



Enhanced Industrial Machine Vision

POWERED BY SYNTHETIC DATA.



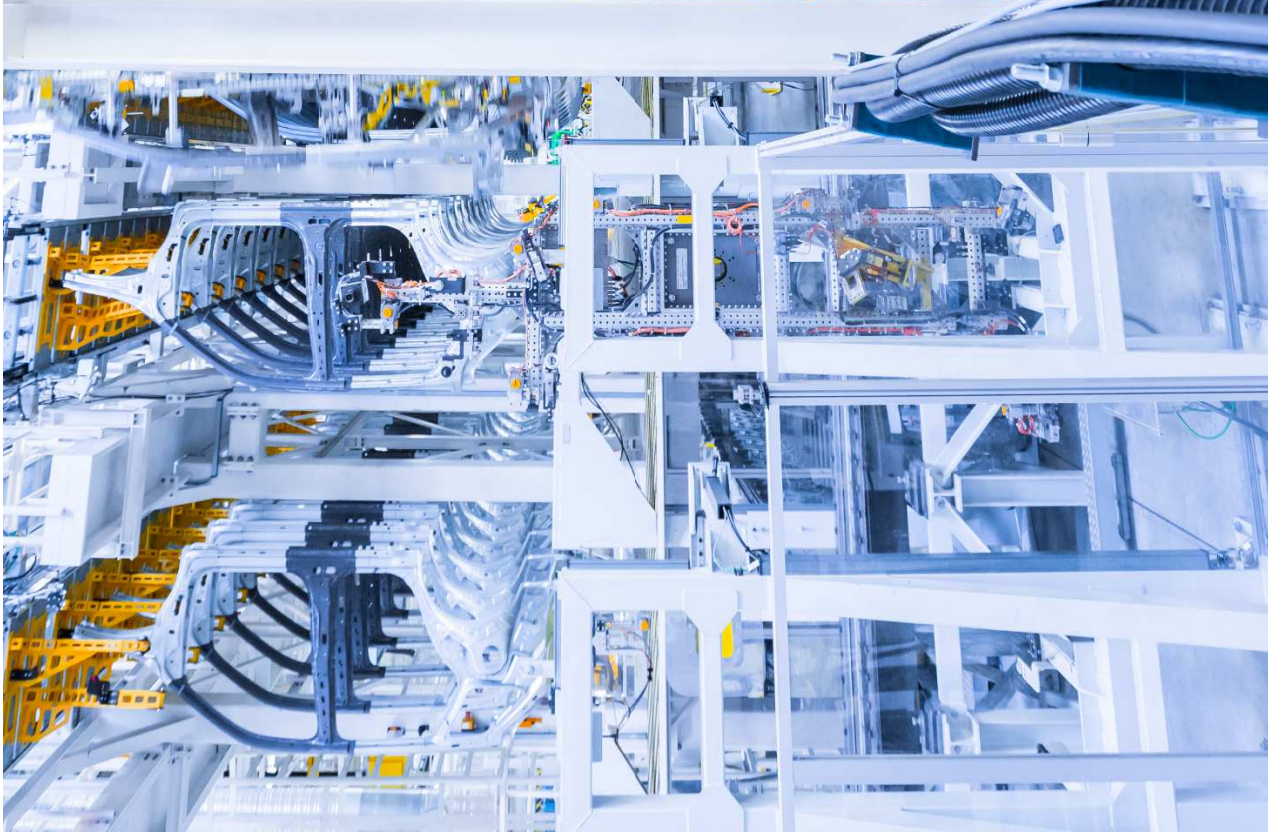


AGENDA.

1 Motivation

2 Technology

3 Use Cases



Challenges With Manual Inspection.



