



3DEXPERIENCE®

The Quest for Sustainability

The Power of Virtual Twin

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“Next Normal” Requirements are emerging

Re-assess manufacturing strategies and capacity to mitigate shortcomings in supply chain



Remote monitoring and diagnostics of operations and assets



Increase in safe manufacturing practices and work health safety



IT/OT convergence and renewed investment in process automation on the shop floor



'Nearshore' or 'onshore' manufacturing driven by SC disruption impact / risk



Over 45% of companies either have virtual twin technology or are in pilot stages



Human Experience



PEOPLE



PLANET



PROFIT



VIRTUAL TWIN EXPERIENCE

A framework for Sustainable Operations

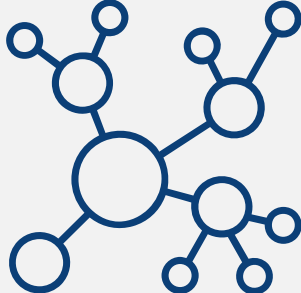
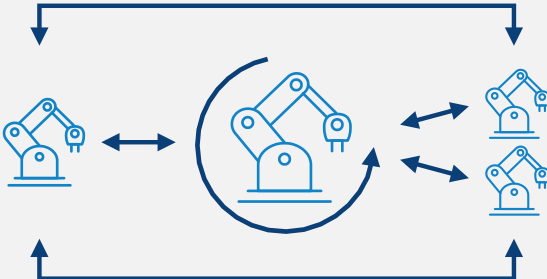
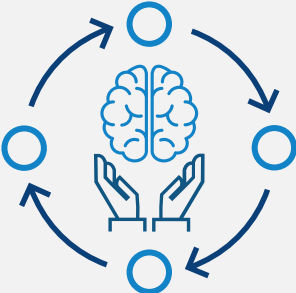
Enabling Virtual Experiences and Real-World Evidence through



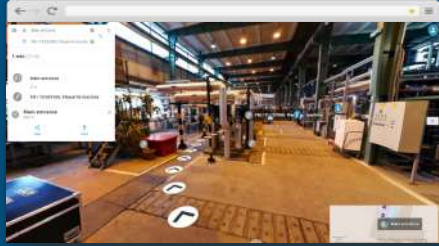
Human Experience

Virtual Twin Experience

Value Network



How a Virtual Twin Experience is Created



Asset Scanning/3D Plant Model Creation

+



Plant Layout Design

+



Factory Flow Simulation



Efficiency

Factory Planning Cost



- ✓ Scan the facilities with mobile mapping system
- ✓ Examine the as-is conditions: using point clouds and 360° panoramic image
- ✓ Create 3D factory with existing 2D drawings
- ✓ Integrate as-is data into the Virtual Twin



Performance

Increase Factory Layout



- ✓ Define and validate worker safety aspects
- ✓ Utilize pre-defined resource types in the 3DEXPERIENCE catalogue
- ✓ Position and manipulate resource positions in 3D
- ✓ Validate shop floor layout for overall flexibility

