

ArcGIS in Heavy Transport Evaluation

Ramboll in brief

- Independent engineering and design consultancy and provider of management consultancy
- Founded 1945 in Denmark
- 14,000 experts
- Close to 300 offices in 35 countries
- Particularly strong presence in the Nordics, the UK, North America, Continental Europe, Middle East and Asia Pacific
- EUR 1.4 billion revenue
- Owned by Rambøll Fonden

Current situation

Process

- Transporter sends application to the police
- Police forwards data to the Danish road direktorate (VD)
- VD forwards the application to Ramboll for further evaluation



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Current situation

Process

- Transporter sends application to the police
- Police forwards data to the Danish road direktorate (VD)
- VD forwards the application to Ramboll for bridge assesment
- Ramboll returns the answer to the transporter - the transport is denied or approved
- Around 3000 assessments are made per year - each taking around 30 minutes

Tools now

- Google maps for route visualization
- Excel macro for simplified calculations
- Manual evaluation of each bridge (1 normal and 3 conditional passes)
- Generate approved/denied transport document

Sætraansvarskontoret | Politiets
Højbjerg 2
8270 Højbjerg
Tlf: 5642 9000 Fax: 5642 0994
E-mail: stj-ekstransport@politiet.dk

Pulborg den 12-03-2018
Politiet j.nr.: 3300-20181-0315-18

RAMBOLL
- Aalborg Kommune
- Fredericia Kommune

Anmodning om udtalelse vedr.: Strækingsstilladelse

Transporter: Tage E. Nielsen, Agerlandsvej 6, 7400 Herning

Der anmodes om udtalelse for strækningen:

Fra: 9000 Aalborg - Beddingen Til: 7000 Fredericia - Oldenborggade 48

Rute: Beddingen - Nyhavnsgade - Østre Alle - Østre Uttrup Vej - tilkørsel 24 - 845 S - motorvejstrysk Skarup - E20 Ø - frakørsel 39 - rute 28 - Strandvejen - Holstenvej - Oldenborggade.

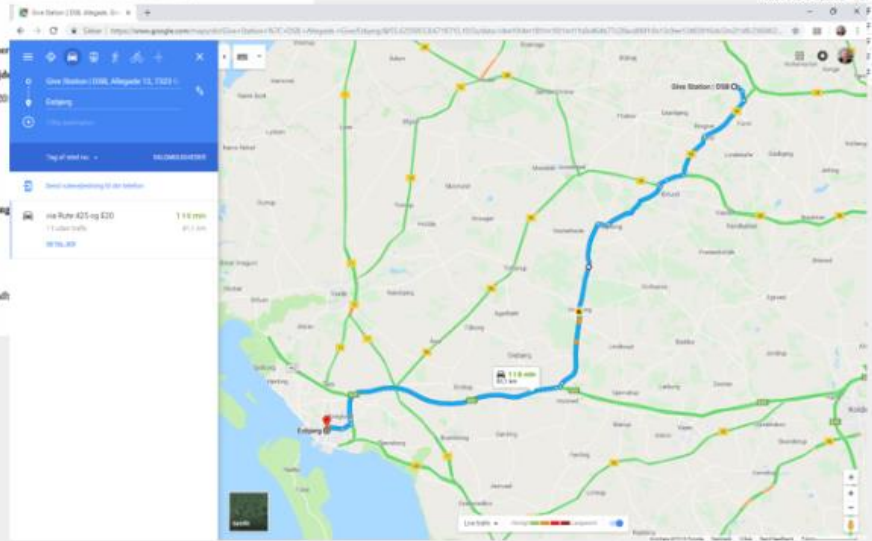
+ Returkørsel

Transporten har følgende dimensioner
Bredde: 3,65 m - Længde: 36 m - Højde:
og har følgende klassificering: WEB: 20

Følgende er vedlagt:
 Ansøgning
 Klassificeringsattest

Tidrummet for transportens afvikling
Bemærkning:

Med venlig hilsen
Helle P. Kjær, Sætraansvarskontoret Politi



Ruter:	442								
Spv for kl 100	Spv	max. Kl	Indsæt tal for de felter højst mellem kl. 100 er						
32,86	30	36							
	40	110							
Max køretøjskl.	135								
			Broer under kl 100	Broer over kl 100	Clear Filter	Find broer på rutene			
Bygdet	= OF/L =	Bygmarksbetegnelse	SpMin	SpMax	Kns	Norm	1	2	3
0000442-0-004.30	UF	UF af gangsti	6,5	6,5	3/0050	100	100	0	0
0000442-0-004.70	UF	UF af GANGSTI ved golfbane	4,4	4,4	4/0830	200	200	200	200
0000442-0-005.00	OF	OF af K-VEJ 192, Rudemøllevvej	10,2	21,8		100	100	125	125
0000442-0-005.10	UF	UF af Vandt.	0	0,6	5/0815	0	0	0	0
0000442-0-005.70	UF	UF af Vandt.	0	0,6	8/0090	0	0	0	0
0000442-0-006.00	OF	OF af K-VEJ 194, Ejskærvej	7,9	17,6		100	100	125	125
0000442-0-006.50	UF	UF af Vandt. Næstlød Bæk	0	0,7	10/0680	0	0	0	0
0000442-0-006.60	OF	OF af K-VEJ 1, Næstlødvej	8,7	18,2		100	100	125	125
0000442-0-006.70	OF	OF af K-VEJ 2146, GI Skivevej	10,4	36,1		100	100	125	125
0000442-0-007.00	UF	UF af K-VANDL 6a, Viummelø Å	0	2,5	12/0970	100	100	125	150
0000442-0-007.50	OF	OF af forlagt K-vej 59L, Saugstrupvej	9,45	17,7		150	175	200	200
0000442-0-008.00	UF	UF af K-VEJ 3345, Hjørk Kirkevej	5,5	10,2	16/0050	100	100	125	125
0000442-0-008.80	UF	UF af K-VEJ 6355, Skibvej	6,5	6,5	17/0230	100	100	125	150
0000442-0-009.00	UF	UF af K-VEJ 2895, Harrevej	6,8	10,6	17/0890	100	100	125	125
0000442-0-010.00	UF	UF af K-VANDL 4b, Harrevejle Å	0	2,8	20/0953	100	100	125	125
0000442-0-011.00	UF	UF af K-VEJ 8960, Vitevej	0	9,4	21/0530	100	100	125	125
		OF af L-VEJ 525, Kongehøjvej/Sundhøjvej						10	125
		UF af K-VEJ 4394, Kongehøjvejen						10	125
		UF af cykelsti						10	125
		UF af vand, Sallingundbroen (Hele Salling)						2	140
		UF af vand, Sallingundbroen (Hele Salling)						2	140

Spændviddeklasser.

Spændvidde (m)	Max. klasse
2,00	47
4,00	52
6,00	69
8,00	82
10,00	88
15,00	91
20,00	89
25,00	88
30,00	96
40,00	110
50,00	116
60,00	121
80,00	126
100,00	129
200,00	135

Plan for new tool

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Plan for new tool

Network data

- Map bridges to transport network
- Define upper and lower passage
- Build network

