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Assessment of ITP Netherlands

Dutch Data quality assessment of Intelligent Truck Parking facilities related to the EU core network

1. Introduction:

Since 2015 the National Data Warehouse for Traffic Information (NDW) is responsible for the publication of data related to safe and secure Truck Parking Facilities, according to the delegated Regulation (EU) No 885/2013 (part of ITS Directive 2010/40/EU). This data is accessible on the Dutch "National Access Point" (https://nt.ndw.nu/). Information on both public and private truck parking facilities (TP's) is available on this site.

Within the Sub-Activity EU EIP 4.1 (Quality of ITS services) quality criteria and service levels are proposed in so called Quality Packages (QP) to determine the quality of several ITS services in the different member states. For the service ITP Rijkswaterstaat National Road Authority) carried out an assessment on truck parking facilities located in a range of max. 5 km from the priority highways, including the European Core Network.

This article gives insight in the data collection, the assessment method, the results and the conclusions.

Figure 1: Dutch "priority zoning", including European Core Network

2. Data collection:

For public parking facilities Rijkswaterstaat started in 2015 with a readily available basic list of truck parking facilities in NL and improved and maintained the data since 2017. The latter is done by site visits, desk research, satellite images and interviews.

Private truck parking facilities were initially added to the 'basic list'. Private TP owners were requested to check their information and it is assumed that private TP owners keep their TP's information up-to-date, when changes occur (e.g. change of available facilities/services). So both public and private TP owners take care of data base content and actualization.

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3. Assessment method:

To assess the quality of ITP according to the QP we did a comparison between information on the NAP (entered by TP owner) and the 'ground truth' (TP situation in the field). For this we did:

- Comparison of current dataset from NAP with previous desk research, to check for newly added, deleted or missing TP's.
- Check and complement of selection criteria: private/public parking, parking capacity, part of Core Network and/or NL prio zoning.
- Selection of private TP's (based on the criteria above) that are suitable for quality control.
- Digital visits of all selected TP's, by using satellite and 360° imagery and TP's online web presence, to compare information on NAP with ground truth.
- Calculation of geographical coverage and error rates.
- Interviews (phone & e-mail) with 5 private TP owners to ask about irregularities and general opinions about the NAP.

4. Assessment results:

The ITP assessment results relate to:

- Level of service
  - Geographical coverage of NAP
  - Availability of NAP
- Level of quality
  - Reporting period & timeliness of the presented information
  - Discrepancies regarding parking capacity, facilities and services in terms of
    - Error rate
    - Report coverage
    - Completeness
- Ableness of Dutch NAP to present TP information that suits the business format of TP's
- General findings
- Reflections on NAP
- Conclusions

The next table gives an oversight of the total, public and private truck parking facilities in the Netherlands taking into account the European Core Network, the Dutch priority zoning and the lower limit of 35 parking spots.

	Number of truck parkings on NT *		
Item	Public parkings	Private parkings	Total parkings
Total no. of parkings in NL & on NT that are <35 parking spots	269	2	271
Total no. of parkings in NL & on NT that are ≥35 parking spots	32	20	52
Total no. of parkings in NL & on NT	301	22	323
Total no. of parkings in NL & on NT that are <35 parking spots (within PRIO NL zoning)	152	2	154
Total no. of parkings in NL & on NT that are ≥35 parking spots (within PRIO NL zoning)	25	17	42
Total no. of parkings in NL & on NT (within PRIO NL zoning)	177	19	196

** NT=Nationaal Toegangspunt (a.k.a. the Dutch National Access Point (NAP))*

4.1. Geographical coverage:

Overall 75% (< Basic level (1 star)) of the TP's within a 5km from the highway (prio zoning), and more than 35 parking sports. For public TP's this is 100%, for private TP's this is just 55%.

