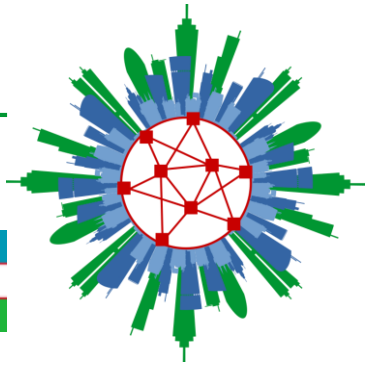
CARL VON OSSIETZKY universität OLDENBURG

SuMoCoS
Sustainability and Mobility in the Context of Smart Cities



NEMO - Mobility platforms as a key element for sustainable mobility

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The research project at a glance

Sustainable satisfaction of mobility demands in rural regions

Development of sustainable and innovative mobility services for rural areas

Research partner:
University Oldenburg, University Vechta, TU Brunswick and DLR

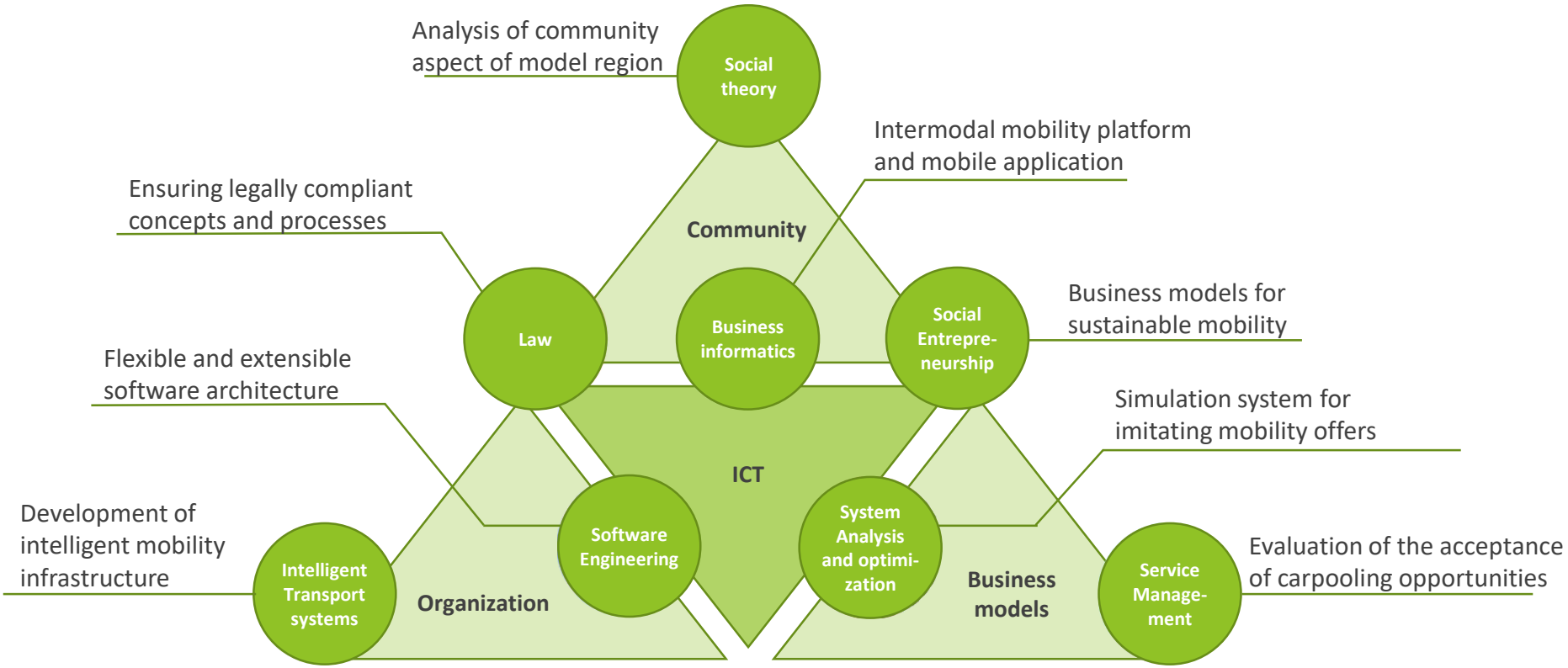
Model region:
Northern Germany

Project duration:
March 2016 - March 2020

Funded by the Lower Saxony Ministry of Science and Culture and the Volkswagen Foundation

Based on the "Showcase Electric Mobility Lower Saxony”

Project Consortium



Why is our focus on rural regions?

… about 90% of the area of Germany are rural regions

… more than 50 Million people are living in rural regions

… 90% of the households owing at least one car (in rural regions)

… age and costs main reasons (75%) for abandonment of private cars

70 to 90% of public transport trips in rural areas are school traffic

Which are the central research questions?

How can we **satisfy mobility needs** in rural areas based on **social structures** under consideration of **sustainability and purpose-orientation**?

Social

How to increase the community idea from a sociological and psychological perspective?

Organizational

Which organizational concepts are suitable for sustainable mobility models for social self-organization?

