AaaS – NTL Solution Overview

DISCOVER THE *Power Of Choice*

Trilliant®

What are non-technical losses (NTL)?

Total_Losses = Tech_Losses + Nontech_Losses

Technical Losses

- Produced by Joule effect (I^2 R) in lines (transmission and distribution) and transformer windings, as well as by heating of the transformer core due to eddy currents.
- They are easily calculable and controllable. Electrical systems are designed and operated to minimize these losses.

Non-Technical Losses

- Represents the energy consumed by users that is not billed and/or incorrectly measured.
- It is produced by fraudulent connections, manipulation or misconfiguration of meters, billing errors; in general HUMAN FACTOR.
- They are not easily calculable and controllable.

Why is it mission-critical to solve Non-Technical Losses?

Causes

- Tampered meters/energy theft
- Defective meters
- Uncalibrated meters
- Misconfigured meters
- Failures in the billing system
- Corruption or poor governance

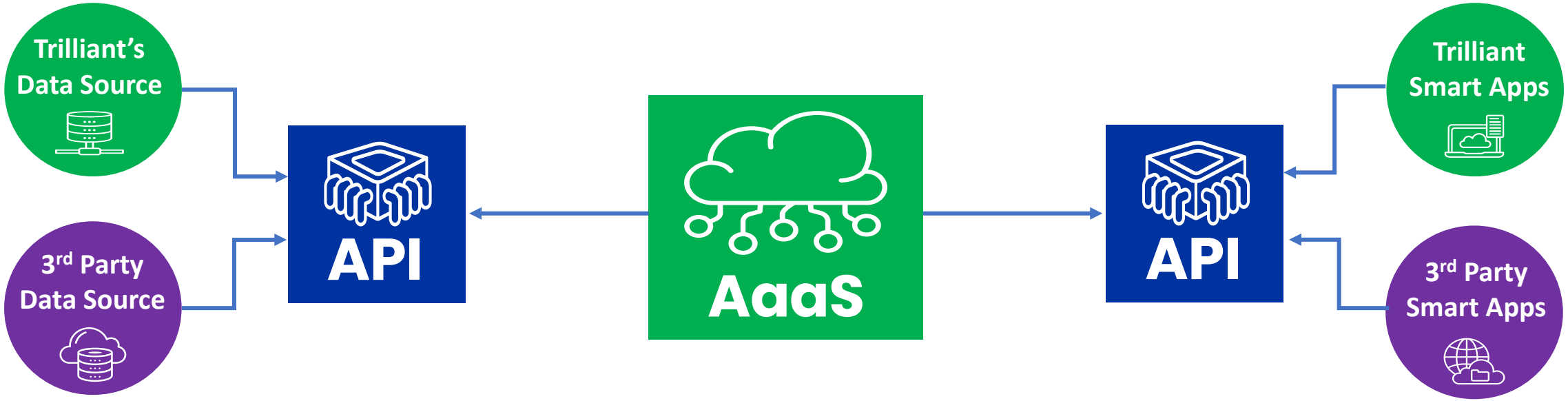
Impacts

- Revenue
- Observability
- Reliability
- Security
- Efficiency

What is Analytics as a Service

The data scientist for utilities worldwide.

Trilliant's Analytics as a Service is a cloud-based platform, which adds value to meter data and surfaces the underlying information, helping utilities make data-based decisions.

