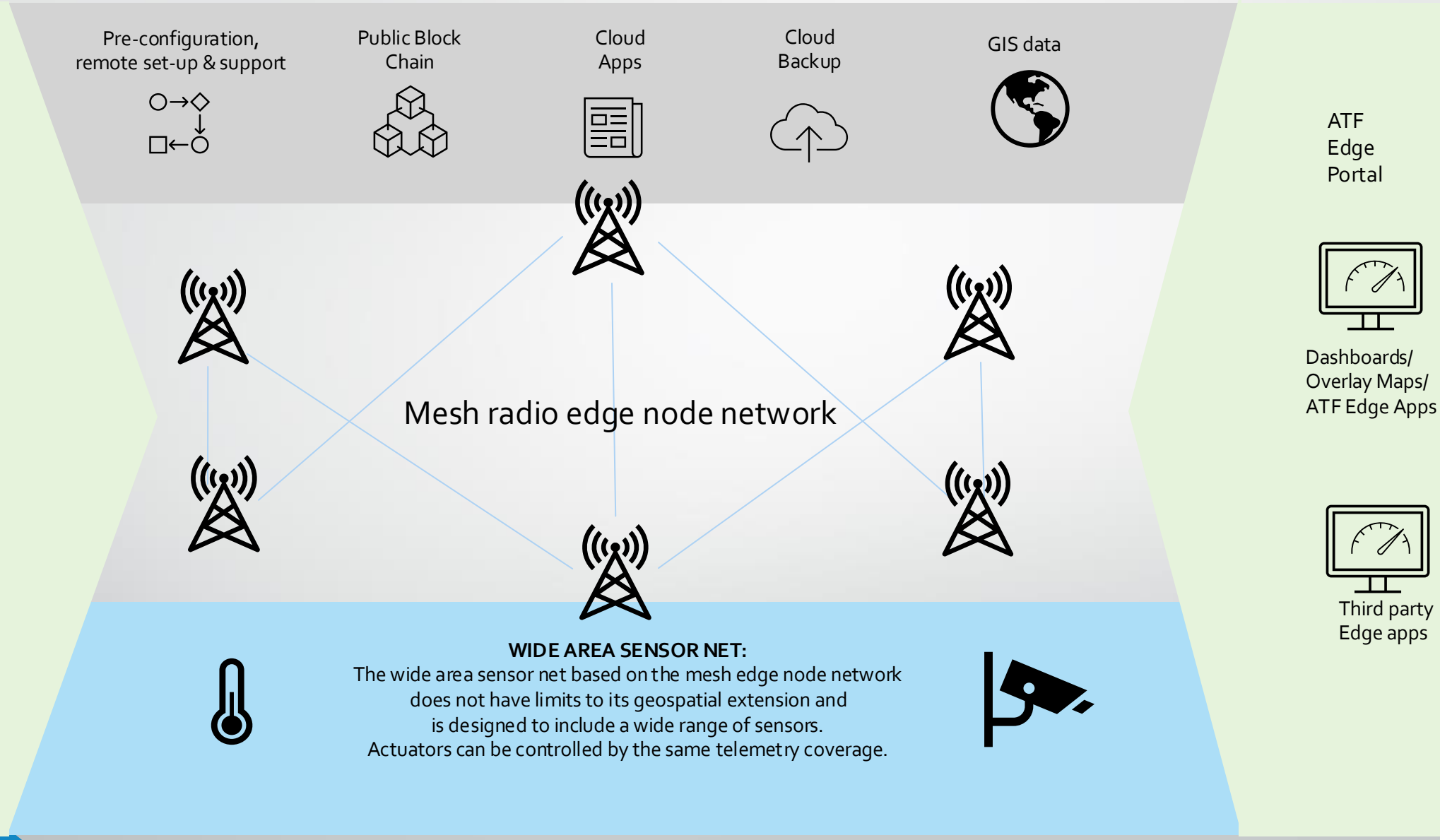
ATF Edge Platform

Technology Overview

Edge Platform Overview



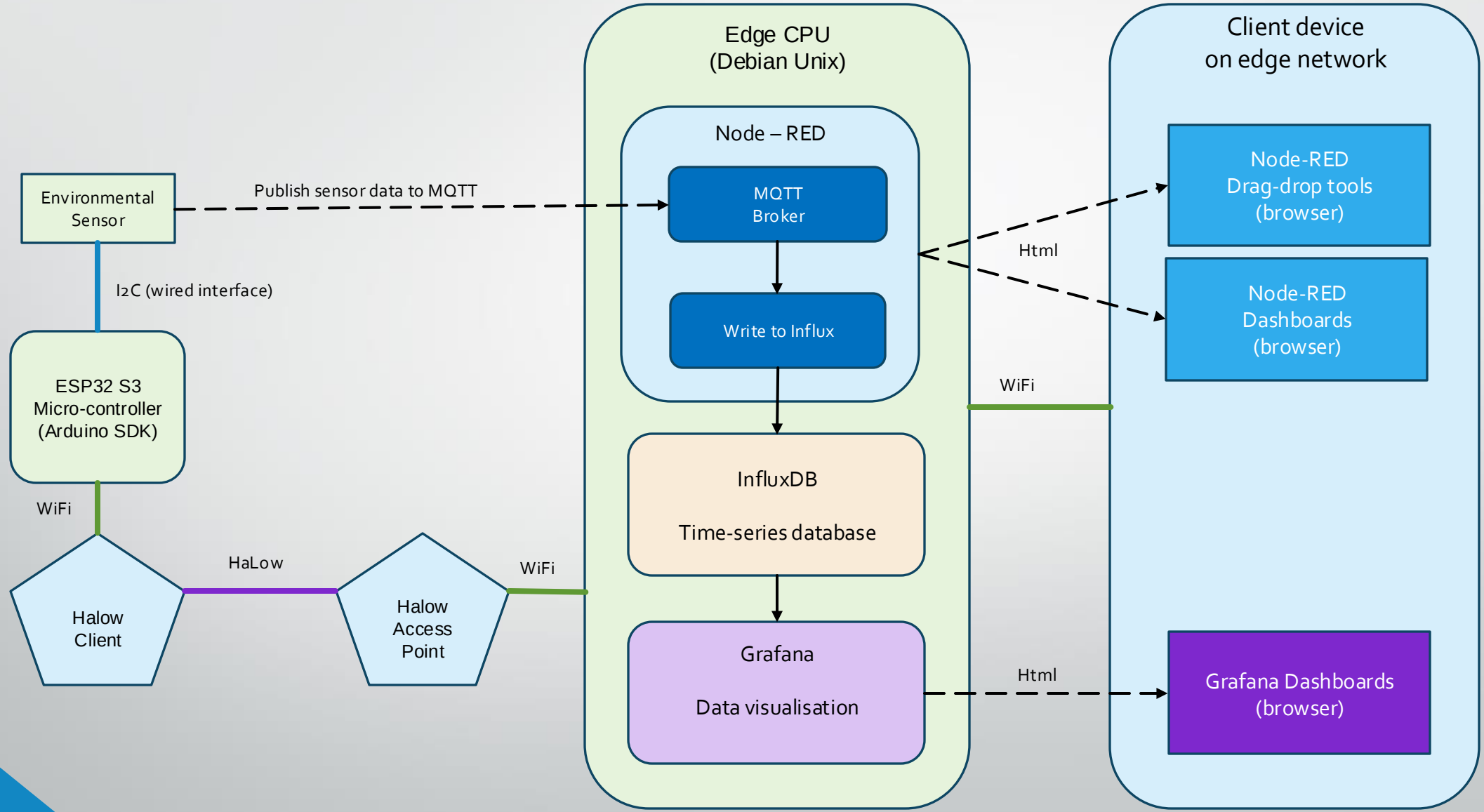
Software Stack

	MQTT	MQTT is a widely used open-source publish-subscribe network protocol. It is designed for connections with remote locations that have devices with resource constraints or limited network bandwidth.
	Node-RED	Node-RED is a flow-based, low-code development tool for visual programming developed originally by IBM. Node-RED provides us with a flexible, modular web browser-based flow editor for building and deploying IoT solutions.
	InfluxDB	InfluxDB is an open-source time series database developed by the company InfluxData. We use it for storage and retrieval of time series data from the ATF sensor installations.
	Grafana	Grafana is a multi-platform open-source analytics and interactive visualization web application. Used in the ATF stack to provide sophisticated and flexible dashboards.
	Inter Planetary File System (IPFS)	IPFS is a peer-to-peer content delivery network built around content addressing where we store, retrieve, and locate data based on the fingerprint of its actual content rather than its name or location.
