

Carbon Reduction @ Suppliers

Information deck for External usage



Table of Content

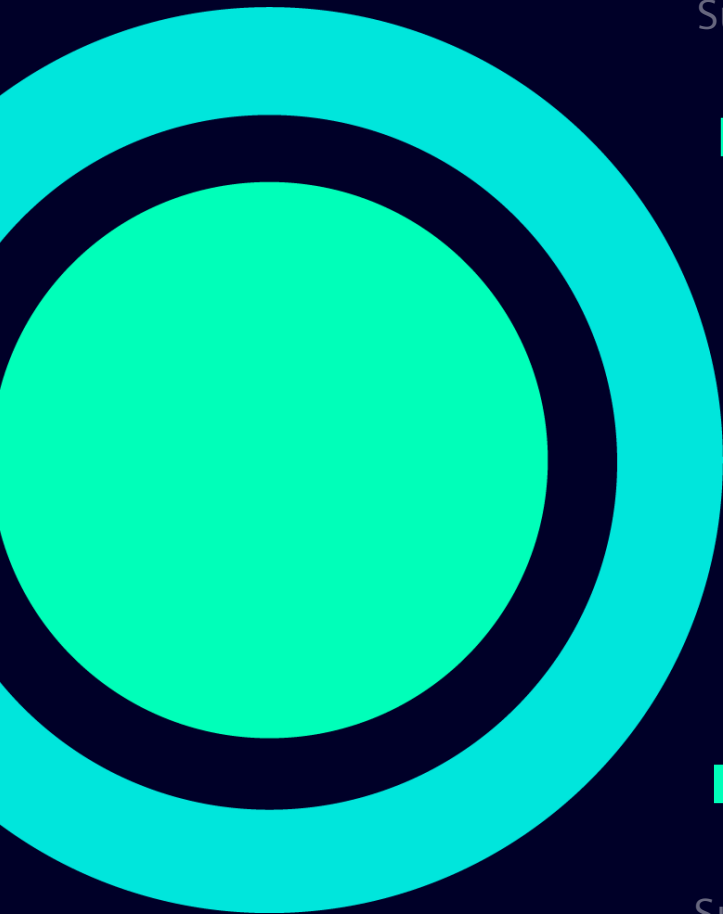




***Decarbonization in
the supply chain***

SIEMENS

Our **DEGREE** framework – a 360° view on Siemens priorities in our business and our own operations



Sustainability business

D – Decarbonization **Accelerated**

E – Ethics

G – Governance

R – Resource efficiency

E – Equity

E – Employability **Accelerated**

Sustainability in own operations

Customer value
propositions

Decarbonization
& energy efficiency

Resource efficiency
& circularity

People centricity
& societal impact

D – Decarbonization

support the 1.5° C target to fight global warming

E – Ethics

foster a culture of trust, adhere to ethical standards and handle data with care

G – Governance

apply state-of-the-art systems for effective and responsible business conduct

R – Resource efficiency

achieve circularity and dematerialization

E – Equity

foster diversity, inclusion, and community development to create a sense of belonging

E – Employability

enable our people to stay resilient and relevant in a permanently changing environment



Consistent steps toward a net zero supply chain (scope 3 upstream)

Net Zero supply chain by 2050 and 20% emissions reduction by 2030

Impact through global supplier footprint



~66,000

Suppliers



~€35bn

goods and services purchased



~150

countries

Scope 3 upstream development in FY22¹

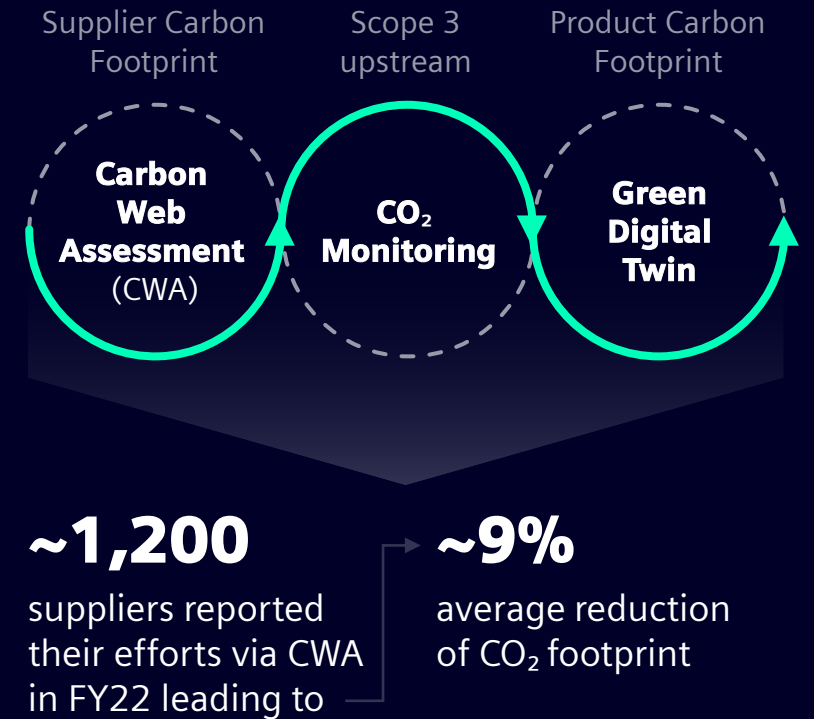
~16%

increase of Purchasing Volume (PVO)

