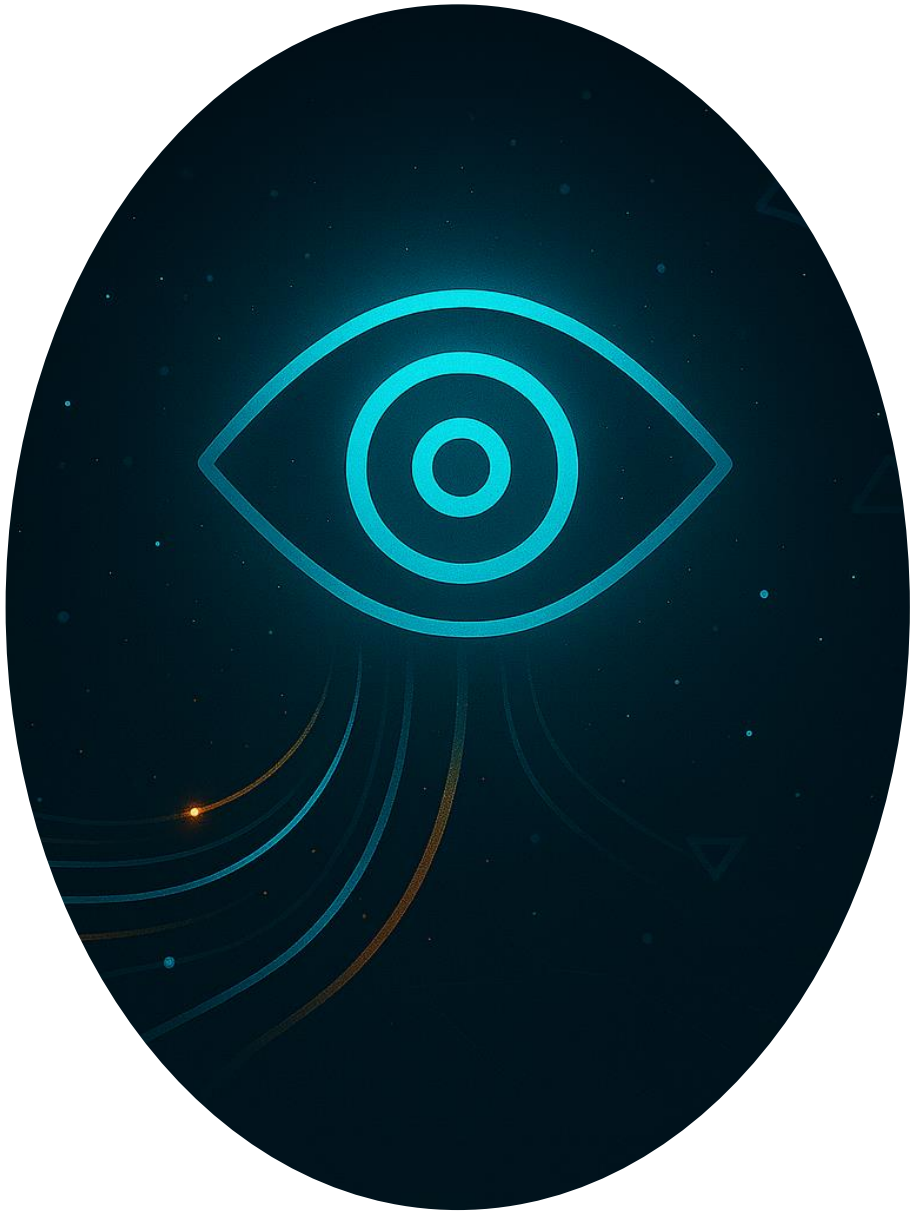
Ipsilum – A new geospatial paradigm

Introduction to the modular and 100% browser-based ecosystem



From SRM Consulting to Ipsilum

- For over 20 years, SRM Consulting has led production and consulting projects in the field of geospatial information. In 2022, we began transforming that accumulated experience into a new vision: IPSILUM.
- Ipsilum is not just an evolution — it’s a revolution. A cloud-native technological platform, designed from scratch to democratize access to geospatial information, enabling any user —technical or not— to visualize, process, and analyze data in real time. All directly from the browser.
- We evolved from being consultants and integrators to becoming creators of advanced technology, integrating spatial analysis, distributed processing, and artificial intelligence algorithms within a modular, open, and interoperable architecture.

