

KI im Einsatz bei der Verteilnetzführung

alliander

Wer sind wir

Alliander



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Größter VNB in den Niederlanden

In öffentlicher Hand

Aktiv in 6 Provinzen

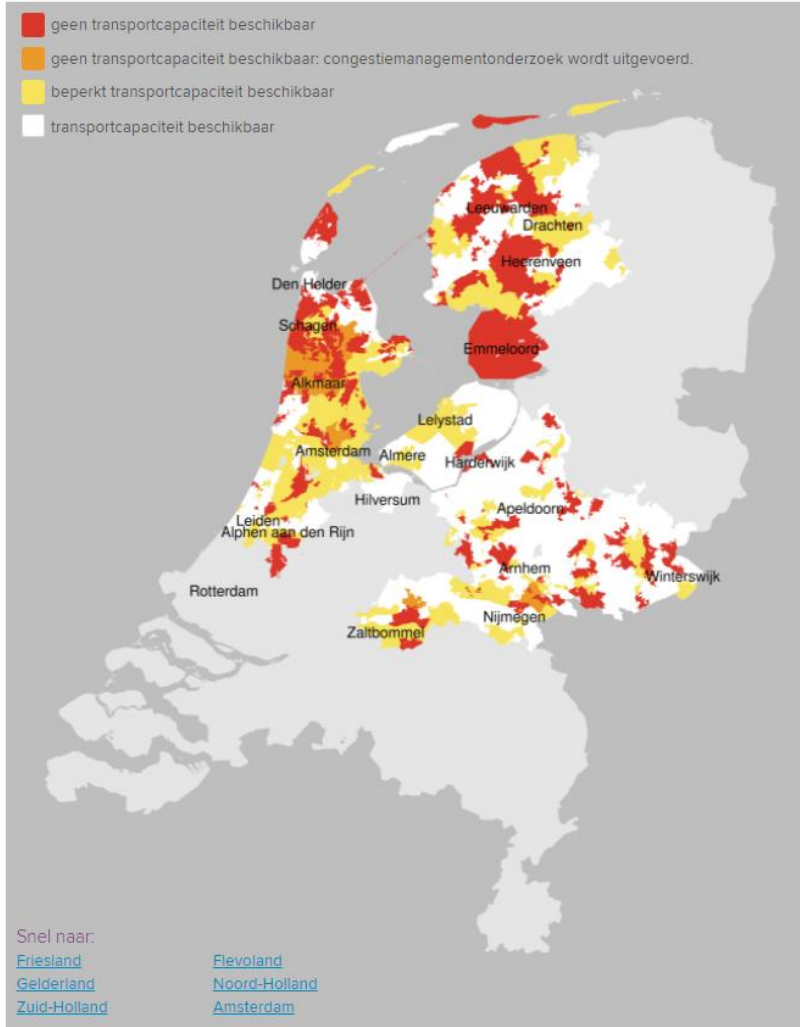
139 Gemeinden

5,8 Millionen Kundenanschlüsse

Heutige Situation

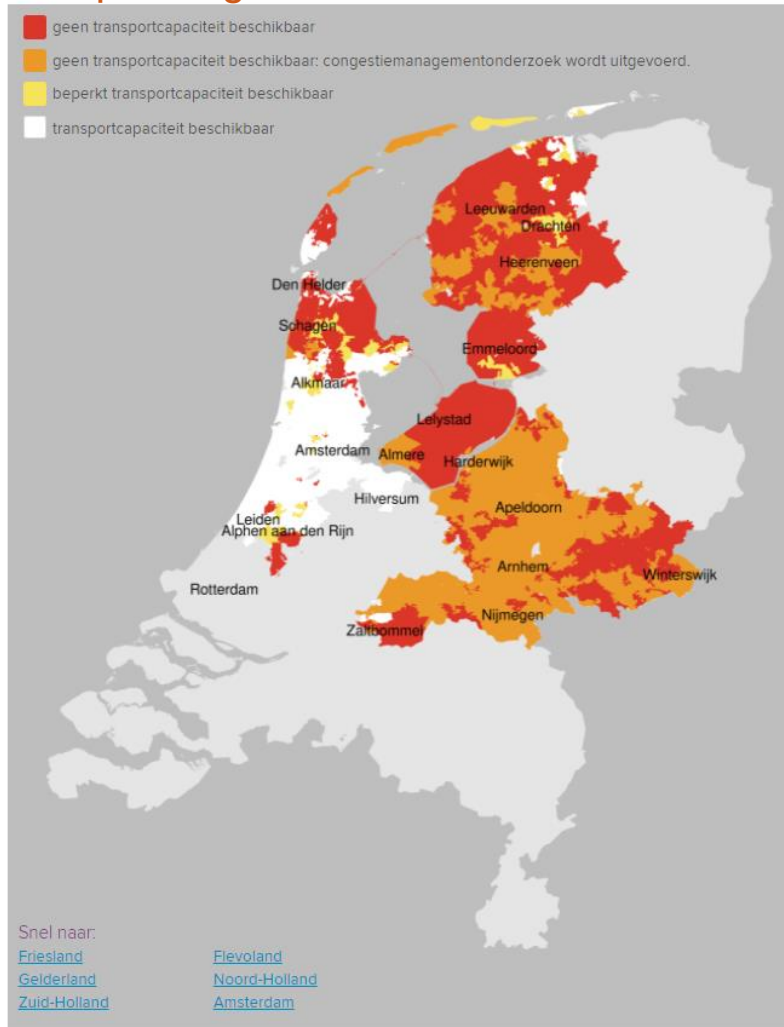
Großkunden (MS)

Verbrauch



Großkunden (MS)

Einspeisung



Kleinkunden (NS)

Zunahme von heute bis 2030:

- Solaranlagen
- EV Ladesäulen
- Wärmepumpen

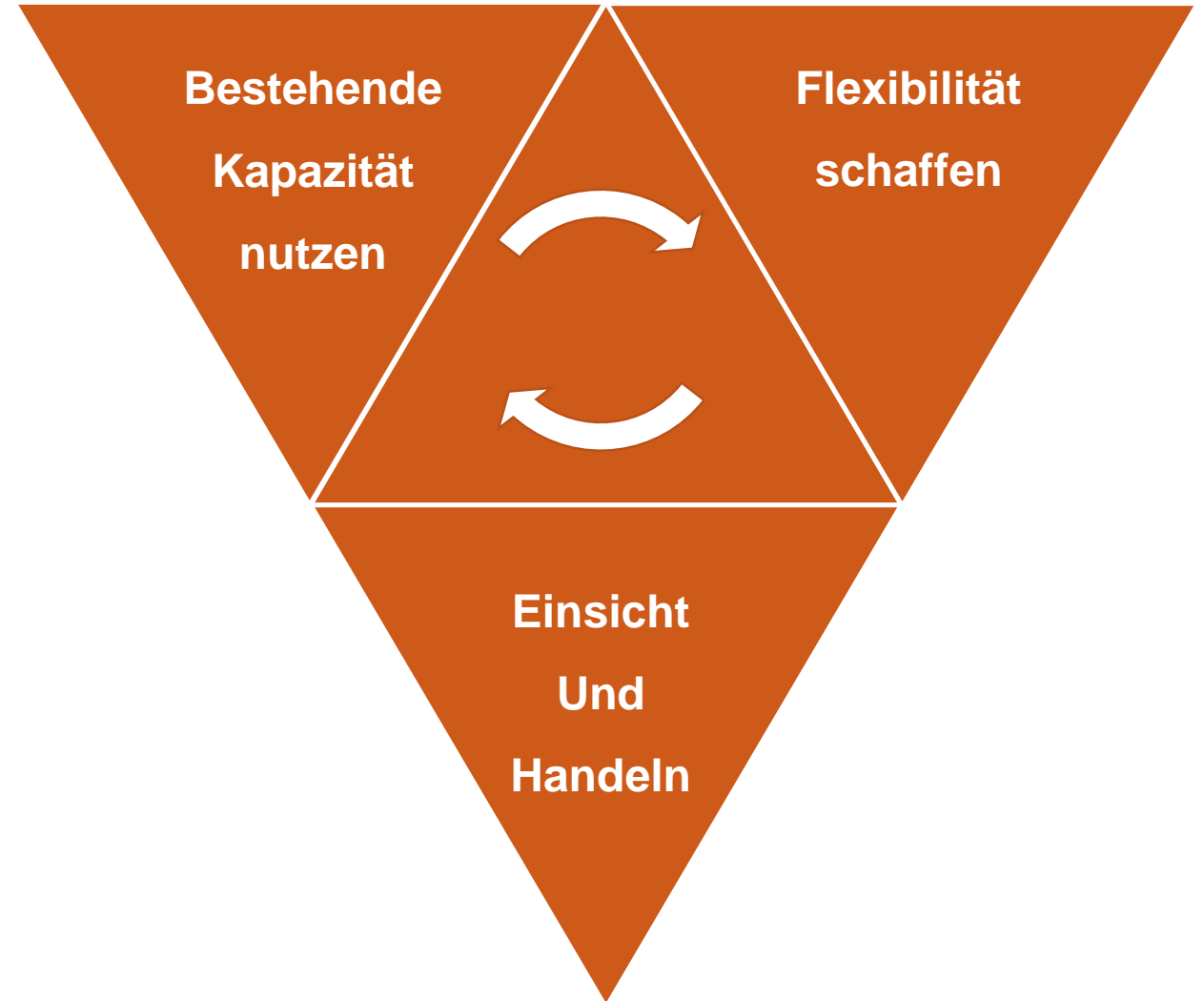
NS Netz in die Niederlanden ist dünn ausgelegt (gas-infrastruktur).