~2.5%

increase of scope 3 upstream emissions compared to FY20 baseline

Collaboration and technology as enabler to reach targets



¹ Excluding SHS

The Carbon Reduction @ Suppliers approach supports the upstream supply chain decarbonization through Carbon Web Assessment and Green Digital Twin



Decarbonization

support the 1.5°C target to fight global warming

Reflected in the **DEGREE** ambition
“Net-zero supply chain by 2050”



The Carbon Reduction @ Suppliers approach includes:

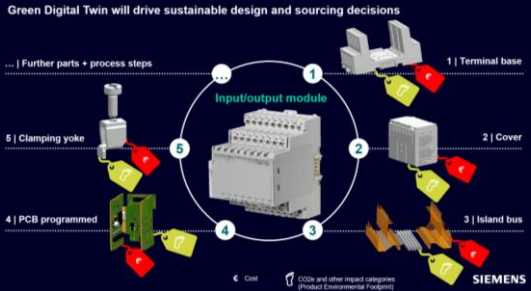
Carbon Web Assessment

Assess suppliers and develop action plans

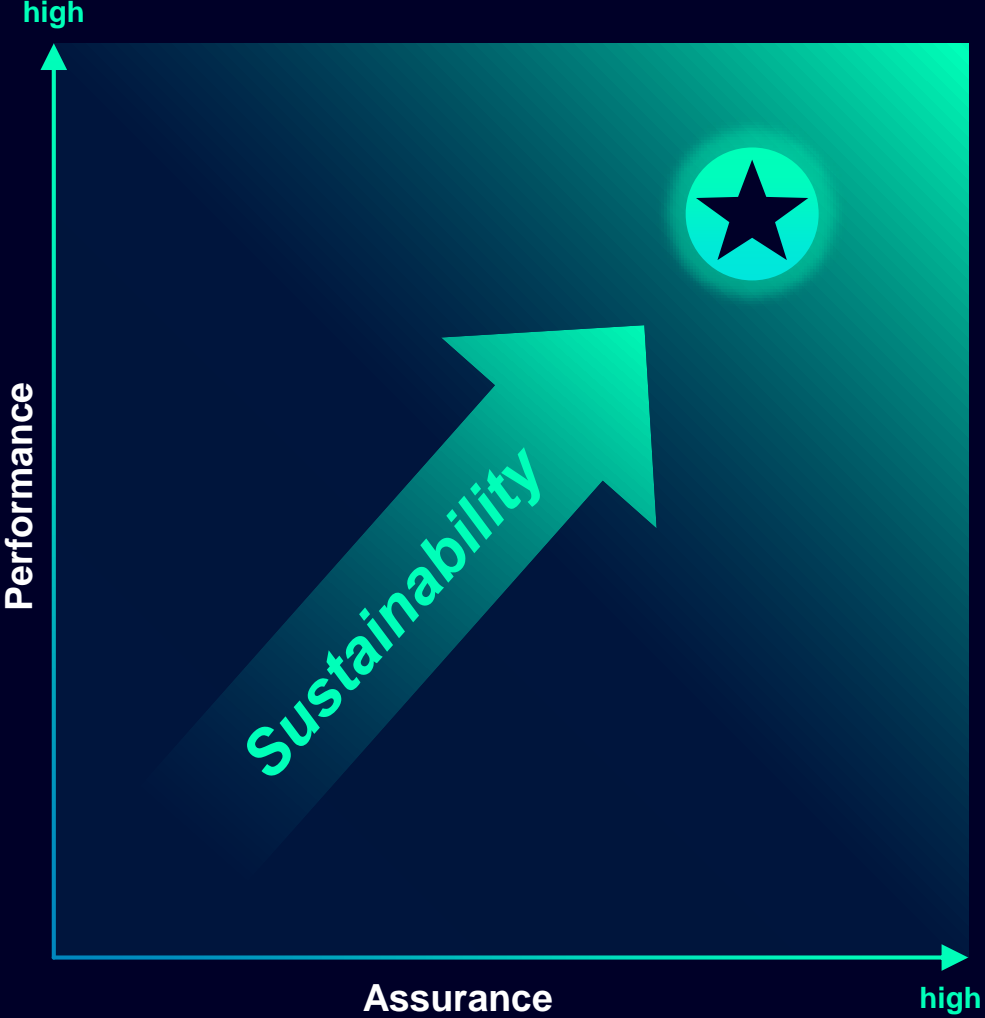


Green Digital Twin

Transform data into environmental transparency at large scale.



