ROADLYTICS

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LSBG
Landesbetrieb Straßen,
Brücken und Gewässer
Hamburg

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AGENDA

01 INTRODUCTION

02 SITUATION & PROBLEM STATEMENT

03 OUR SOLUTION

04 ROADLYTICS LIVE DEMO

05 ROADLYTICS TEAM

06 Q & A


AR / VR
KI
BIM 5D
5G
DIGITALER ZWILLING
INGAP 2030– ARBEITSPLATZ DER ZUKUNFT
GRUNDLEGENDE VERÄNDERUNG DER BEARBEITUNGSWEISEN:
nachhaltige Innovationen und neue Produkte vereinfachen Arbeitsabläufe und
schaffen benutzerfreundliche, barrierefreie und technologisch aktuelle Arbeitsplätze

HAMBURG CONGESTION CAPITAL NO. 1

- **On average 131 hours (5.5 days) per year in traffic jams**

	Stadt	Tagesdurchschnitt	morgens	abends
1	Hamburg	34 %	54 %	61 %
2	Berlin	32 %	49 %	59 %
3	Wiesbaden	32 %	50 %	61 %
4	München	30 %	54 %	60 %
5	Nürnberg	30 %	47 %	56 %
6	Stuttgart	30 %	48 %	58 %
7	Bonn	29 %	52 %	61 %
8	Kassel	28 %	41 %	57 %
9	Bremen	27 %	36 %	55 %
10	Frankfurt a.M.	27 %	54 %	51 %

Quelle: Tom Tom Traffic Index 2020 (veröffentlicht 01/2020 für das Jahr 2019)
Grundlage: Analyse der Verkehrsmuster von Smartphones und fest verbauten Navigations-geräten in 416 Städten weltweit

WHAT ARE THE CAUSES?

Increase in private traffic

Traffic light control

Accidents and weather events

Construction sites

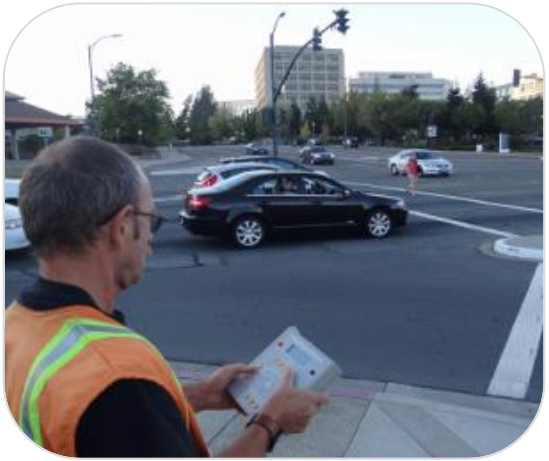
Second row parking

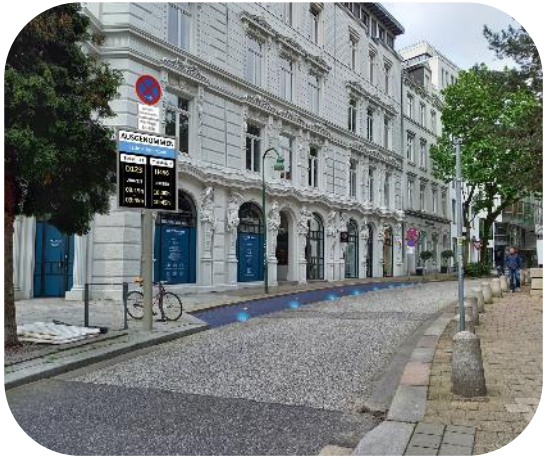
Increase in delivery vehicles

SITUATION

- **Increase of Ecommerce**
- **Delivery Services are fastest growing sector in Road traffic**
- **Shortage of suitable parking location**
- **Inappropriate parking**
- **Increase in Congestion**
- **Including risks to road users, pedestrians and cyclists**

SITUATION





Traffic planners struggle to minimize the impact of the increasing volume of vans.

