



SEMICON Europa 2023

Generative AI for European Growth and Sustainable System Design

Rebecca Dobson

Corporate Vice President EMEA
Cadence Design Systems, Inc
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Europe Remains a Leader in the Semiconductor Industry

37%

<=7nm EMEA design starts
2023-28 CAGR

Source: IBS Design Activity Analysis Report 2023



10%

EMEA Semi Revenue
2023-28 CAGR

Source: IBS First In-Depth Analysis Report 2023



23%

EVs Shipped in Western Europe
2023-28 CAGR

Source: ABI Research Electric Vehicles 1Q 2023



European Semiconductor Goals and Investments

20%

To double global advanced semiconductor market segment share

Source: EE News Europe, Sep 2023

150

Planned EV model through 2030

Source: McKinsey, Aug 2023

4+

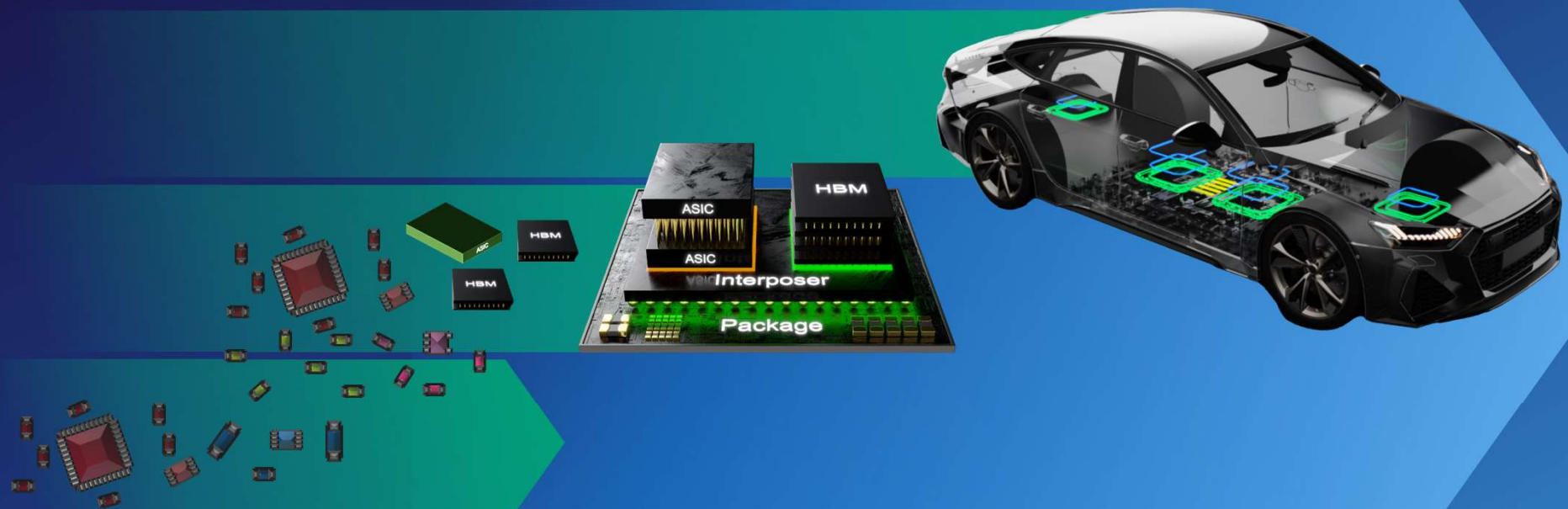
Increased Investment

2

New Fab Projects

Multi-die Chiplets for Automotive Applications

Enabling Multi-die Chiplet Deployment



Universal Chiplet Interconnect Express
Automotive Working Group

European Semiconductor and Net Zero

**NET
ZERO**



SEMI

Manufacturing
Fabs

AI



European Semiconductor and Net Zero



**NET
ZERO**

SEMI

Manufacturing
Fabs

ELECTRONICS

Devices
Manufacturing



Hiring Alone Won't Keep Up With Complexity and Design Starts

~10x

Transistor Count Growth

37%

EMEA Design Starts CAGR 2023-28

Source: IBS Global Semiconductor Industry Service Report: Design Activities and Strategic Implications, July 2022
Source: Cadence analysis