What we expect from our supply chain partners



Commit to our assurance fundamentals

- ✓ Code of Conduct
- ✓ Self-Assessment (CRSA)
- ✓ External Sustainability Audits

Drive sustainability performance with highest ambitions

- Strengthen our **Sustainability transformation**
- Actively drive **CO₂ reduction** along the **net-zero pathway**
- Join our **Carbon Web Assessment** and **involve your suppliers**
- Utilize **resource reduction levers** and get prepared for the **Green Digital Twin**



Carbon Web Assessment (CWA)

SIEMENS

Carbon Web Assessment (CWA) is designed to support our suppliers in their target setting and action plans for reducing their climate footprints

Gaining transparency was the first step

Economic model developed to calculate the aggregated CO₂ footprint of all products and services purchased by Siemens

From calculated transparency to primary data

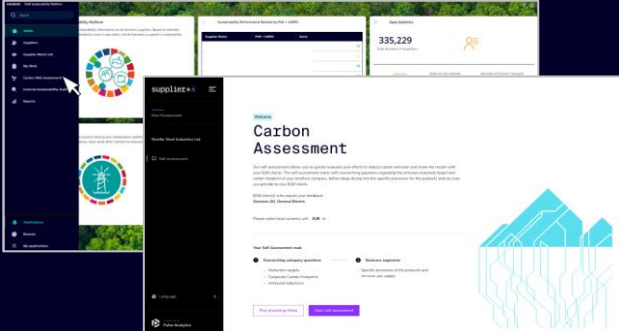
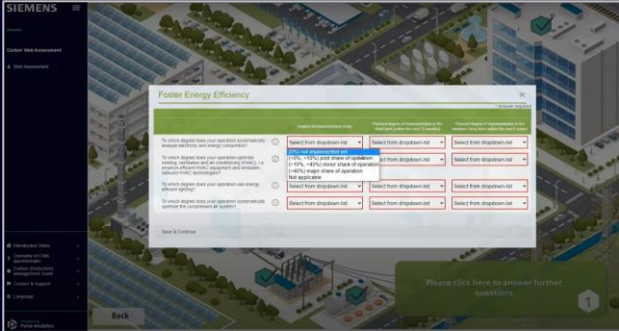
“Carbon Web Assessment” (CWA) designed to work with our CO₂ calculation tool and replace estimated data with primary data from our suppliers

From pilot to scale up

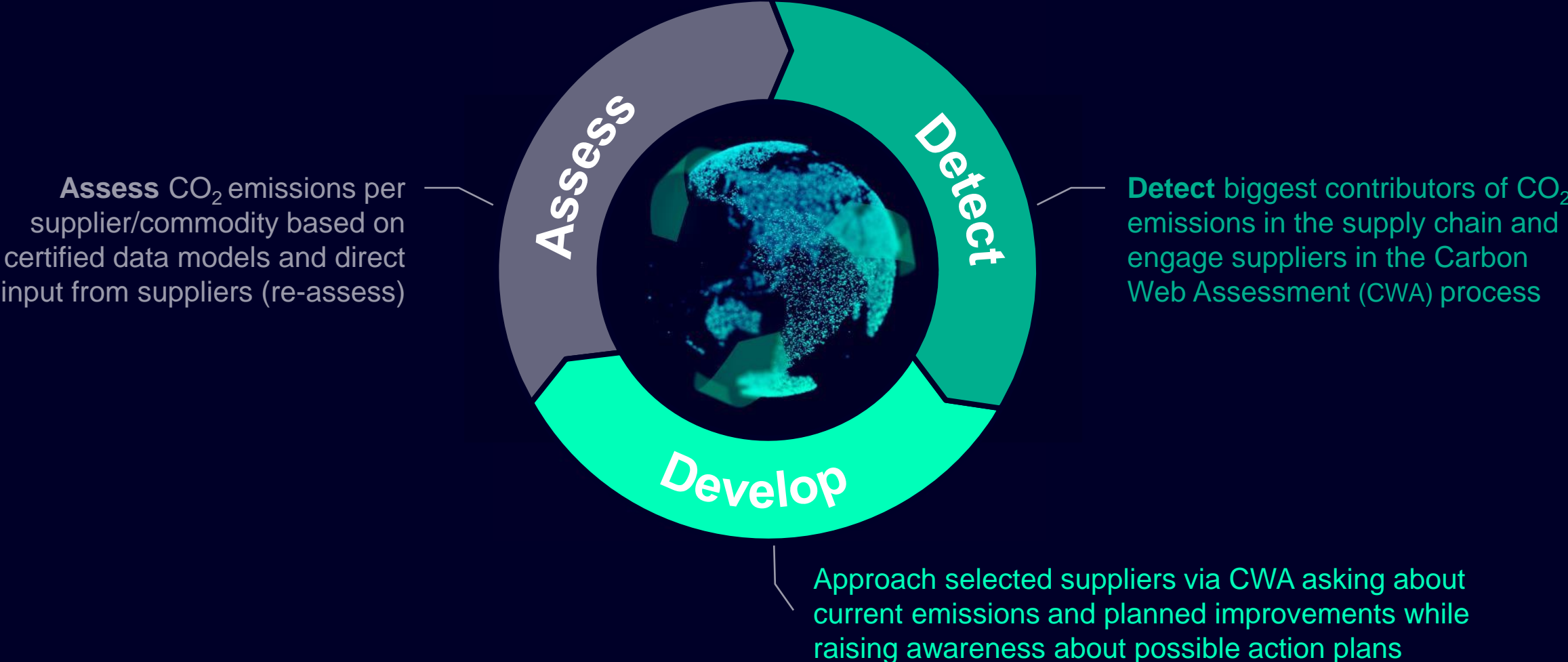
Digitized process via the SCM Sustainability Platform (SSP) and a new platform, externally available and with the ability to address the deeper supply chain

Continuous improvement

Further process and platform improvement including creation of the CWA Qlik Dash, Sustainability Score enhanced by CWA performance, addition of new business segments etc.



