

The Science of Possibility

Media Lunch #HM24

23rd April 2024, Hannover, Germany



#OnlyForward

22. - 26. April 2024 | Hannover

ENERGIZING A SUSTAINABLE INDUSTRY

WORLD. LEADING. INDUSTRYSHOW.

Über die #HM24

Altair @ HM24
The Science of Possibility

▶ Unleashing the Power of AI



***Disrupt to Win - with Altair's differentiation:
The **Convergence** of Data Science + Rocket Science***

Jim Scapa, CEO Altair

Altair's Vision

Computational intelligence will drive innovation for
a more connected, safe, and sustainable future

Data Science + Rocket Science™

ALTAIR ONE

ALTAIR HYPERWORKS

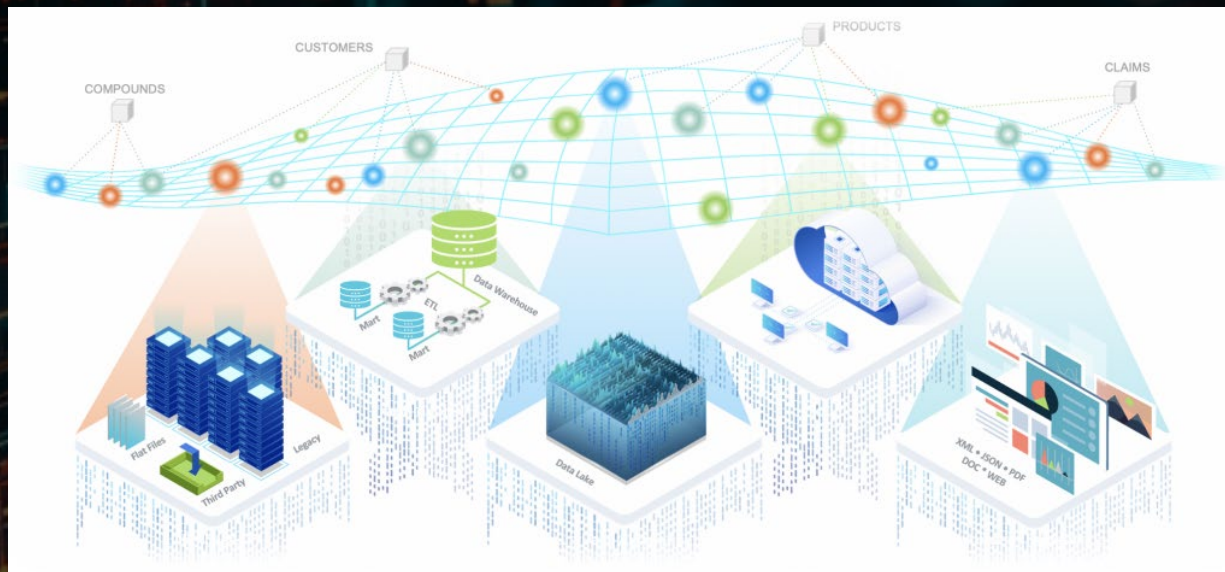
ALTAIR RAPIDMINER

ALTAIR HPCWORKS

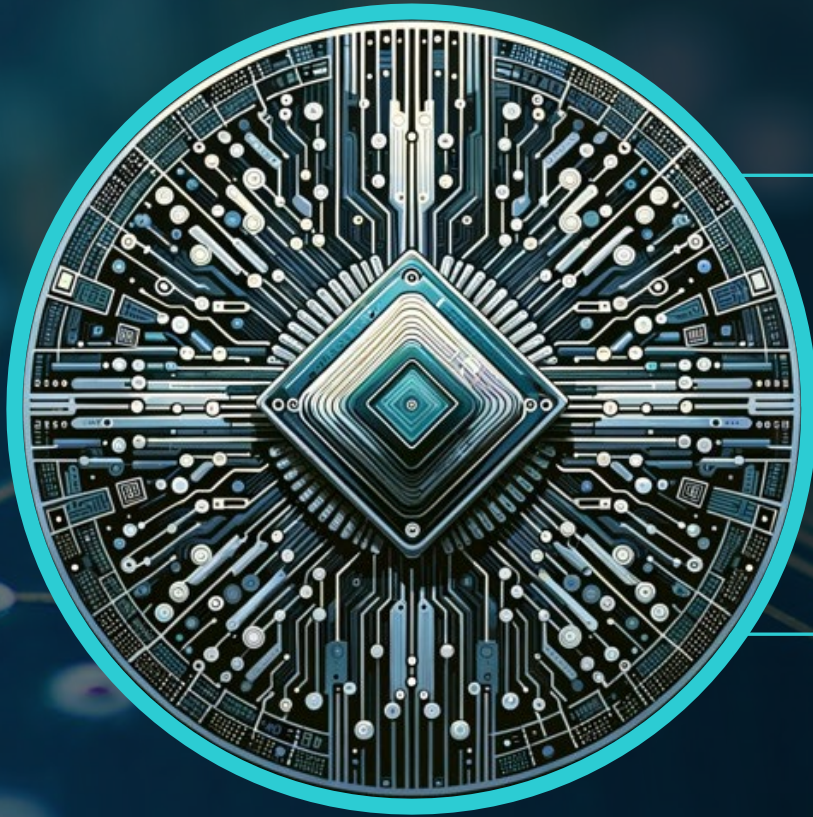
Hot News

Altair acquired the software business and related services of Cambridge Semantics

Knowledge Graph Technology allows a virtual representation of an organization's data, simplifying it and providing important context



AI-Powered Engineering and Business Paradigm Shift



- Computer-Aided Design
- Computer-Aided Engineering
- Computer-Aided Manufacturing

AI-Powered Engineering and Business Paradigm Shift



- Computer-Aided Design
- Computer-Aided Engineering
- Computer-Aided Manufacturing


