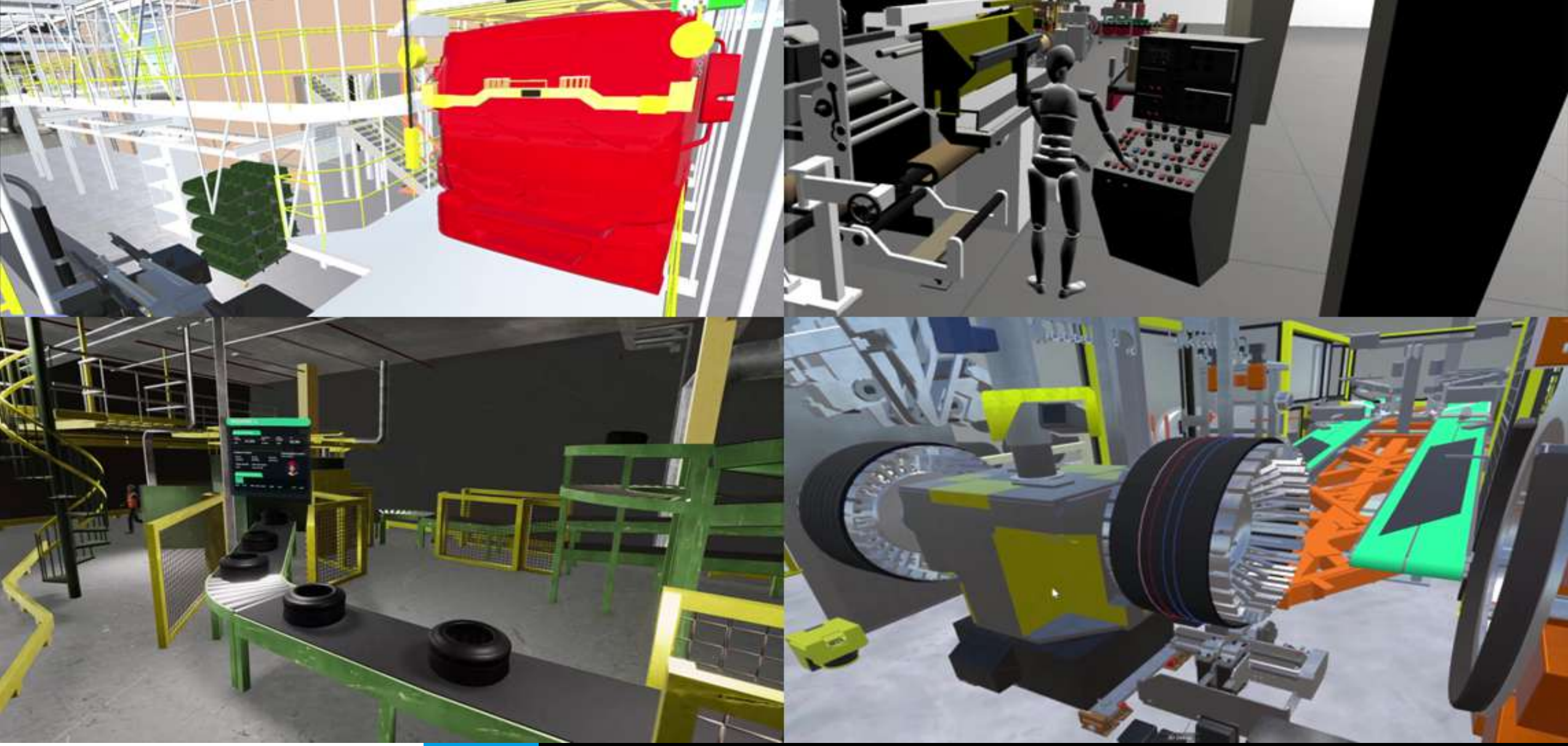

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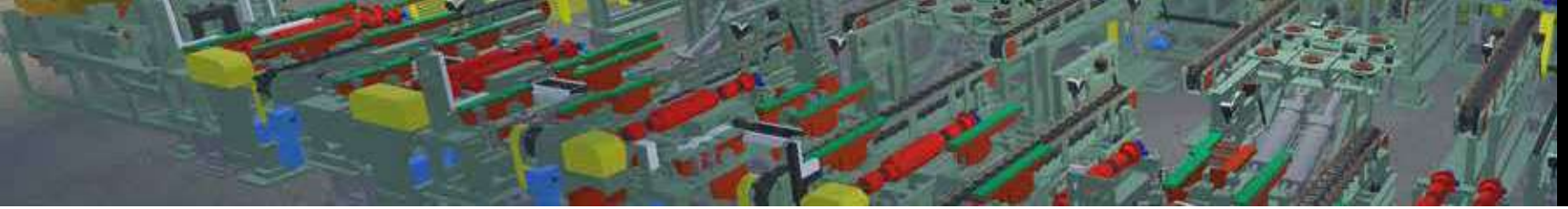
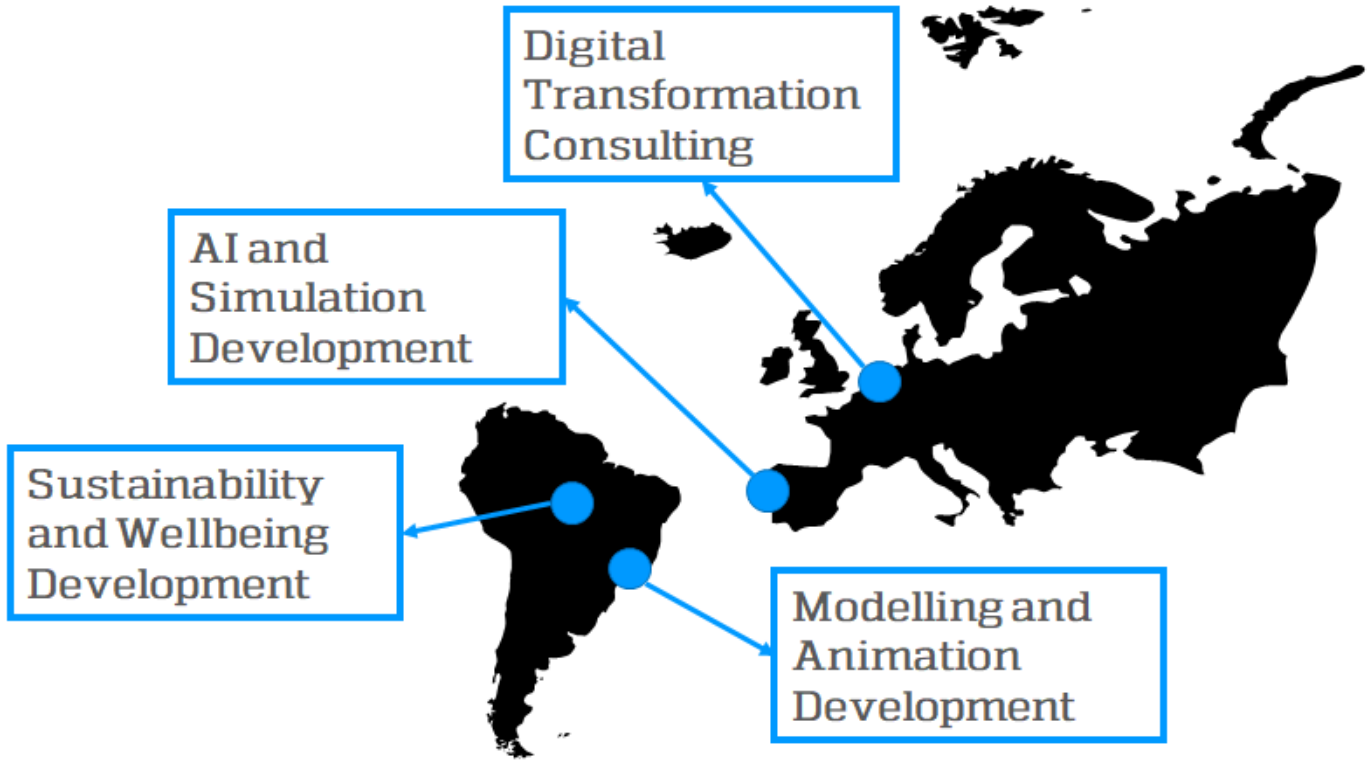
3D Digital Plant

Industrial Metaverse Platform:
3D Digital Twin and Virtual Sensing



>Who we are Infinite Foundry



- Locations: Porto (HQ/PT), Hague (NL), São Paulo (BR), Amazon (BR)
- Year established: 2017
- Number of employees: 20
- Revenue: €1,7M
- Pipeline: + €5M
- Partnerships: Altice Communications, INESC TEC, Produtech, Senai, GIZ

