



From 0 to 50: A2MAC1's journey to scale the Costing Library

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Decode the future

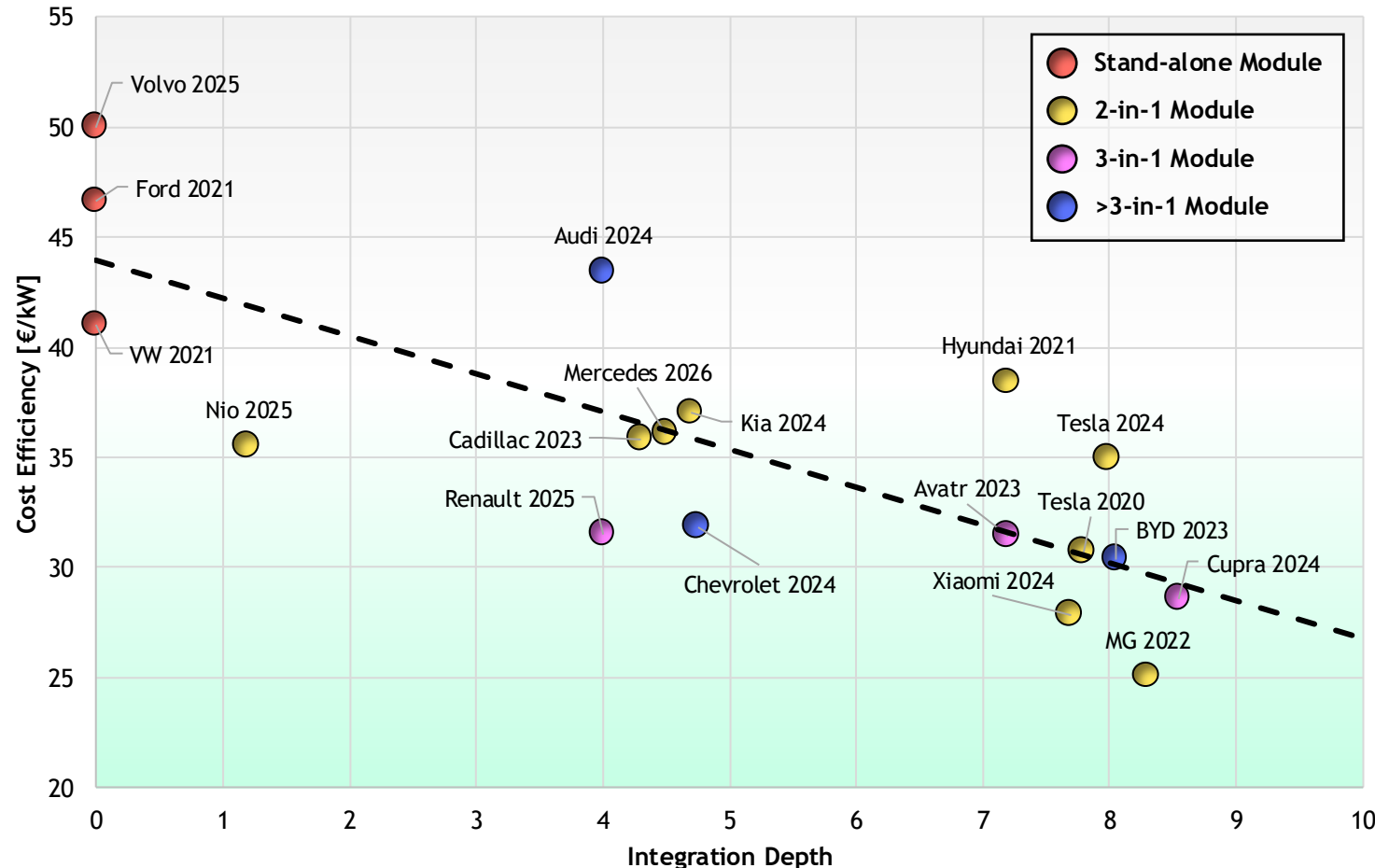


How can I **optimize** the **Cost** of my Onboard Charger?
What **should** my Onboard Charger **Cost**?

Till now, answering this was often a project

Extensive work and **analysis are required** to generate meaningful insights, reliable benchmarks and actionable recommendations.

11 kW OBC & DC/DC Converter (China 2026, 200k pcs p.a.)



- 1 **Integration Breadth**
Choose the right x-in-1 configuration
Combine the functions that create the most value for the vehicle platform.
- 2 **Integration Depth**
Maximize sharing between functions
Share components, power stages, control and cooling to capture the full benefit of integration.
- 3 **Topology Selection**
Simplify the power conversion concept
Select topologies that support functional integration and reduce component count.
- 4 **Mechanical Design**
Simplify structure and assembly
Streamline the housing and structural concept to reduce mechanical parts and assembly complexity.
- 5 **Electrical Architecture**
Optimize connections, control and PCB
Simplify interconnections and control circuitry, and improve PCB utilization to reduce board area.

The market is changing...

Oliver Blume
Volkswagen CEO



**3 Goals at the same time:
Fully electric, made in Europe, affordable**

Oliver Blume
Volkswagen CEO



**The transformation will never stop:
Decisions need to be quicker**

Christophe Périllat
Valeo CEO



**Acceleration is the new normal:
Speed is becoming a competitive requirement.**

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What Cost Engineering needs to deliver...

