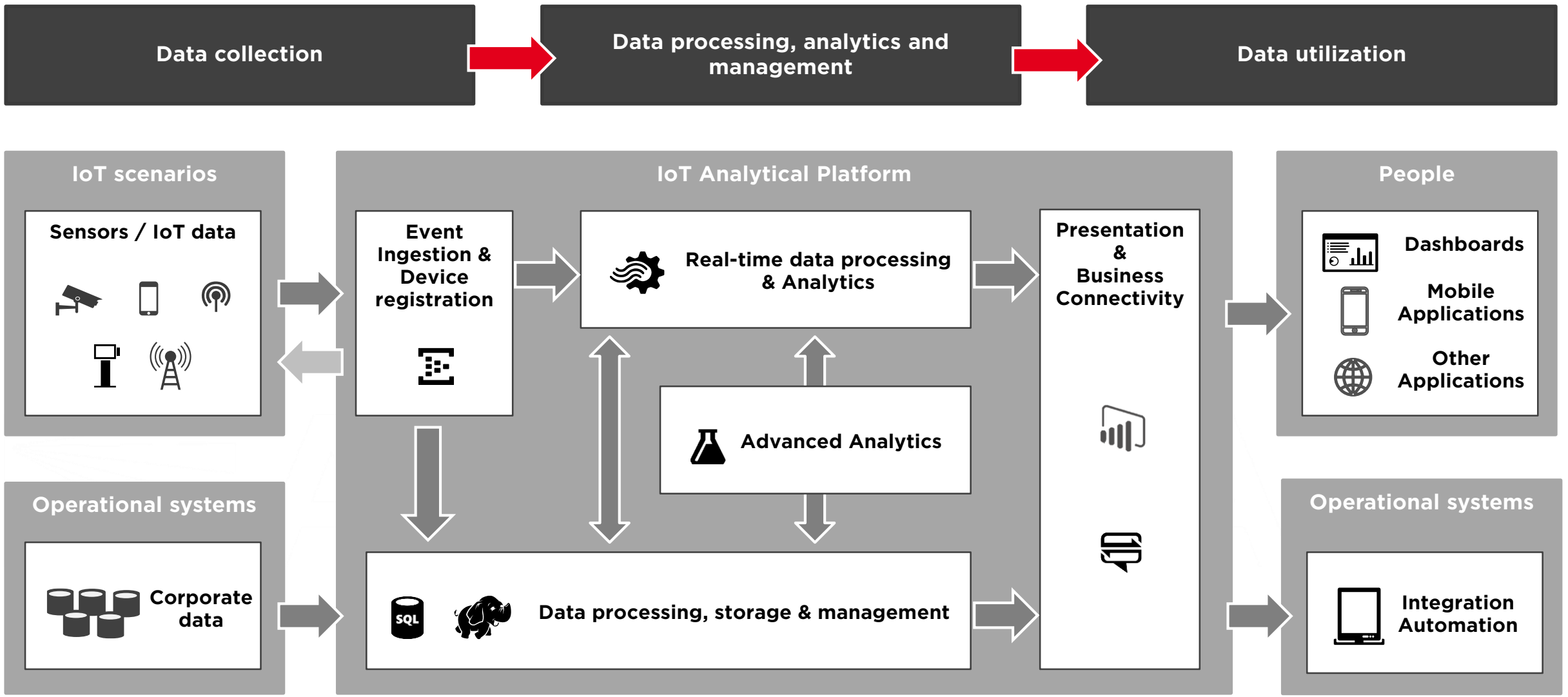
ADASTRA

Monitoring & Tracking

Returnable packaging monitoring

Adastra IoT Platform - Architecture



Returnable Packaging Assets Tracking and Shipment Monitoring

Smart pallet

Returnable packaging monitoring

Smart pallet

The “Smart pallet” solution makes possible to obtain useful information about reusable packaging material (Containers, pallets, totes, bins, ULDs…) manipulation.

Based on the information you can:

- **respond** operatively to pre-defined events (notifications - e-mail, SMS)
- **evaluate** the use of pallets visible in dashboards

Possibilities of using the solution for Smart Pallets:

- Detection of improper **pallet handling**
- Pallet **localization**
- Ambient temperature **monitoring**

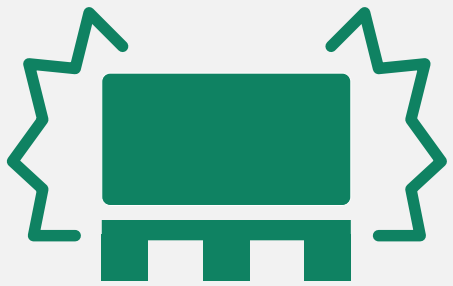
Solutions & Benefits

- ✓ Reducing the cost of purchasing new pallets and maintaining existing pallets.
- ✓ Reduction of losses associated with damaging the pallet or transported goods due to improper pallet handling.
- ✓ Reduction of losses associated with non-compliance transport or storage temperature of goods.
- ✓ Higher efficiency of pallet utilization, improved control and delivery planning, reduction of pallet misuse.
- ✓ Ensure quality assurance of goods during transit.

