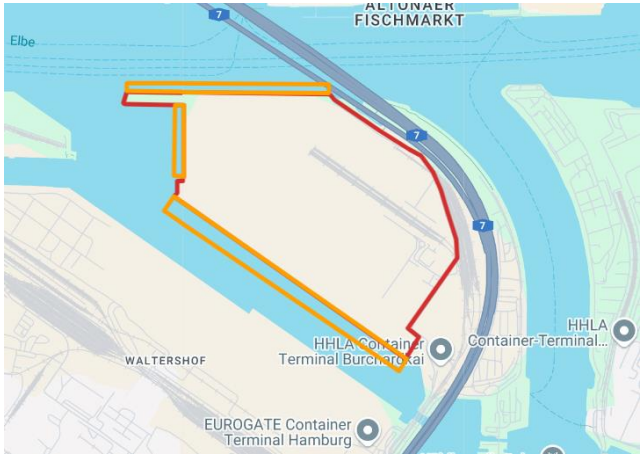
Geofence Use Cases

Rotterdam, 13 November 2024

Benefits of the Global Geofence Library seen by Hapag-Lloyd

- **Neutral, global source of truth**
- **High quality** of the Geofences, accuracy and detail – following the UN/CEFACT standard
- **Identifiers** of the geofences are the terminal- and depot codes which are already industry standard:
  BIC Facility Code (example ITGOAMEDA) and
  SMDG Terminal Code (example DEHAM+CTB)
- **Interoperability** among providers and partners

Example Geofence for HHLA Hamburg Terminal CTB
Red = Yard Yellow = Berth



Benefits of the Global Geofence Library seen by Hapag-Lloyd

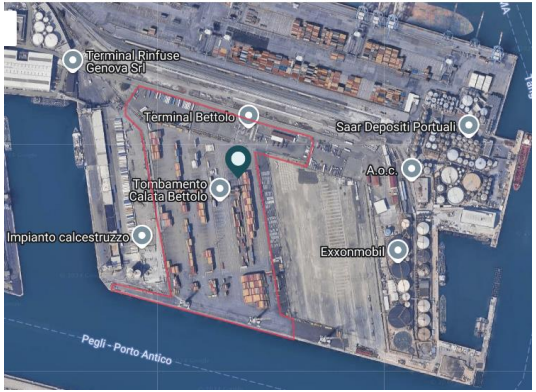
- Success of the GCGL depends on **adoption** by the industry in respect of
  a) usage in productive environment and
  b) support the creation of new geofences

- Good **growth** seen since last year.
  Good response by the BIC on Industry requirements.

- A central repository of geofences causes far **less effort** compared to maintaining an own global library

- Benefits for HL are upscaling with our Smart Container program and corresponding use cases

