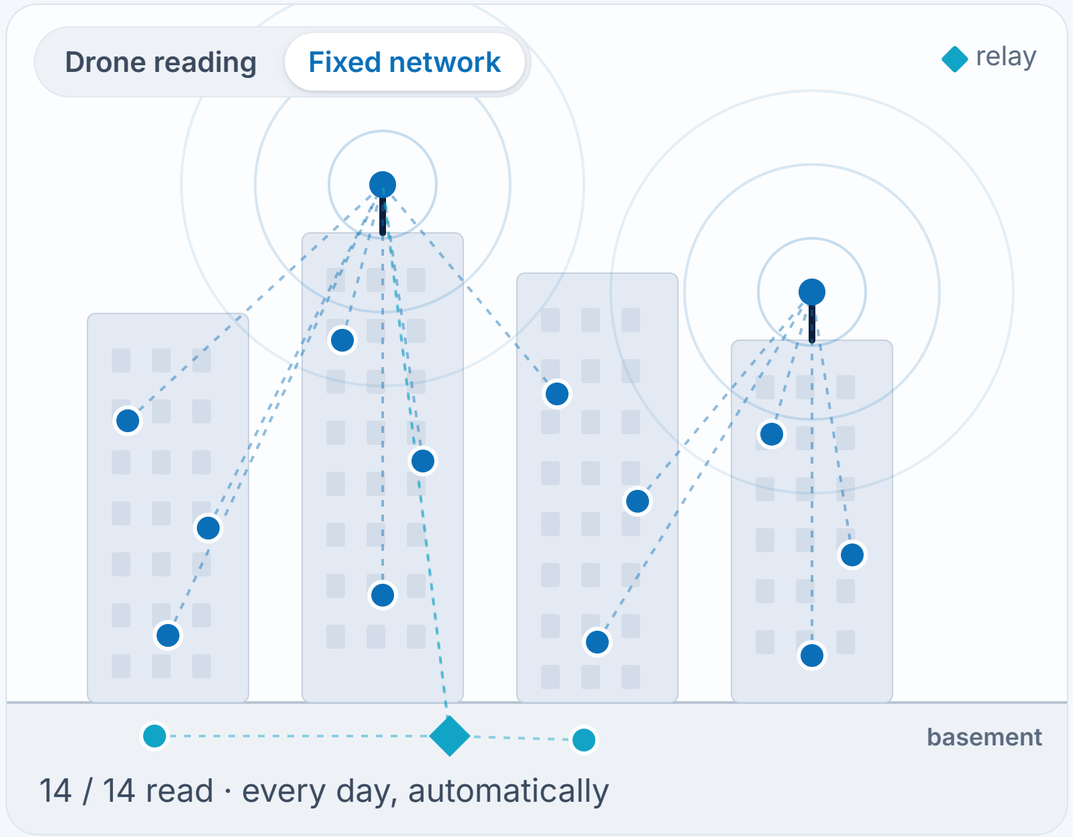
The signal scorecard flags degradation before data is lost; a work order opens automatically.




3 gateways + 1 relay · 9 / 9 meters read

# Remote reading: every meter, every day, automatically

1. **The meter measures and sends.** Readings, alarms and battery status in hourly or daily packets.
2. **The network hears and filters.** Gateways receive the packet; the network server removes duplicates and sets the data rate.
3. **The platform validates.** Duplicate, anomalous and impossible readings are rejected; the reading is stored.
4. **Data turns into action.** Billing, leak analysis, alarms and customer notifications.




**Target:** over 98% daily read success, so drone and drive-by reading are no longer needed.

# Vendor-neutral: different meters, one platform

### Smart meter

LoRaWAN, NB-IoT or M-Bus connectivity; remote reading and commands.

### Prepaid card meter

Existing card system is kept: credit via NFC on a phone, a kiosk or an external reader.

### Mechanical meter

Made smart with a pulse-output LoRaWAN module; during the transition, readings are taken in the field or from photos.

→

ADAPTER LAYER

## SuSaati

Manufacturer → model → capability matrix; each meter's data is mapped to one format.