- Spannungsprobleme
- Überbelastung

Das zu lösende Problem

Und die System Operations Ziele

allliander



Alliander Virtual Grid



ALLIANDER
CENTRAL

COMMODITY

CENTRAL

POWER & GAS

UNLOADING TECH

SECURITY BY DESIGN

LOCAL

SURVEILLANCE

Safety Stability

DMS CASE

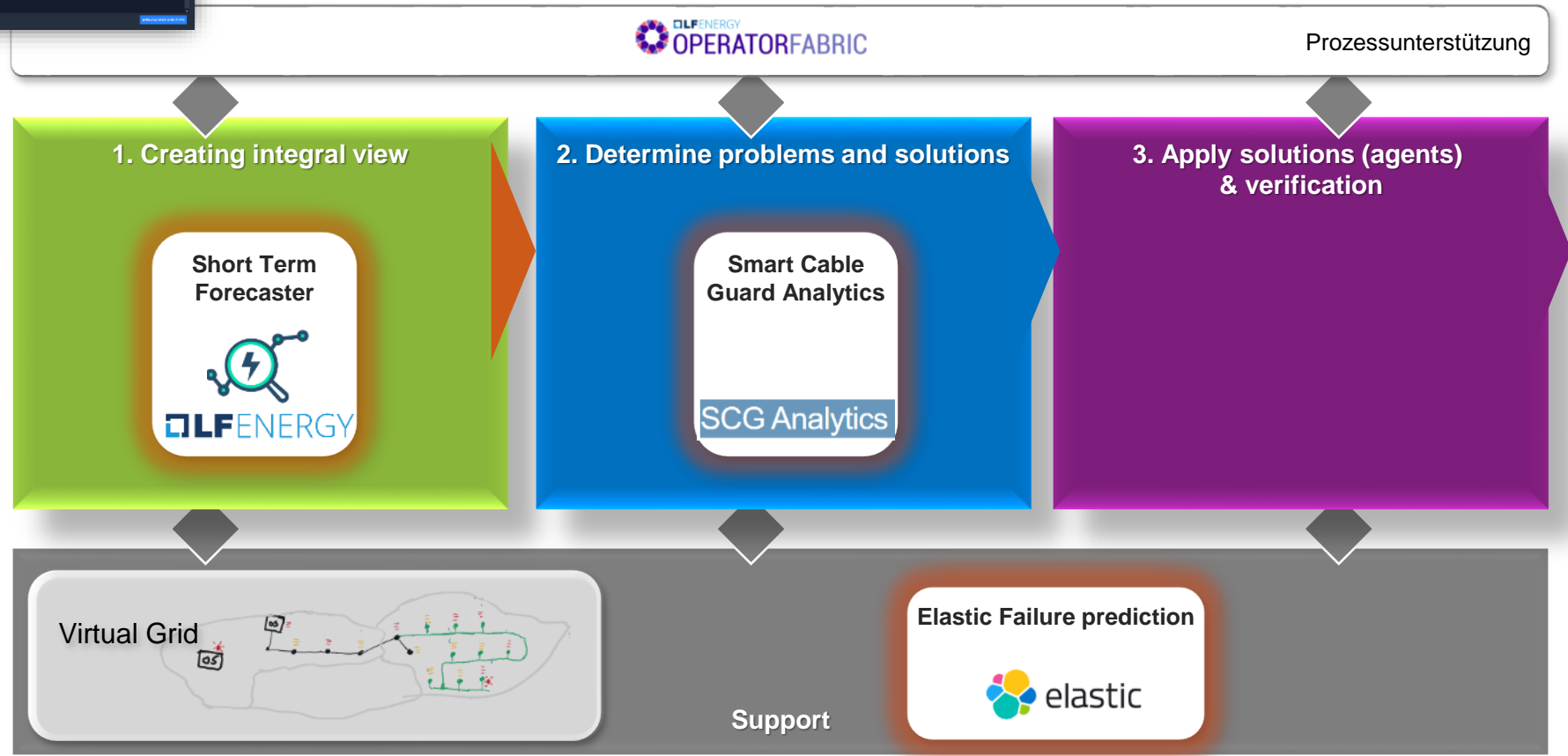
Engineer

Plan

Deploy

Unsere KI-Agenda

Unser SO-Betriebsführungssystem ist die Basis für unsere Agenda



1. Open Short Term Forecasting

KI als Input für das Engpass Management



Operational Dashboard

[API Docs](#)

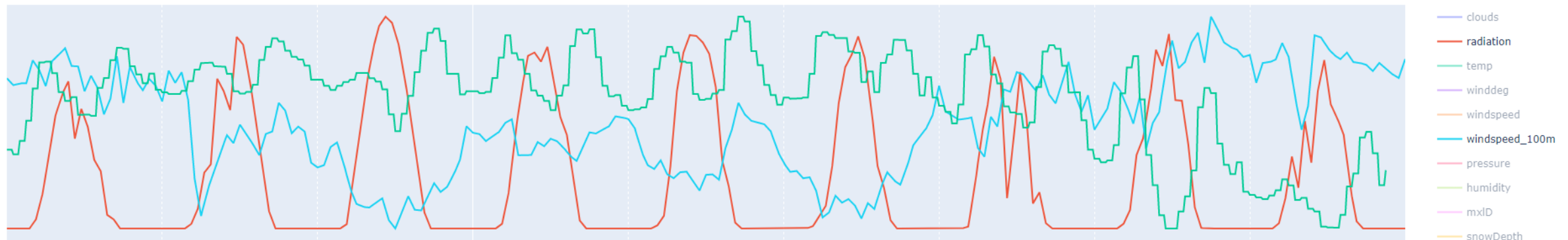
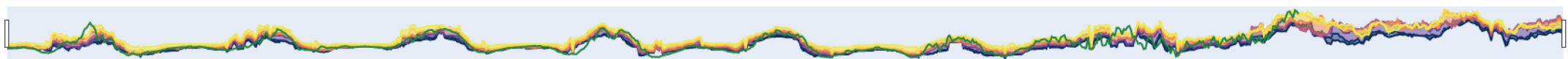
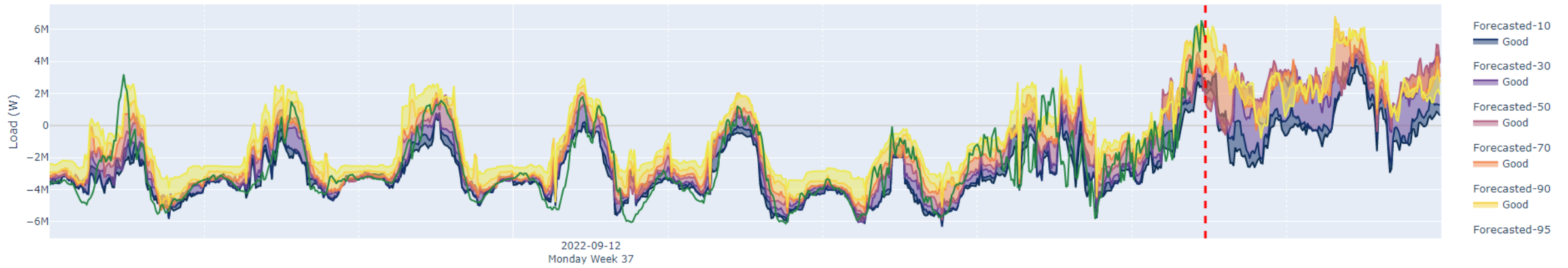
mRID
99120451-786d-5761-86c9-58f2a29013c5

