Catena-X

THE FIRST OPEN & COLLABORATIVE DATA ECOSYSTEM

Niels Angel, BMW Group
Project lead Sustainability @Catena-X
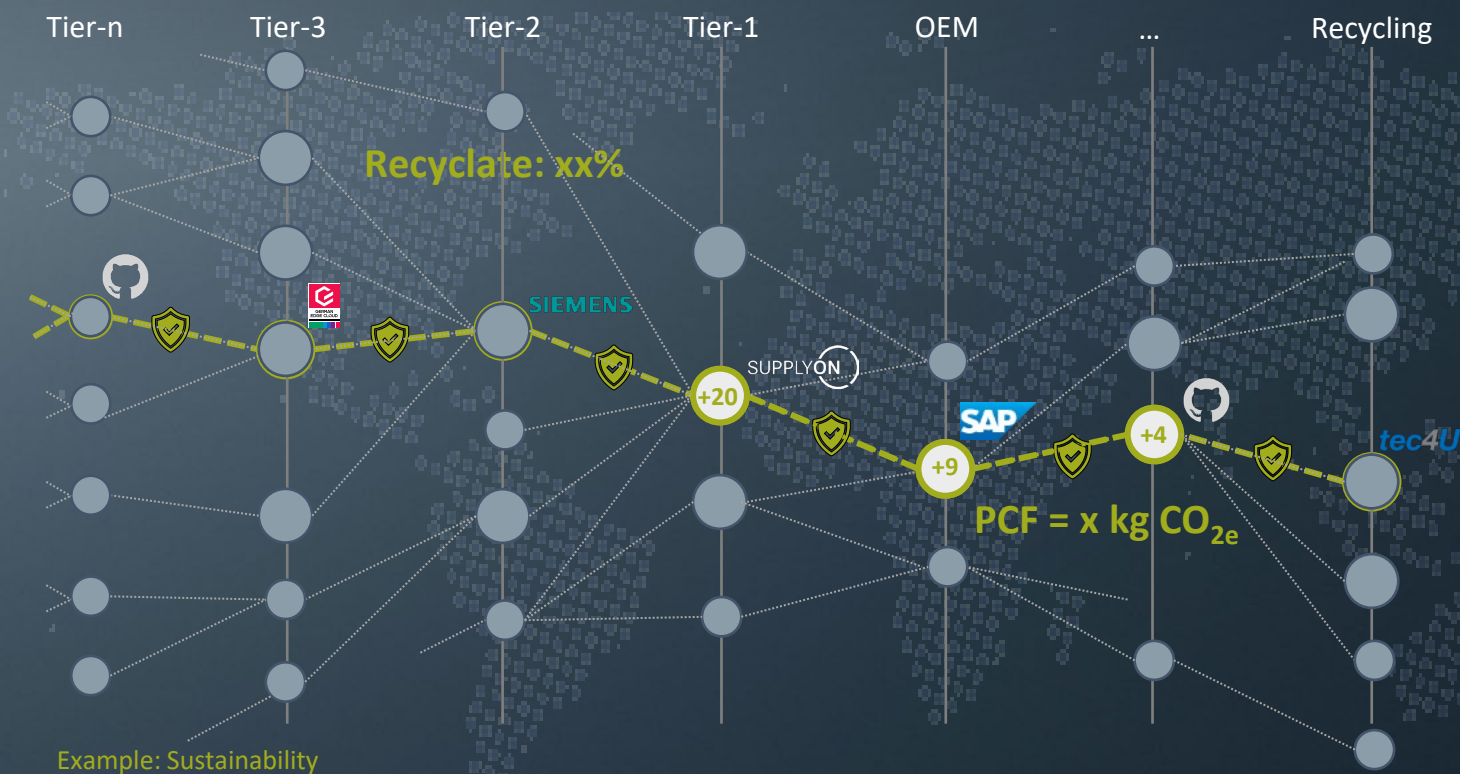
Bundesministerium
für Wirtschaft
und Klimaschutz

Catena-X is building an ecosystem to digitise the automotive supply chain

Build a **global data space** that can host our industry

275.000+
legal entities

x

 # locations
globally

x

 # digital twins
machines, products, …

x

 # apps
business processes

x

 # users
business responsibility

optional adjacent industries

Create the first **data driven value chain**; incorporating all participants via **interoperable** and trusted solutions