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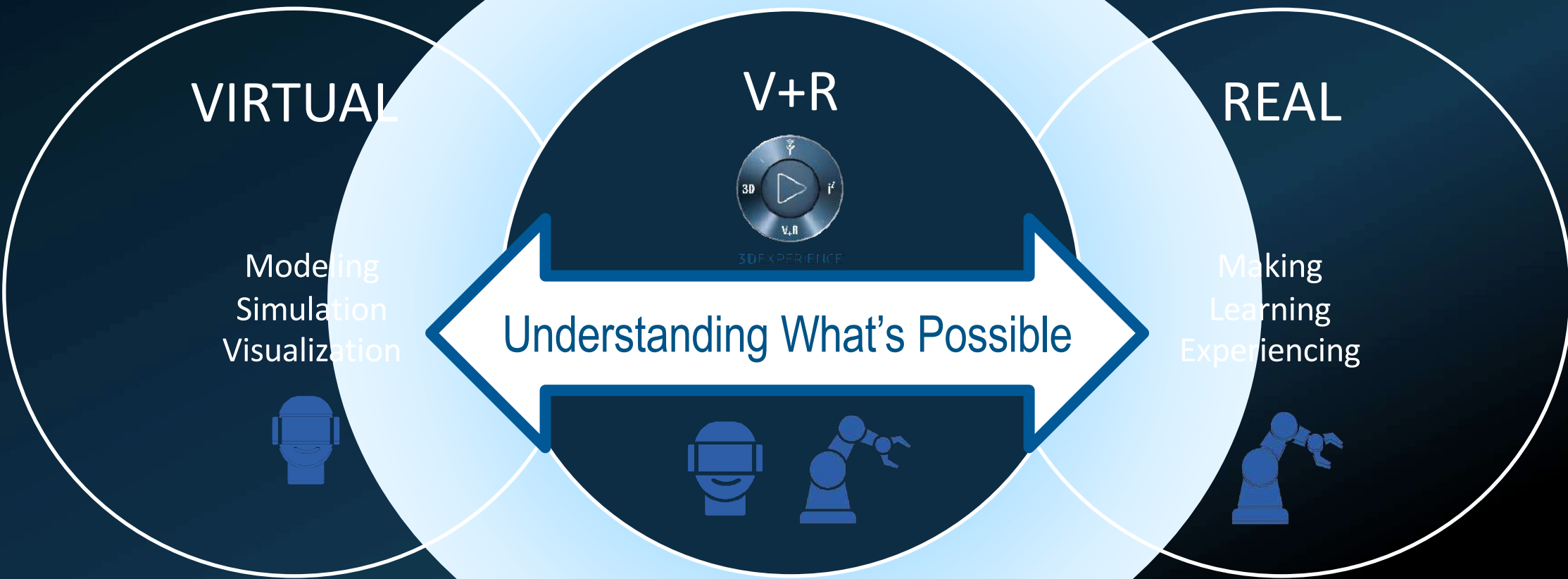
Innovation

Digitize Factory Floor



- ✓ Define and simulate tools, robots, machines
- ✓ Simulate factory floor with multiple attributes covering equipment, trajectory, robotics, ergonomics and commissioning
- ✓ Conduct feasibility and performance studies

3DEXPERIENCE Platform: Reducing the Distance Between V&R



IMAGINATIVE | IMMERSIVE | COLLABORATIVE | PREDICTIVE

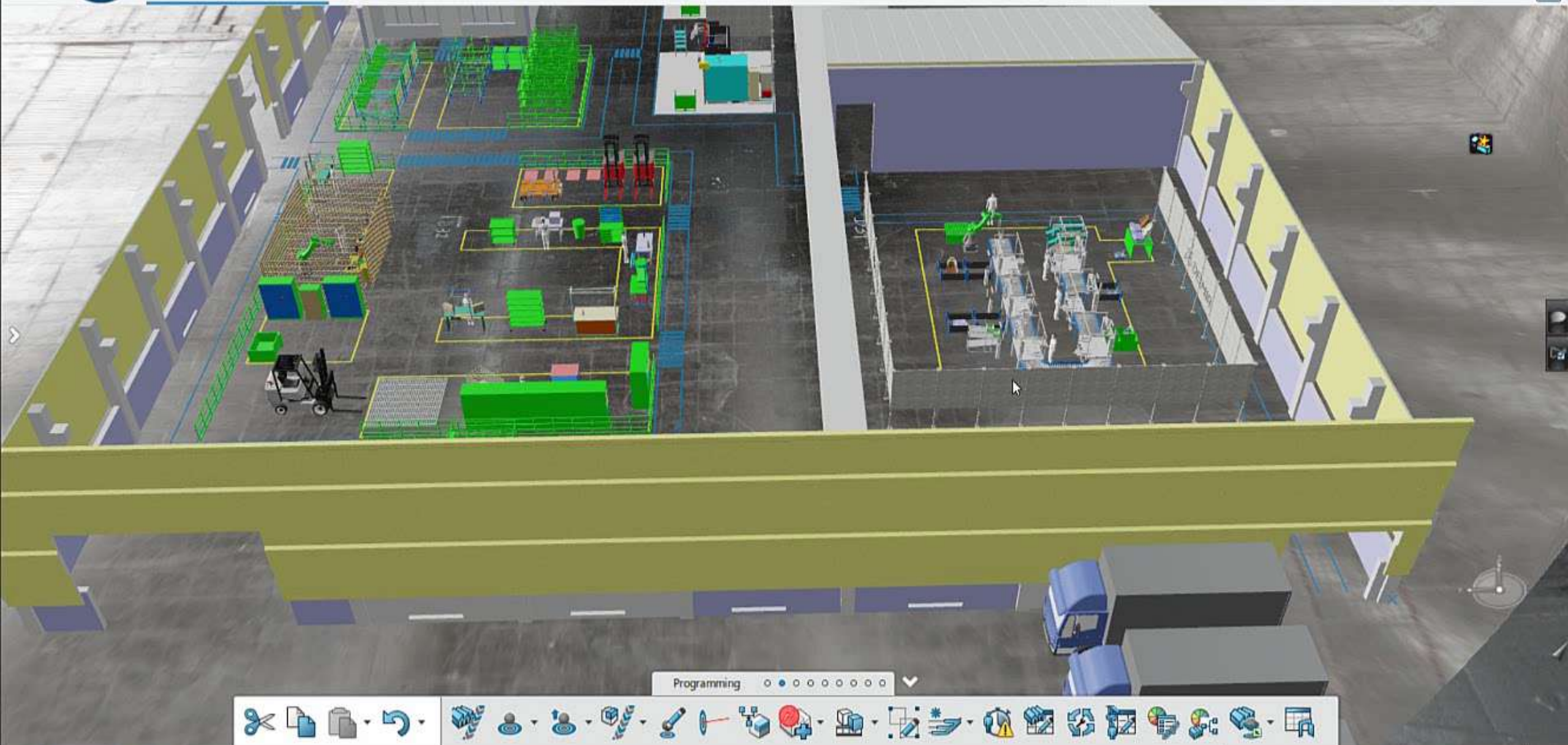
PEOPLE: Value Networks. Knowledge. Know How.
& TECHNOLOGIES: MBSE. AI. AR/VR. 3D Printing. IIoT.