What challenges do we face?

- Users without GIS training who need powerful and intuitive analysis.
- Data arriving from multiple sources in real time.
- Need for field coordination during crises or large-scale projects.
- ✅ Ipsilum responds with a modular platform, offering visualization, process execution, traceability, and bidirectional communication among all stakeholders.

Welcome and paradigm shift

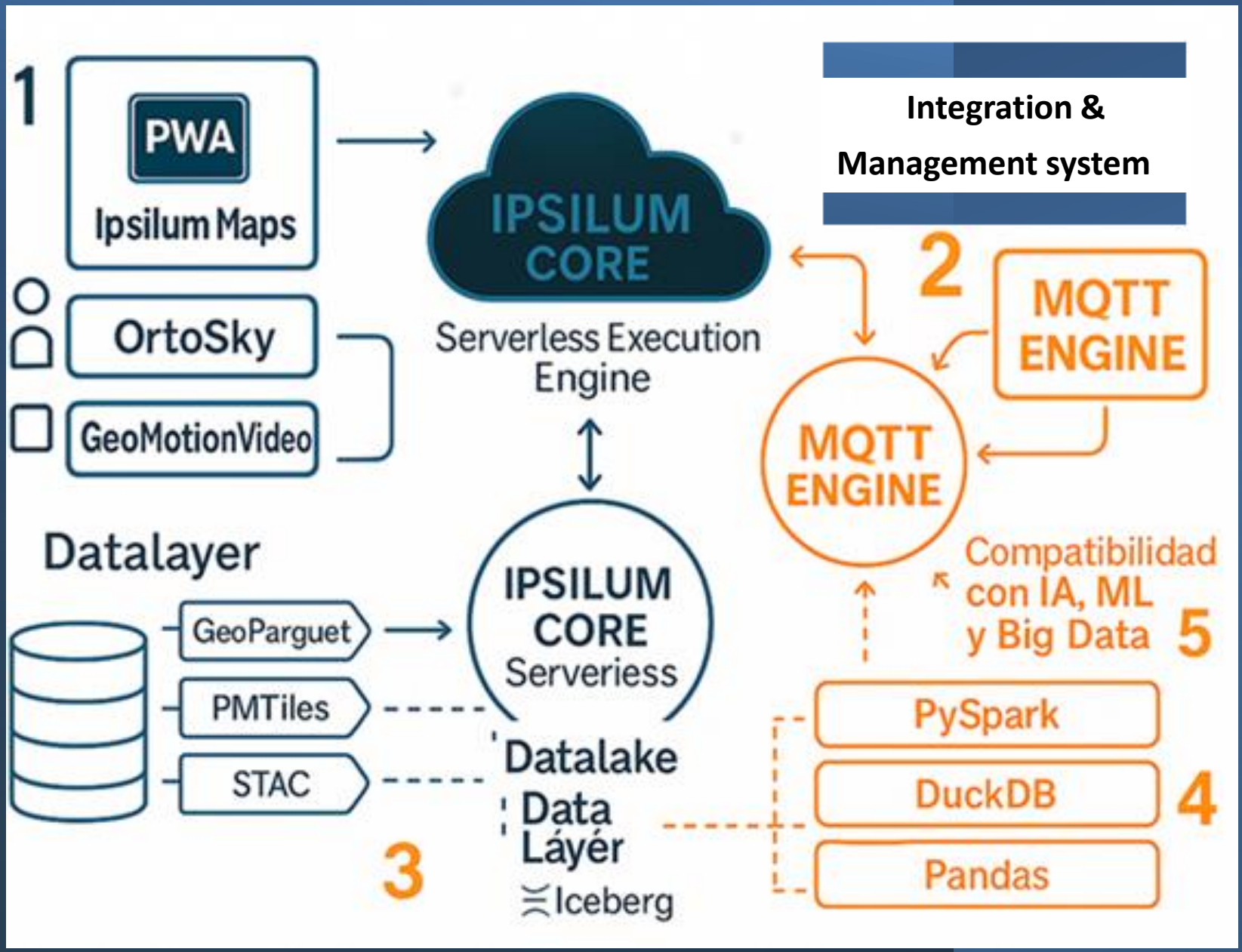
- From local GIS systems to cloud-based platforms
- Users without technical background need geospatial analysis
- Dispersed data, need for speed and interoperability
- Need for a suitable ecosystem to enable large-scale AI implementation