Carbon Web Assessment will support us and our suppliers through an iterative cycle of assessing emissions, detecting biggest contributors and developing action plans with them



In order to achieve the required level of transparency, our suppliers play a vital role in the Carbon Web Assessment process



Requirements to our suppliers

- **Identify** the right person in the company who can provide information about their decarbonization plan
- **Register** to the supplier+s platform
- **Complete the self-assessment** by answering as many questions as possible
- **Invite your suppliers** to join the platform and to conduct the self-assessment



***Supplier+s
platform***

SIEMENS

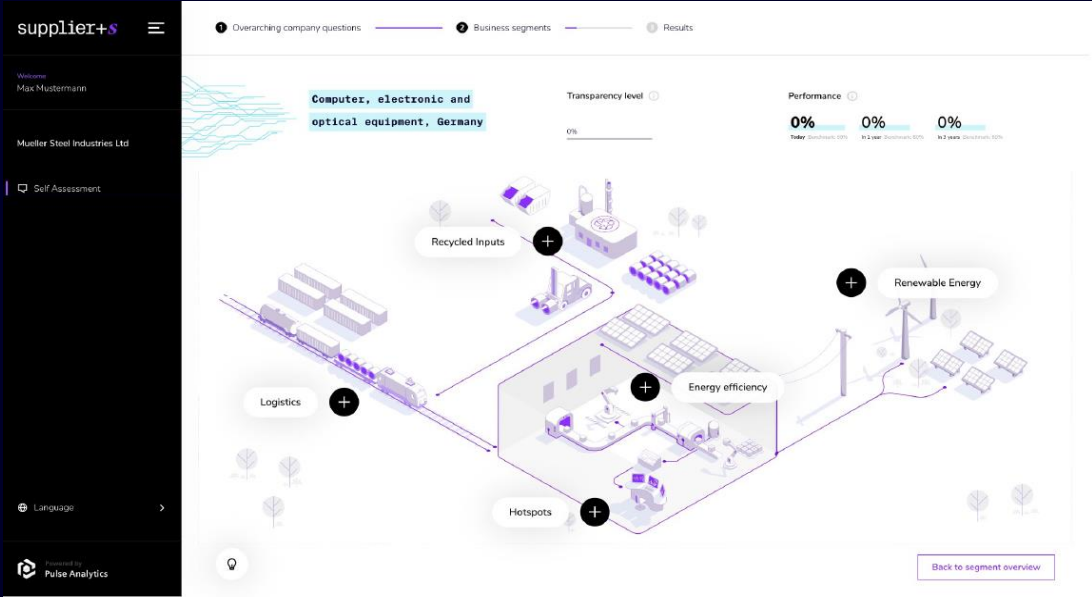
Carbon Web Assessment (CWA) supported and externally hosted by a new tool called “supplier+s”

