Configit®

Green Configuration and Regulatory Compliance

Henrik Hulgaard, VP of Product Management

We support the world's largest manufacturers

— Model-based approach to solving the world's most complex configuration challenges!

ASML

HEIDELBERG

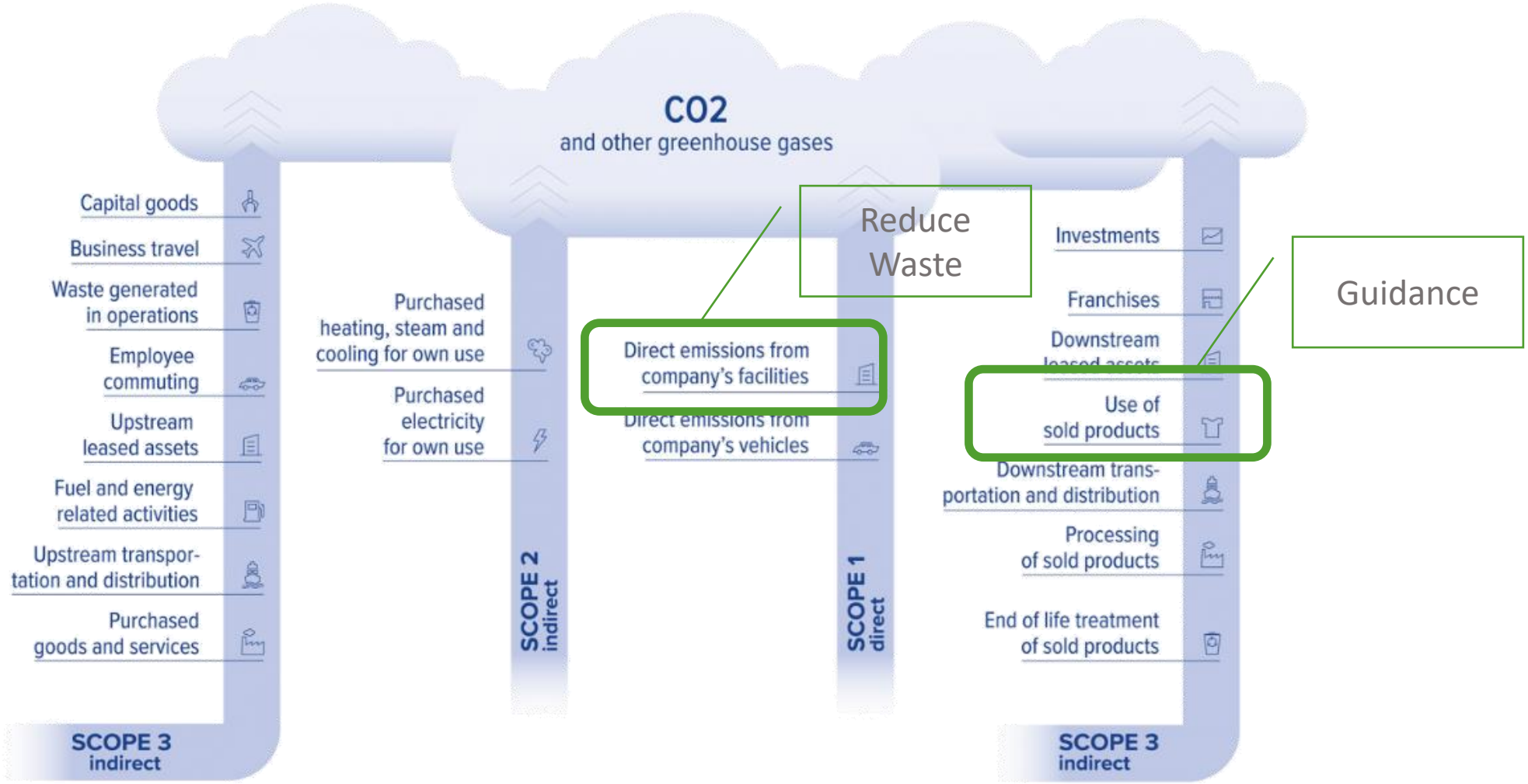
ABB


How can a configuration solution make manufacturing companies more sustainable?

Where can configurators play a key role in reducing emissions?

The Greenhouse Gas Protocol

A Corporate Accounting and Reporting Standard



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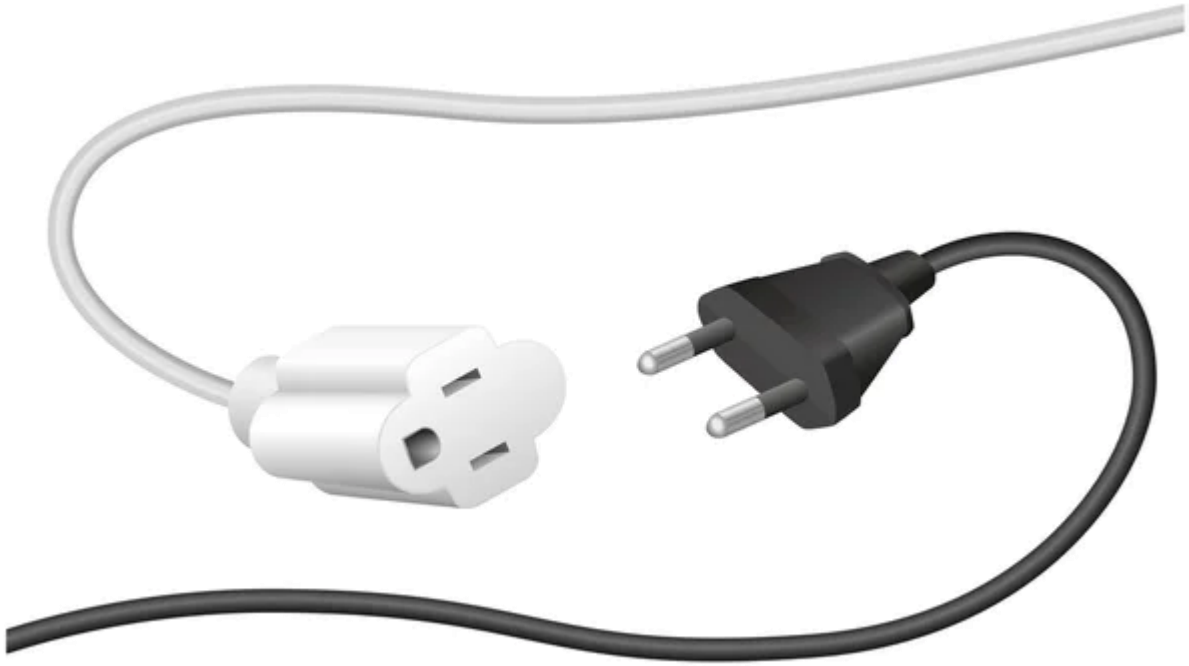
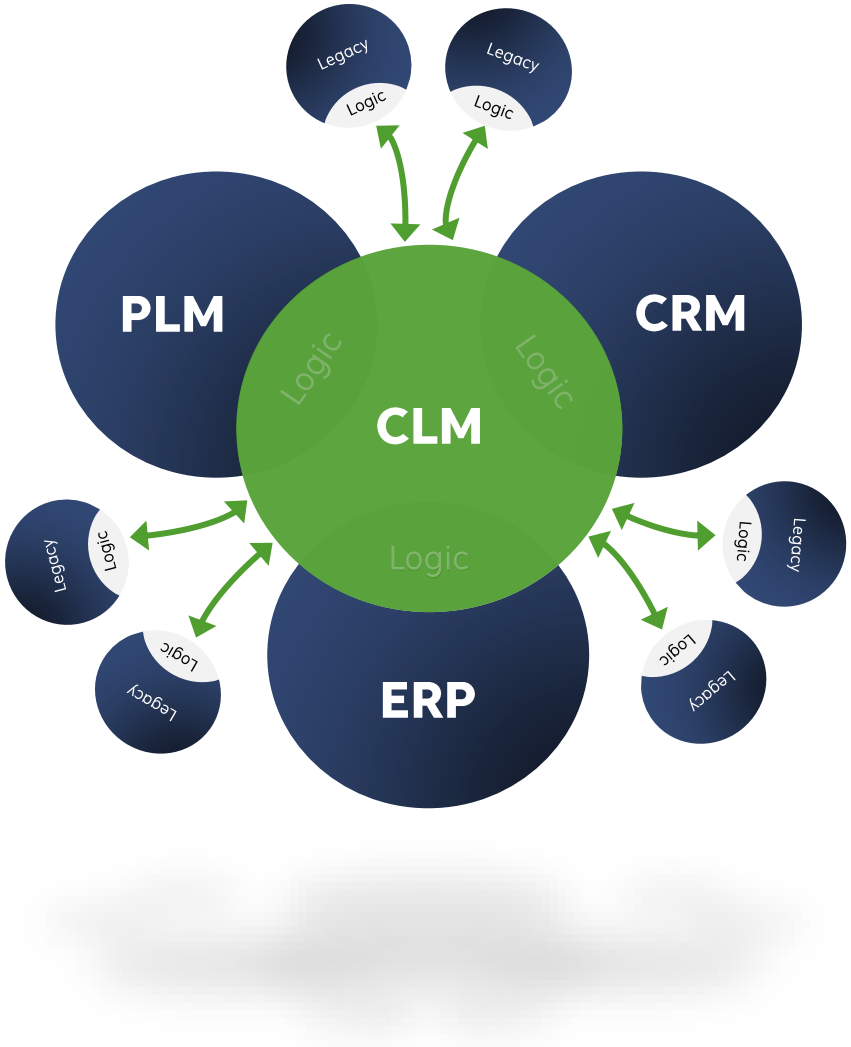
Reduce Waste

