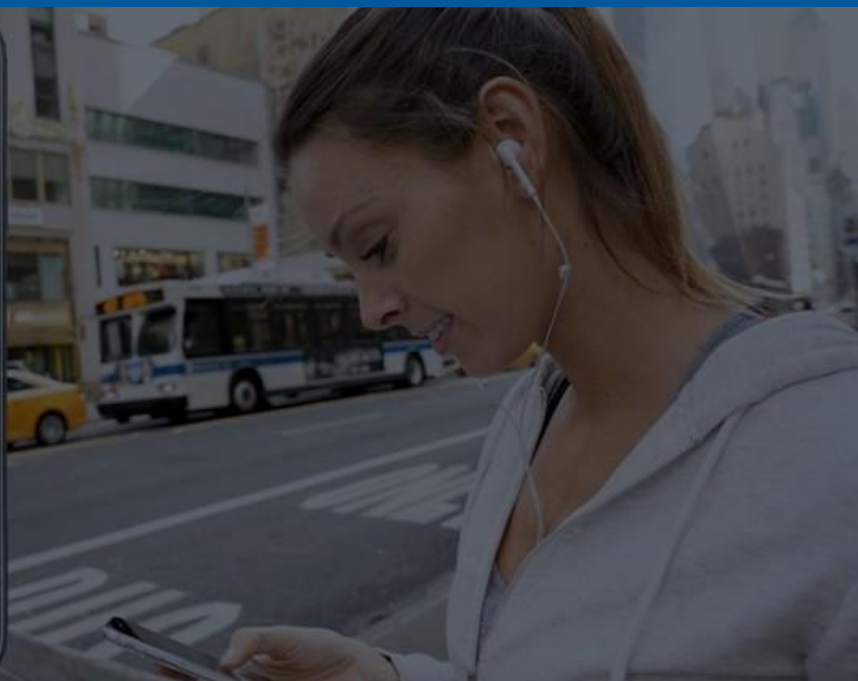
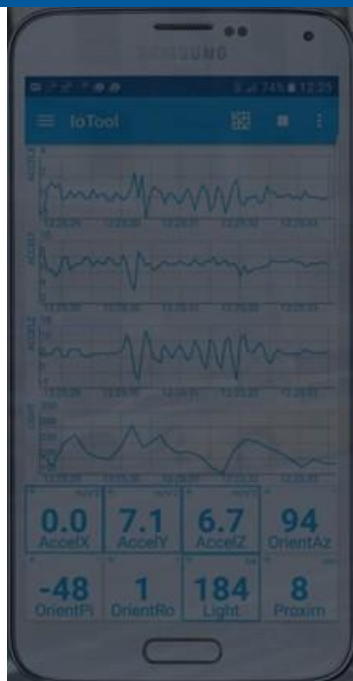


STOP REBUILDING  
INTEGRATIONS FROM SCRATCH

BUILD ONE SHARED DATA  
FOUNDATION - AND LET EVERY  
CONNECTION REUSE IT

# VELA CONTEXT DATAHUB FOR SMART CITIES



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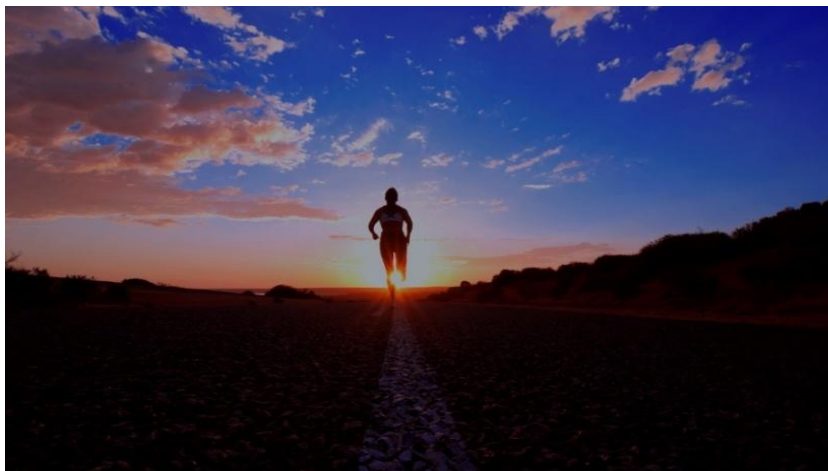


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## CONTEXT

EXECUTIVE  
SUMMARYONE SHARED DATA  
LANGUAGE FOR YOUR  
CITY10 PRE-BUILT CITY  
STARTER PACKS

SIX-MONTH VALIDATION

NO PLATFORM  
REPLACEMENTFIXED INVESTMENT,  
MEASURABLE KPIS

**Your traffic system calls it a “sensor.” Your energy department calls it a “meter”. Your open data portal calls it a “device.”**

Three words for the same physical object on the same street corner. Reconciling that difference costs your IT team weeks every time a new project, department, or external partner needs the data - and that effort repeats in full for every subsequent initiative.