Tier-n   Tier-3   Tier-2   Tier-1   OEM   …   Recycling

Recyclate: xx%

SIEMENS

SUPPLYON

+20

SAP

+9   +4

tec4U

PCF = x kg CO$_2$e

Example: Sustainability

The Catena-X association has currently more than 120 members, and it's open to all interested parties
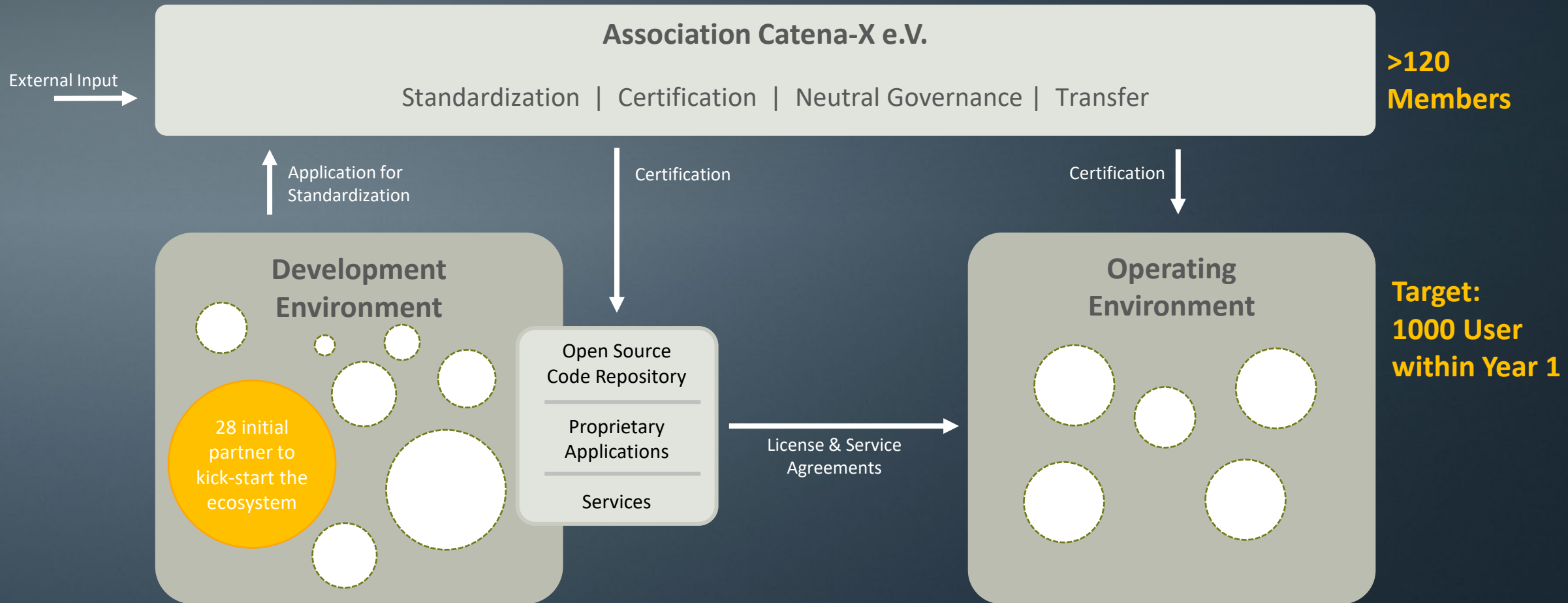
Consortium

ADAC · ARENA2036 · BASF · BMW · ISTOS A MEMBER OF DMG MORI · LRP Autorecycling · Mercedes-Benz · Microsoft · VOLKSWAGEN

BIGCHAIN DB · CCT · DLR · fetch.ai · mipart · BOSCH · SAP · SCHAEFFLER · ZF GROUP

Fraunhofer · GERMAN EDGE CLOUD · GRIS group · Henkel · SIEMENS · T · SUPPLYON · tec4U · up2parts · TRUMPF

Association

allsafe made in germany seit 1964 · APHERIS · APLIKO · ARXUM · AsahiKASEI · VDA · vmware · brembo · HELLA