Currently, parking areas are defined based on manual counting once or twice per year.

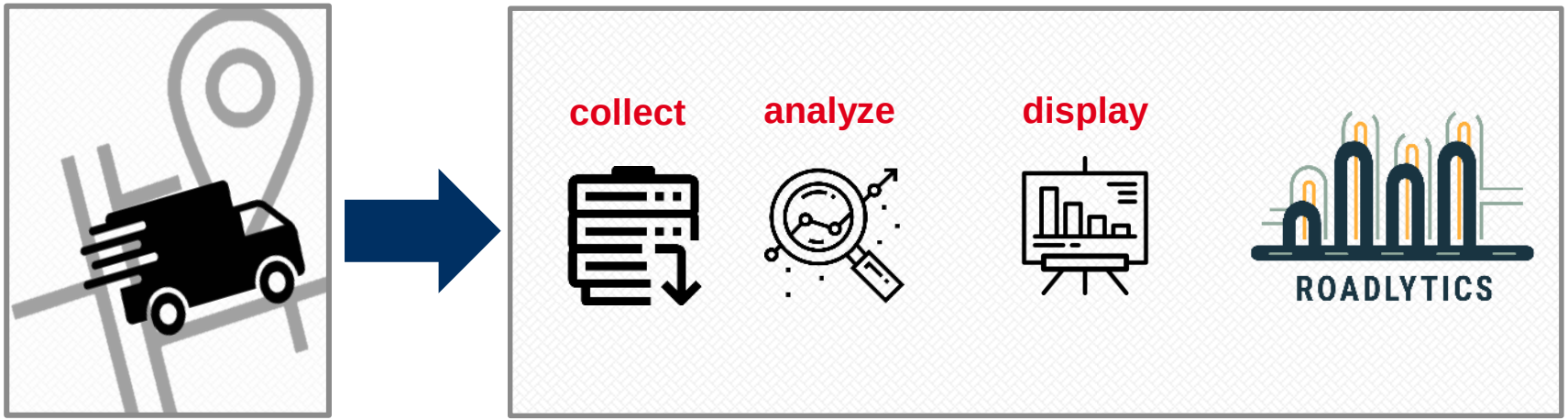
A better understanding of delivery van's traffic is needed in order to find solutions that address the problem properly.

WOULDN’T IT BE GOOD IF PARKING VIOLATORS AND VANS OF LOGISTIC SERVICES DID NOT DISTURB THE TRAFFIC FLOW ANYMORE?

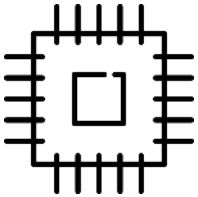
SOLUTION

WHAT IS ROADLYTICS?

Roadlytics is an automated system to collect, analyse and display traffic and parking data of delivery companies and/or other private or public service providers.



ROADLYTICS IN A NUTSHELL

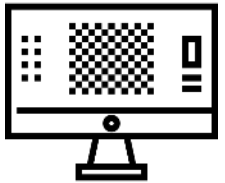


Portable / hand-sized IoT device will be placed in vehicles

Devices collects geolocation data (GNSS)

(time, latitude, longitude, number of connected satellites, accuracy level, battery voltage etc.)

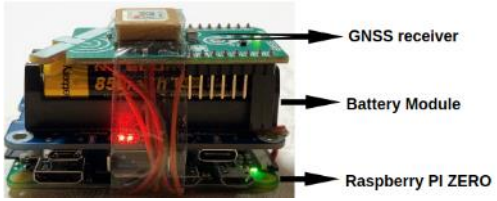
Data is stored, processed and analyzed on Cloud



Analyzed data is displayed on a map-based UI

PROTOTYPE VARIANTS

Prototype 1 [Geospatial Data logger] – (Raspberry Pi + GNSS + Battery)

