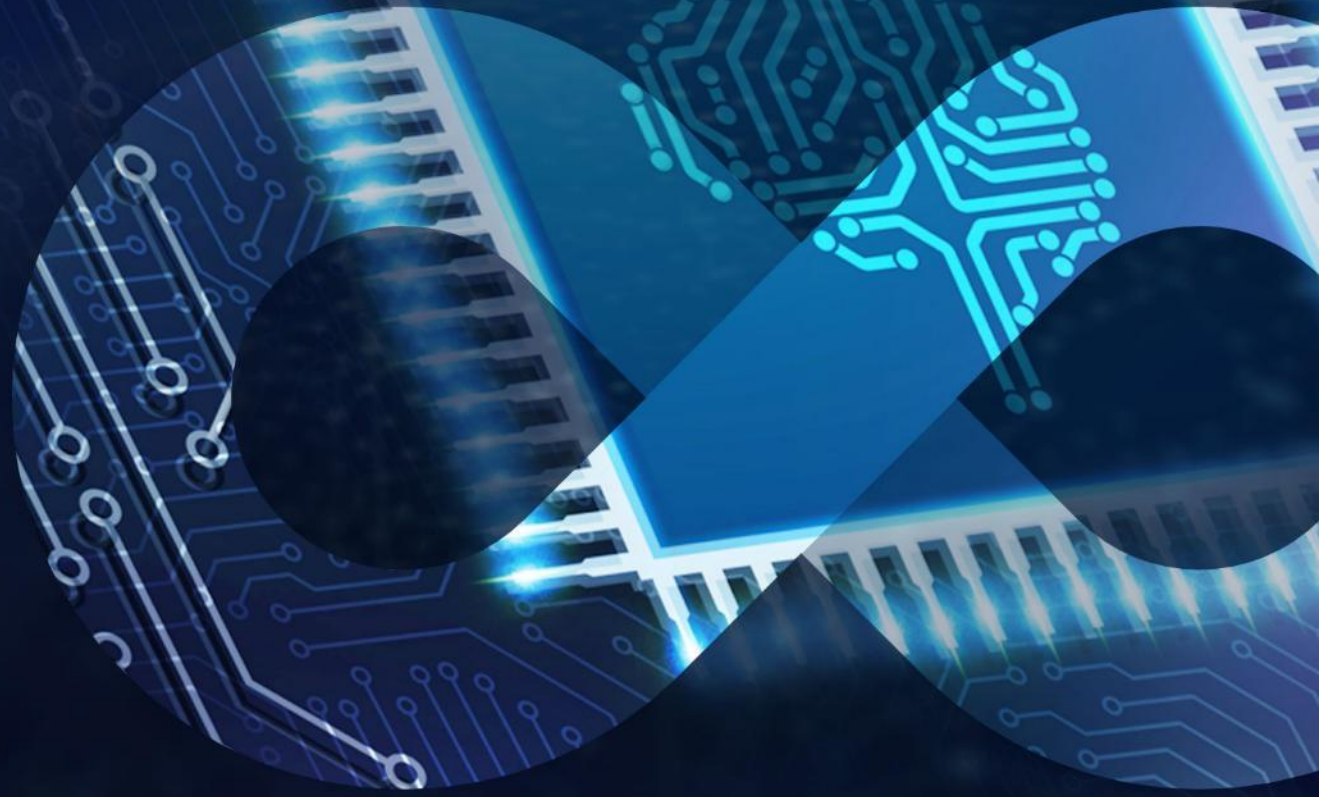
AI – The **Operating System** of the Industry



Bayerischer Halbleiter Kongress

Gerhard Kreß – Senior VP
Xcelerator Portfolio and Digital Business

SIEMENS

Digital disruptions will change how we design and operate – especially AI will lead to radical changes

Digital disruptions

Transfer of hard-ware to software

Reliable simulation at high speed to optimize and validate is changing engineering approaches and operations