Cost Engineering needs competitive, instantly accessible and adaptable data.

01 COMPETITIVENESS

More competitive data is required to safeguard strategic Engineering & Sourcing decisions

02 TIME-TO-MARKET

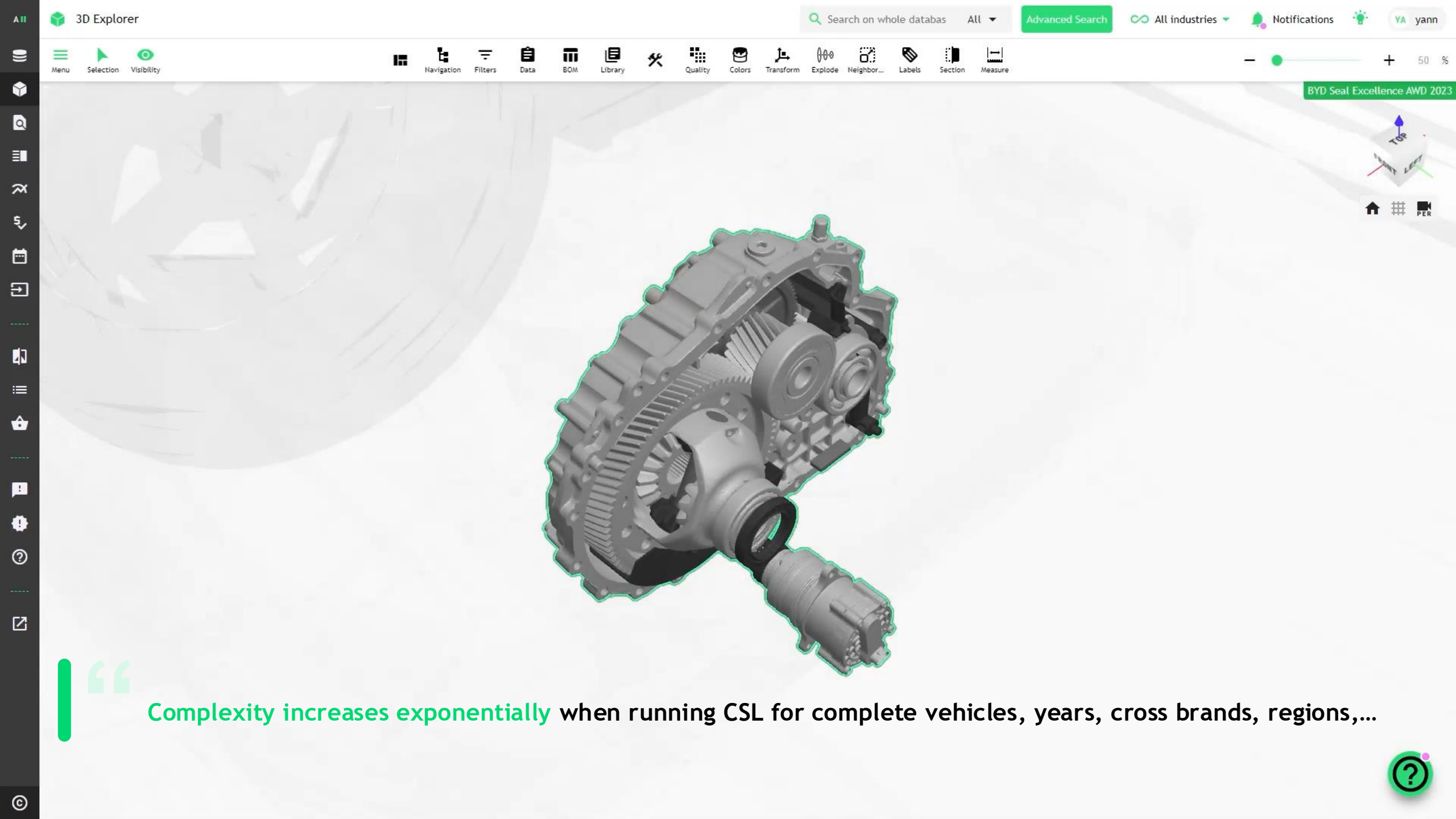
Costing data needs to be instantly accessible

Insights needs to be available at high speed

03 PRODUCTIVITY

Data needs to be “plug & play” adjustable to various use case

Cost Engineering needs to have the answer BEFORE someone asks.



Complexity increases exponentially when running CSL for complete vehicles, years, cross brands, regions,...