From



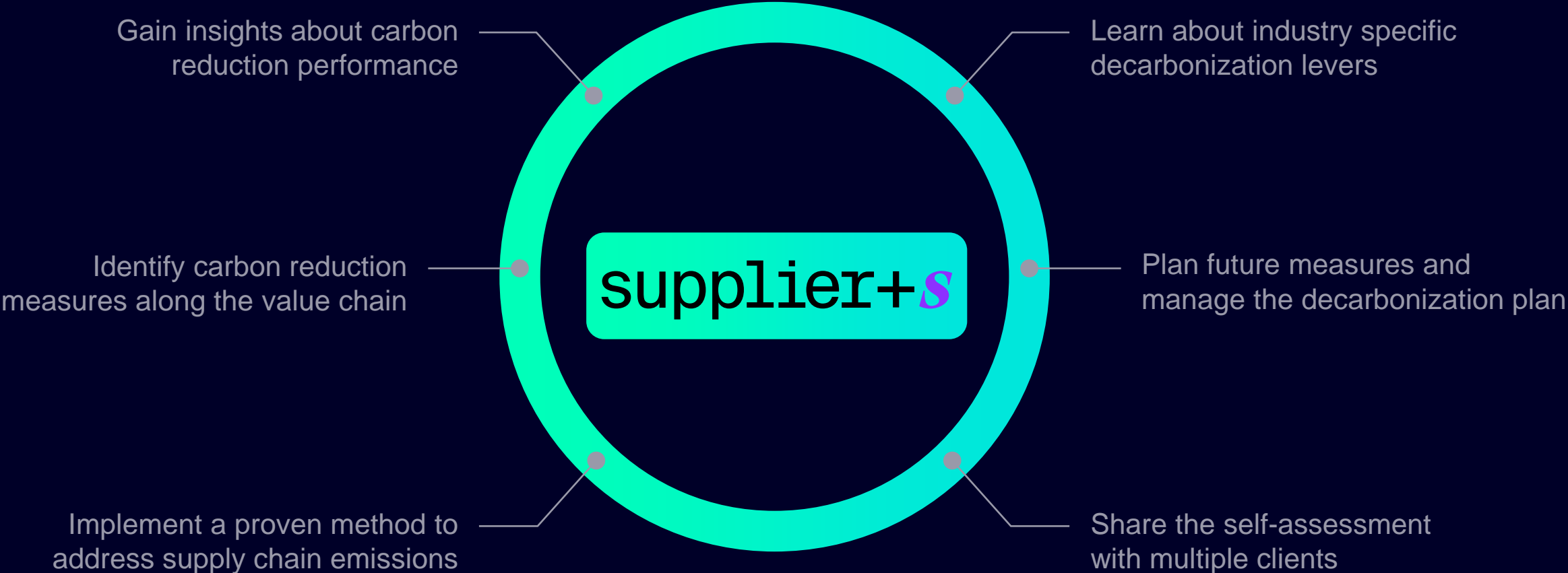
Developed and piloted by Siemens

To



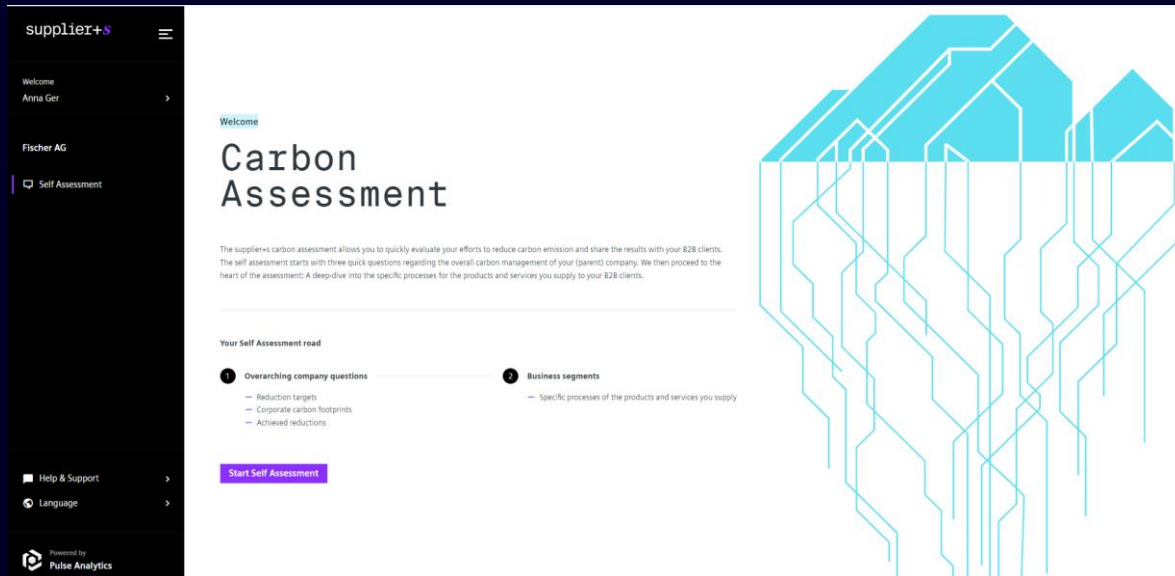
Developed and managed by ctrl+s

The supplier+s platform is designed to provide transparency to the inviting company while also adding value to the supplier that accepts the invitation



As a first step, the suppliers get an invitation per email asking them to register to the supplier+s platform and perform the self-assessment

Homepage



1. E-mail with token
2. Registration process
3. Confirm e-mail
4. Login

In the first part of the self-assessment, suppliers answer questions about their decarbonization status quo on corporate level

Corporate Questions

Corporate status quo

Let's quickly take stock of the status of your corporate carbon management.

Page 1 / 4

Reduction targets

Do you have a scope 1+2 reduction target for your corporate carbon emissions? ⓘ Yes No

Do you have a scope 3 upstream reduction target for you corporate carbon emissions? ⓘ Yes No

Corporate carbon footprints

Do you calculate and report your corporate carbon footprint on a regular (yearly) basis? ⓘ Yes No