AI-Enabled Design

AI-Embedded Engineering

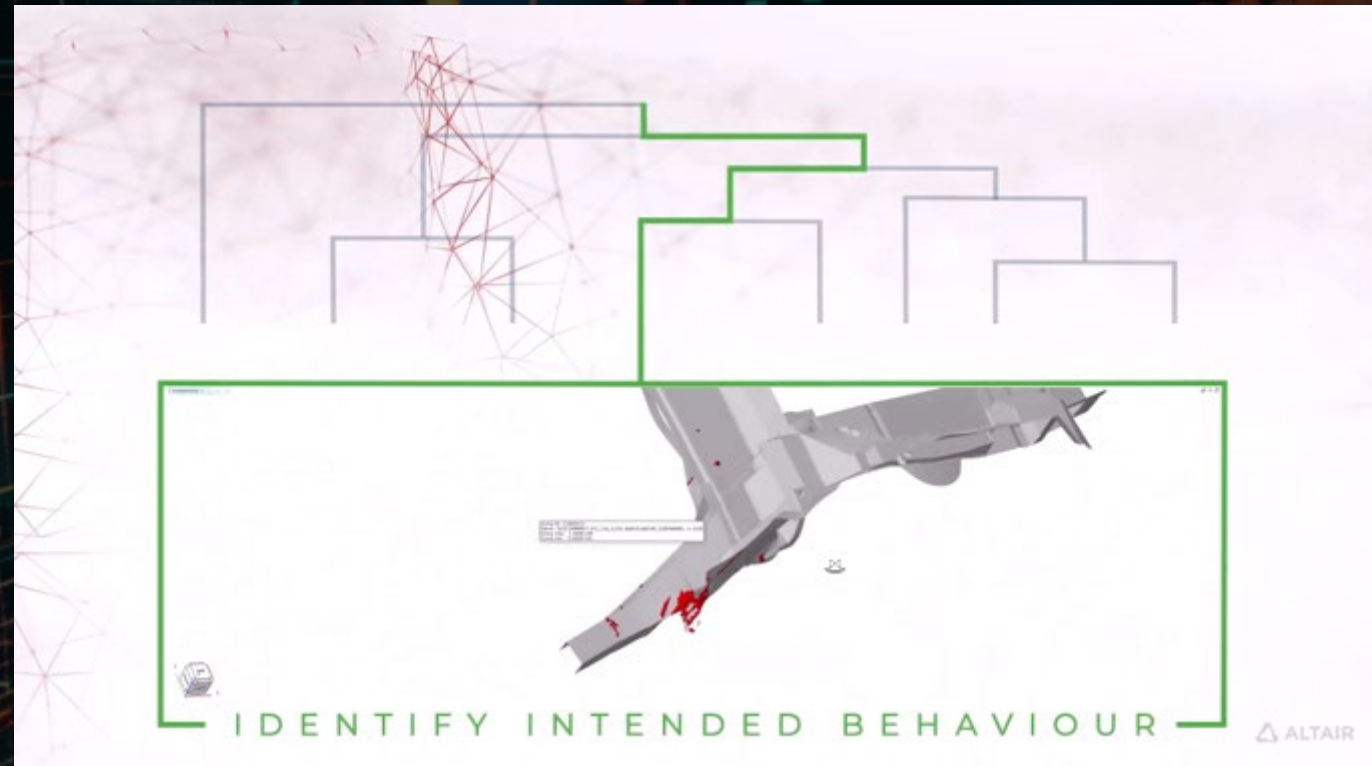
AI-Augmented Manufacturing

AI Powered Engineering

Generative Design



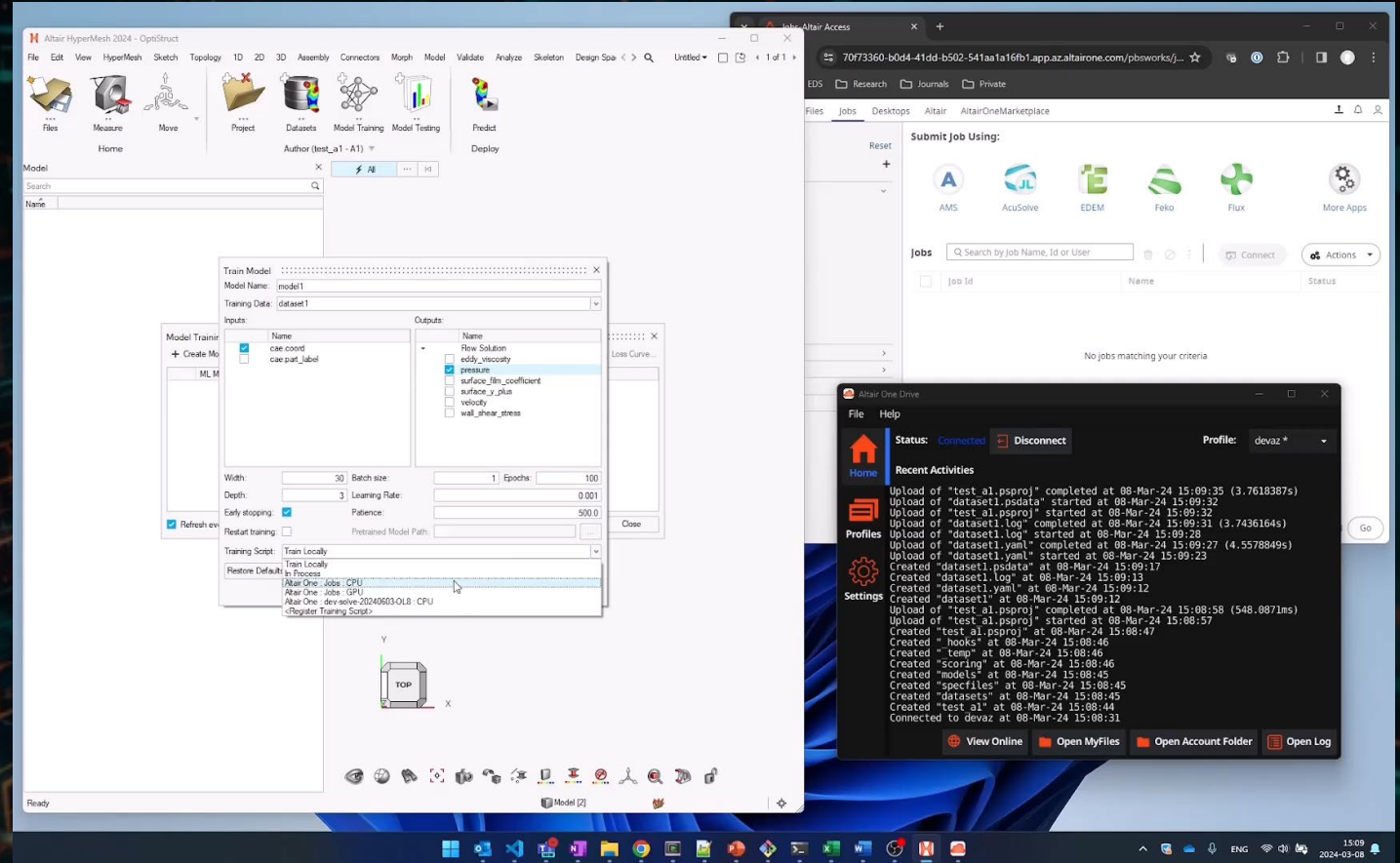
AI-Enabled Design



AI Powered Engineering

Predictions w/o the need to simulate

AI-Enabled
Workflows

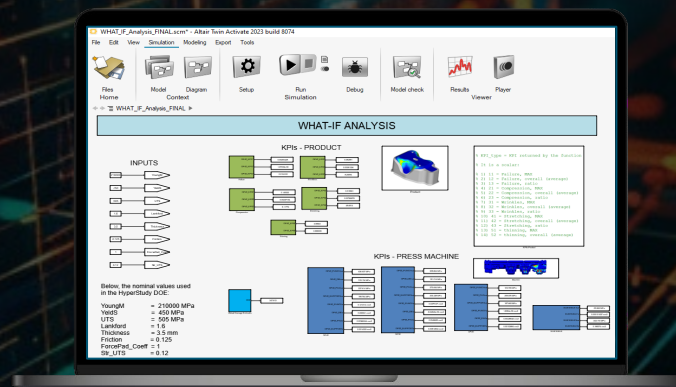
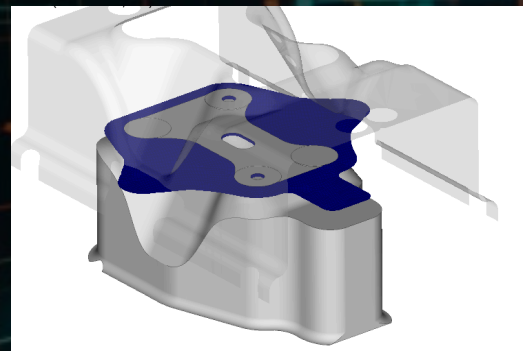


AI Powered Engineering

Real Time Ready Virtual Sensors



AI-Augmented
Manufacturing



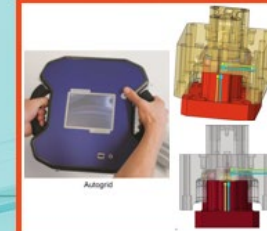
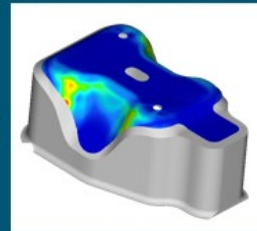
AI Powered Engineering



AI-Augmented
Manufacturing

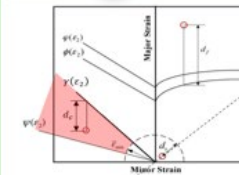
Real Time Ready Virtual Sensors

FE
SIMULATION



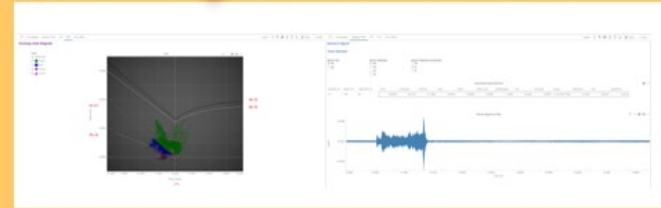
SENSORS

KPIs
ALERTS
CALCULATIONS



Name	expression