Research dimensions

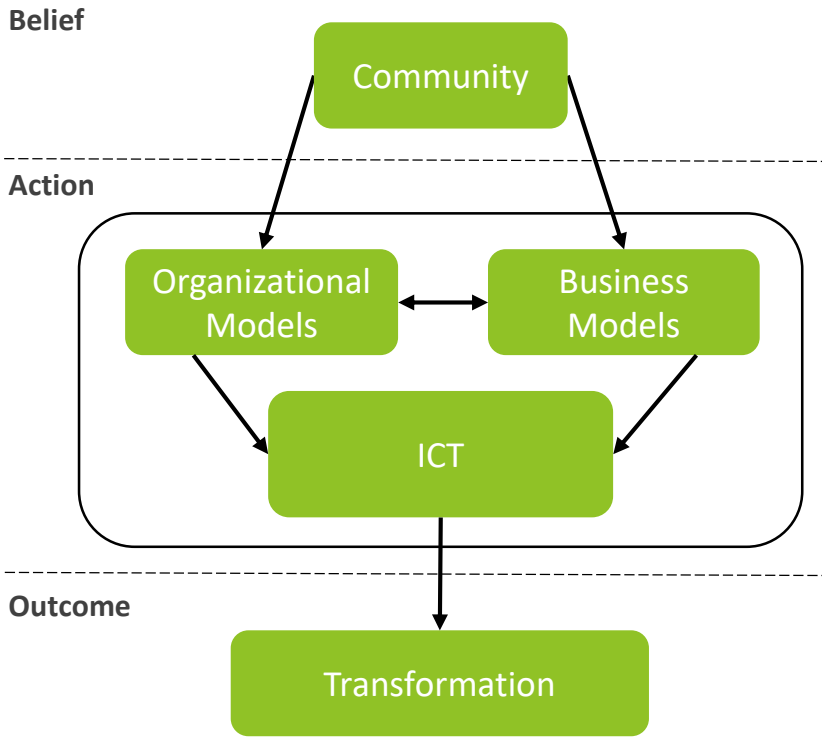
Economical

Which business models are suitable for supporting sustainable mobility and prosumer relationships?

Technical

How can flexible, intelligent and heterogeneous ICT services support rural mobility?

How do we proceed?



- **Community**: Presentation of social interactions as a basis for the coordination and control of communities
- **Organizational Models**: Development of organizational processes for bringing together producers and consumers (prosumer)
- **Business Models**: Participation as an important success factor in the development of business models
- **ICT as Enabler**: Flexible and long-term mobility platform for private, commercial and public stakeholders

Ensure legal compliance

- **Transformation:** Establishment of comprehensive and sustainable mobility structures based on participatory community services

What are the main outcomes?

Project results

Action	Objective
Communication Platform for self organization (ICT-supported)	Barrier-free and efficient mobility
Usage instead of possession "Shareconomy"	Reduction of resource consumption and emissions
Mobilization of all population strata (Community-Model)	Social Participation
Innovative Business Models	Enabling Prosumer-transactions relations

Methods

Workshops

Pilot project

Consulting

Publications

Prototypes

Civic forum

Education

Simulation

Project impact

trough …	on …
Awareness and inclusion	Consumers, Citizen, Companies, Associations, Municipalities
Prototypical Implementation/ Evaluation	Consumers, Citizen, Companies, Associations, Municipalities
Scientific distribution	Universities, Research institutions
Consulting	Legislator, Municipalities, Companies

Wesermarsch county is our central model region

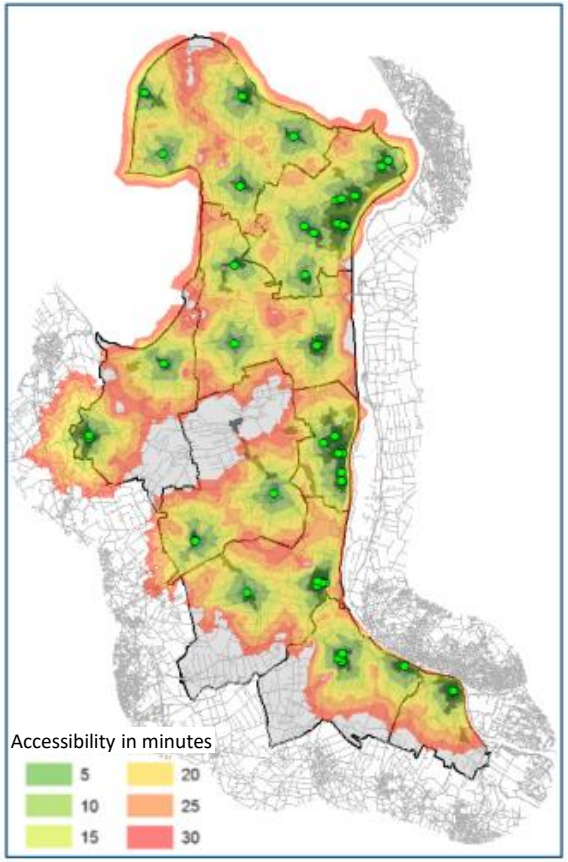
Thin population: 108 inhabitants/km²
(Average Lower Saxony: 164 inhabitants/km²)

