



VIRTUAL TWINS: THE FUTURE IN REAL-TIME

Visiativ Connect, 17 October 2024



3DEXPERIENCE™



OUR COMPANY



A purpose-driven company

Combining Art, Science & Technology
for a more sustainable world

23,811 passionate people

From 142 countries
194 sites
One global R&D / 76 labs



Long-term driven

Majority shareholder control
Revenue: €5.95 billion*
Operating margin: 32.4%*

*Figures as of FY 2023 / Non-IFRS



17,000 partners

Software, Technology & Architecture
Content & Online services
Sales
Consulting & System Integrators (C&SI)
Education
Research



+350,000 customers

12 industries
45.3 million users
Game-changing
3DEXPERIENCE platform



OUR BELIEF



Virtual worlds **extend**
and **improve** the
Real world

OUR LEGACY – HERITAGE AND AMBITION



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1981
3D Design

1989
3D DMU
Digital Mock-up

1999
3D PLM
Product Lifecycle Management



2012
3DEXPERIENCE® platform

2020
Virtual Twin Experience of **Humans**



2040
Virtual Twin Experiences for a **Sustainable World**

INDUSTRY

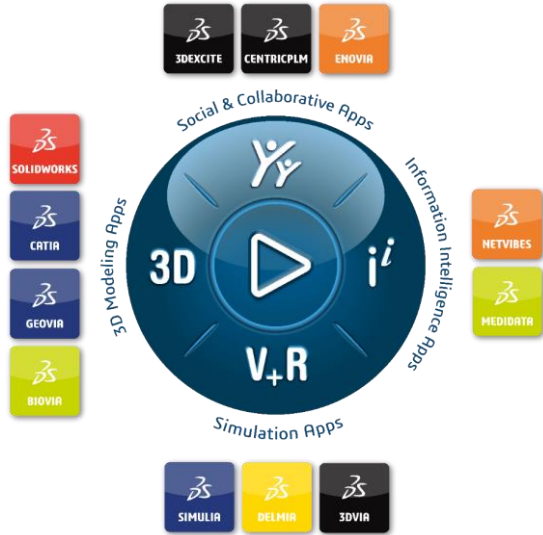
EXPERIENCE

HUMAN

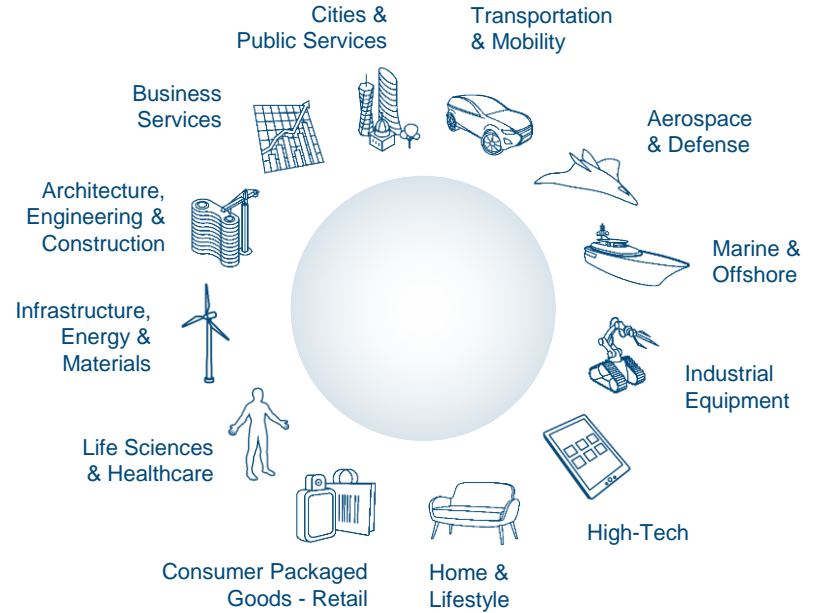
METAMORPHOSIS



3DEXPERIENCE® POWERS OUR BRAND APPLICATIONS...



