HOW TO MEASURE **SUSTAINABILITY** IN SOFTWARE SYSTEMS

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What do 200 kilograms of CO_2e represent...

A The emissions from producing and using one laptop

B The emissions from driving a car for about 10,000 miles

C The annual cloud footprint of a large enterprise environment

D The emissions from streaming Netflix for one year

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Fragmented Data


Lack of Transparency


Lack of Awareness

ECO DIGIT

Enabling green **CO**mputing and **DIGI**tal **T**ransformation

Research and development project on automated life cycle assessment of distributed software systems

adesso

GESELLSCHAFT FÜR INFORMATIK

GI

ScaleUp Technologies

SIEMENS

Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

plusserver

OSB Open Source Business ALLIANCE
Bundesverband für digitale Souveränität e.V.

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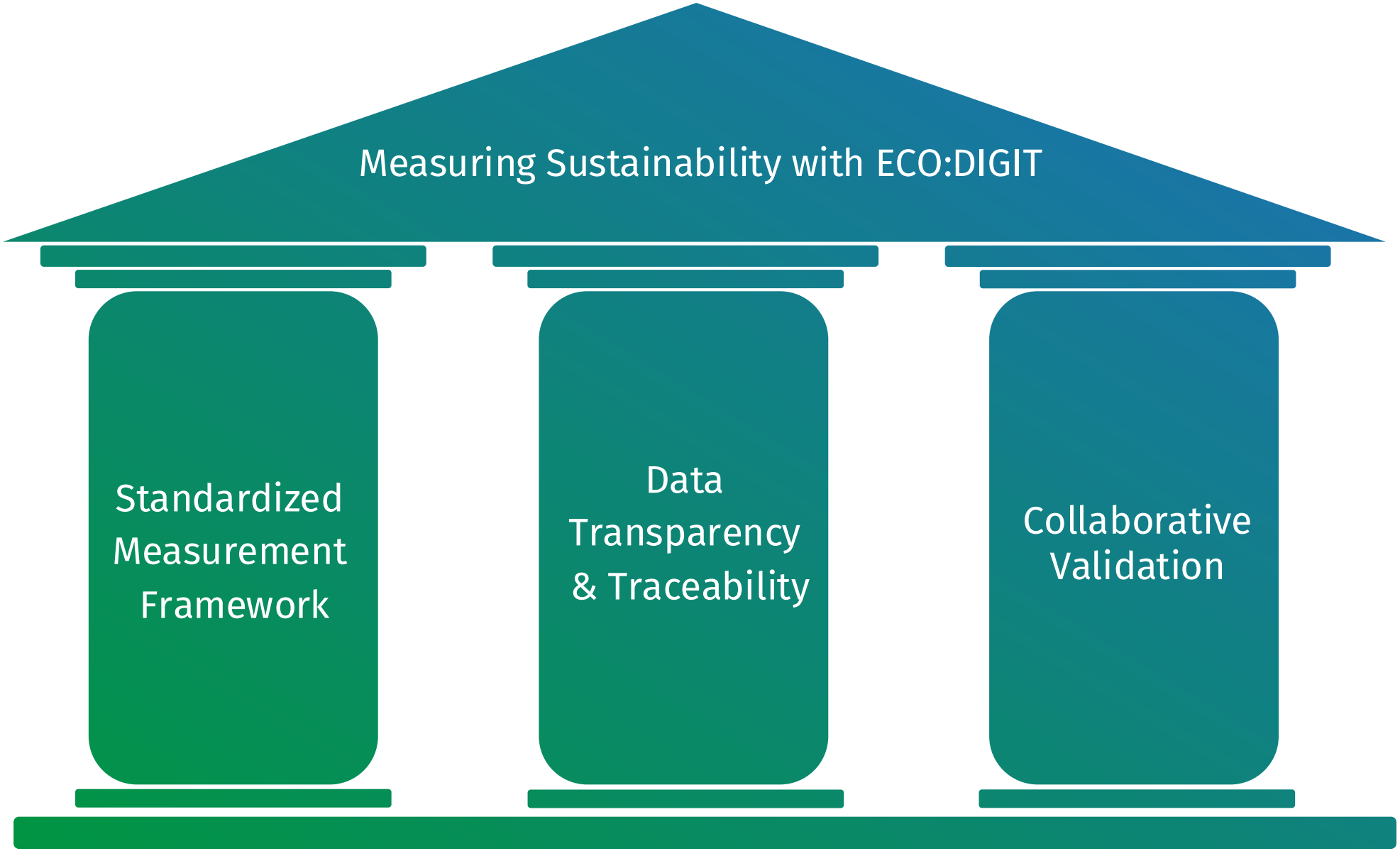
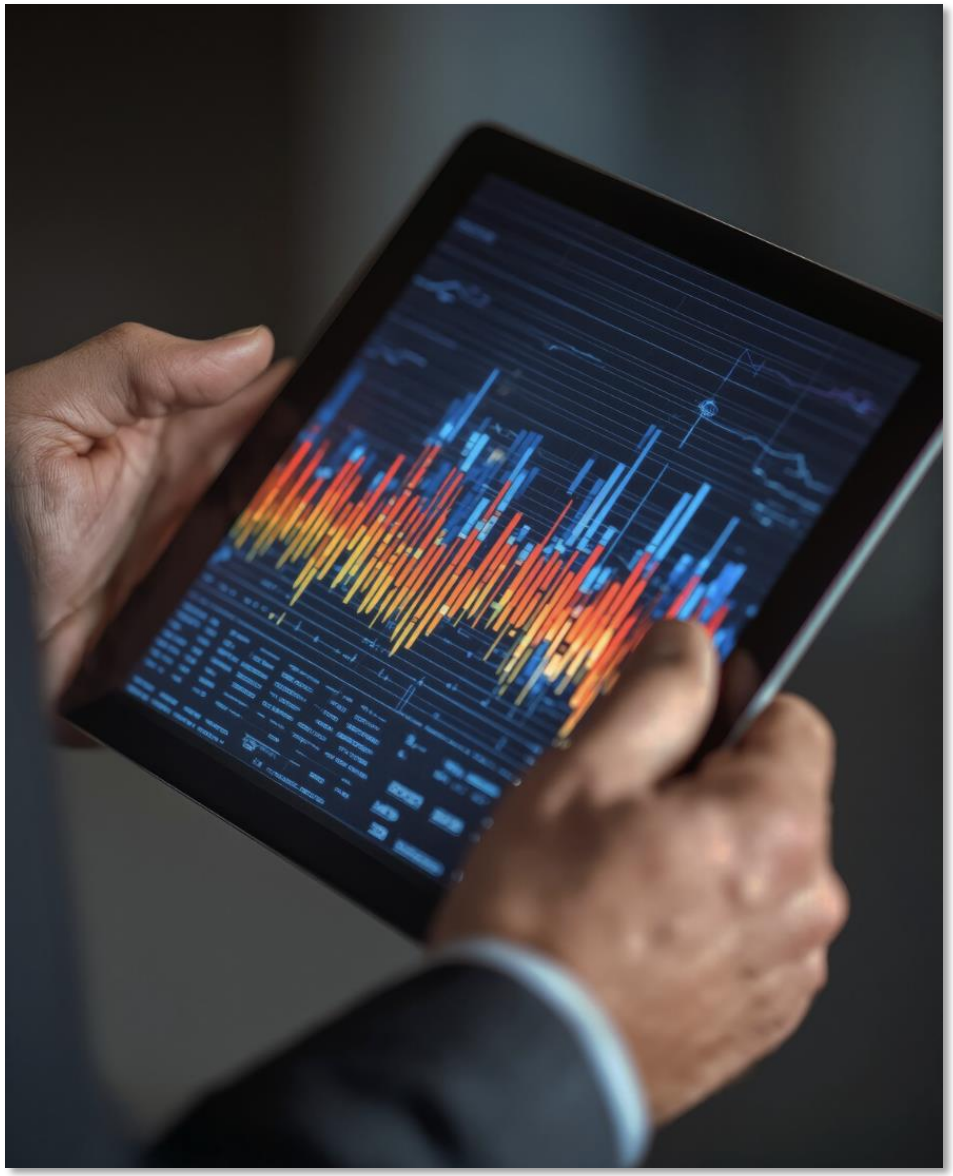
Bundesministerium für Wirtschaft und Klimaschutz