Bridge data

- Bridge class for each span

First version

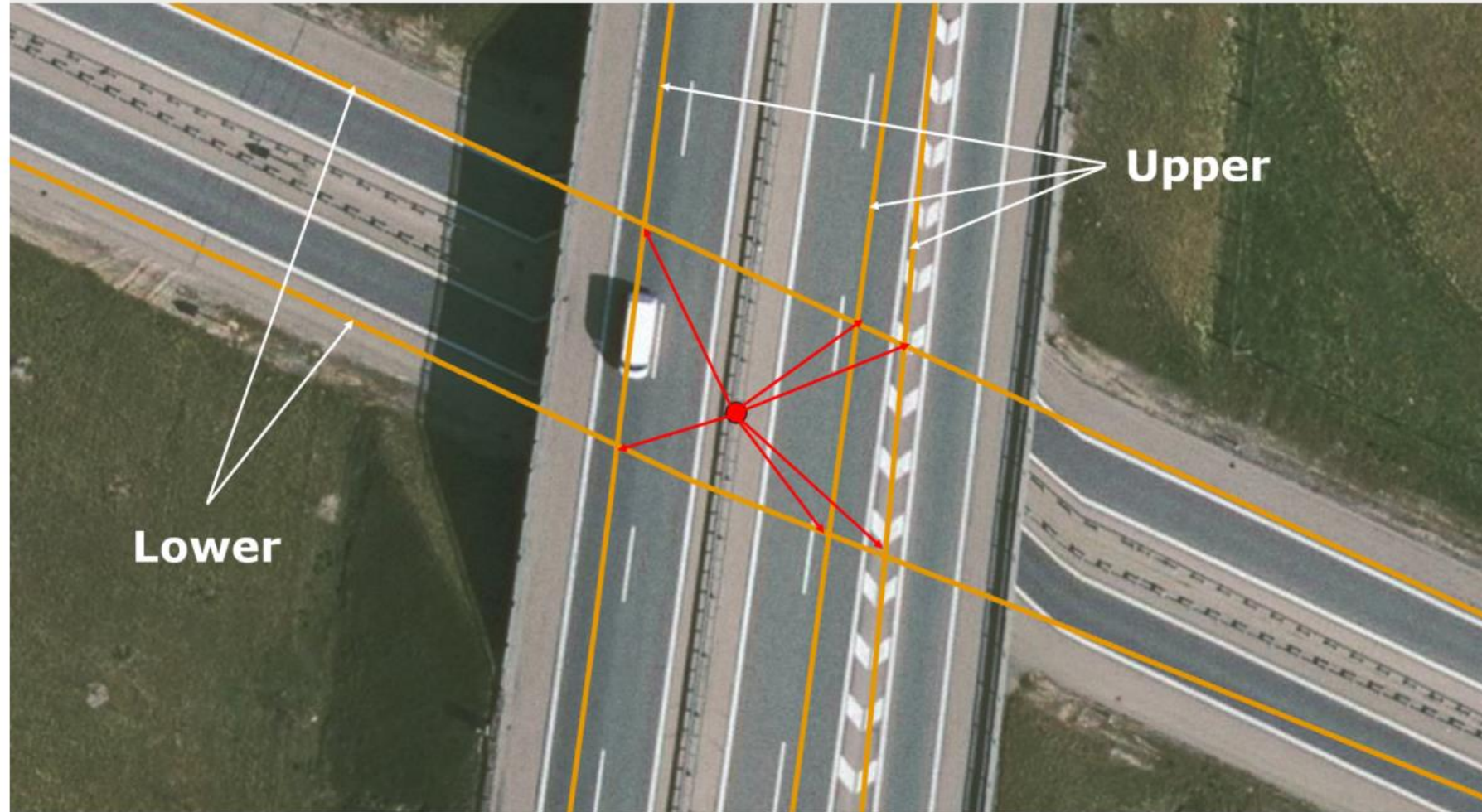
- Point out desired route
- Enter transport properties
- Assess each bridge passed in regards to the roads travelled in the network
- Generate automated response

Future

- The transporter will log in and generate a preliminary approval himself

GIS data available

We tried multiple road networks of poor quality so we ended up using a licensed road network covering Denmark.



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GIS data available

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Bridges are imported from kml files from Danish Road Directorate

