Optimizing cost and carbon footprint using Cleansheet
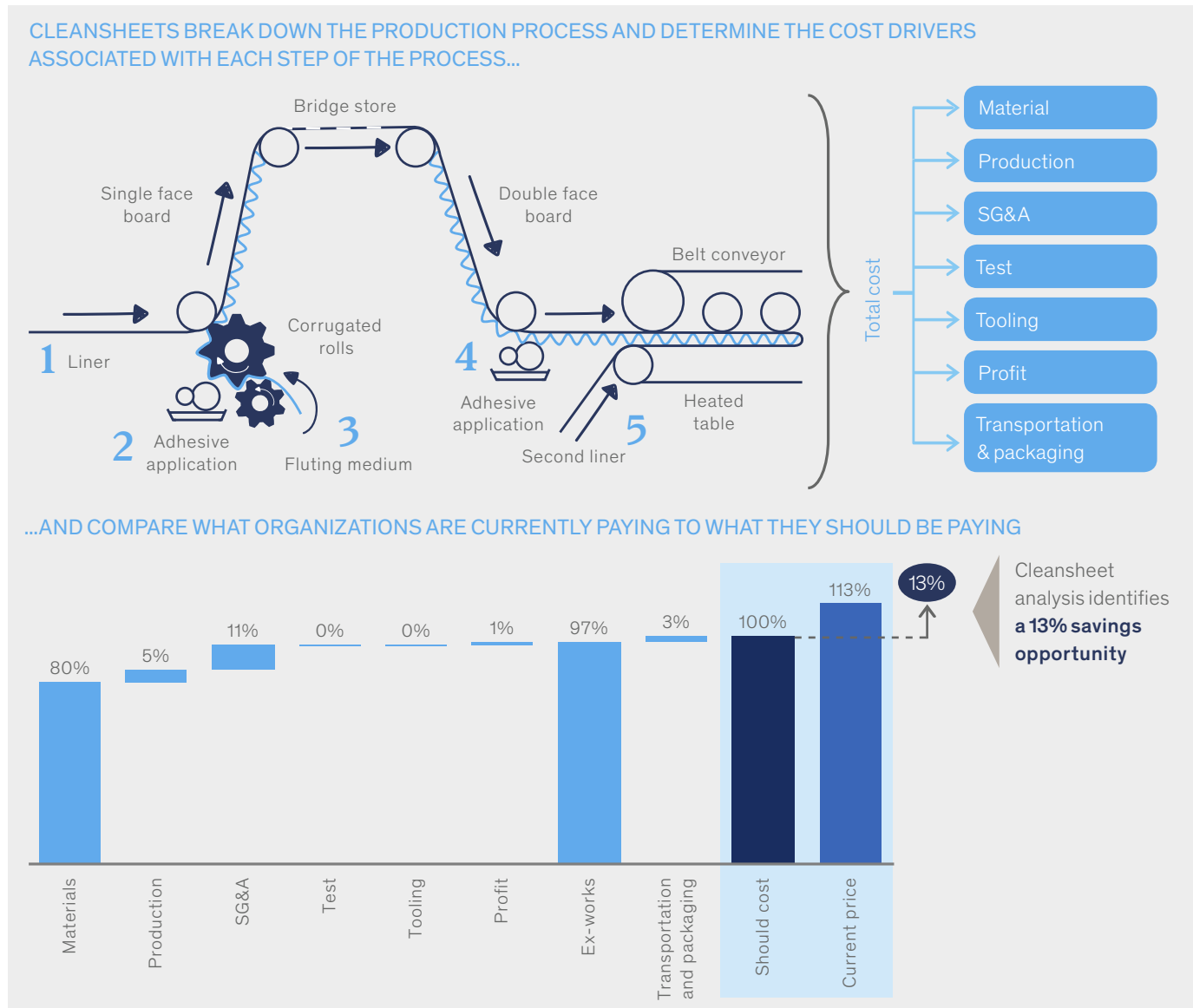
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What is a Cleansheet?