overall	$\frac{1}{n} \sum_{i=1}^n d_i = \frac{1}{n} \sum_{i=1}^n F(x_i, \phi)$, \square $F\left(\left(x_i - \phi(x_i)\right)^2, \begin{matrix} x_i > \phi(x_i) \\ x_i \leq \phi(x_i) \end{matrix}\right)$
max	$\max(d_i)$
ratio	$\frac{\mu_{Failure, 5\%}}{\mu_{Total}}$

REAL-TIME
DASHBOARD



Altair @HM 2024

- Technologies, methods, and examples for **successful digital transformation**
- Highlighting Examples
 - Digital Twins
 - AI-Powered Engineering
 - Simulation Driven Design
 - AI for the Factory Floor





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Altair Inspire, especially in combination with the selectable manufacturing restrictions, enables us to specifically design components for 3D printing and thus make optimal use of the advantages of additive manufacturing.

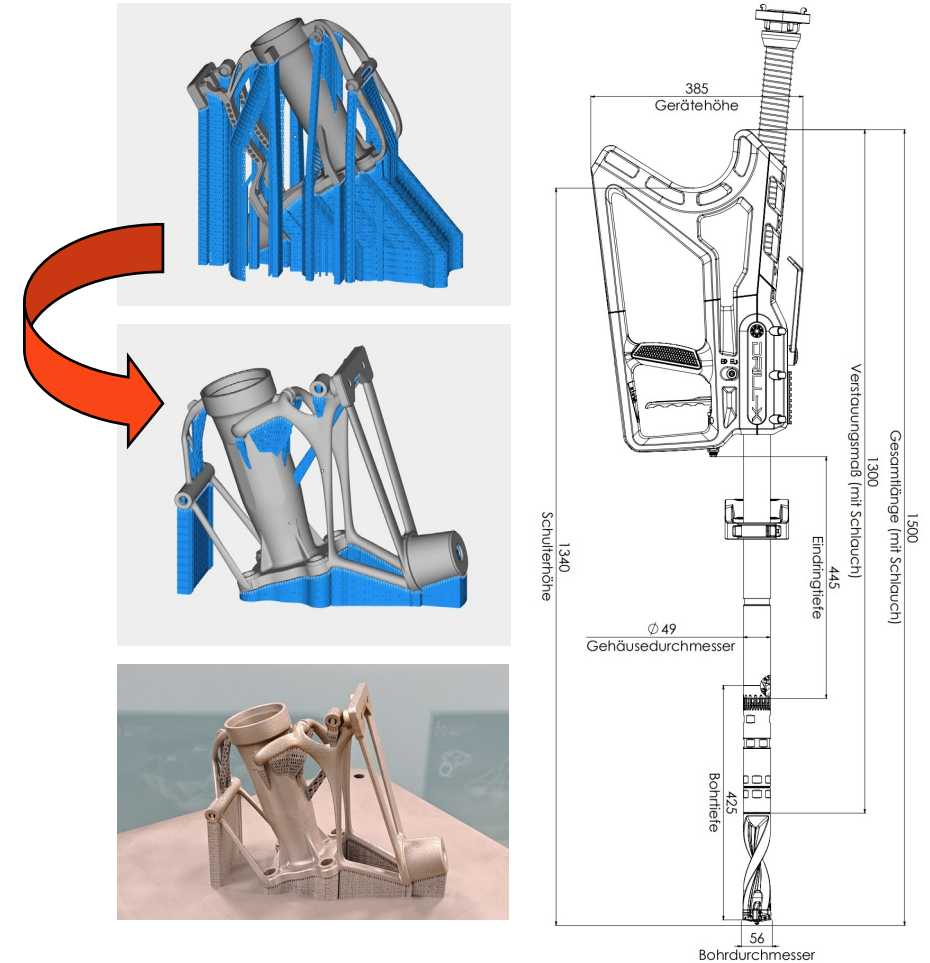
Philipp Schwemberger,
head of additive manufacturing, M&H CNC Technik