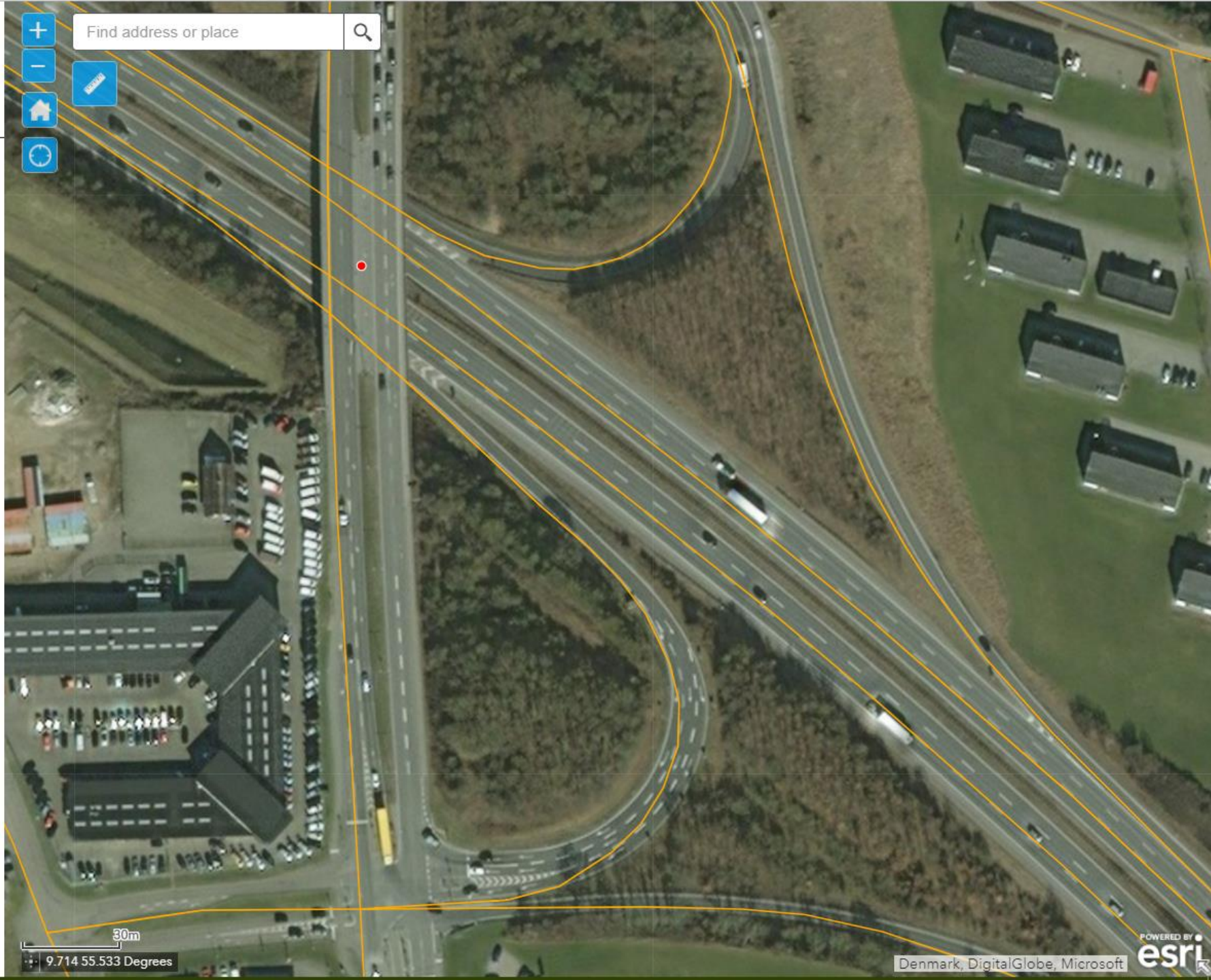
The biggest challenge was data quality

Enhancing data

Legacy bridges are distributed to all road intersections using a number of buffer and intersection analyzes

The bridge data are replicated to each intersect and assigned to each individual road

All potential road segments are now linked to a bridge representation no matter how the bridge is passed



