Green Core with SAP Solutions

WE HAVE A COMPREHENSIVE APPROACH AND ACCELERATORS FOR SUSTAINABILITY WITH SAP

> *I have put acting on climate change at the heart of our Group priorities with a focal point of our ambitious target of net zero by 2030.*
>
> – Capgemini's Chief Executive Officer, **Aiman Ezzat**

Capgemini's environmental sustainability program

Capgemini offers a comprehensive approach starting from assessment, POCs, and implementation, with sustainability as an integral part of the Digital Transformation Journey.

Capgemini Blogs and Publications

- Blog - Holistic Reporting of Sustainability performance Using SAP Sustainability Control Tower
- Blog - Advancing Sustainable Business Practices Through Sap Responsible Design and Production
- 2022 - Sustainability in Automotive
- 2022 - Sustainable Product Design
- 2021 - Sustainable IT Report by Capgemini Research Institute

Events and Videos

- 2023 PoV - Sapphire Video - SAP S/4HANA sustainability solutions by Capgemini
- 2023 NYC Climate Week
- 2023 - Capgemini/SAP at 3BL Forum
- SAP S/4HANA® sustainability solutions by Capgemini
- Capgemini's Green Core with SAP Solutions
- How software and sustainability intersect Sustainability and SAP

...with SAP S/4HANA

S/4HANA implementation projects driven by clients' sustainability business objectives

- Clients in automotive, utilities, energy industries
- Prospects in battery, wind farm, packaging industries

Green Core with SAP Solutions by Capgemini for sustainable business & operations

- Set of Solutions built on SAP S/4HANA for aggregating data from the SAP transactions, calculating sustainability metrics, and providing actionable insights across end-to-end processes such as Source-to-Pay and Order-to-Cash
- Battery Sorting and Recovery Viewer, Supplier Sustainability Evaluation, Material Sustainability Evaluation, Carbon Dashboarding in Outbound Transportation, Intelligent Allocation, Inventory Optimization, Automotive Parts Recycling Visibility, Sustainable Transportation Solution, Capgemini's Automotive Reusable Packaging Solution

Sustainable IT
IT applications & infrastructure (Technology landscape (systems, applications, interfaces), ERP transactions, Green Software Engineering Principles)

High-level SAP Architecture for Sustainability
A comprehensive end-to-end architecture for sustainable business transformation via large-scale initiatives, encompassing data capture, processing, and insights layers. The approach adopts a hybrid architecture integrating SAP solutions (S/4HANA, Green Ledger, SFM, SCT, SDE,) and non-SAP solutions (hyperscalers like AWS, Microsoft, and Google) for a holistic strategy.

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ACT NOW FOR A SUSTAINABLE TOMORROW

Socially-aware markets
More socially-aware consumers demand more sustainable products and services.

Increasing green regulation
Governments are implementing demanding compliance and regulation around sustainability.

Competition for talent
In a market weighted towards job-seekers, employees seek companies with strong sustainability credentials.

Agile new market players
New, nimble competitors are entering markets seeking to exploit the sustainability niche.

Internal business pressures
Shareholders and investors are demanding business leaders drive growth *and* sustainability.

79% of **consumers** have changed their purchase preferences based on products' perceived environmental and social impact.

90% of **executives** in the consumer products and retail industry agree that sustainability is a key driver for their sector.

70% of **employees** actively seek companies with a strong environmental vocation.

Source: Capgemini, Sustainability Evolution, *Will your organization turn disruption into opportunity?*

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OUR OFFERINGS HELP CLIENTS DEFINE AND IMPLEMENT SUSTAINABLE TRANSFORMATIONS TOWARDS A NET ZERO ECONOMY

COMMIT

Net-zero strategy and new business models

Purpose, commitments, transformation path

- Defining organizations' sustainable purpose
- Defining the vision and pathway to decarbonization
- Setting the right organization and governance to secure the decarbonization ambition
- Seizing the opportunity of new business models that drive change
- Engaging talents to support low-carbon transformation
- Engaging stakeholders to support low-carbon transformation

ACT

Three levers to make it happen

Sustainable Products & Services

Products and services

- Designing and developing low-carbon customer experiences
- Designing and engineering low-carbon intelligent products
- Designing and developing low-carbon intelligent services
- Designing, engineering, and developing circular products and services

Sustainable operations

Manufacturing and supply chain

- Implementing sustainable procurement strategy
- Enabling low-carbon energy supply
- Decarbonating factories by enabling sustainable manufacturing
- Decarbonating supply chain including network, planning, logistics, and packaging
- Implementing circular supply chain

Sustainable IT

Devices, apps, and infra

Assessing and reducing environmental impacts of IT:

- Green equipment
- Green apps (portfolio optimization, app eco-design, etc.)
- Green infrastructure (cloud migration, server, system architecture and data center optimization, etc.)

