

UrbanEdge Innovation

AI-Powered Urban Intelligence for Smarter Cities

From complex zoning data to decision-ready insights **Version 1.0 (MVP – Pilot Ready)**

Khaled Bayoumi – Founder & CEO

Bridging the Belgian Decision Gap

URBAN EDGE INNOVATION AS

In Belgium, particularly in cities such as Brussels and Flanders, a severe housing market market crisis is unfolding:

- Belgium needs **50,000 – 70,000** new dwellings annually, but issued only **~17,500 – 21,400** permits in 2025.
- Flanders faces an acute shortage with strict regulations under the **Vlaamse Codex Ruimtelijke Ruimtelijke Ordening**.
- Brussels suffers from extreme fragmentation across **19 communes**, leading to **4–12 months** of manual data collection.
- Social housing target: **+50,000 units** by 2042, while waiting lists continue to grow.



Planning and zoning information remains fragmented across municipalities and stored in disconnected systems and PDF documents.

The Consequence

This creates a critical "**Decision Gap**", where developers and investors spend months gathering gathering and analyzing data before making decisions — slowing project timelines, increasing risk, and worsening the housing shortage.

Sources: Statbel (2025), Federal Planning Bureau, Flemish Government Housing Targets 2042, Housing Europe, ING Think.

Belgian market evidence: why this is urgent

Tight supply, strict zoning, and complex regional regulations make faster feasibility and risk screening more valuable.

+3.1%

Belgian property prices rose year-on-year, driven by sustained demand.

STATBEL, APRIL 2025

4–5%

Projected annual growth in Brussels & Flanders through 2028 due to land scarcity.

NBB ECONOMIC OUTLOOK

1.0%

Approx. 1% net greenfield expansion constrained by strict regional rules.

VLAIO / STATBEL

-25%

New-build permits down 25% over two years; market shifting to adaptive reuse.

STATBEL HOUSING STATISTICS

IMPLICATION FOR URBANEDGE

Early-stage site mistakes are now more costly under tightening zoning and regional regulation.

- **Developers** must rapidly identify feasible sites and navigate multilingual zoning without months lost.
- **Investors** need comparable, evidence-backed opportunity scoring with real-time regulatory and ESG signals.
- **Municipalities** require automated redevelopment screening to accelerate sustainable renovation.

Sources: Statbel; National Bank of Belgium; VLAIO Land & Spatial Indicators; European Renovation Wave guidelines.

URBAN INTELLIGENCE & REGULATORY INTERPRETATION

URBAN EDGE
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L_05 Decision Intelligent

Final 'Opportunity Score' and actionable recommendations to guide investment decisions.

L_04 Intelligent Design & 3D Urban Model

AI-powered Digital Twin simulations for strategic urban development scenarios. Evaluates renovation vs. new-build pathways, city-level planning strategies, and spatial impact analysis at both Urban Scale and Building Scale.

L_03 Predictive Layer

AI-driven signals identifying market trends and hotspot to anticipate urban development needs.