4.2. Availability of NAP:

The NAP is always on-line and > 99,9 % available (Advanced level (3 stars)

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Service and Quality Criteria for ITPS			★ (Basic)	★★ (Enhanced)	★★★ (Advanced)	Netherlands	Remarks
Level of Service	**Geographical coverage**	Percentage of the transport system infrastructure covered by the (content provision) service.	90%	95%	99%	**75% overall** 100% public 55% private	**< Basic level** = Advanced level < Basic level
	Availability	Percentage of the time that the (content provision) service is available.	95% (347 days/year)	99% (361 days/year)	99,5% (363 days/year)	99,9%	= Advanced level

4.3. Reporting Period and Timeliness:

60% of all TP's are up to date (public). It was concluded that All information of the 17 private TP's is at least 1,5 years old, of which 4/17 private TP's most recently modified the data in January 2019 and the other 13 private TP's have older information. 11/17 private TP's have information dating back to June 2015, when the Dutch NAP was first launched. 6/17 private TP's are owned by 1 company. These TP's also have the richest and most up-to-date information quality.

Service and Quality Criteria for ITPS			★ (Basic)	★★ (Enhanced)	★★★ (Advanced)	Netherlands	Remarks
Level of Quality	**Reporting period**	Time interval for refreshing information (dynamic data)	15 min	10 min	5 min	N/A	One owner (4 parkings) provides dynamic data via link to own website, with time interval 1 min
	Timeliness (update)	Time interval between a change of any data entity and the moment that change is reflected in the service	1 month	1 week	1 day	Immediate	= Advanced level

4.4. Error rate:

The error rate of all TP's is 3,5% for static location data and 3,9 % for safety and equipment info. The figure beneath shows some details and differences between public and private TP's.

Service and Quality Criteria for ITPS			★ (Basic)	★★ (Enhanced)	★★★ (Advanced)	Netherlands	Remarks
Level of Quality	**Error rate**	*For static data* Percentage of data entities for which the values are different from the ground truth out of the total data entities which are included in the service provision. Measured as the arithmetic mean of the percentages for all parking places covered by the service.	10%	5%	1%	**Static data (location data)** 3,5% overall 0,0% public 8,5% private	 = Enhanced level = Advanced level = Basic level
			10%	5%	1%	**Safety & equip-ment info** 3,9% overall 0,0% public 9,5% private	 = Enhanced level = Advanced level = Basic level
		For dynamic data Absolute relative error (Err) of the provided number of free spaces (Np) compared to the ground truth (Nr) calculated as: $Err = \frac{\lvert N_r - N_p \rvert}{N_r} \times 100$ Measured as the arithmetic mean of the errors for all parking places covered by the service.	15%	10%	5%	N/A	One owner (4 parkings) provides dynamic data via link to own website, with time interval 1 min

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4.5 Report coverage & completeness:

The report coverage could not be calculated because the changes since the previous update were not available at the level of data entities. The completeness of data is 72,1% for static location data and 55,5 % for safety and equipment info. These calculations could have been higher if of non-applicable data that was stored as 'empty entities' instead of a data values like 'none' or 'N/A'.

Service and Quality Criteria for ITPS			★ (Basic)	★★ (Enhanced)	★★★ (Advanced)	Netherlands	Remarks
Level of Quality	**Report coverage**	The percentage of data entities which were updated out of the total data entities for which changes occurred since the previous update period	80%	90%	95%	N/A	For this it's neccesary to have insight into the changes that've occurred since the previous update period that haven't been reported in the NAP. For this assignment, this kind of information was not available.
	Completeness of data	Percentage of data elements available in the service provision with respect to the total data elements of that service or data type for which quality criteria have been defined. More precisely, for a given service or data type, are all the data elements foreseen in the Regulation provided?	50% (at least ½)	80% (at least ¾)	100% (all)	**Static data (location data)** 72,1% overall 72,0% public 72,2% private **Safety & equip-ment info** 55,5% overall 49% public 65,2% private	 = Basic level = Basic level = Basic level = Basic level < Basic level = Basic level

4.6 Parking capacity:

For 90% of all TP's the exact number of actually existing parking spots is presented on the NAP.
This is for 100 % of the public TP's and 76 % of the private TP's (13/17).
For a small number of private TP's (4/17) large differences occur between the number of parking spots stated on NAP and the number of parking spots visible on satellite images.
It's not always clear if parking spots on neighboring business properties are accessible for parking purposes, or changes in parking capacity since first registration (>5 years ago) aren't updated on the NAP. In most cases, designated parking spots for refrigerated, extra-long and/or convoy exceptionnel trucks aren't mentioned specifically in parking capacity figures.