Software defined hardware

AI to **predict and generate** designs, engineering and operations information

Digital twin

A **common data backbone**, allowing data to flow across the use cases in the value chain

Artificial Intelligence

Radical changes

ahead in

- **Time to market**
- **Efficiency**
- **Adaptability**
- **Business models**

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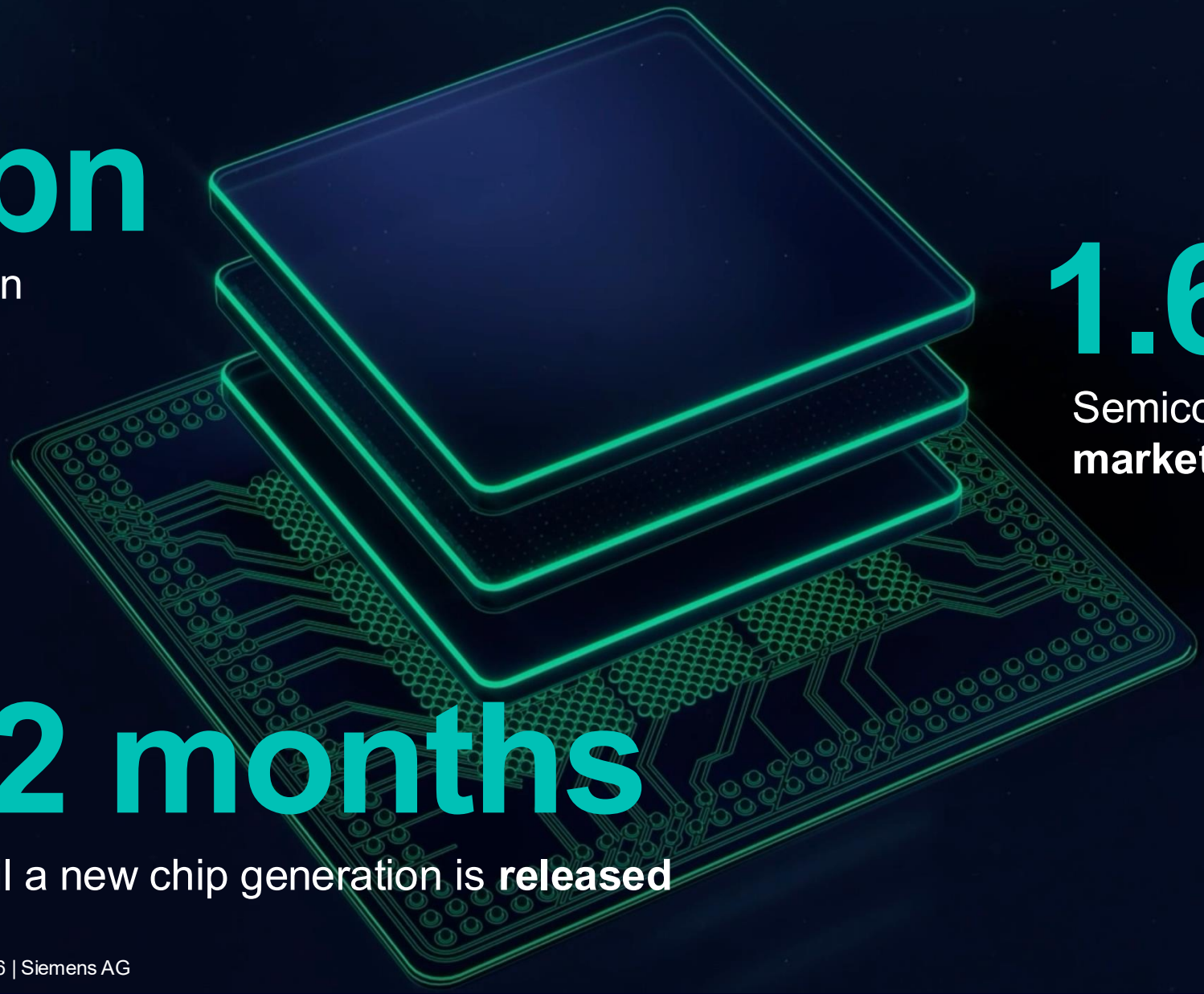
>300bn