MONITOR AND REPORT

Data for net-zero strategy

Data platform, monitoring, and reporting

- Modelling environmental impacts (carbon assessment, lifecycle analysis, etc.)
- Providing access to ESG data across value chain (data platform and tooling)
- Monitoring and reporting ESG criteria (sustainable reporting as a service)
- Modeling and mitigating risks through Sustainable AI (CO_2e emissions prediction for sales, carbon pricing modeling, climate change impact modeling for portfolio management, etc.)

WE HELP OUR CLIENTS LEVERAGE ON THEIR E2E SUPPLY CHAIN & OPERATIONS PROCESSES TO ACHIEVE NET ZERO & CSR STRATEGY

Capgemini

SEC 1

NET ZERO & CSR & ESG STRATEGY

SUSTAINABLE PRODUCTS & SERVICES

SUSTAINABLE OPERATIONS AND SUPPLY CHAIN

6 ESG Reporting & Steering

*Track and analyze sustainability performance , meet regulatory reporting requirements, with **SAP Sustainability Control Tower***

1 Sustainable Procurement and Production

*Track materials with **SAP LBN** . Assess supplier ecosystem CSR performance with **SAP ARIBA** risk management and Capgemini Green Core Use cases- Vendor and Supplier Sustainability*

2 Corporate Emission Management

*Monitor and reduce energy, water, waste & GHG emissions with SAP Environment Management & **Sustainable Footprint Management***

3 Sustainable supply chain

*Calculate and manage corporate and product carbon footprint across the entire value chain with **SAP Sustainability Footprint Management, SAP Green Token & Green core- Outbound logistics***

4 Circular Economy

*Green core **Automotive parts Recycling Visibility** , **Battery Sorting and Recovery Viewer,** SAP **Reusable Packaging.***

5 Product Compliance

*Manage Global Product Safety and Compliance throughout the Product Lifecycle with **SAP Product Compliance***

KPIs & Costs Management

Roles, Governance & Capabilities

E2E Carbon Footprint Monitoring

DATA FOR SUSTAINABILITY & SUSTAINABLE IT

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FOR MANY OF OUR CUSTOMERS, BUSINESS TRANSFORMATIONS ARE DRIVEN BY SUSTAINABILITY AMBITIONS

Creating More Sustainable Operations and take a leading role in energy transitions & sustainable setups

40%
Reduction in carbon emissions

Reach **net-zero carbon** emissions by 2050. **Carbon neutral** operations by 2030. Cut absolute emissions in Norway to **near zero** by 2050

100%
Digital Factory

Production site of a **fully digital site**. The knowledge gleaned will be used to help shape the future IT configuration of the plants and expand this sustainably at the parent org.

Reduce by **52% the rate of emissions per kWh of energy** production by 2030. Reduce by **34% the emissions** linked to the use of the Group's products


Wind Powered Clean Energy

Offshores windfarms are the future. Company will install **12-16 GW** of wind energy by 2030. Grow in renewables from 0.5 GW in equity capacity in 2019 to **4-6 GW** in 2026


Digital Factory

Digital Production Platform (DPP), where data of every machine, piece of equipment and system from every plant are pooled. The sites become part of the industrial cloud

Capgemini Is Helping a leading Retailer transform Supply Chain to save 6,600 tons CO2 pa and reduce waste

CO_2e
6,600 tCO2e pa

Strategic program to create a **best-in-class Replenishment** solution. Aim is to increase supply chain efficiency through smart ordering, improved forecast, end-to-end data sharing and automation.


Food waste reduction

In-store real-time Intelligent Apps to provide **smart production advice and instructions** for the baking of bread and slicing of meat

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GREEN CORE WITH SAP SOLUTIONS: AN OVERVIEW

We Empower Organizations To Thrive In A Greener World By Helping Them Gain Greater Control And Visibility Of Their Operations, Products And Suppliers, So They Can Spot And Act On Opportunities To Make Their Entire Value Chain More Sustainable.

