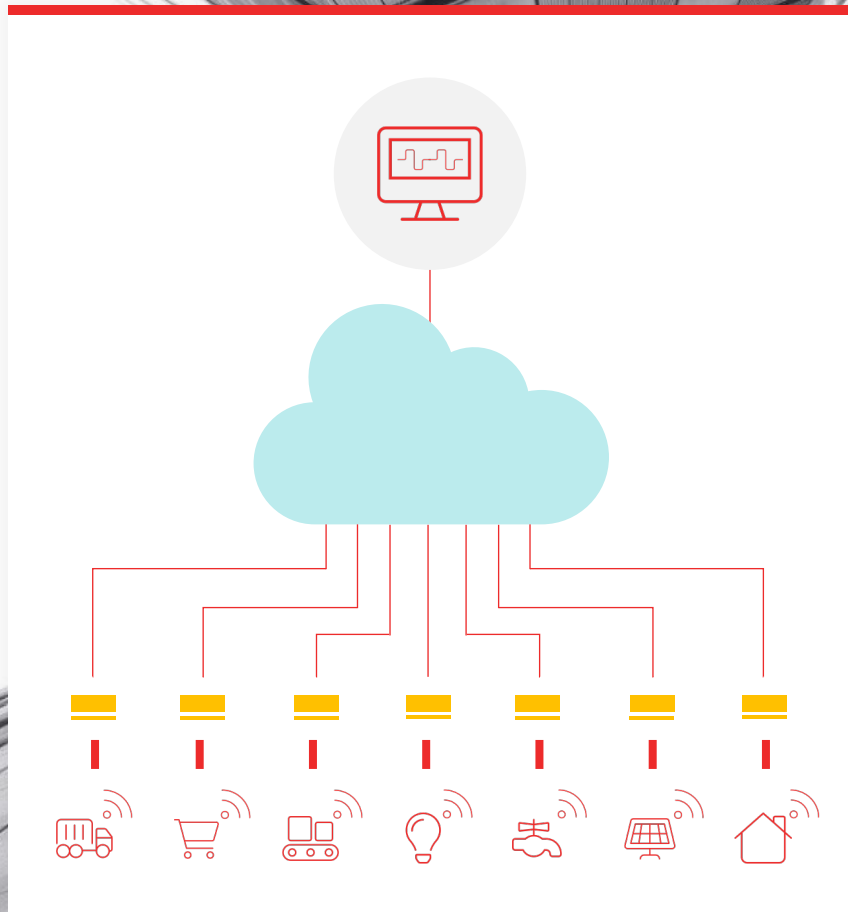# Power your edge computing journey with Nuvla

In this Solution Brief discover:

- Why edge computing is on the rise
- How business benefits from edge computing
- How to create a future-proof solution
- How to build a future-proof and frictionless solution that is pay-as-you-go and SaaS based

# Why is edge computing an exciting place to be?

The advent of IoT has precipitated an explosion of data generation from devices on the 'Edge' of the network. The current model for analyzing, utilizing and storing this data needs to be reevaluated.

> There will be 41.6 BILLION connected IoT devices generating 79.4 ZETTABYTES (ZB) of data in 2025.

Source: IDC

Cloud is **NOT** designed to directly handle this scale.