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Enhancing data

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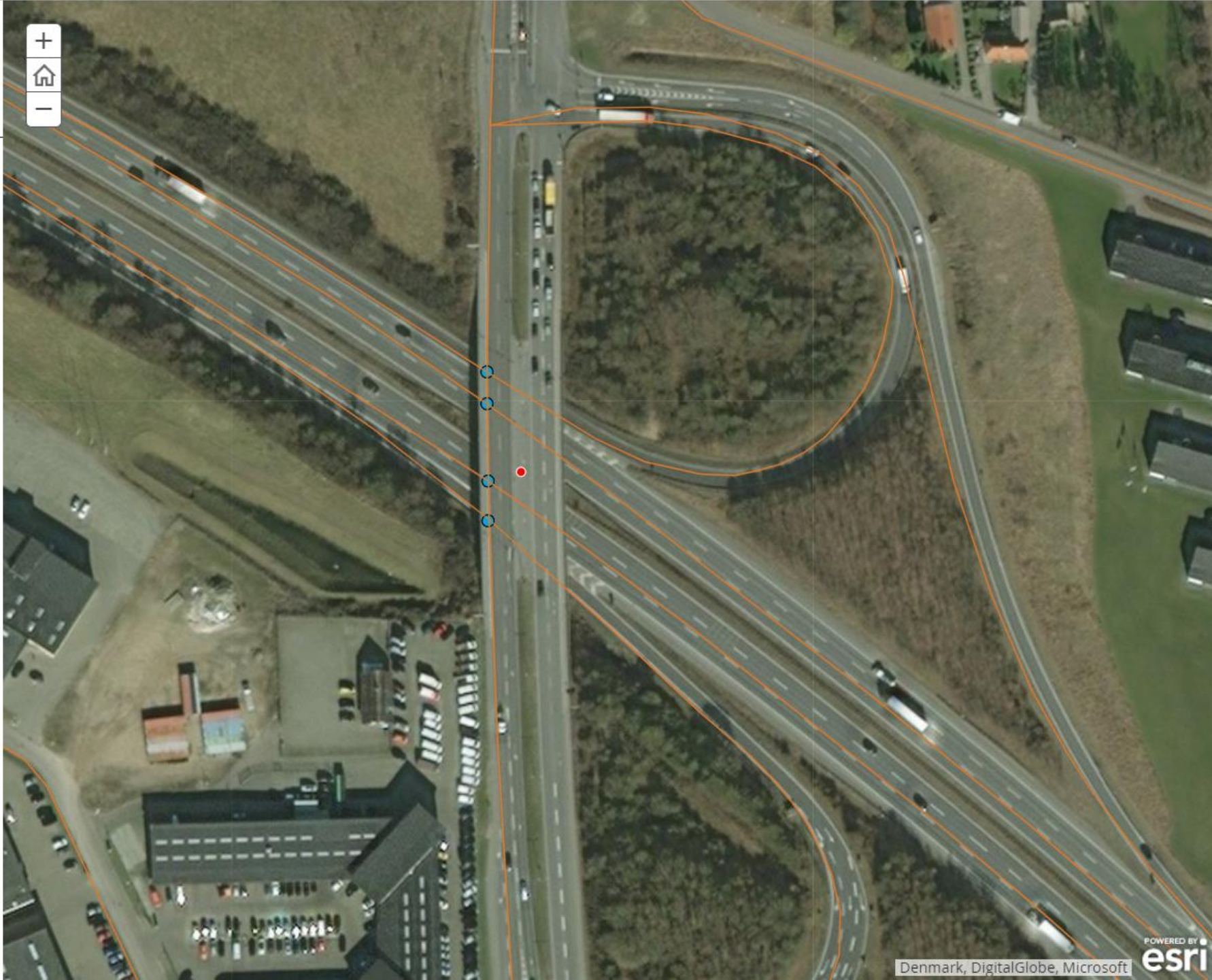
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Elevation

The heavy transports are only relevant if the road is "crossing over"

Each bridge representation get an added attribute depending on road profile in a terrain raster lookup