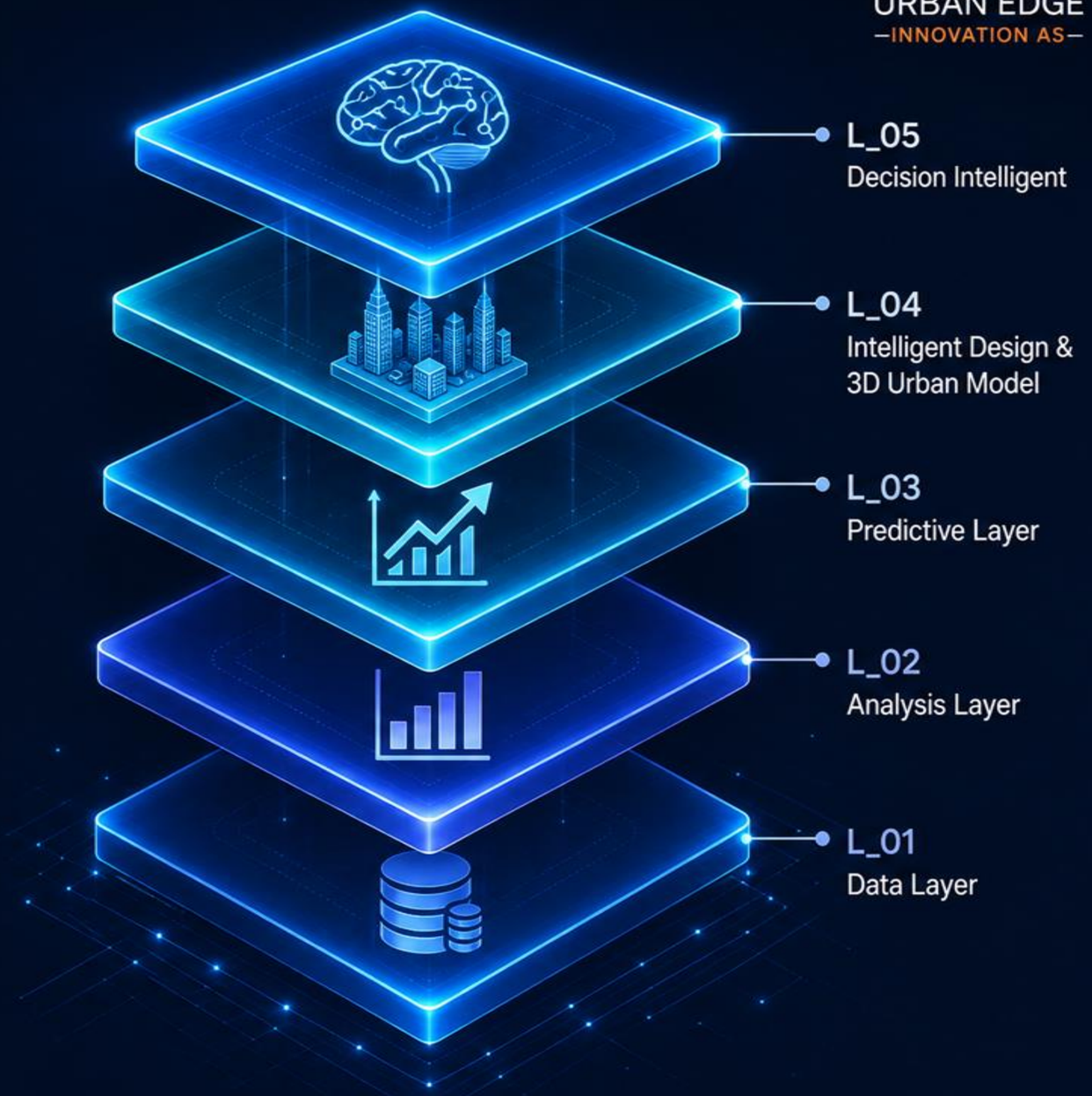
L_02 Analysis Layer

Rule-based logic calculating density, FAR, and building usage based on local zoning regulations.

L_01 Data Layer

Authoritative Belgian data sources for spatial analysis. A unified source of truth.

Sources: Statbel, FPS Finance (Cadastre), Geopunt (Flanders), Geoportal Wallonia), Urbs (Brussels).



Spatial Tech Integration

URBAN EDGE INNOVATION AS

SYSTEM ARCHITECTURE LAYERS

L_05 — **Decision intelligent** — DECISION ENGINE
Generates Opportunity Scores & actionable recommendations.

L_04 — **Intelligent Design & 3D Model**
AI simulations for strategic urban planning scenarios.

L_03 — **Predictive Layer**
AI-driven signals identifying market trends & needs.

L_02 — **Analysis Layer** — SPATIAL REASONING
Zoning logic calculating density, FAR, and building usage.

L_01 — **Data Layer**
Authoritative Belgian sources (Statbel, Geopunt, Cadastre).

SPATIAL REASONING FLOW (L_02 ANALYSIS)

01 — Projection Check
Verifies geographic projections across regional Belgian datasets to avoid overlap errors.

02 — Data Quality Validation
Cleanses topology and checks spatial completeness before analytical processing.