Three federal highways (yellow)
combine most traffic volume

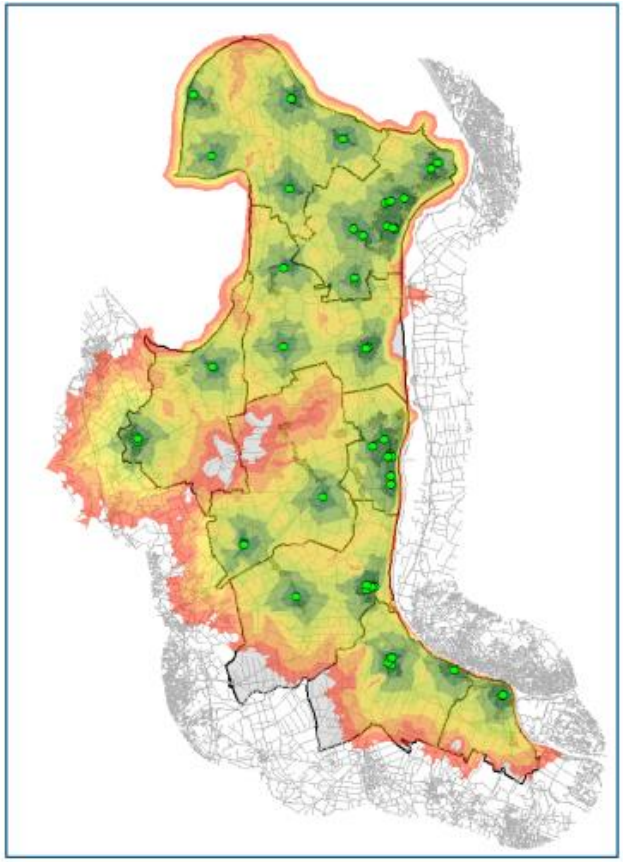
Cities of Oldenburg, Bremen and Bremerhaven
as important regional centers (commuter traffic!)

Radius extension by pedelecs

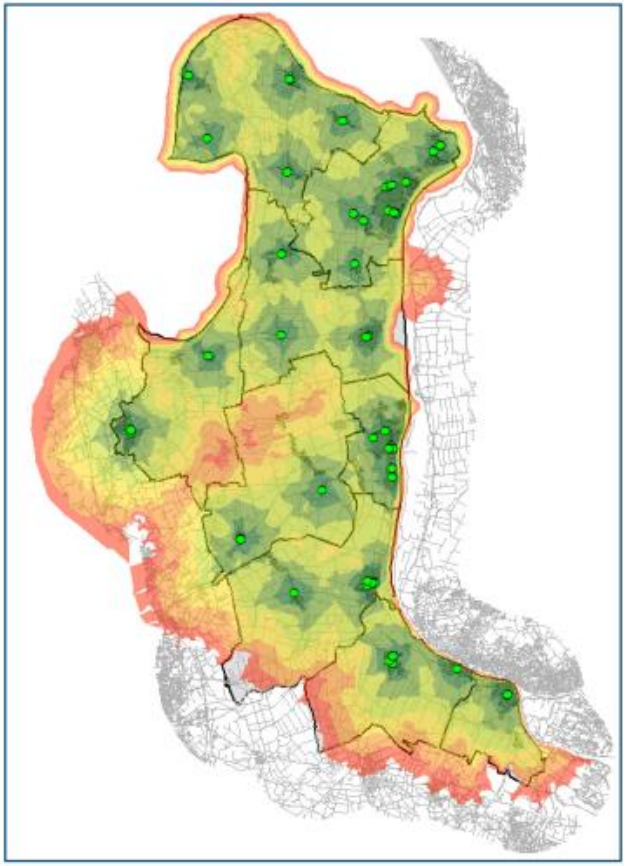
Slow Cycling (11,5 km/h)



Fast Cycling (16 km/h)



Pedelec (20km/h)



Source: IGES Institut, BMVI-Modellvorhaben „Versorgung & Mobilität“ - Modellregion Landkreis Wesermarsch

What questions do we ask ourselves to improve mobility in rural regions?

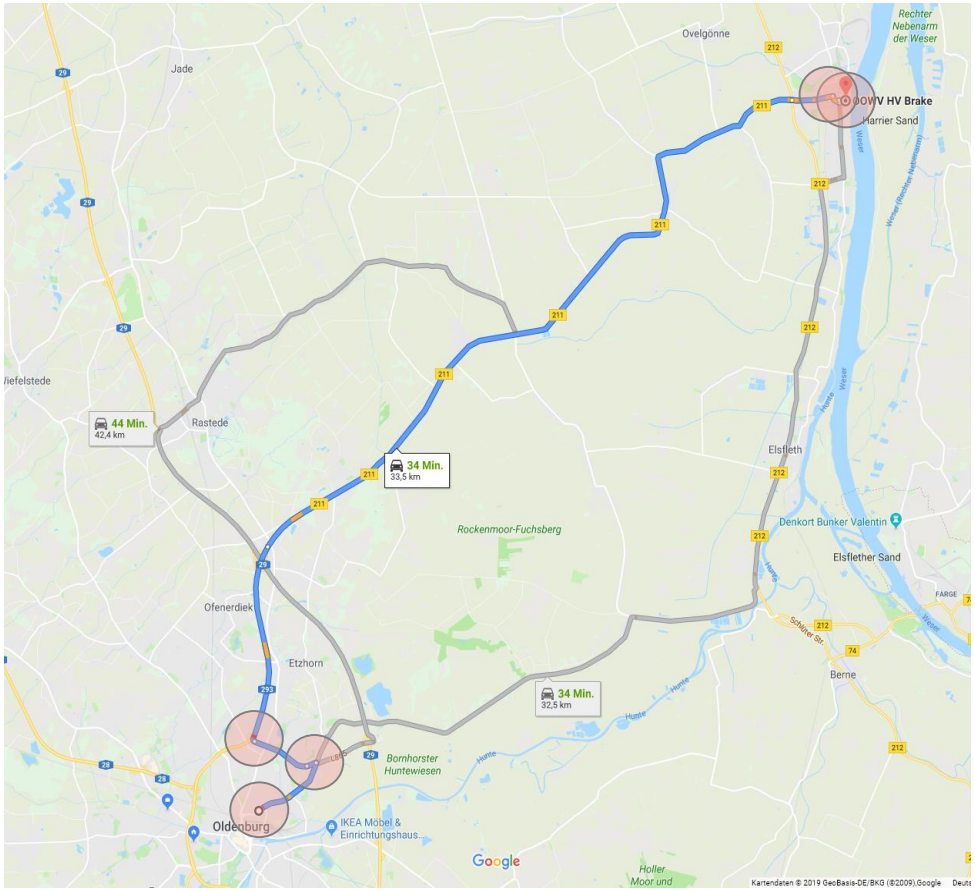
What are people's ***attitudes*** towards ***carpooling***?