Case Study: A2MAC1 Costing Library journey

CS Library 2024

4



CS Library 2025

8

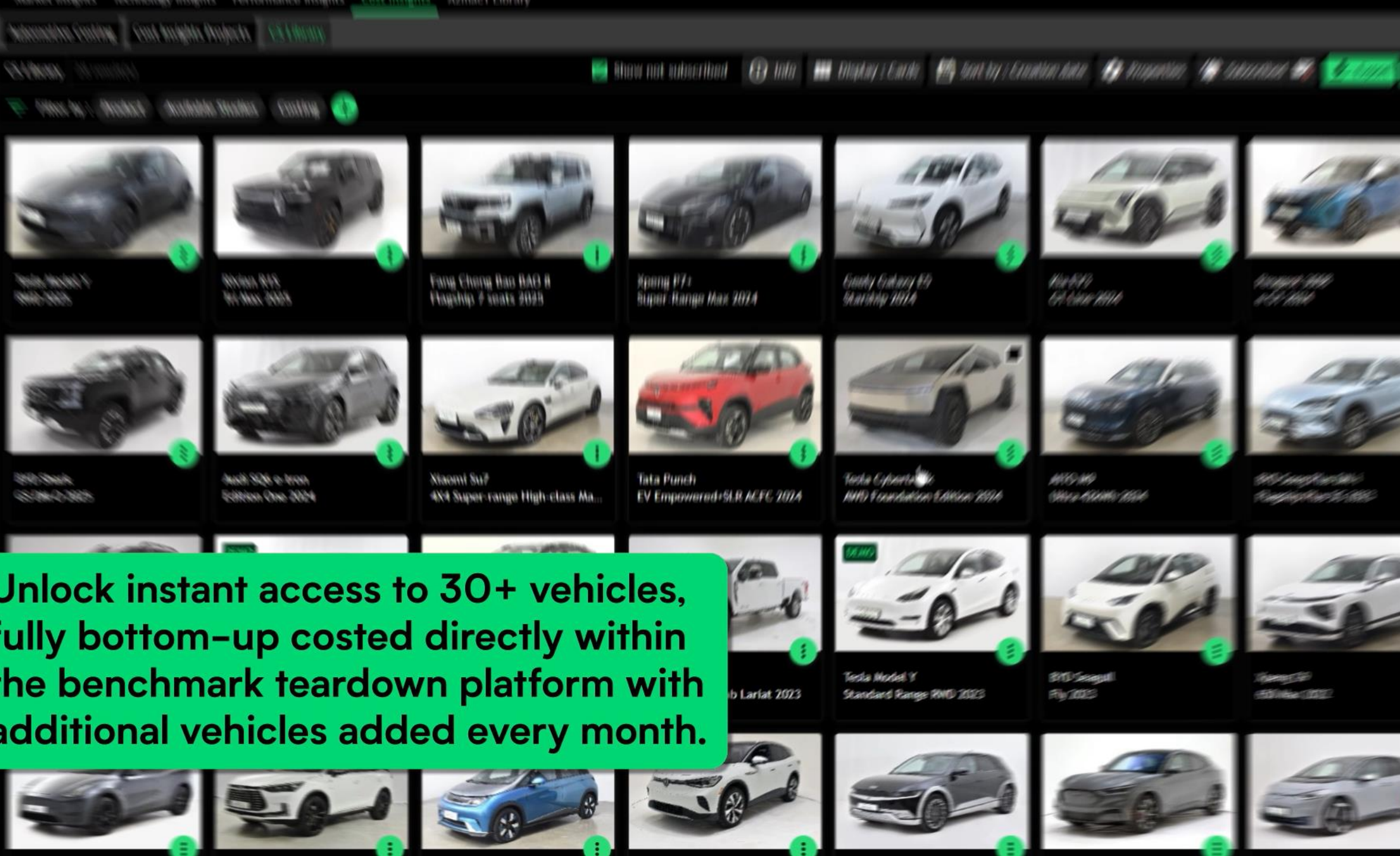


CS Library 2026

15+



Close to 30 vehicles fully costed bottom-up



Unlock instant access to 30+ vehicles, fully bottom-up costed directly within the benchmark teardown platform with additional vehicles added every month.

How Did We **Achieve** the **Foundational Phase** of **Scaling**?

Automated, deterministic workflows replaced fragmented, project-based costing

	2024	2026
BOM Creation	Manual BOM creation	Automated BOM import into one online costing environment
Cost Models	15 manually activated models covering ~11% of the vehicle BOM	400+ deterministic models applied automatically by commodity, covering ~60% of the vehicle BOM
Quality	Fragmented databases and manual quality checks	Automated checks for base-data inconsistencies
Data Integration	Manual highlight reports link cost and technical data	90%+ of cost data linked to technical data on IBP
People	Individual project teams, delivering against customized requirements	Localized production with global methodology & quality governance structure

Which Challenges did we discover on this journey?

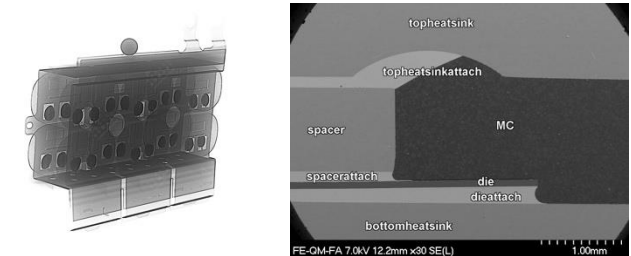
01 Input Challenge: Technical Data input needed to be extended to fully cover for bottom-up costing



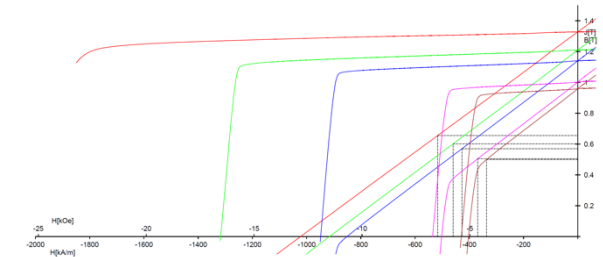
Additional teardown
(pumps, motors, lenses, displays,..)