Expensive



Slow



Subjective



Error-prone



Workforce availability

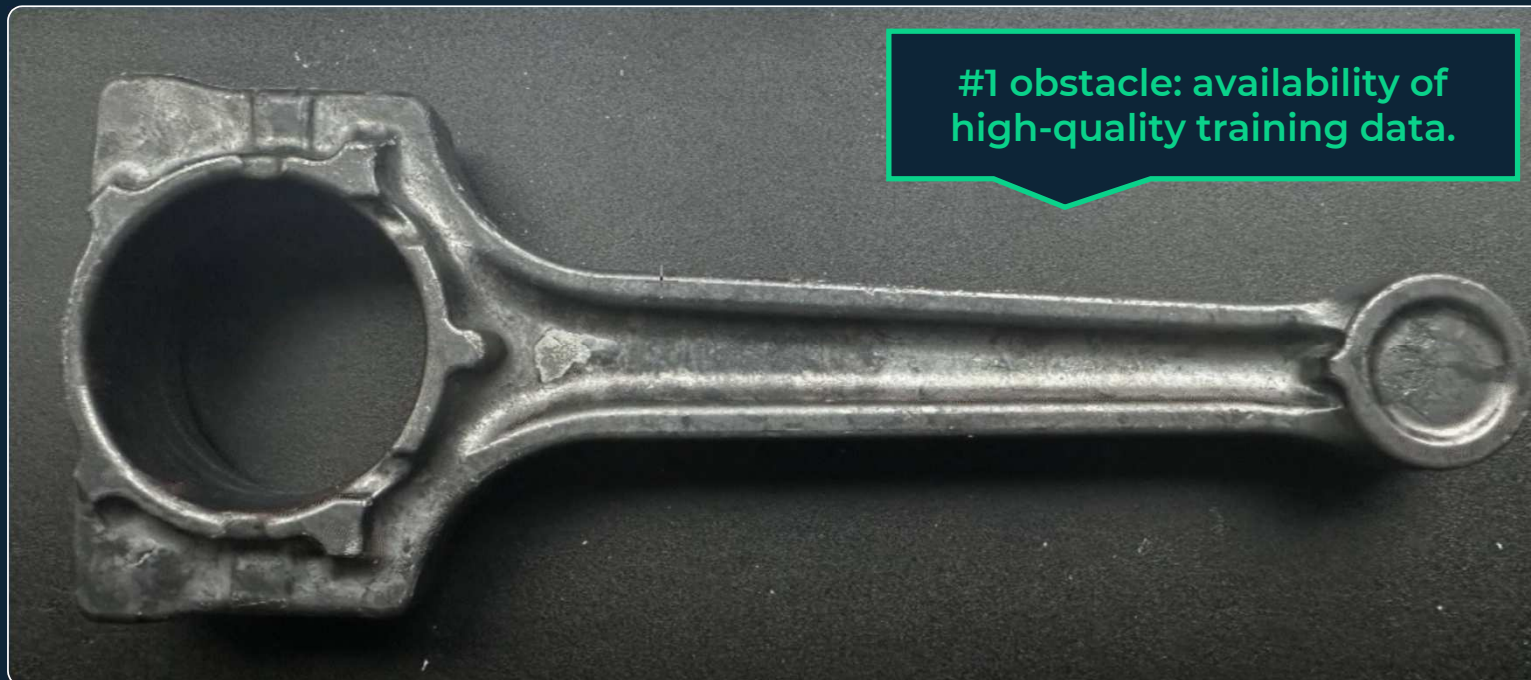


Results can not be saved and analyzed










Problem: 75% Of Manufacturers Struggle To Enhance Production With AI.



Source: Manufacturing Leadership Journal 08/2024



Challenges With Automated Inspection.

-  Pseudo rejects
-  Long time-to-value
-  High manual efforts for AI integration
-  Poor performance & pilot purgatory
-  Dependency on real-world data



THE FUTURE
OF
INDUSTRIAL AI
IS
SYNTHETIC.

Solution: Building Task-Specific Applications With Synthetic Data Generation.