This is not a technology problem. Your city already collects vast amounts of data - from sensors, utilities, GIS systems, open data portals, and public services. The problem is that each department, vendor, and project defines that data differently. There is no shared language between them.

**Vela Context DataHub** is a translation layer that sits between your existing city systems and gives them a common, structured language built on **ETSI NGSi-LD** - the EU open standard for context data. Define the meaning once - what a “parking zone” is, what an “air quality station” is, what a “public building” is - and every subsequent project, app, and partner draws on that shared definition.

You don’t start from a blank page. We deploy with one of **10 pre-built city starter packs** - each a defined data domain with NGSi-LD models, connectors, dashboards, and example datasets.

A six-month engagement, isolated from production systems, with KPIs locked before any work begins. You measure the outcome. We are accountable to it.

**Cities that start now build a reusable data foundation. Cities that wait rebuild every integration from scratch - at higher cost, under tighter EU deadlines.**

**The cost of inaction is not zero. It is deferred – and growing.**

## PROBLEM

### THE REAL COST OF DISCONNECTED CITY DATA

EVERY PROJECT  
REINVENTS THE WHEEL

DEPARTMENTS DON'T  
SHARE DATA

VENDOR LOCK-IN  
ACCUMULATES

EU COMPLIANCE  
PRESSURE RISING

CITIZENS NOTICE THE  
GAPS



#### Every smart city project starts from zero.

Your city has traffic sensors, air quality monitors, utility meters, building management systems, GIS databases, and open data portals - each procured separately, by a different department, from a different vendor, in a different data format. The result: silos that cannot talk to each other without expensive custom integration.

#### Where this shows up every day:

- A new mobility app needs traffic and parking data - but the formats are incompatible, so IT spends weeks mapping and cleaning before development can start
- Air quality data sits in environmental services, energy data in utilities, weather data with a national provider - no one can cross-reference them for a unified climate dashboard
- Your open data portal publishes raw CSV files external developers must transform before building anything - reducing adoption and slowing innovation
- EU Open Data Directive and INSPIRE require machine-readable, interoperable datasets - but your current data does not meet these standards
- Pilots succeed in isolation, then stall when they need to connect to other city systems for citywide rollout

#### EU regulatory pressure is rising.

The Open Data Directive, INSPIRE, the European Data Act, and Green Deal reporting all demand structured, interoperable, machine-readable city data. Cities without a shared data foundation will face these deadlines with manual workarounds - or miss them entirely.

## SOLUTION

ONE SHARED DATA  
LANGUAGE FOR  
YOUR ENTIRE CITY

STRUCTURED CONTEXT  
LAYER

YOUR INFRASTRUCTURE

EU OPEN STANDARDS  
(ETSI NGSI-LD)

OPERATIONAL IN WEEKS

COMPLEMENTS - NEVER  
REPLACES



### What it is

- A structured data layer that connects all city systems - traffic, energy, water, environment, buildings, mobility - through one shared, standards-based context model
- Built on **ETSI NGSI-LD**, the EU open standard adopted across EU smart city initiatives and data spaces, with EU Smart Data Models for every city entity
- Deployed on your city's own infrastructure or sovereign European cloud - no citizen data leaves your boundary without your explicit decision
- Operational within weeks - start with one starter pack and expand as you grow
- Complementary to your existing GIS, SCADA, building management, and open data platforms

### What it is NOT

- Not another smart city platform that replaces what you have - Vela Context DataHub connects and translates between your existing systems
- Not a data warehouse or BI tool - those analyse data; we ensure the data means the same thing across every system before analysis begins
- Not a vendor-locked SaaS - built entirely on EU open standards, deployable on your own servers
- Not a multi-year transformation programme - the first use case delivers measurable results within six months

Start with one system. Scale to the whole city. Every integration you build on the shared model costs less than the one before it.

## SOLUTION

## STARTING PACKS



ENERGY &amp; UTILITIES

MOBILITY &amp; STREETS

ENVIRONMENT &  
CITIZENS

DATA PUBLICATION

CROSS-PACK REUSE

**Choose your starting pack**

Each pack ships with NGSi-LD models, connectors, dashboards, and example datasets - designed to deliver a working data layer within the timeline below.