measurementType
ThreePhaseActivePower

Start
2022-09-09

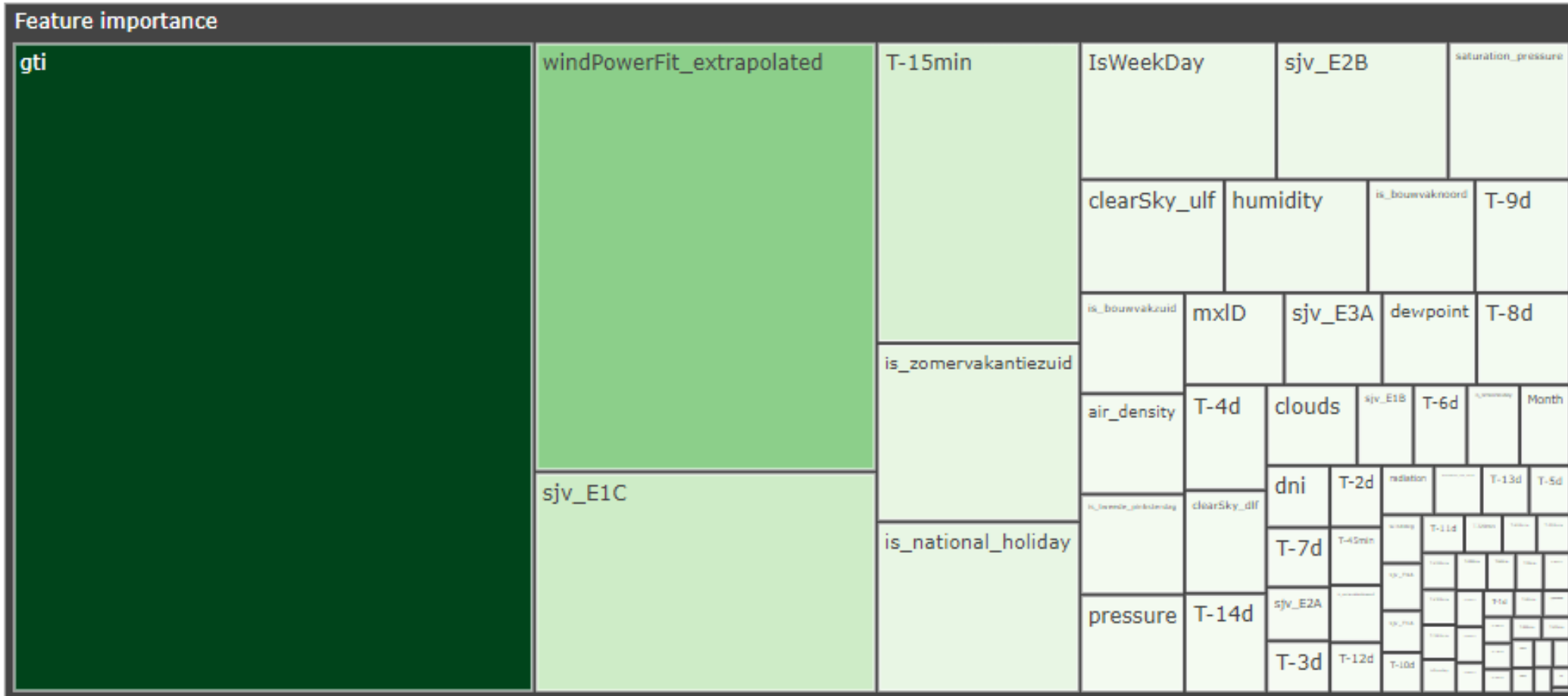
End
2022-09-18

Go



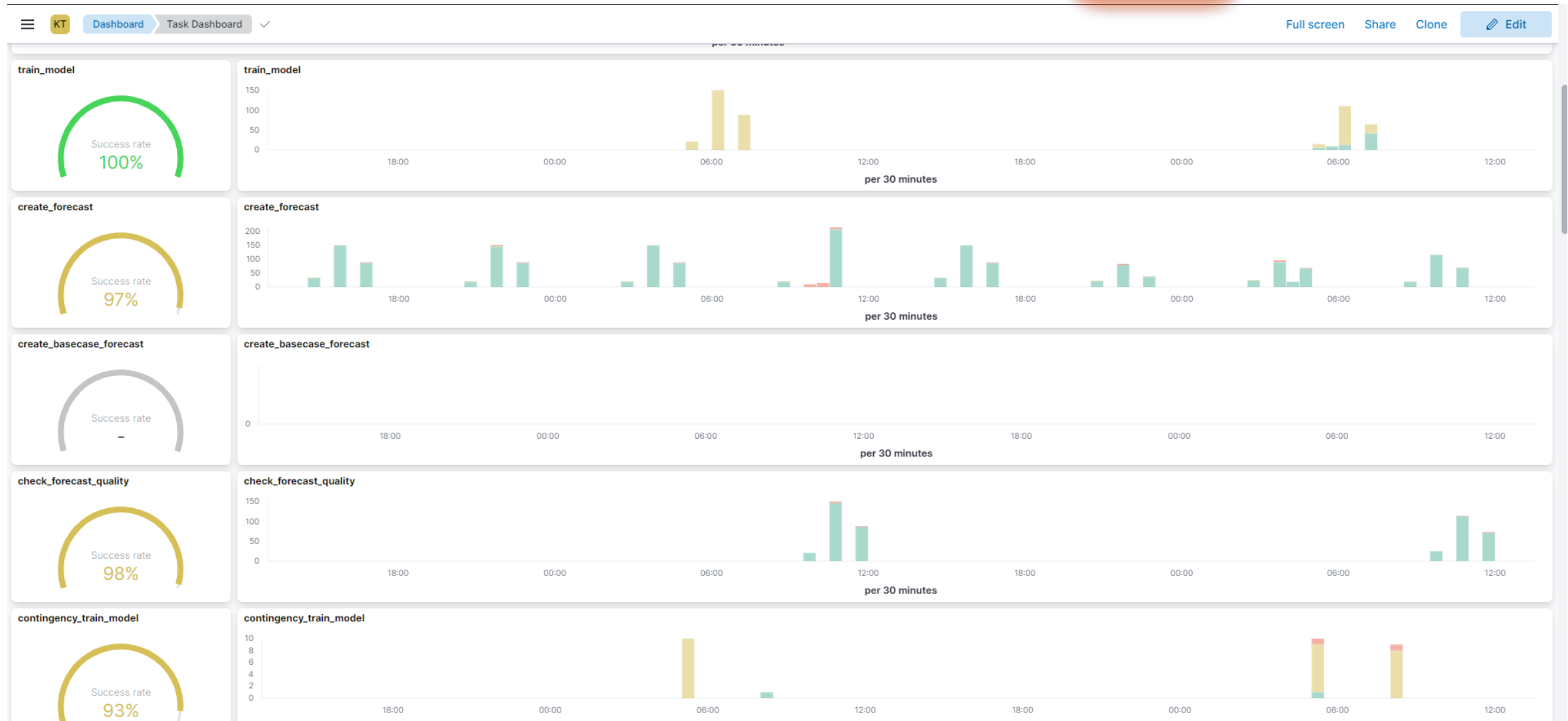
1. Open Short Term Forecasting

Maschinelles lernen im Hintergrund



1. Open Short Term Forecasting

Prognose benötigt? Automatisiert bereitgestellt!