Black Box Analysis & Xray
(Capacitors, inductors, power modules)



Material & Chemical Composition
(BiW sheet metal, magnets, Cat-con,..)



Any bottom-up costing is only as reliable as its technical data foundation.

Which Challenges did we discover on this journey?

02 Scaling Challenge: Data Production to be Localized, but Methodology Governance required Centralized



Costing teams in all regions close to Teardown hubs

Standardized methods around the globe

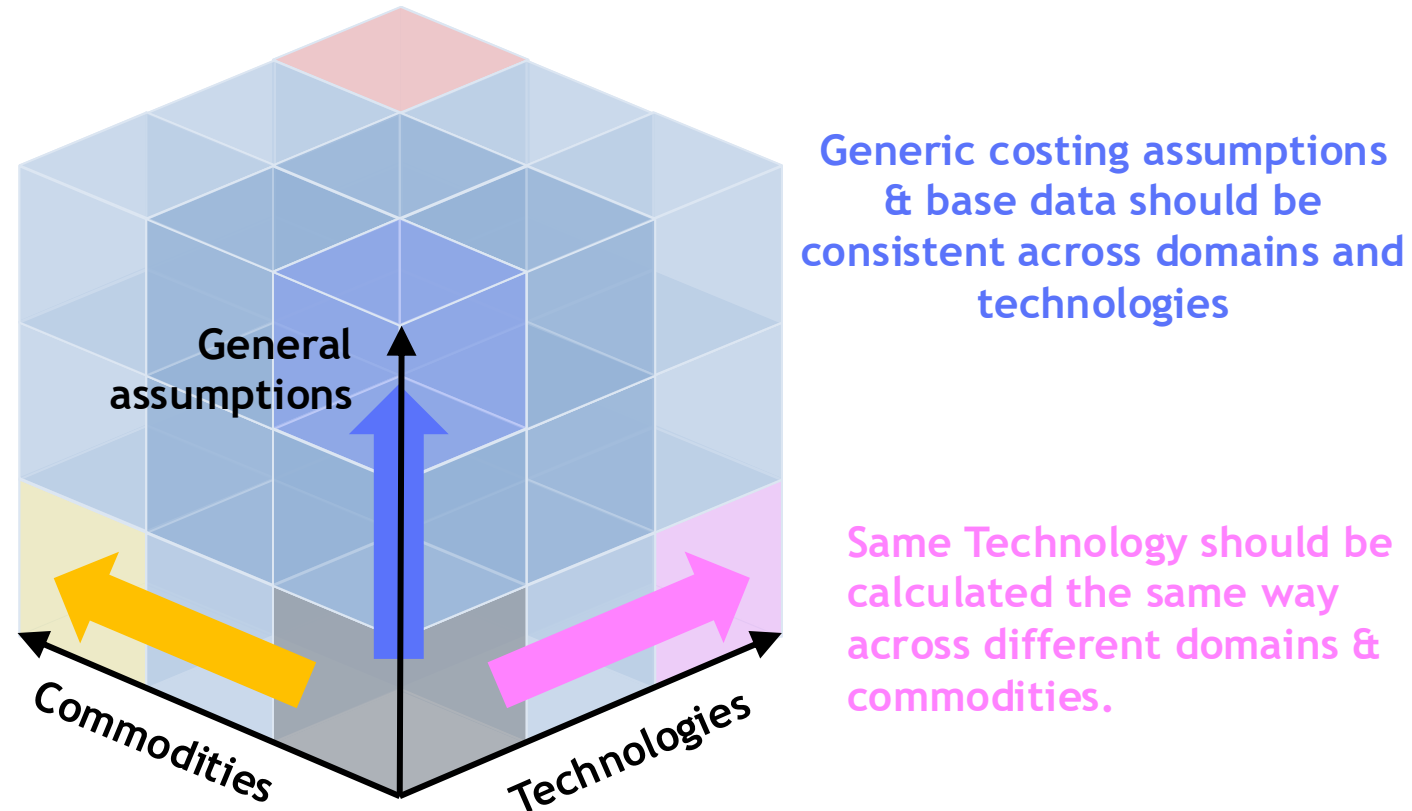
Central Governance structure to ensure consistent data quality



Scale comes from local production, consistency comes from **centrally governed methods**.

Which Challenges did we discover on this journey?

