



Success factors and lessons learned in the Implementation of automotive transport emission calculation, customer data exchange and commercialization

04./05.02.2026
Dr. Stefan Doch
Lutz Fricke

Agenda

1. ECG emission calculation, customer data exchange and book and claim process as foundation
2. Success factors and lessons learned based on current implementation experiences

Agenda

- 1. ECG emission calculation, customer data exchange and book and claim process as foundation**
2. Success factors and lessons learned based on current implementation experiences

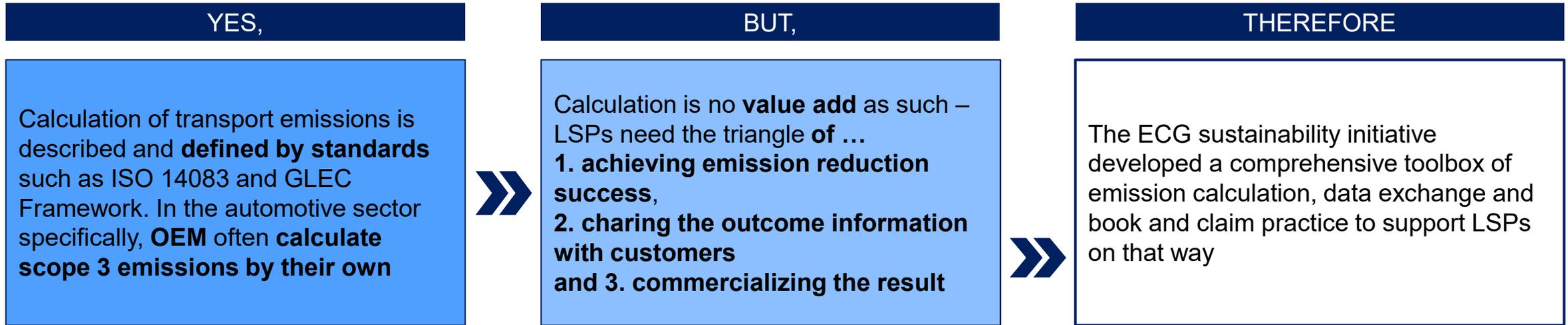
The sustainability initiative

| Phase 0 | Phase 1 | Phase 2 |
|---|--|---|
| <p>Previous studies by the VDA have shown that emissions calculations between OEMs are not comparable.</p> <p>The ECG wanted to develop a guide for its members to standardise emissions calculations.</p> | <p><u>When:</u> Q1 2023 → Q4 2023 <u>Who:</u> 9 working groups from OEM and LSP <u>What:</u></p> <ul style="list-style-type: none"> • Initial creation of the guideline • Setting the scope and allocation principles for the most relevant MoT <p><u>Result:</u></p> <ul style="list-style-type: none"> ➤ Publication of first version in December '23 | <p><u>When:</u> Q1 2024 → Q2 2025 <u>Who:</u> 6 working groups from OEM and LSP <u>What:</u></p> <ul style="list-style-type: none"> • Developing the guideline • On-site training for knowledge distribution • 6 pilots for real world application <p><u>Result:</u></p> <ul style="list-style-type: none"> ➤ Publication of second version |

Consortium of Phase 2



The initiative's root cause



THE DEVELOPED APPROACH WAS PILOTED IN 6 LSP/OEM USE CASES



- 3 ways of calculation were compared:
1. **OEMs** own calculation
 2. **LSPs** own calculation
 3. Calculation according to the new **guideline**



Deviations were found and could be assigned to **4 main categories**

| | Impact on emissions result |
|---------------------------------------|----------------------------|
| Missing (Master-) Data | Up to 10% |
| Varying (certified) Methods | Up to 10% |
| Simplified (wrongly modelled) Routing | Up to 30% |
| Effect of primary data | Up to 20% |

The initiative's root cause



One objective of the sustainability initiative is to **assign responsibility for calculating emissions to those who possess the necessary data**, i.e. the Logistics Service Providers.



But why can't responsibility for calculating emissions simply be handed over to the LSPs?

1. They currently lack expertise in this area.
2. Lack of standardised procedures when standards are “not free from interpretation”.
3. Emission data can only be interpreted correctly by the OEM if they know how it was calculated.



What are examples of ‘not free from interpretation’?