2. Smart Cable Guard Analytics

Kabelfehler Vorhersage und thermische Belastbarkeit



SCG Analytics Platform

UPDATE

23828 - [FPL 207462] - OS ENKHUIZEN - ELZENBAAN (ENK 10-2V167)

Distance
604

Bandwidth
1 pct

Time resolution
1d

Warnings
Select...

Components
Select...

Date range
2022-05-01 → 2022-05-31

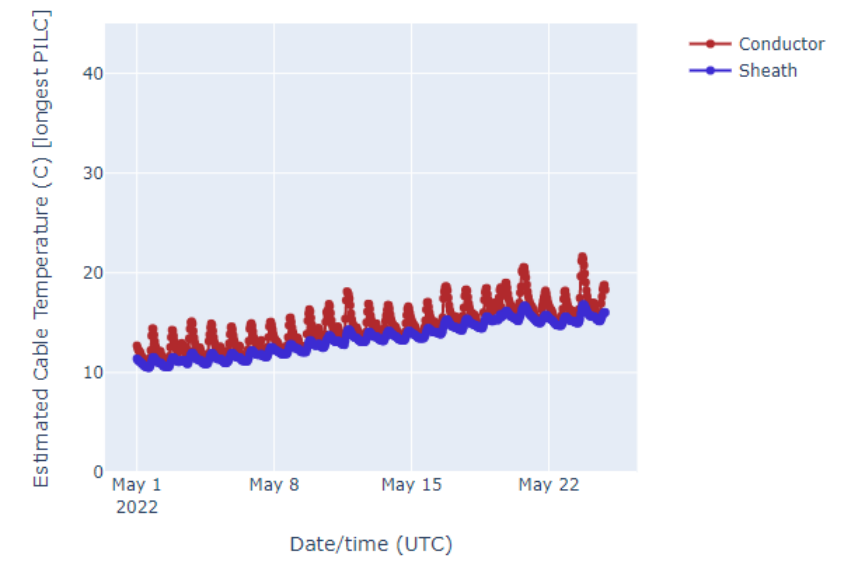
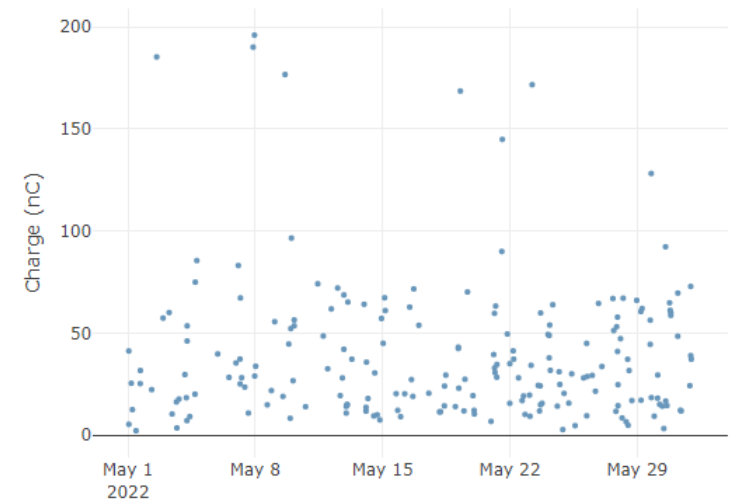
Choose preset date range
three months

Data summary
Latest update: 2022-09-01
Number of active circuits: 2304
Number of joints measured: 39835
Kilometers of cable measured: 6191
Number of joints in data: 65974
Kilometers of cable in data: 10255

[FPL 207462] - OS ENKHUIZEN - ELZENBAAN (ENK 10-2V167)