03 — Analytical Engine Selection
Chooses appropriate geometric and buffer models based on the zoning question.

04 — Spatial Logic & Rules
Vets calculations against Flemish spatial planning rules & zoning guidelines.

05. Interpretation & Handoff to L_05 Decision Brain — Opportunity Score Output

OUR DATA INTELLIGENCE PIPELINE

How UrbanEdge transforms fragmented public data into structured, traceable decision intelligence — with human review at every step.

[INPUT: RAW DATA] →→→→→[THE AI ENGINE] →→→→→ [OUTPUT: ACTIONABLE INSIGHTS]

01

UNIFIED INGESTION

ACTION: Automated harvesting from CadGIS, Geopunt, Statbel, VEKA, OVAM, VMM, private firms, and satellites.

VALUE: Eliminates manual data hunting across fragmented platforms.

02

AUTOMATED VALIDATION

ACTION: Instant algorithmic checks for missing attributes, duplicates, and spatial/coordinate anomalies.

VALUE: Flags source conflicts before they impact your analysis.

03

AI QUALITY ASSURANCE

ACTION: Cross-references conflicting sources, detects errors, and applies dynamic weights based on data recency.

VALUE: Delivers an explicit Confidence Score (e.g., Building Height: 13m | Confidence: 96%).

04

SEMANTIC HARMONIZATION

ACTION: Machine learning translates and normalizes fragmented municipal nomenclature.

VALUE: Standardizes regional chaos into unified profiles (e.g., Housing Zone + Residential Area → Residential).

05

HUMAN-IN-THE-LOOP

ACTION: Automated escalation to urban planning experts only for highly complex spatial edge cases.

VALUE: Guarantees institutional-grade accuracy without slowing down the system.

06

ECOSYSTEM DELIVERY

ACTION: Feeds clean, structured, and ready-to-use data into the UrbanEdge Suite.

VALUE: Powers Maps → Analytics → Digital Twin → Predictive AI → Dashboards → APIs instantly.

3D URBAN MODEL

URBAN EDGE INNOVATION AS

Dual-Scale Vision

At the Urban Scale
City-level scenario simulation for planning, development strategies, and spatial impact analysis.

At the Building Scale
AI-driven feasibility analysis, zoning compliance, and ESG-related performance indicators.

3D URBAN MODEL
Interactive 3D City Model



3D Visualization & Urban Modeling

DIGITAL TWIN
AI-Powered Digital Twin



Real-time Data · AI Analytics · Scenario Simulation

Technology Infrastructure

GIS & BIM Integration
Spatial engine for accurate mapping combined with 3D high-fidelity digital twin simulations.

AI & ML Models
Advanced models for planning interpretation, prediction, and natural language processing.

WHO WE SERVE

Primary Users
- Municipal Planning Depts
- Housing Associations
- SME & Mid-sized Developers
- Urban Planning Consultancies

Secondary Users
- Banks & Credit Institutions
- Institutional Investors
- Insurance Companies
- Property Advisors & Brokers
- Legal & Planning Consultants

CORE USE CASES

- Site Selection & Development
- Zoning & Regulatory
- Urban Renewal & Redevelopment
- ESG & Sustainability
- Investment & Risk Intelligence
- Land Acquisition Due Diligence
- AI-Powered Decision Support

DATA INTEGRATION
Multiple Data Sources
GIS | BIM | IoT | Open Data | Municipal

→

AI & ANALYTICS ENGINE
AI + GeoAI + ML

→

FIVE INTELLIGENCE INDICATORS
EGS | ROI | FVS | HCUS | ROS

→

FASTER, SMARTER & SUSTAINABLE URBAN DECISIONS

Built to scale from local pilots to regional and national platforms.