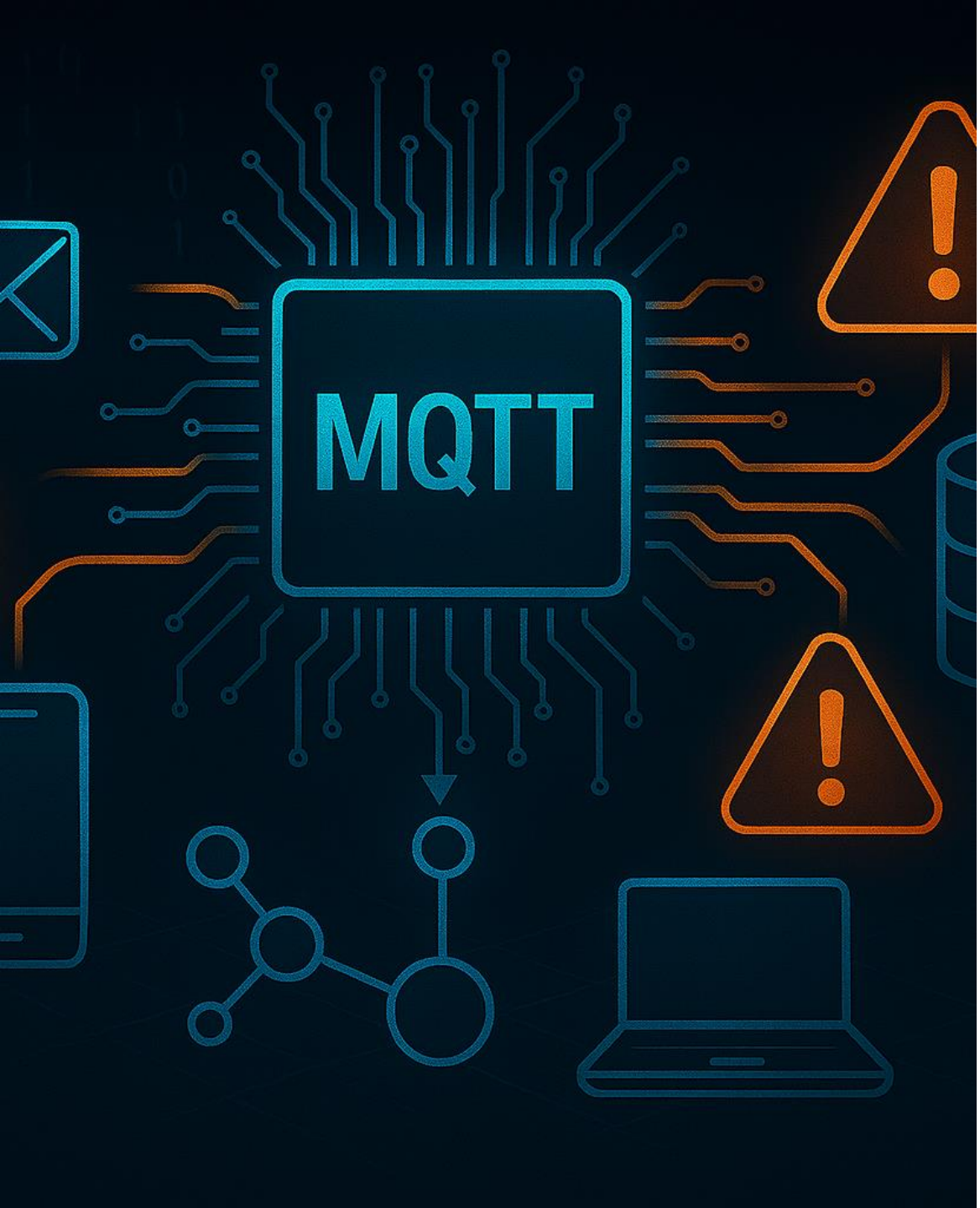
What is Ipsilum?