Hiring Alone Won't Keep Up With Complexity and Design Starts

~10x

Transistor Count Growth

37%

EMEA Design Starts CAGR 2023-28

Source: IBS Global Semiconductor Industry Service Report: Design Activities and Strategic Implications, July 2022
Source: Cadence analysis

>10x

Increase in
**Automation
Required**

Source: Semiconductor Industry Association, Dec, 2022

The Power of AI-Driven Solutions to Impact Design

Accelerate the human in the loop + AI

Power of the **Human**

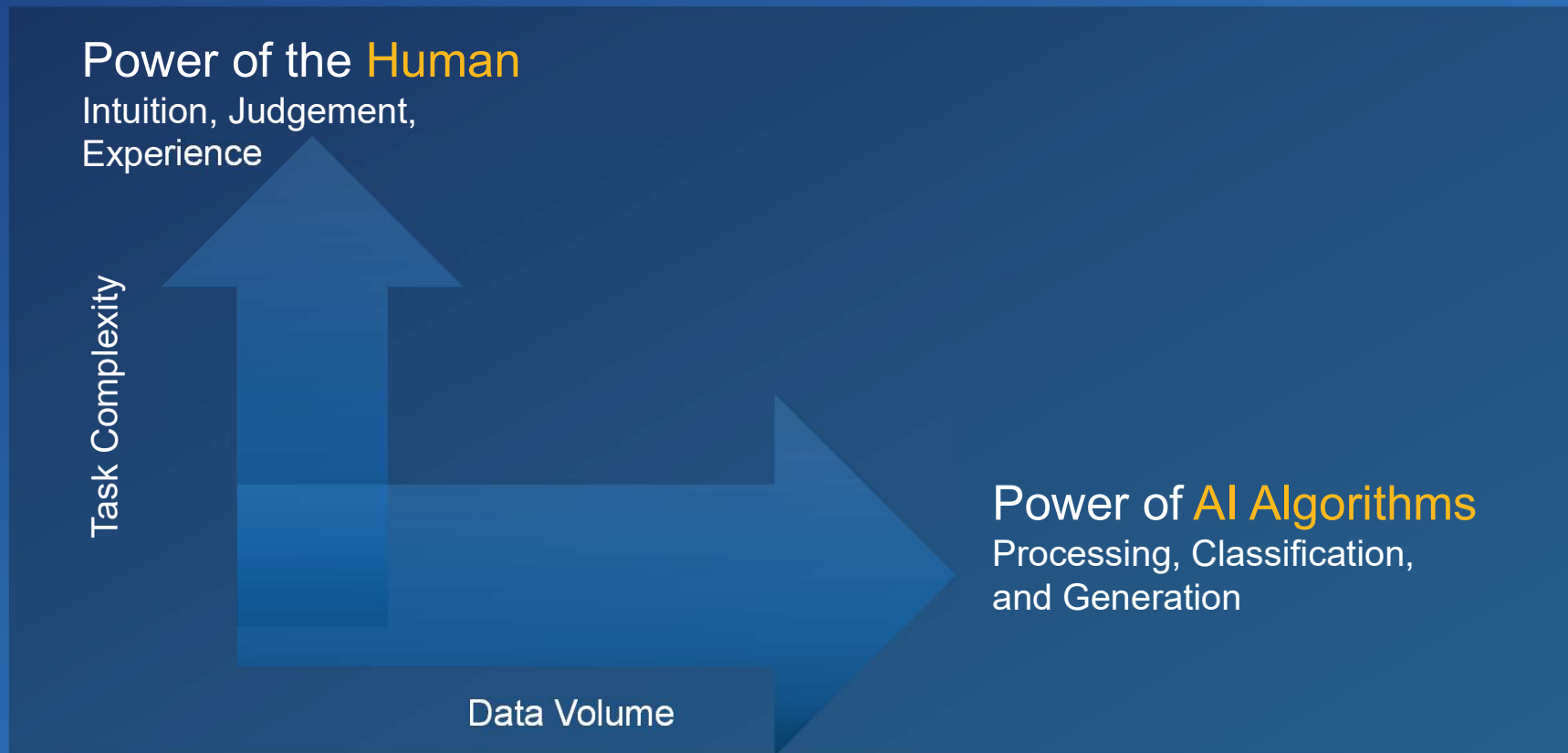
Intuition, Judgement,
Experience

Task Complexity



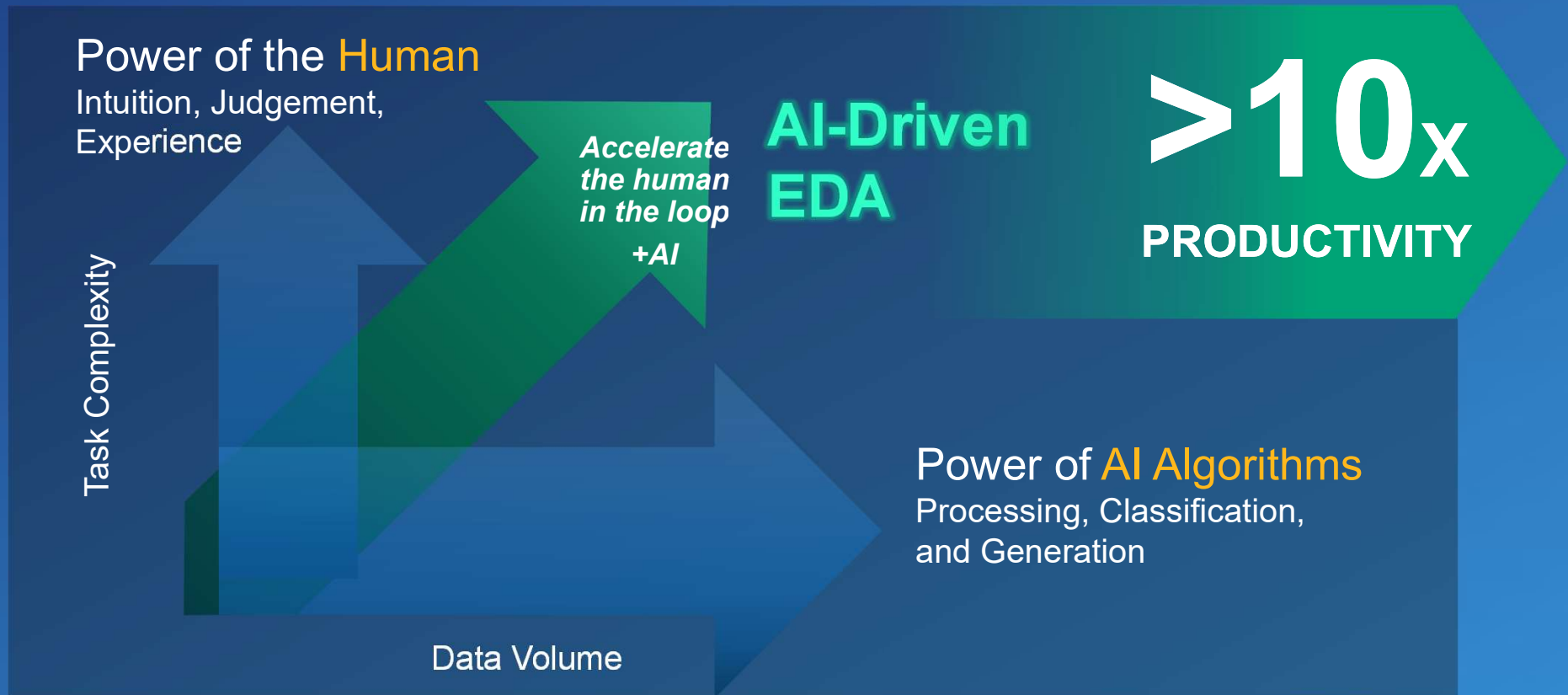
The Power of AI-Driven Solutions to Impact Design