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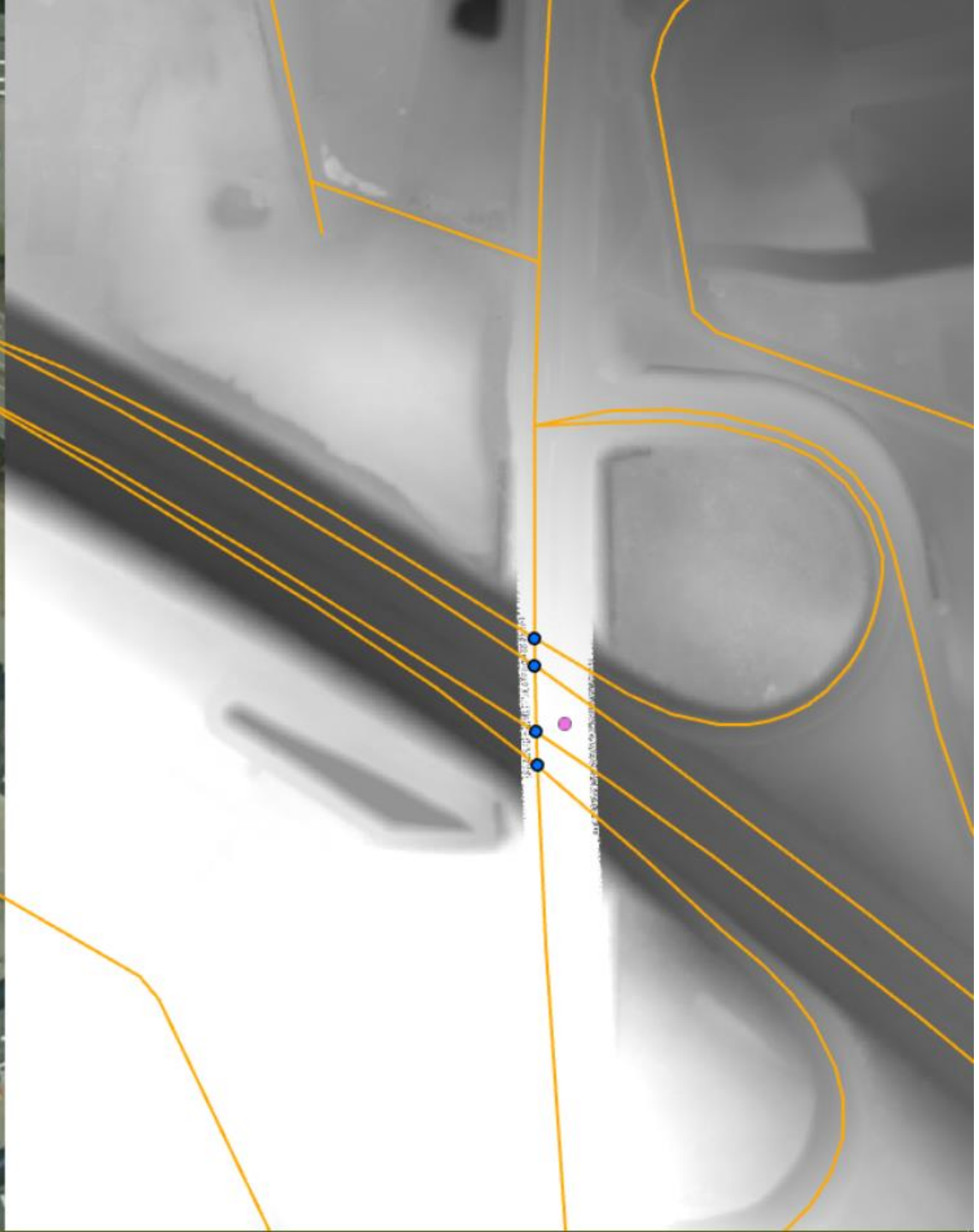
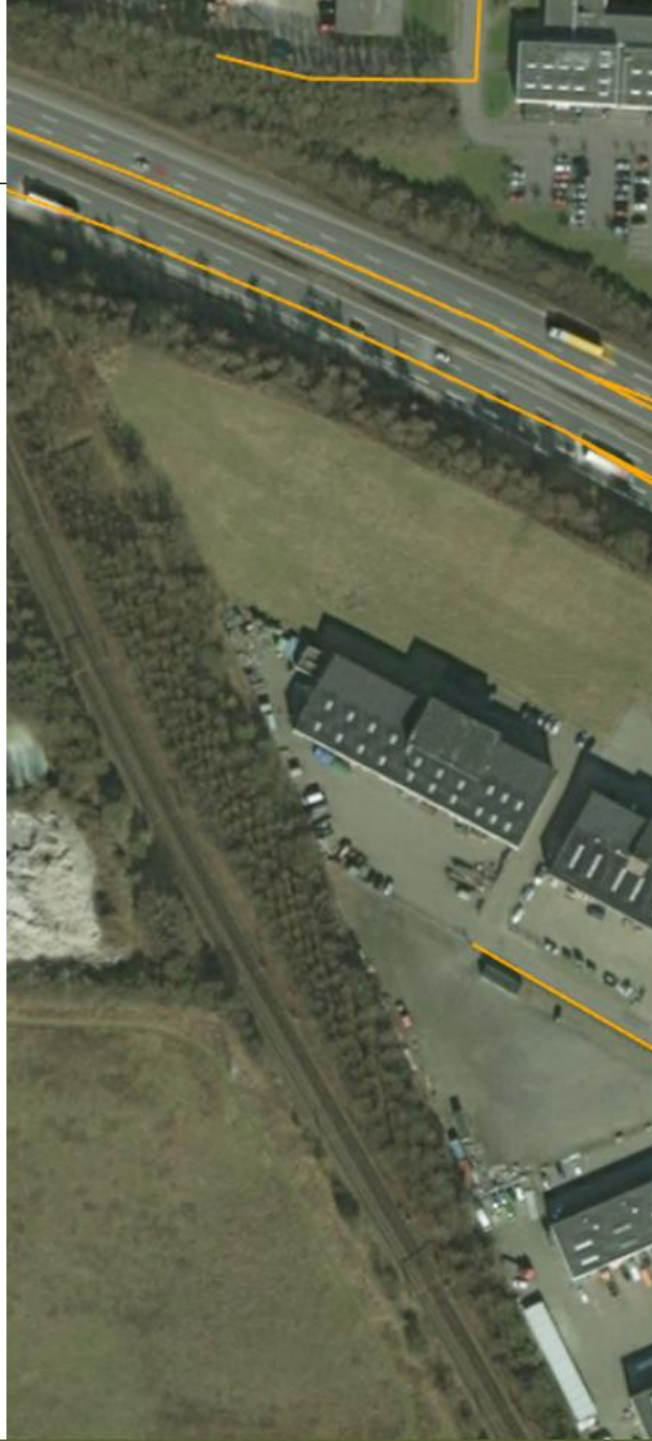