What are Green Core with SAP Solutions?

A set of solutions built on top of SAP applications that provide greater visibility and control for organizations by measuring the financial, economic, and social impact of their IT, operations and wider value chain.

What do they do?

Green Core with SAP Solutions use transactions across business functions in SAP applications to track carbon emissions and other sustainability KPIs and visualize them in decision dashboards.

Why is this important?

Real-time outputs help teams make critical decisions and take action to meet their ambitions for making the value chain more sustainable – in turn driving competitiveness, compliance & growth.

Capgemini's Sustainability Ambition

- Be carbon neutral for our own operations no later than 2025 and across our supply chain by 2030
- Transition to 100% renewable electricity by 2025, and electric vehicles by 2030
- We have an ambition to help our clients save 10 Million Carbon tonnes by 2030
- Committed to becoming a net zero business by 2040

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B

GREEN CORE WITH SAP ADDRESSES END–TO-END SUPPLY CHAIN SUSTAINABILITY REQUIREMENTS

Green Core with SAP Solutions use transactions across business functions in SAP S/4HANA applications

USE CASE 1
supplier sustainability
Measures and ranks suppliers' sustainability performance

USE CASE 2
materials sustainability
Evaluates material sustainability parameters

USE CASE 3
outbound logistics
Determines carbon emissions for transportation processes

USE CASE 4
intelligent allocation
Helps users navigate supply and demand fluctuations

USE CASE 5
inventory optimization
Incorporates product carbon footprint data into inventory planning

USE CASE 6
fleet energy management
Monitors energy consumption of vehicles using data from SAP PM

USE CASE 7
recycling visibility
Tracks recycling material in a plant and calculates the financial benefit

USE CASE 8
battery recycling
Tracks battery collection, sorting and segregation of battery metals

USE CASE 9
Sustainable Project Planning
Select vendors for project BOMs based on emissions

USE CASE10
Workforce Planner
Impact of workforce planning on carbon footprint

What are Green Core with SAP Solutions?

- Green Core with SAP solutions are demonstrators of use cases for tracking and reporting sustainability data in SAP S/4HANA ERP systems.

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100+ SUSTAINABILITY MEASURES AND IMPROVEMENTS IN OUR INDUSTRY REFERENCE MODELS AS A CORNERSTONE OF CLIENTS' S/4 BUSINESS DESIGN

What we enable

How the smart analytics, joined-up data provide by S/4 is helping companies meet their sustainability ambitions or obligations

- New business models, Changes in the supply chain with transport as a service
- Reputational challenges. Providing detail on the ethics of their supply chain
- Businesses making decisions made on sustainability factors as well as economic.
- New industries such as wind farms growing demanding efficient processes and flows of data.
- Accurate ethical reporting providing data on carbon emissions per serving.
- Agrochemicals. Respond to more stringent regulations by proving the degree that biological products are used.
- Recycling to avoid fines. Reintroducing products back to the supply chain for recycling.

How we do this

We leverage the 60+ sustainability measures and improvements mapped to our end-to-end process decomposition, e.g.

Level 1	Level 2	Level 3	Level 4	Measure / action
Source to pay (STP)	Procurement analytics	Supplier evaluation	Operational supplier evaluation	% Supplier sustainability rating as part of overall supplier evaluation What is % of code of conduct (CoC) signed for suppliers?
Source to pay (STP)	Purchase & receive	Order materials / service	Direct order – packaging - VMI	Packaging - % Recycled content Ratio of packaging material to product volume. Ratio of plastic vs paper packaging
Make to deliver (MTD)	Warehouse management	Outbound goods movement	Dispatch	% Sustainable route scheduling
Make to deliver (MTD)	Production Execution	Process Manufacturing	Process Execution	Water pollution by release of chemical compounds (API) GHG emissions via manufacturing (metered dose inhalers…)

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EXTENDED COLLABORATIVE PLANNING: SUSTAINABLE SUPPLIERS

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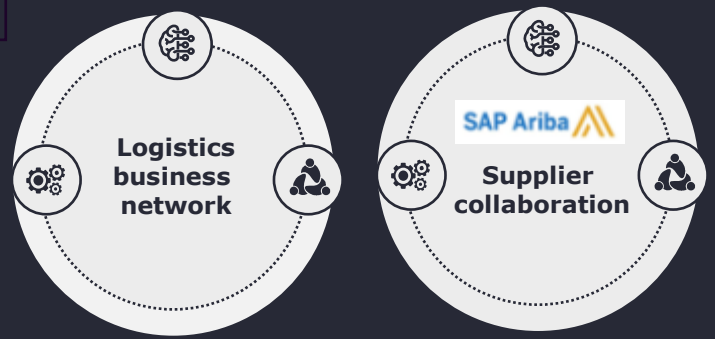
SUSTAINABLE SUPPLY CHAIN

A single dashboard to comprehensively evaluate supplier sustainability on SAP S/4HANA® and SAP Ariba.