Cleansheets are a means by which to create a bottom-up build of cost and understand what a product or service 'should cost' to make or buy. It translates the real world production process into a value stream model, allowing organizations to pinpoint different steps of the production, procurement, and supply chain process to identify cost savings opportunity at each level.

McKinsey has expanded the Cleansheet approach to sustainability, to help clients develop cost-effective, carbon abated products.

Illustrative 5-layer carton example

CLEANSHEETS BREAK DOWN THE PRODUCTION PROCESS AND DETERMINE THE COST DRIVERS ASSOCIATED WITH EACH STEP OF THE PROCESS...

...AND COMPARE WHAT ORGANIZATIONS ARE CURRENTLY PAYING TO WHAT THEY SHOULD BE PAYING

Cleansheet analysis identifies **a 13% savings opportunity**

Materials 80% | Production 5% | SG&A 11% | Test 0% | Tooling 0% | Profit 1% | Ex-works 97% | Transportation and packaging 3% | Should cost 100% | Current price 113% | 13%

Cleansheets enable organizations to:

- Develop an advantaged fact-base for setting and achieving 'should costs'
- Understand how the impact of multiple cost drivers (e.g., material costs, currency, production location) affects should cost across portfolio of products in real time
- Rapidly evaluate the cost impact, and carbon footprint of different design alternatives, and select the most optimized design

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Cleansheet Solution Platform

Cleansheet Solution is a collaborative SaaS platform that rapidly determines should-costs for items through an existing library of cost models and custom-model building capabilities. These models are populated by data from curated cost databases, insights from McKinsey's network of category experts, and inputs from supplier workshops to calculate should-cost for specific items and portfolios of products. Cleansheet Solution also expands this approach into sustainability, enabling users to generate insights to reduce cost and carbon footprint of products, simultaneously.

Features

POWERFUL CALCULATION ENGINE

Industry-agnostic calculation engine, enables costing and carbon footprinting from simple parts to complex assemblies
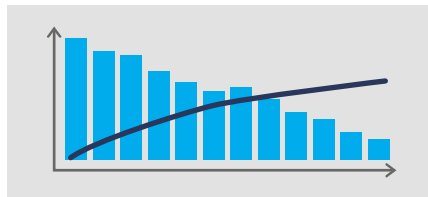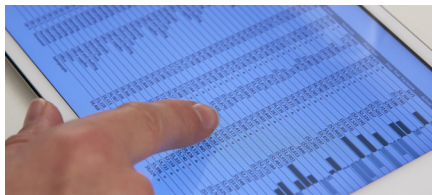

PARAMETRIC MODELING

Powerful capability that calculates should-cost of entire categories for complex portfolios based on a few characteristics of each item

RESOURCE CLEANSHEET

Optimize cost and CO2 footprint, and devise abatement strategies through a world-class carbon footprinting business logic

CURATED COST DATABASES

Thousands of dynamic data points for materials, process costs, etc., that refresh cost calculations instantaneously
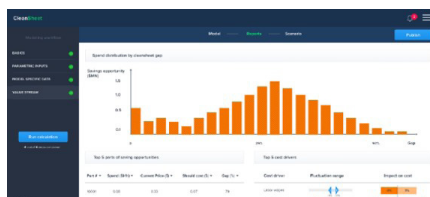

CUSTOM MODEL DEVELOPMENT

Extensive library of cost models paired with capability to create custom models across spend categories