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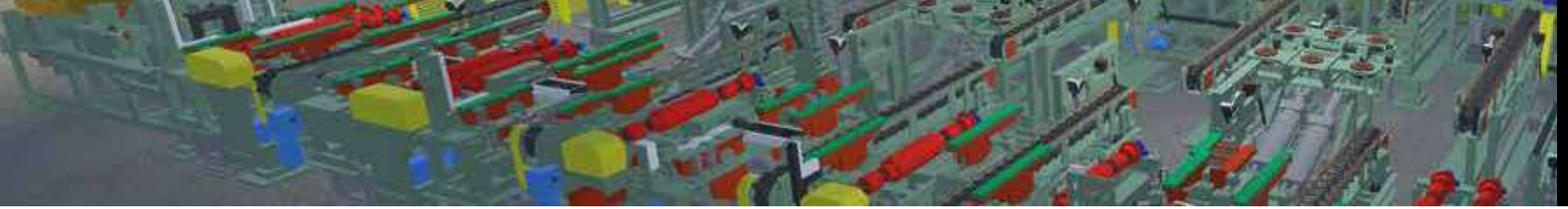

>The Problem Industry Faces Many Challenges

Supply Chain Disruptions	High Customer Expectations	Sustainability	Workforce Availability
After-effects of the pandemic, natural disasters and geopolitical tensions have caused uncertainty	High-quality, customized products, faster, and at lower cost, so there is a need to produce goods efficiently	Customers and regulators are increasing pressure for industry to adopt sustainable practices	It is becoming harder to find skilled workers, so automation is essential but requires big investments

Meeting these challenges requires technology for deep understanding of production

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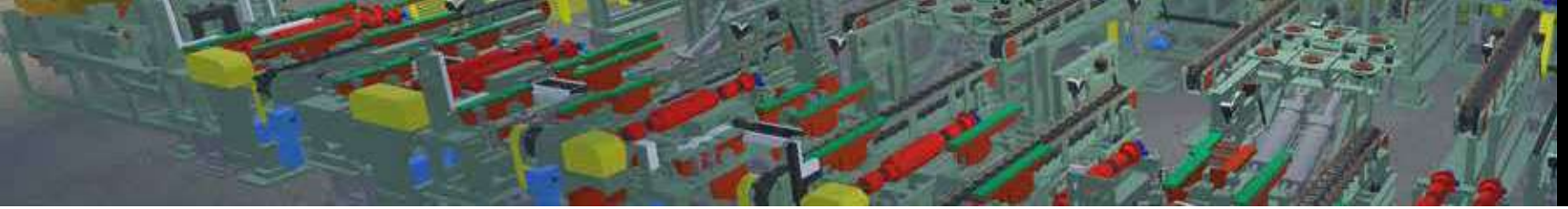

>Industrial Metaverse is Efficiency and Innovation

Ecosystem in which IoT, AI and digital twins are deeply integrated with the entire value chain

Full traceability of operations is enabled so that efficiencies can be found and implemented

It unleashes a new era of creative freedom for companies to play around with ideas and test technologies without the costs and bottlenecks associated with real-world testing

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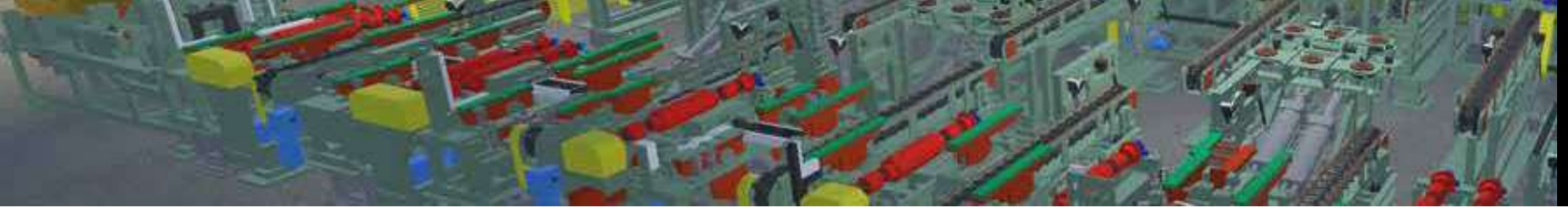
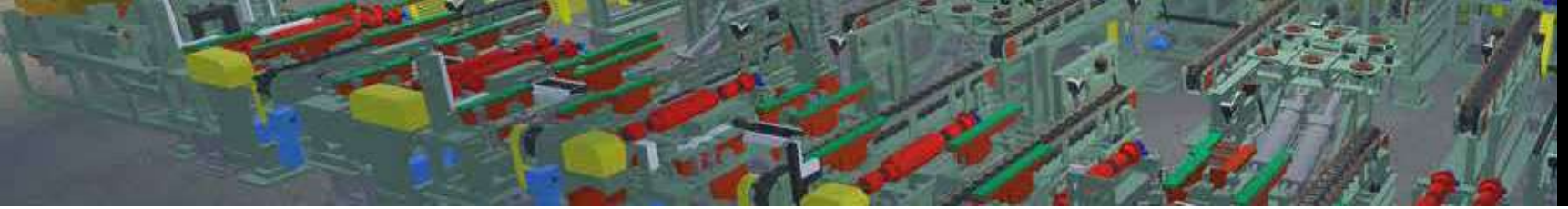
3D Digital Plant