Transistors on
one chip



1.6tn

Semiconductor
market by 2030

12 months

until a new chip generation is **released**

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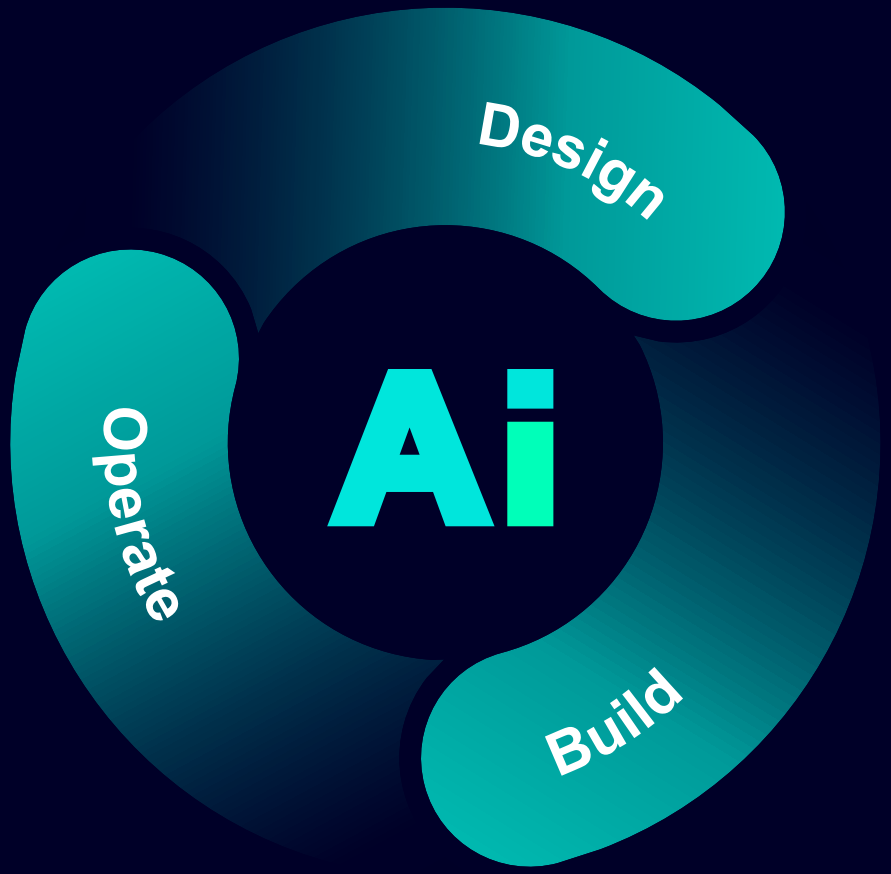
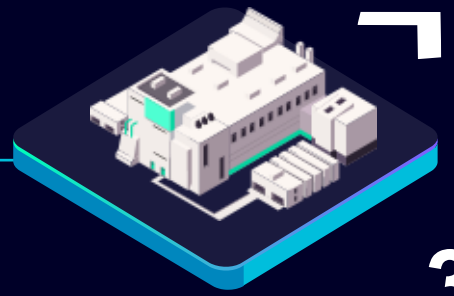
Siemens is **the only company to address the complete lifecycle** in the Semiconductor Industry with our portfolio leveraging AI & Digital Twins



1 Next-Gen Chip Design
Integrated with whole value chain

2 Intelligent Manu-facturing Design & Planning
Prepared for faster ramp-ups

3 Dark-Factory Manufacturing
Efficiency in core processes



4 Smart Building & Energy Infrastructure
Reliable, safe & sustainable operations

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Chip design – Design has to become smarter and faster.
Siemens launched Fuse, our multi agent, AI-native environment for the EDA value chain