1. TOC definition: Whereas the ISO standard only emphasises that similar types of transports should be grouped together, the guideline provides clear specifications as to which characteristics are relevant.
2. Intermodal transport: Where the ISO does not clearly define how to proceed with pre- and post-carriage, the guideline clearly includes these as elements of the transport chain.
3. Electricity mix/cross-border rail transport: Instead of avoiding the topic, the guideline describes that transports must be split in two elements on borders if different electricity sources can be determined.



Is it enough to enable LSPs to calculate their transport emissions?

- Without standardised data transfer, LSP calculations cannot be processed efficiently.
- Templates were created to standardise data exchange between LSP and OEM.

The initiative's results

Standardised data exchange

Data Exchange Template



An essential component of the sustainability initiative was a **standardised data exchange** between the LSP and the OEM



With the help of **Odette**, four **data exchange templates** were therefore created to standardise the reporting



They cover all the information needed to **calculate emissions** and **review** the respective calculation



They contain all the data necessary to automatically **assign emissions to an emitter**



Emission values can be transmitted accurately for **each shipment** using the templates



The templates can be integrated into **automated data flows** thanks to the .xsd file format



They are **freely accessible**

Overview of developed templates

I

Master
Data
Report

II

Emission
Intensity
Report

III + IV

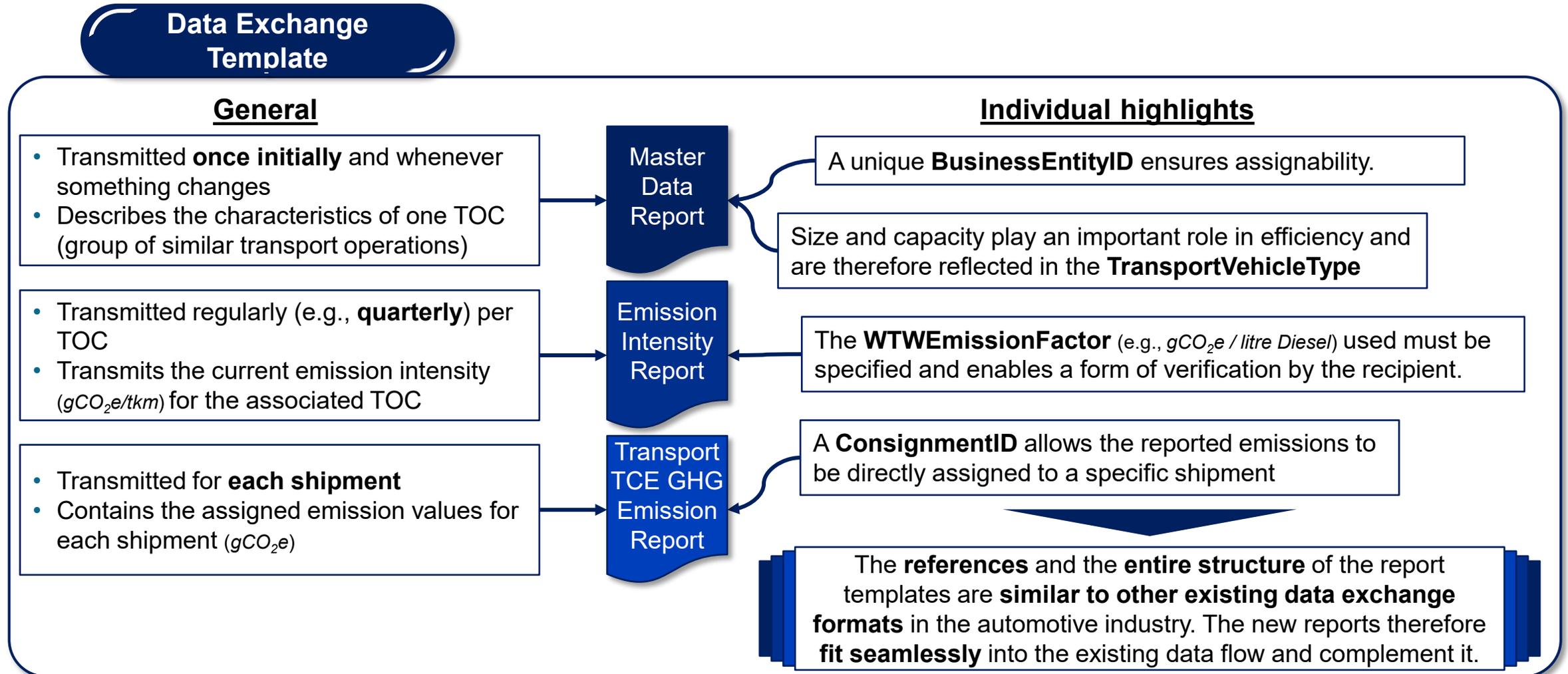
Transport
TCE GHG
Emission
Report

Hub
TCE GHG
Emission
Report

TCE = Transport Chain Element
GHG = Greenhouse Gas

The initiative's results

Standardised data exchange



The initiative's results

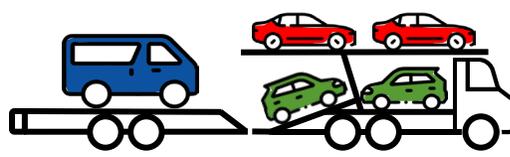
Allocation of partial emissions to individual transported vehicles

Vehicle-specific emission allocation

- ?
- There are situations in which the emissions of a transport operation should be **allocated to the vehicles** being transported.
- This does **not affect the general calculation** of a transport's emissions.
 - This is only necessary if (1) vehicles from different OEMs are being transported and the emissions are to be divided, or (2) if the emissions of the transport are to be broken down to individual vehicles.

⚡ Doing it based on the vehicles' **weights** leads to **incorrect results**.

! A **combination of weight and dimensions**, known as **CEU** (Car Equivalent Unit), allows emissions to be allocated to the cargo according to their **realistic contribution**.



| | Weight-based | CEU-based | |
|--|-----------------------------------|-------------------------------------|--------|
| 2 x  | 2 x 1.304 t = 2.608 t 29 % | 2 x 10 CEU/car = 20 CEU 25 % | - 4 % |
| 2 x  | 2 x 2.220 t = 4.440 t 50 % | 2 x 13 CEU/car = 26 CEU 32 % | - 18 % |
| 1 x  | 1 x 1.908 t = 1.908 t 21 % | 1 x 35 CEU/car = 35 CEU 43 % | + 22 % |

The initiative's results

Enabling controllable book and claim

Insetting - Book&Claim

? Low-emission transport solutions (e.g., electric trucks) are a way of reducing transport emissions but **cannot yet be used on all relations** of a LSPs' transport network. One way to address this is to introduce them where they are already worthwhile and **pass on the emission benefits separately** to customers who are interested.

⚡ This approach is not standardised, and a LSP is able to pass on the emission savings according to its own calculations, which are difficult for OEMs to verify.

! The guideline proposes a standardised procedure for applying the book&claim method, which fits into the reporting system.