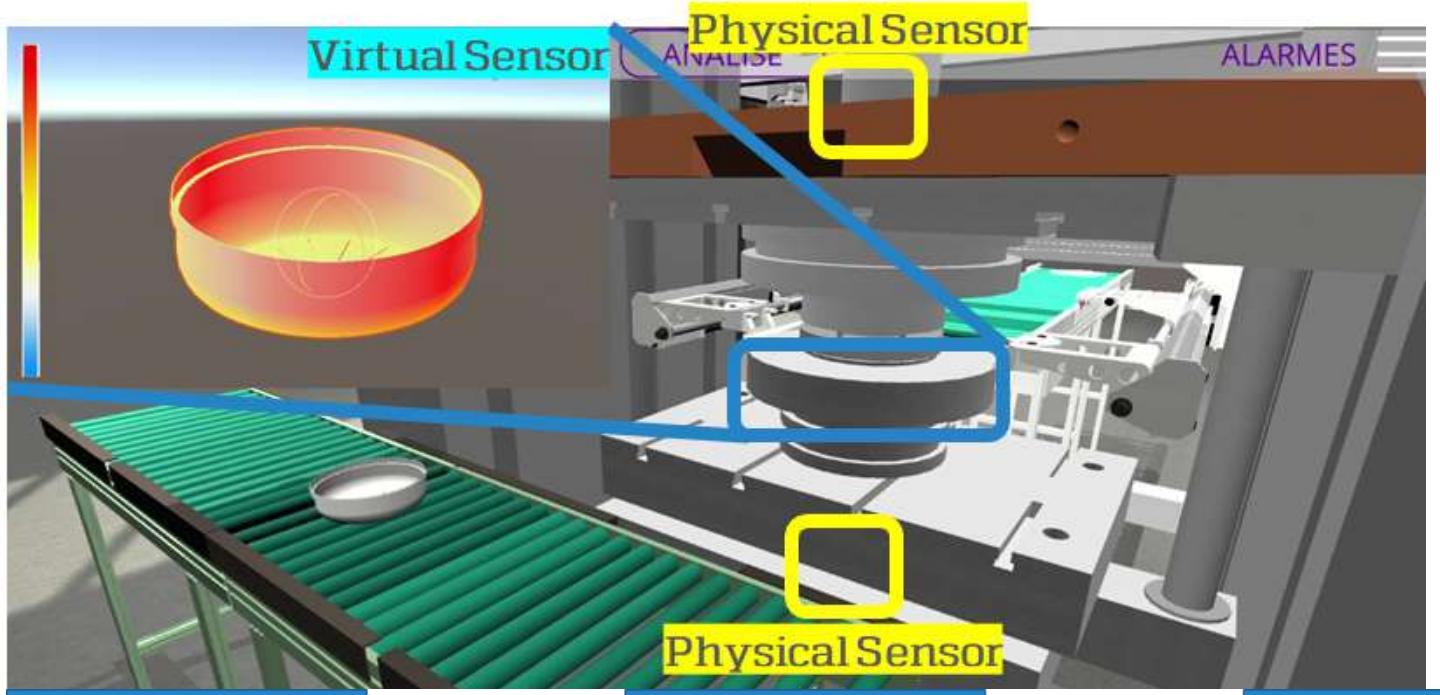


>Benefits Industrial Metaverse Platform

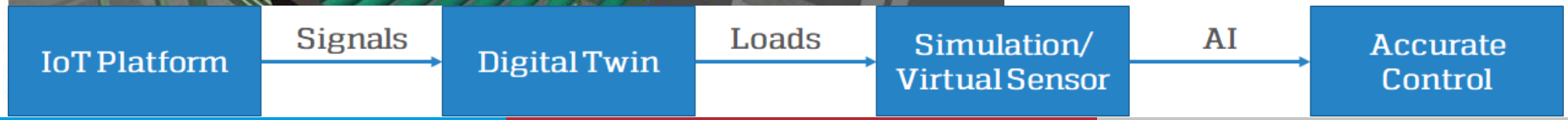
Plan	Move Quickly	Learn Continuously	Manage Value Chain	Enhanced Collaboration
Plan virtually any change to operation, eliminating data silos between design, R&D, operations, sales	Identify all bottlenecks and find solutions to remove them to implement change	Understand all production process details by processing real time date in 3D to maximize efficiency	Use interoperability with suppliers to streamline processes and avoid disruption	Extended reality enable to create and collaborate immersively using natural interface: hands and language