How can ***existing car capacities*** be used better?

How can similar ***interests*** and mobility ***demands*** be ***brought together***?

What contribution can ***information and communication technology*** make to improving mobility?

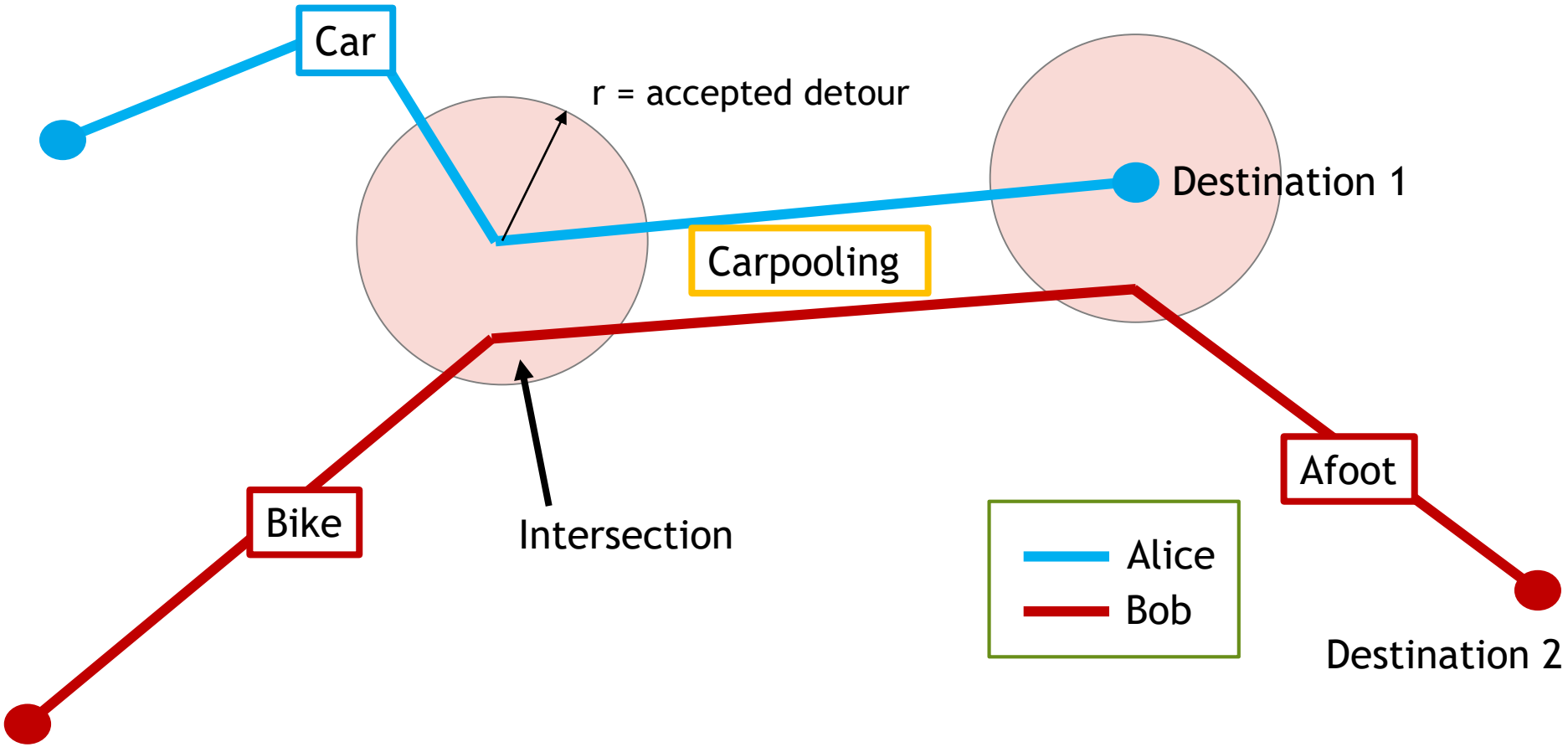
Matching Parameters



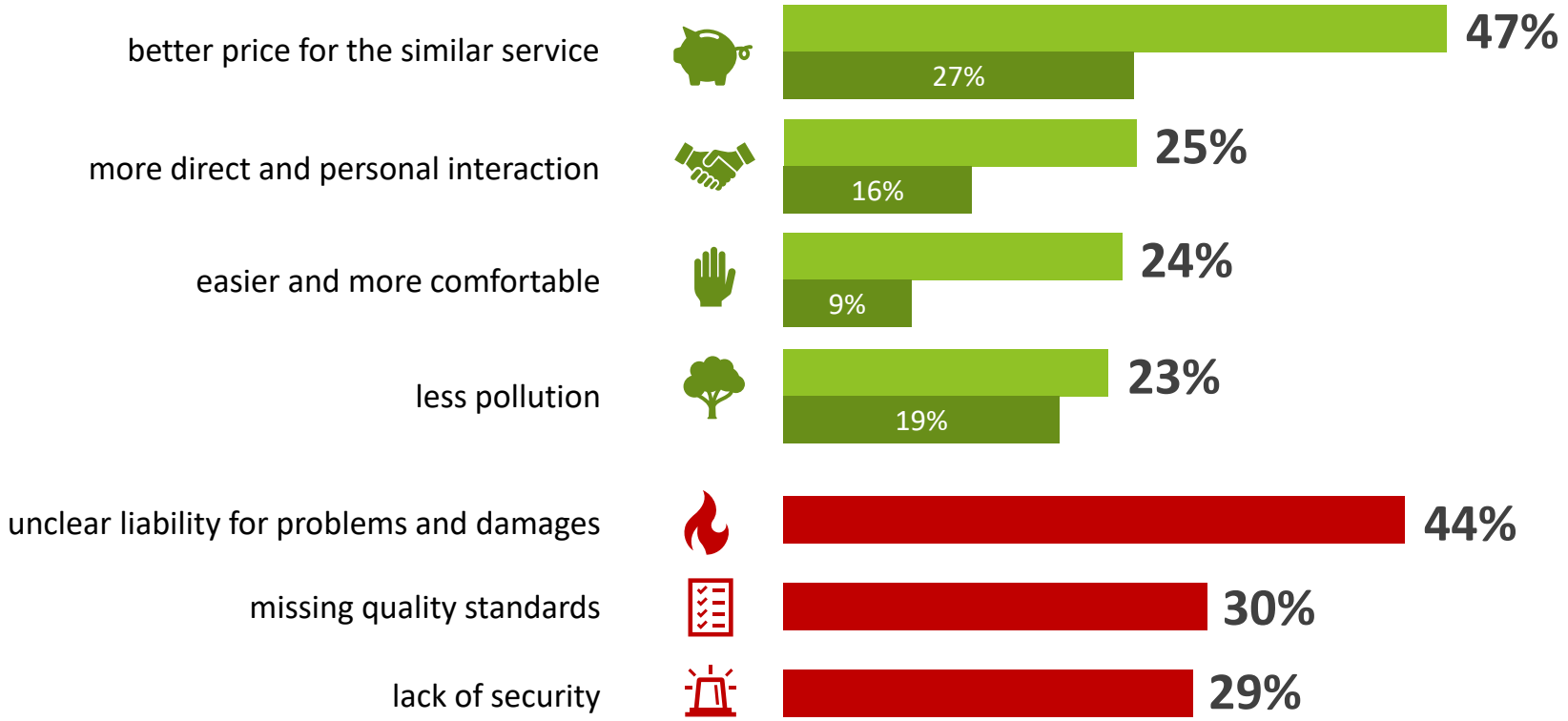
Tolerances:

- Timespan: 3600s
  (desired time +/- 1800s)
- Detour: 10%, 20%, 30% of total distance
- Detour-willingness and other preferences can be set in the application

Matching Mechanism



Perceived advantages and disadvantages of Sharing Economy



n = 1000
Source: PwC, 2018

Car Pooling Motivation and Obstacles

Comparison Driver & Passenger

Driver

- Lower Operating Costs (*N*=22)
- Sustainability (*N*=25)
- Social Contacts (*N*=19)
- Solidarity (helping others) (*N*=14)
- Less Traffic (*N*=4)

- Security concerns (*N*=16)
- Lack of Privacy(*N*=6)
- Additional Expenditure (N=5)
- Loss of spontaneity (N=5)
- Liability / insurance issues (*N*=2)

Further obstacles Driver perspective

- *Expenditure for payment (also take advantage of driver by too little cash / inappropriate change)*
- *Marking of smoking vehicles necessary*
- *Use of the trunk, taking animals with you → Vehicle pollution*

Passenger

- Sustainability (*N*=44)
- Convenience (*N*=14)
- Social Contacts (*N*=25)
- Cost Savings (*N*=44)
- Time Savings (*N*=21)

- Safety concerns (driver/car) (*N*=14)
- Additional Expenditure (*N*=5)
- Unknown Persons (*N*=22)
- Liability / insurance issues (*N*=4)

Further obstacles Passenger perspective

- *Holding of agreements (e.g. due important appointments)*
- *Bring along bulky things (e.g. walking aids) or your own dog*
- *Incompatibility with job*