EDA Digital Twin

Software

Architecture Exploration and IP Selection

Functional IC

IC Functional Design & Verification

Physical IC

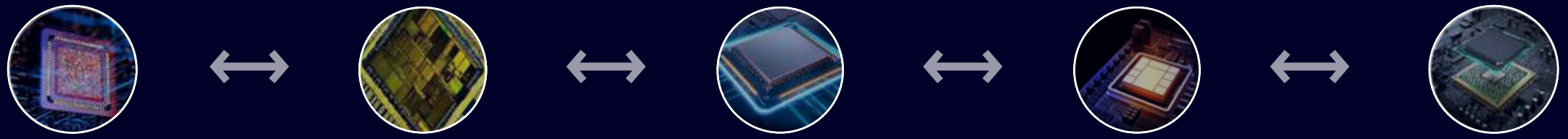
IC Physical Design & Verification

3D IC

IC Packaging, 3D IC and Chiplet Integration

Electronic Systems

Electronic Systems Design, Verification, & Manufacturing



Powered by industrial-grade AI: **FUSE**

Machine Learning

Reinforcement Learning

Generative AI

AI Agents

Agentic AI

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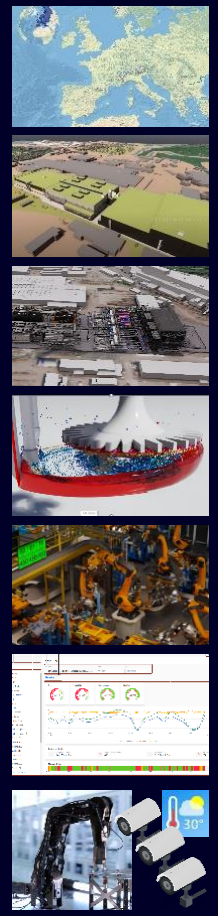
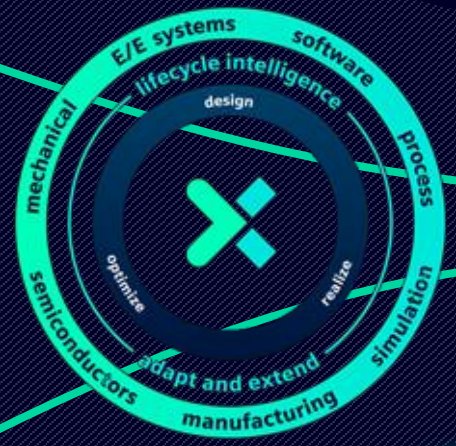
Digital Twin Composer: Simplifying **Intelligent Manufacturing Design and planning**, leveraging digital capabilities for real world impact

Digital Data

Real Data

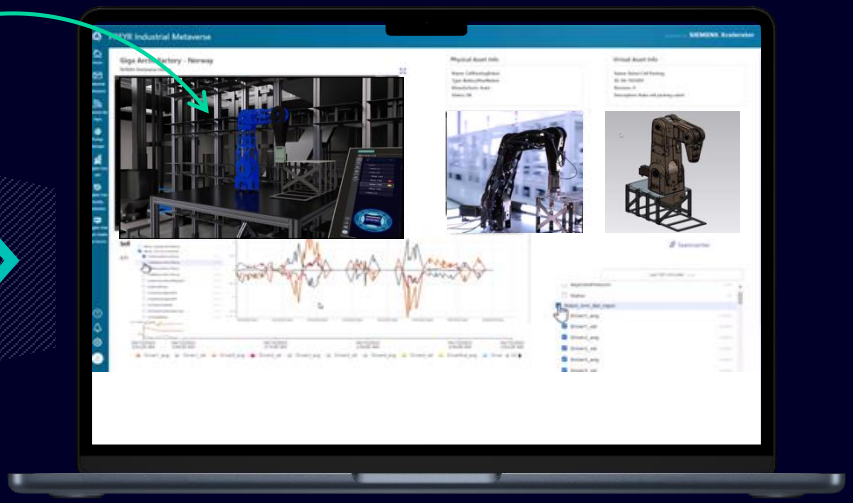


Open Ecosystem



AI Services

Digital Twin Composer
Application to build, manage, configure, synchronize, orchestrate, and visualize the assets and Digital Twin elements