Reduce Waste

— Alignment between engineering rules, commercial rules and manufacturing reduce waste due to misbuilds





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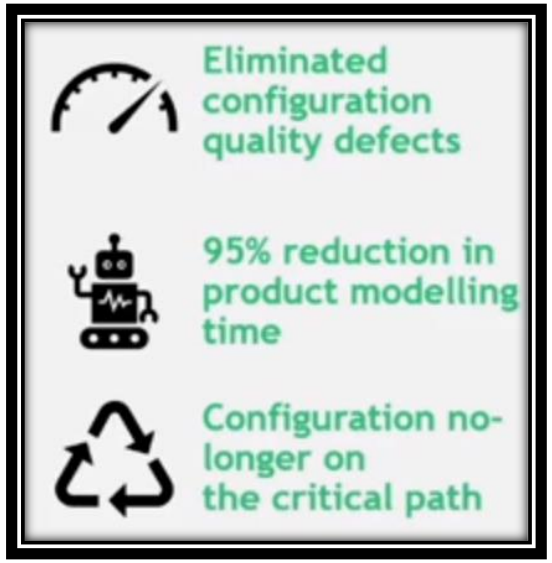

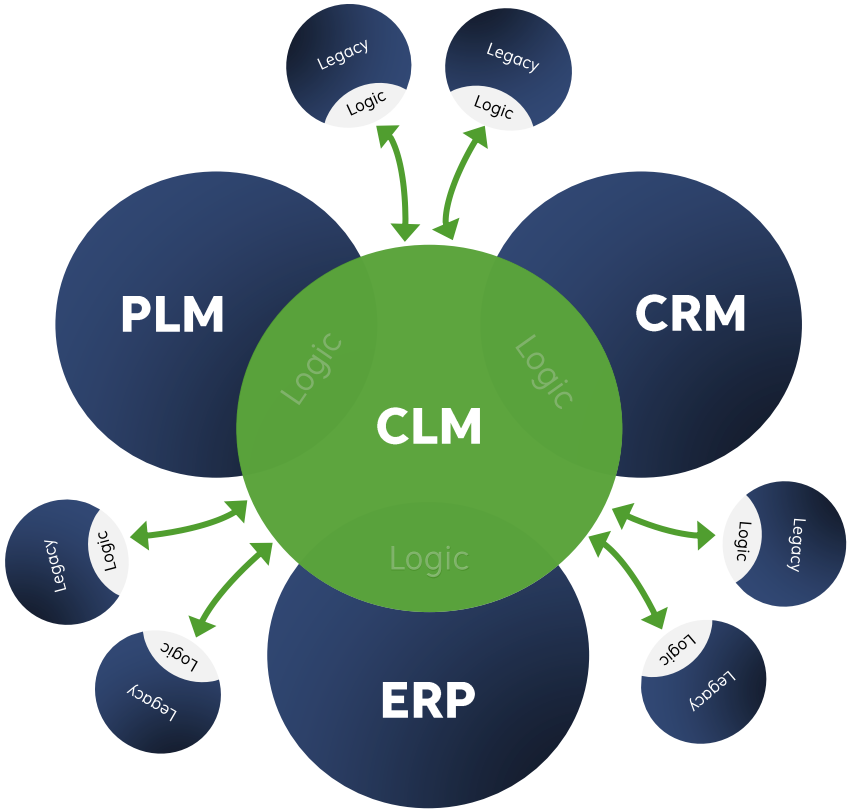

Alex Crawford, Director of Engineering Operations, CLM Summit 2021

Reduce Waste

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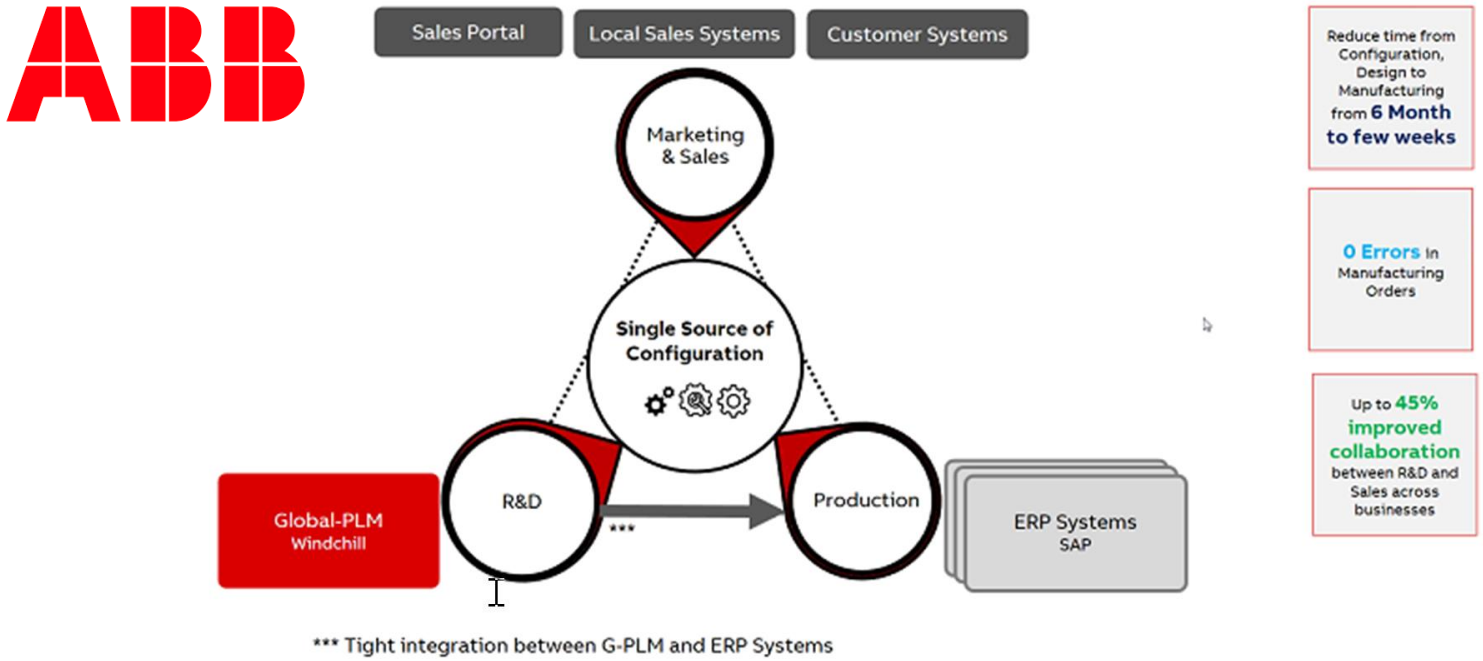
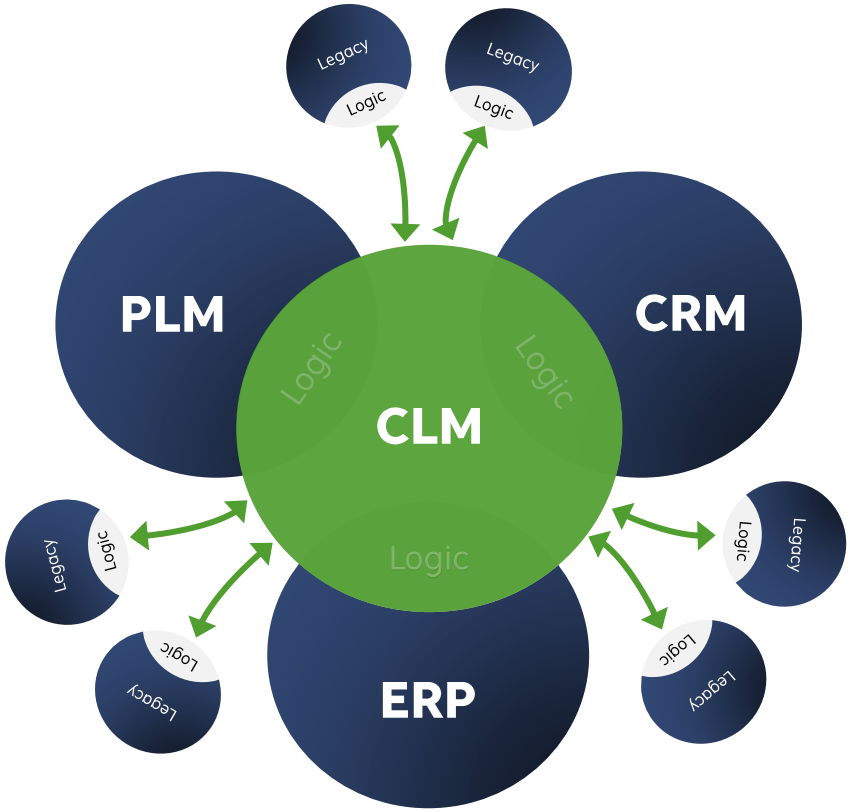


Reduce time from Configuration, Design to Manufacturing from **6 Month to few weeks**