AAI AUTOMOTIVE ARTIFICIAL INTELLIGENCE · BRAIN OF MATERIALS · Capgemini · CDQ SHARING DATA EXCELLENCE · CIRCULARISE · circunomics · WITTE AUTOMOTIVE · VOLVO · Scheer

dccs IT Business Solutions · Deloitte. · DENSO Crafting the Core · Continental · HANSELMANN & COMPAGNIE · HELIOT EUROPE · Kaputt. · 23 Technologies · hp

IAV · ILI.DIGITAL · iPoint · itemis · Atos · DRÄXLMAIER · em engineering methods AG · Ford · CGI · MAGNA

owncloud · SSC · Valeo · thyssenkrupp · tributech · STELLANTIS · fagorederlangroup · IBM

For the complete list of all members, please visit www.catena-x.net
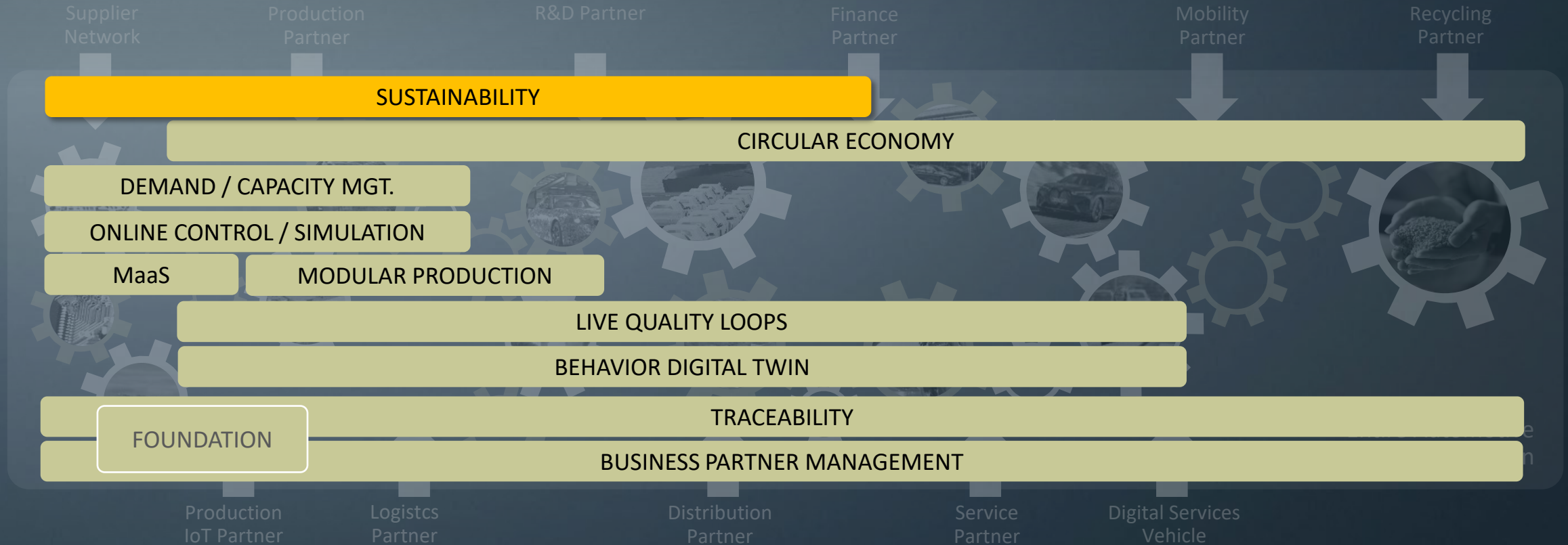
AMERICA · **ASIA** · **AFRICA**

Pot. Catena-X Hubs

Starting Point
German Automotive Industry

It takes an Open and Balanced Approach to build and run a Global Data EcoSystem for the Industry

Association Catena-X e.V.

Standardization | Certification | Neutral Governance | Transfer

External Input

>120 Members

Application for Standardization

Certification

Certification

Development Environment

28 initial partner to kick-start the ecosystem

Open Source Code Repository

Proprietary Applications

Services

License & Service Agreements

Operating Environment

Target: 1000 User within Year 1

How Catena-X Works

Example

Open Source SaaS

Tenant · Tenant · SME 1

GreenToken SaaS licenced to

Tenant · Tenant · Tenant · .... · ....