aufgrund eines Beschlusses des Deutschen Bundestages

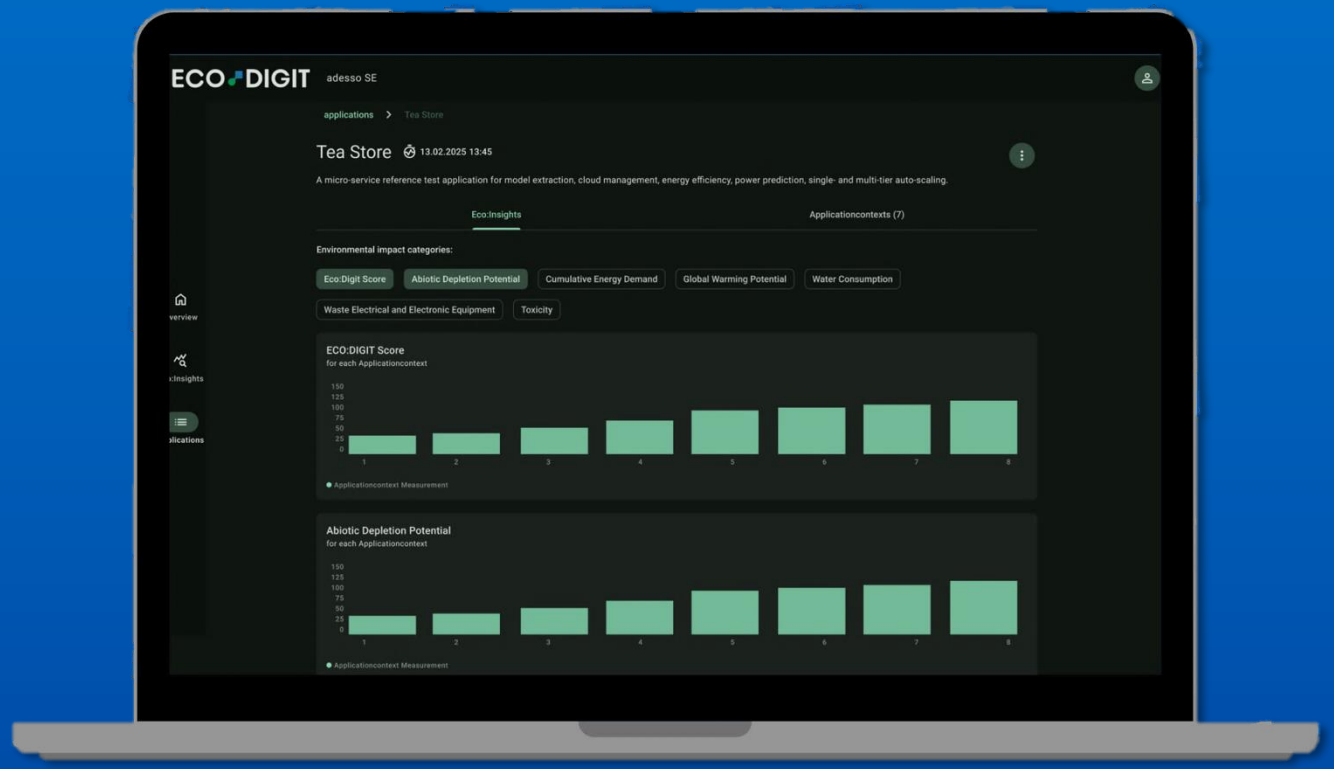

Measuring Sustainability with ECO:DIGIT
Standardized Measurement Framework
Data Transparency & Traceability
Collaborative Validation

Standardized Measurement Framework

- Developed on a scientific foundation using Öko-Institut methodologies
- Provides a unified structure for environmental metrics, covering both the manufacturing and use phases of IT systems
- Covers key sustainability metrics: GWP, CED, ADP, and Water Consumption
- Enables automated, consistent, and comparable assessments across different infrastructures



Data Transparency & Traceability



- Ensures traceable and verifiable calculations across all system components
- Includes external validation by research partners
- Provides open documentation of methods, datasets, and emission factors
- Transforms black-box APIs into transparent, reproducible results