Conclusion of Survey

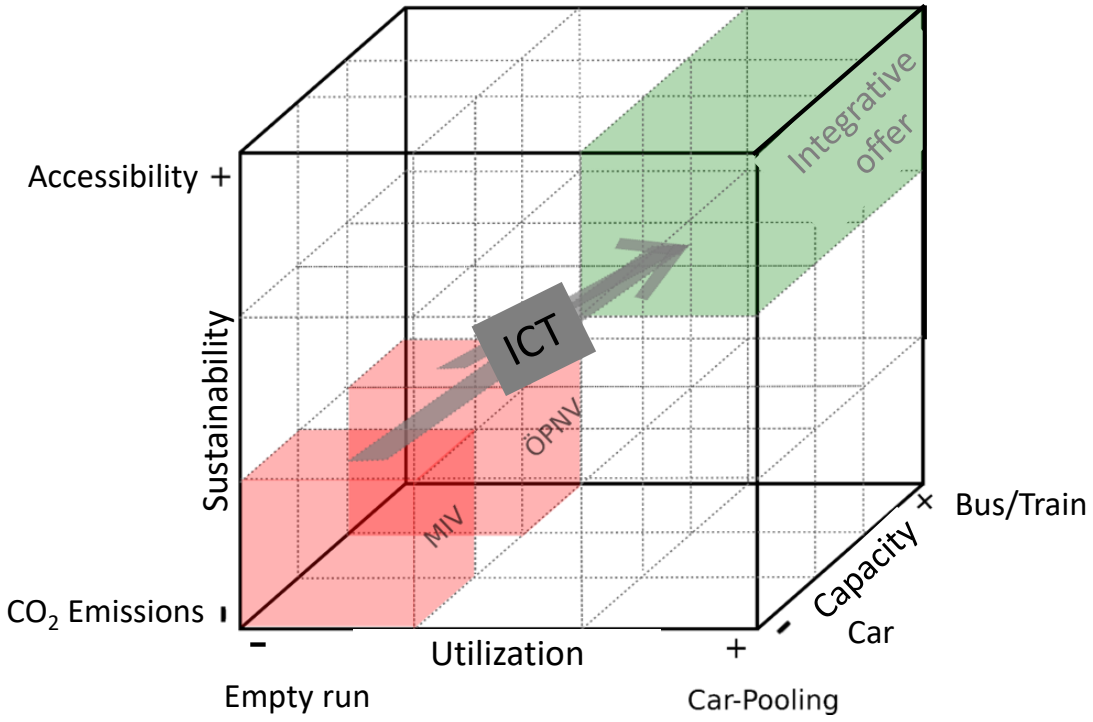
- From a descriptive point of view, relevant obstacles are mainly
  - Coordination and coordination effort,
  - security concerns,
  - social barriers and
  - concerns about not being able to access a sufficiently large carpooling community, and
  - skepticism about the cost of detours.

- Conditions for taking advantage of organizing carpooling opportunities through third parties:
  - Situational and personal conditions: Carpooling on round trips (primarily relevant for passengers), tend to be more willing to carpool with women and during the day (descriptive evaluation).

  - Platform-side conditions: Ensuring a transparent pricing system, enabling direct agreements, and implementing measures to increase physical security and testing the trustworthiness and reliability of the carpool partners (e.g. platform-side evaluation system).

The Mobility Platform

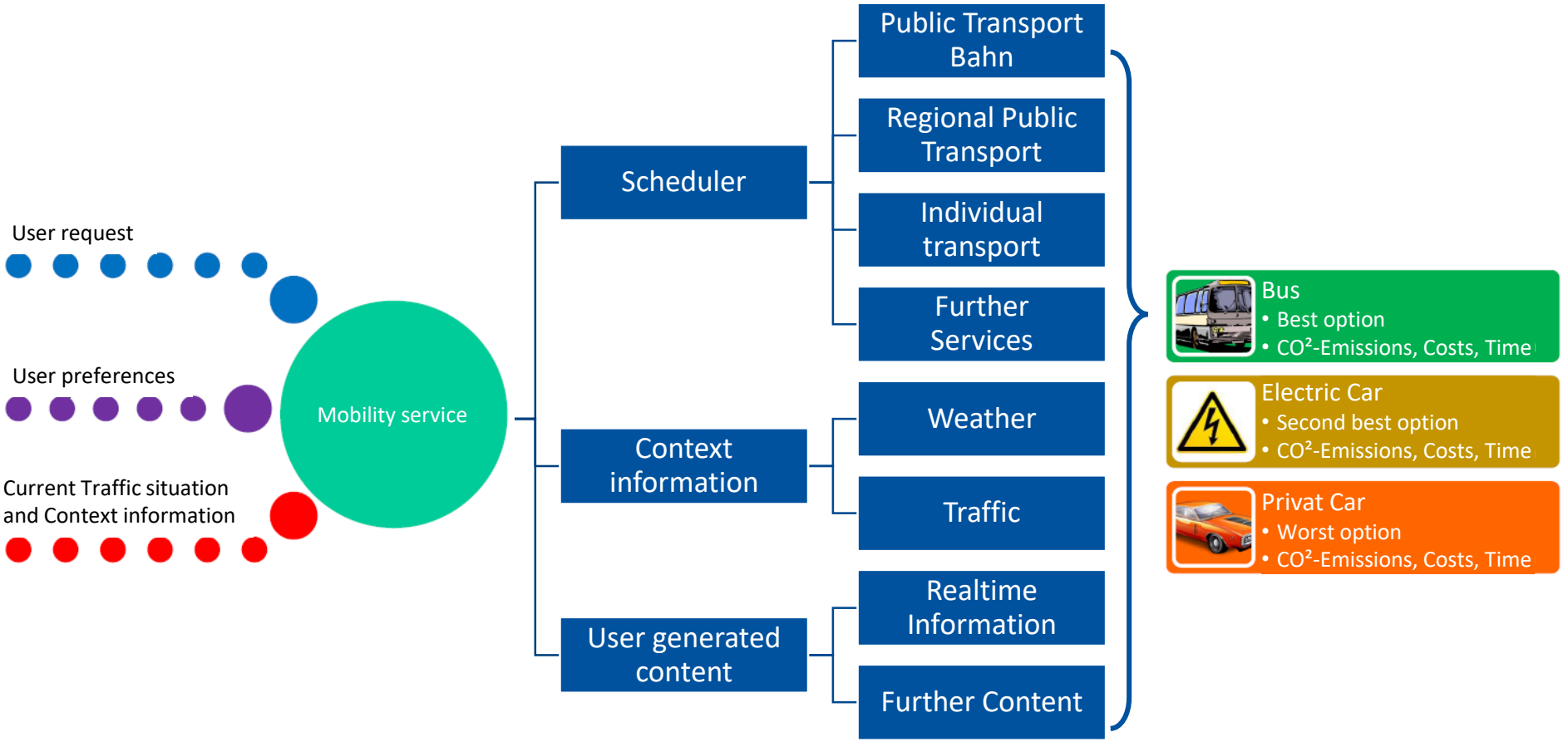
How does the integrative mobility offer emerge?