INTUITIVE USER INTERFACE

An Excel-like environment that minimizes learning curve

COLLABORATIVE SAAS PLATFORM

Web-based environment enables organization-wide collaboration and a consistent source for all things costing
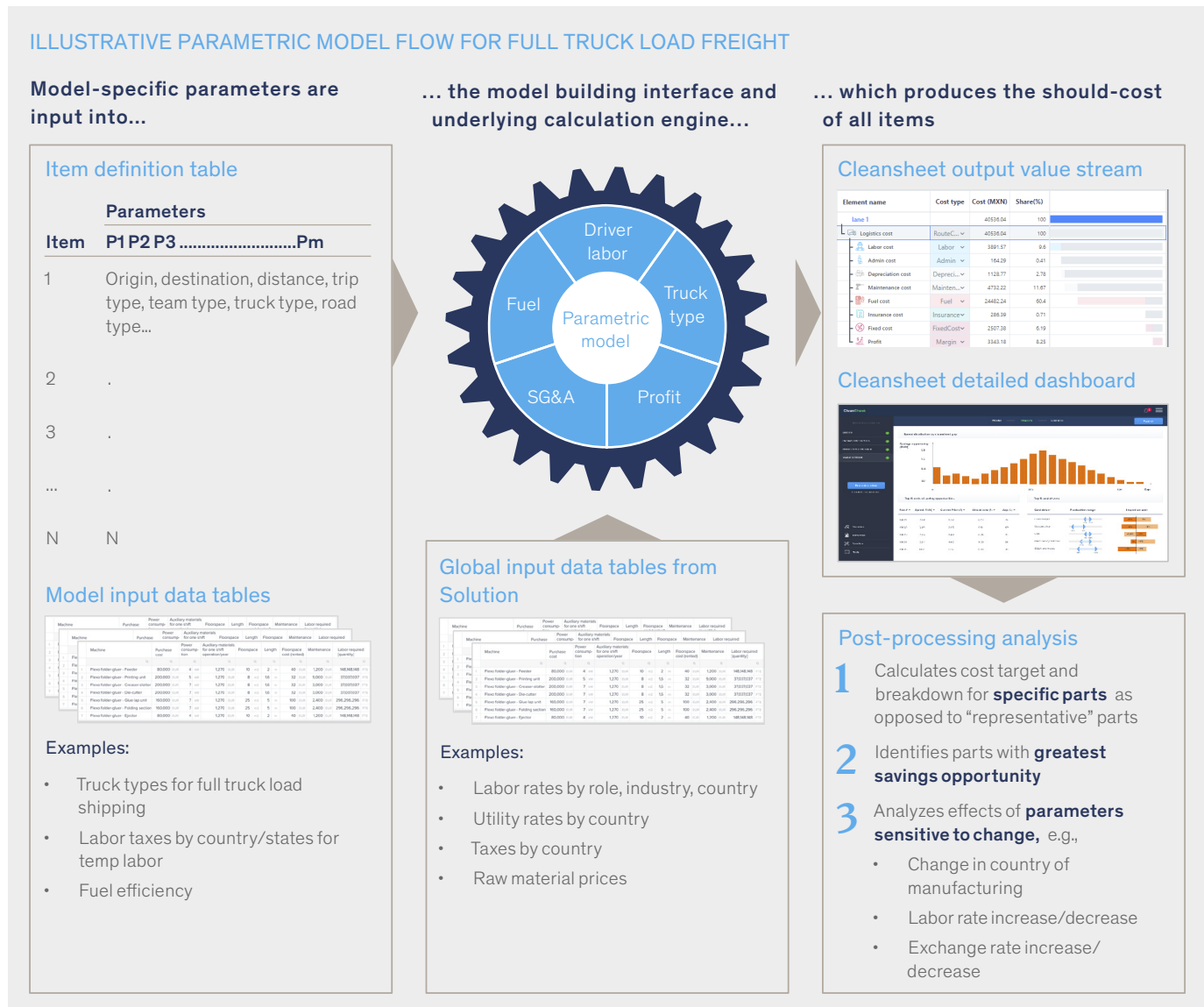
Parametric Cleansheet modeling

Bringing cost transparency and analysis to complex portfolios and large supplier bases

What is it?

Cleansheet Solution offers a parametric capability which uses a flexible model to calculate savings opportunities for entire categories of items (thousands) based on a few parameters such as dimensions, materials, or finishing. The parametric capability can also be used to determine costs of individual SKUs across a portfolio of products, as well as those of indirect spend categories such as temporary labor, services, and logistics.

How does it work?

ILLUSTRATIVE PARAMETRIC MODEL FLOW FOR FULL TRUCK LOAD FREIGHT

Model-specific parameters are input into...

Item definition table

Item	Parameters P1 P2 P3 ....Pm
1	Origin, destination, distance, trip type, team type, truck type, road type...
2	.
3	.
...	.
N	N

Model input data tables

Examples:

- Truck types for full truck load shipping
- Labor taxes by country/states for temp labor
- Fuel efficiency

... the model building interface and underlying calculation engine...