3D
Object



Use In
Production



Synthetic

Data

Generation

Physical
Simulation

Customized
Dataset

Production
-Ready AI

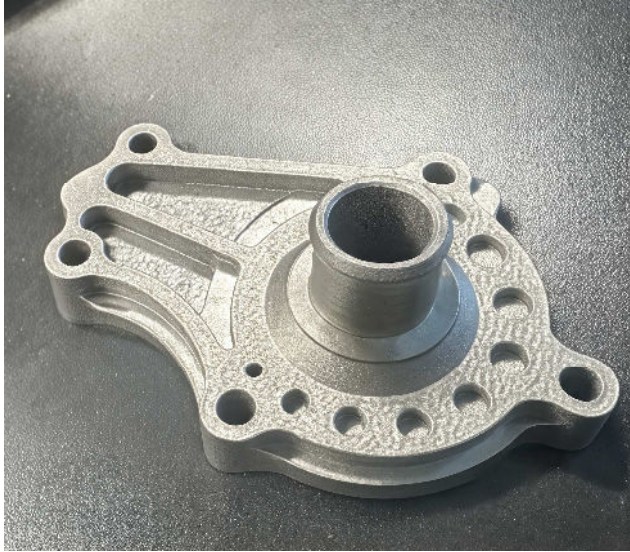


Physical
Simulation

Customized
Dataset

Production
-Ready AI

Synthetic image



Real image



Physical
Simulation

Customized
Dataset

Production
-Ready AI



Physical
Simulation

Customized
Dataset

Production
-Ready AI



Physical
Simulation

Customized
Dataset

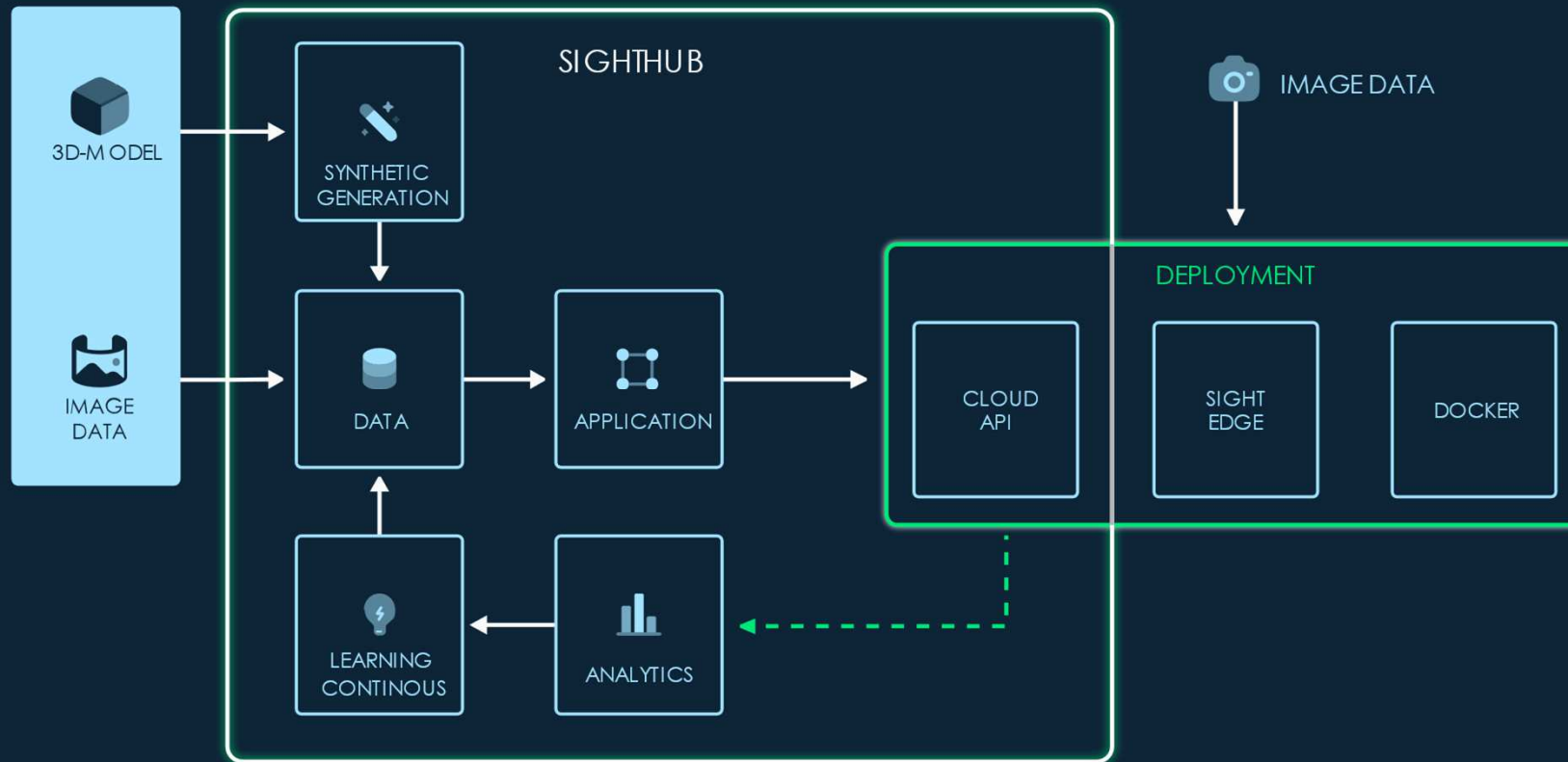
Production
-Ready AI



Image acquisition



Product: The SightHub.



End-To-End Platform For Enhanced Industrial Computer Vision.