Volume of connected devices

12.3B

x4

50B+

2021
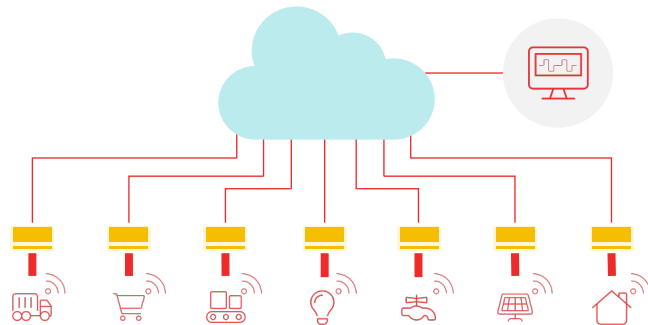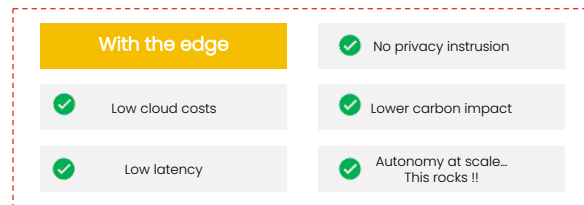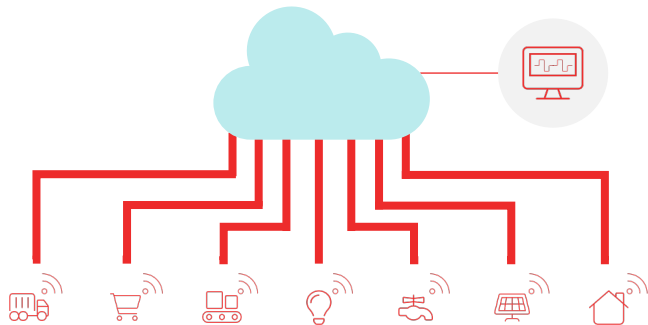
2030
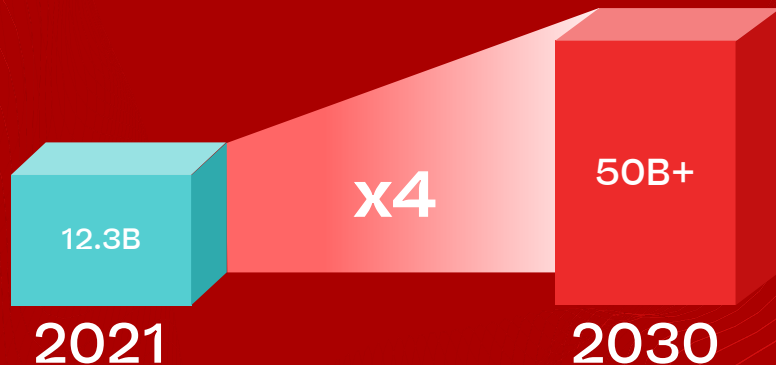
Source: IoT Analytics

In short, the cloud providers promote that ALL data needs to be sent to the cloud to be processed, but with the current and forecasted demand, there is simply too much data generated for this strategy to properly scale. As you can see in the graphic on the left, there will continue to be rapid growth in the number of devices and the amount of data that those devices produce, which means that we need to look at more optimal solutions now.

Edge computing is the solution!

Edge computing allows the processing of data closer to where it's generated, supporting processing at greater speeds and volumes, without having to put so much pressure on the cloud. This solution is being explored by many companies, but often without proper knowledge or a sustainable strategy.

Why is the Edge the solution?

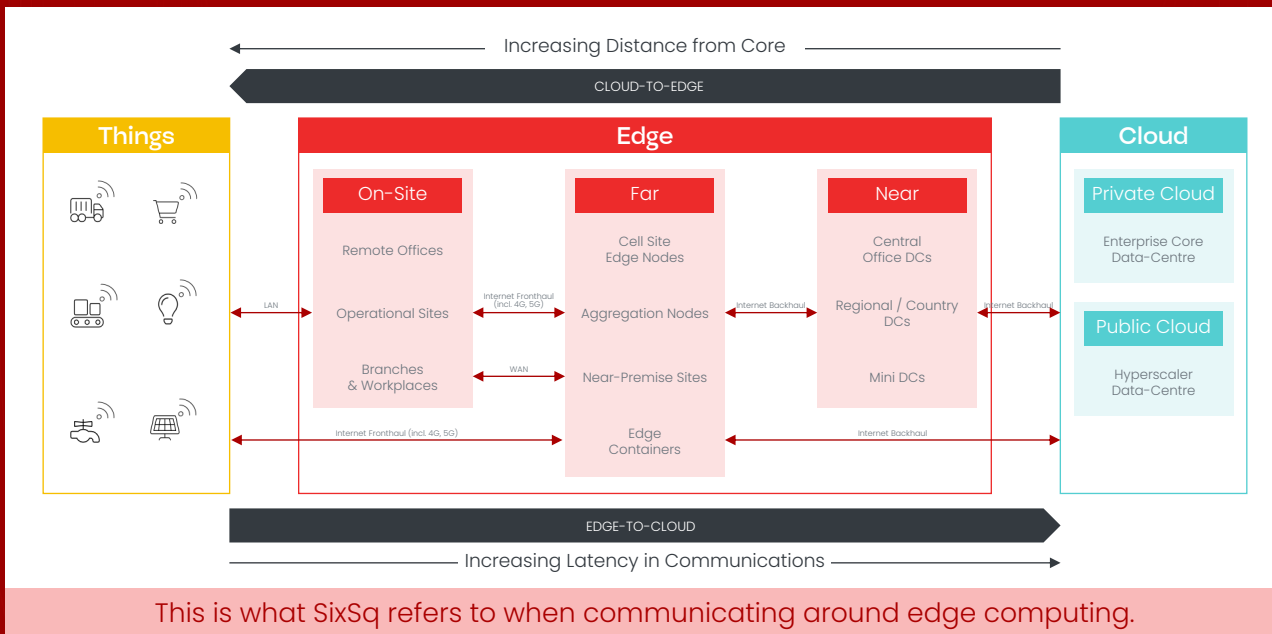There are multiple drawbacks of a cloud-only strategy. High costs, latency and carbon impact are just a few. It can also result in potentially serious privacy intrusion, especially when deploying video and audio sensors. Additionally, these types of sensors generate a tremendous amount of data, much of which is never actually processed. Furthermore, when scaling projects into production, we constantly witness that what worked in the lab does not always work in the 'real' network which may introduce risks and delays. Instead, an edge-to-cloud strategy addresses these drawbacks *by design*. The resulting solution is scalable, with minimum risks.