>The Technology 3D Digital Twin and Virtual Sensor



- 3D real-time integrated environment
- Domain that runs physics to improve control accuracy by 50% where data is limited to indirect sensors
- Simulate any parameter and layout change to optimize operation
- Connect 3D digital twins for supply chain traceability - Metaverse



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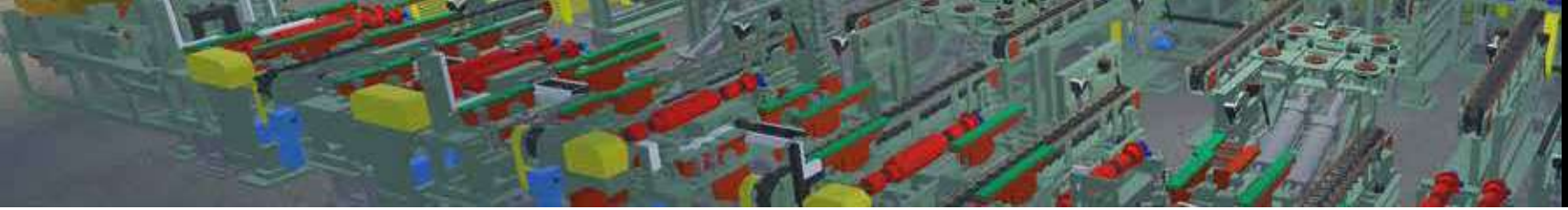
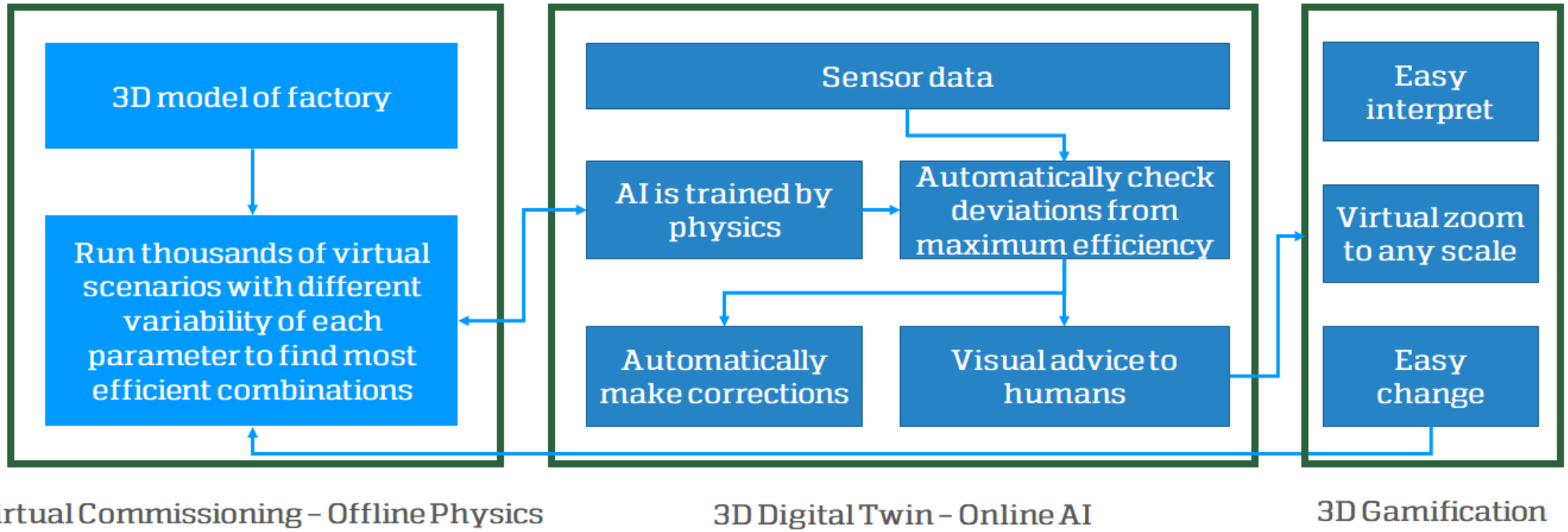
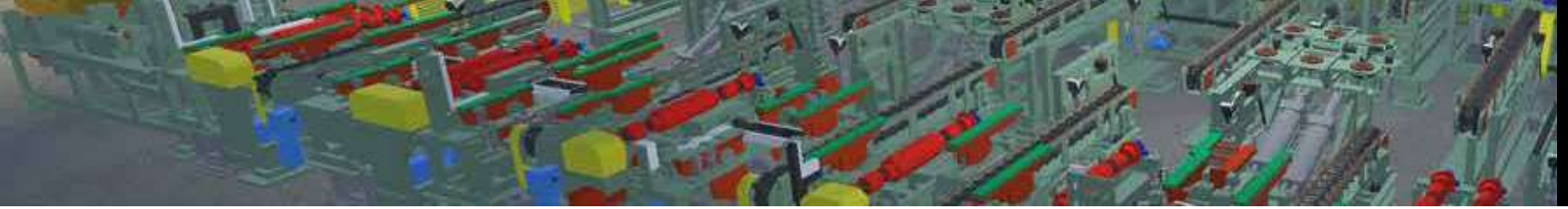