Parametric model

Driver labor · Truck type · Profit · SG&A · Fuel

Global input data tables from Solution

Examples:

- Labor rates by role, industry, country
- Utility rates by country
- Taxes by country
- Raw material prices

... which produces the should-cost of all items

Cleansheet output value stream

Cleansheet detailed dashboard

Post-processing analysis

1 Calculates cost target and breakdown for **specific parts** as opposed to "representative" parts

2 Identifies parts with **greatest savings opportunity**

3 Analyzes effects of **parameters sensitive to change,** e.g.,

- Change in country of manufacturing
- Labor rate increase/decrease
- Exchange rate increase/decrease

What value does it generate?

- Increases visibility of total spend breakdown and enables higher confidence for supplier negotiations, resulting in higher savings
- Allows procurement to analyze entire portfolios of parts quickly for organizations with complex, fragmented categories and multiple suppliers
- Brings a level of ease and depth of analysis to understanding costs for organizations with large portfolios of items
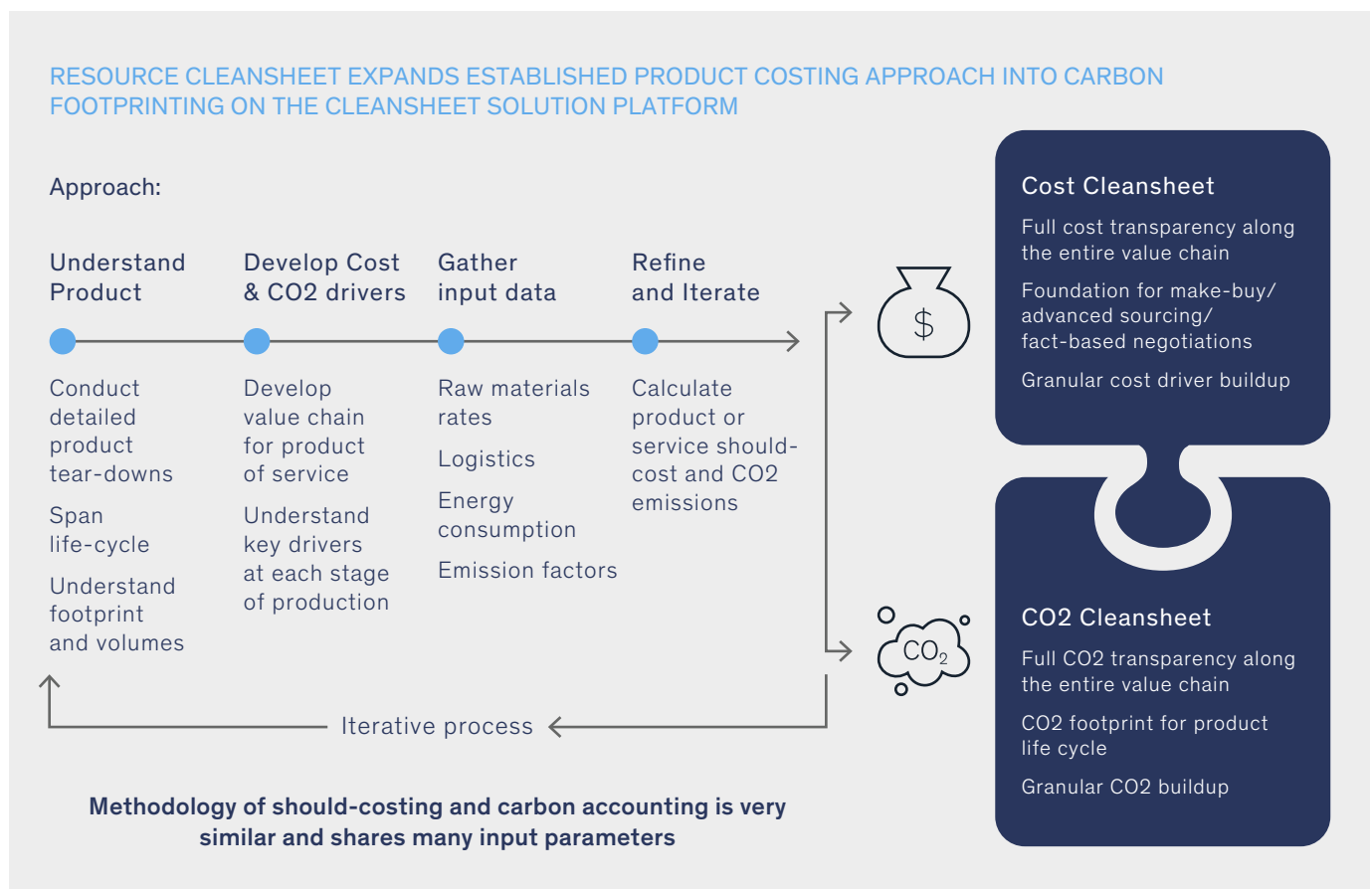
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Resource Cleansheet