COLLABORATE



Key benefits

- More sustainable sourcing decisions
- Suppliers accurately segmented
- More sustainable contract management

Feature: Supplier sustainability parameters

Feature: Supplier ranking report

SUSTAINABLE EXECUTION: OPTIMIZED LOGISTICS

SUSTAINABLE SUPPLY CHAIN

View aggregated data on carbon/fuel emissions, distance, and total weight from freight orders on SAP.

EXECUTE

Key benefits

- Actionable insights on carrier performance
- Choose optimized routes and transport modes
- Informs more sustainable business processes

Feature:
Fuel consumption report, based on freight orders

Feature:
Report on carrier fuel consumption and carbon emissions

DEMAND TO SUPPLY SOLUTION: INVENTORY OPTIMIZATION

Capgemini

SUSTAINABLE SUPPLY CHAIN

Integrate carbon footprint data into inventory planning, using SAP Integrated Business Planning (IBP), SAP Analytics Cloud (SAC), Product Carbon Footprint, and SAP.

PLAN

Key benefits

- Fewer value chain expenses tied up in working capital
- Inventory and service is optimized according to environmental impact
- Enables users to take remedial actions to reduce safety stocks

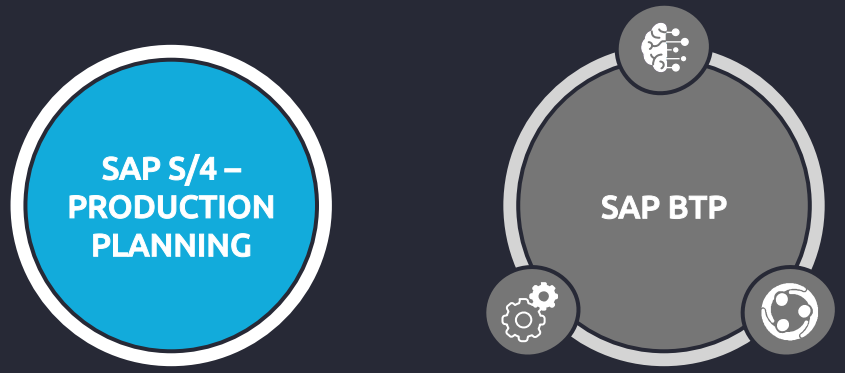
Feature:
Report on inventory carbon footprint, across locations

Feature:
Displays ‘what-if?’ scenarios for product locations

SUSTAINABLE MANUFACTURING: RECYCLING VISIBILITY

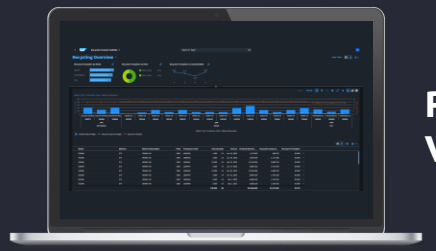
BRING TRANSPARENCY IN ADOPTION OF CIRCULAR ECONOMY PRACTICES IN MANUFACTURING CYCLE.

The standard process integration with SAP S/4HANA enables to provide overview of recycling adoption at organization, plant, and material level. It provides traceability of recycled components used, by reading corresponding procurement data. It is also capable of tracking waste diverted from landfill by measuring the aluminium scrap recycled and reused in production. It further calculates cost benefits by comparing purchasing costs of virgin aluminium vs utilizing in-house recycled aluminium.