Possibilities of using

Detection of improper pallet handling

- Aim is to detect the handling of the pallet, which may damage the pallet or the transported goods.
- An accelerometer is used for detection, which allows to detect the following events:
  - Shock
  - Tilt

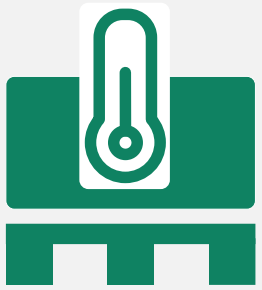


Pallet localization

- Goal is to monitor:
  - where the pallets are located
  - pallet movement over time
  - leaving / entering a defined area
- Location of the pallet allows:
  - Detect the accumulation of pallets
  - Monitor the movement of the pallet between logistics centers and control the delivery time.
  - Identify the presence of the pallet in known areas.
  - Detect cases where the pallet is completely outside the intended area.

Ambient temperature monitoring

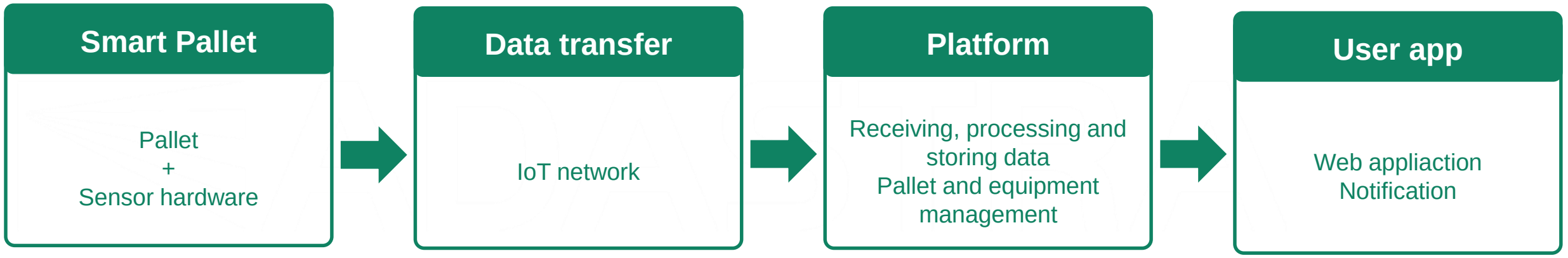
- Aim is to control storage and transport conditions.
- By measuring the temperature, it is possible to find out temperature conditions and warn if the temperature is outside the required threshold.



How it works

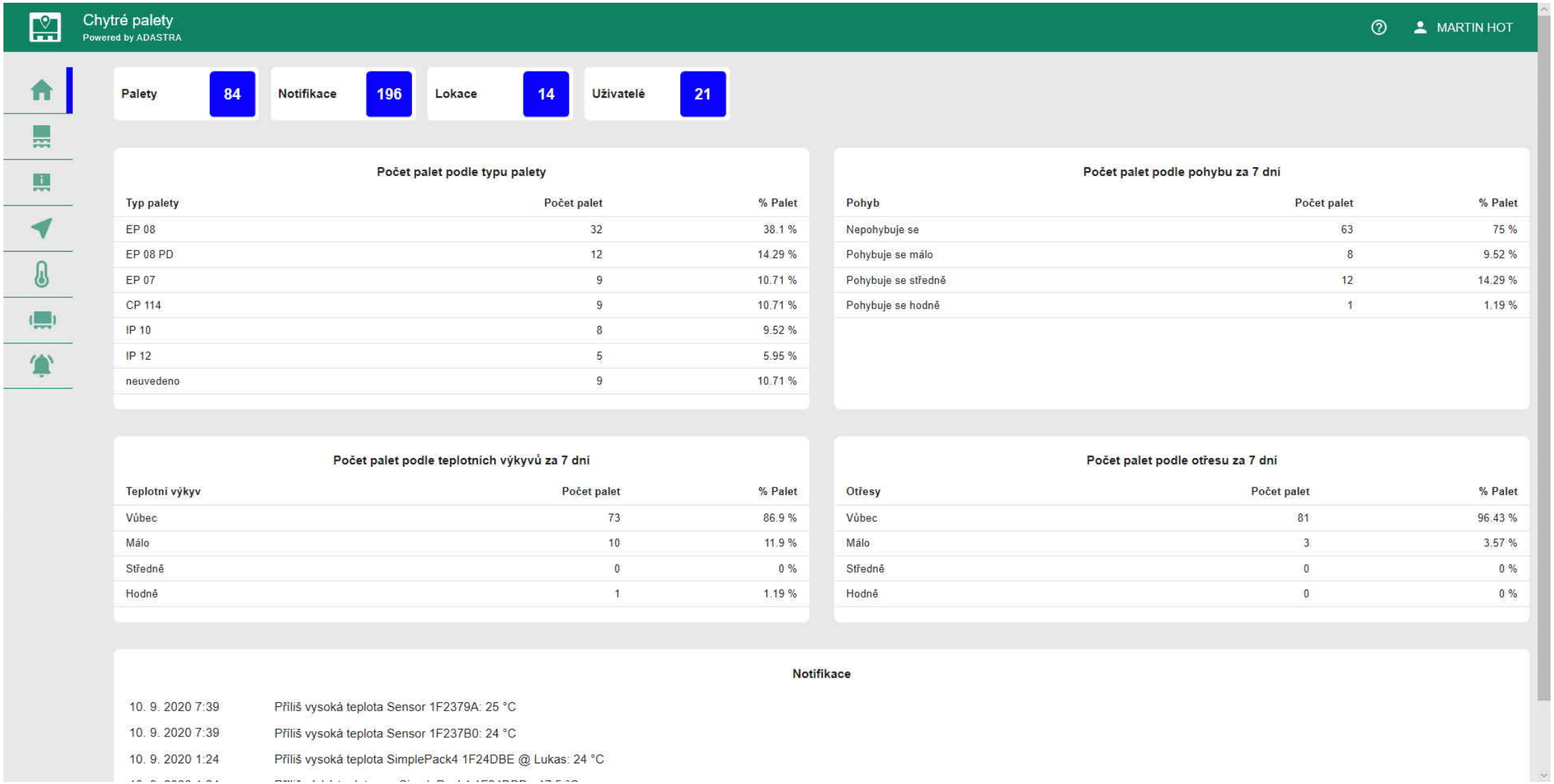
The solution for "Smart Pallets" consists of the following components:

- Pallet is equipped with a device containing sensor for collecting the necessary data.
- IoT network for data transfer from the device to the "Smart Pallets" platform.
- The platform for "Smart Pallets", which ensures the receipt, processing and storage of data.
- User applications for data access.

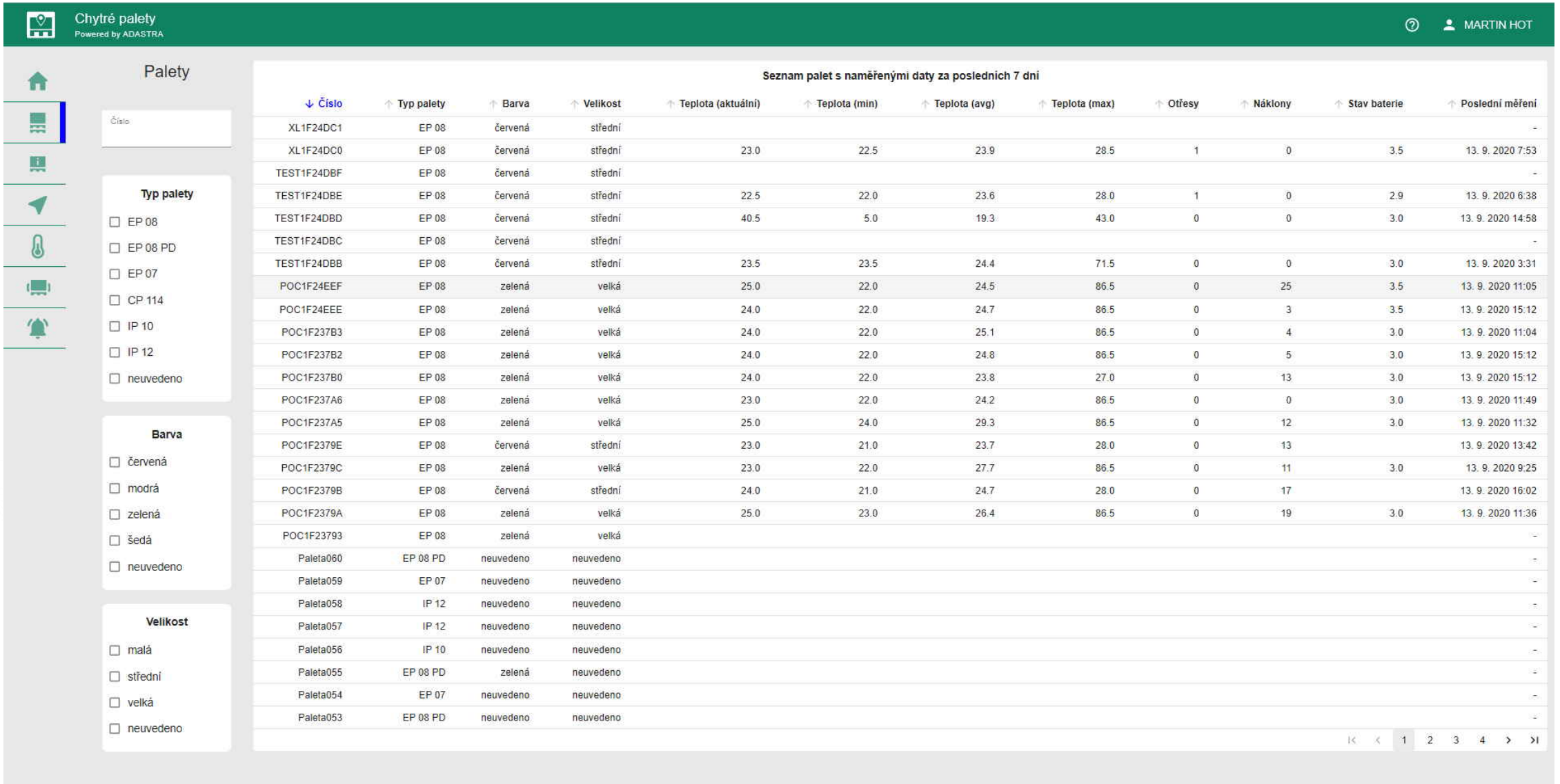