0 Errors in Manufacturing Orders

Up to **45% improved collaboration** between R&D and Sales across businesses

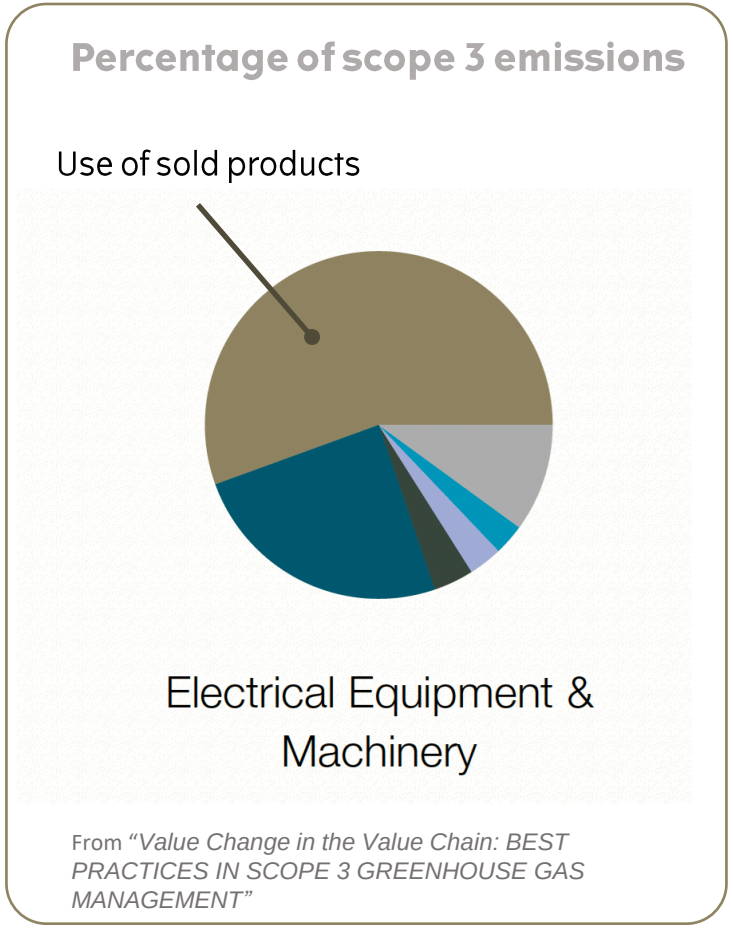


Guidance

Scope 3 Emission

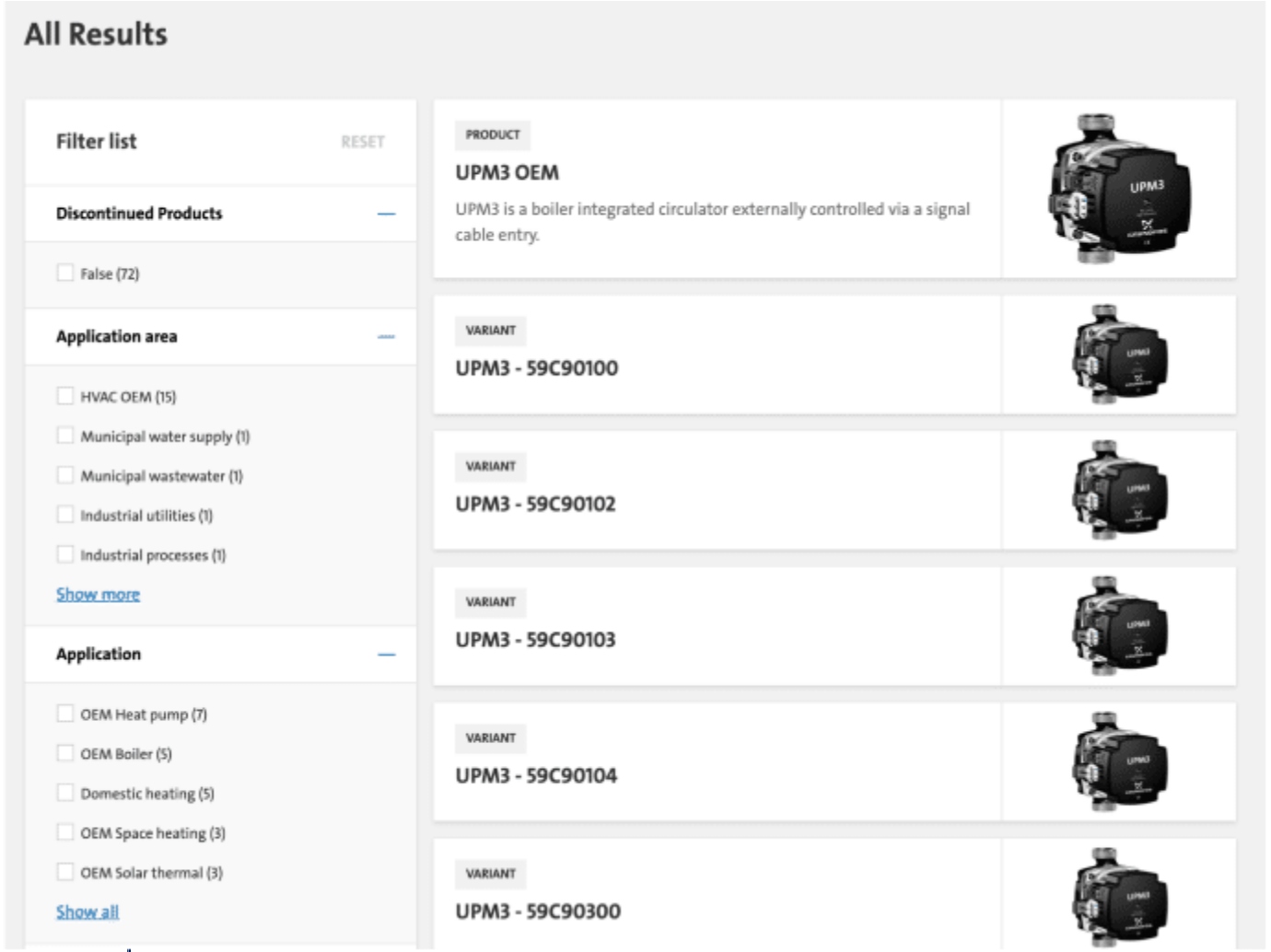
— **Scope 3**: emissions in the company's downstream value chain

— For manufacturing companies, more than half of scope 3 emission come from use of **sold products,** often accounting for several times the impact of its scope 1 and 2 emissions.



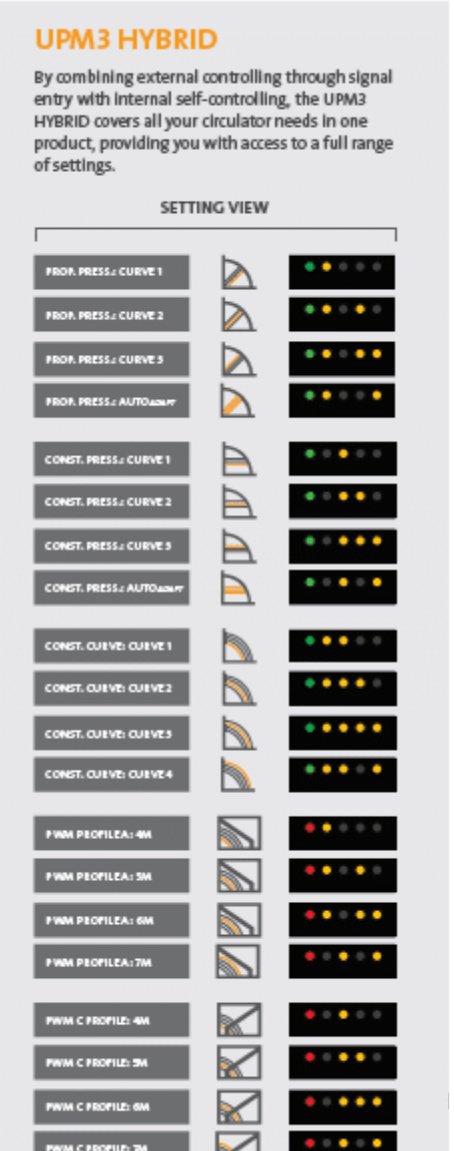
Optimal Product Selection

— **Example**: finding the pump that has the lowest power consumption for a given set of requirements (scope 3), will over time out-weight the energy used to manufacture the pump (scope 1 and 2)