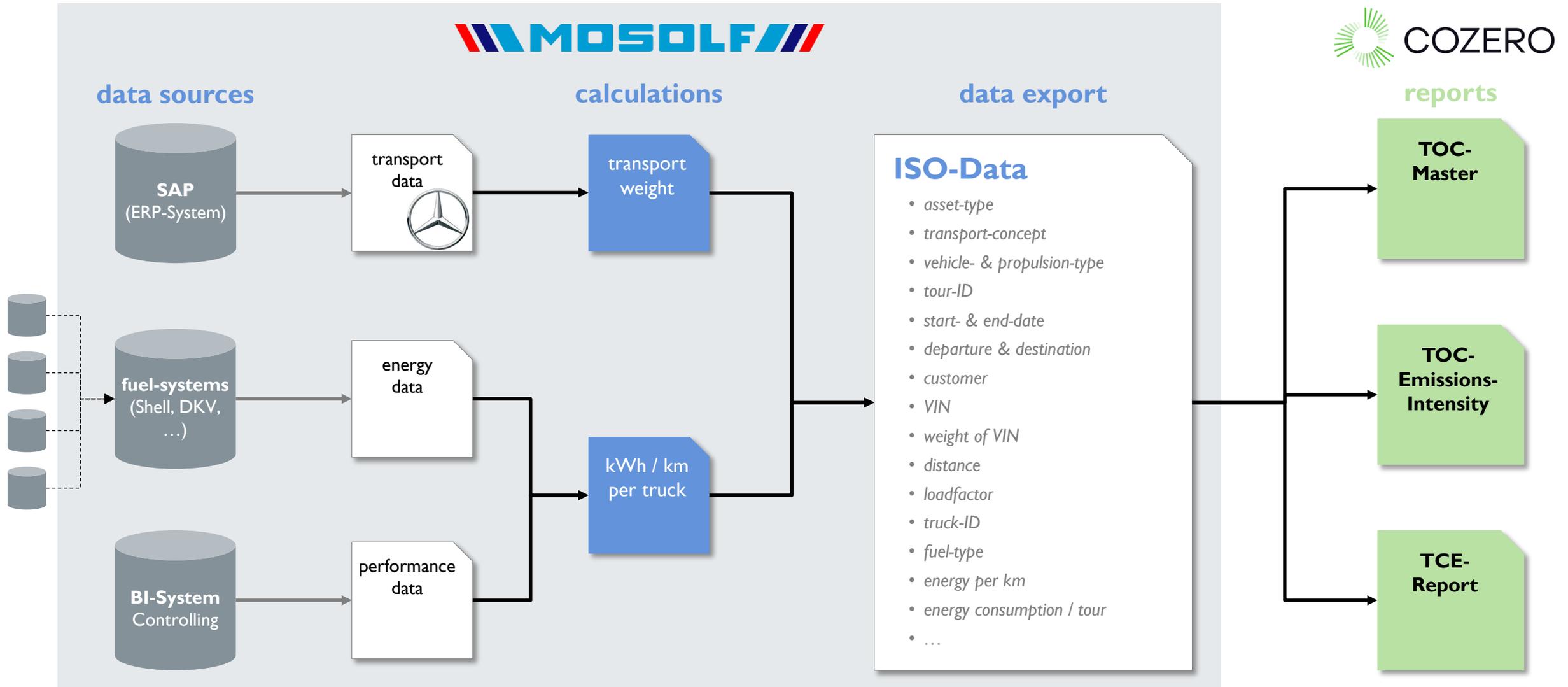


Agenda

1. ECG emission calculation, customer data exchange and book and claim process as foundation