SIEMENS · SiGreen SaaS licenced to

Tenant · Tenant · Tenant · BASF · .... · ....

EDC

Data Exchange Option B

Catena-X
Federated Operating Environment

Portal	Digital Twin Registry	Semantic Hub
Identity Provider	Marketplace Contracting / ...	...
Marketplace Navig., Apps, Services	Authentication DAPS → Cust. Wallet	Self-Description Hub

SME 1 · CSV-Upload · my fully-managed Catena-X cloud stack with my · EDC

SME 2 · IoT Adapter · my Catena-X certified cloud stack with my · EDC

no operational data

no operational data

no operational data

no operational data

Digital Twins · IAM · EDC

Data Exchange Option A

EDC · IAM · Digital Twins

BASF · We create chemistry

The First Use Cases to Kickstart the Network

10 business-critical end-to-end use cases

Supplier Network • Production Partner • R&D Partner • Finance Partner • Mobility Partner • Recycling Partner

SUSTAINABILITY

CIRCULAR ECONOMY

DEMAND / CAPACITY MGT.

ONLINE CONTROL / SIMULATION

MaaS   MODULAR PRODUCTION

LIVE QUALITY LOOPS

BEHAVIOR DIGITAL TWIN

TRACEABILITY

FOUNDATION   BUSINESS PARTNER MANAGEMENT

Production IoT Partner • Logistcs Partner • Distribution Partner • Service Partner • Digital Services Vehicle

Challenge: No access to accurate, specific primary data of PCF in the supply chain

Status quo:

Little specific information on Product Carbon Footprint in the supply chain
No transparency regarding actual process efficiency or actual energy usage

Inconsistent methodology / standards für die PCF calculation

Today: PCF calculation using technology averages from LCA databases

Average data blurs any differences in supply chains and fails to measure reductions in your supply chain