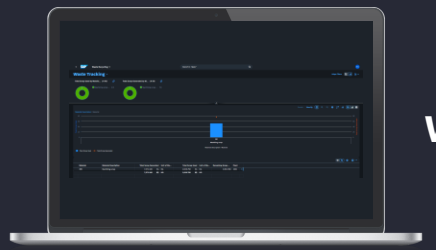
KEY BENEFITS

- Measure the success of Circular economy practices
- Builds trust and lays foundation for adoption by consumers
- Reduces Waste and dependence on natural resources
- Boosts confidence within the organization on long term growth due to recycling

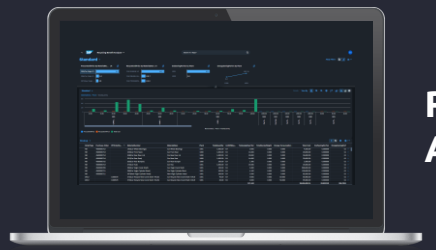


RECYCLED CONTENT VISIBILITY

RECYCLED COMPONENT TRACKING



WASTE RECYCLING



RECYCLING BENEFITS ANALYZER

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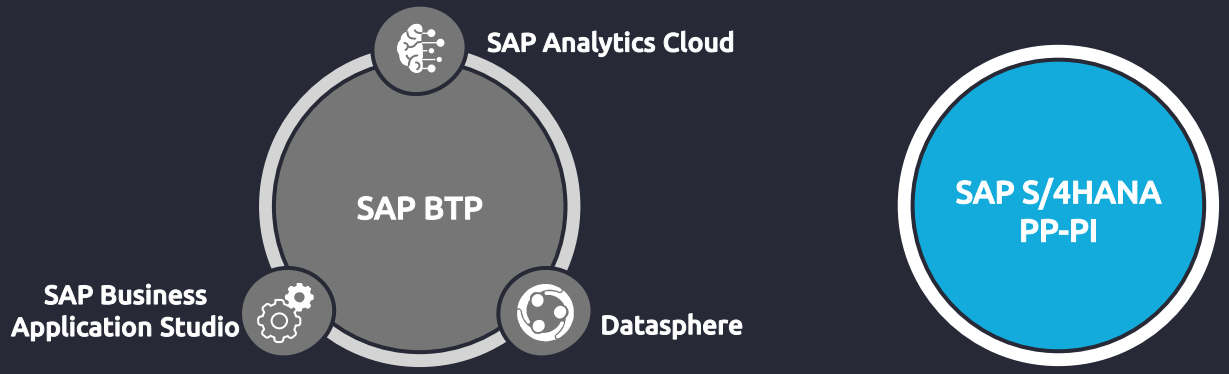
BATTERY SORTING AND RECOVERY VIEWER APPLICATIONS

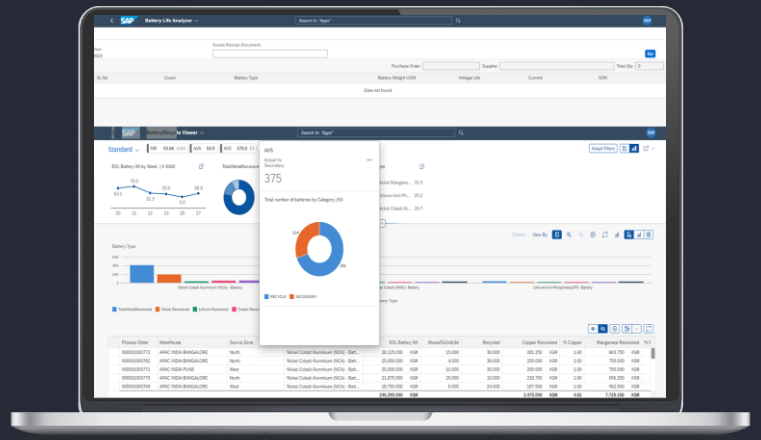
Efficiently repurposing used batteries extends their lifecycle, maximize resource utilization, and reduces environmental impact

The solution leverages Business SAP Application Studio, Datasphere and SAP Analytics Cloud (SAC) services in SAP Business Technology Platform (BTP). SAP S/4HANA PP-PI Process serves as the data foundation, ensuring seamless integration and data integrity. The apps accurately identifies, sorts, and tracks the batteries capable of 2nd life use on the basis of various factors such as health, voltage, current and thus addresses critical challenges in battery recycling. It maximizes resource utilization, reduces costs, enhance sustainability efforts and significantly reduces environmental footprints in battery-related industries.