Optimal Configuration Reduces Scope 3 Emissions

- A configurator supports an **end-to-end approach**, linking engineering parameters with customer requirements
- Ensures alignment through manufacturing and deployment
- **For example:** the configurator determines the software parameters that needs to be set when deploying



How is it done in practice?

— **Add parameters** about sustainability to the configuration models, linked to the technical parameters through rules

— Use the configurator to **guide** the user to find the best trade-off between **price**, **performance** and **sustainability** dimensions

2023 BMW i4

Fuel Economy 10

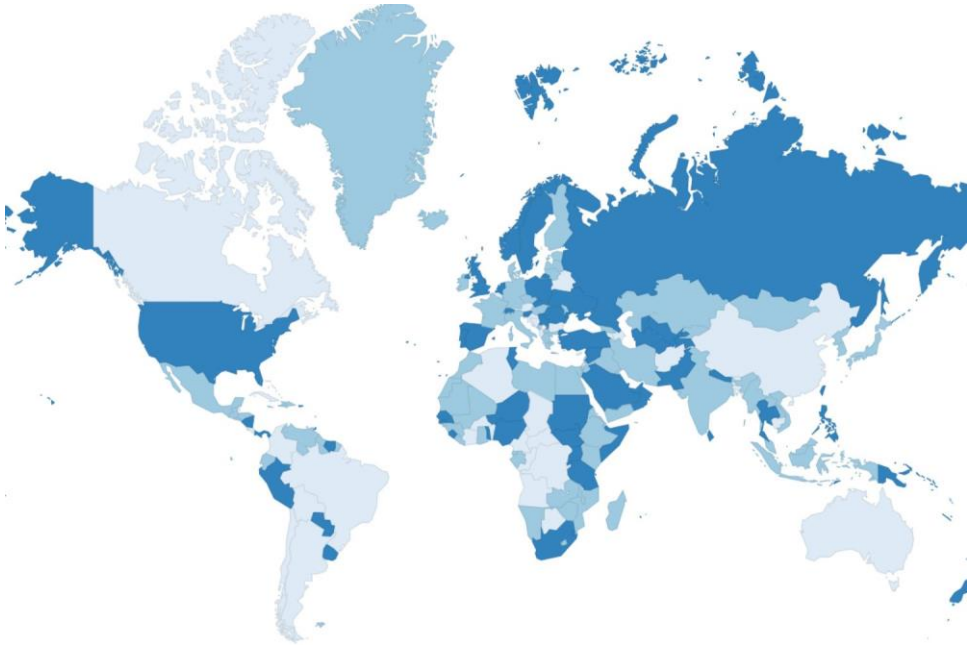
"Your choice of wheels will have a large impact on the i4's range.