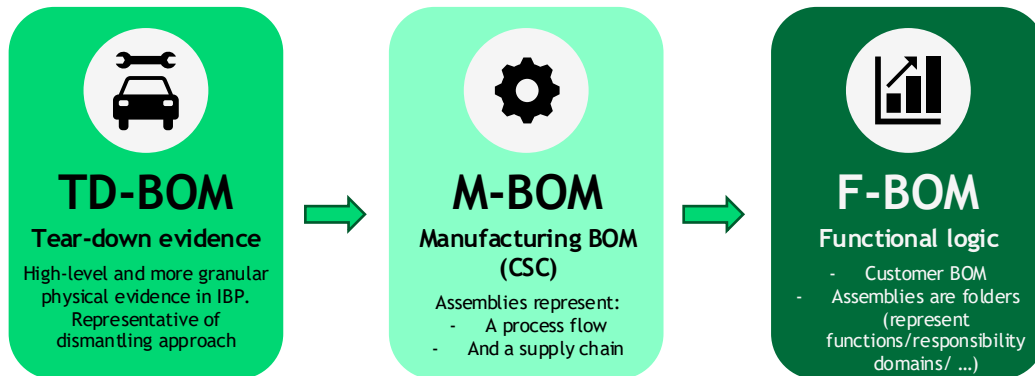
03 Matrix Problem: **Quality & consistency** of Data Needs to be **Guaranteed** along Multiple Dimensions



Quality requires consistent costing logic across **commodities, technologies and domains.**

Which Challenges did we discover on this journey?

04 Hierarchy Challenge: Global Standard is Missing



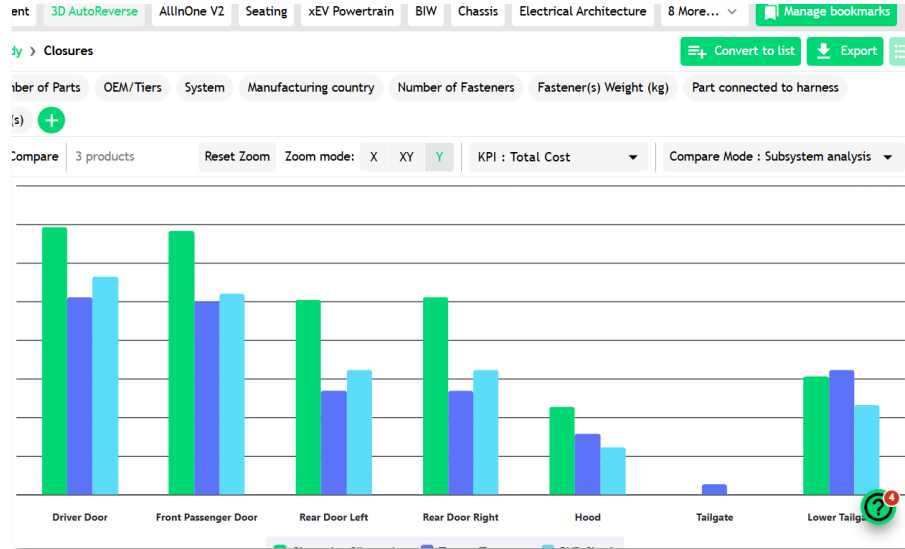
- Customers have up to 5+ different BOM conventions
- BOMs serve multiple purposes (from teardown, manufacturing, function to sourcing)



A common hierarchy connects every BOM view into **one coherent product structure**.

Which Challenges did we discover on this journey?

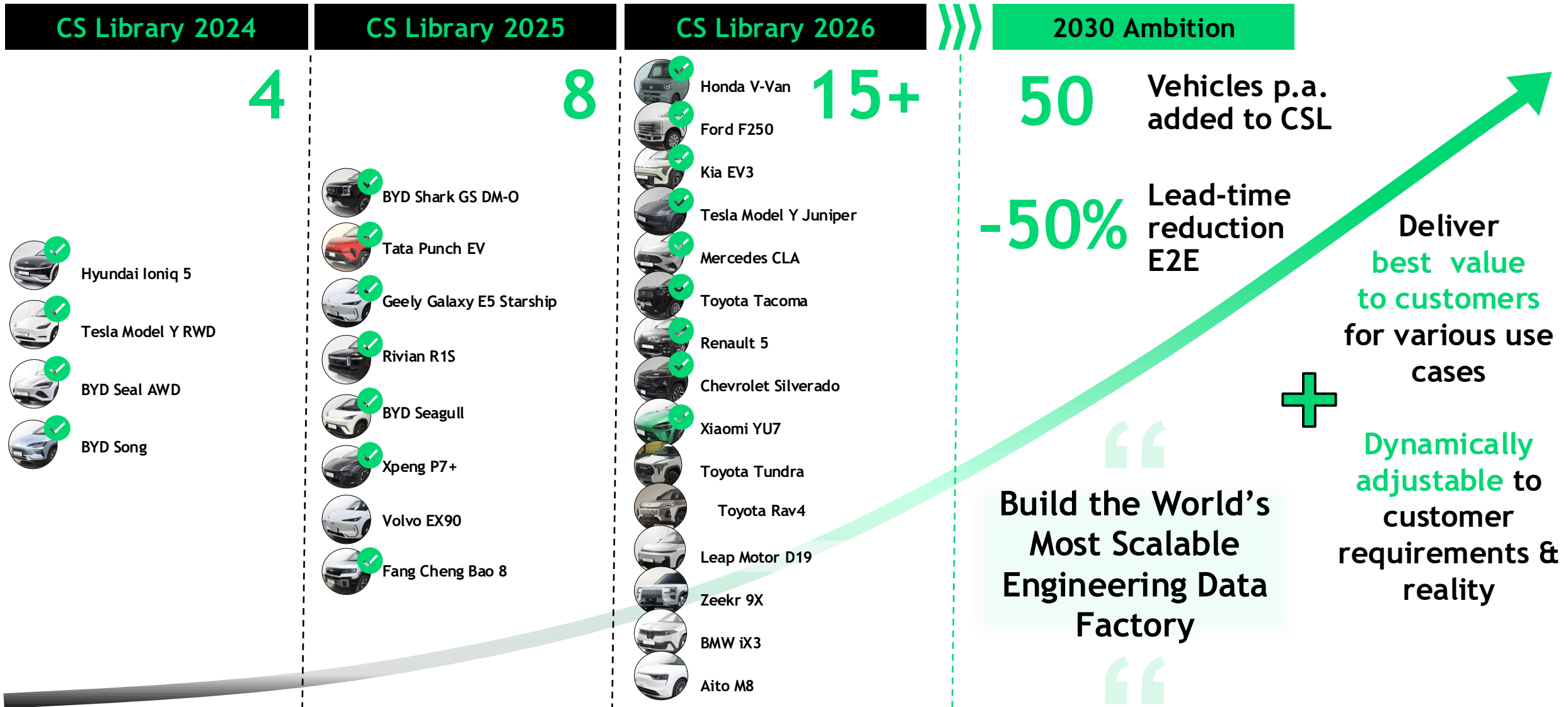
05 Delivery Challenge: Customer Cost Engineering needs to be able to Validate, Adjust & Publish.