What is it?

Consumer and regulatory demand for environmentally sustainable products is increasing and global CO2 emissions have doubled in the last ten years, but organizations sometimes struggle to make trade-off decisions between driving down CO2 emissions, reducing product costs, and addressing customer value demands.

Resource Cleansheet allows user to calculate cost and carbon footprint of products and end-to-end value chains simultaneously, and in accordance with Greenhouse Gas (GHG) Protocol guidelines. This is achieved by expanding existing should costing methodology and calculations into carbon footprinting calculations. McKinsey's integrated cost + carbon footprinting logic is one of the most comprehensive such solutions in the world, enabling carbon accountants and cost engineers to actively interact, and develop cost effective, carbon abated products.

How does it work?

RESOURCE CLEANSHEET EXPANDS ESTABLISHED PRODUCT COSTING APPROACH INTO CARBON FOOTPRINTING ON THE CLEANSHEET SOLUTION PLATFORM

Approach:

Understand Product	Develop Cost & CO2 drivers	Gather input data	Refine and Iterate
Conduct detailed product tear-downs	Develop value chain for product of service	Raw materials rates	Calculate product or service should-cost and CO2 emissions
Span life-cycle	Understand key drivers at each stage of production	Logistics	
Understand footprint and volumes		Energy consumption	
		Emission factors	

Iterative process

Methodology of should-costing and carbon accounting is very similar and shares many input parameters

Cost Cleansheet

Full cost transparency along the entire value chain

Foundation for make-buy/ advanced sourcing/ fact-based negotiations

Granular cost driver buildup

CO2 Cleansheet

Full CO2 transparency along the entire value chain

CO2 footprint for product life cycle

Granular CO2 buildup

What value does it generate?

- Expands established should-cost methodology into comprehensive carbon footprint methodology, aligned with GHG Protocol
- Flexible modeling architecture that helps generate custom emissions factors by modeling end-to-end client-specific value chains, across sectors
- Enables reliable, fact base calculations for evaluating supply chain footprint, in support of Scope 3 upstream decarbonization
- Helps evaluate design alternatives and insights to produce cost effective and carbon abated products from the get-go

Helping you get to maximum long-term value

Capacity building within your teams creates lasting impact

SUSTAINABLE IMPACT

A. CLEANSHEET SOLUTION PLATFORM

- **Easy-to-use** excel like interface
- **Scalable solution** with parametric capabilities
- **Customizable** to organizational use and data needs
- Robust **calculation engine**
- **Integrated reporting** capabilities
- **Remotely hosted SaaS** – no need for IT integration

B. MODELING PROCESS

- **Category prioritization** and selection
- **Cost driver tree** development
- Research to **identify major cost inputs**
- **Iteration of cleansheet** models to drive to high accuracy and confidence
- Category **impact sizing** and **negotiation target** setting

C. CAPABILITY BUILDING

- **Structured training, and "on the job" coaching**
- **Interfaces** between Should cost team and other orgs
- **Value-based mindset** to building and using should cost models

Customized to fit client needs and create distinctive value:

- **Cleansheet Solution subscription –** Establish a single platform for developing, maintaining and managing should cost and carbon footprint models. The subscription is best suited for organizations with established cost engineering and/or carbon footprinting expertise inhouse, and other organizations looking to utilize the Cleansheet Solution

- **McKinsey expertise and capability building –** We'll guide your organization through the deployment of Cleansheet modeling capabilities. Subscription to Cleansheet Solution software with the objective of a medium-to-long term investment to build inhouse capabilities

- **Modeling-as-a-Service –** Customized impact-oriented modeling services based on your unique needs. These services require a subscription to the Cleansheet Solution platform and are best suited for organizations who do not want to invest in building in-house cleansheet modeling capabilities, but want to leverage insights generated using Cleansheet Solution platform

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Client impact

Impact:

$60M in savings

for $180M of spend

44% potential savings

during RFQ after Cleansheet

Global industrials client

McKinsey unlocked significant value for a large, global industrials client through a robust parametric cleansheet exercise. This client was sourcing a fragmented portfolio with over 40,000 parts and over 1,000 suppliers. After building bottom-up cleansheets for the client, the team found an average savings gap of 38% but a very wide spread in cost savings (from 2-95%) across the portfolio. Our experts then built parametric cleansheets for 10,000+ parts to determine specific cost targets. The client received a factbase from which to center their cost negotiations moving forward. Through an RFQ process, the client saw 44% potential savings from best bids and ultimately saved $60 million across $180M of spend.

$500M in savings

over 2 years

40% average savings

across product categories

US discount retailer

A large US discount retailer (~$70B revenue) with a very complex and fragmented portfolio of products (e.g. over 2000 items in sportswear, 800 items in footwear, etc.) found large cost savings through the Cleansheet solution. While this client already had a robust sourcing process in place, in reality the cost breakdown they had was misleading, as they were not analyzing close to their full spend. With Cleansheet, McKinsey collected product samples for 70-80% (~200 items) of their total spend and mapped costs to a detailed breakdown of the production process. The cleansheet model identified savings gaps of 36% for sportswear and 44% for footwear. After a multi-round RFQ, the client found significant savings of 20% in sportswear and 24% in footwear. Over 2 years, we delivered $500M in savings.