Regulatory Compliance

Managing Rules across Markets

Engineering rules control technical constraints of the product

Market rules are used to control the commercial presentation of the product



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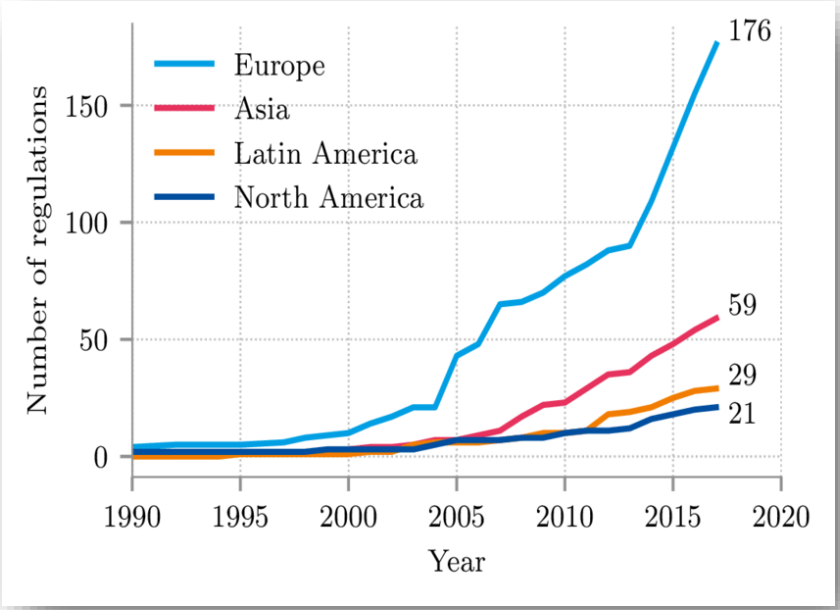
Increase in Customization and Regulatory Compliance

— Even the **simplest product exists in multiple variants** for example, due to different market requirements, both commercially and from regulations

Increase in Regulatory Compliance

- Manufacturing companies see an **increase in regulatory compliance rules**, in particular within environmental rules and sustainability.

- Examples of recent regulation:
  - **EU Packaging and Packaging Waste Regulation** (PPWR) has the objective that all packaging placed on the EU market must be recyclable by 2030
  - The **EU Digital Product Passport** (DPP) is digital sustainability data of the lifecycle of physical products, gradually being rolled out until 2030



9x

more regulations in EU since 2004

All

Manufacturing companies in EU will have to have a solution to the DPP by 2030

96%

of all companies in EU will be affected by the Corporate Sustainability Reporting Directive (CSRD)

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An Example: Food Packaging

— Consider deciding on the **packaging** of bananas.

  — **Logistical constraints:** constraints related to the transport of the products. For example, "rigid" types of packaging allows products to be stacked.

  — **Cost constrains:** Different packaging has different cost and **tax** elements. For example, in Sweden the packaging is taxed depending on the degree to which the products meet the requirements for **environmentally sound packaging** (see e.g. https://npa.se/en/producer-responsibility/packaging-fees)

  — **Regulatory constraints:** rules regarding **food safety** wrt. packaging varies across markets (see e.g. https://eur-lex.europa.eu/summary/chapter/food_safety.html)

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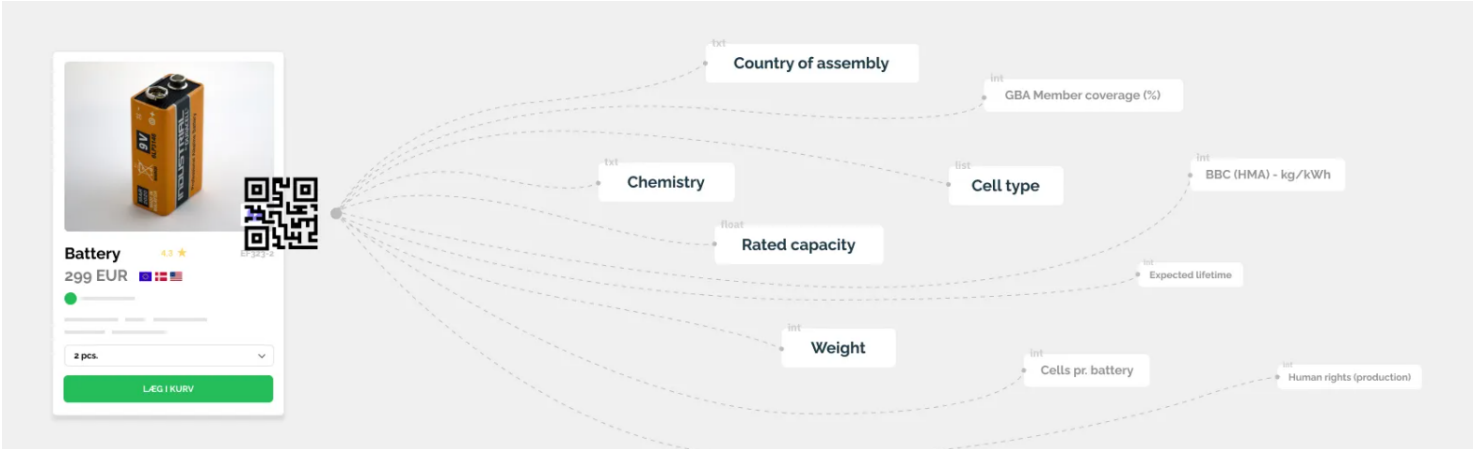
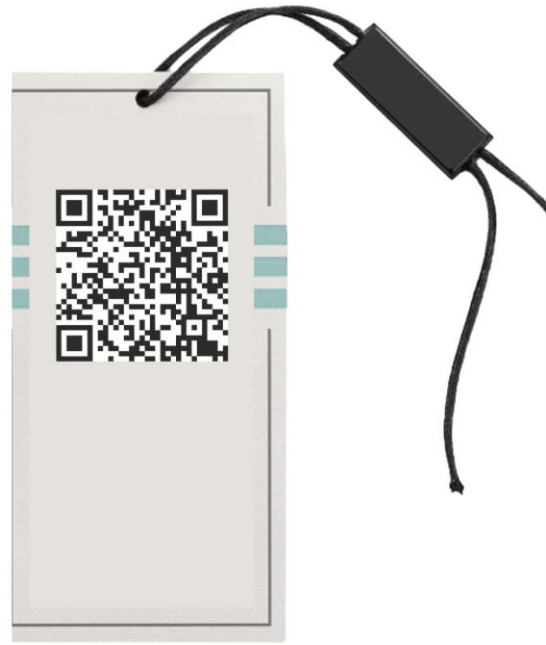
Digital Passport for Configurable Products

— The Digital Product Passport (DPP) is used to **collect and share product data** throughout its entire lifecycle used to illustrate a product's sustainability, environmental and recyclability attributes.