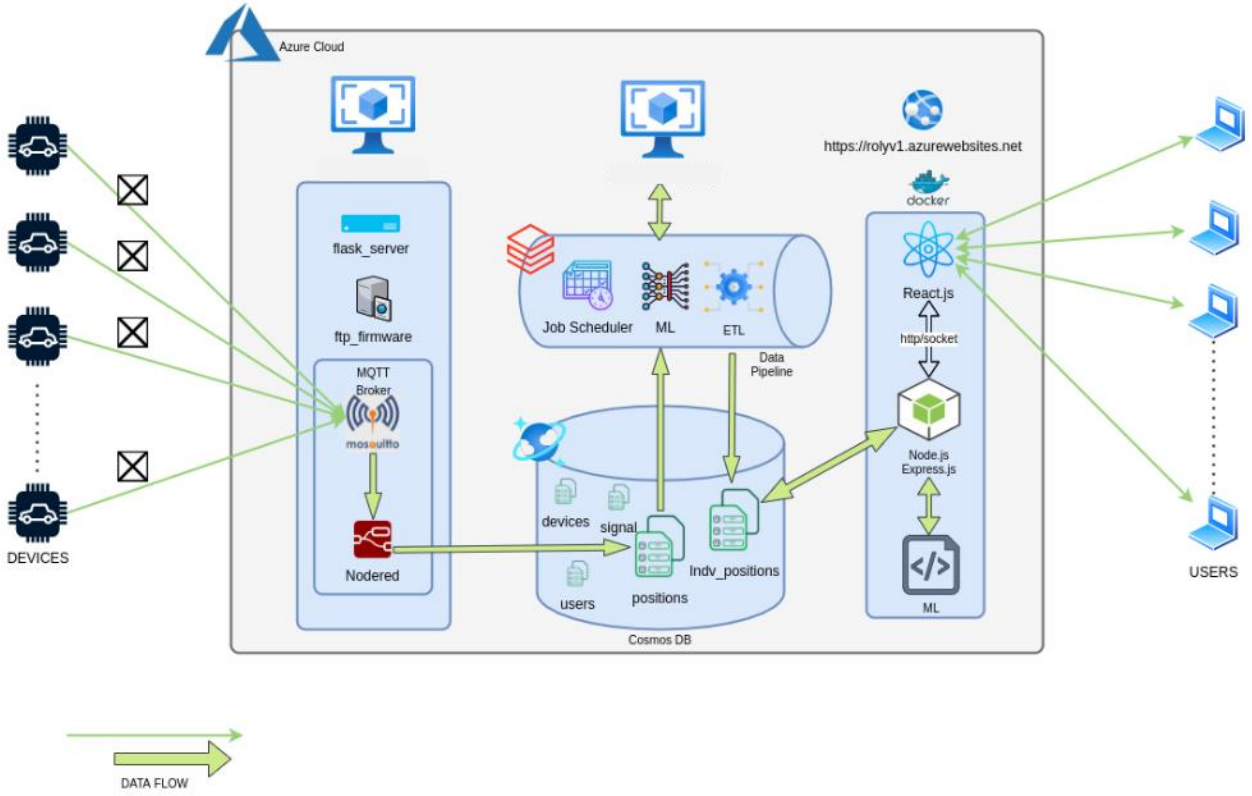


Prototype 2 – (Raspberry Pi + GNSS + WIFI + Battery)

Prototype 3 – (Raspberry Pi + GNSS + LORA + Battery)

Final Version –
Custom motherboard + high precision dual freq GNSS + other sensor elements + LTE-M + Battery(primary and secondary)