- **Energy & Utilities: City Utility Data** (60 days) - meters, billing, and consumption across departments - the broad starter. **Public Building Energy Efficiency** (90 days) - single-portfolio focus; fastest path to a measurable saving story. **District Energy & Heating** (120 days) - for cities with district networks; cross-asset optimisation. **Water Utility** (90 days) - meters, pressure, leakage; complements existing SCADA
- **Mobility & Streets: Smart Parking & Mobility Flow** (90 days) - parking, traffic, and e-mobility unified into one mobility picture. **Smart Street Lighting Optimization** (60 days) - dimming schedules, energy reporting; quickest first deployment. **Urban Sensors & IoT Roll-out** (120 days) - multi-domain sensor rollout, one model from day one
- **Environment & Citizens: Air Quality & Micro-Climate** (90 days) - air, noise, and weather as one cross-referenceable layer. **Waste & Circular Economy** (120 days) - container fill, collection routing, citizen reporting.
- **Data Publication: Open City Data Portal & API** (90 days) - NGSi-LD + DCAT-AP publication; meets EU Open Data Directive

**Cross-pack reuse**

The second pack you deploy reuses the first pack's models, identity, and dashboards - typically 20-40% less effort on pack #2, 40-60% less by pack #3. The platform pays for itself by the third domain.

## OUTCOMES

### WHAT CHANGES FOR YOUR CITY

- FASTER PROJECT DELIVERY
- CROSS-DEPARTMENT VISIBILITY
- EU COMPLIANCE READINESS
- LOWER INTEGRATION COSTS
- CITIZEN-FACING INNOVATION



#### Performance targets - agreed before Phase 1

- New smart city project integration time: 30-50% reduction
- Cross-department data sharing: structured and automated, replacing manual reconciliation
- Open data compliance: machine-readable, NGSI-LD and DCAT-AP compliant datasets

Targets are based on observed results from production deployments in comparable municipal environments. Specific targets for your engagement are agreed and locked before any technical work begins.

#### City example - mid-size European municipality (120,000 residents)

Air quality sensors, traffic counters, and utility meters were deployed across five districts - each in a different format, managed by a different department, with no cross-referencing capability. Vela Context DataHub was deployed in Month 2. By Month 5, all three streams were unified into a single context model, enabling the city's first real-time environmental-mobility dashboard. Integration time for subsequent projects dropped by over 40%, and the open data portal was upgraded to NGSI-LD compliant publication - meeting EU Open Data Directive requirements ahead of schedule.

#### Track record

- 200,000+ devices connected worldwide across smart cities, energy, buildings, mobility, and industry
- 20+ years of IoT and context data experience
- ETSI NGSI-LD ecosystem contributor; aligned with OASC MIMs Plus, EU Smart Data Models, and Living-in.EU
- Led personally by Jure Lampe, Founder & CEO, from scoping through evaluation

**CONTROL**

**YOUR CITY'S DATA.  
YOUR  
INFRASTRUCTURE.  
YOUR RULES.**

**ON-PREMISES OR  
SOVEREIGN CLOUD**

**NO HYPERSCALER  
DEPENDENCY**

**CITIZEN DATA STAYS  
LOCAL**

**GDPR / NIS2 COMPLIANT**

**YOUR IT TEAM CONTROLS  
EVERY STEP**

**“We already have a GIS platform and SCADA systems.”**

Vela Context DataHub does not replace them. GIS handles spatial data; SCADA handles operational control. We handle what the data means across systems - the shared context model that must exist before traffic, energy, and environmental data can be used together. Your existing tools continue working. We added the interoperability layer they were not designed to provide.

**“We can’t send citizen data to an external provider.”**

Vela Context DataHub is deployed on your city’s own infrastructure or within a sovereign European cloud. No citizen data, sensor data, or operational data crosses an organisational boundary without a policy decision your team explicitly controls. All models, configurations, and data remain entirely city owned. SenLab retains no access once deployed.

**“What if we try it and decide not to continue?”**

No automatic continuation. No lock-in. At Month 6 you receive a documented performance evaluation. You decide; expand to more departments, add use cases, or conclude - with zero further obligation.

**“Is this compliant with EU regulations?”**

Built on **ETSI NGS-LD** - the standard underpinning EU smart city data spaces and the Gaia-X framework. Compatible with DCAT-AP for metadata, EU Smart Data Models for city entities, INSPIRE for geospatial data. Aligned with GDPR, NIS2, the European Data Act, and the Open Data Directive.