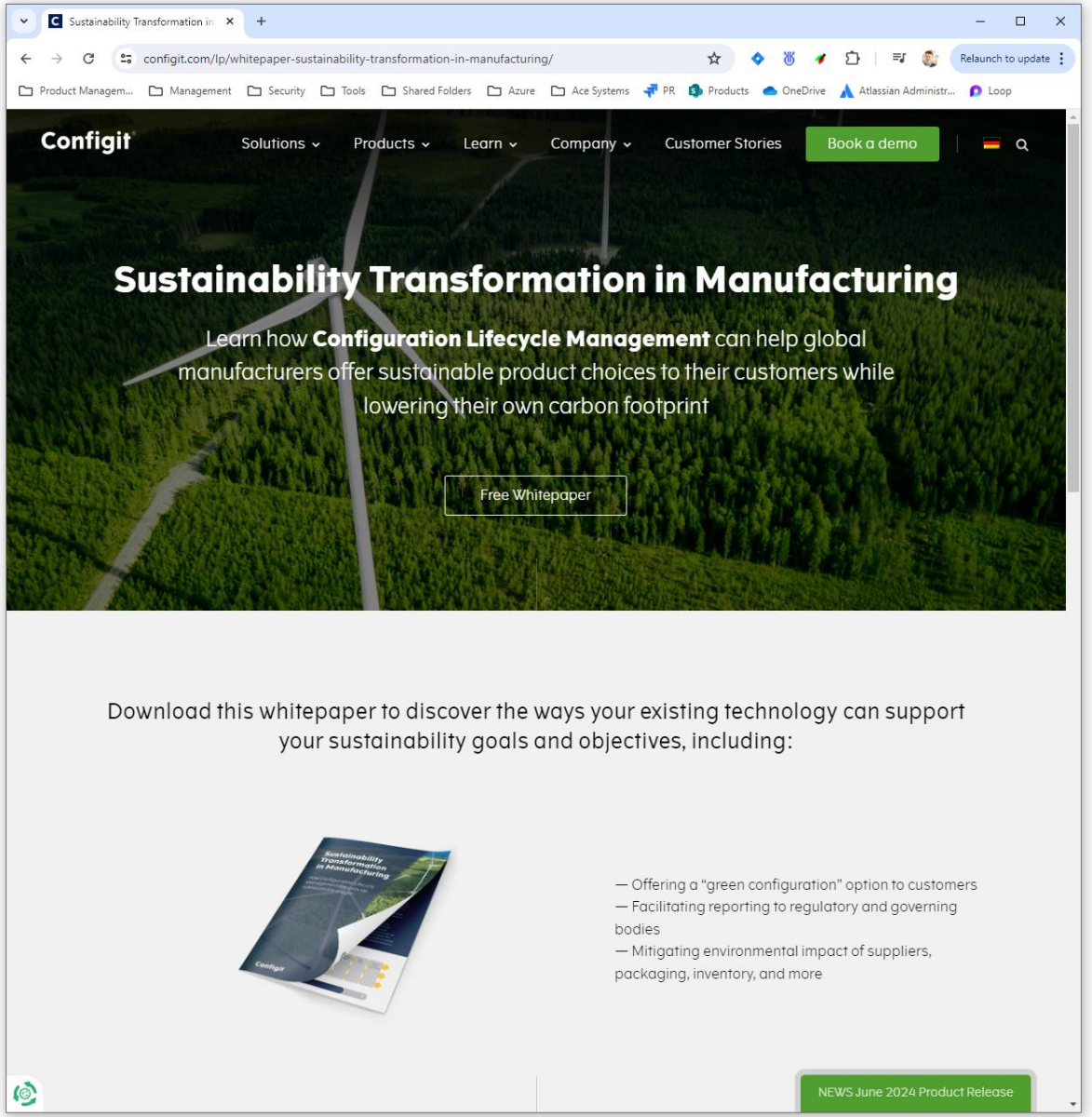
— For **configurable products**, each instance will have its own passport, requiring manufacturers to track individual configurations through their life-cycle.



[Scan QR code to see example product passport]

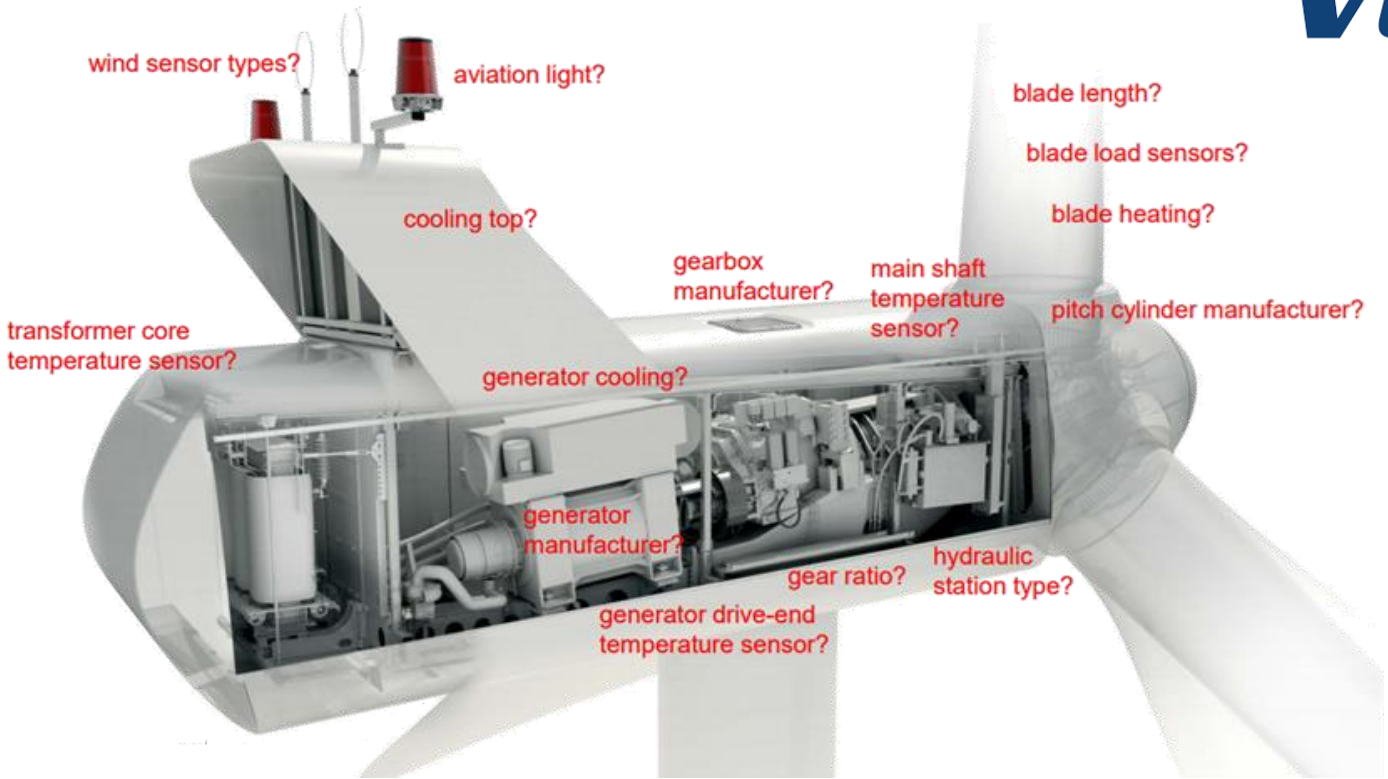
Learn More

- Go to configit.com
  - [Whitepaper]
  - [Blog]



Misc Slides

Software Parameters: Vestas Wind Turbines



50.000+ software parameters
pr. wind turbine

Challenges in Manufacturing are Speeding up the Requirement for Digital Transformation