IoT straight to Cloud... **A bad idea**	⚠️ Potential privacy instrusion
⚠️ High cloud costs	⚠️ High carbon impact
⚠️ High latency	⚠️ At scale... This will fail !!

With the edge	✅ No privacy instrusion
✅ Low cloud costs	✅ Lower carbon impact
✅ Low latency	✅ Autonomy at scale... This rocks !!
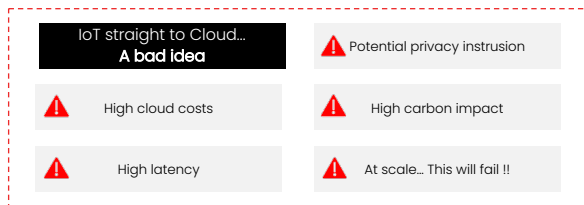
The Cloud-to-Thing Continuum

If we consider the continuum between the 'things' in IoT and the cloud (in all its types), Edge Computing is the space that lives in between the devices and the cloud. From a taxonomy perspective, when speaking about edge computing, we break this into three discrete pieces: the 'near' Edge, 'far' Edge, and On-site (premises)

Increasing Distance from Core

CLOUD-TO-EDGE

Things	Edge			Cloud

Things

Edge

On-Site	Far	Near
Remote Offices	Cell Site Edge Nodes	Central Office DCs
Operational Sites	Aggregation Nodes	Regional / Country DCs
Branches & Workplaces	Near-Premise Sites	Mini DCs
	Edge Containers	