- Our customers needs to have the ability to adjust our data.
- Plug in Master data - Different methods

Costing Data is supposed to be democratized but needs to be validated & governed by Cost Engineering.

Case Study: A2MAC1 Costing Library Coverage & Ambition



Times of transformation require us to address new use cases...

Antonio Filosa
Stellantis CEO

“ **We need more regulation for localization.**
70% of BOM cost to be sources from Europe.

Oliver Blume
Volkswagen CEO

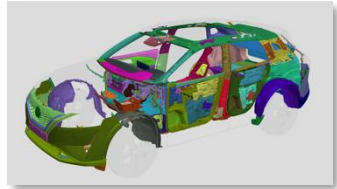
“ **We are still far away from parity for BEVs vs. ICE.**
TCO is becoming a decision criteria - Impact of Energy vs. fuel prices

Christophe Périllat
Valeo CEO

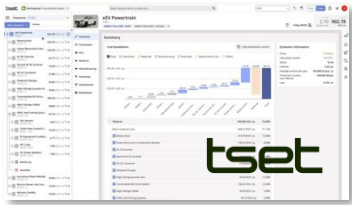
“ **Memory prices went up by a factor of up to 5x...**
PCB bare board prices are increasing...

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Deliver best value to customers for various use cases...



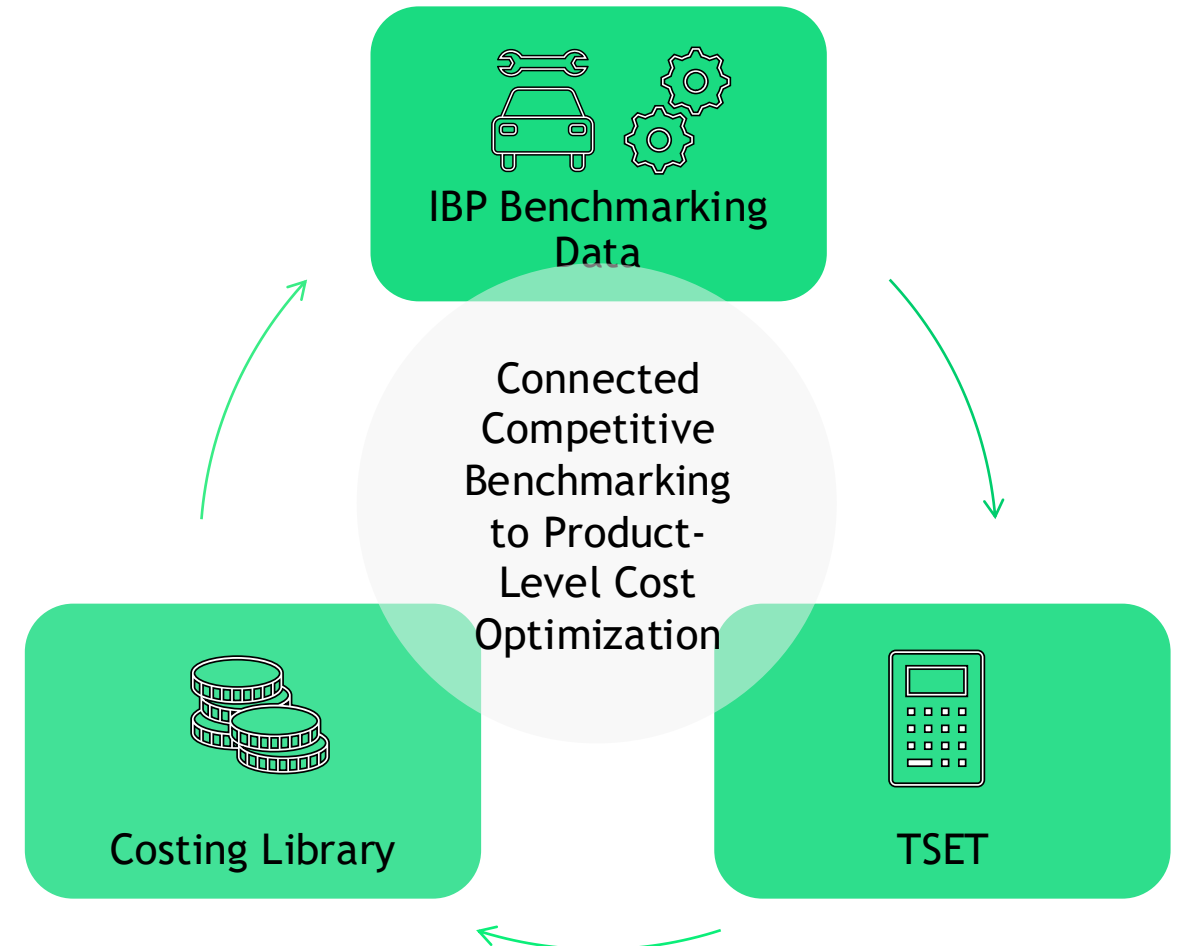
IBP benchmarking data input



Costing data creation through orchestration of deterministic methods & agentic AI



Delivery of Costing Library through IBP & Tset



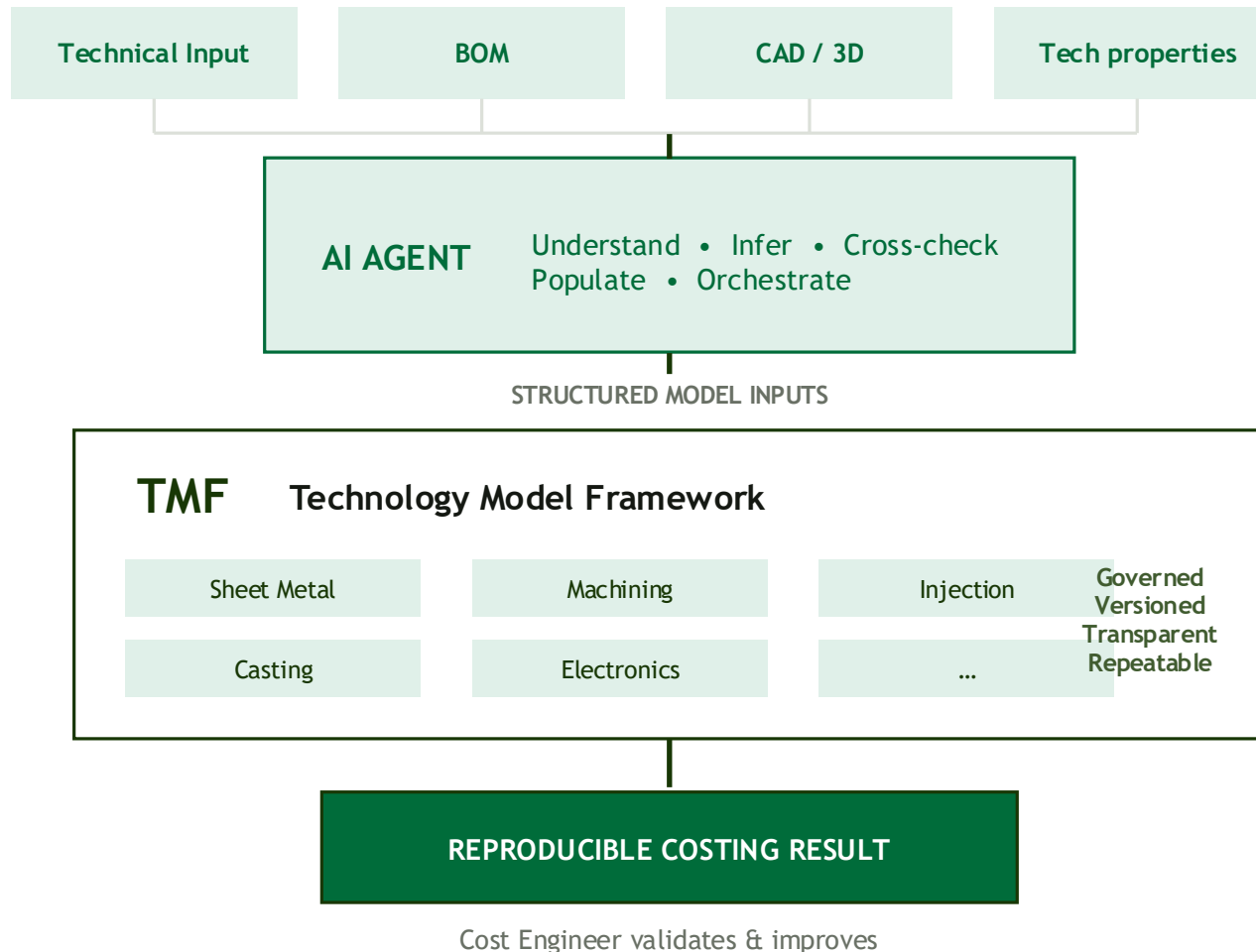
... requires a connected workflow

- on A2MAC1 side and on customer side

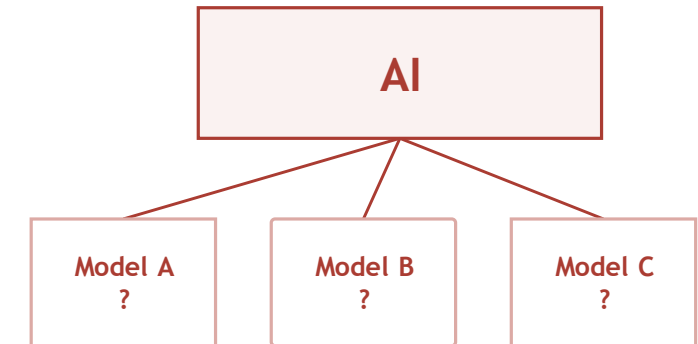
AI should operate the model, not invent it