New models on known protocols come from the catalogue; a new protocol only needs an adapter.

17 capabilities
7 reading sources

→

READING

- Remote reading
- Real-time telemetry
- Readings and consumption
- Battery status

CREDIT

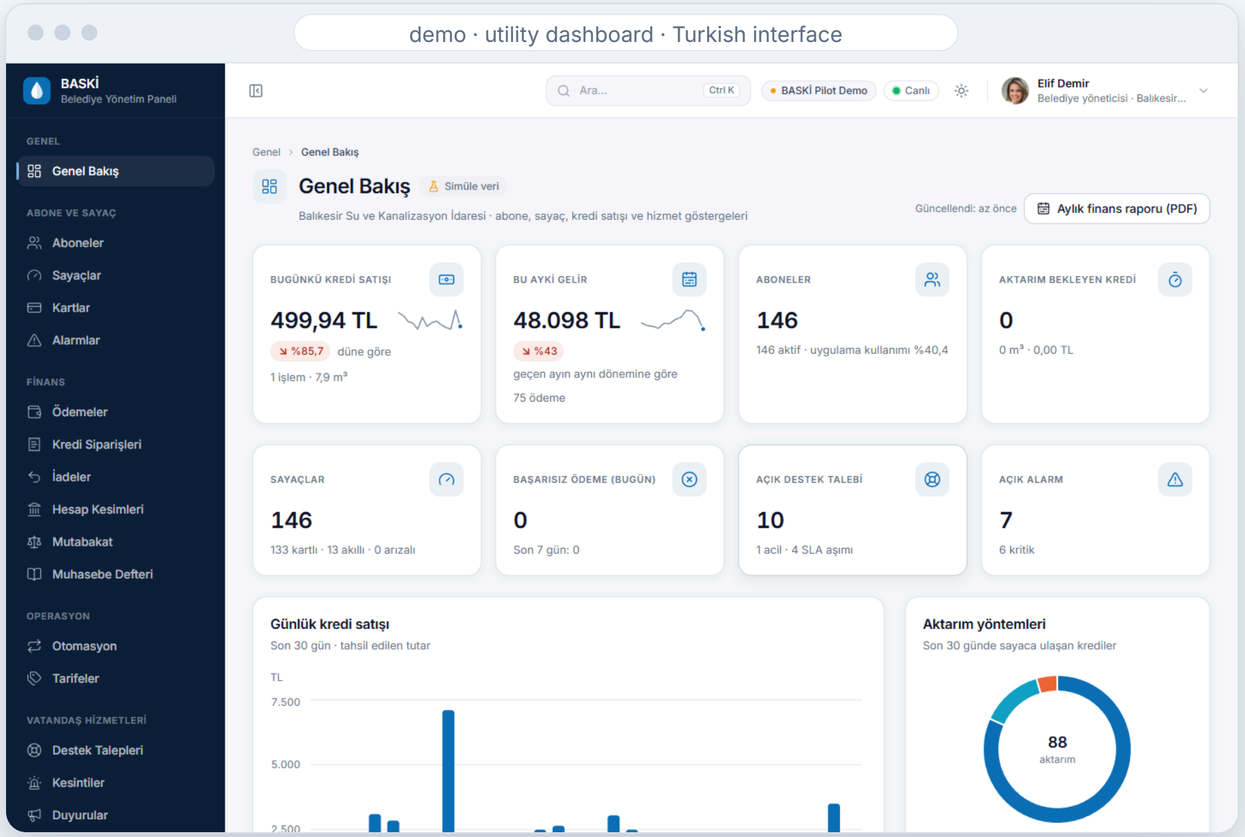
- Remote credit
- NFC card writing
- Kiosk
- External reader

CONTROL AND ALARMS

- Valve control
- Leak detection
- Tampering and magnetic interference
- Reverse flow
- Event log

Capabilities are defined per model; the dashboard and app only offer actions the meter supports.

# Utility dashboard: one screen for operations




## Overview

Sales, revenue, customer and alarm indicators update live.

## Analytics

Consumption map by district, and digital adoption.