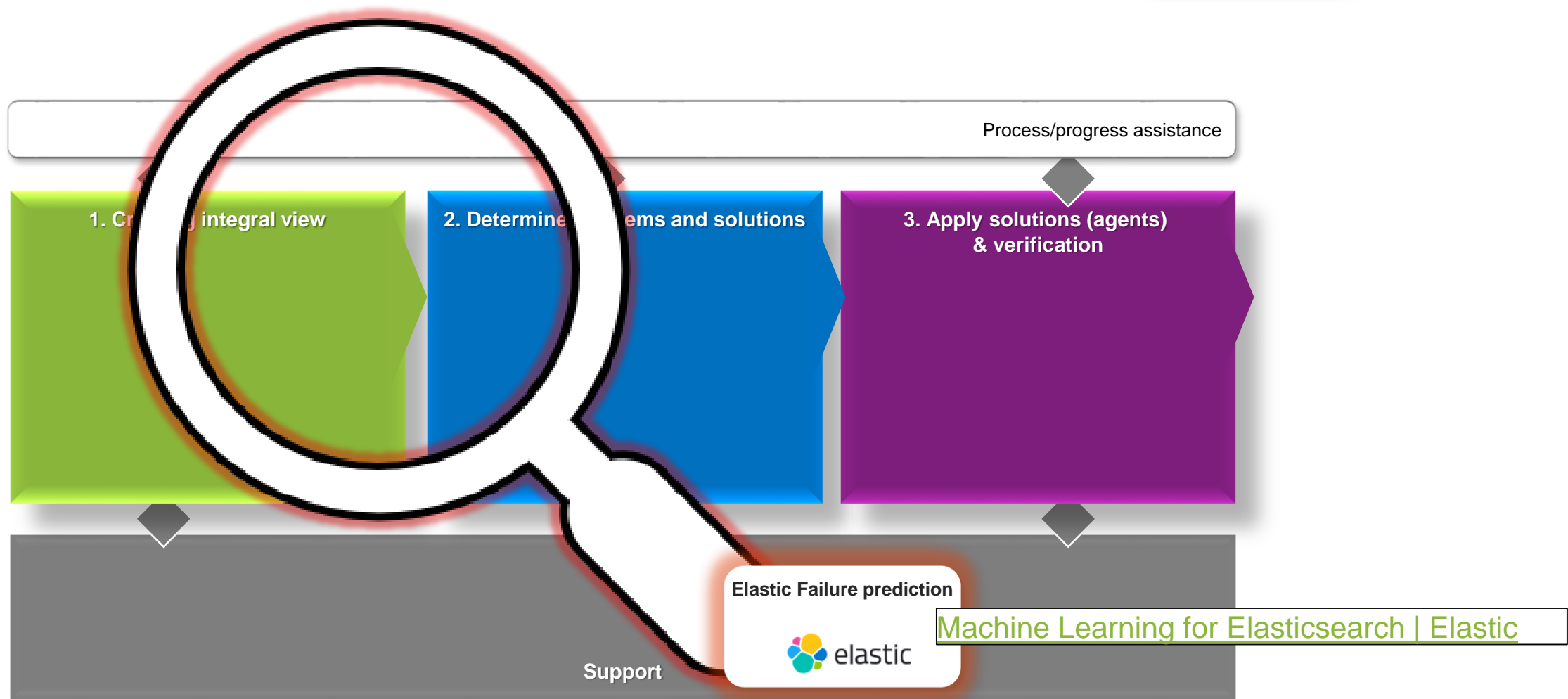
Time-charge at location

Model-2 Temperature (dyn)



3. Elastic failure prediction

Fehler in der Betriebsführung wollen wir im Voraus erkennen!



Zum Schluss

Links



Herzlichen Dank

Alliander

Linux Foundation Energy

OpenSTEF

Operator Fabric

Smart Cable Guard (basis)

Smart Cable Guard analytics

Machine learning for Elastic

[Welcome - Alliander](#)

[Home - LF Energy](#)

[OpenSTEF - LF Energy](#)

[OperatorFabric - LF Energy](#)

[Smart Cable Guard](#)

[Contact presenters](#)

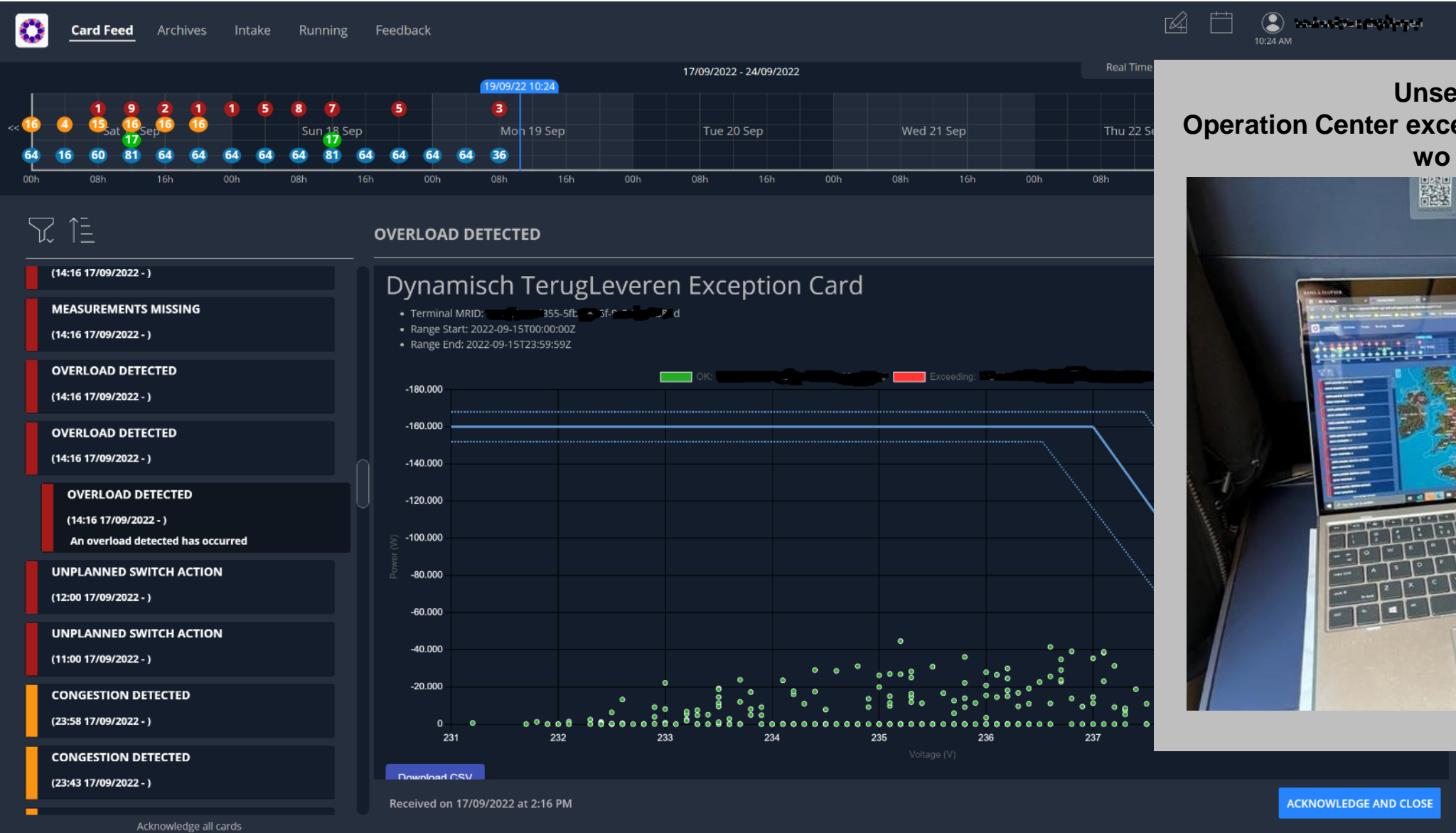
[Machine Learning for Elasticsearch | Elastic](#)