Enable Innovative Fire Fighting

Reducing resources, power consumption and production time – improve performance

- *Reduce Printing Time by 35%*
- *Reduce Printing Volume by 45%*
- *Reduced Postprocessing by 50%*
- *Reduced Hydraulic Resistance Loss by 270%*

Business Impact: Serial Production Feasibility





**Hydraulic resistance
loss reduced by**

270%

Part consolidation

27►1

**Printing volume
reduced by**

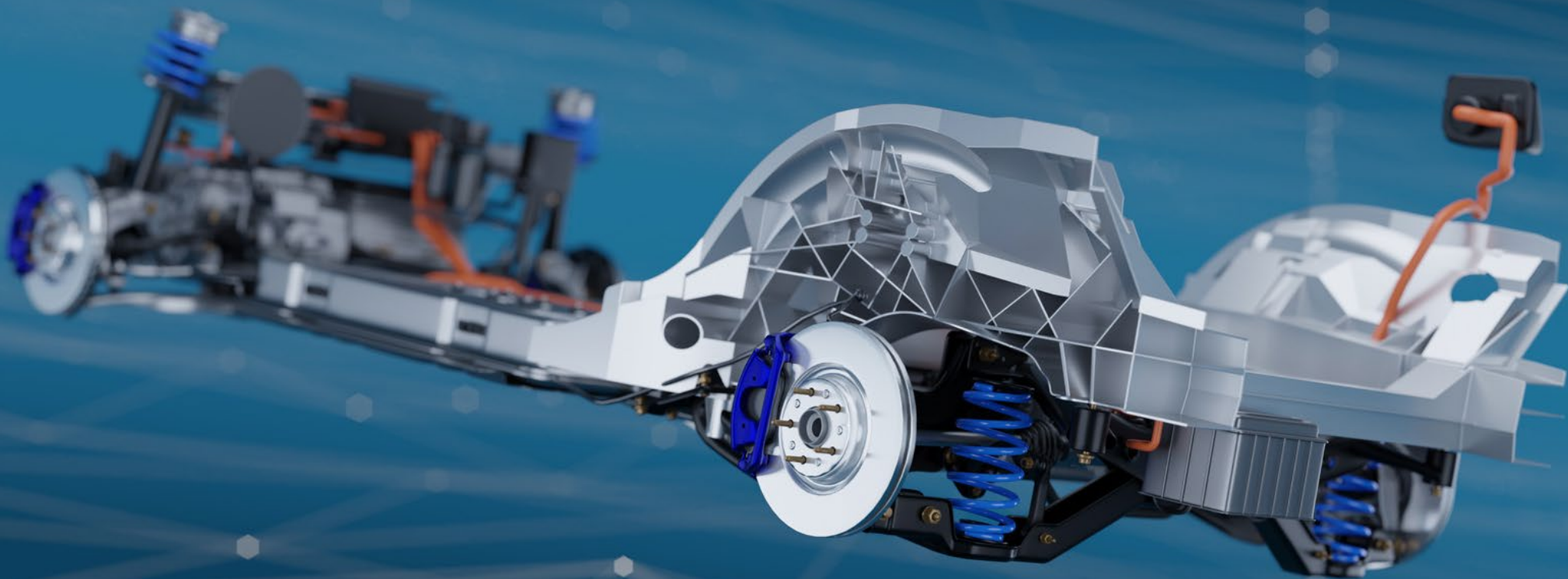
45%

**Printing time
reduced by**

35%

**Post-processing
reduced by**

50%



TOPOLOGY OPTIMIZATION

ENGINEERING DESIGN

RIB SIMPLIFICATION

STATIC AND NVH TARGETS

WEIGHT OPTIMIZATION

CRASH REQUIREMENTS

CASTING INTEGRATION

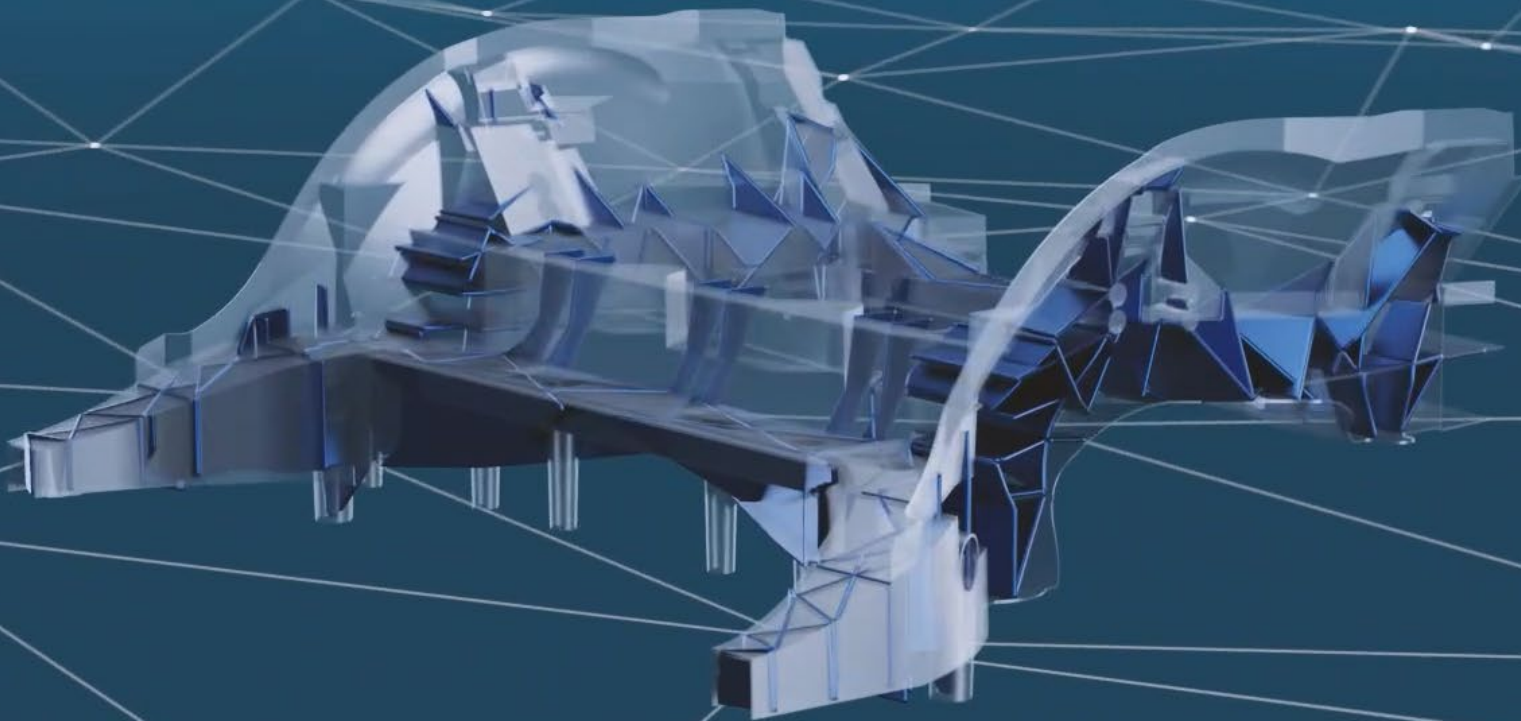
CASTING OPTIMIZATION

GENERAL OPTIMIZATION

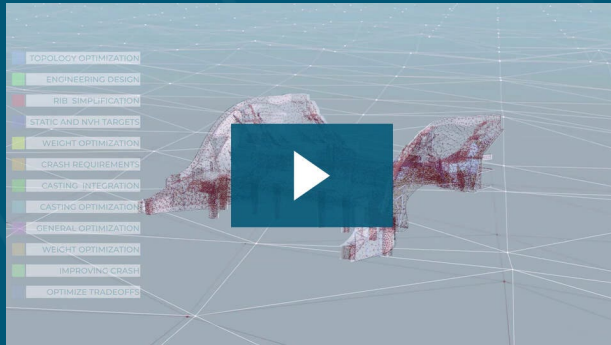
WEIGHT OPTIMIZATION

IMPROVING CRASH

OPTIMIZE TRADEOFFS



Want to know more about Generative AI design?