Web appliaction

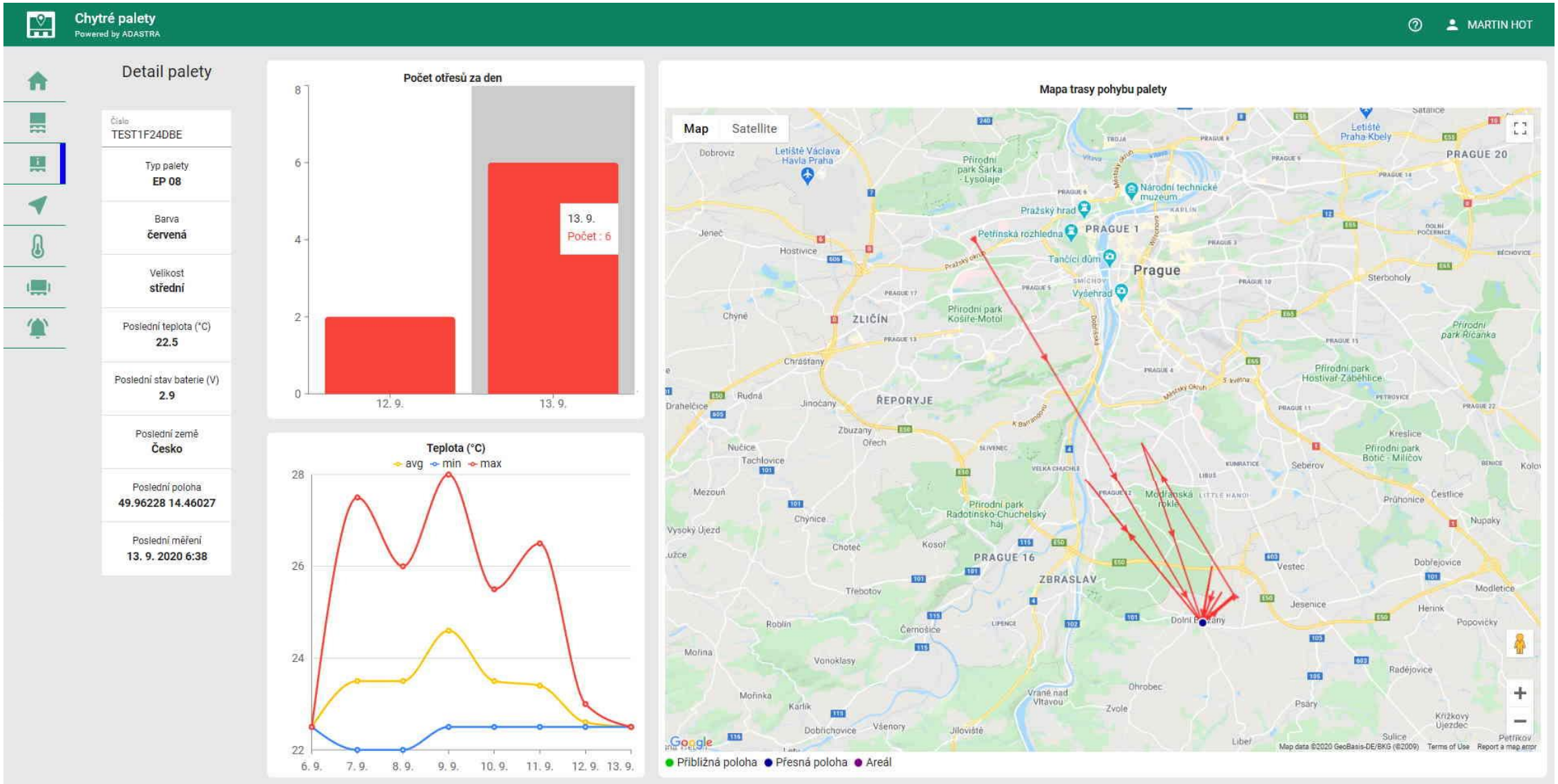
Web application



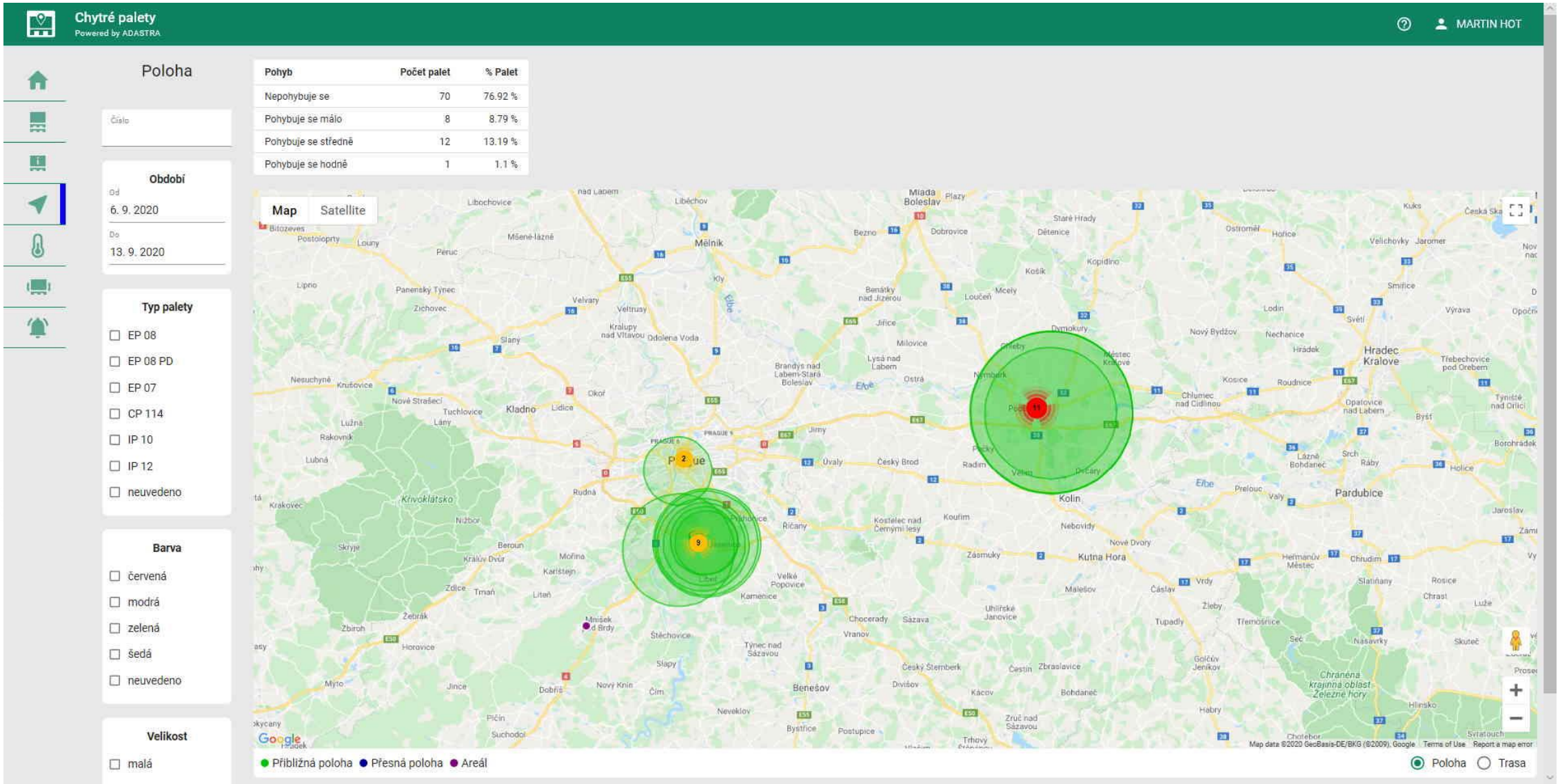
Web application



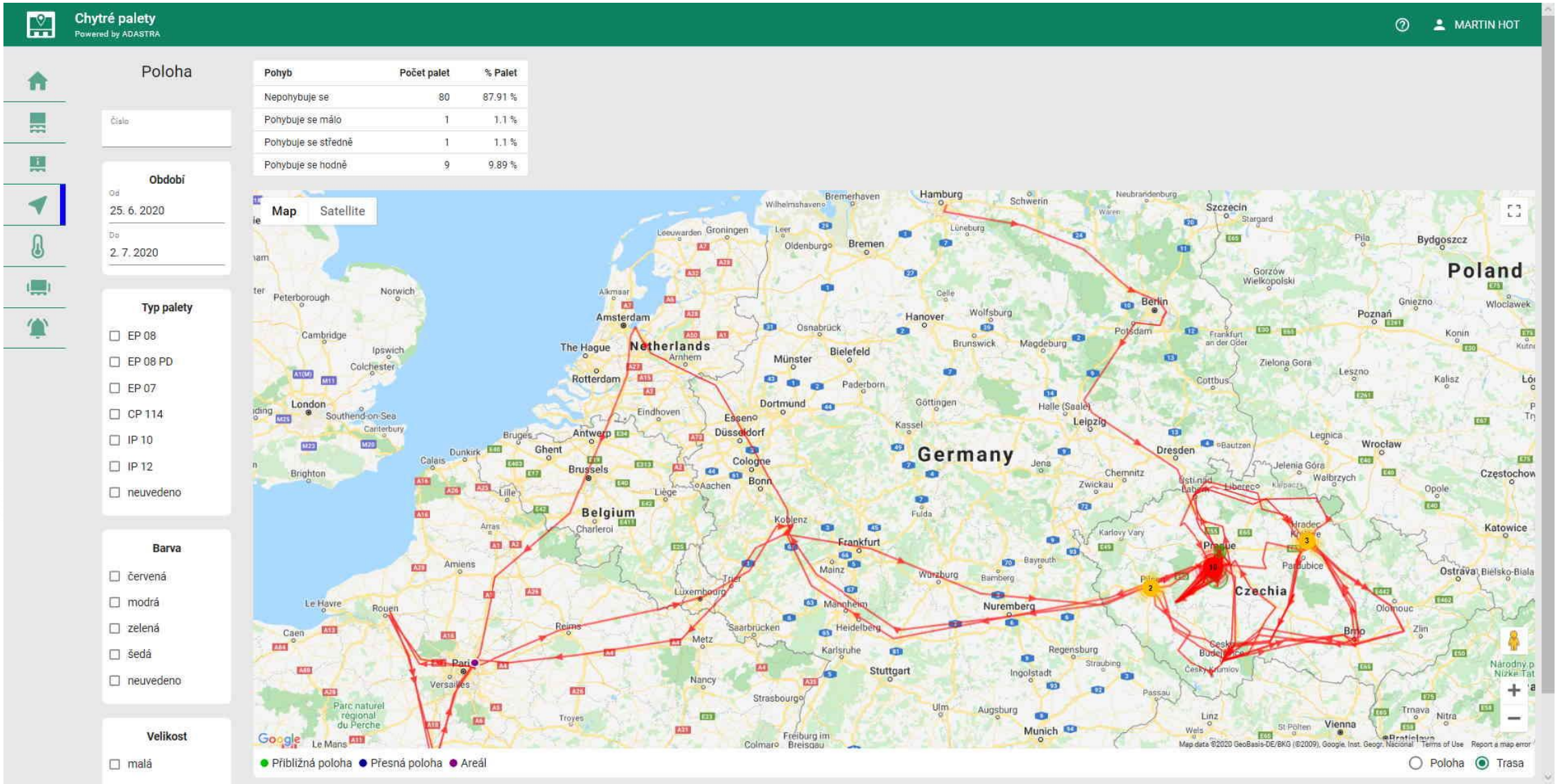
Web application



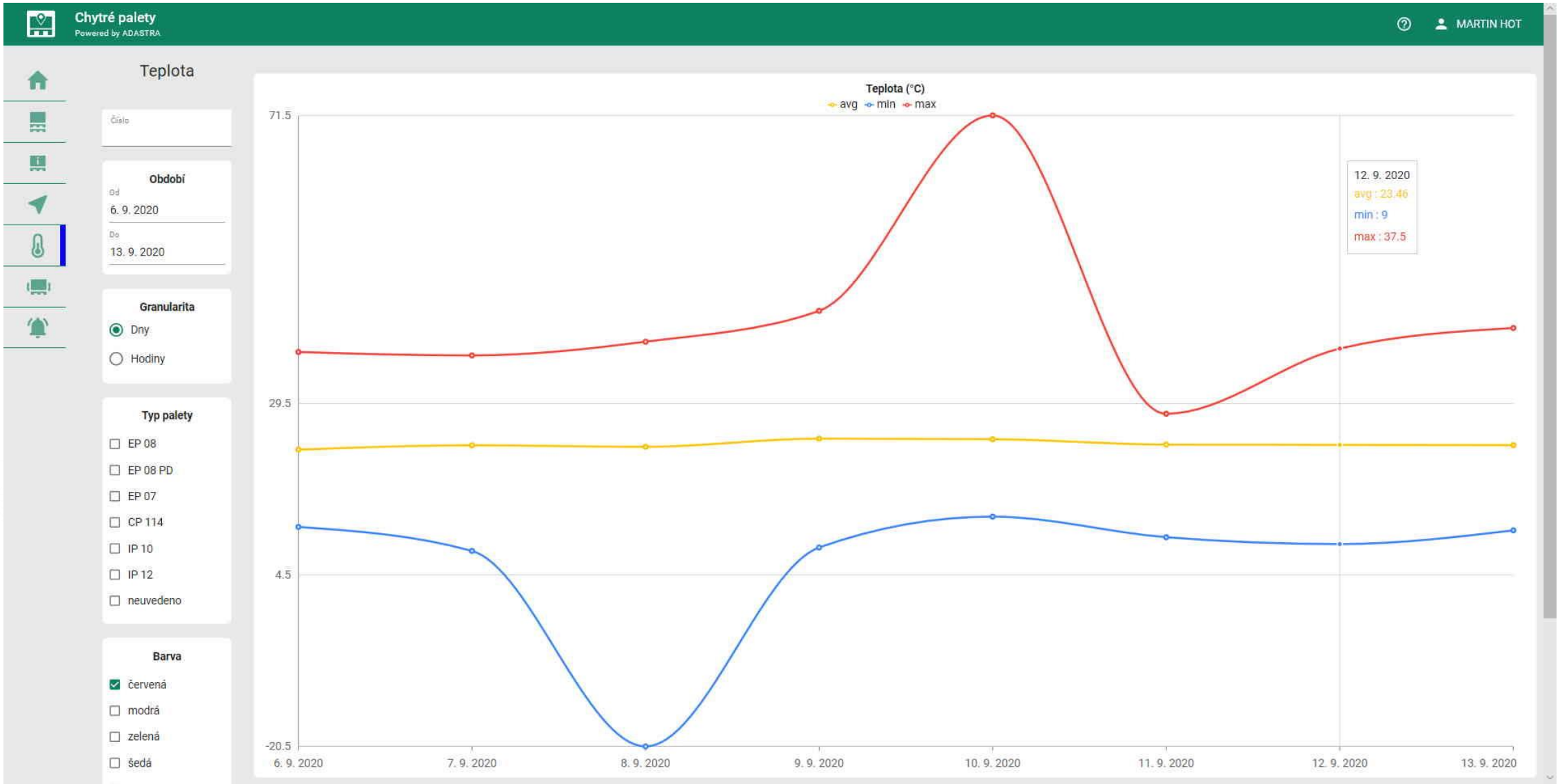
Web application - Location



Web application - Location



Web application - Temperature