Author/Manage | Connect | Integrate | Operate/Experience

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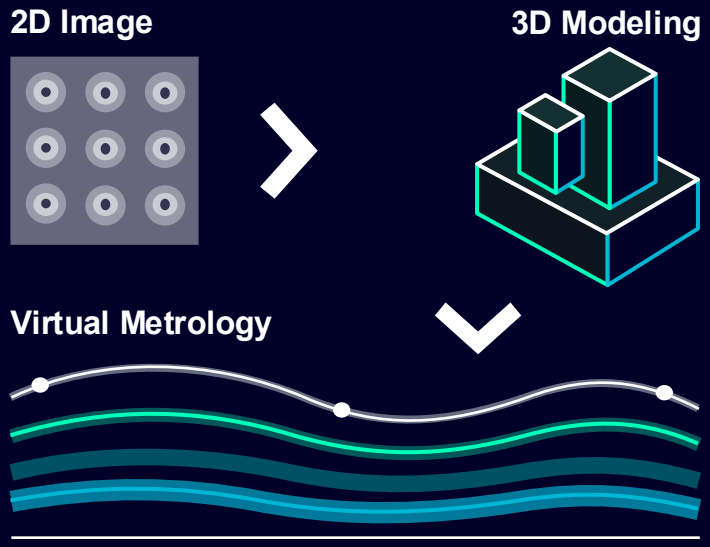
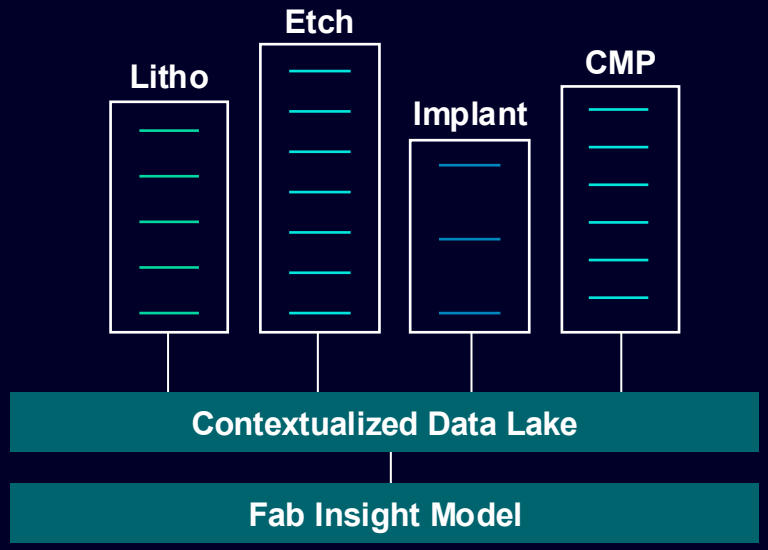
Manufacturing – Three Enablers to Realize the Autonomous Fab: Sense, Learn, and Control