The Pre-Design Intelligence Gap

	The Old Way	The UrbanEdge Way
Data Access	Static monthly PDFs (BruGIS/Geopunt)	24-hour Live-Sync APIs
Zoning & Compliance	Manual interpretation by consultants	AI-automated rule generation & density mapping
Scenario Testing	Fragmented CAD and separate environmental studies	Unified 3D Digital Twin with real-time shadow/solar
Sustainability	Retroactive ESG reporting	Proactive HCUS & EU Taxonomy scoring before acquisition

Competition

Feature / Capability	Realo	Immoweb	BruGIS (Gov)	UrbanEdge
Official Property Data	✓	✓	✓	✓
Planning & Zoning Data	✓	✗	✓	✓
AI Zoning Compliance	✗	✗	✗	✓
Predictive Market Analytics	Partial	✗	✗	✓
ROI / Financial Scoring	✗	✗	✗	✓
ESG / Sustainability Scoring	✗	✗	✗	✓
Geospatial Mapping	Basic	✗	Raw	✓
Land Opportunity Identification	✗	✗	✗	✓
AI Decision Support	✗	✗	✗	✓

Gov Platforms (Geopunt, Statbel)

Strength: Trusted official data.

Weakness: No decision support or AI interpretation.

GIS Platforms (ArcGIS, QGIS)

Strength: Strong spatial visualization.

Weakness: No financial modeling or investment focus.

Real Estate Data (Realyse, CoStar)

Strength: Deep market pricing data.

Weakness: Weak on zoning and planning law.

Urban Consulting (Sweco, OMGEVING)

Strength: High planning expertise.

Weakness: Project-based manual delivery; not scalable.

*While existing Belgian platforms analyze market listings or raw maps, **UrbanEdge is platform** that instantly identifies and financially models where to build next.*

URBANEDGE TRANSFORMS DATA INTO DECISIONS.

Business Model & Revenue Strategy (Belgium)

Starter (MVP)

€1,500 – €2,000 / yr

- ✔ Data Layer (maps + basic data)
- ✔ Property Search
- ✔ Basic analytics

Value: Entry-level access with faster insights

Professional (Core)

€3,000 – €4,000 / yr

- ✔ ROI analysis
- ✔ Opportunity Scoring
- ✔ Alerts & monitoring

Value: Actionable investment insights

Intelligence

PREMIUM

€5,000 – €7,500+ / yr

- ✔ Predictive analytics
- ✔ ESG scoring
- ✔ Scenario simulation
- ✔ Decision support tools
- ✔ EPC & ESG Compliance (Belgium)

Value: Full AI-driven decision intelligence

Additional Revenue Streams

API Access	AI Reports	Data Room (Digital Twin)	Custom Data Extraction
Custom pricing	Per report / subscription	Premium add-on	One-time fee

* Competitively priced vs. traditional platforms like Realo/Immoweb, while delivering AI-powered decision intelligence.

Target Customers and Core Use Cases

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TARGET CUSTOMERS

Primary Customers

- Municipal Planning Departments
- Housing Associations
- SME & Mid-sized Real Estate Developers
- Urban Planning & Engineering Consultancies

Secondary Customers

- Banks & Credit Institutions
- Institutional Investors & Asset Managers
- Insurance Companies
- Property Advisors & Brokers
- Legal & Planning Consultants

CORE USE CASES

- Site Selection & Development Opportunities
- Zoning & Regulatory Compliance Analysis
- Urban Renewal & Redevelopment Planning
- ESG & Sustainability Assessment
- Investment & Risk Intelligence
- Land Acquisition Due Diligence
- AI-Powered Urban Planning Decision Support