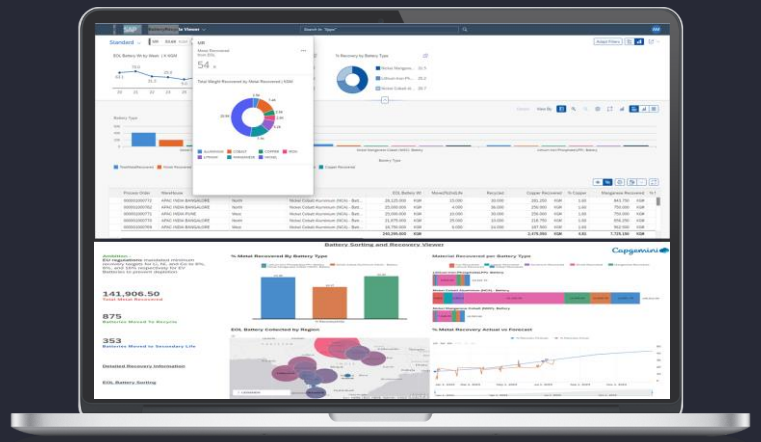


KEY BENEFITS

- Enhanced transparency and efficient resource allocation by sorting batteries for 2nd life
- Increased cost efficiency, improved circularity and recovery of end-of-life battery
- Reduced Wastage and dependence on natural resources
- Improved stakeholder communication and innovation through interactive dashboards



Battery Life Analyzer for Sorting and Regrouping



Battery Recovery Viewer

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THE HIGH-LEVEL SAP ARCHITECTURE FOR SUSTAINABILITY

DATA INSIGHT

DATA PROCESSING

DATA CAPTURE

ESG REGULATIONS | Others

Laws, industry standards, and reporting requirements

SUSTAINABILITY PLATFORM FOUNDATION

powered by SAP BTP, Azure, aws, Google Cloud

REPORTING & APPS

CO_2 CARBON | WATER | WASTE | ...

Carbon, Water, Waste and other fundamentals for a Sustainability Business to reports to Regulations and other Stakeholders

CALCULATIONS

SAP SUSTAINABILITY FOOTPRINT MANAGEMENT | CAPGEMINI ASSETS | Azure, aws, Google Cloud, SAP BTP | 3P

SUSTAINABILITY COMMON DATA MODELS

EXTERNAL DATA PROVIDERS → Azure, aws, Google Cloud, DATA LAKE | DATA FABRIC, SAP BTP ⇄ SAP DATASPHERE

A new sustainability data model to fuel the calculations layer with SAP and non-SAP data, complementing COTS solution with custom enhancements

OPERATIONS

SALES | PROCUREMENT | LOGISTICS | FACILITY MNG | ...

Re-engineering of business processes to achieve sustainable supply-chain, circular economy

EXTENDED HYBRID IT PLATFORM

Azure, aws, Google Cloud, ... | SAP ERP | MDG | BRIM | PLM | ... | LEGACIES

Evolving in a Green IT with a Cloud IaaS, PaaS, SaaS Architecture, Apps modernization

SITES, PRODUCTIVE PLANTS, PARTNERS ECOSYSTEMS

ENERGIES | ... | IOT | MES

DIGITAL CHANNELS

SERVICES | ...

Intelligent Factory, Industry 4.0, 5G, IoT, Digital Twin, Industrial Metaverse

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THE OLIVE OIL MANUFACTURING USE CASE: THE SCENE

FROM FARM TO END CUSTOMER

Sergio is a supply-chain manager working for the “MediterrainGold Olive S.p.A.”, headquarter in Italy, farms spreads between Italy, Spain, Morocco.

The company is committed to achieve zero emission within 2030 and he need to support the overall transformation.

He knows very well that achieving zero emissions often requires addressing emissions throughout the entire value chain, including suppliers, transportation partners, and other stakeholders, as well as a cultural shift within the organization, involving changes in employee behaviors, attitudes, and the overall company culture.

The first pain point to address is related to the lack of information: There are missing insights at the operational level, with either no data available or only non-standardized data, making it challenging to measure the sustainability performance of business operations, processes, and vendors.

As the first deliverable, starting with carbon emission calculations, Sandra, from the IT department, is supporting the Sustainability Transformation Program as an expert in SAP Footprint Sustainability Management (FSM). She is working on designing and implementing FSM processes on SAP Business Technology Platform (BTP), integrated with S/4HANA, to calculate carbon emissions.

So, Sergio can begin by analyzing emissions based on the olive oil production batch process, working with SAP master data sustainability attributes, bill of materials, process orders, MRP fulfillment for raw materials, identifying areas of improvement, optimizing partner ecosystems, in order to make more informed repetitive decisions.