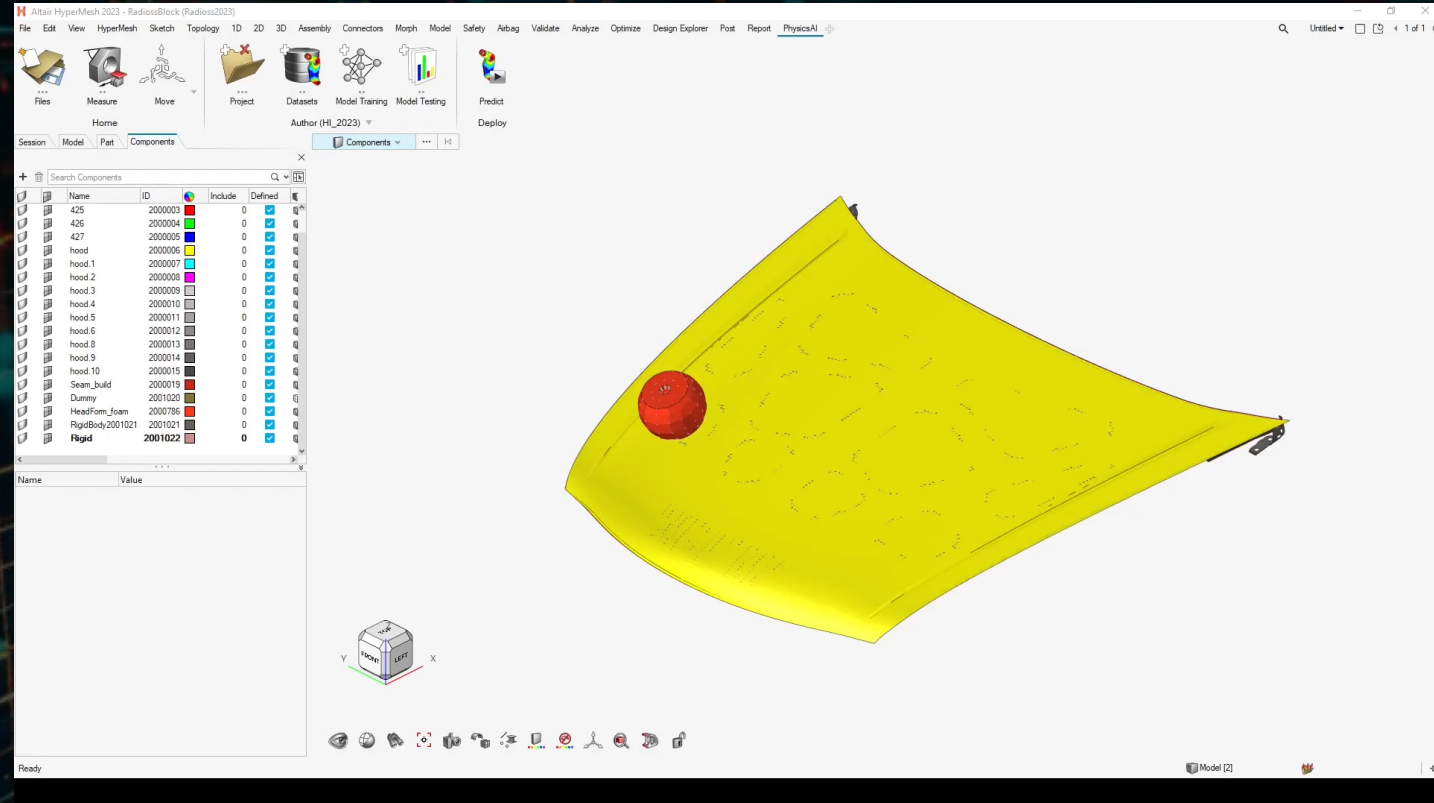


<https://web.altair.com/de/megacasting>

AI Powered Engineering

AI-Embedded Engineering

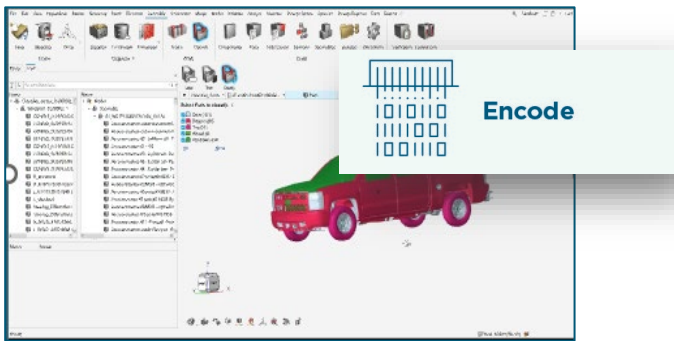
- *Learn from historical Data*
- *Reduce Simulation Time*
- *Capture & Share Knowledge with other teams*
- *Reduce Development Time*