Complexity

Supply Chain Disruption

Customization

Green Configuration

3D-Real Time

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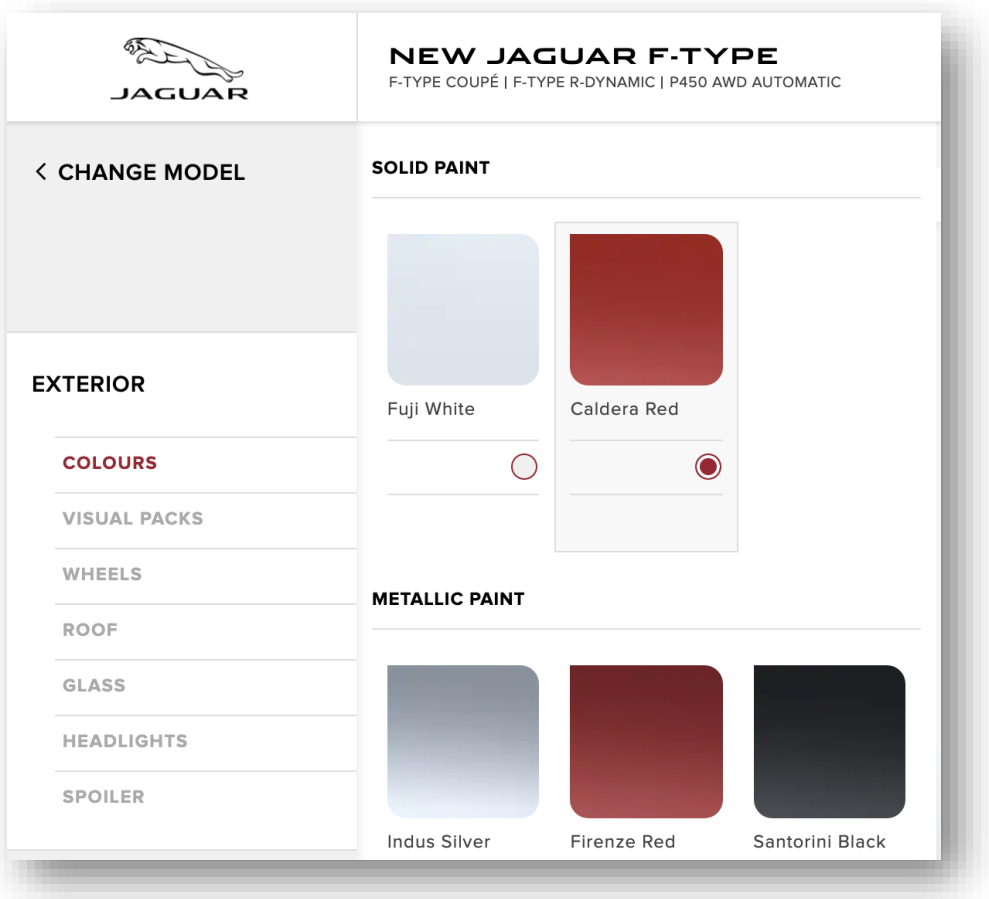
Features and Families

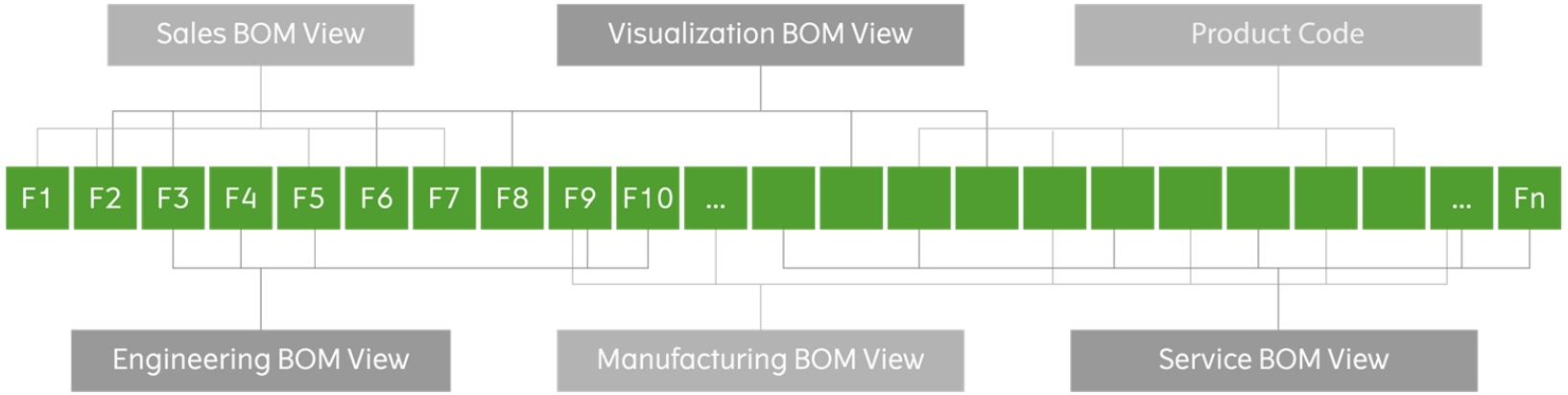
— **Feature** are used to characterize and differentiate product variants, e.g., “`Fuji White`” and “`Caldera Red`”

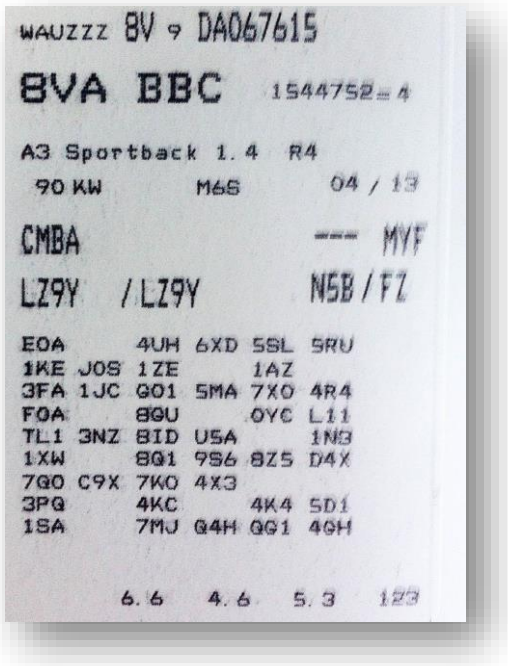
— **Feature Family** is a collection of features, e.g., “`PaintColor`”