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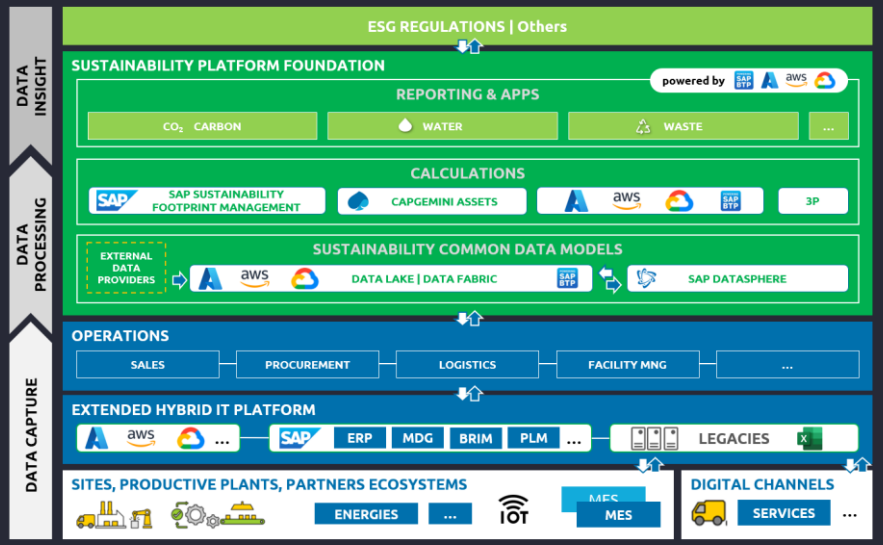
THE OLIVE OIL MANUFACTURING USE CASE: THE SCENE

HOW IT WORKS: MAPPING OF BASIC EXTRA VIRGIN OLIVE OIL (EVOO) PRODUCTION PROCESS IN SAP



CARBON FOOTPRINT FROM
SAP SUSTAINABILITY FOOTPRINT MANAGEMENT (SFM)

OPERATIONAL DATA
FROM SAP S/4HANA

CREATION OF SAP MASTER DATA → PRODUCTION EXECUTION PROCESS → PROCESS ORDER CREATION → MRP EXECUTION: FULFILMENT OF PROCUREMENT FOR RAW MATERIALS → PROCESS ORDER CONFIRMATION PROCESS → PROCESS ORDER CONFIRMATION PROCESS

- **MATERIAL MASTER**: RAW MATERIAL AND FINISHED GOODS
- **RECIPE**: GROUP NUMBER
- **WORKCENTER**: MILLING WORKCENTER
- **BILL OF MATERIAL**: ONE BOM LEVEL HAVING CHILD (OLIVE) AND PARENT (EXTRA VIRGIN OLIVE OIL)

SFM CONFIGURATIONS → S/4HANA & SFM INTEGRATION → EXCHANGE ORGANIZATIONAL AND MASTER DATA → RECEIVE INPUT DATA FROM S/4HANA AND EXTERNAL SYSTEMS → CARBON FOOTPRINT CALCULATION → FOOTPRINT ANALYTICS TO TRIGGER DECARBONIZATION

- **TRANSACTION DATA IMPLIES PRODUCTION AND PROCUREMENT DATA**
- **ORGANIZATION DATA IMPLIES MASTER DATA AS WELL AS LEGAL ENTITY AND OTHER ORG. DATA**

SUSTAINABILITY AND RISE

- Outbound Logistics and fleet management for carbon tracking
- Signavio Integration with sustainability KPI's
- Industry reference model in a RISE setup

- Combing thru 1600+ tickets to find non-disruptive integration into UNFI's established frameworks and increase SAP licenses on sustainability
- Carbon calculations for beyond a move to cloud scenario in a RISE setup with proposed Use Cases mapped to client goals & next steps

Large Retailer

- Capgemini Is Helping a leading Retailer transform Supply Chain to save 6,600 tons CO2 pa and reduce waste
- In-store real-time Intelligent Apps to provide **smart production advice and instructions** for the baking of bread and slicing of meat

- While setting up the manufacturing journey, Fisker will have complete control to review its commitment to sustainability – from supplier selection to partnership, customer reach to services, Manufacturing to Deliver, Deliver to Support

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About Capgemini

Capgemini is a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 340,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2023 global revenues of €22.5 billion.

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