Established methods

LCA dataset:
average production of a product,
e.g., regional market mix

Company A

Production line A1

PCF
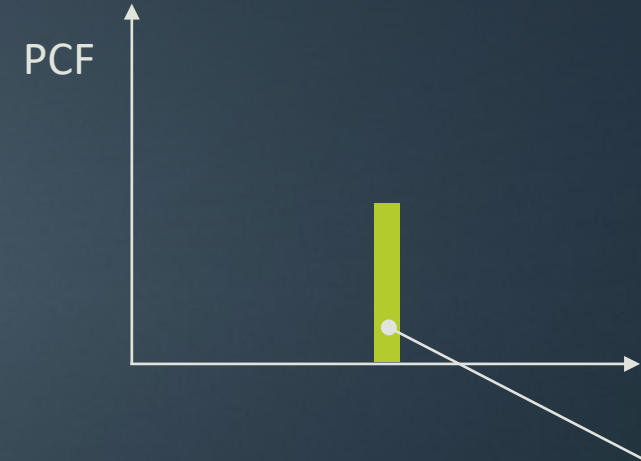
Supplier-specific, primary data

Company G

Production line G1

Company E

Production line E1

Company B

Production line B1

Company A

Production line A1

PCF

average production

Supplier specific

Competitors
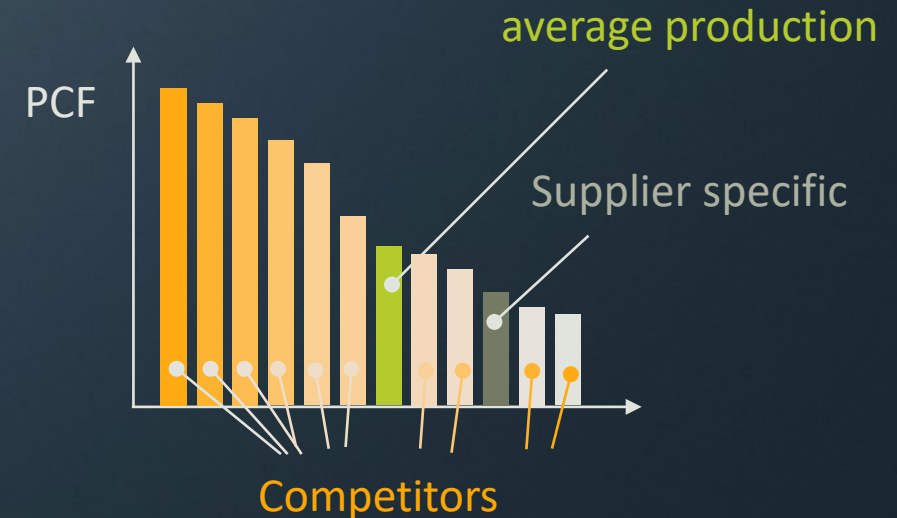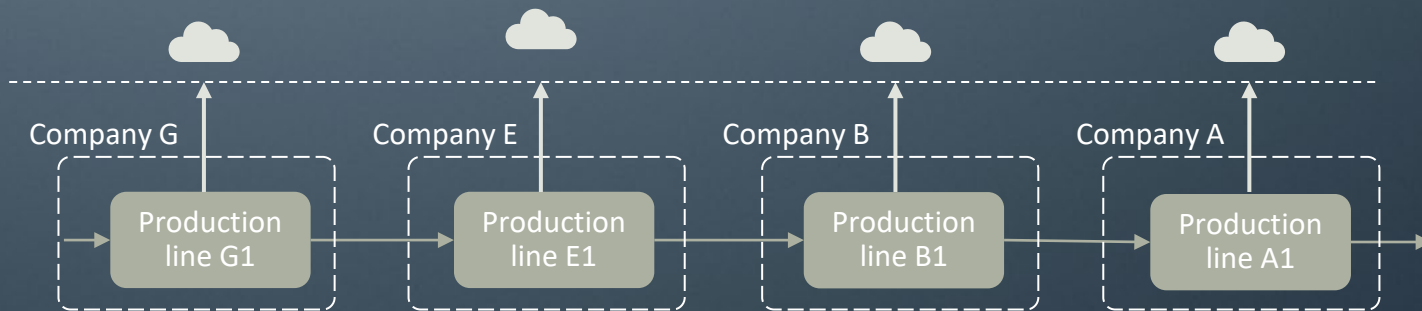
Catena-X aims to exchange PCF based on primary data along the value chain wherever possible...

CO_2 supply chain for a component

OEM
Tier 1
Tier 2
Tier 3
Tier 4
Tier 5

n.r. / 740
40 / 700
100 / 350
30 / 70
80 / 70
5 / 45
30 / 100
5 / 165
85 / 0
45 / 0
55 / 40
10 / 60
30 / 0
10 / 0
50 / 0