ADASTRA

Key References

Our clients

References

Adastra in manufacturing & logistics companies

Combination of **Business Consulting** & **Software**

(Business Analysis, Project Management, IT Analysis & Development, Operation & Support)

Full **Digitization** Coverage

(Planning & Budgeting, Artificial Intelligence, Big Data, Data Management, Mobile Applications, IoT, Digital Marketing)

Long-term **Cooperation & Partnership**

(Ernst&Young, IBM, SAP, Sabris, ABC, Blindspot, Adastra One and more)

Container Loading Optimization

Automotive | Operational

Client Large manufacturer

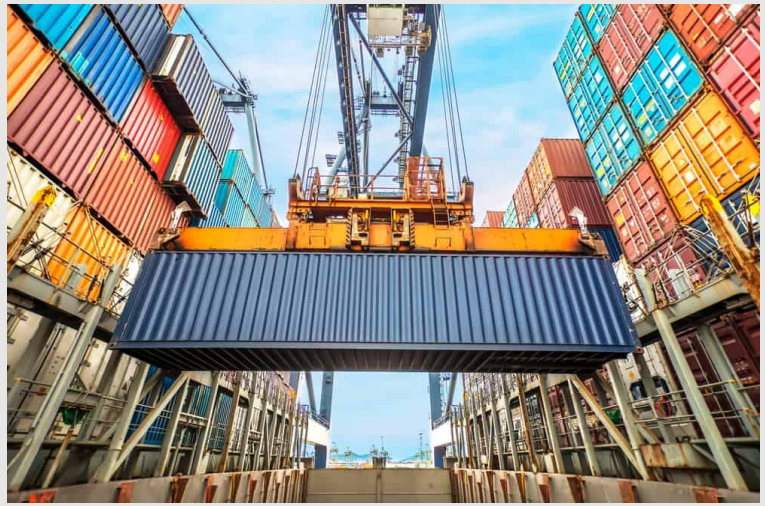
Goal Decrease the amount of "air" in shipping containers by loading them more efficiently

Action Prepared an optimization model considering cargo weight and dimensions, developed a tablet UI for the cargo loading team

Results Increased cargo volume loaded

Area Mathematical Optimization

Increased avg. volume loaded by 5%, translating into hundreds of containers saved each year.