- Modular, cloud-native platform with no installation required
- Direct access via browser: laptop, tablet, or mobile
- Ideal for technicians, managers, and non-expert GIS users

Main Modules of the ecosystem

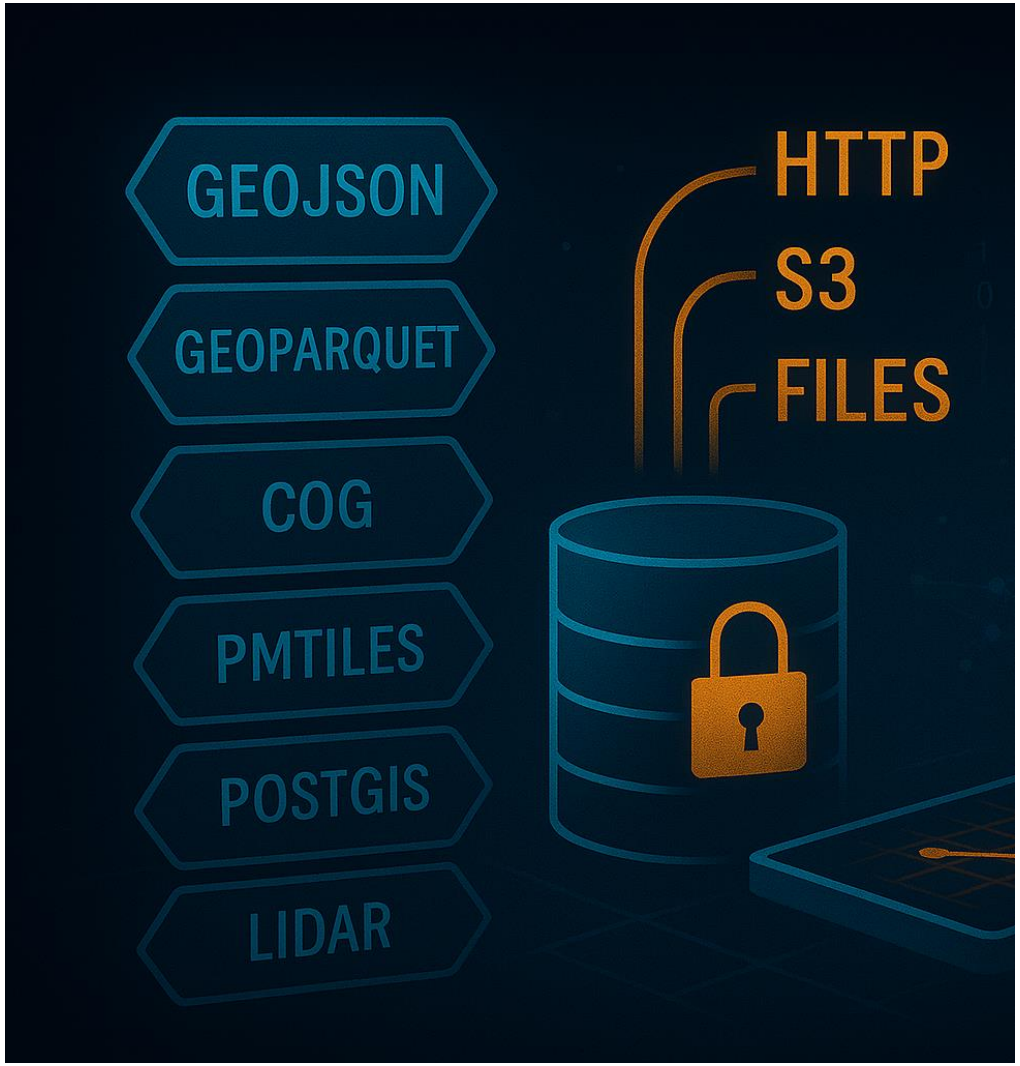
- Ipsilum Core – flow engine and serverless análisis
- Ipsilum Maps – interactive maps and no-code dashboards
- GeoMotionVideo – georeferenced video and synchronized events
- OrtoSky – desktop module for LIDAR and GIS data compilation and stereoscopy,


Integration &
Management system
1
PWA
Ipsilum Maps
OrtoSky
GeoMotionVideo
IPSILUM CORE
Serverless Execution Engine
2
MQTT ENGINE
MQTT ENGINE
Datalayer
GeoParguet
PMTiles
STAC
IPSILUM CORE Serveriess
Datalake
Data Láyér
Iceberg
3
Compatibilidad con IA, ML y Big Data
5
PySpark
DuckDB
Pandas
4