Cloud

Private Cloud — Enterprise Core Data-Centre

Public Cloud — Hyperscaler Data-Centre

LAN · Internet Fronthaul (incl. 4G, 5G) · Internet Backhaul · Internet Backhaul

WAN

Internet Fronthaul (incl. 4G, 5G) · Internet Backhaul

EDGE-TO-CLOUD

Increasing Latency in Communications

This is what SixSq refers to when communicating around edge computing.
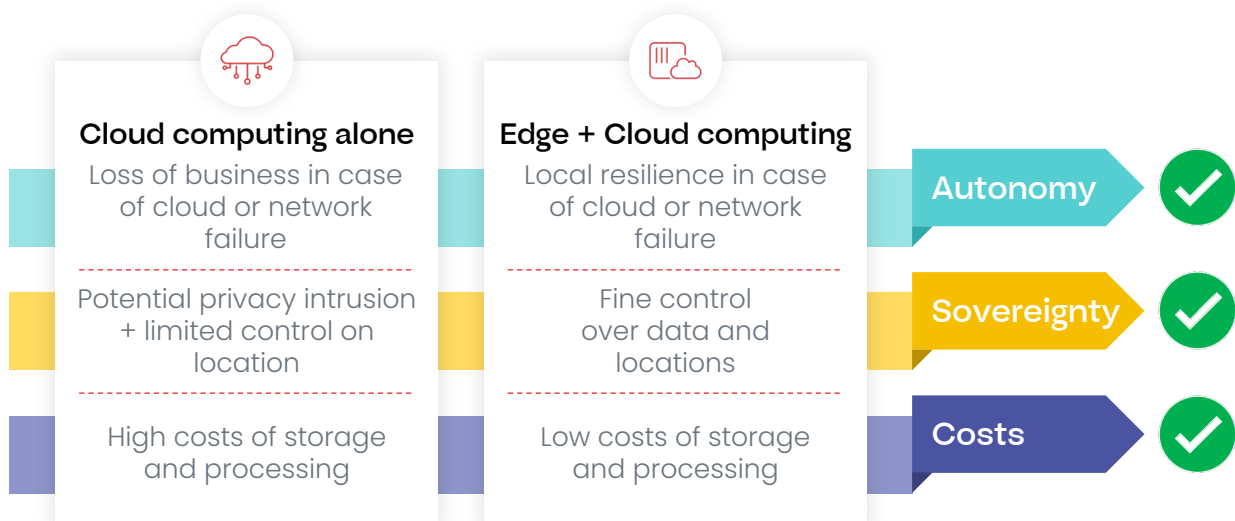
SixSq with Nuvla covers the entire continuum, including the cloud. This means Nuvla customers have a single platform to manage apps across the edges and optionally the cloud(s).

Edge + cloud = the solution to many challenges

Initially, analysts thought that the main driver for the adoption of edge computing would have been linked to low latency.

It is in instead now clear that while latency is an important factor, it is rarely the main adoption driver. The main catalysts to adopting edge computing are instead linked to the need for higher *data autonomy and sovereignty* as well as *cost reduction*.

Cloud computing alone
Loss of business in case of cloud or network failure

Potential privacy intrusion + limited control on location

High costs of storage and processing

Edge + Cloud computing
Local resilience in case of cloud or network failure

Fine control over data and locations

Low costs of storage and processing

Autonomy ✅

Sovereignty ✅

Costs ✅

Instead of approaching edge computing as a choice between cloud and edge computing, a more successful approach is to consider the two technologies as complementary.

Ekinops and SixSq reflect this philosophy with Nuvla by giving users the greatest flexibility in terms of workload placements (applications). As companies evolve, their business identifies new needs that must be fulfilled by future-proof technologies based on open standards. SixSq understands the importance of having a flexible solution and has developed Nuvla with this in mind. Nuvla is designed to welcome the company's changes and evolutions, by providing a **simple, secure and future-proof solution with unprecedented flexibility.**.

Create a simple, secure & future proof edge infrastructure

SixSq implements this flexible and customizable vision with Nuvla, its flagship product. The solution is composed of two main blocks: NuvlaEdge and Nuvla.io. Nuvla is container native, supporting both Docker and Kubernetes.

Compatible with any hardware

NuvlaEdge

Software

- Turns any computer into a smart edge device
- Hardware agnostic
- Connects securely to Nuvla.io for control

NuvlaEdge is the software installed in any computer (e.g. single board computer, CPE, server, virtual machine, even bare metal), which connect securely to Nuvla.io. The process can also be automated using a zero-touch provisioning strategy.

SaaS B2B platform

Nuvla.io

Platform

- Application centric
- Cloud neutral
- Container native
- Open, secure & agile

Nuvla.io is a multi-tenant platform, including terms and conditions simply enabling business transactions between the customer and app vendors. Customers can also register their own apps, free of charge, in their own workspace.