... FOR 12 INDUSTRIES



DELMIA

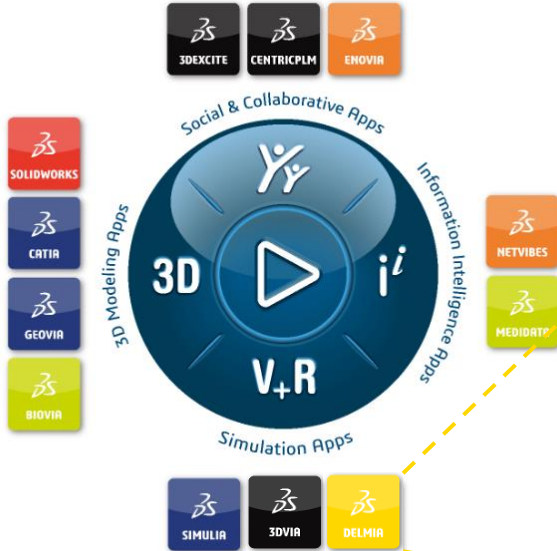
MAKE IT HAPPEN
FOR ALL YOUR BUSINESS OPERATIONS







DELMIA BRAND



DELMIA SUPPLY CHAIN EXCELLENCE

1 Supply Chain Planning

- 80% of rolled aluminum products worldwide are planned and produced using DELMIA
- Delivery performance improved from 40% to 90%
- Stock reduced by 33%
- Output increased by 44%

2

Sustainability

- The virtual twin/digital twin use cases alone can deliver combined incremental benefits of USD \$1.3 Trillion of economic value and 7.5 Gt CO₂e emissions reductions between now and 2030¹
- In Metals, 3.5 Kt CO₂e savings on scrap/waste