MQTT Engine

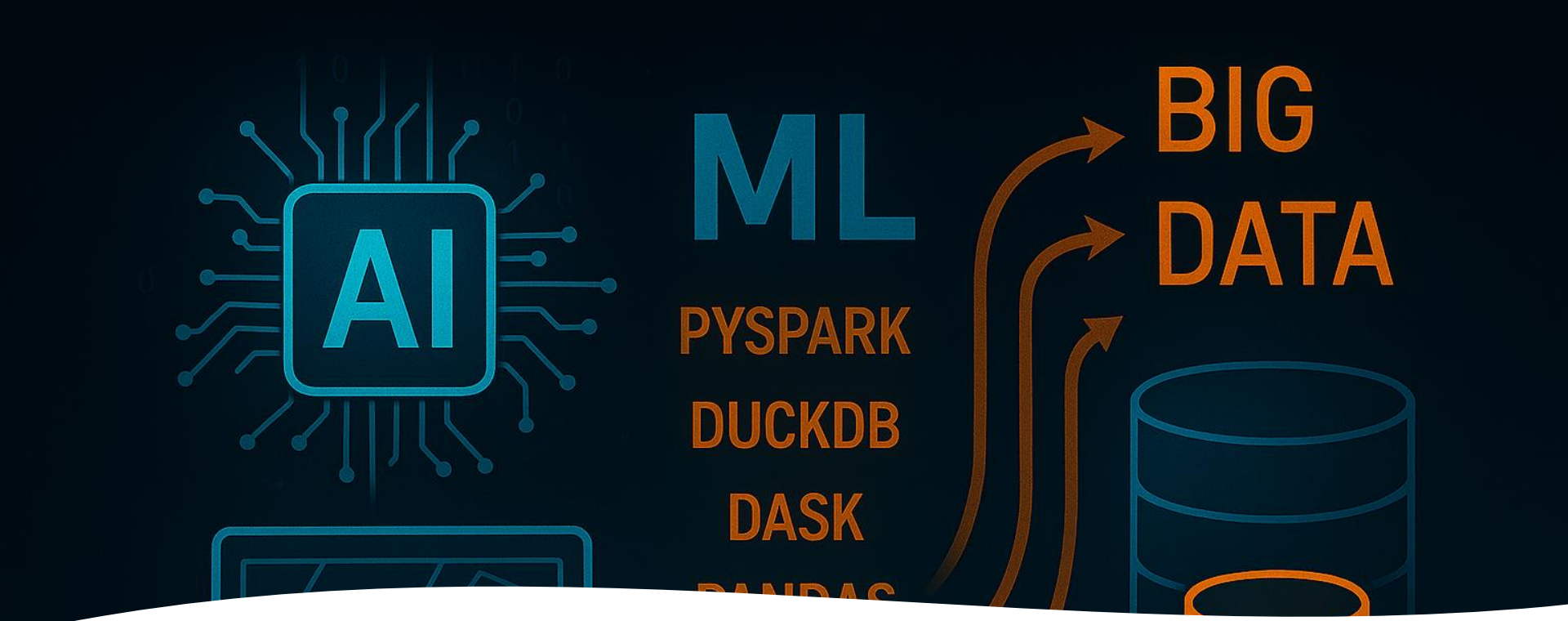
- MQTT Protocol: Lightweight, real-time communication between all system components.
- Custom Channels: Devices, nodes, and users subscribe to channels based on role, area, or operational context.
- Bidirectional Messaging: Allows sending instructions, process results, geolocated alerts, or contextual information.
- Event Storage: All messaging is stored in the datalake for later analysis.