Unmatched edge simplicity
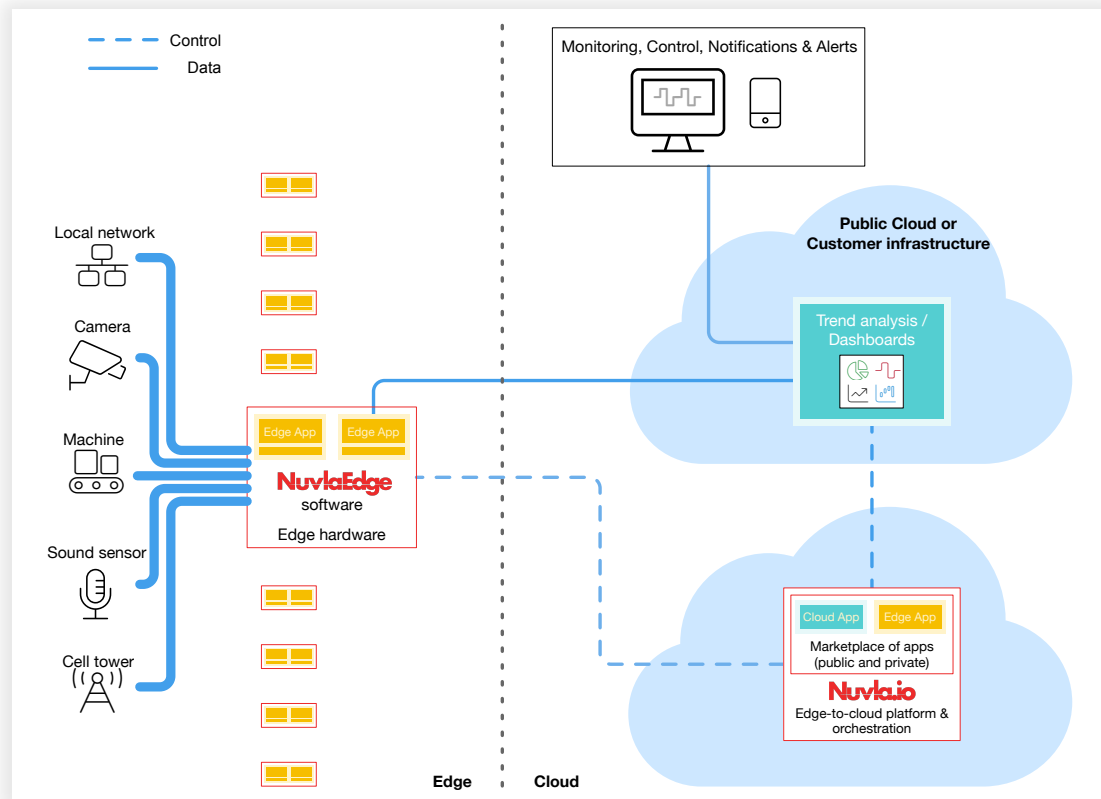
Secure
Access control, integrity checks, zero-touch provisioning and multi-tenancy.

Scalable
Manage fleets of 10,000s of devices.

All cloud & hardware
All major cloud vendors. Certified for both ARM and x86 architectures.

Within the diagram:

Control

Data

Local network

Camera

Machine

Sound sensor

Cell tower

Edge App   Edge App

NuvlaEdge
software

Edge hardware

Monitoring, Control, Notifications & Alerts

Public Cloud or Customer infrastructure

Trend analysis / Dashboards

Cloud App   Edge App

Marketplace of apps (public and private)

Nuvla.io
Edge-to-cloud platform & orchestration

Edge   **Cloud**

Enabling enterprise & service provider use cases

Nuvla allows users to address simple and complex use cases alike, often deploying a multitude of apps, as a bouquet of solutions. Apps can be chosen independently to address your problems in the best way possible. Just like a bunch of flowers, you can pick your apps to form the bouquet that best suits your needs.

Using existing or purposefully deployed sensors and actuators, the edge can process a high flow of data, providing real-time actionable insights, reducing data flows to the cloud and delivering **autonomy** and **sovereignty**.