## Alarms and work orders

Leak, battery, tampering: a prioritised task list.

## Outages

Map, affected customers, SMS and push notifications.

## Finance and roles

Payments, refunds, reconciliation; each role sees only its own screens.

04 · PLATFORM · CITIZENS

# The SuSaati app: your water meter, now in your pocket

### Balance and consumption
Verified balance, daily consumption analysis and savings goals.

### Credit and payment
To the card via NFC or remotely to the meter; 3D Secure payment.

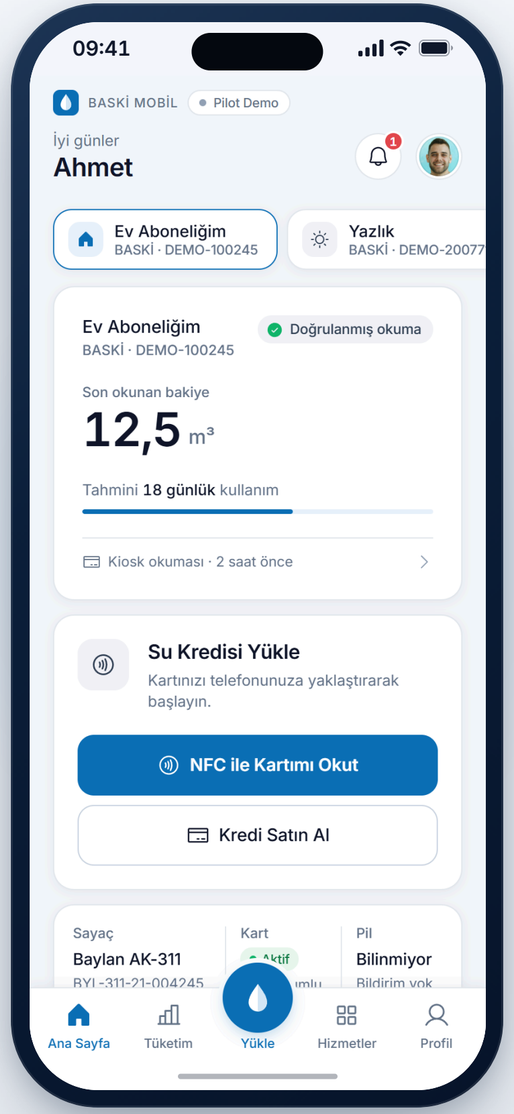
### Auto top-up
Automatically when the balance runs low, within set limits.

### Leak alerts
Instant notification when night flow or unusual consumption is detected.

### Outages and announcements
Area-specific notifications; map of outages and top-up points.

### Under the utility’s own brand
Android, iOS and web; published with the utility’s name and colours.

Video: a TRY 500 credit purchase in the demo (Turkish interface), with 3D Secure and writing to the card via NFC. In the demo, payment and card writing are simulated.



04 · PLATFORM · PAYMENTS

# Credit and payments: every channel

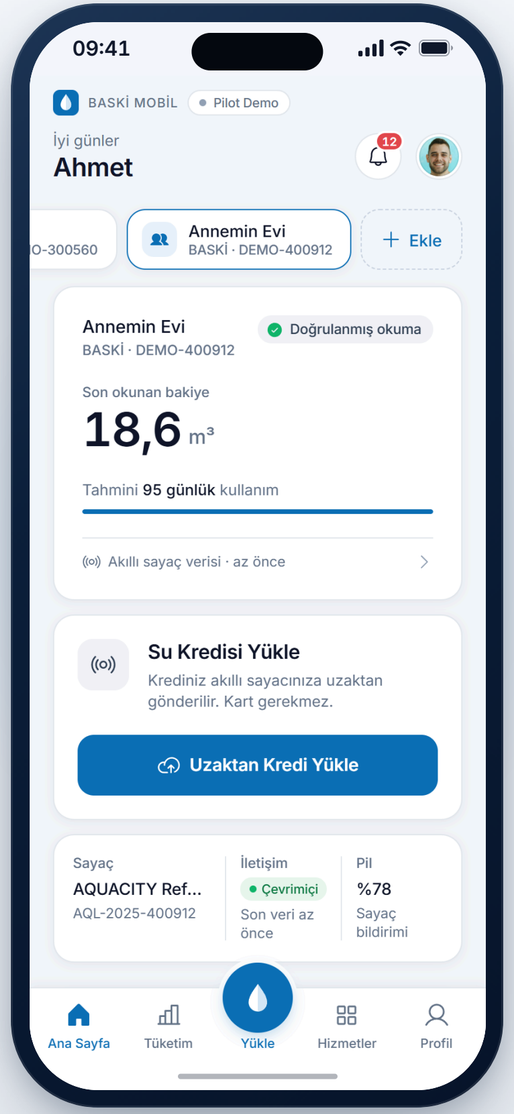
### Card credit via NFC
Bought on the phone and written to the card; loaded when the card goes into the meter.