Separate flexible AI reasoning from governed, reproducible costing methodology.

GOVERNED COSTING ARCHITECTURE



NOT: AI INVENTS THE MODEL



Calculation logic generated again for every case

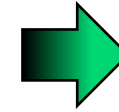
- ✗ **REPRODUCIBILITY** Same problem ≠ same methodology
- ✗ **GOVERNANCE** No centrally controlled logic
- ✗ **TRANSPARENCY** Hard to explain why logic changed

AI handles ambiguity. TMF governs methodology.

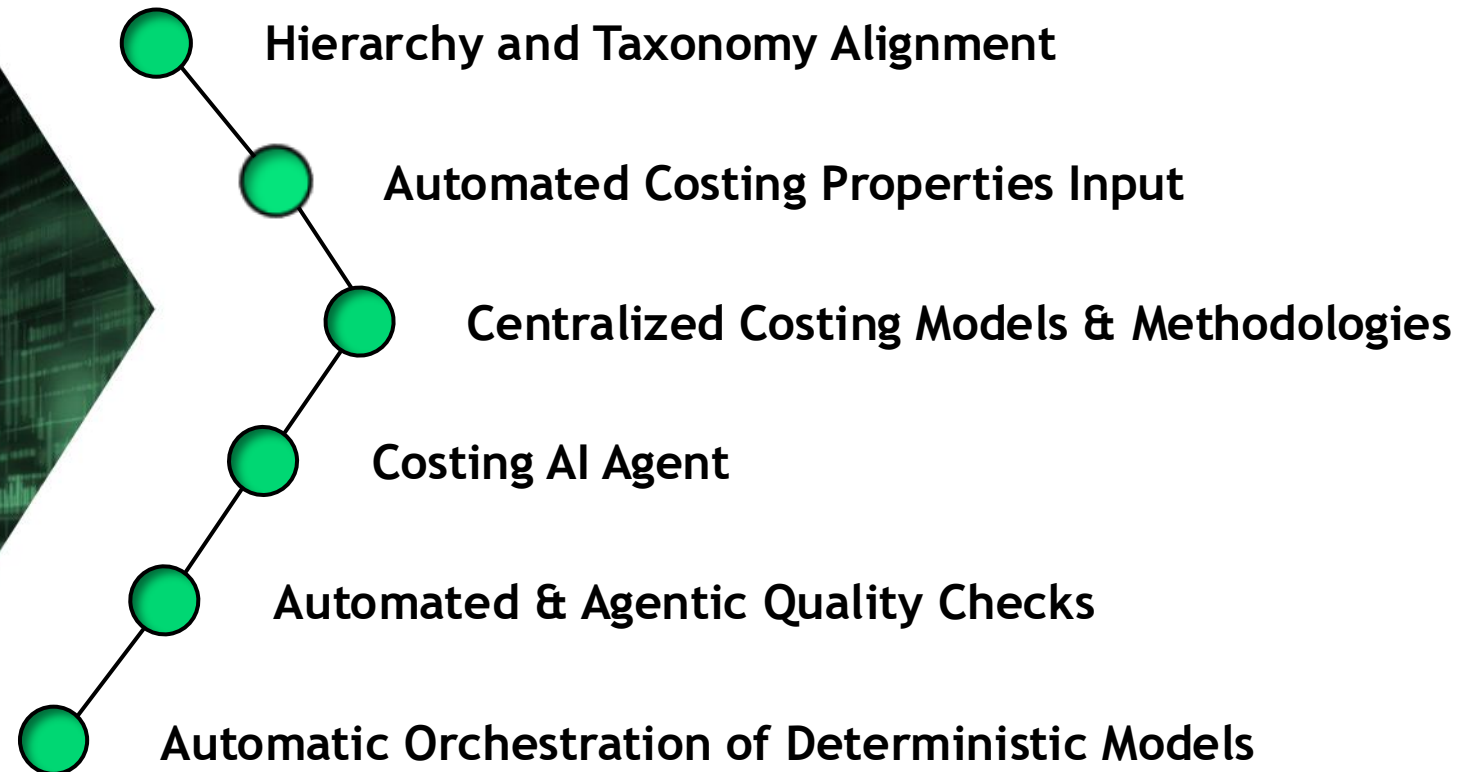
What's Needed for the Next Phase?

As deterministic standard-automation is reaching limits, the **next phase** requires **holistic optimization orchestrating the overall workflow**.

DETERMINISTIC FOUNDATION



AI-ENABLED ORCHESTRATION



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Thank you