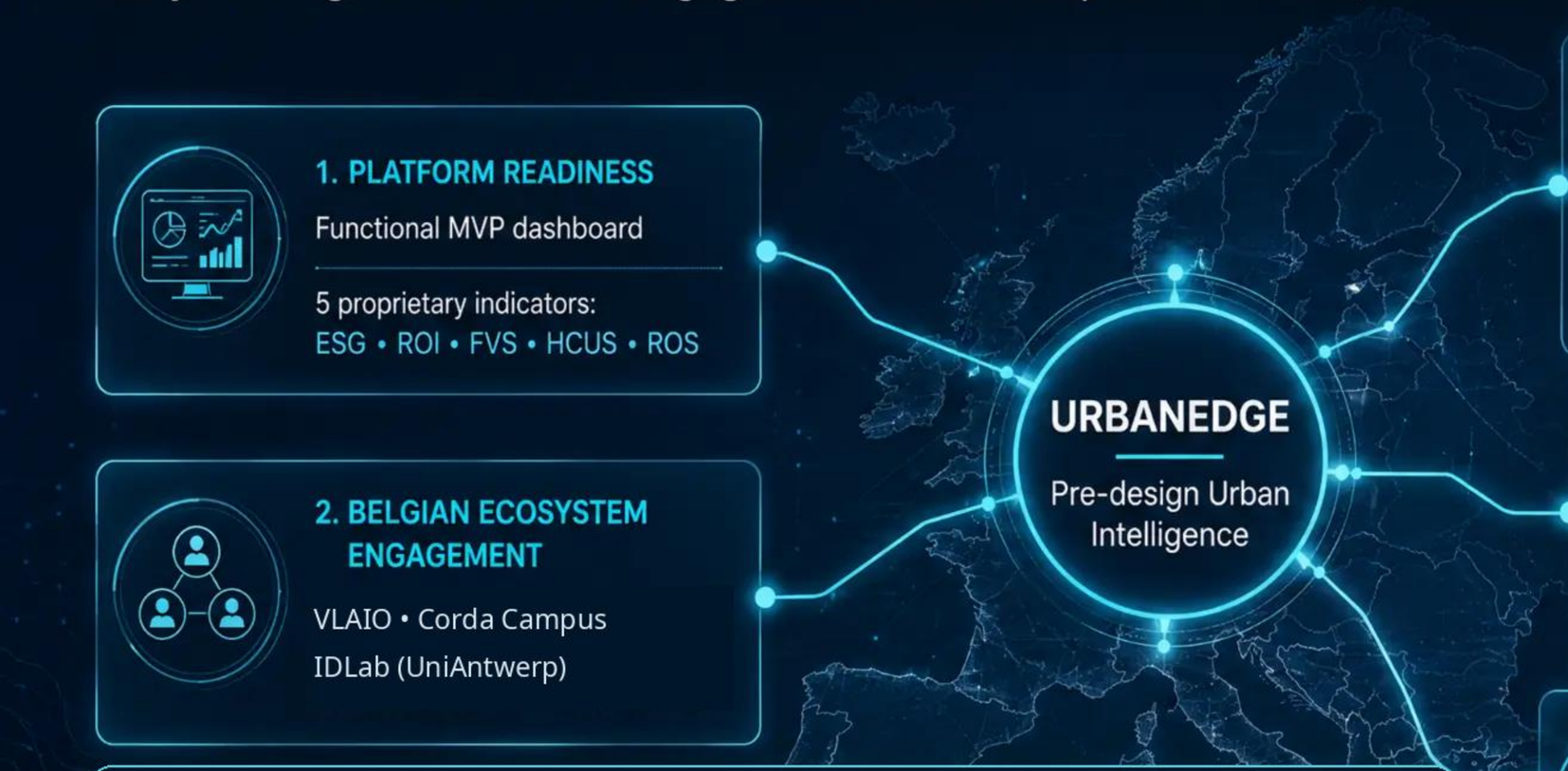
INPUT
Spatial Data + AI + GeoAI + Municipal Data

ENGINE
EGS • ROI • FVS • HCUS • ROS
Five Intelligence Indicators

OUTCOME
Faster, Smarter & Sustainable Urban Decisions

European Traction & Validation

Early meetings and technical engagement across European innovation, research and municipal ecosystems.



1. PLATFORM READINESS

Functional MVP dashboard

5 proprietary indicators:
ESG • ROI • FVS • HCUS • ROS

2. BELGIAN ECOSYSTEM ENGAGEMENT

VLAIO • Corda Campus
IDLab (UniAntwerp)

3. TECHNICAL & AI ENGAGEMENT — POLAND

CitCom.ai TEF — Warsaw University of Technology

Meeting / technical discussion

GeoAI • Spatial Big Data • GIS • AI validation • Digital Twins • Computing Infrastructure

4. MUNICIPAL ENGAGEMENT — DENMARK

Aarhus Municipaility / Aarhus City Lab

Early exploratory contact.