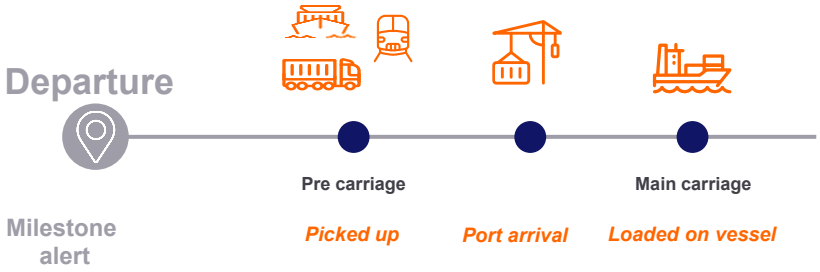
Example Geofence for Medrepair Genoa

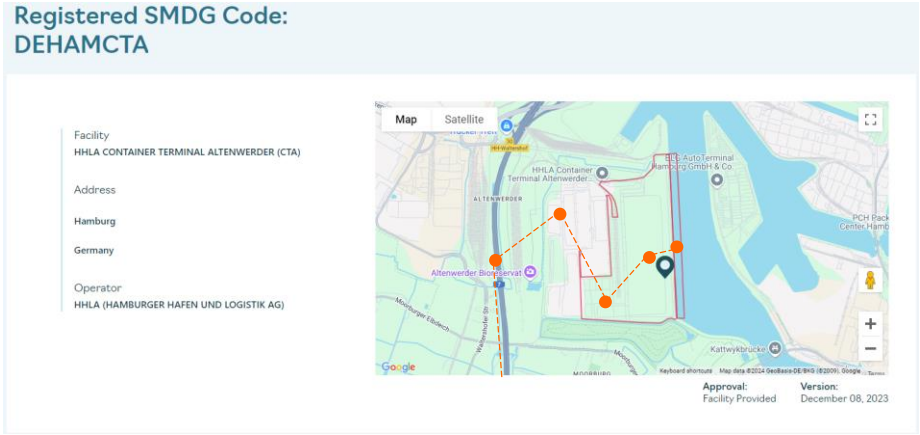


➔ **Hapag-Lloyd is actually using the library in real life in production systems – Use Cases on next page**

Use Case 1: Geofence based Milestone alerts

- **Milestone alerts** will be triggered as soon as the IoT container trace crosses a geofence
- Terminal and Depot Geofences will be taken from **external SMDG / BIC catalog**
- For Geofences at customer places a **circle around the address** will be used
- ➔ Basis for **dynamic inland ETA prediction**





Use Case 2: Vessel Schedule update based on Geofence and AIS signal from vessel

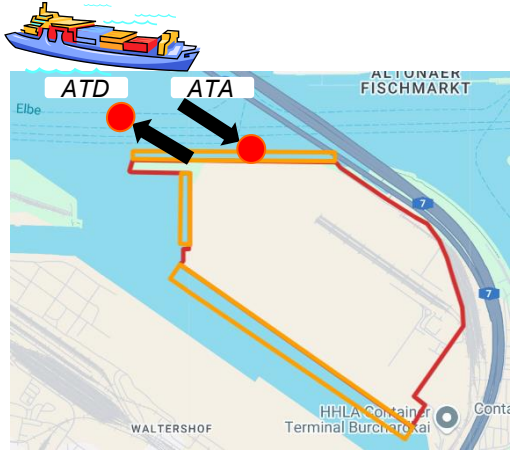
Sending AIS signal is mandatory for all vessels (position, speed, course)

Collect GPS signals Lat+Lon from vessels via AIS antennas

Maintain Geo-fences and IDs for Terminals

ATA = Actual time of vessel arrival
ATD = actual time of vessel departure

<u>Match GPS with Geo-fence</u>:
Determine ATA:
> incoming signal and then speed zero
Determine ATD:
> leaving geo-fence



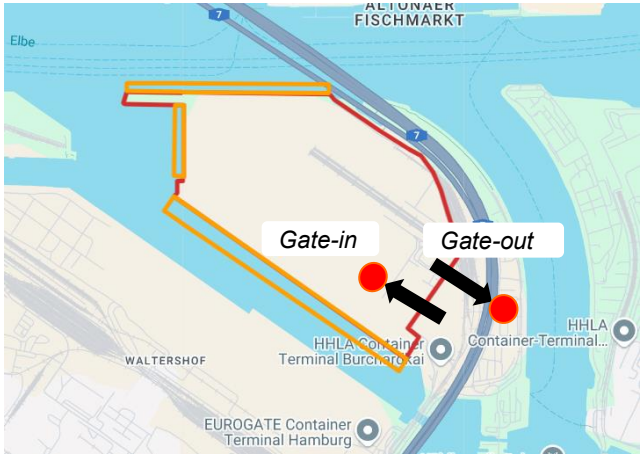
Use Case 3: Determine Gate-in and Gate-out based on Geofence and IoT signal from smart container

IoT

Collect IoT signal from Smart Container

Match IoT with Geo-fence:

Determine Gate-out:
> IoT signal leaving the Geofence
Determine Gate-in:
> IoT signal entering the Geofence



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