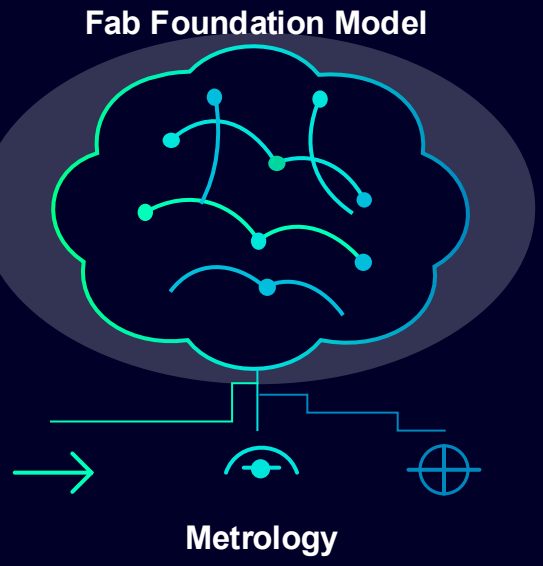
Enabler #1:
Physics-Rich Sensing



Enabler #2:
Cross-Silo Learning



Enabler #3:
Autonomous Thinking



Centralized Data Lake: Petabytes $\mathcal{O}(10^{15})$

Layout | Layers | Wafer | Reticle | Facility | FDC | Yield

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Smart Infrastructure & Buildings – Siemens can also provide energy optimization and manage power quality to improve manufacturing operations

AI Box

AI-powered **Chiller Optimization**
30% Higher Energy **Efficiency**

Electrification X

AI-enabled **Energy Management** Platform
Near-Zero Power Disturbance for Fab Operations

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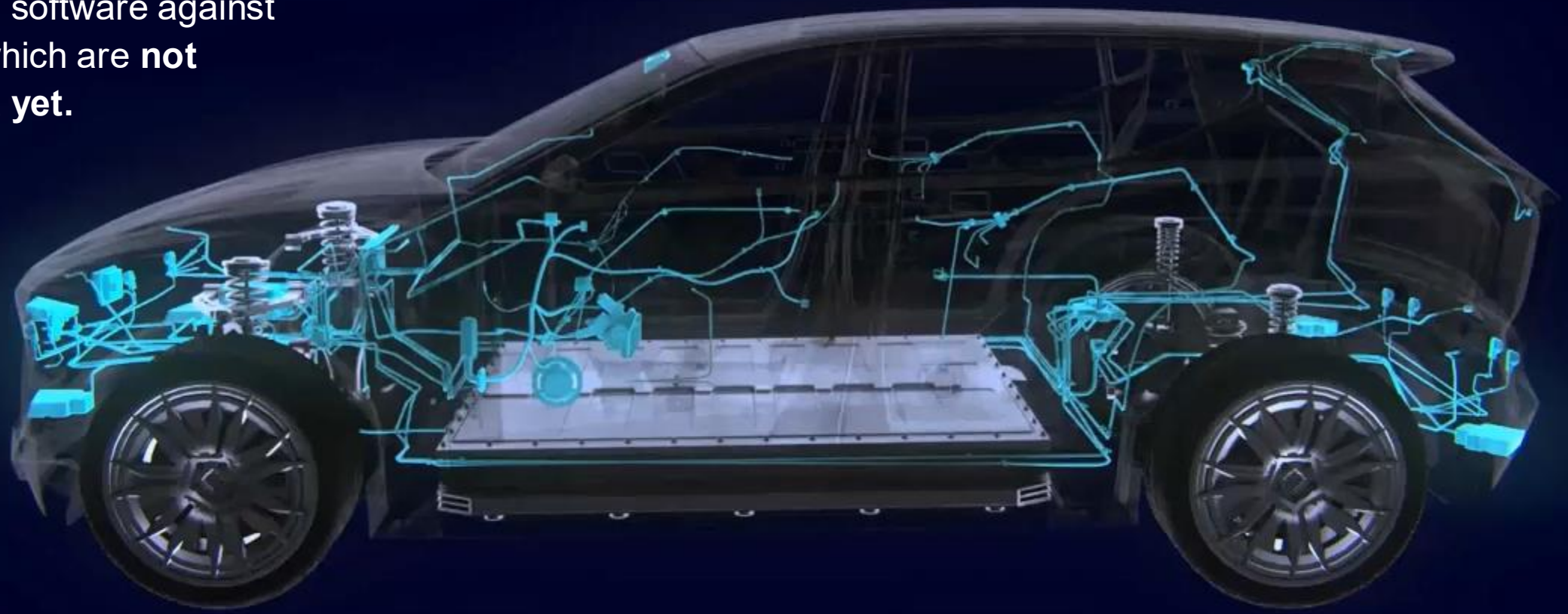
Next step – Virtualizing chip sets helps customers to develop better solutions faster, driving innovation