Accelerate the human in the loop + AI



The Power of AI-Driven Solutions to Impact Design

Accelerate the human in the loop + AI



Biggest Sustainability Impact of AI is Design Optimization



**Make the
best products**

**Chip and System
Optimization**

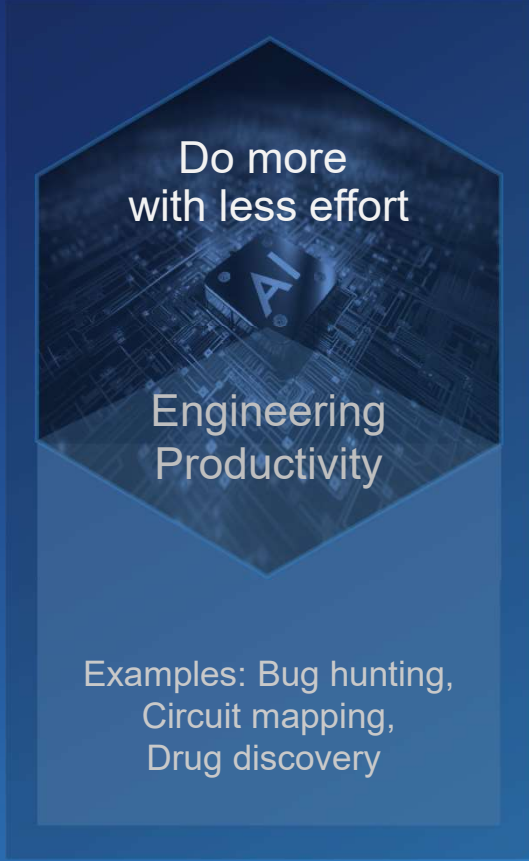
**PPA Optimization
Thermal Optimization
Aerodynamics**