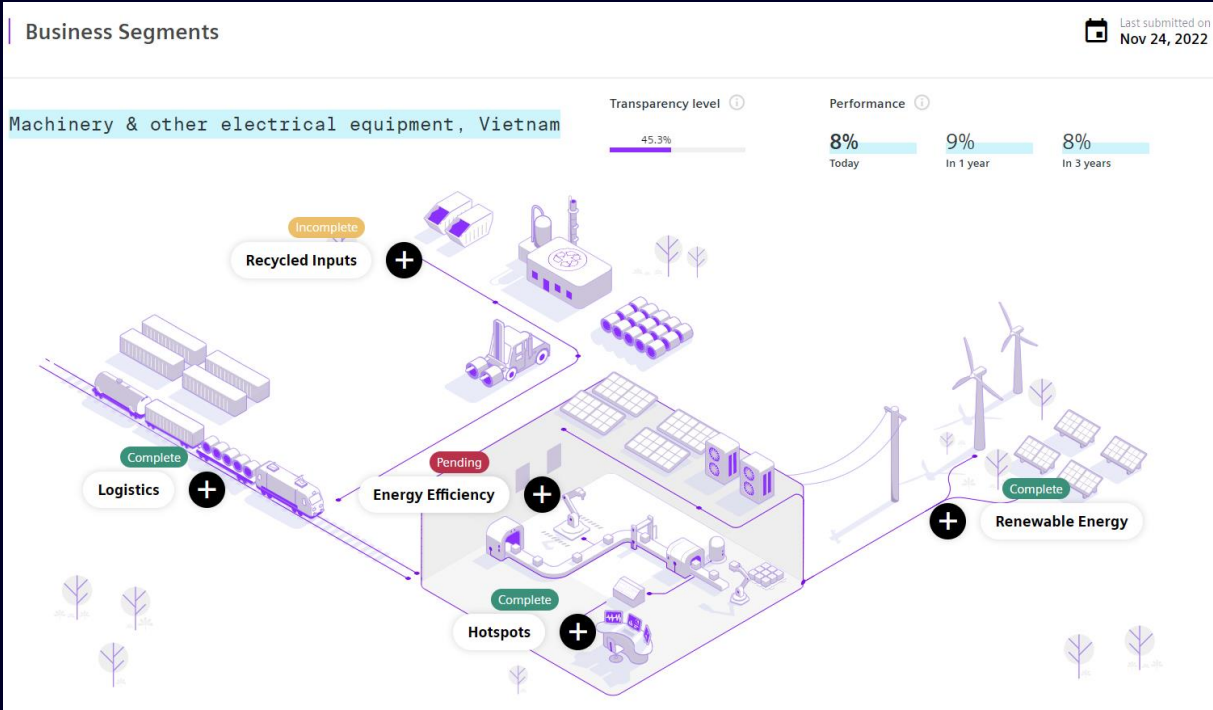
Achieved reductions

As your corporate carbon footprint might change from one year to the next due to several reasons, are you able to clearly quantify the share of this change that is due to your reduction activities (as e.g. opposed to change due to methods updates or new system boundaries)? ⓘ Yes No

1. Reduction targets
2. Commitments
3. Reporting emissions
4. Achieved reductions

The second part of the self-assessment consists of business segment related questions that are customized based on the industry of the supplier

Business Segments Questions



1. Specific chapters
2. Transparency level
3. Performance
4. Submit

Example: Machinery & other electrical equipment



Carbon Accounting Module in supplier+s

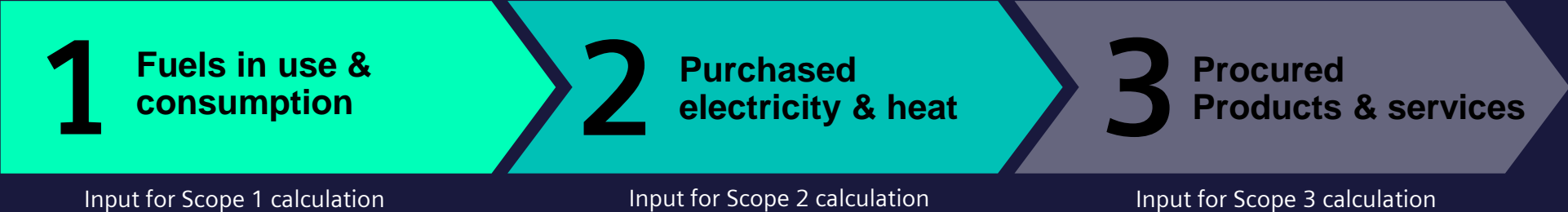
SIEMENS

Carbon Accounting Module provides the basis for Multi-tier insights and impact

New Module in the *supplier+s* platform

Carbon Accounting Module in *supplier+s*

Suppliers can get an assessment of their CO₂e emissions in three simple steps:



Additional value add for suppliers

Suppliers can calculate their emissions in the Scopes 1, 2, and 3 upstream

Enhanced comparability

Calculated values can enhance CCF figures included in the self-assessment

Tier-n insights

Provides insights into supply chain emissions that can be used to engage sub-suppliers

As a first step, the suppliers select the fuels they use and specify their respective consumption

Fuels in use & consumption

The screenshot displays a web interface for carbon accounting. The title is 'Carbon accounting - Fiscal year 2023' with a 'Help' button. The section is 'Scope 1' (Step 1/3). A descriptive paragraph explains that Scope 1 includes direct greenhouse gas emissions from combustion of fuel in vehicles, furnaces, heaters, or machinery owned by the organization. Below this, the section is 'Direct emissions from fuel combustion and own processes'. It contains a table with two rows of data:

Activity	Amount/ consumption	Remove
Wood pellets - tonnes	80 tonnes ↗	✕
Compressed natural gas (CNG) - kWh (Net CV)	40 kWh (Net CV) ↗	✕

Below the table is a '+ Add new input' button. At the bottom, there is a note: '*Gross Calorific Value (GCV) is the amount of heat released by the complete combustion of a unit of fuel. It is also known as Higher Heating Value (HCV); Net Calorific Value (NCV) also known as lower heating value (LHV) or lower calorific value (LCV) is determined by subtracting the heat of vaporization of the water vapour from the higher heating value.' At the bottom right, there are '< Back' and 'Continue >' buttons.

1. Add new input
2. Choose types of fuel
3. Specify amounts
4. Calculate Scope 1

As a second step, the suppliers describe the electricity and heat that they purchase

Purchased electricity & heat

Carbon accounting - Fiscal year 2023 Help

Scope 2 Step 2/3

Complete your carbon accounting for Scope 2 by listing your indirect emissions from purchased electricity, heat/steam, and cooling in three simple steps: select the activity, the country/region where the energy is consumed, and the amount/consumption.