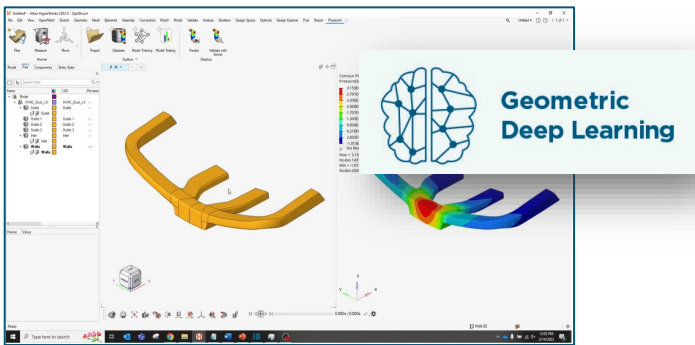
Data Science in Product Development

AI Power at Engineers Fingertips

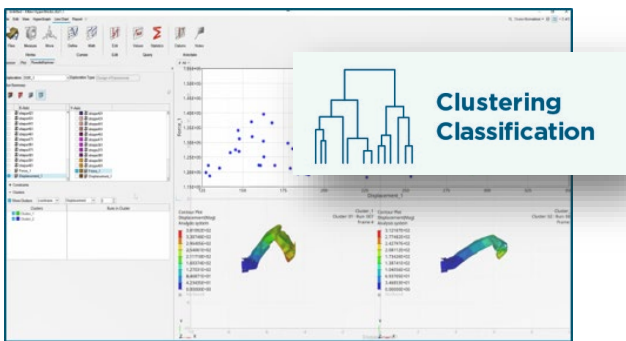
Geometry Recognition



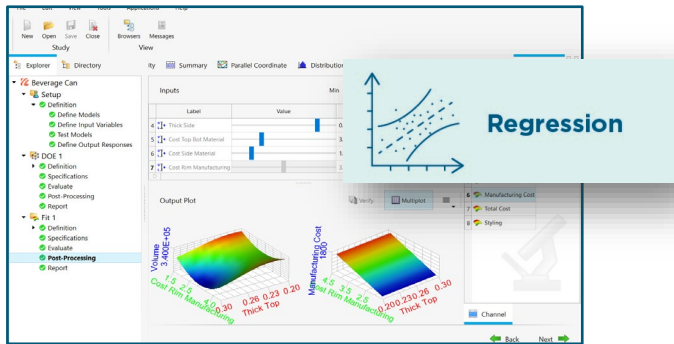
Fast Physics Predictions



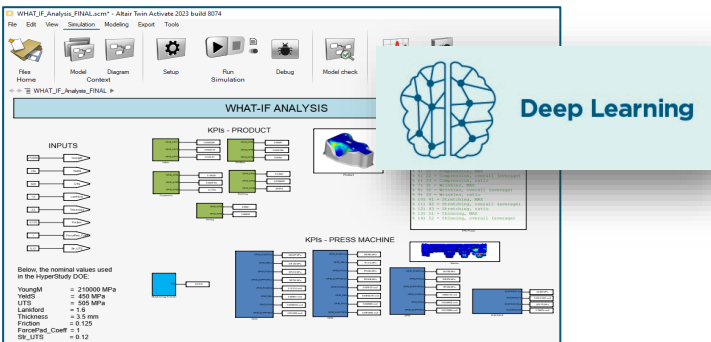
Identify and optimize desired behavior



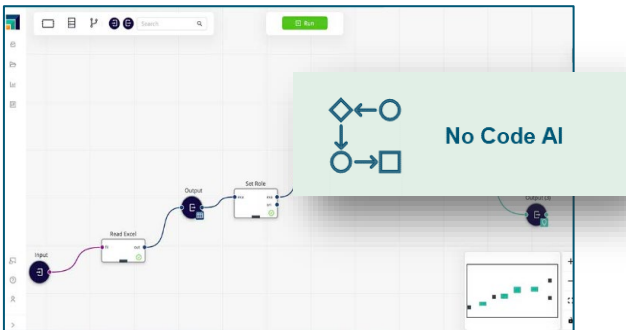
Multi-Disciplinary Design Exploration



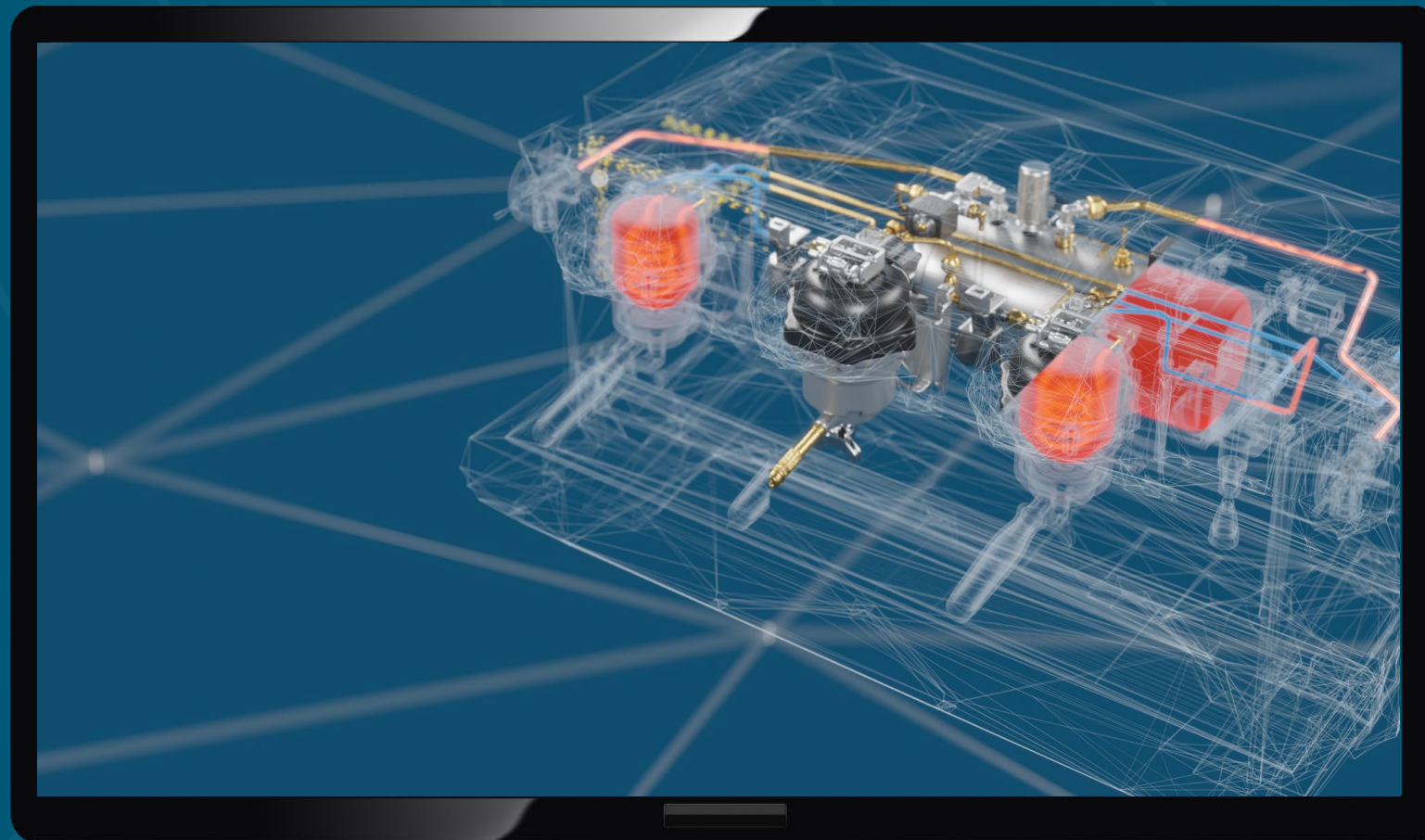
Reduced Order Modeling, System Identification