## FOUNDATION

SIX MONTHS.  
ONE CASE. YOUR  
DECISION.



SELECT ONE STARTER  
PACK

DEPLOY IN SANDBOX

MEASURE IMPROVEMENT

YOU DECIDE NEXT STEPS

### Phase 1 - Define & Baseline (Month 1-2)

- Select your starter pack with our team
- Map data sources, departments, and systems involved
- Agree and lock performance KPIs before any technical work begins
- Align with your IT security, governance, and data protection policies

### Phase 2 - Deploy & Connect (Month 3-4)

- Deploy in an isolated environment, separate from production city systems
- Connect selected data sources: sensors, APIs, open data feeds, departmental databases
- Apply the starter pack's Smart Data Model mapping and NGSi-LD context publication
- No modifications to your existing city platforms at any stage

### Phase 3 - Measure & Decide (Month 5-6)

- Measure against KPIs agreed in Phase 1
- Document integration time reduction and cross-department data availability
- Full written evaluation for your city's decision
- You decide - expand to more departments, add use cases, or conclude

### Your first 30 days

WEEK 1	WEEK 2	WEEK 3	WEEK 4
Scoping session, starter pack selected, KPIs drafted	Data source inventory completed; KPIs locked; signed scope	Sandbox environment deployed; first data source connected	First NGSi-LD entities live; baseline measurements recorded

**ENGAGE**

YOUR TEAM, YOUR  
TERMS, YOUR FIRST  
STEP



FIXED-PRICE CITY  
ENGAGEMENT

SUBSCRIPTION  
CONTINUATION

THREE STEPS TO START

NO HIDDEN COSTS

ABOUT SENLAB

**Investment**

**€12,000 - €35,000** fixed-price for a six-month structured engagement. Exact investment locked before Month 1. Scope varies by number of data sources connected and integration complexity. No variable costs. No commitment beyond the engagement period.

**Subscription (continuation)**

Continue with **Starter (€850/mo)** on shared infrastructure or **Professional (from €1,999/mo)** with a dedicated instance - your city's choice at Month 6, or any time after.

**Start the engagement**

- Step 1: 60-minute scoping session - select the city use case, agree baseline KPIs
- Step 2: Fixed-price scope document with investment terms - delivered within one week
- Step 3: Deployment begins within four weeks of signed agreement

**After Phase 3: Your Decision**

Month 6 closes with a documented performance evaluation against your agreed KPIs. You decide - expand across departments, add new domains, switch to subscription, or conclude. No automatic continuation, no lock-in.

**About SenLab**

Slovenian IoT and data integration company, founded 2015, Ljubljana, EU. 100+ deployments across smart cities, energy, buildings, manufacturing, and mobility. EU FIWARE ecosystem contributor. Open standards, vendor-neutral architecture.

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**EXECUTION****TECHNICAL  
APPENDIX**

ETSI NGSI-LD COMPLIANT

EU SMART DATA MODELS

DCAT-AP METADATA

SOVEREIGN DEPLOYMENT

FOR YOUR IT TEAM

**This section is for your IT and architecture team.****Standards & Ecosystem Alignment**

- ETSI NGSI-LD compliant context data model (EU standard)
- EU Smart Data Models for city entities: air quality, traffic, parking, energy, buildings, water, environment
- DCAT-AP metadata catalog for EU Open Data Directive compliance
- JSON-LD semantic representation - API-first architecture
- Compatible with Gaia-X and EU data space frameworks (DS4SSCC, LDT4SSC)
- OASC MIMs Plus aligned

**Core Architecture**

- CASSIOPEIA - no-code data transformation engine; maps any source (CSV, Excel, JSON, API, MQTT, OPC-UA) to NGSI-LD Smart Data Models
- LIBRA - production-grade NGSI-LD API gateway with five enforcement dimensions: attribute, entity type, scope, time, query
- NGSI-LD Context Broker (semantic core, ETSI-conformant implementation)
- Keycloak identity & access management
- ClickHouse (PostgreSQL with TimescaleDB optional) for high-frequency historical storage
- Node-RED connector library: CSV, Excel, MQTT, OPC-UA, REST APIs, sensor streams
- Grafana dashboards & monitoring (Prometheus, Loki)
- Containerised - Docker / Kubernetes ready
- Built on SandBoxOS - versatile IoT operating system with 130+ pre-loaded open-source packages