**Create more
from less input**

**Content
Generation**

Specs to Designs
Specs to Verification IP
Digital biology

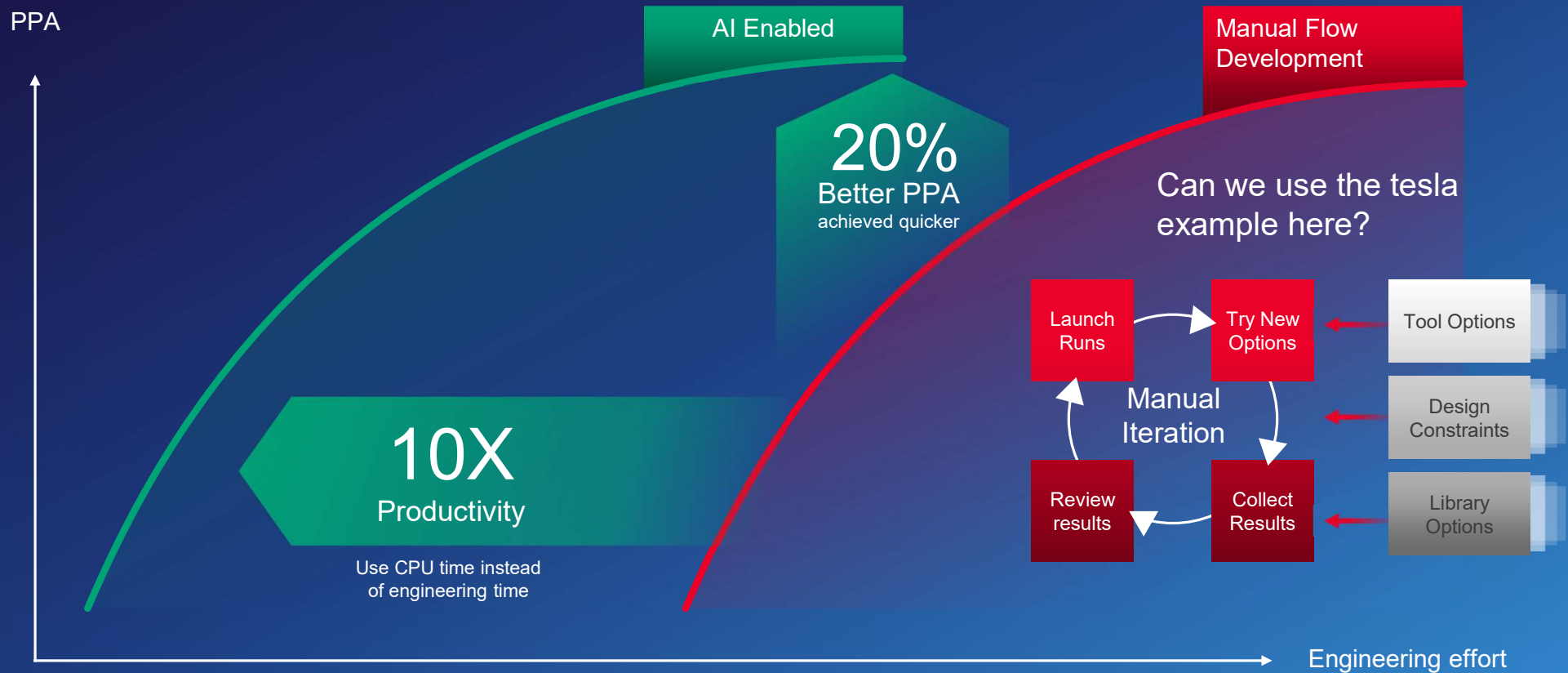


**Do more
with less effort**

**Engineering
Productivity**

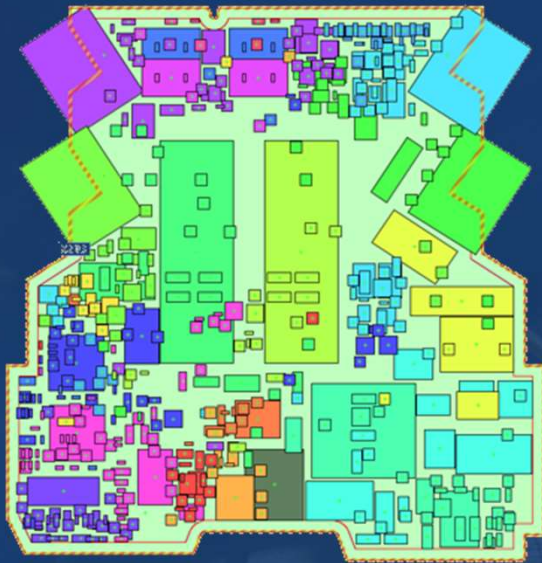
Examples: Bug hunting,
Circuit mapping,
Drug discovery

Generative AI Improves Chip PPA up to 20%



Generative AI Reduces PCB Power Consumption up to 25%

Human Placement



~59 hours to P&R

AI-driven Clustering



20 minutes
16% better wirelength

Up to **25%**
Power
Reduction



Generative AI “Chips to Systems” for Sustainability

**Optimized
Designs**

**Differentiated
Products**

**Workflow
Productivity**

Cadence® Joint Enterprise Data and AI (JedAI) Platform

JedAI GENERATIVE AI SOLUTIONS

Cadence® Cerebrus™
Digital Design

Virtuoso® Studio
Analog/Custom Design

Verisium™
Debug and Verification

Allegro® X AI
Printed Circuit Board Design

Optimality™
Multiphysics Optimization

JedAI ENHANCED TOOLS

Conformal™
Formal Equivalence Checking

Innovus™
Digital Implementation

Spectre®
Monte Carlo Simulation

Xcelium™
Regression Simulation

Tempus™
Static Timing Analysis

Liberate™
Library Characterization

Allegro X and OrCAD X
Printed Circuit Board Design

Jasper™
Formal Verification

Driving sustainability through value chain collaboration



The background of the slide is a futuristic, blue-toned digital environment. It features a grid of glowing yellow and green triangles, some pointing towards the center. In the upper right, there's a glowing 'AI' logo inside a square frame with circuit-like patterns. Below the 'AI' logo, a small globe with green grass and a single tree sits on a blue and white base. The Cadence logo is centered in the middle of the slide.

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