4.7 Parking facilities and services:

For 100% of all TP's the information of the major facilities (e.g. petrol station, restaurant, sleeping facility) on the NAP are actually present and meet the ground truth. This is the case for 100 % of the public TP's as well as 100 % of private TP's (17/17).
Some private TP's include facilities of neighboring businesses. 1/17 private TP's includes a restaurant as a present facility, while this was actually not on the TP's premises (but within walking distance).
1/17 private TP's includes a truck garage/service stations as a present facility, while this was actually another company close to the parking area.

4.8 General findings regarding the NAP quality:

Price information:
Price information on the NAP (price/hr) doesn't (seem to) match TP's price setting desires.
TP's (especially 'smaller' TP's) prefer to relate parking tariffs with a drivers' spending in the restaurant, for example (e.g. "spend €18 in our restaurant and receive a parking ticket"). Also, TP's may have different price categories depending on the duration of stay (e.g. "first 24 hours = €1,50/hr and €1,00/hr for the second 24

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hours"). The NAP doesn't provide a suitable option for matching these price setting desires. 14/17 of assessed TP's have incomplete or incorrect price information on the NAP and 5/17 of assessed TP's don't have price info on the NAP.

Security labels:
If a TP has mentioned a security label (certification), it's unknown if this really is the case. Some TP's have registered 'unknown', but still mention a security label on their own website. Also, several types of labels seem to be used by TP's. Therefore, it is more likely that safety equipment is a more reliable source of info (fence, CCTV, barrier, etc.). 6/17 of the assessed TP's have "level_none" in the "safety certification level" field, 9/17 of the assessed TP's have "level_none" in the "safety self-certification level" field and 2/17 of assessed TP's mentioned less safety equipment (e.g. fence, CCTV) than what was actually present on the NAP.

Dynamic data (live information on availability of parking spots):
Most TP's do not have a dynamic (live) information system. 4/17 of the assessed TP's (all from 1 owner) have a live feed of their current parking space availability. Some TP's mention that they don't prefer to show this data live, because it can be seen as classified information that can give a certain level of insight into a companies' (financial) figures.

Feedback of private truck parking owners:
Truck parking businesses are not always convinced that a (obligatory) participation to a NAP is good for their business. Some truck parking owners state that they prefer not to include their information on a NAP, because of 'fear' that this could lead to a new and/or larger body of (international) clients which might result in a decline in available parking places for their regular clients. It creates a perceived decline in service to their regular, returning, loyal customers. 'Smaller' local TP's (max. 50-75 places) mostly rely on regular and returning clients and state that they don't need a NAP to realize a positive revenue stream. The attention (and willingness) of truck parking owners to keep information on NAP up-to-date is low.

5. Conclusions:

- The information of the public TP's on the NAP is complete and up to date (100% coverage). The information of private TP's on the NAP is for half of the cases incomplete and out of date (+/- 55% coverage).
- Most of the assessed private TP's (the selection of TP's that have information on the NAP) have correctly presented their parking capacity, driver facilities and truck services.
- Security labeling is not uniform; information about security facilities (e.g. fence, CCTV) seem to be more reliable.
- Nearly all private TP's have information on the NAP that's >5 years old.
- The NAP price setting option (€/hr) doesn't match with the TP's business format (eg. buy a meal & get parking ticket).
- Some private TP's have concerns about (negative) impact on their business adding information on the NAP.

This assessment is part of the EU EIP sub-activity 4.1 - Determining Quality of European ITS Services. The assessment will be used to validate and enhance a formerly released Quality Framework for Intelligent Truck Parking Services (see https://eip.its-platform.eu/highlights/intelligent-truck-parking-services-itps-quality-framework-published).
A formal deliverable on this validation, also looking into a similar assessment of truck parking data in Germany, will be published at the EU EIP website at the end of 2020.