Frictionless AI with No Code Data Science

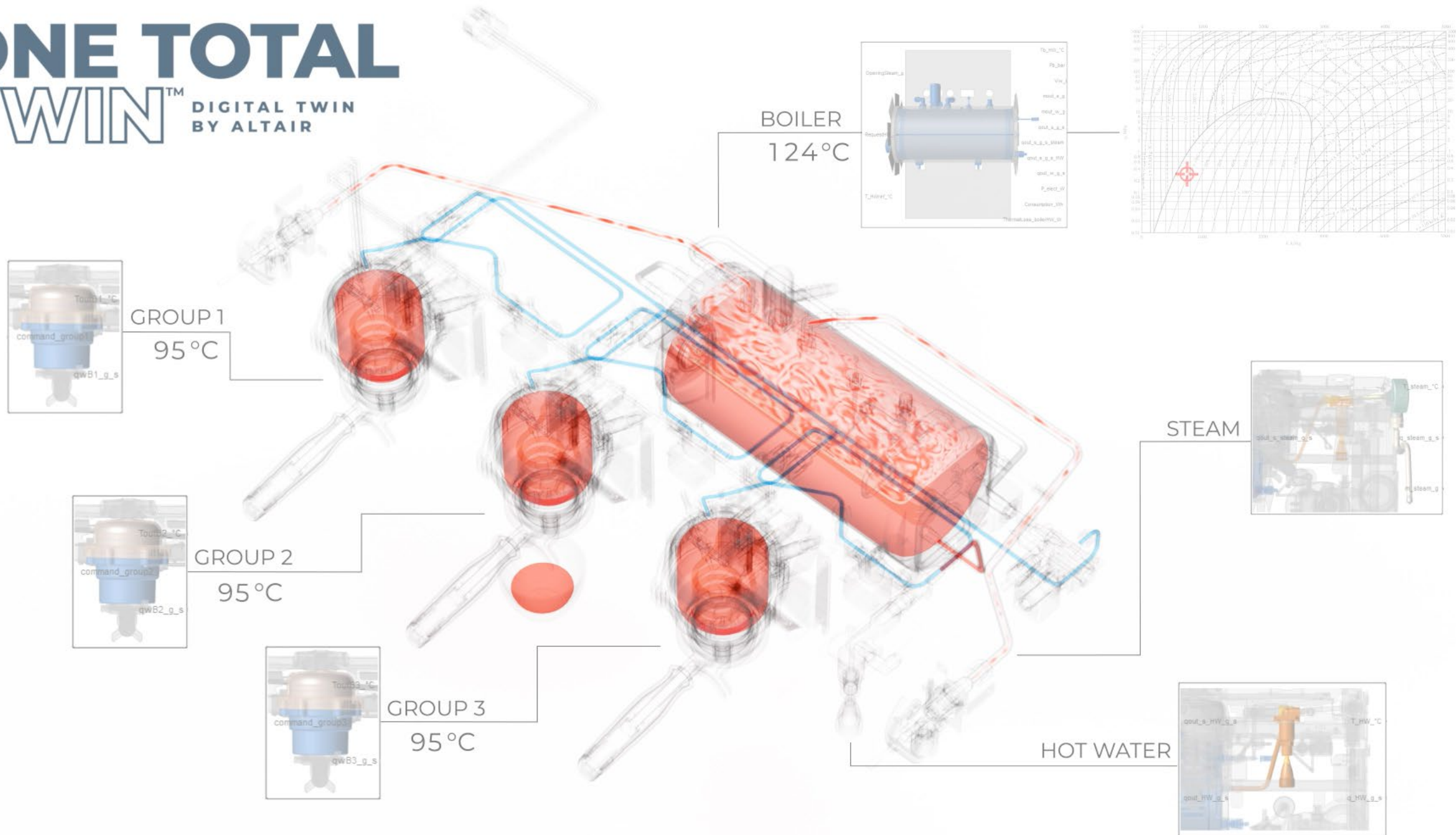


Digital Twin



ONE TOTAL TWIN™

DIGITAL TWIN
BY ALTAIR



AI for the Factory Floor



The Digital Factory - A blueprint for AI

Application scenarios and the necessary building blocks



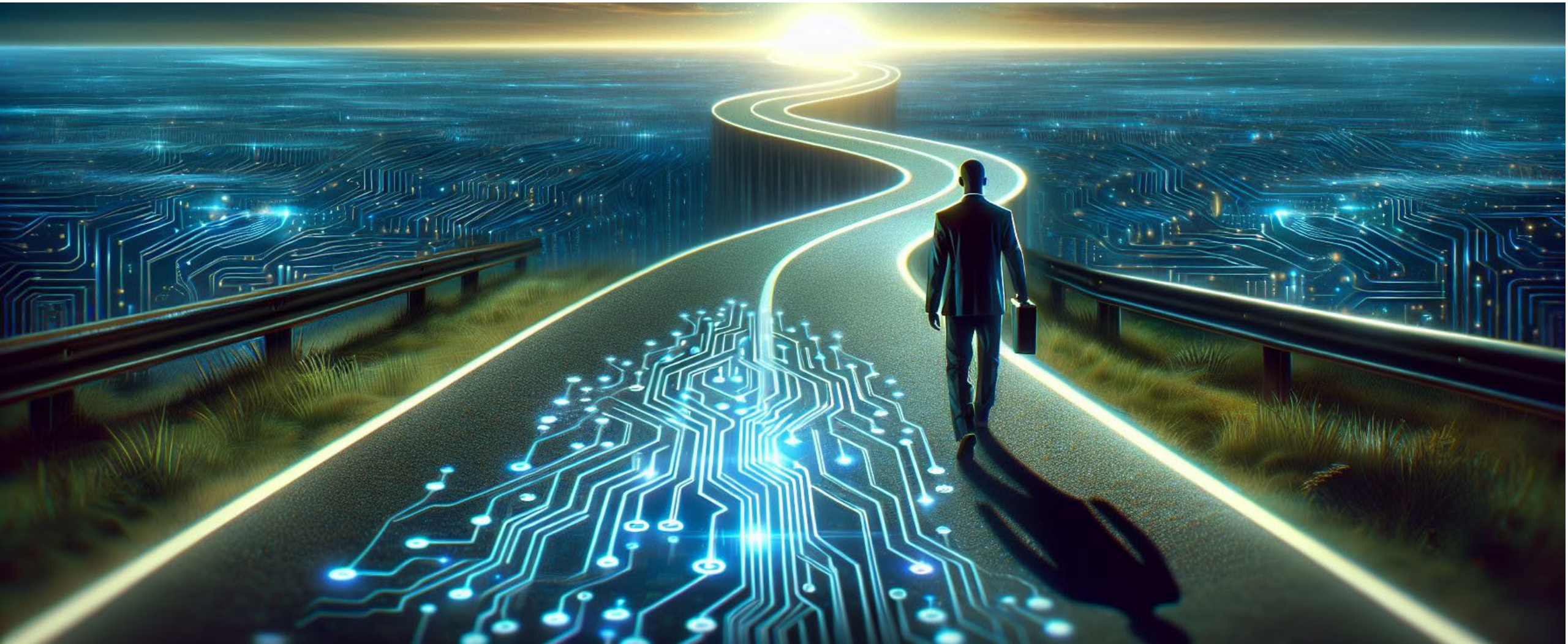
Partnership for Progress

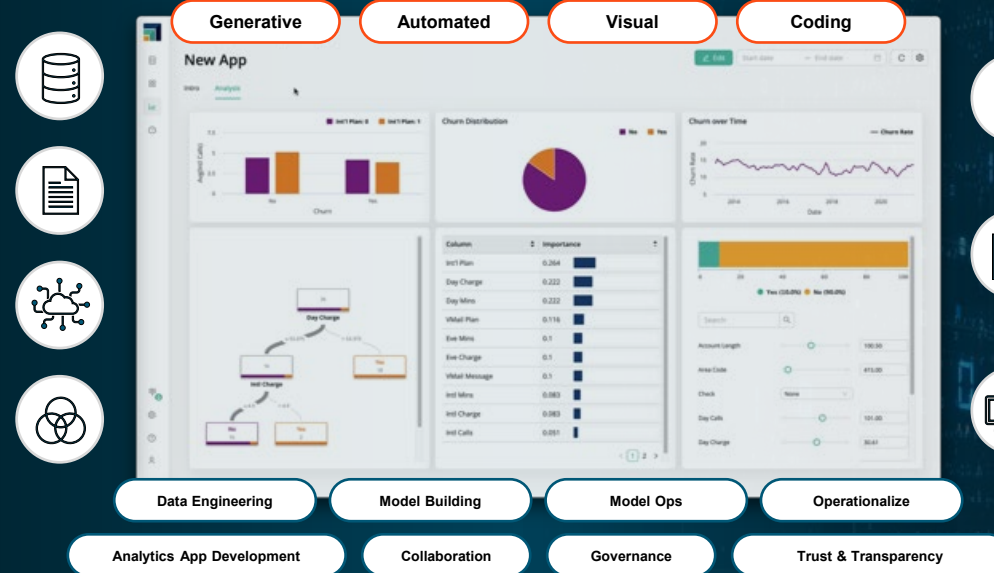
- Engineering Brilliance
- Redefining Speed to Market
- Sustainable Growth

ALTAIR

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Engineer the Future: Your AI-Driven Journey Begins Here, Now!





ALTAIR HYPERWORKS

Platform for Simulation Driven Innovation

ALTAIR RAPIDMINER

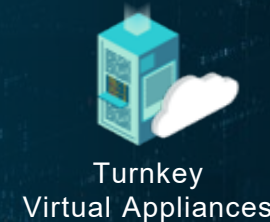
Platform for AI Driven Innovation

ALTAIR HPCWORKS

Platform for Compute-Driven Innovation



Turnkey
Physical Appliances



Turnkey
Virtual Appliances

ALTAIR ONE

The Gateway to A Digital Enterprise