Available hardware can often be reused, ensuring a cost-effective solution and rapid deployment strategy.
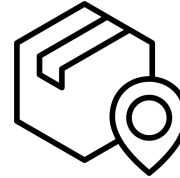
MONITORING

CYBER DEFENSE

LATENCY & QoS MONITORING

PROTECT WORKERS

PRODUCTS TRACKINGERS

ANONYMISE VIDEOS

PREDICTIVE ANALYSIS

CYBER DEFENSE

FORENSIC ANALYSIS

Nuvla Marketplace

The Nuvla marketplace of business applications contains a growing number of ready-made apps, provided by domain matter experts. These apps can be deployed in 1-click, eliminating human error and improving quality.
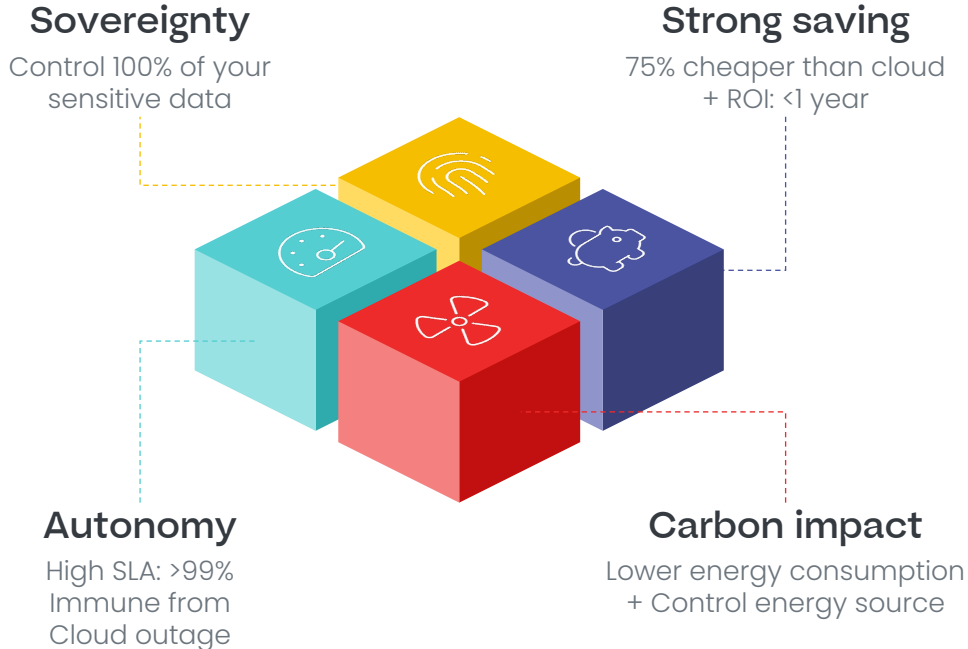
Furthermore, users can register their own apps, creating their own private app store, mixing in commercially available apps from the marketplace.

These apps address multiple sectors that include but are not limited to *retail*, *manufacturing*, *logistics*, *transport* and *energy*.

Enterprise Customers and *SMBs* Pay-as-you-go apps, resulting is unprecedented flexibility and a truly future-proof solution.

Benefits for Customers

Sovereignty
Control 100% of your sensitive data

Strong saving
75% cheaper than cloud + ROI: <1 year

Autonomy
High SLA: >99% Immune from Cloud outage

Carbon impact
Lower energy consumption + Control energy source

Customers using Nuvla benefit from having control of their data, giving them *sovereignty* over what is often their most sensitive assets.

Compared to cloud-only or non managed approach, our customers *save significantly*, up to 75% in some cases.

Edge computing provides unmatched *autonomy* and robustness towards business continuity.

By reducing wasteful and unnecessary data transfers and cloud storage, while better controlling parts sourcing and power sources, edge computing can deliver lower carbon impact. This can have a concrete influence on our customers' efforts to reach their Sustainable Development Goals (SDGs).

Nuvla key features

Shared infrastructure
Deploy a range of apps to leverage infrastructure investment (e.g. retail, manufacturing, transport, logistics, etc.)

Pay-as-you-go
SaaS-based, frictionless deployment and pay-as-you-go model provides unprecedented flexibility