3D
Object



Use In
Production



Performance



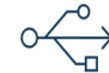
Productivity

95 %

Time-to-Value

6x

ROI



Plug & Play

Benefits: Save Time, Cost And Resources.



Case Study: Forging Industry. Whitepaper Now Available.



INDUSTRIAL MACHINE VISION POWERED BY SYNTHETIC DATA

CASE STUDY: FORGING INDUSTRY



THE RESULTS

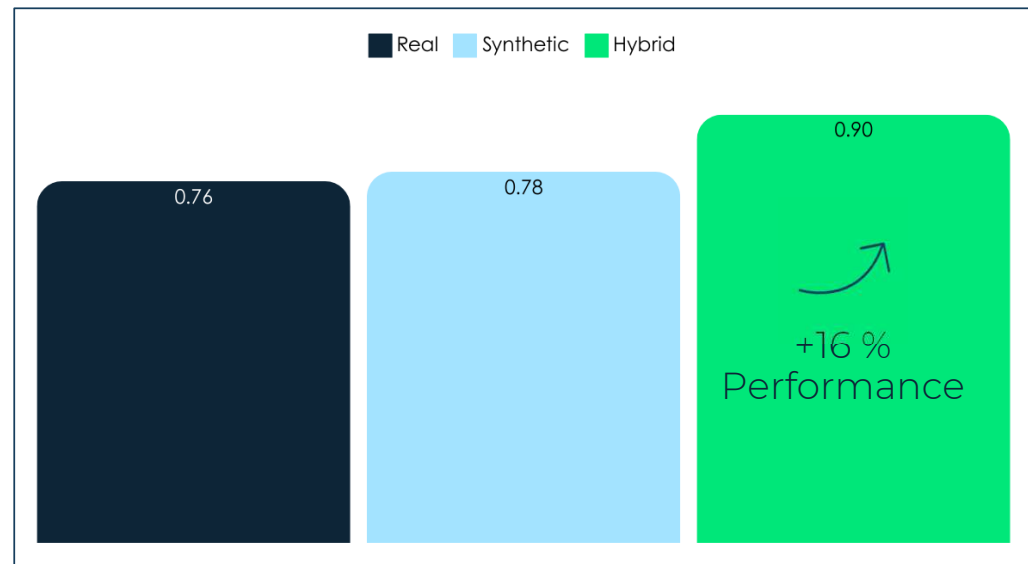


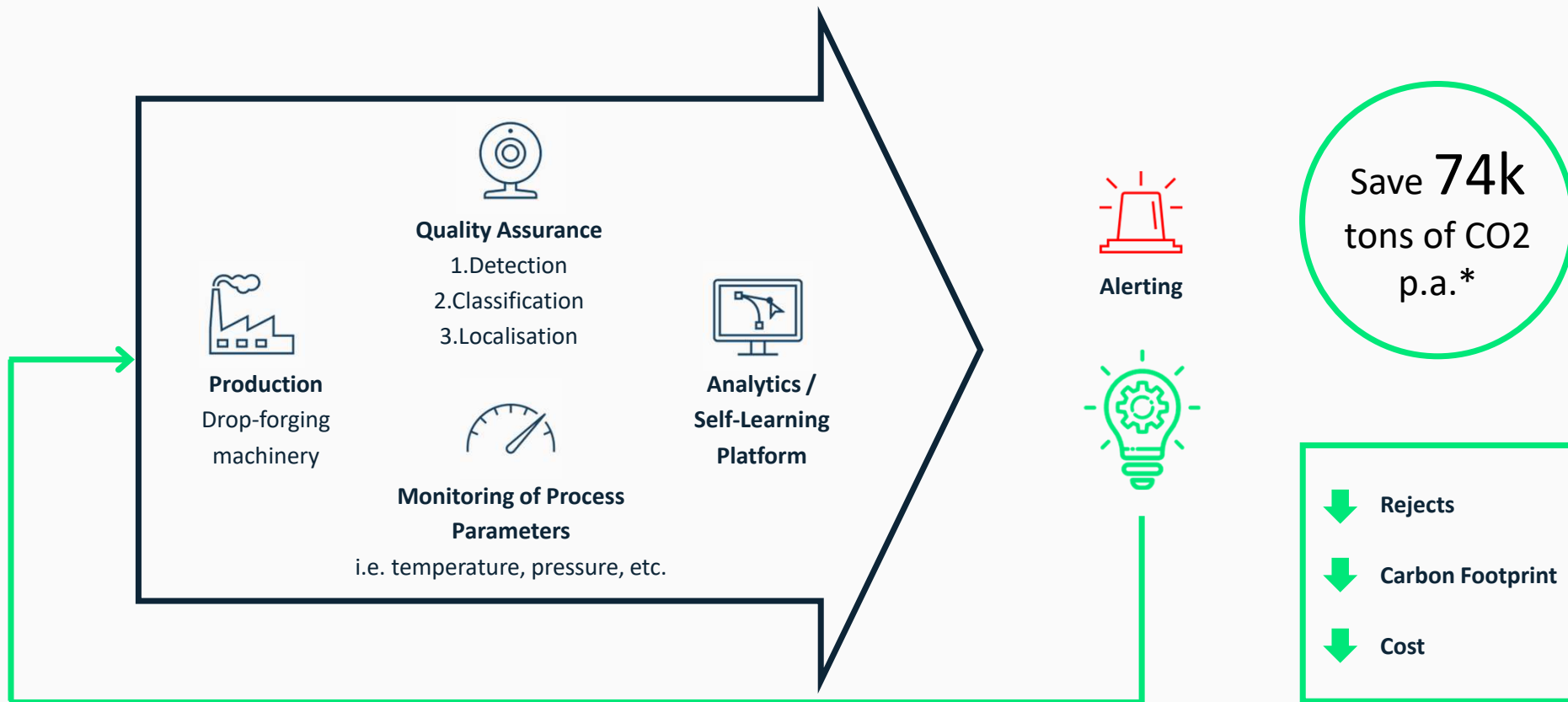
Chart: comparison of best mAP values achieved on test set