- 2. Success factors and lessons learned based on current implementation experiences**

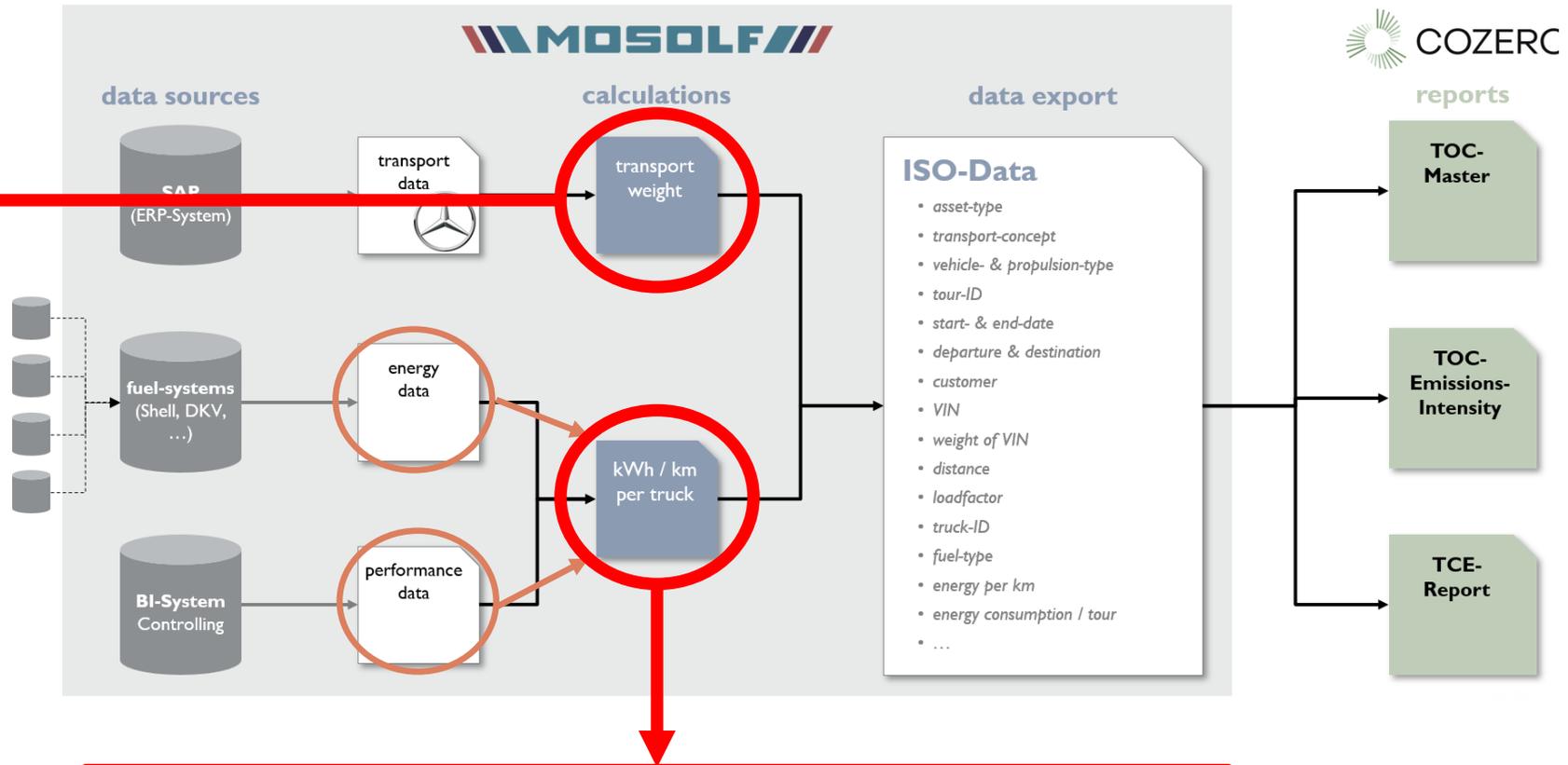
How we implemented the emissions calculation