Zusätzliche Folien

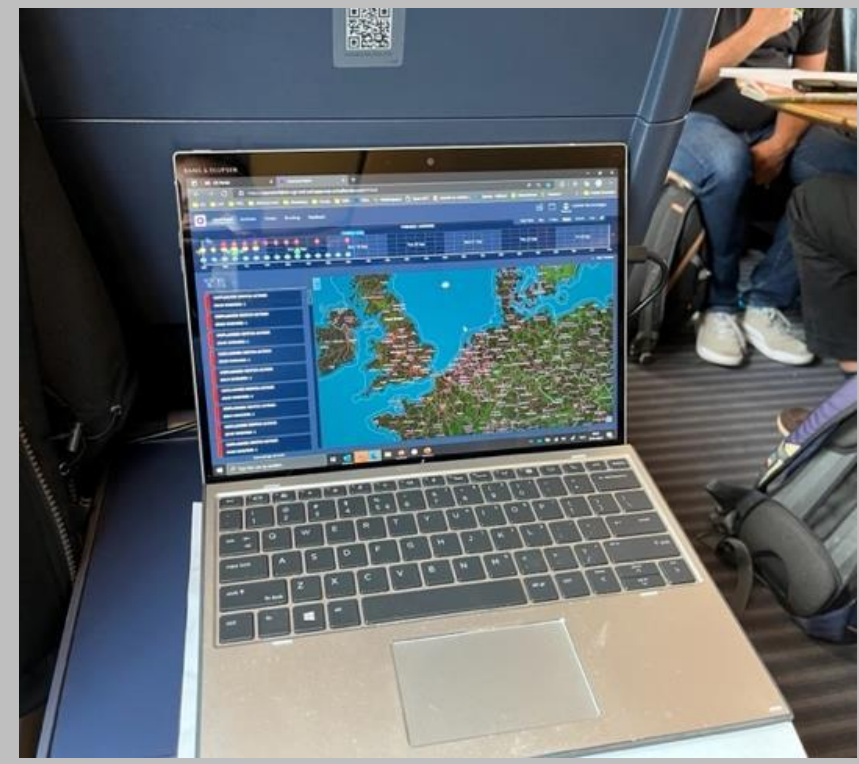
Back-up

SO Betriebssystem

Exception Operations (status 19. Sept. 2022)



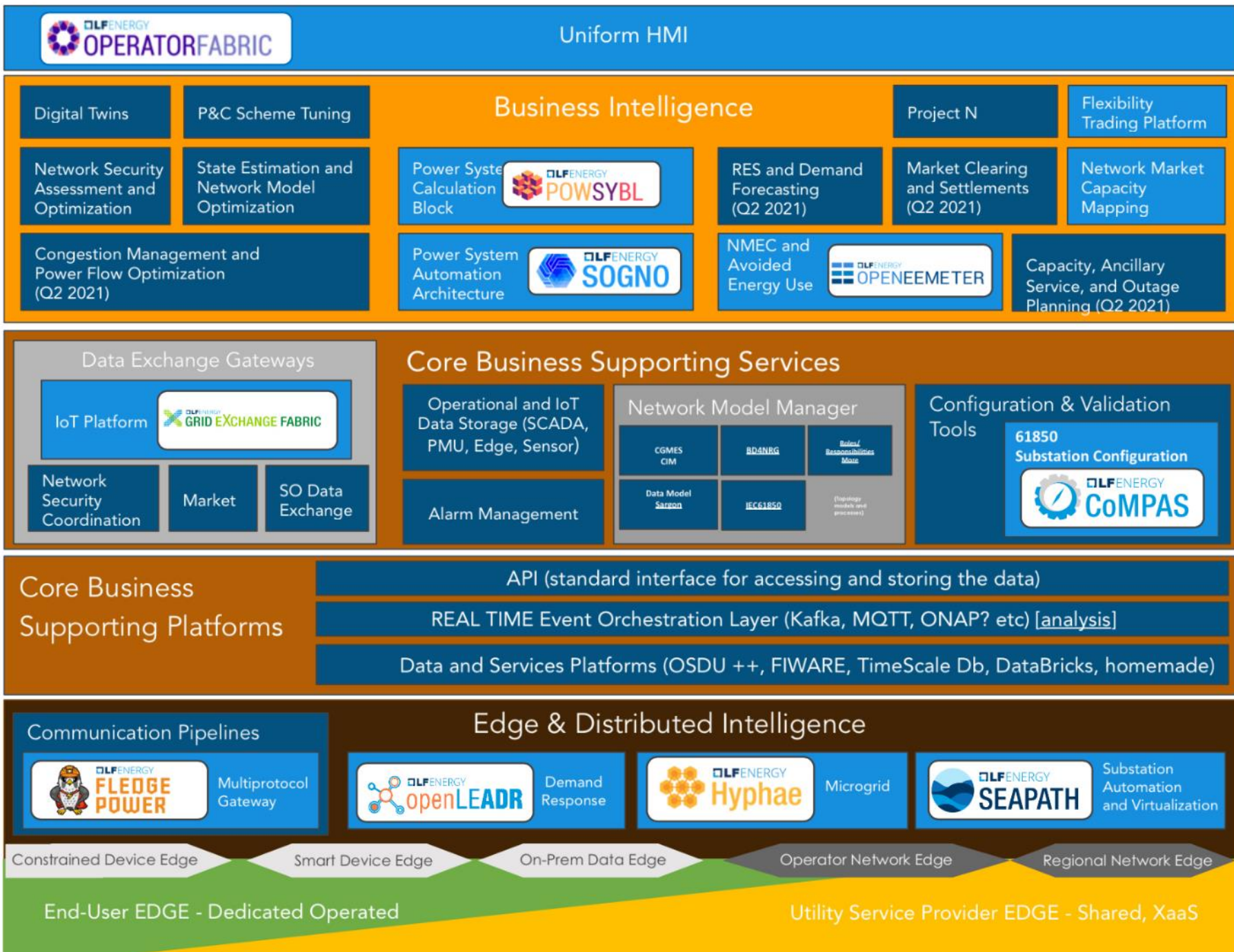
Unsere Vision
Operation Center exception Betriebsführung ist
wo ich bin:





Application Catalogue

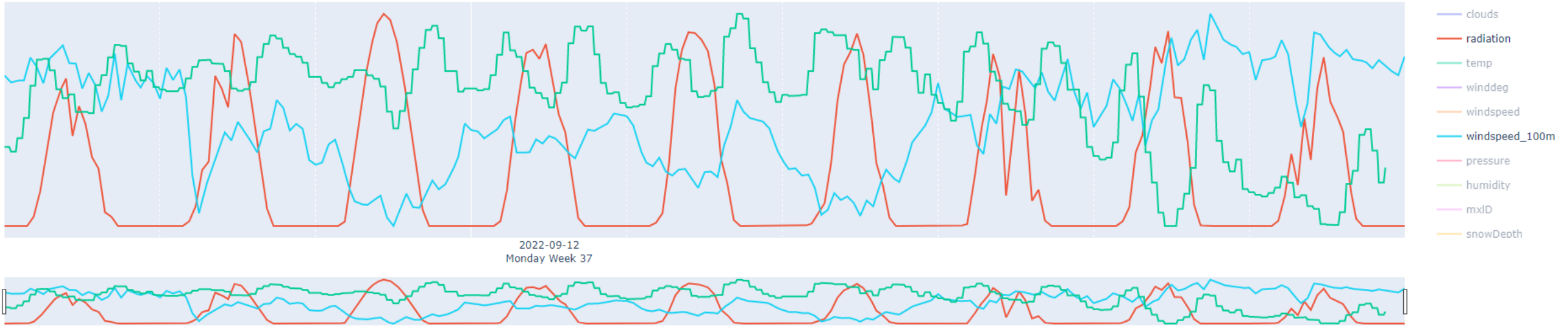
Infrastructure



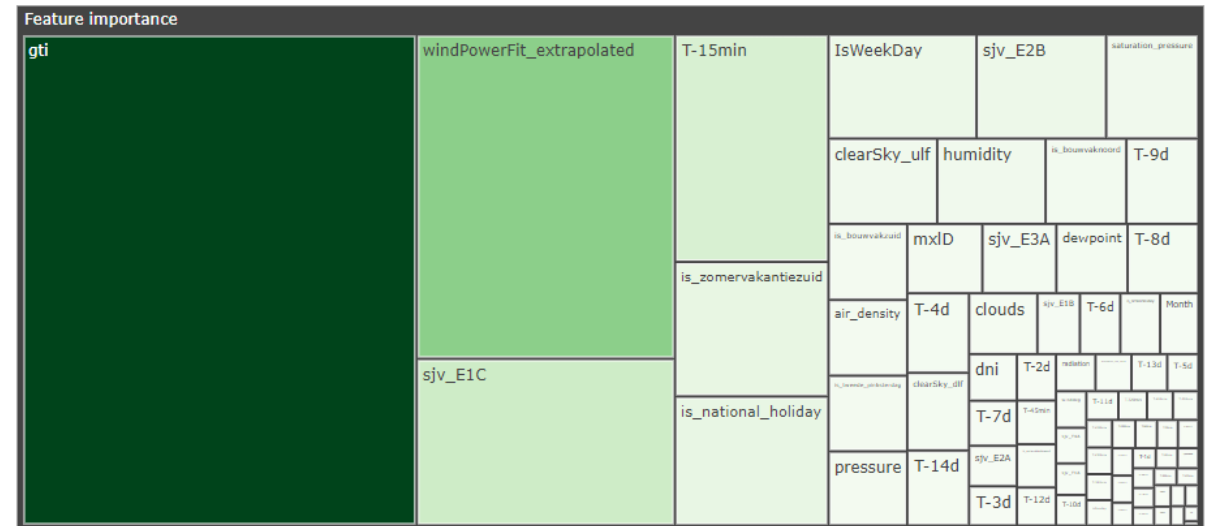
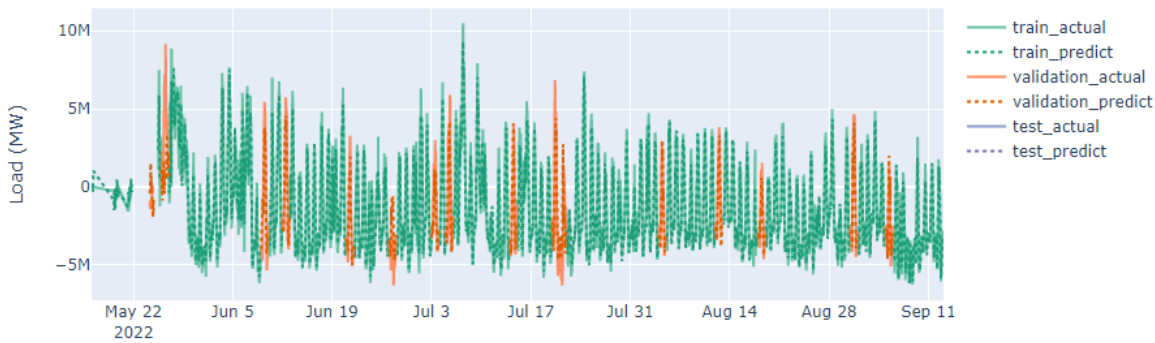
Security

1. Open Short Term Forecasting

Basic dashboarding



Predictor in action for horizon: 48.0



1. Open Short Term Forecasting

IT monitoring



KT Dashboard Task Dashboard

Full screen Share Clone Edit

Search KQL Last 2 days Show dates Refresh

+ Add filter

Options Tasks

Run source Contingency Name Contingency mRID Task Name Task Type mRID

Status

Active Alerts

Alert Start per hour	Name	UUID	Reason
2022-09-16 09:00	Tasks failed Contingency CreateForecast	9cac67b9-7606-4287-9c1b-f73b73b4842b	4 log entries (more than or equals 1) match the conditions.
2022-09-16 10:00	Tasks failed Contingency TrainModel	01765ef8-176a-4c28-9bb0-743174318b1d	2 log entries (more than or equals 1) match the conditions.

DDD Forecast Available in Telemetry Registry

per 60 minutes

train_model

1. Open Short Term Forecasting

Quality monitoring