Key findings:
Synthetic data outperforms homogeneous real-world datasets and significantly boosts the performance of larger datasets by training in “hybrid mode”.



SightHub Add-on:

Self-Learning System for Sustainable Process Enhancements.



EXAMPLES



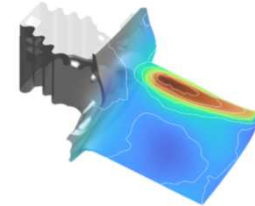
Sightwise Track Record: Samples Of Past And Current Projects.



Defect Detection On Aircraft Turbine Blades

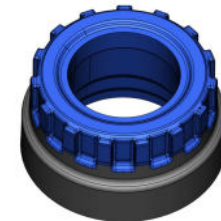
For a large aircraft engine manufacturer, we conducted/ are working on multiple projects for:

- multi-camera inspection system for detecting damage and assessing wear on used turbine blades
- 2D/3D image data projection for crack detection on manufactured turbine blades



Forging Industry: Strategic Partnership

After conducting a large-scale technology validation for defect detection on forged parts for the automotive industry, we entered a strategic partnership with one of Europe's largest drop-forging machine manufacturers. We are currently building a sales demonstrator and starting first projects with end customers.



Sightwise Track Record: Samples Of Past And Current Projects.



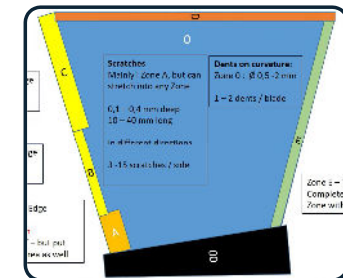
Spatially-Resolved Defect Analysis

- Map the captured images to specific locations on the object
- Geometrically align damages to a CAD model
- Ensure traceability during QA inspections



Synthetic Data For New Blade Generation

- Build a synthetic dataset to develop a defect detection algorithm for new turbine blades
- Product does not exist yet
- Input: a 3D object and the description of expected defect types (i.e. dents, scratches)





Meet Sightwise.



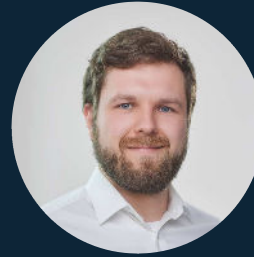
Dr.-Ing. Philipp Middendorf
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Dr.-Ing. Nils Melchert
Software & Innovation