Cloud Native Geospatial

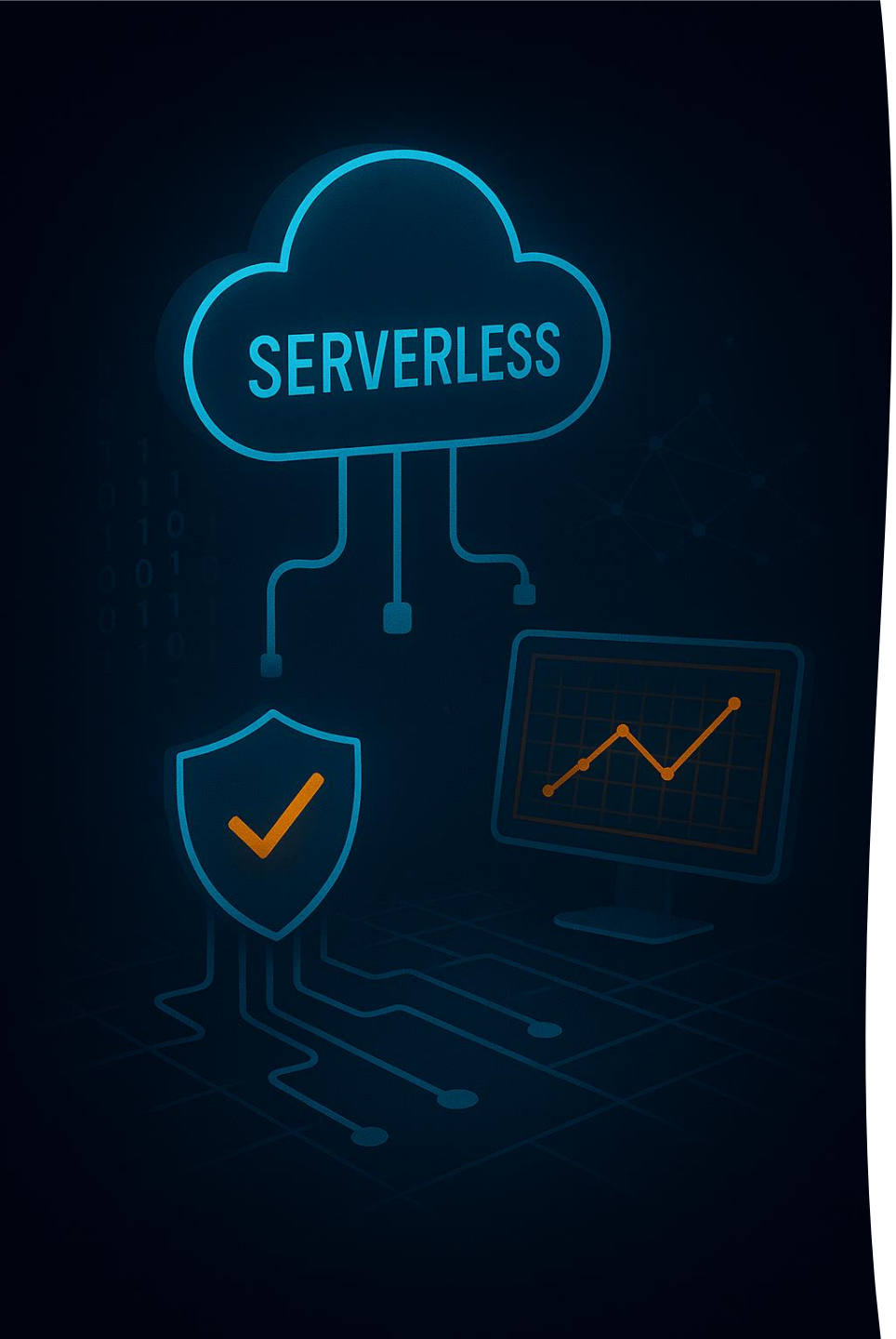
- GeoParquet, COG, PMTiles, COPC, STAC…
- Direct access via HTTP, S3, databases, files, and datalakes without moving datasets.
- Partial reading and analysis of massive online datasets without the need to download or duplicate them.