Easy to use
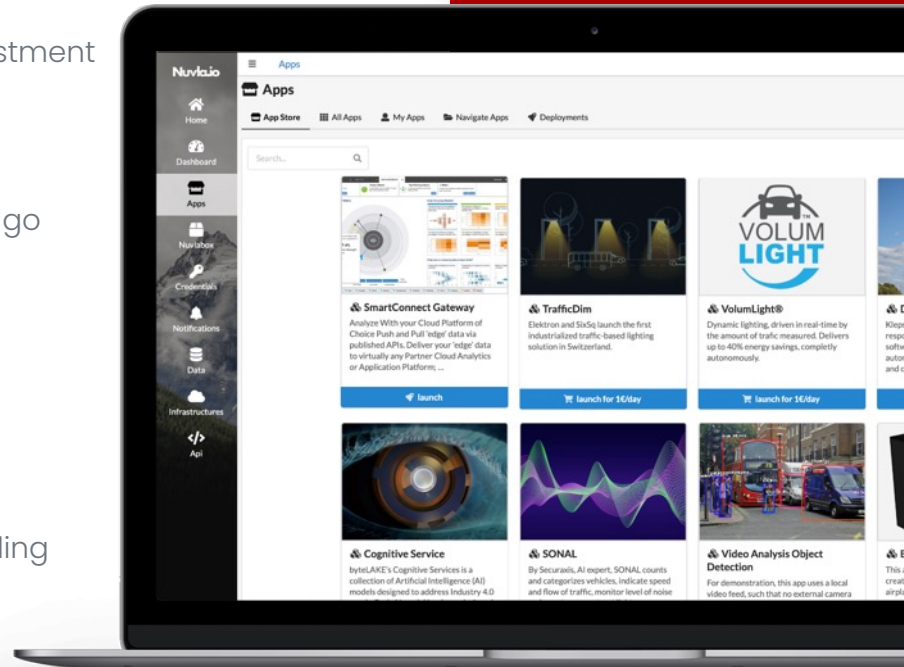Simplifies daily life by removing management complexity and reducing operations risks

Simple Terms & Conditions
T&C make business enablement straightforward, avoiding need for specific contracts with app vendors

Data sovereignty
Keep control of data and ensure user privacy

Get started at the Edge with a Strategic Workshop

Workshop

Discover	Design
Your Edge Value	**Your Edge Experience**
Help organisations **Discover, Understand and Define** how to solve their business problem.	Help organisations **Validate, Design and Prototype** an Edge solution which will help them solve their own challenges, learning from industry best practices.
Goal	**Goal**
• Identified the business problem • Identified the way to solve it • Identified "personas & extreme users"	• Identified use case architecture • Clear roadmap • Identified timeline & outcome expected

Experience has shown us that the most effective way to take Nuvla for a spin is via a qualified proof of concept (PoC).

This is why we offer dedicated and high-quality workshops to help define such PoC.

Bringing the main stakeholders together in such workshop ensures the best possible outcome. Generally, we tend to include:
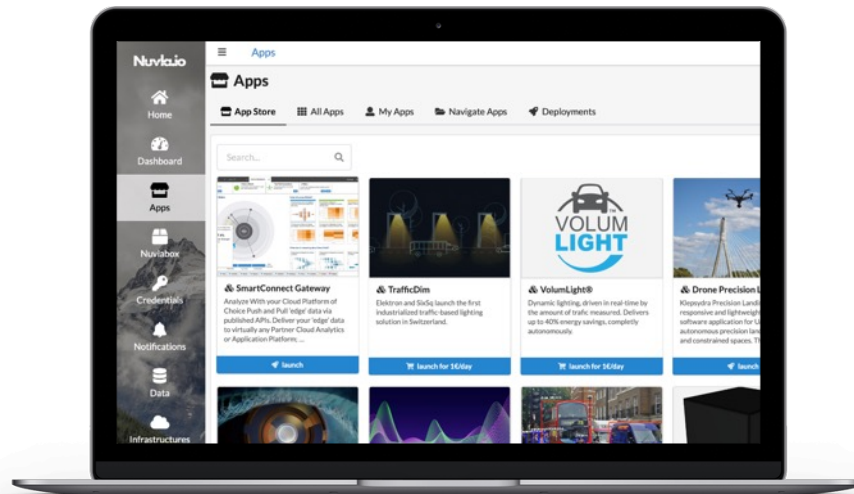• Operations
• Business
• Technical
• Legal

A successful PoC can then be deployed as a pilot or directly in production and scaled up with minimum risk.

Want to know more?
Get in touch:

info@sixsq.com

Create your free account
at: Nuvla.io

Or visit us: sixsq.com

SixSq SA – Geneva, Switzerland – an Ekinops Company