Indirect emissions from purchased electricity, heat, steam and cooling

Activity	Country/region	Amount/ consumption	Remove
Renewable heat and steam (certified) -...	United States (USA) ▾	50,000 kWh ℹ	✕
Electricity (national grid) - kWh	Germany (DEU) ▾	100,000 kWh ℹ	✕

[+](#) Add new input

*Electricity from renewable sources that is sourced or generated purposefully, namely via: Energy Attribute Certificates (EACs), Purchasing Power Agreements (PPAs), on-site generation (solar PV, biomass, biogas, hydro, wind), green tariffs, NOT: renewable share already included in location-based grid factor

[← Back](#) [Continue →](#)

1. Add new input
2. Choose type
3. Specify amounts
4. Calculate Scope 2

As a third step, the suppliers describe their supply chain to determine their upstream Scope 3 emissions

Procured Products & services

Carbon accounting - Fiscal year 2023 Help

Scope 3 upstream Step 3/3

Scope 3 upstream emissions are often the largest source of emissions, but also represent the greatest opportunity to reduce emissions. Complete your Scope 3 accounting to prioritize your decarbonization efforts where they will make the biggest difference. The process follows : **three simple steps**:

1. Report your company's total turnover (in USD), as well as the percentage that is spent on products and/or services.
2. Define the distribution of your spend volume by entering the inputs that contributed most to your spend. Enter at least one product or service to continue your accounting.
3. Specify suppliers for each product and service for more accurate results and insight into your emissions hotspots. You can autofill the entries by clicking the 'Autofill with industry statistics' button and you can then add or edit information. The auto-fill feature uses proxy statistical data from companies in your industry. Finally, invite relevant suppliers to the platform to track their emissions and reduction efforts

Spend volume ⓘ

Total turnover (in 1000 USD) *required [🔗](#)

Spend as share of turnover (%) [🔗](#)

If left blank, your industry's average is automatically applied: 48%

Distribution of spend volume Autofill with industry statistics

Product/service	Contribution to spend volume	Suppliers specified	Supplier management progress	Remove
Other miscellaneous manufacturing	26 % 🔗	Manage suppliers	<div style="width: 81%;"><div style="width: 81%;">81%</div></div>	✕
Resin metals	2% 🔗	Manage suppliers	<div style="width: 100%;"><div style="width: 100%;">100%</div></div>	✕

[⏪ Back](#) [Continue ⏩](#)