With Siemens software, customers can **develop** and **refine** software against chipsets which are **not even built yet.**



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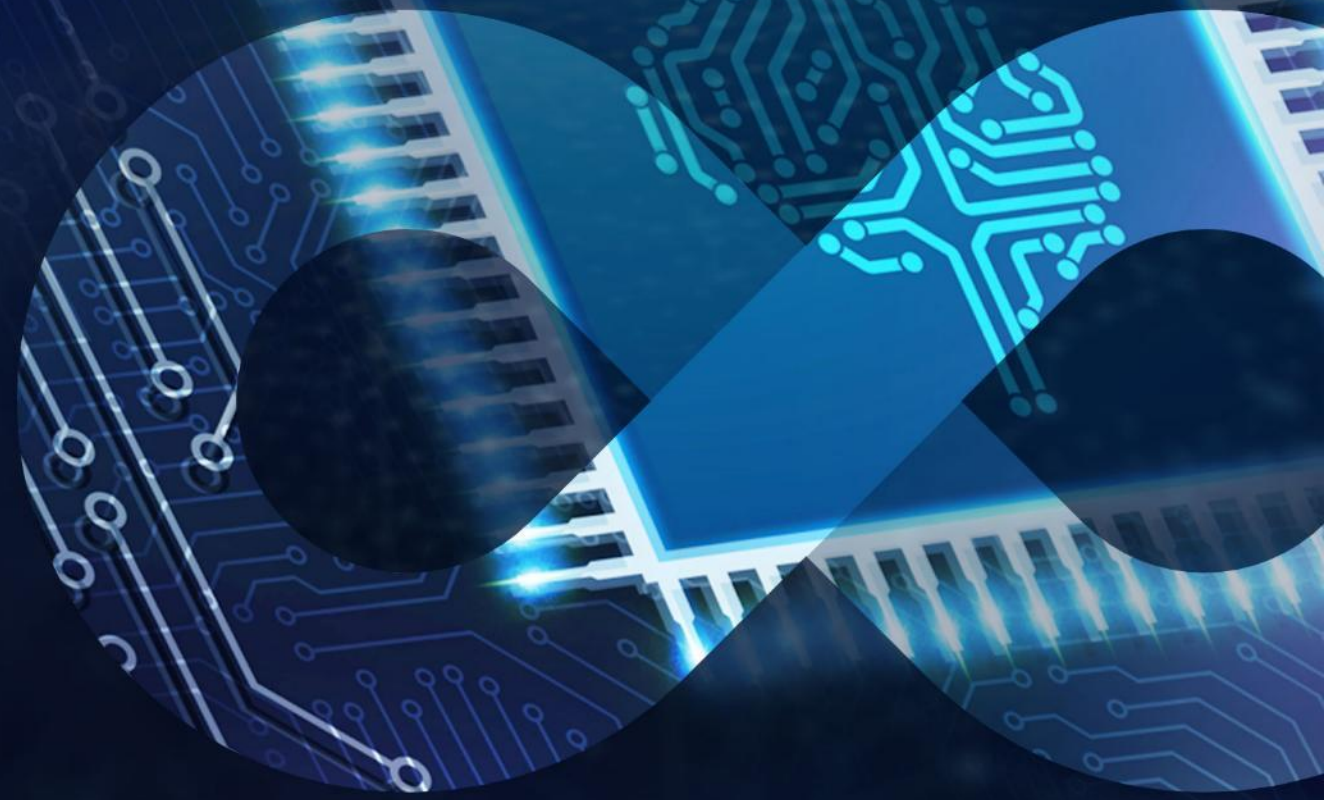
Together …

… we are closing the loop between **the digital and physical worlds**.



Transforming semiconductors with Industrial AI.

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