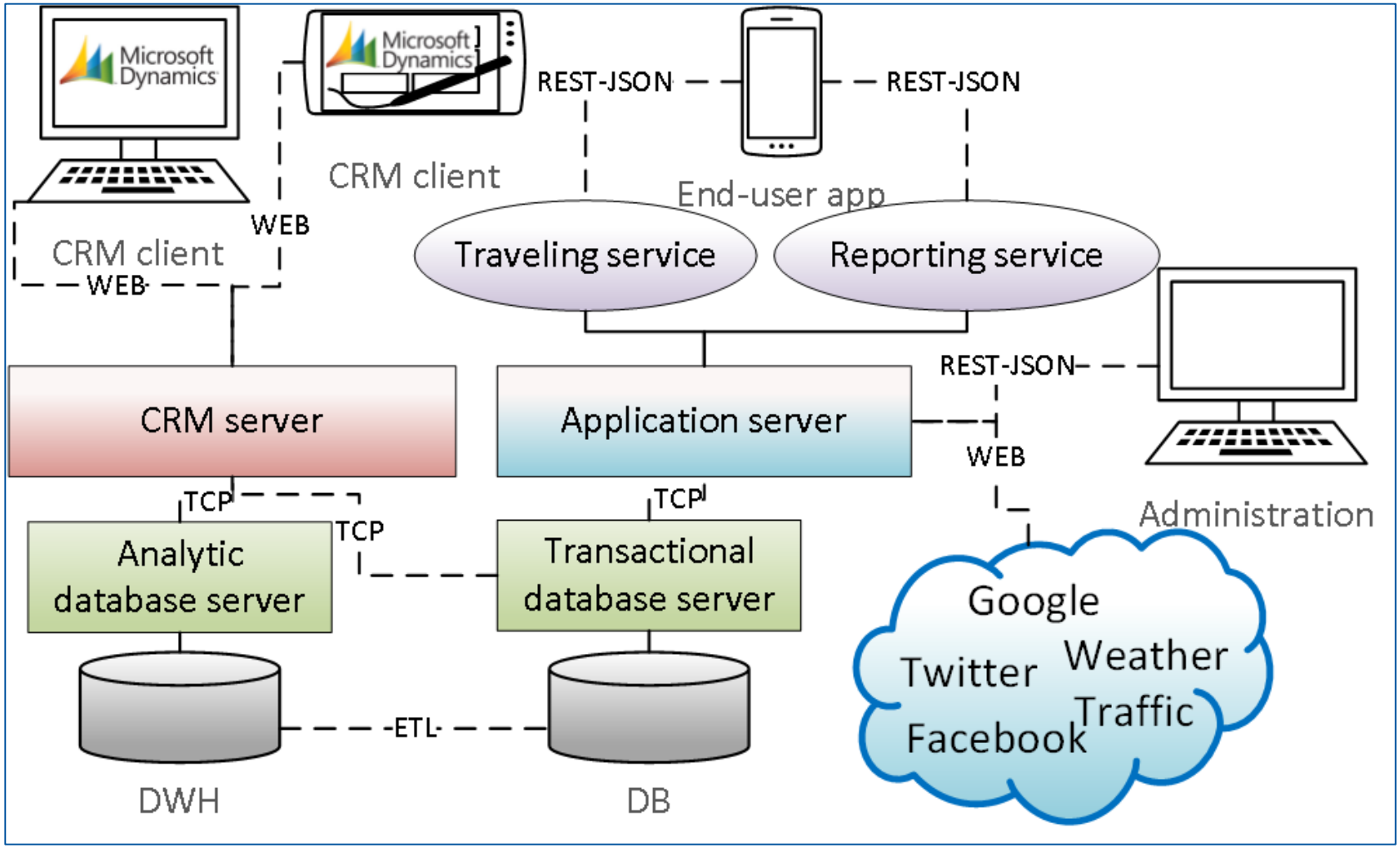
- Increasing the utilization of means of transport in order to reduce emissions and the total number of vehicles
- Improving the quality of life by satisfying mobility needs
- Complexity can only be mastered with ICT, e.g. intermodal mobility chains

Combining existing means of transport and social structures into a sustainable, integrative mobility offer