3

Workforce Planning

- Roster air traffic controllers who manage 70% of the world's airspace

4

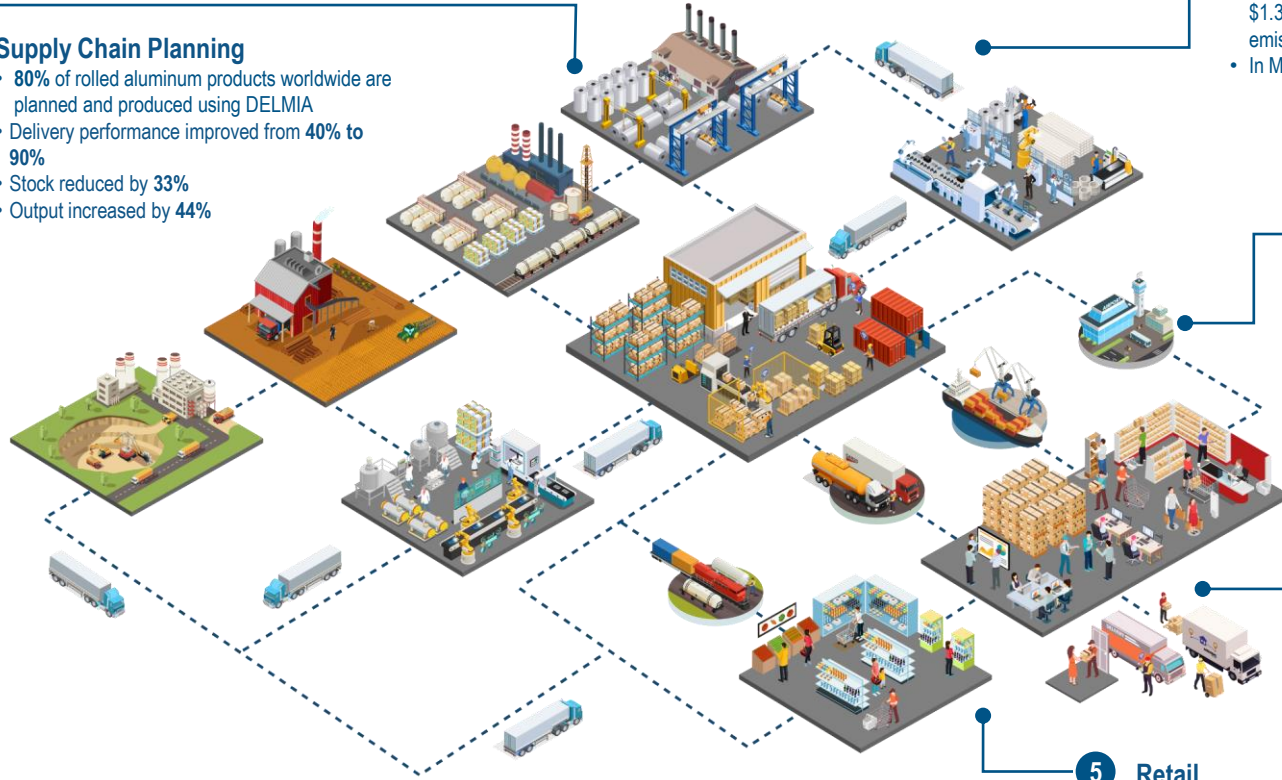
Logistics Planning

- 2 of 10 top logistics companies worldwide
- The world's largest liquid natural gas producers use DELMIA for fleet optimization
- Optimizing delivery of more than 1.8 billion global shipments annually

5

Retail

- Supporting global retailers that supply more than 20,000 stores worldwide



MANUFACTURING LEADERS USE DELMIA

1 Build to Order / Build to Stock

- 8 of 10 top global automotive OEMs
- 60% of electric vehicle (EV) manufacturers
- Worldwide, **every second**, a new car is assembled with a part manufactured using DELMIA
- 50% of the world's largest **farm equipment manufacturers**
- 40% of the world's largest **construction equipment manufacturers**
- 9 of 10 world's largest **aircraft manufacturers**



2 Process Manufacturing

- 80% of rolled aluminum products worldwide are planned and produced using DELMIA



3 Batch Manufacturing

- 3 of 5 top global cosmetics companies

5 Repetitive Manufacturing

- 2 of the world's largest robotic surgery suppliers with **over 80%** market share
- 2 of 3 world's top orthopedic device suppliers



4 Hybrid Manufacturing

- 85% of the world's battery cell capacity is designed and produced using Dassault Systèmes

INDUSTRY CHALLENGES ARE DRIVERS FOR DIGITAL TWINS



Transformation

- Digital technology adoption: Digital Twin technology, big data, advanced analytics, human-machine Interfaces (AR/VR), AI/ML
- Flexible, scalable and secure technology
- Increasing performance and quality delivered to the customer



Sustainability

- Reducing environmental footprint of the product/company
- Reducing fuel consumption and machine CO2 emissions
- Energy transition to hybrid, electric or hydrogen



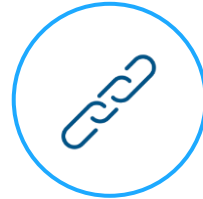
Workforce Challenges

- Ongoing talent shortage
- Employee retention and turnover
- Increasing wages and competition
- Knowledge capture and new worker training



Product Complexity & Diversity

- Increasing demand for personalization without sacrificing quality
- Alternative energy sources
- Regional rules and regulations
- Demand volatility



Supply Chain Instability

- Covid-related issues that continue past 2022
- Supply Chain “Bullwhip” effect
- Transforming supply chains for advantage beyond the next disruption

THE CHALLENGES OF TODAY'S DIGITAL TWINS



Access to real-time data

Often, there is no real-time data available or only from a limited amount of sources, and other times, there is no data at all.



Lack of data standards and integration

Many experience difficulty in finding data available in a usable format. Can it be easily integrated into the data platform of the Digital Twin?