>Virtual Sensor Physics-Based AI Model of Factory





>Main Components Industrial Metaverse

LAYOUT IOT

Laser scan to get 3D factory model

+

Map IoT to 3D model for real time animation

Infinite Foundry Database

120 production lines scanned

MACHINE PHYSICS

Physics-based calculation of areas not sensorized

+

No-coding simulation for operation optimization

150 production machines in database

WORKER TRACKING

Ergonomics calculation

+

Task detection

180 manual tasks detected

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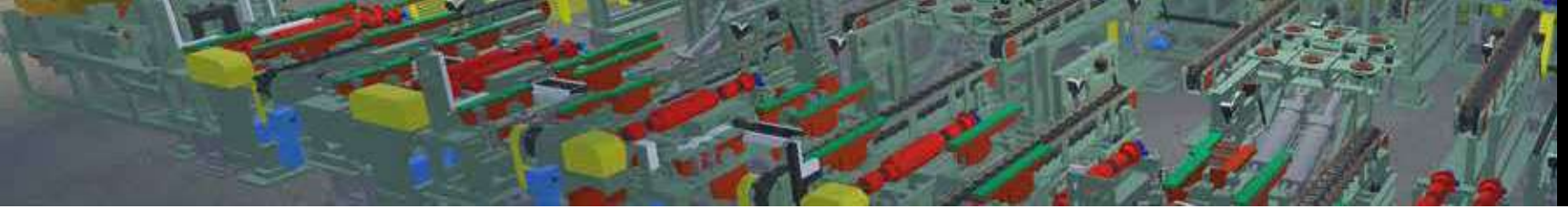
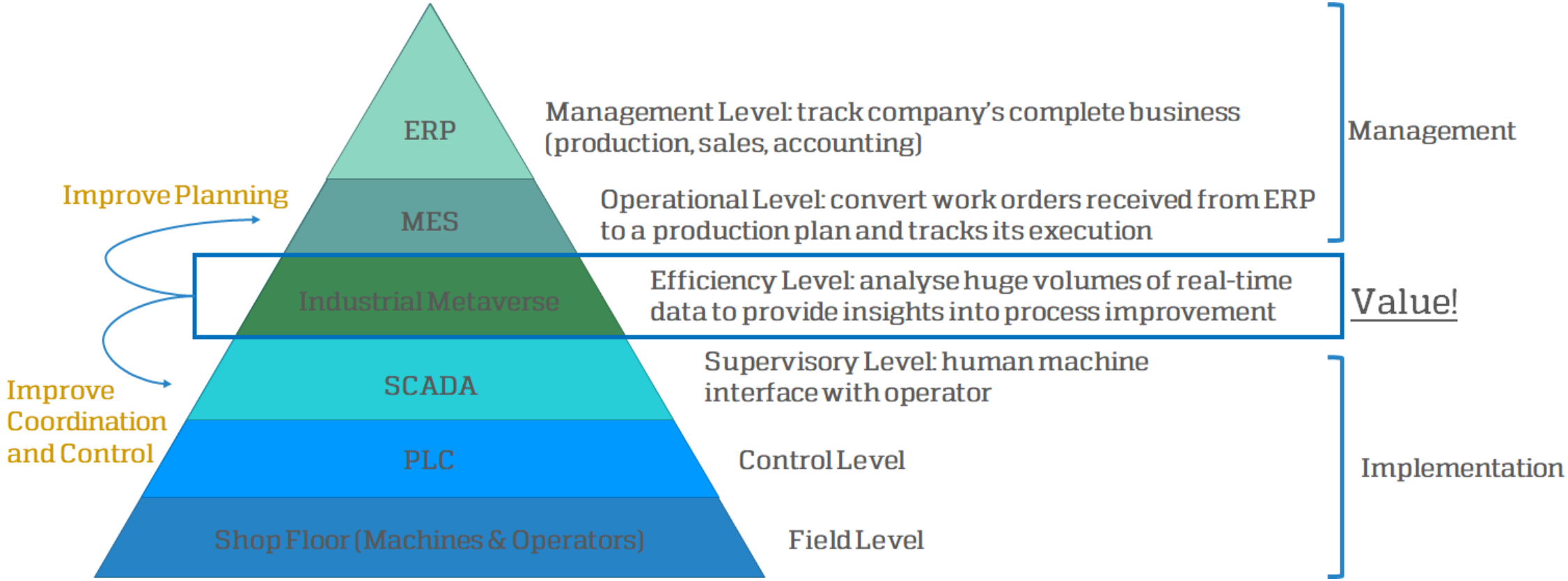
3D Digital Plant