Direct emissions
Upstream emissions
g CO_2e
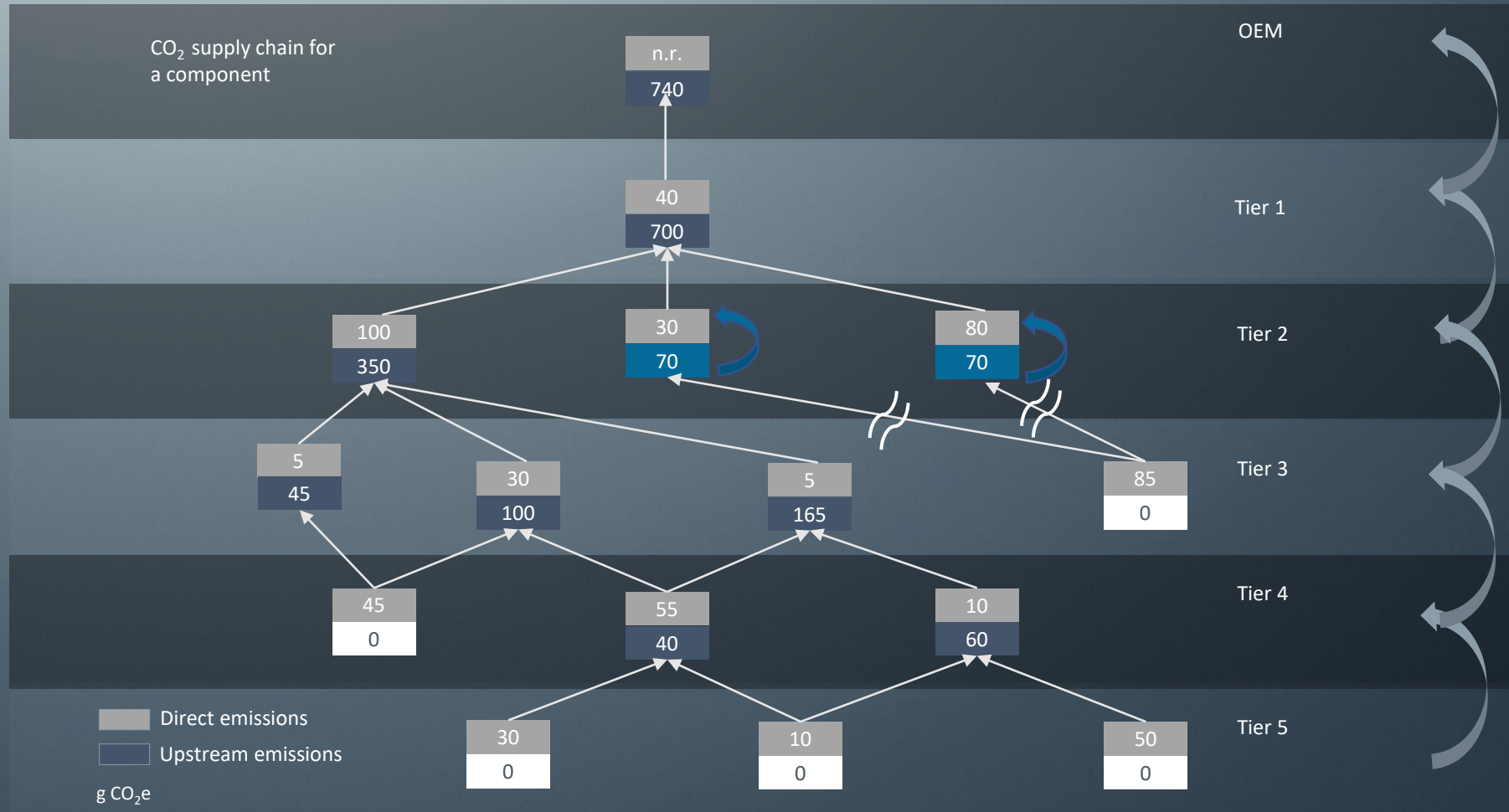
Quality indicators like primary data share allow for a system which is improving over time, improving quality along with a growing network!

... falling back on recognized database values when necessary

Catena-X records the PCF along the entire automotive supply chain to improve reporting efficiency and to reduce GHG emissions in a sustainable and traceable manner

Capture GHG emissions data based on real **processes and site data to measure, reduce and report.**

Identification of hotspots

Definition and implementation of measures in the n-tier chain

Efficient and credible reporting of PCF values and achieved reductions

Goal: Replace average values from databases with specific data over time

Catena-X has identified 5 core tasks to enable PCF measurements along the value chain

Rulebook

PCF Exchange Format

Calculation support for SMEs

PCF Verification & Audit

Infrastructure for PCF

PCF calculation guidance

Unified data model based on rulebook

Calculation support apps and ecosystem for small and medium enterprises

Streamlined processes to build trust along the supply chain while minimizing efforts
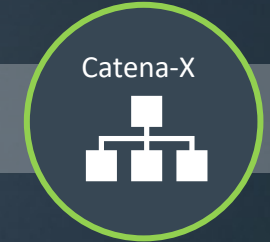
Exchange software solutions