in accordance with the ECG guideline



Lessons learned: What has been our biggest challenges?

About **40%** of the vehicle weights are not stored in our ERP. We have therefore built an algorithm that determines the vehicle weight based on the available information.



According to our initial data, around **5%** of our trucks drove but did not fill up. These cases also existed in a reversed constellation. Here we had to understand the causes in order to be able to clean up this data.

So much effort just to report emissions to our customers in a standardized way?

1.7. CO₂ reporting / proof of reduction in CO₂ emissions

The contractor must generate a status CO₂ emission report in a regular frequency (e.g. monthly/ quarterly/ yearly) and in an adequate format (e.g. excel) as agreed with [REDACTED]. The contractor must provide proof of the overall CO₂ emissions related to the transported [REDACTED] volume, but also showing the CO₂ reducing impact of the implemented alternative technologies and sustainability measures referring to the certain proportion of volume. The CO₂ reporting shall be based on 'ton kilometers', considering actual transported weight and distances (e.g. by telematics systems) – in alignment with a standardized methodology (e.g. DIN EN 16258; 'GLEC' framework⁶ etc.) is recommended as a guideline. The applied standard values (e.g. emission factors, consumption values) must be disclosed on request.

The CO₂ reporting approach must be explained and validated together with [REDACTED] Sustainability team.

Wir bitten Sie folgende Dinge zu berücksichtigen.

Diese Punkte müssen auf dem Zertifikat enthalten sein:

- Empfänger: [REDACTED]
- Gültigkeitszeitraum
- Höhe der Emissionsreduzierung der Maßnahme in Tonnen CO₂e (absolut und prozentual)
- Zertifikatsnummer/Deklarationsnummer
- Darstellung Berechnungslogik

By disclosing sustainability efforts (qualitative and quantitative) and emission data to initiative as Carbon Disclosure Project etc. in a standardized manner and usable within the entire transport sector reporting efforts could be reduced and transparency increased.