1. Specify spend volume
2. Select products & services
3. Specify share of spend
4. Calculate Scope 3 upstream

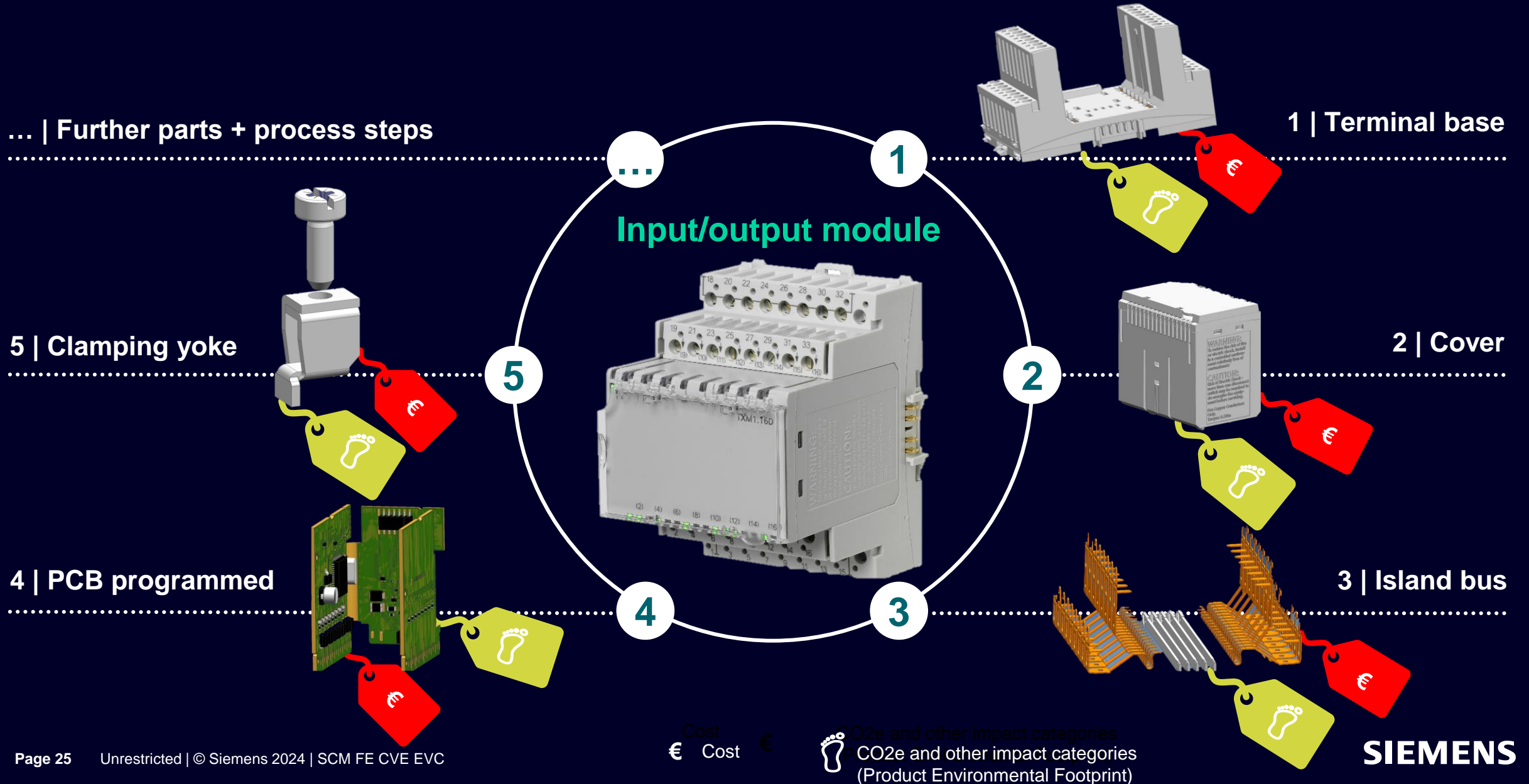


Green Digital Twin

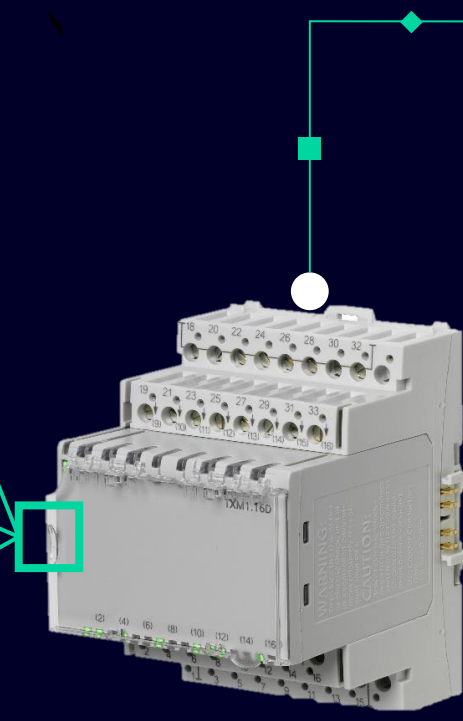
SIEMENS

Green Digital Twin will drive sustainable design and sourcing decisions

... | Further parts + process steps



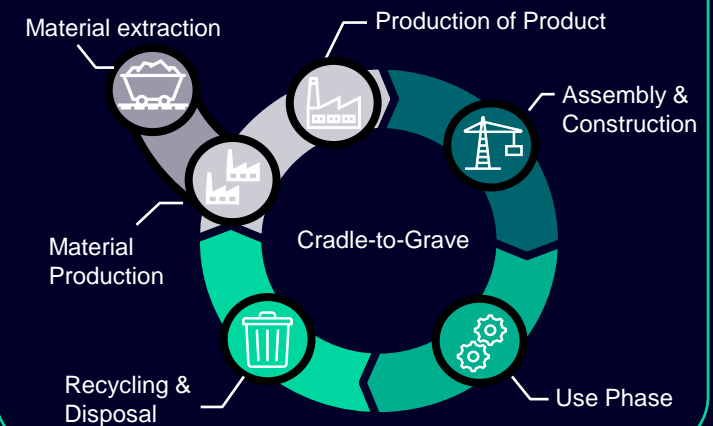
We start with full transparency along whole product lifecycle



Product Environmental Footprint with **multiple** impact categories



Product Lifecycle from **Cradle-to-Grave**



SIEMENS

Green Digital Twin Web Application: to be used for LCA / EPD calculations and for environmental footprint simulation/optimization

What GDT provides

Lifecycle Assessment (LCA) and Environmental Product Declaration (EPD)

The screenshots display the following sections:

- General information:** Product details for SIMATIC S7-400 CPU 410, including manufacturer (Siemens) and product description.
- Material composition:** A donut chart showing the breakdown of materials: Thermoplastics (42.1%), High alloyed steel (31.2%), Low alloyed steel (12.8%), Copper and alloys (4.3%), and Electronics (8.6%).
- Life cycle stages and reference scenarios:** A flow diagram showing Manufacturing, Operations, and End-of-life stages.
- Global warming potential:** A bar chart showing CO2e emissions: Manufacturing (81.2), Operations (506.7), and End-of-life (1.1).
- Key environmental performance indicators:** A table with columns for Impact category, Unit, and Total, detailing various environmental metrics.
- End-of-life scenario:** Information regarding the disposal and recycling of the product.

Product environmental footprint simulation and optimization supporting robust ecodesign

The screenshots display the following sections:

- Composition (% of total product weight):** Two panels showing material breakdowns. The first panel includes Aluminum (48.29%), Casting (18.93%), Coating (14.44%), Electronic (2.36%), Non-ferrous Metal (8.16%), and Other materials (7.83%). The second panel includes Aluminum (15.41%), Casting (25.69%), Electronic (2.97%), Ferrous Metal (15.41%), Non-ferrous Metal (17.13%), Other materials (8.22%), and Plastic (15.16%).
- Commodity Details:** Two panels showing pie charts for 'Total' CO2e emissions. The first panel shows a total of 9.94 kg CO2e, and the second panel shows a total of 8.95 kg CO2e.

Solid and proven foundation

GDT web app certified by TÜV Rheinland since December 2023



Centralized and harmonized "One Siemens LCA database" with more than 5000 data points (life cycle inventory)



Seamless automated data flow across input sources and output (e.g. data input from Data cloud systems like Snowflake and providing results to customer portals)

Operational for whole Siemens product portfolio

20



500+

480+ EPDs Type II published in one year (Type III start in Dec 2024)