### Kiosk
A cash or card payment point for people without a smartphone.

### Remote credit
Credit reaches the smart meter over LoRaWAN; a sequence number prevents double top-ups.

### Auto top-up
Automatically when the balance runs low, within set limits.

Payments use 3D Secure; virtual POS and payment providers connect via adapters. Card numbers and CVVs are never stored. Video: remote credit in the demo (Turkish interface).



04 · PLATFORM · NON-REVENUE WATER

# Leak and alarm management

**~14 L/h**
continuous flow all night

**≈ 10 m³**
a month, unnoticed loss at a single customer

**≈ 123 m³**
a year, same customer

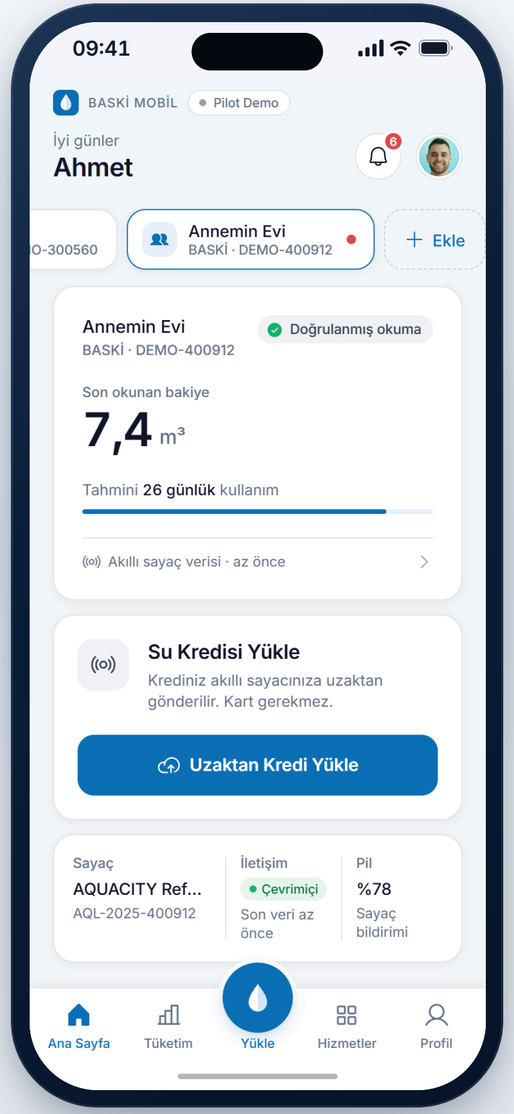
Leak flow rate — 1,000 customers ≈ **123,000 m³/yr**

**1 · Night flow:** three nights of continuous flow between 02:00 and 05:00 raise a possible-leak alarm.

**2 · Meter alarms:** tampering, magnetic interference, reverse flow and low battery show up instantly.

**3 · Everyone knows at once:** customer notification, dashboard alarm, work order for the crew.

Default figures come from the sample leak scenario in the demo. For card meters, averages between reading periods and unusual-consumption alerts are used.



# Operations and support: we monitor the network

## Signal scorecard

Every packet logs signal strength, signal-to-noise ratio and the gateway that received it.