Urban innovation • Digital Twins • Smart City applications

5. MUNICIPAL ENGAGEMENT — NETHERLANDS

City of Eindhoven

Early exploratory contact

Urban innovation • Digital Twins • Data-driven city development

ACTIVE PILOT — HASSELT

Hasselt (Limburg), Flanders — small-scale MVP pilot currently in development.

Use case: residential plot infill potential via zoning compliance check + HCUS.

Interactive demo targeted for mid-October 2026.

Milestones & Roadmap

URBANEDGE
INNOVATIONS AS

NEXT PRIORITY

SHORT-TERM
0–6 Months

- Hasselt pilot MVP — interactive demo, mid-October 2026
- Pilot projects with 2–3 Belgian municipalities
- Initial customer acquisition (developers & investors)
- Data integration (planning + land + market data)

MID-TERM
6–12 Months

- Expansion across major Belgian cities
- Advanced AI analytics (ROI, ESG, FVS)
- Platform optimization based on user feedback
- Strategic partnerships with consultancies

LONG-TERM
12–24 Months

- Benelux market expansion
- Digital Twin & BIM integration
- Full-scale AI urban intelligence platform

Why Belgium? Strategic Gateway for UrbanEdge

URBAN EDGE INNOVATION AS

EU Capital Advantage

Direct access to European institutions and ESG regulatory frameworks.

1

Smart City Landscape

High demand for AI-driven urban morphology and planning solutions.

2

Innovation Support

Strategic partnerships with Flanders-based incubators like Corda Campus (Hasselt) and public funding bodies such as VLAIO.

3

High Data Transparency

Reliable access to structured geospatial data from UrbIS and FPS Finance.

4

Scalable Market Access

A central hub to expand UrbanEdge intelligence across the European Union.

5

POSITIONING URBANEDGE AT THE HEART OF EUROPE

Our Core Team & Advisors

URBAN EDGE INNOVATION AS
Building Cities, Empowering Impact, Shaping Futures



Khaled Bayoumi

Founder & CEO

Urban Development, GIS, Mobility & Urban Intelligence.



Nehal Elsayed

Co-Founder & COO / Planning Lead

Accomplished engineer in planning and technology with extensive expertise in project management, planning, and monitoring.

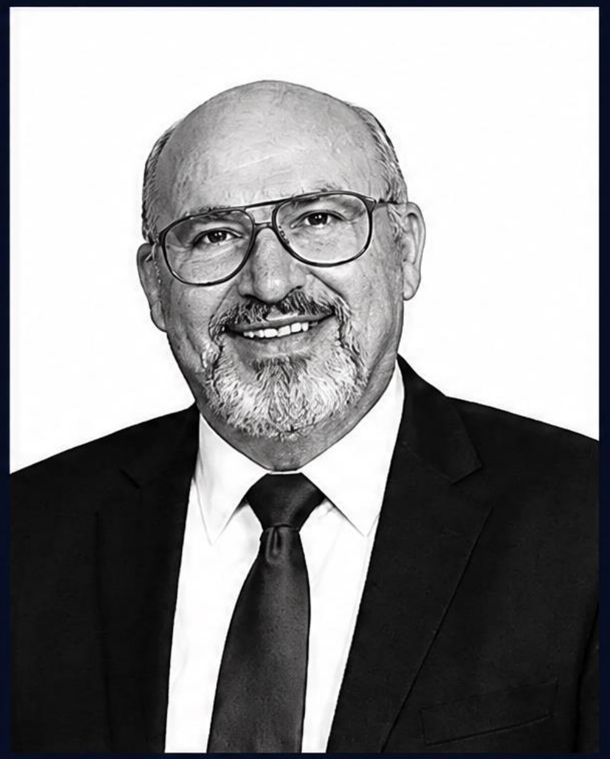


Parshav Sheth

Co-Founder & Technology Architect

Academic, Architect & Big Data Analyst.

Our Core Team & Advisors



Reda Nemr

Co-Founder & Strategic Advisor (STO Strategy)

Former Managing Director at REGAL INTERNATIONAL, Perth, Western Australia.