Sustainable and scalable

Digital Twins are purpose built, rigid and can be difficult to maintain over time or expand for new problem solving

Digital Twin

- Model and simulate real world environment
- Debugging system issues digitally



Physical

- Verify performance earlier
- Accelerate installation and commissioning

USING VIRTUAL TWIN EXPERIENCES TO CREATE RESILIENCY

SUPPLY CHAIN

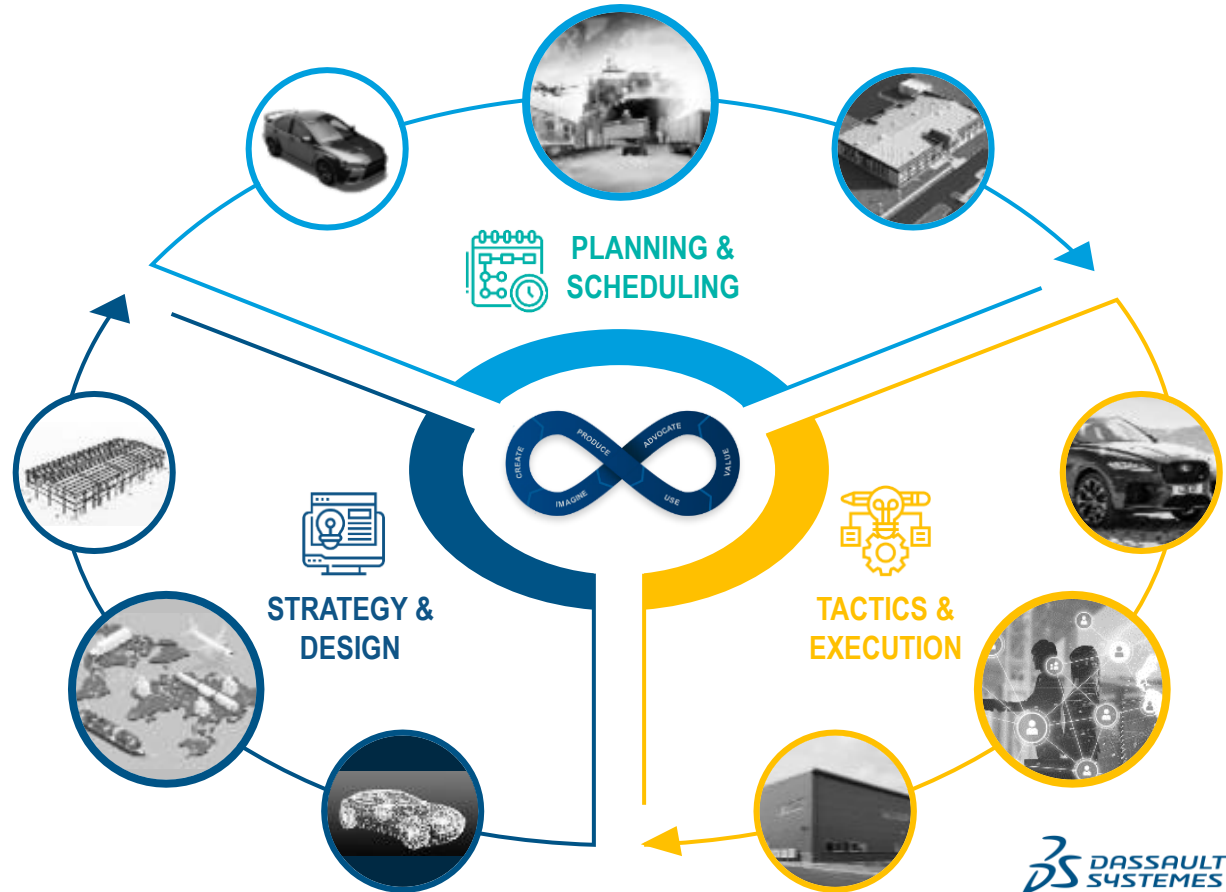
Models of Value Network,
Supply, Demand, Partners
Logistics Execution