General requirements for CO₂ data:

- **'Well-to-Wheel'**
'Well-to-Wheel' consists of the partial processes 'Well-to-Tank' (energy processes; energy consumption, or all indirect emissions involved in supplying the fuel from the source to the vehicle's fuel tank) and 'Tank-to-Wheel' (vehicle processes; final energy consumption, or all emissions directly involved in operating the vehicle). By this, all direct and indirect emissions represent the calculation basis on which [REDACTED] reports the carbon emissions.
- **CO₂ equivalents**
In this document, CO₂ shall be interchangeable with CO₂e. The unit of measurement CO₂e is used to measure greenhouse gases (e.g. carbon dioxide, methane) across the board.
- Differentiation between **conventional electricity** and **renewable electricity**:
Conventional electricity means energy mix, incl. electricity generation by coal and nuclear energy; renewable electricity means electricity generation by e.g. wind,

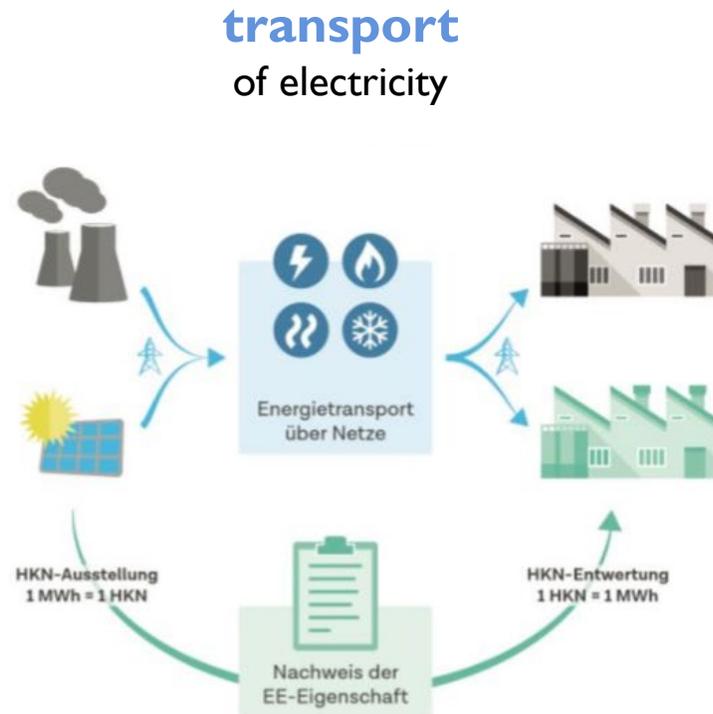
Der Auftragnehmer sollte zusätzlich folgende Kennzahlen für den Volumenanteil [REDACTED] zur Verfügung stellen:

- Energieverbrauch (Strom in kWh) pro Fahrzeug
- Energieverbrauch (Heizung in kWh) pro Fahrzeug
- CO₂-Emissionen (in Gramm) pro Fahrzeug für Platzbetrieb und Lkw-Verteilung (jeweils separat ausweisen)
- Wasserverbrauch pro Mitarbeiter und Jahr (m³/MA*a)
- Recyclingquote des Abfalls in %

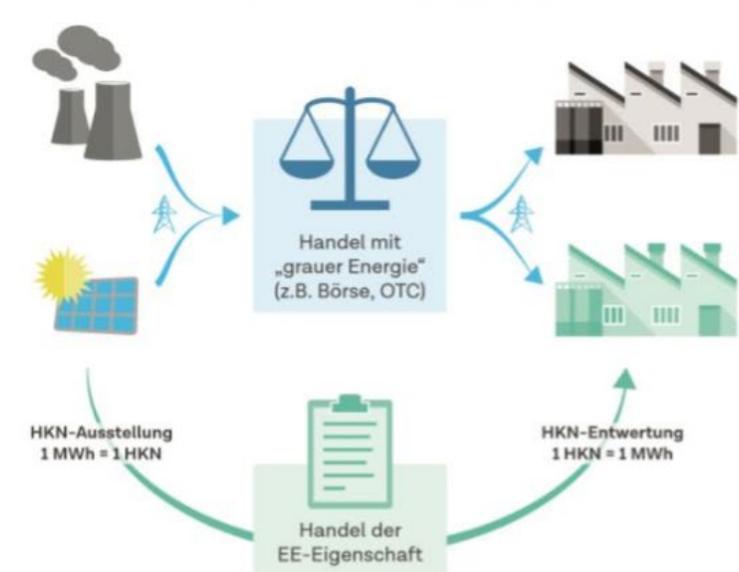
How Book & Claim works

And why it can become game changer in transformation

**Trade-
market**
for electricity



sale
of electricity



**Trade-
market**
for vehicle-
transport

transport
of vehicles

sale
of vehicles-
transport