Catena-X has already worked on a draft for a common rulebook, to be consulted and further developed with interested parties
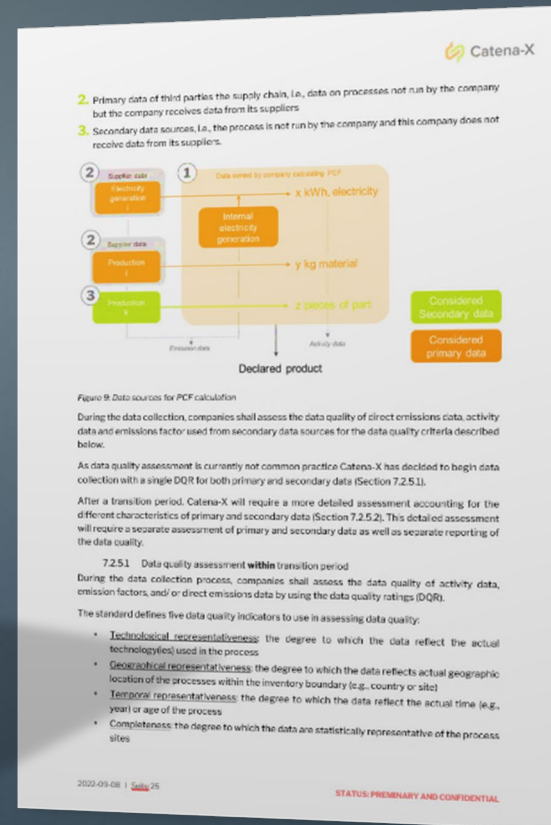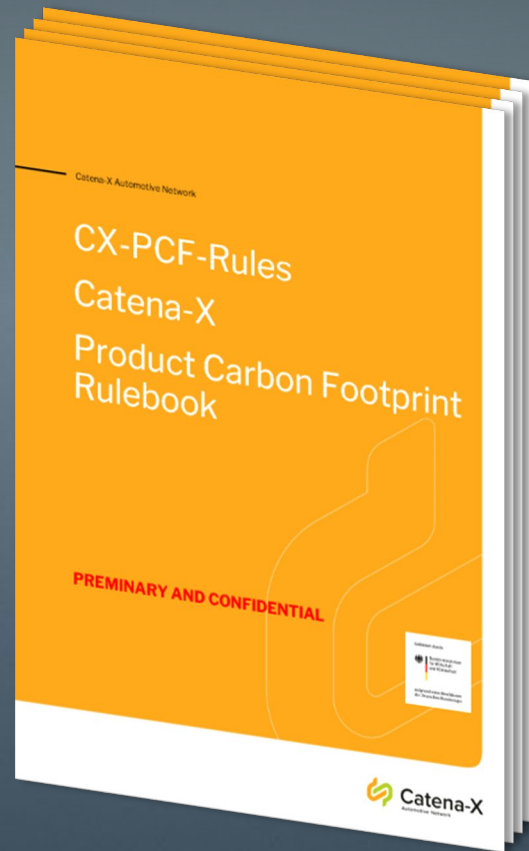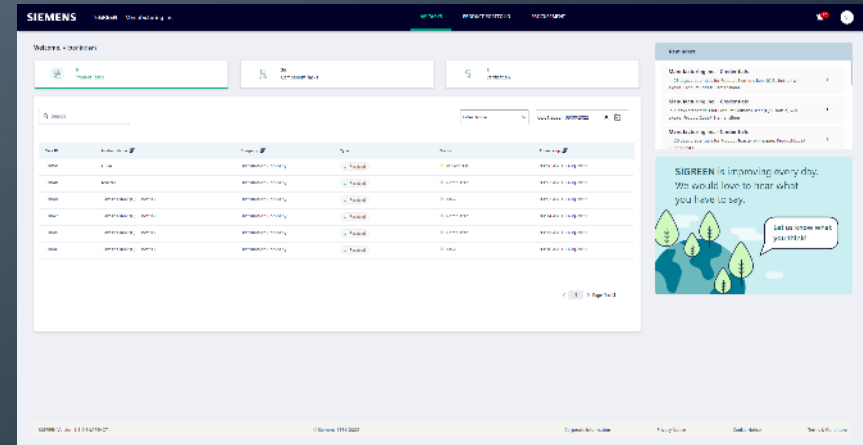

- **Goal**: Standardising measurement and reporting along the supply chain to make CO_2 emission data comparable.

- **Team**: LCA Experts of Catena-X Consortium and Association

- **Collaboration:** WBCSD A-Pact

- **Timeline:** Consultation Process starting now

Interoperable Apps exchange data via standardised connectors, data-model and with a common methodology

Questions?

Niels Angel, BMW Group
Project lead Sustainability @Catena-X
Niels.Angel@bmw.de

Visit us:

www.catena-x.net
https://www.linkedin.com/company/catena-x-automotive-network