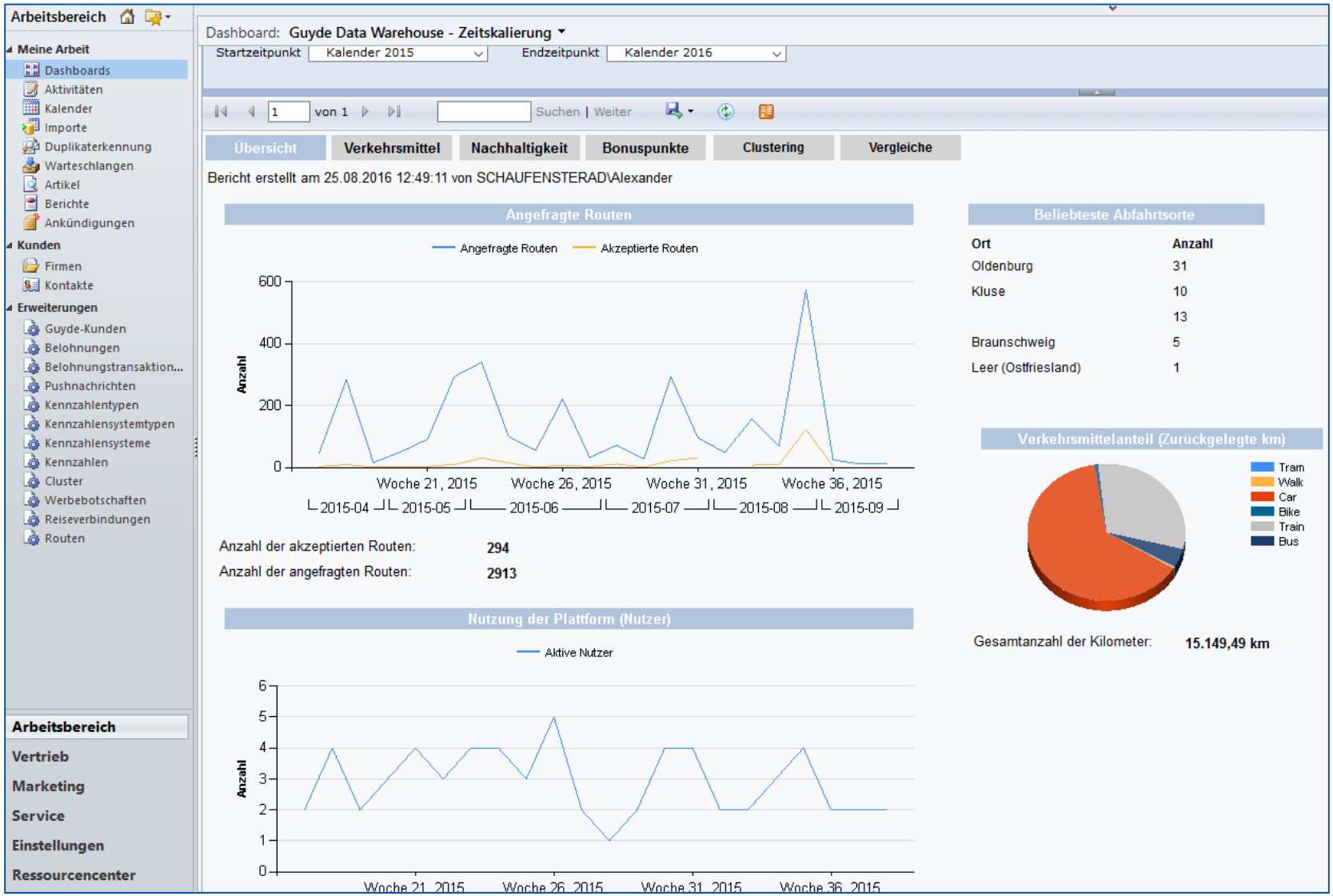
Intermodal mobility platform



Architecture



CRM System


Arbeitsbereich
Meine Arbeit
Dashboards
Aktivitäten
Kalender
Importe
Duplikaterkennung
Warteschlangen
Artikel
Berichte
Ankündigungen
Kunden
Firmen
Kontakte
Erweiterungen
Guyde-Kunden
Belohnungen
Belohnungstransaktion...
Pushnachrichten
Kennzahlentypen
Kennzahlensystemtypen
Kennzahlensysteme
Kennzahlen
Cluster
Werbebotschaften
Reiseverbindungen
Routen
Arbeitsbereich
Vertrieb
Marketing
Service
Einstellungen
Ressourcencenter
Dashboard: Guyde Data Warehouse - Zeitskalierung
Startzeitpunkt
Kalender 2015
Endzeitpunkt
Kalender 2016
1
von 1
Suchen | Weiter
Übersicht
Verkehrsmittel
Nachhaltigkeit
Bonuspunkte
Clustering
Vergleiche
Bericht erstellt am 25.08.2016 12:49:11 von SCHAUFENSTERAD\Alexander
Angefragte Routen
Angefragte Routen
Akzeptierte Routen
600
400
200
0
Anzahl
Woche 21, 2015
Woche 26, 2015
Woche 31, 2015
Woche 36, 2015
2015-04
2015-05
2015-06
2015-07
2015-08
2015-09
Anzahl der akzeptierten Routen: 294
Anzahl der angefragten Routen: 2913
Nutzung der Plattform (Nutzer)
Aktive Nutzer
6
5
4
3
2
1
0
Anzahl
Woche 21, 2015
Woche 26, 2015
Woche 31, 2015
Woche 36, 2015
Beliebteste Abfahrtsorte
Ort
Anzahl
Oldenburg 31
Kluse 10
13
Braunschweig 5
Leer (Ostfriesland) 1
Verkehrsmittelanteil (Zurückgelegte km)
Tram
Walk
Car
Bike
Train
Bus
Gesamtanzahl der Kilometer: 15.149,49 km

Integration of Stakeholders

Contact

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