RESOURCES

Models of Facilities,
Physical Assets, Machines
Workforce, Production Execution

PRODUCT

Models of Items, Process Plans,
Build Strategies



ORCHESTRATING VALUE NETWORK OPERATIONS



Virtual Twin Experience of Resources & Facilities



Virtual Twin Experience of the Product



Virtual Twin Experience of the Supply Chain

VIRTUAL



MODEL
• Scientific accuracy



SIMULATE
• Unlimited scenarios



OPTIMIZE
• Solve complex business challenges

MODEL BASED

3D



i'

DATA DRIVEN

V.R

3DEXPERIENCE®

IMAGINATIVE | IMMERSIVE |
COLLABORATIVE | PREDICTIVE

REAL



PLAN
• Holistic alignment & consensus



OPERATE
• Efficient & flawless execution



ANALYZE
• Insights & future predictions

UNIQUELY ORCHESTRATING **VIRTUAL** + **REAL** CAPABILITIES

FACTORY VIRTUAL TWINS

High-level creation process



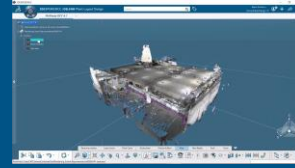
Asset Twin



Scan Factory



Import 3D cloud points



Replace Points Cloud by 3D Models

FACTORY VIRTUAL TWINS

High-level creation process



Asset Twin



Scan Factory



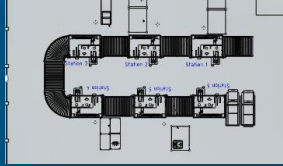
Import 3D cloud points



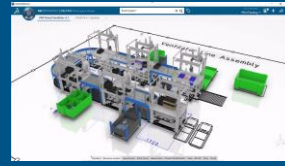
Replace Points Cloud by 3D Models