Collaborative Validation

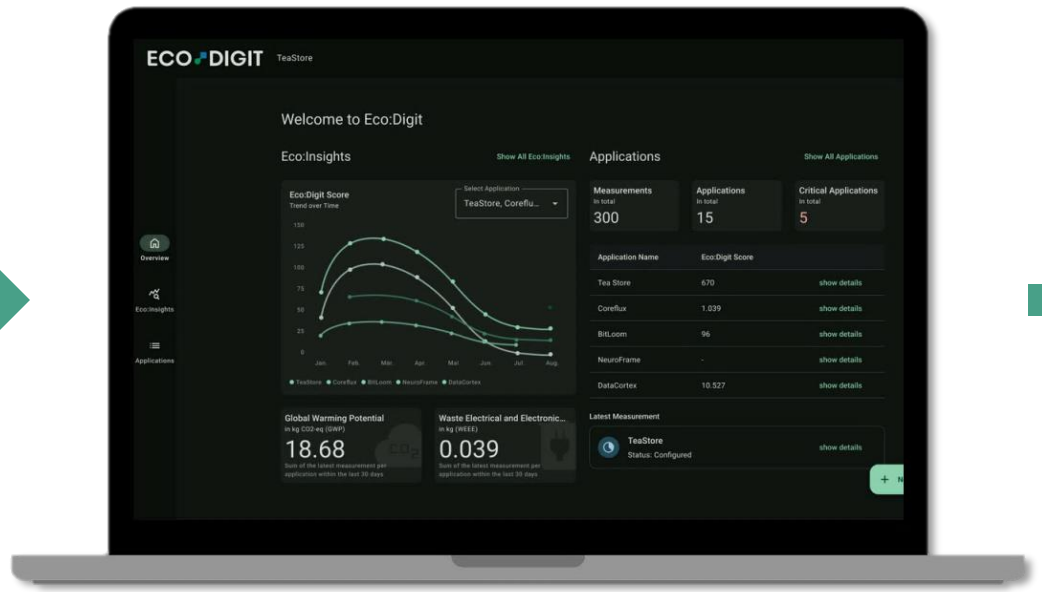
- Involves friendly customers and research partners to test the framework in practice
- Validates measurement results under real-world conditions
- Translates insights into actionable recommendations for organizations
- Builds a shared understanding that connects ecological and economic perspectives

ECO DIGIT

Enabling green **CO**mputing and **DIGI**tal **T**ransformation

Input

- Infrastructure Definition
- Application
- Usage Scenario

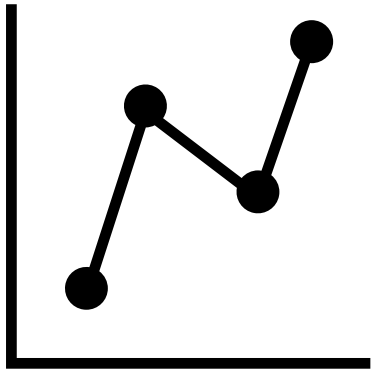


Output

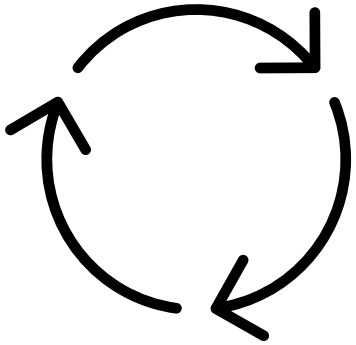
Distributed Systems Life Cycle Assessment