User interface

Created using the Javascript API

Constructed of 3 tabs

- Point out the route - you can pull the route handles to the preferred path. Verification is shown on left side
- Enter relevant vehicle information
- Write response depending on outcome



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User interface

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Constructed of 3 tabs

- Point out the route - you can pull the route handles to the preferred path. Route verification is shown on left side
- Enter relevant vehicle characteristics
- Chose and write response depending on evaluation

Spatial calculations and span class evaluation is run on a MS SQL server
Calculations takes ~1 sec

Total evaluation time per transport in test phase: 5 minutes

Questions

Rute
Køretøj
Rapport

1 7280, Sønder Felding, Herning, Midtjylland ti

2 7100, Vejle, Syddanmark

TILFØJ

AFGANG NU ▼
INDSTILLINGER

HENT KØRSELSVEJLEDNING
🖨️

00:52

ti. min 68,42 kilometer

1 1. Start at 7280, Sønder Felding, Herning, Midtjylland

12,25

↑ 2. Go south on Tarpvej toward Skjernvej

0,15 km

↶ 3. Turn left on Skjernvej

4,89 km · 4 min

↷ 4. Turn right on rundkørsel

0,07 km

↷ 5. Turn right on Skjernvej

7,45 km · 7 min

↷ 6. Turn right on rundkørsel

0,07 km

↷ 7. Turn right on FASTERHOLTVEJ

1,60 km · 2 min

↷ 8. Turn right on rundkørsel and immediately turn right on TILKØRSEL RUTE 18 MOD VEJLE