	Solana Blockchain	Solana is a blockchain platform which uses a proof-of-stake mechanism to provide smart contract functionality. Solana is known for its high speed and low transaction costs.

Intelligent Edge

Layer 1: Visualisation	Layer 2: Simple operations on real-time data flows	Layer 3: Machine Learning	Layer 4: Deep Learning
Dials Time series Derived values Smoothing Calibration	Alerts, Alarms Activator thresholds Mathematical data relationships	Classification, Prediction from structured data sets i.e. sensor time series Linear regression Naive Bayes, KNN, SVC Gradient boosted GA, etc	Classification, Prediction from un-structured data sets i.e. images, video, sound tracks RNN, CNN, LSTM, GRU, GAN Transformers

Basic system components used for demonstration



ATF edge computing Carbon-on-Chain Flow

Sensor data

Project documents

Project set-up & execution

Carbon credit emission

1. Store project assets in IPFS

2. Capture asset CIDs in the project metadata file

3. Store project metadata file in IPFS

4. Create dedicated solana spl token

5. Post project CID to token metadata

6. Mint token supply to correspond to carbon credits

CIDs

CID

Project Metadata
Name:
Description:
Locations:
...
Datasets[cid,cid]
Documents[cid,cid]

Helia IPFS

Solana

Solana SPL Token dedicated to the project

Additional Metadata: Carbon Project Metadata CID