Asset Twin



Import 2D Factory Layout



Create 3D Models

FACTORY VIRTUAL TWINS

High-level creation process



Asset Twin



Scan Factory



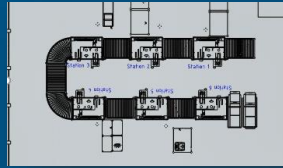
Import 3D cloud points



Replace Points Cloud by 3D Models



Asset Twin



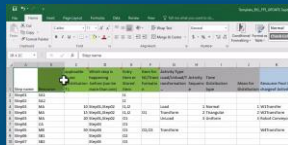
Import 2D Factory Layout



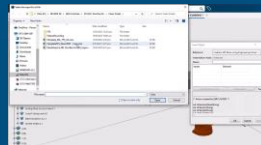
Create 3D Models



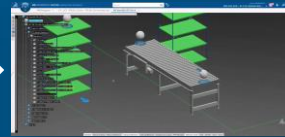
Process Twin



Capture Manufacturing Process



Insert Manufactured Product



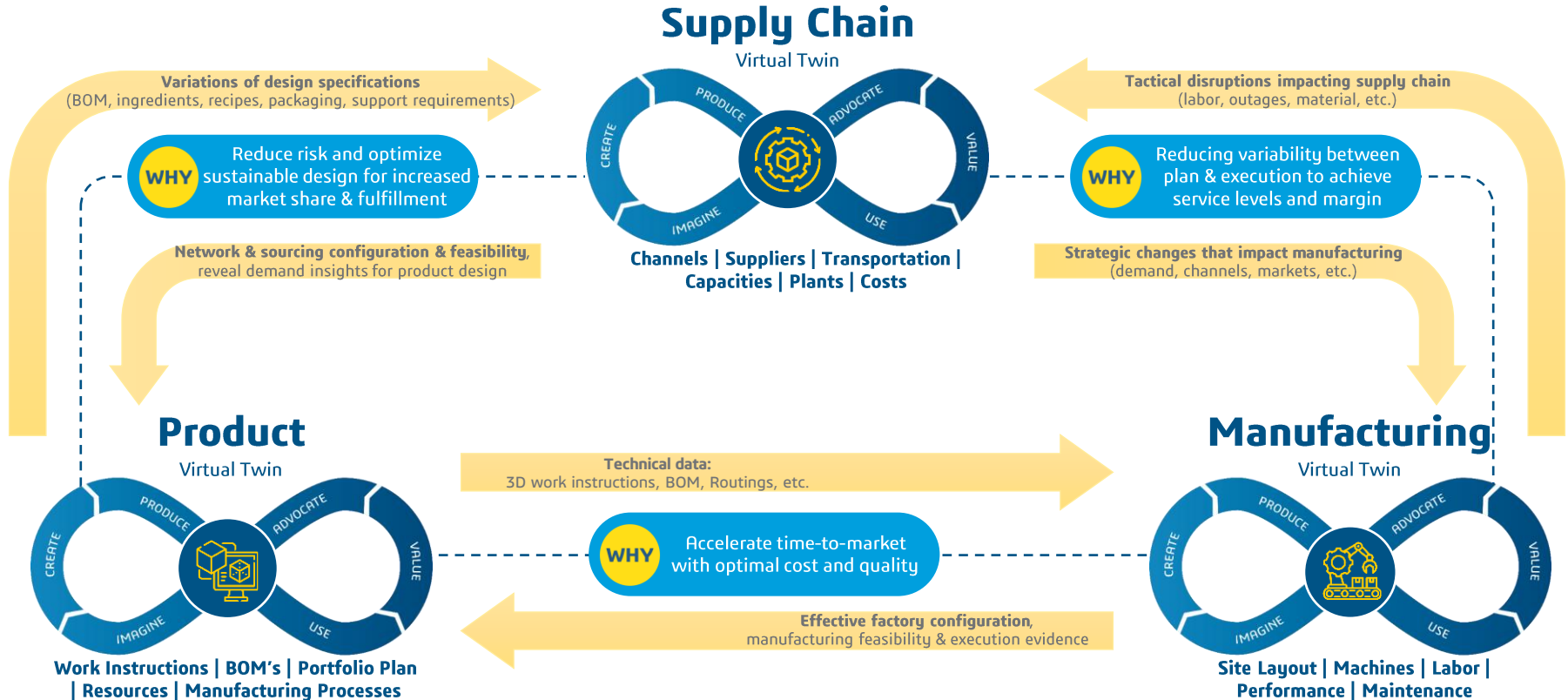
Create Product and Resource Zones



Create Factory Flow Model

A UNIQUE PORTFOLIO FOR MANUFACTURING

Dassault Systèmes is uniquely positioned to break functional silos and orchestrate end-to-end performance



A UNIQUE PORTFOLIO FOR MANUFACTURING

Customer Examples of Multi-discipline Orchestration

WHY Reduce risk and optimize sustainable design for increased market share & fulfillment



faurecia


Supply Chain

Virtual Twin



Channels | Suppliers | Transportation |
Capacities | Plants | Costs

WHY Reducing variability between plan & execution to achieve service levels and margin