McKinsey's product cost and carbon footprint analytics ecosystem

Cleansheet

McKinsey Expertise

Solution Support
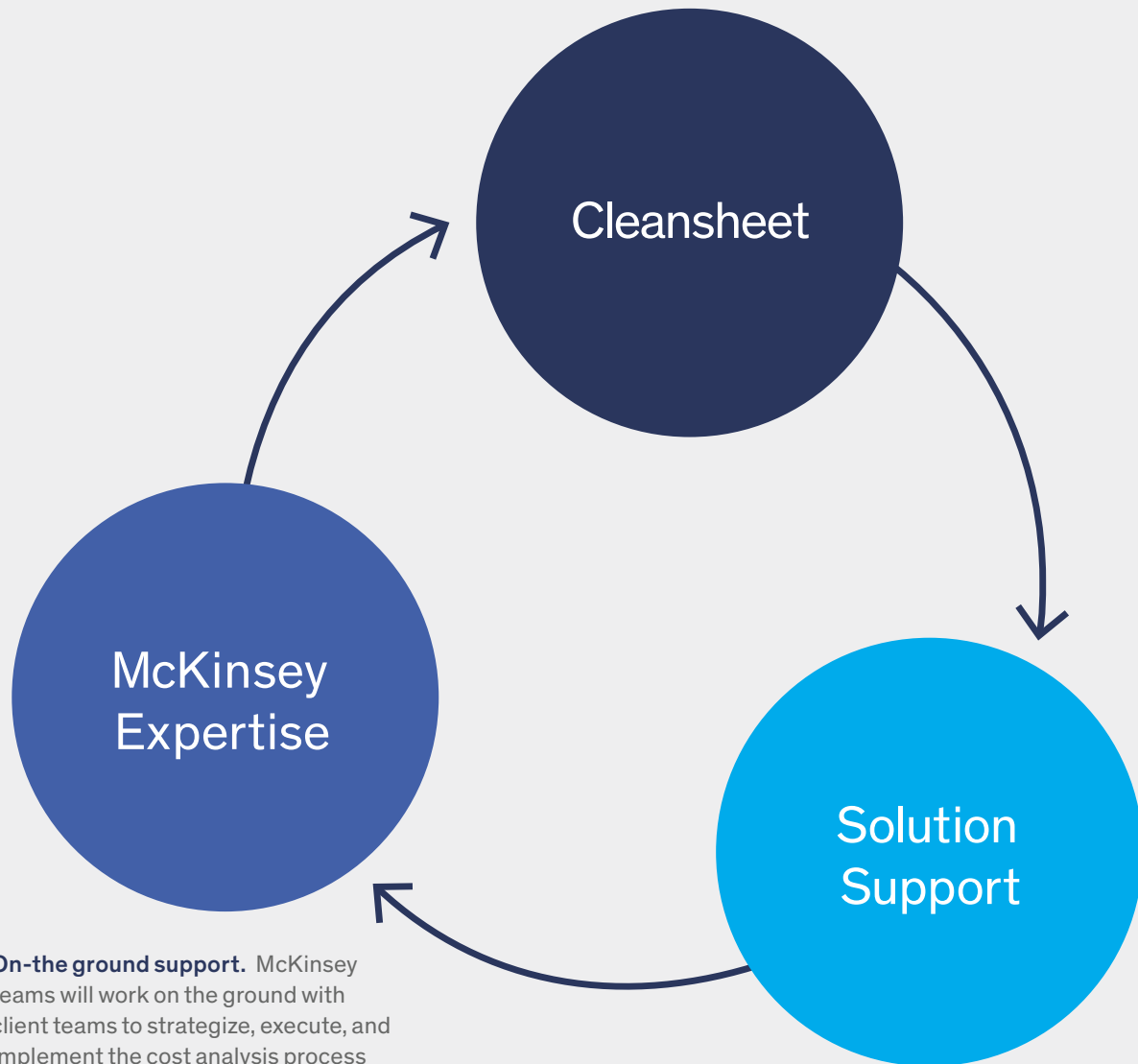
- **On-the ground support.** McKinsey teams will work on the ground with client teams to strategize, execute, and implement the cost analysis process with Cleansheet from end-to-end

- **Supplier prioritization.** Our experts provide knowledge and insight on what the most impactful items and suppliers to negotiate with will be

- **Negotiation strategy.** McKinsey partners with clients to strategize on the best course of action for supplier negotiations

- **Installation.** McKinsey works with users to ensure that client IT systems are set up for successful use of Cleansheet

- **Training.** McKinsey provides a comprehensive onboarding and continued training program for technical use of the tool

- **Model customization.** McKinsey tailors its Cleansheet modeling services to specific needs of client, whether it is about cost of products, services, or optimizing cost and carbon footprints

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Why use Cleansheet?

INITIAL NEGOTIATIONS

Cleansheet analyzes production processes to tell users what they should be paying for products. With a rigorous breakdown of the financial facts, users can enter cost negotiations armed with a strong arsenal of costing data and achieve greater savings

REACTING TO SHIFTING COSTS

As economics shift and market conditions oscillate, organizations may see changes in their quoted costs by suppliers. Cleansheet's refreshable databases enable users to regularly refresh product cost calculations in the face of changing market costs, to ensure that product costs are reasonably quoted

DESIGNING COST EFFECTIVE AND CARBON-ABATED PRODUCTS

When organizations think about designing new products or modifying existing products, Cleansheet enables rapid evaluation of the financial and carbon footprint implications of different design decisions for items. The parametric capability allows for such analysis at the portfolio level, ensuring that no design decision is made in a vacuum

Impact

$2B in savings

Large telecom used Cleansheet across entire spend to manage costs

40% cost reduction

Global elevator manufacturer managed fluctuating input prices by aligning SKUs globally and using Cleansheet to manage prices

35% CO2 reduction

North American consumer products manufacturer used Cleansheet to optimize cost and carbon footprint of their new products

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How to get started

General questions / schedule a demo

Cleansheet_Solution@mckinsey.com

More information:

https://cleansheetsolution.mckinsey.com

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