>Market Position



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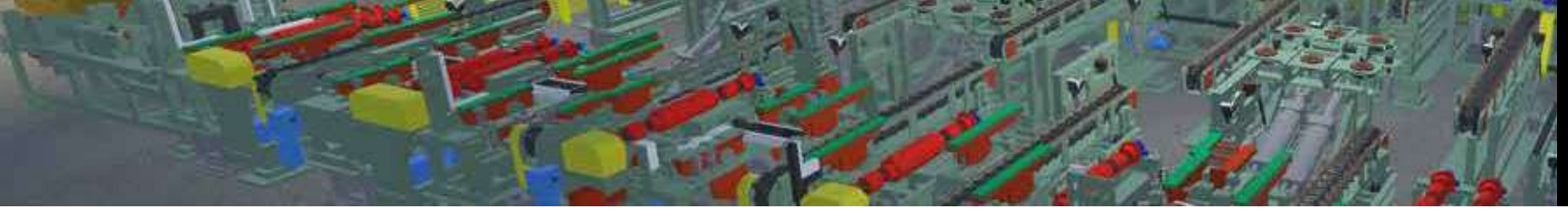

> Architecture

Robots
Machines
Industrial Application
Vehicles
Workers
Connectivity
Digital Twin
Enterprise Application
Products
Embedded Analytics
Operator Application

Sensors Shop Floor
Middleware
Application

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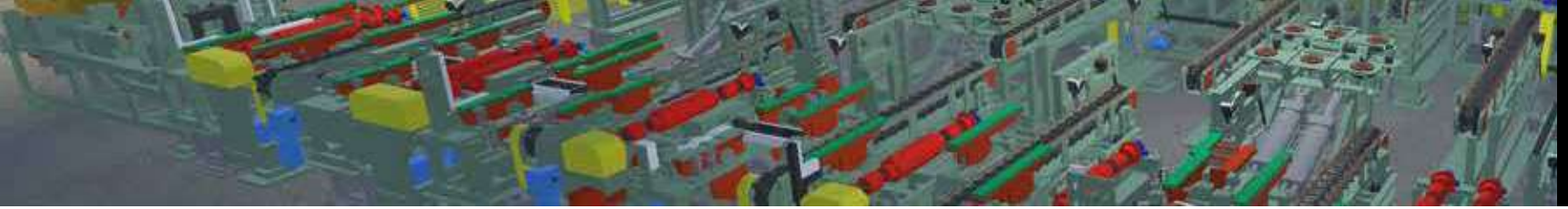
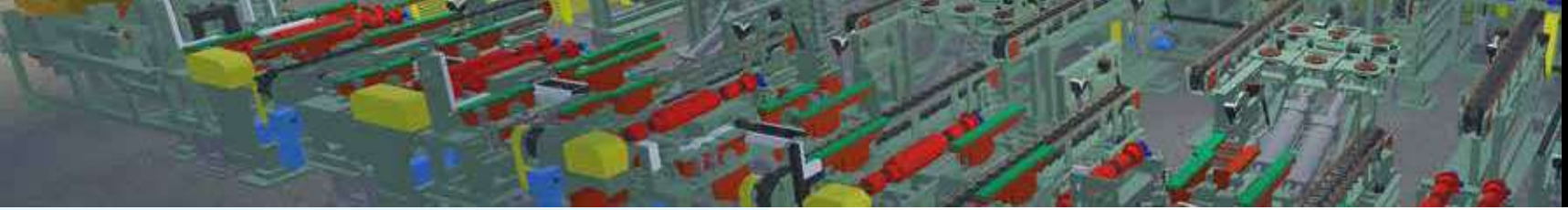
3D Digital Plant



>Evolution Standard AI to 3D and Generative AI

Manufacturing AI	Manufacturing 3D AI	Generative Manufacturing AI
Production Problems	3D Digital Twin Entire Line	Type of Industry
Machine Learning Identifies Patterns	Physics Understands Cause Problems	Machine Learning Knows Efficiency
Early Warning to Avoid Problems	Optimize Operation to Improve Efficiency	Full Traceability, Quality Assurance, Process Optimization