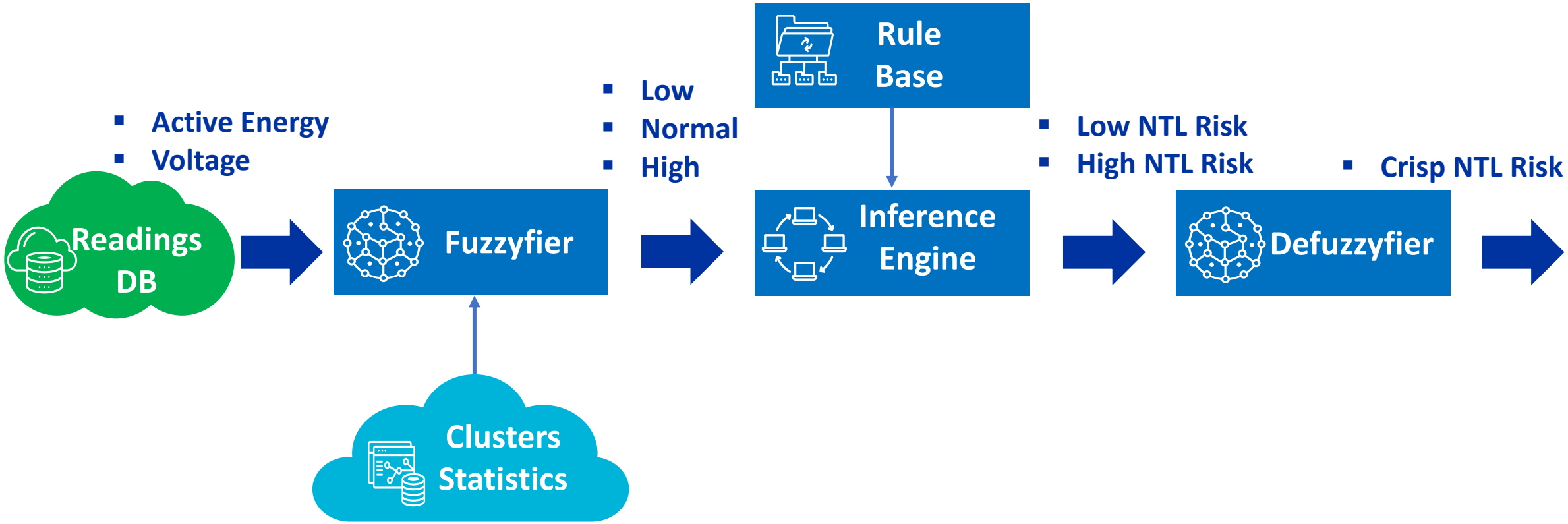


Trilliant

How does the model work?

Assessing the NTL Risk

- The goal is to identify the meters with a high risk of being a source of NTL.
- This process is executed daily, to get the NTL assessment from the day before.



Trilliant®

The data scientist for utilities

Features

- API for getting the outcome of the models.
- Data pipeline supporting proprietary and 3rd party data sources.

Advantages

- Models' outcome can be visualized from any BI tool.
- Models are retrained with utilities owned data.
- Native connector to Trilliant's software platform.

Benefits

- Get the outcome of a data scientist, without hiring one.
- Transition into a digital utility.

Trilliant®

Running a Pilot for Utility NTL Modeling

Required Data from the Utility

DATA	NEED	SIZE/LENGHT	WHERE TO ACQUIRE THE DATA	FORMAT	USE OF DATA
kWh or kW Hourly Interval (Load Profile) Readings	Yes	12 to 24 months from 1k to 10k meters	UnitySuite HES, SCADA or 3rd Party MDM data repositories.	csv/xls	▪ Cluster Calculation ▪ Hourly Statisctics ▪ Anomalous behavior probability estimation
Voltage Hourly Interval (Load Profile) Readings	Yes	12 to 24 months from 1k to 10k meters	UnitySuite HES, SCADA or 3rd Party MDM data repositories.	csv/xls	▪ Hourly Statistics ▪ Anomalous behavior probability estimation
Meter GPS Coordinates	Yes	1k to 10k meters	GIS or 3rd Party MDM data repositories	csv/xls	▪ Identify the cities/zones with more probability of NTL. ▪ Geolocation of meters in the report
Grid Topology	Optional	Middle and Low Voltage Grid	ADMS, EMS	csv/xls	▪ As an indirect way to test the model comparing it results against energy balances
List of Suspicious Meters	Optional	12 to 24 months	Billing or Revenue Assurance Systems	csv/xls	▪ Direct way for testing the model's accuracy


DISCOVER THE Power Of Choice
Trilliant®