- GWP
- CED
- Water
- ADP
- TOX
- WEEE
- ECO:DIGIT Score

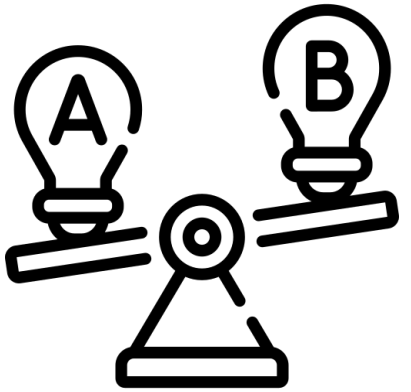
ECO:DIGIT x GreenOps Dashboard



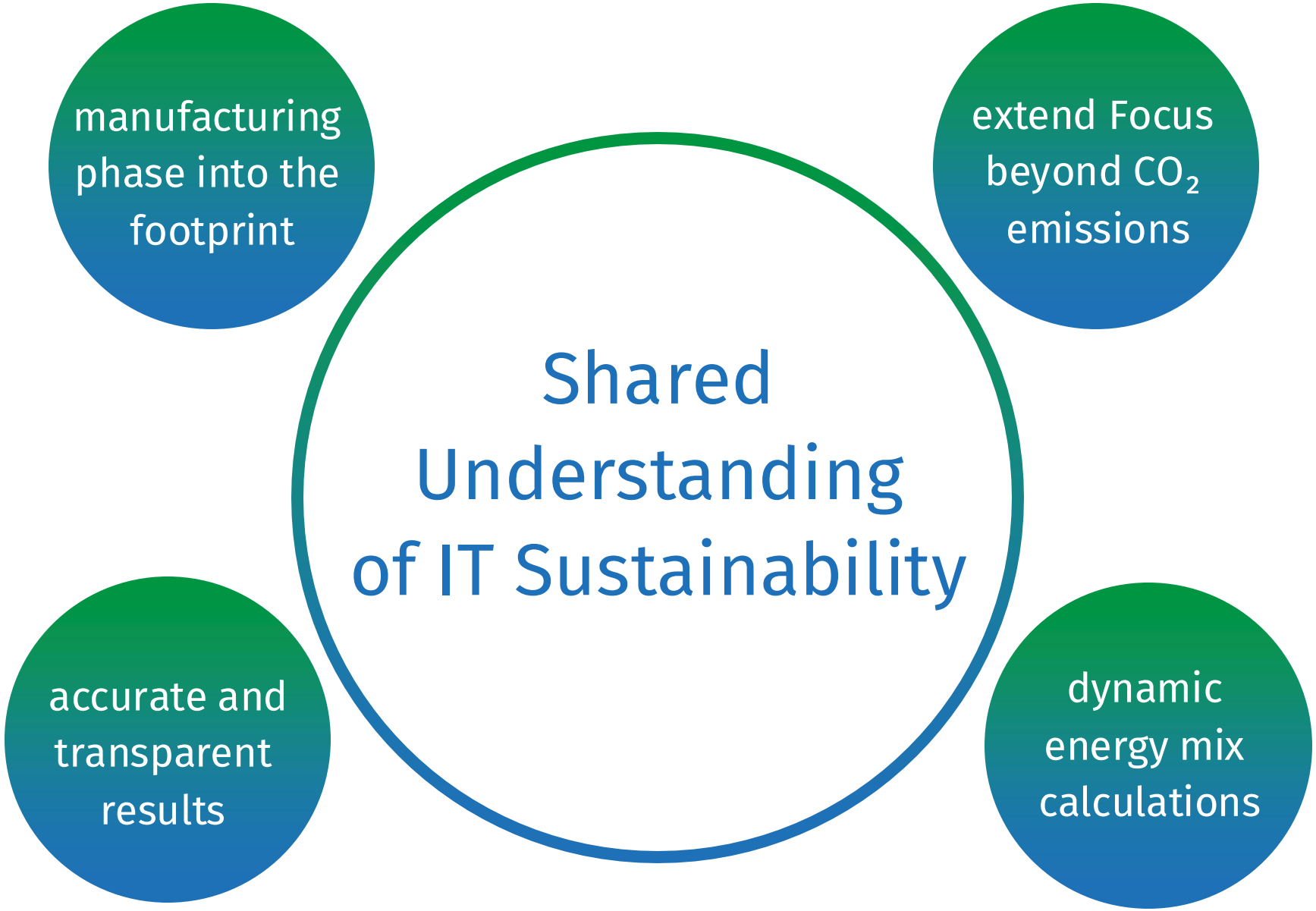
Collected real IT infrastructure data



Applied Öko-Instituts‘s LCA approach



Compared the results of the servers


manufacturing phase into the footprint
extend Focus beyond CO_2 emissions
Shared Understanding of IT Sustainability
accurate and transparent results
dynamic energy mix calculations

Sustainability in IT Needs Collaboration.

ANY QUESTIONS?

Website from ECO:DIGIT

For more insights and project updates, visit our website