Serverless



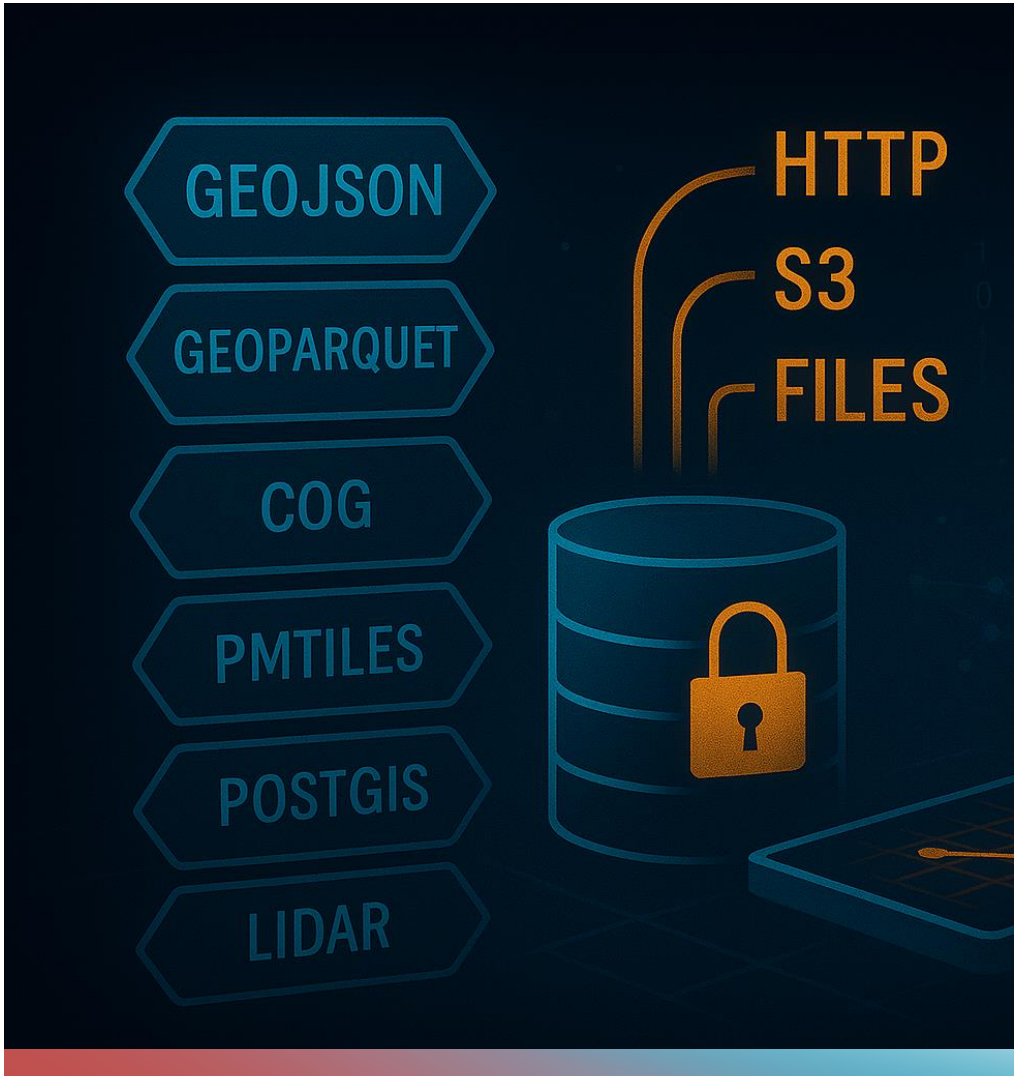
IA, ML y Big Data compatibility

- Integration with PySpark / DuckDB / Dask / Pandas: Execution of distributed analyses on geospatial data.
- Model orchestration: Execution of prediction models, land classification, and anomaly detection from the cloud or the browser.
- Collaborative training: Through MQTT events, different modules can exchange results or retrain models.



Why it is diferent

- True serverless processing: automatic frontend + backend
- Real-time analysis with no servers or local installation
- AI ready
- Full traceability: every event is audited



Access and compatible data

- Supports GeoJSON, GeoParquet, COG, PMTiles, PostGIS, LIDAR…
- Remote access via HTTP, S3, databases, files, data lakes
- Partial reading and analysis of massive online data without the need to download or duplicate it

Who is Ipsilum for?

- Users without technical knowledge: assisted análisis
- Experts and developers: extensibility with Python/SQL/JS
- Institutions: ETL flows (extraction, transformation, and loading), device control, and task validation

Where to apply Ipsilum?

Although Ipsilum is a cross-cutting technology applicable to multiple sectors, we have initially focused on three major strategic verticals:

- Territory management
- Emergency response support
- Infrastructure management support

IPSILUM

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