>Efficiency

Massive improvement with metaverse

Efficiency Improvement	IoT Platform	Infinite Foundry Metaverse
Predictive Maintenance	5% Alerts Before Breakdown	10% Optimizes Machine Design
Process Automation	5% Alerts Operator Anomaly	15% Optimizes Line Parameters
Quality	5% Detects Bad Quality	10% Resolves Quality Problems
Worker	-	10% Reduces Worker Variability
Logistics	5% Material&Parts Traceability	10% Optimizes Lean Principles
Supply Chain	-	15% Digital Thread Value Chain
TOTAL	20%	70%

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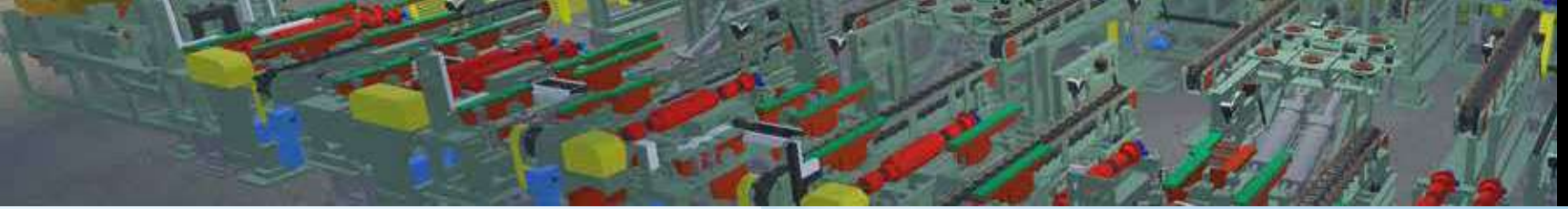

>Competition

Industrial Metaverse Combines Dissimilar Disciplines

VR/AR

- NavVis
- unity
- TRANSFRVR
- STRIVR
- TALESPIN
- ATTENSI

Simulation

- DELMIA
- Ansys
- TECNOMATIX
- rescale

IoT/AI/IT

- AVEVA
- thingworx
- SIEMENS Mindsphere
- PARSABLE
- SAP Leonardo

+ Motion tracking

+ Physics-based 3D AI

+ Supply chain integration

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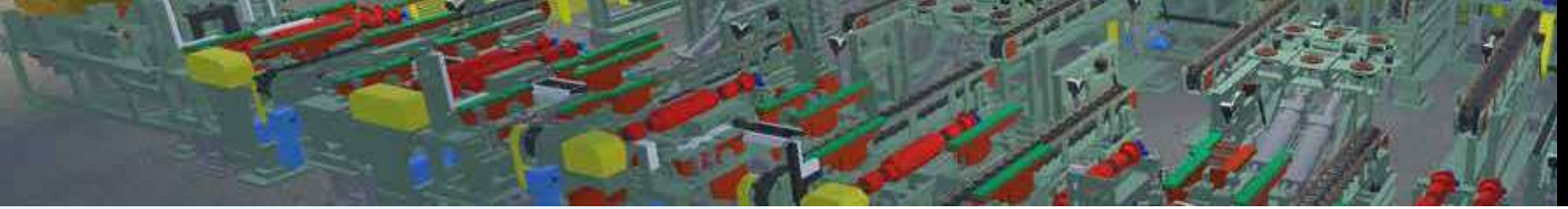

>Customers

Automotive

Mercedes-Benz

RENAULT

SAINT-GOBAIN

Other Industries

EMBRAER

VALE

LG

SAMARCO

BOSCH

camargo corrêa infra

Vestas

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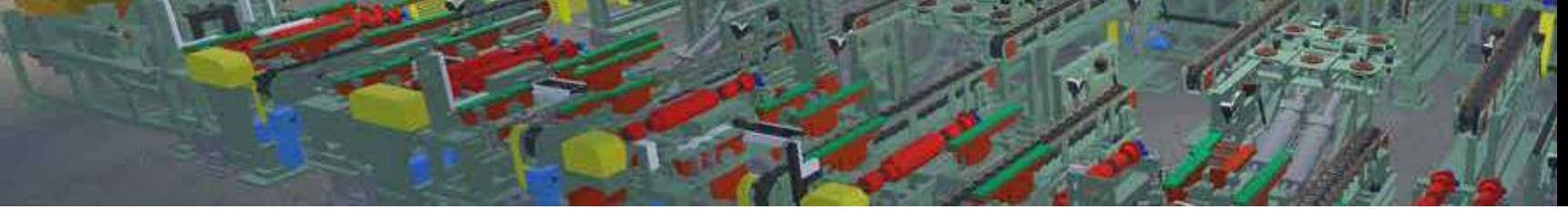

Thank you

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