



# INTRODUCTION TO AI4DI

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**Artificial Intelligence for Digitalizing Industry** 

## AI4DI



#### **ECSEL AI4DI stands for "Artificial Intelligence for Digitizing Industry"**

#### **AI4DI Industry Sectors and Applications**

AI4DI's mission is bringing AI from the cloud to the edge and making Europe a leader in silicon-born AI by advancing Moore's law and accelerating edge processing adoption in different industries through reference demonstrators.

## AI4DI INDUSTRIAL SECTORS





#### Collaborative Requirements & Transformation of 5 diverse industrial sectors

Machinery



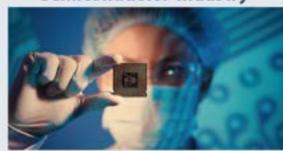
**Automotive Manufacturing** 



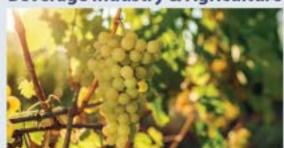
Collaborative



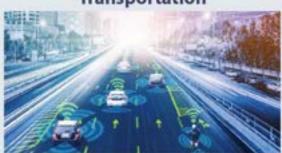
Semiconductor-Industry



**Beverage Industry & Agriculture** 



Transportation



# AI4DI





#### AI4DI WORK PACKAGES AND SUPPLY CHAINS





















WP2: System Level Design for Industrial AI Solutions



WP3: Al Methods, Semiconductor Components and IloT Devices



WP4: Embedded Systems, Edge Computing and Algorithms for Industrial AI



WP5: Integration and Deployment of Al Applications in Industry



WP6: Validation, Verification and Tests



WP7: Dissemination, Exploitation and Standardization



WP8: Project Management and Projects Clustering

# FRAMEWORK OF ELEMENTS (KEY-TARGETS) TO IMPLEMENT AI IN THE INDUSTRY

1. Divide the industrial world in the most relevant parts which should apply the framework

1. heterogeneous systems control and optimization

2. homogenous systems control and optimization

3. Human Machine collaboration

4. change detection -

diagnostics of systems, security systems, systems aging/change of performance detection, distributed ledger (Block chains)

2. Define interaction elements for these industrial process world which can observe and control these processes, or even connect, interact, provides support and do analysis and process analytics 3. Add AI

6. Al tools

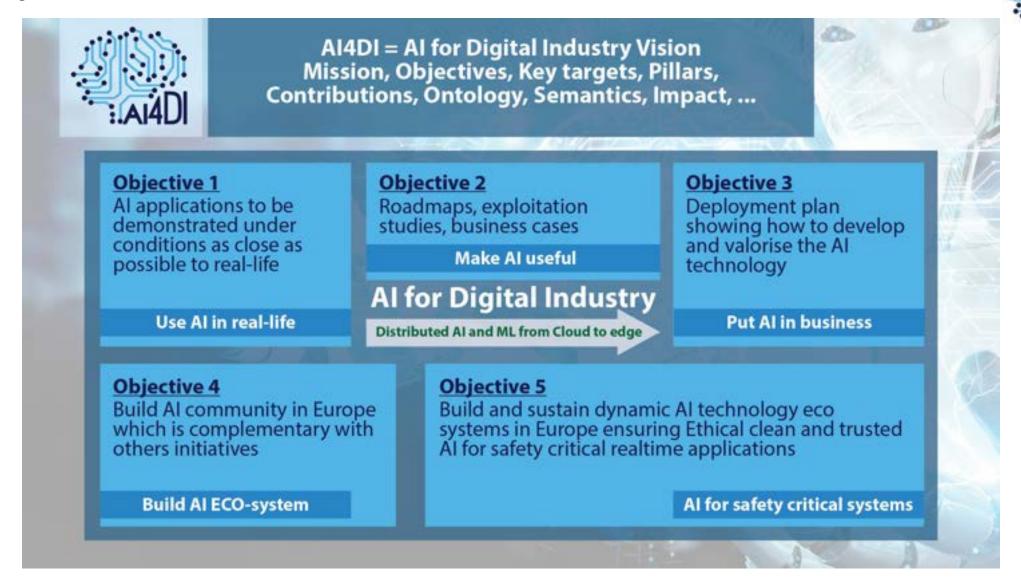
5. distributed intelligence

including machine learning, deep learning, multi-access edge computing and connectivity, system partitioning based on criticality 7. Al Hardware/Software

modules - components for sensing, actuating, connectivity, signal processing

4. Define IoT
Devices for
specific use in
each of the
other\_elements

## **OBJECTIVES**



#### VISION





#### Vision: Silicon-Born-Al

For Accelerated AI in Embedded Control for Edge Computing and IoT/IIoT devices in industry



Dedicated AI methods for the indusry according to the AI-attributes

To tackle big amounts of data out of the real industrial world



Dedicated AI Software on improved AI hardware architectures for the industry

Enhanced connectivity for fast communication



Dedicated CPU + AI in Silicon components

Silicon-Born-Al

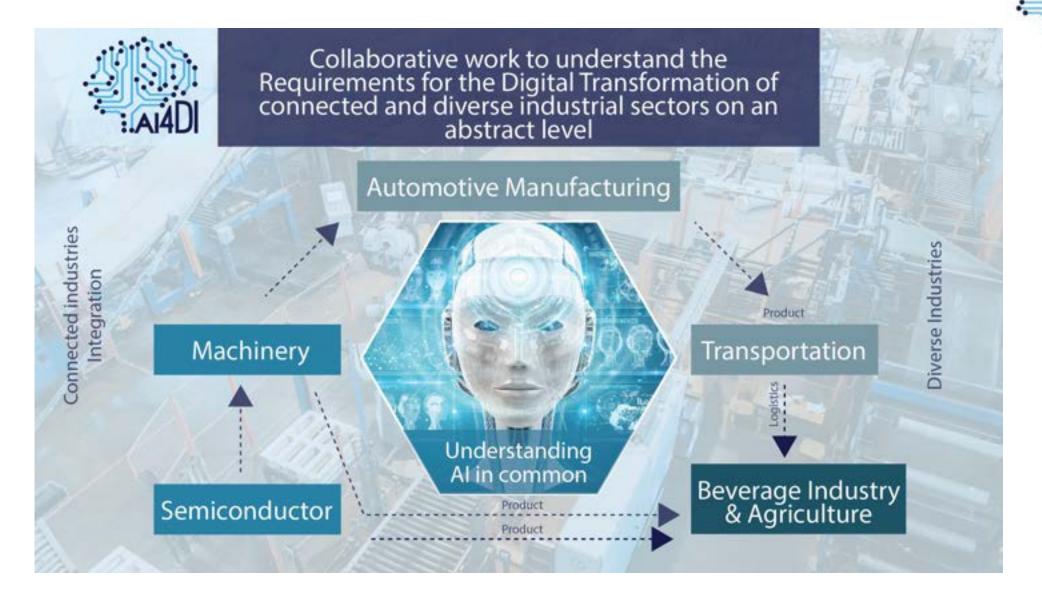
Moore Law ++ Al For native Al computing More Moore ++ Al For native Al algorithm



Dedicated Sensors + AI in Silicon components (sensors, MEMS) Sensing and preparing the edge data Silicon - Born - Al

More Moore ++ AI
For native AI perception and actuation

## COLLABORATIVE WORK





Artificial Intelligence for Digitalizing Industry

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