PhD in the field of
numerical optimization



Dr.-Ing. Kolja Hedrich
AI & Product

PhD in the field of
industrial AI



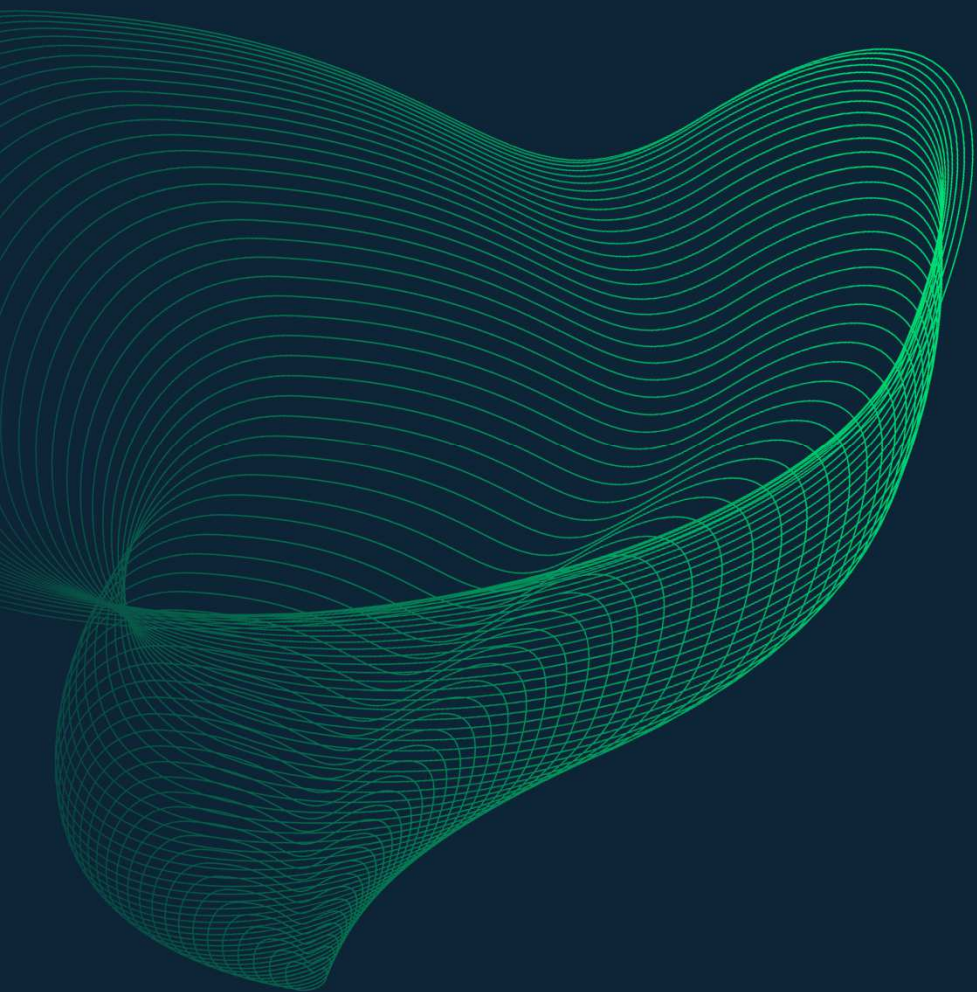
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LET'S OPEN UP
A NEW
CHAPTER OF
INDUSTRIAL AI.



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Solution:

Building Task-Specific Applications
With Synthetic Data Generation.

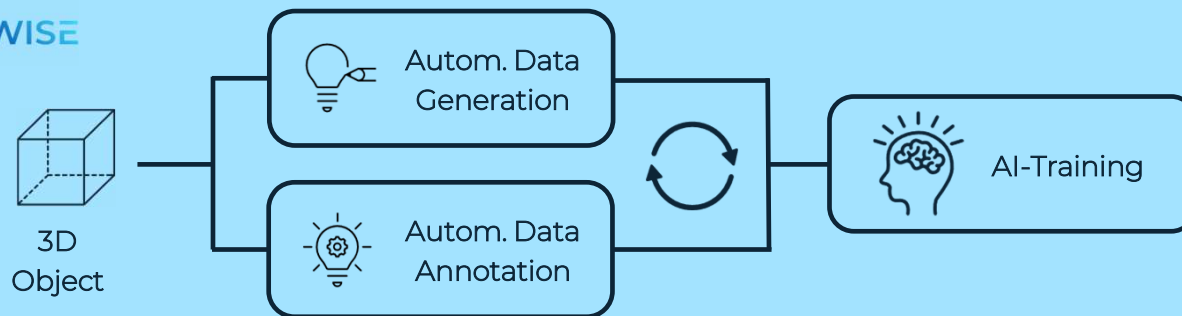


Traditional workflow



- Time-scale: weeks
- Expensive
- Poor generalization
- Difficult to update

 SIGHTWISE



- Time-scale: days
- Scalability
- Flexibility
- Data Security