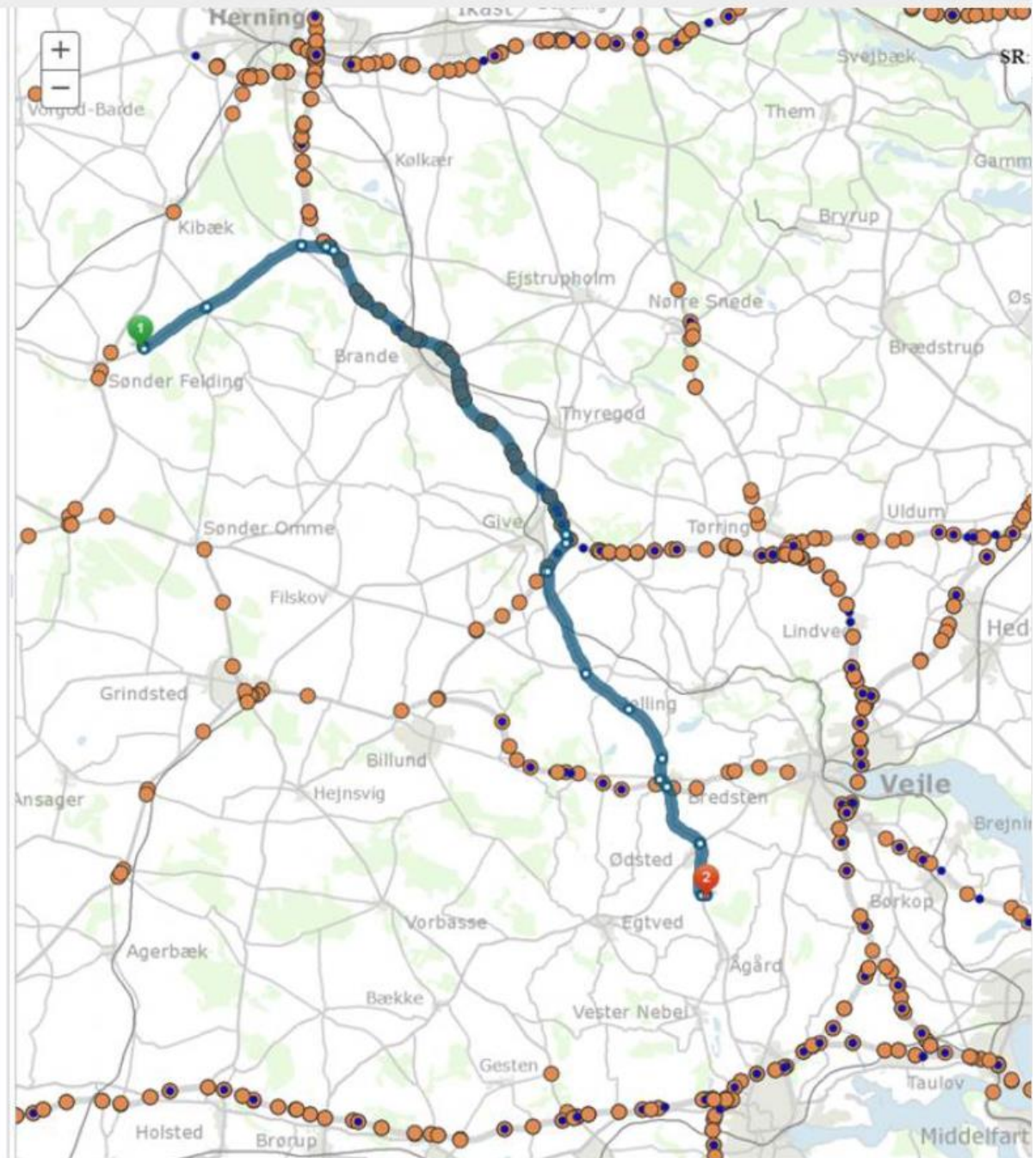
0,53 km · 1 min

↑ 9. Continue on Motorvej 18

25,00 km · 13 min

↑ 10. Continue on Frakørsel nr. 8

0,65 km · 1 min



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phase: 5 minutes

Questions



QUESTIONS



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