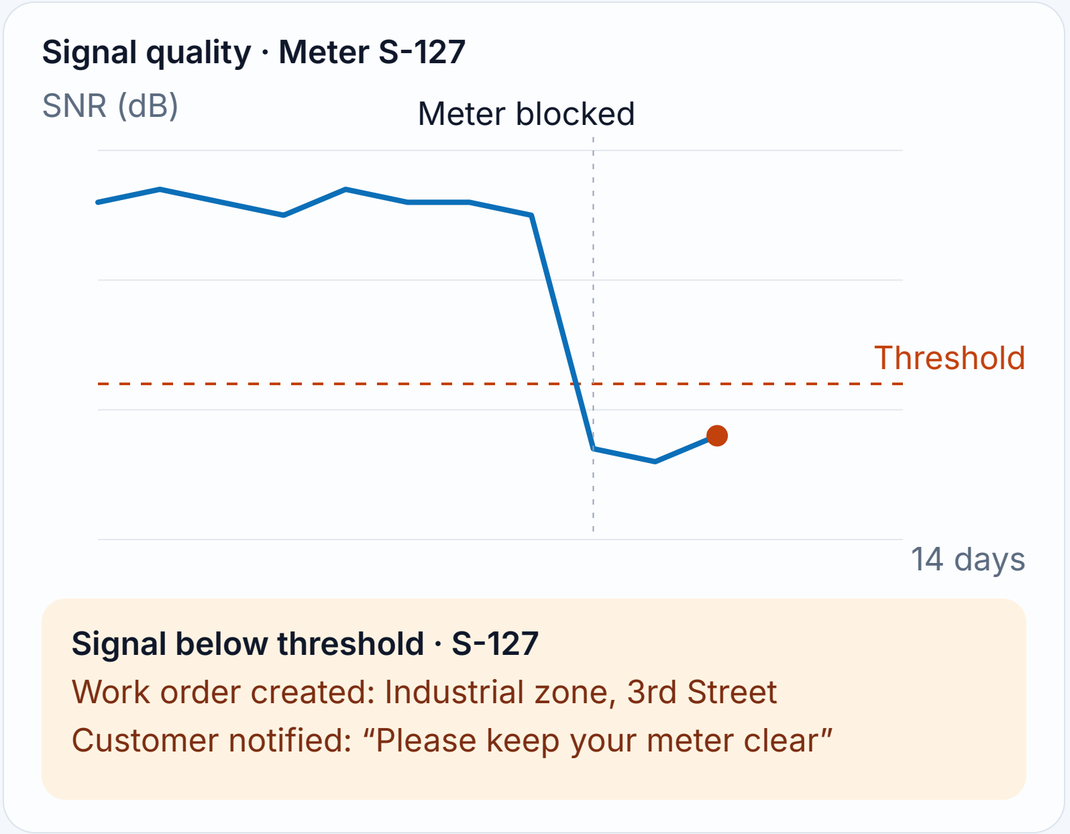
## Early warning and work orders

Degradation is flagged before data is lost; a crew is dispatched and the customer informed.

## Maintenance and updates

Gateways are managed remotely; software updates, backups and reporting are on us.

**Support:** scope and response times are set out in a service level agreement (SLA).



# Security and data protection: built in from day one

## Network: LoRaWAN

- AES-128 encryption, with separate session keys for integrity and confidentiality
- Unique root key per device; sessions via over-the-air activation (OTAA)
- Gateways forward packets they cannot decrypt
- Frame counters block replay attacks

## Platform: SuSaati

- Each utility’s data is isolated by row-level security
- Role-based access, two-factor authentication and a hash-chained audit log
- Card numbers and CVVs are never stored; 3D Secure payments
- Regular security reviews and improvements

**DATA PROTECTION** Your data stays yours: hosted in your own data centre or a dedicated managed cloud environment; versioned consent records, in-app deletion requests, personal data masked in logs. Designed for Türkiye’s KVKK data protection law.

05 · INTEGRATION

# Integration and deployment options

## Open interfaces

REST API and OpenAPI; an enterprise API for customer, reading and payment data, with scoped access.