SYSTEM ARCHITECTURE



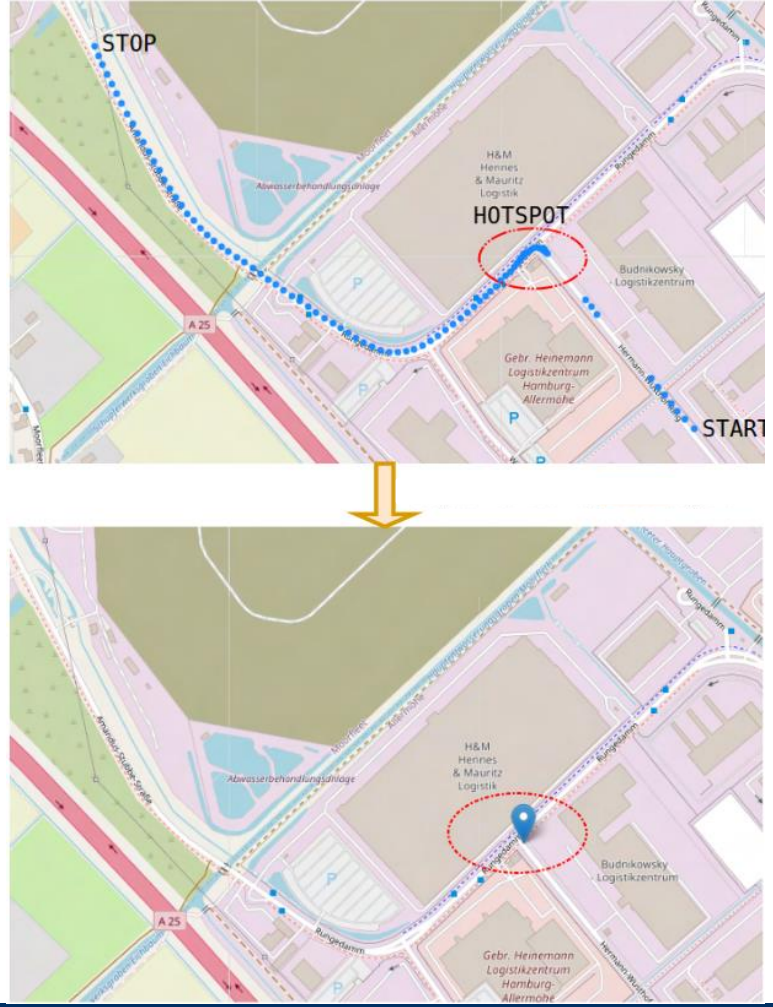
MACHINE LEARNING

1. HDBSCAN

- Individual STOP detection

Dataset size
- 5 million data points

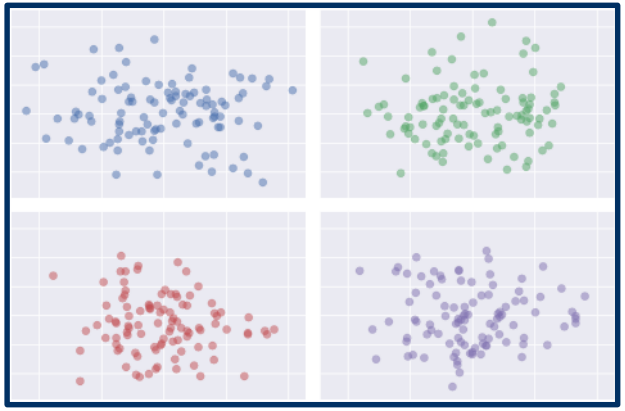
Features
- Latitude
- Longitude
- Speed
- Time



MACHINE LEARNING

2. DBSCAN

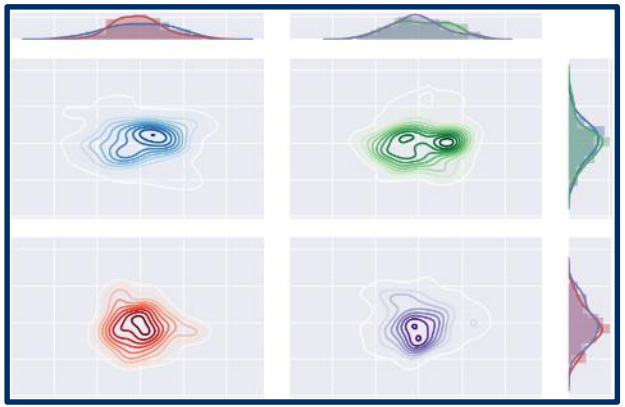
- HOTSPOT detection



Clusters of Individual STOPS

HOTSPOT

Amount of stops made by
Single/group of vans in a defined radius
With highest waiting time