HEXCEL

Product

Virtual Twin



Work Instructions | BOM's | Portfolio Plan
| Resources | Manufacturing Processes

WHY Accelerate time-to-market with optimal cost and quality



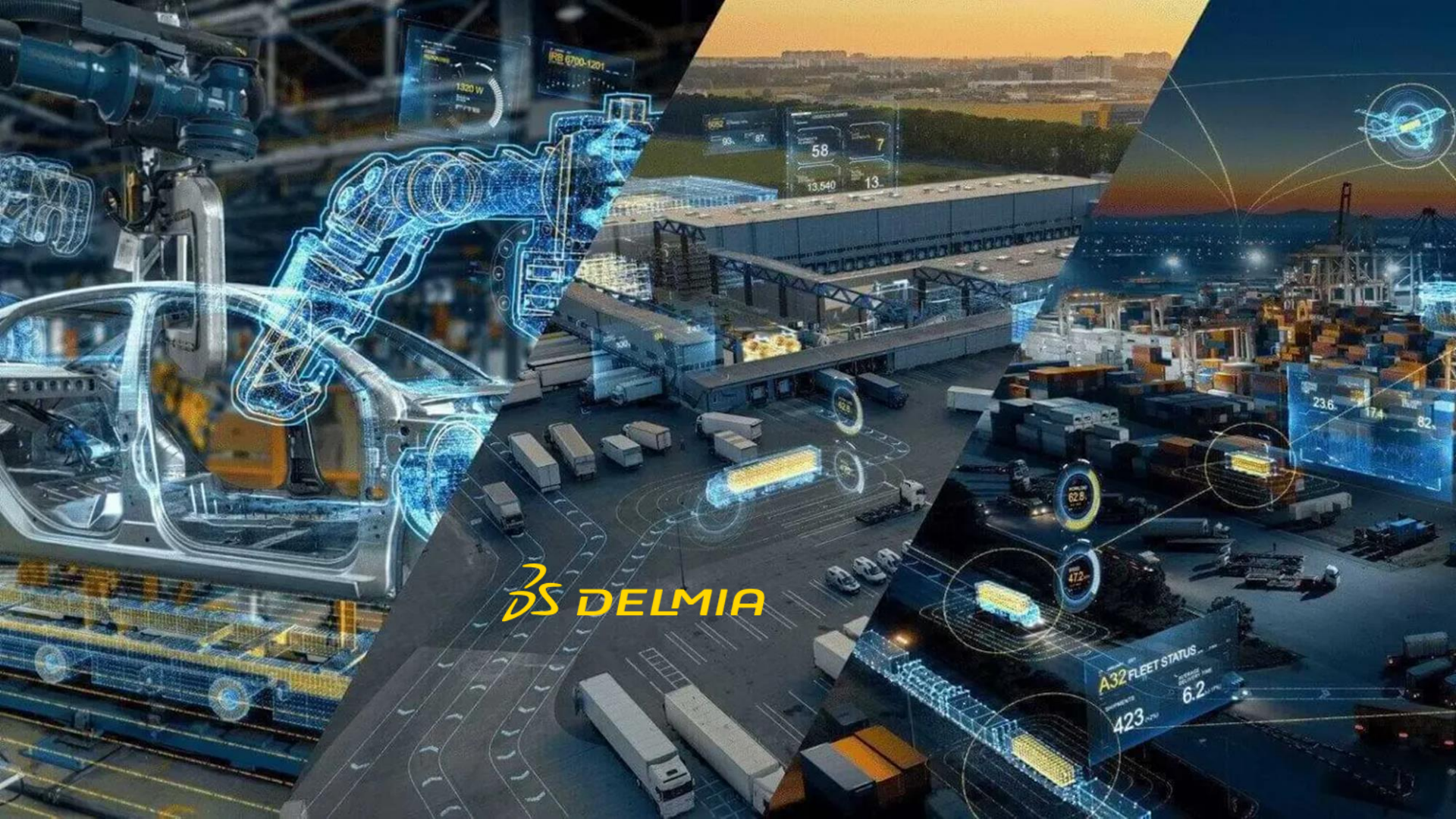
KOBELCO

Manufacturing

Virtual Twin



Site Layout | Machines | Labor |
Performance | Maintenance



IRE 0700-1201
1320 W
99% 87%

58
13,540
7
13

23.6
174
82

62.6

47.2

A32 FLEET STATUS
423
6.2

DS DELMIA

**DISCOVER MORE
ON 3DS.COM**