## Utility systems

Billing/CIS, SCADA, GIS, ERP and call centre via API; payment and SMS providers via adapters.

## Open standards

LoRaWAN and a standard network server; meters from different manufacturers on one network, card meters via adapters.

| Deployment option | Where it runs | Best for |
|---|---|---|
| **Your own data centre** | Platform and network server on-premises | Full data sovereignty |
| **Dedicated managed cloud** | Managed service, dedicated environment | Quick start, low operating overhead |
| **Hybrid** | On-premises network server, cloud platform | Phased migration and pilots |

06 · BENEFITS

# Benefits for the utility, its citizens and the city

## For the utility

- Lower reading costs, fewer site visits
- Losses and leaks spotted and cut fast
- Fewer estimated bills and disputes
- Faster collection with prepayment and remote credit
- Investment and network decisions based on data

## For citizens

- See their consumption every day
- Get leak alerts the same day
- 24/7 digital payment and top-up
- Outages and notices in their pocket
- Actual bills, not estimates

## For the city

- Water savings and sustainability
- Aligned with smart city goals
- Open, future-ready infrastructure
- Direct line to the engineering team
- The utility’s own data and network

**Results are measured:** read success, leaks detected and response times are reported from the pilot onwards.

06 · EXAMPLES WORLDWIDE

# Cities running smart water at scale

| City | Network | Scale | Result |
|---|---|---|---|
| **Madrid, Spain** | NB-IoT | 1.55 million meters | 155,000+ leak alerts, ~37 million m³ saved |
| **Valencia region, Spain** | LoRaWAN + other | 700,000+ meters, 400 towns | 99%+ read rate; up to 60% fewer complaints |
| **Yorkshire, UK** | LoRaWAN | 1.4 million by 2030 | 4,500 leaks fixed in 12 months |
| **Lyon, France** | LoRaWAN | 354,000 meters | 3.5 million+ LoRaWAN meters nationwide |
| **Singapore** | Private IoT network | ~300,000 meters in phase one | Daily readings; leaks tracked in the app |

**Common thread:** a fixed network, hourly data and a platform that catches leaks together with citizens.

Sources: Comunidad de Madrid (2026) · iAgua (2026) · Yorkshire Water (2025) · JDN / Tactis (2023) · PUB Singapore

07 · GETTING STARTED

# Roadmap: start with a pilot, scale on evidence

1 · PILOT · 90 DAYS

## Prove

Survey, installation and measurement in two different areas; decision backed by a KPI report.

2 · ROLL-OUT

## Scale

Gateways and meters area by area; phased conversion of existing meters and completion of integrations.

3 · OPERATION

## Sustain

Network and meter monitoring, maintenance and support; regular reporting and improvement.

### The KPIs we measure

**98%+**
daily read success (target)

**≥ 2**
gateways hearing every meter

**Hours**
to detect a leak

**Years**
of battery life, verified by measurement

# Demo environment: try it now on your phone

### Citizen app

baski.taleppo.com

Tap “Demo hesabıyla hızlı giriş” (quick demo login)

### Utility dashboard

baski-panel.taleppo.com

One-click demo admin login

### Kiosk simulator

baski-panel.../kiosk

One-click login as a kiosk device

The demo runs on sample utility data and its interface is in Turkish. Payments, card writing and meter commands are simulated; no real payments are taken.

07 · WHY SUSAATI

# Why SuSaati and Taleppo

### One team, end to end

All in-house, from survey to operation; one contract, one responsibility.

### Vendor-neutral

Meters and gateways from different manufacturers on one platform; existing investments are protected.

### A working platform

250 automated tests, 13 end-to-end field scenarios and a live demo environment.

### Open standards, open interfaces

LoRaWAN and REST API; data and systems stay under the utility’s control.

### Security and data protection

Row-level data isolation, two-factor authentication, hash-chained audit log.

### In-house development

Built at Balıkesir Teknokent, Türkiye; you work directly with the engineering team.

SuSaati | Your water meter, now in your pocket.

THANK YOU

# Let’s make your city’s water smart together.



Contact us for a site survey, demo or pilot.
First step: a 90-day pilot.

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