Configuration / Feature String

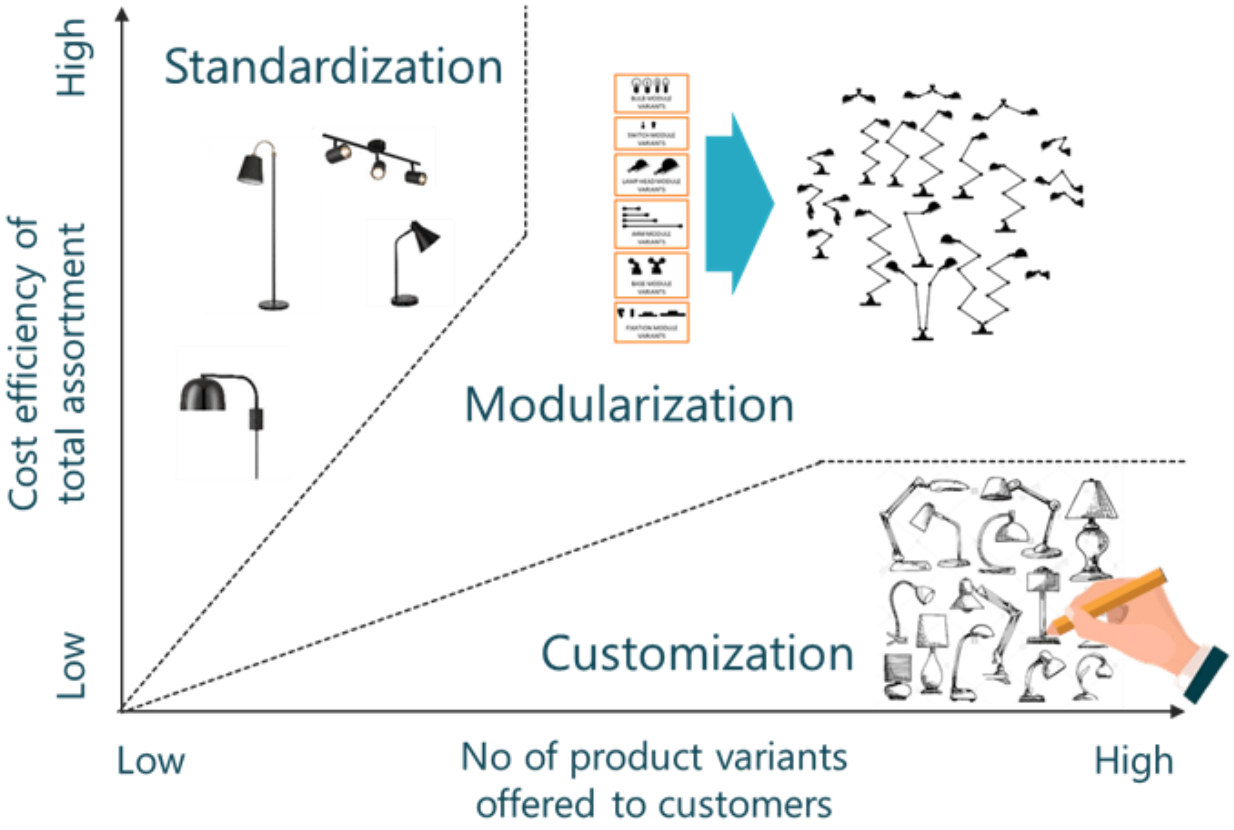
— The **configuration** / **feature string** defines the complete configuration and is the ”DNA” from which other information (e.g. BOMs) can be derived





Feature String for an Audi A3

What is Modularization?



Modularization is an effort to combat the complexity challenge of customization.

With modularization, modules are designed that can be re-used in multiple configurable solutions.

This is a first step in enabling a Configure-to-Order process.

Benefits of Configit's Virtual Tabulation® Technology

Engineering

— Higher quality products
— Release new products faster
— Efficiently manage product development

Sales

— Reduce sales' time-to-close
— Increase customer satisfaction
— Eliminate configuration errors
— Greater profit margins with guided selling

Service

— Service products based on accurate data
— Generate service-based recurring revenue
— Increase brand loyalty with predictive maintenance
— Identify up-sell and cross-sell opportunities

Manufacturing

— Inbound orders are complete and accurate
— Send error-free BOMs to the correct plant
— No production line stoppages due to order errors

Immediate access anywhere to CLM shared-source-of-truth

Configit Ace® SaaS
Global availability with
open **REST API**

Sync with **Cloud** Systems

Sync with **On-Prem** Systems

Interface with Any System Anywhere

Immediate Access Anywhere

Remote User

In-House User

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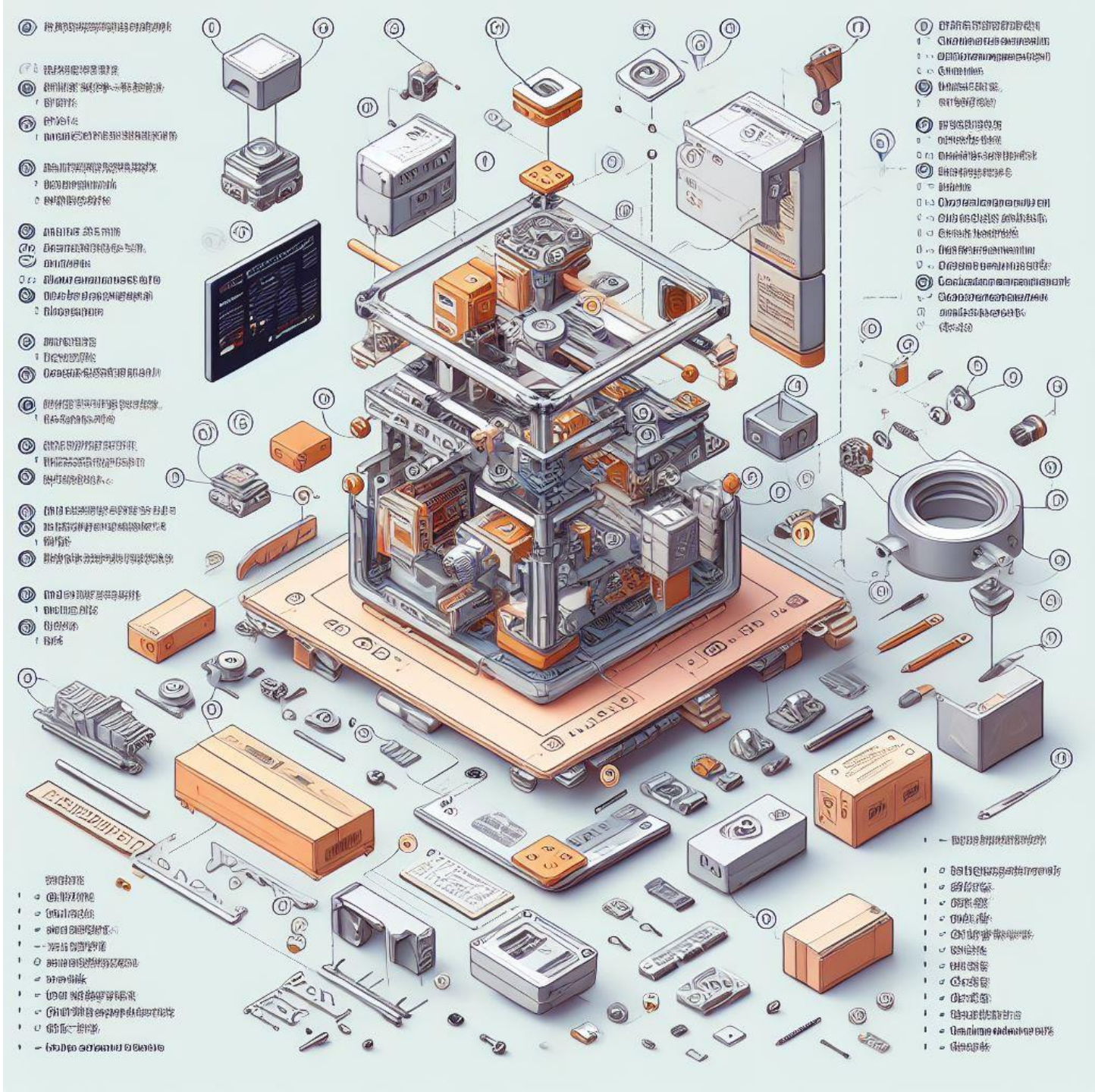
Generative AI and Configuration

Analysis shows that **modelling** is one of the is the most time-consuming part of projects

With complex products, there’s no room for randomness

Combine Generative AI with Symbolic AI:
Use gen. AI to speed up the product modelling process



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How to apply Generative AI?

It does not claim to provide the truth as it’s based on probability and the data it’s trained on

Can generate anything you want, but can’t tell you if it ever existed

We focus on the **validation** of AI generated models

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