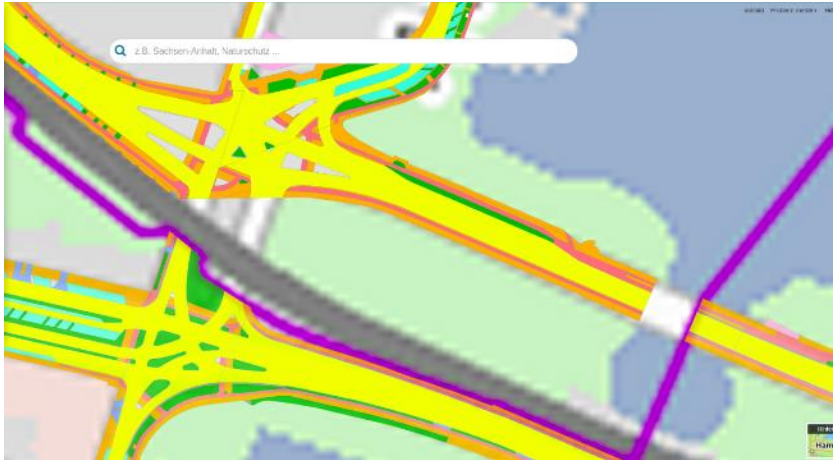


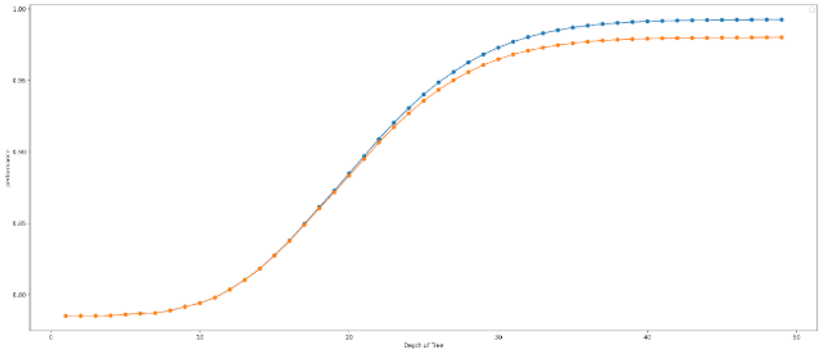
HOTSPOTS

MACHINE LEARNING

3. Decision Tree Classifier

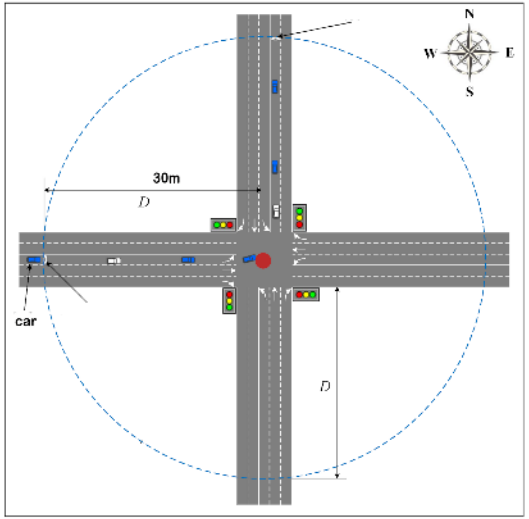
- Lane Segmentation
  - Bike Lane
  - Regular Parking
  - Second Row
  - Footpath
  - Undefined





MACHINE LEARNING

3. rTree DS
    - Classifying VALID / INVALID hotspots



ROADLYTICS TEAM

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SCAN ME

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IF WE WANT TO GO FAR, WE NEED TO GO TOGETHER.

Thanks a lot for your attention.

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