Optimization of FMCG delivery routes

FMCG | Operatioal

Client — Crocodille CR

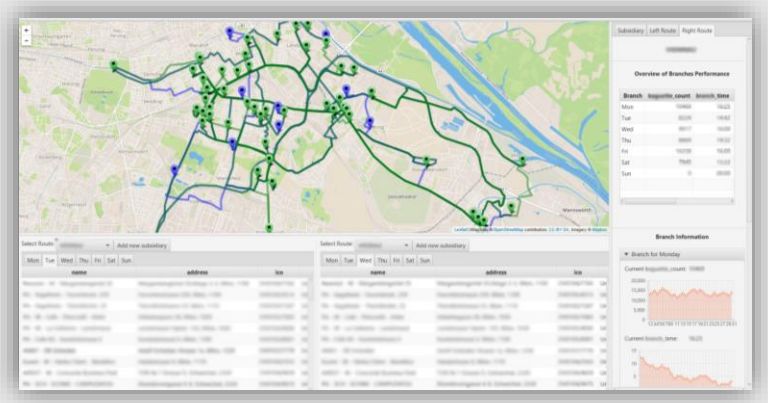
Goal — Digitization of the logistics planning process. Optimization of existing delivery routes. Planning of new delivery routes in new regions.

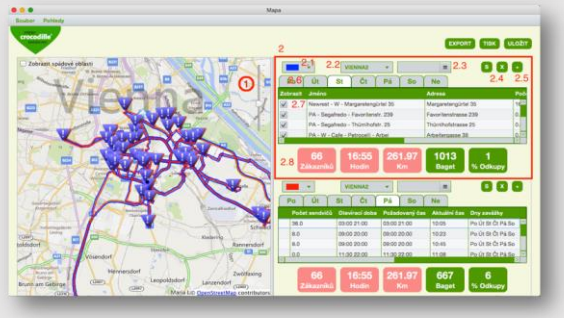
Action — Development of custom logistics planning application build on an optimization engine. Ability of automated route planning with manual override.

Results — Redesign of the route planning process, digitization and standardization of company logistics planning. Optimization of routes resulted into 30% costs savings.

Area — Logistics, FMCG, optimization, route planning

Enablement of business expansion.
Saved up to 30% of travel costs.





Optimization of inter-warehouse transportation

Manufacturing | Operational

Client — Barum Continental

Goal — Minimize the inter-warehouse transports required to collect all ordered items of a particular order dispatching

Action — Develop a new tire distribution algorithm and a web-based application which suggests where to store the produced items such that the future need of inter-warehouse transportation is minimized

Results — More orders can be dispatched from a single warehouse directly, limiting the inter-warehouse transportation to minimum.

Area — Warehouse operation optimization, Internal logistics planning

More than 60% reduction of inter-warehouse transportation costs.

Capacity planning in automotive

Automotive | Operational

Client	Large manufacturer
Goal	Automation of process for planning of production which suffered by long planning cycles, errors and high operational costs.
Action	Customization and integration of Blindspot's Manufacturing Planning Solution enabled generation of capacity plan in minutes instead of days.
Results	Scheduling process automated, done in minutes instead of days. Eradicated errors.
Area	Optimization, manufacturing planning, workforce orchestration, scheduling process automation

Scheduling time decreased from days to minutes.

Transportation optimization

Automotive | Proof of concept

Client Large manufacturer

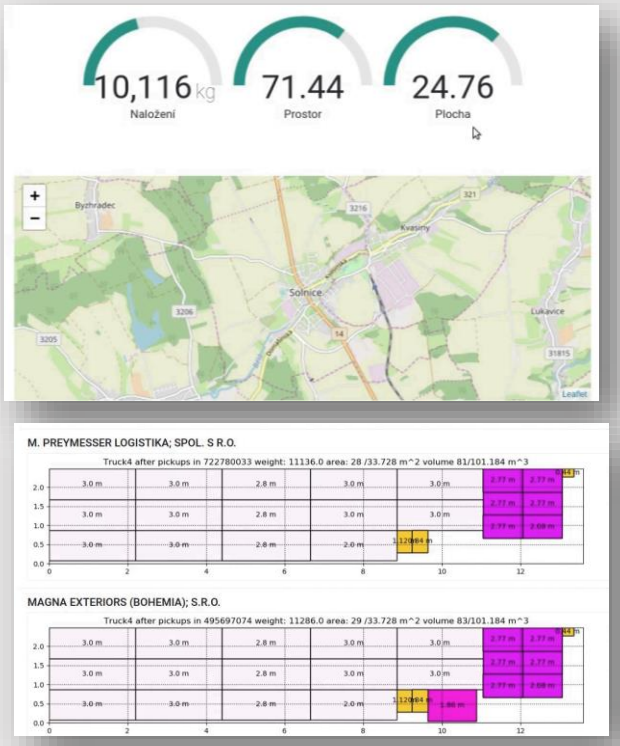
Goal Decrease overall costs related to delivery of the goods from suppliers to the manufacturing plant.

Action Customization and integration of Blindspot optimization platform TASP enabled planning of efficient transportation from various suppliers to manufacturing plant.

Results Decreased costs for shipment of products.

Area Optimization, scheduling process automation

Costs of shipment decreased by 20%.
CO2 emissions reduced by 20%.



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