Our Legacy: Partnering with leaders





Manuf_Simu_3DExpTwin A +



Programming

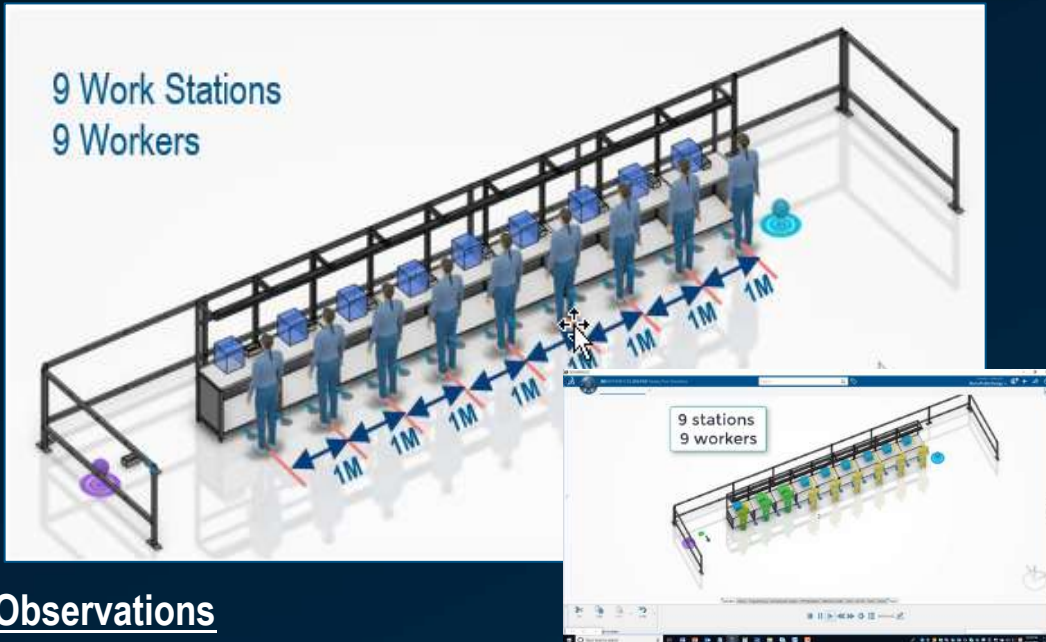


Social Distancing in Manufacturing

Start with 30% worker capacity

ASIS Model

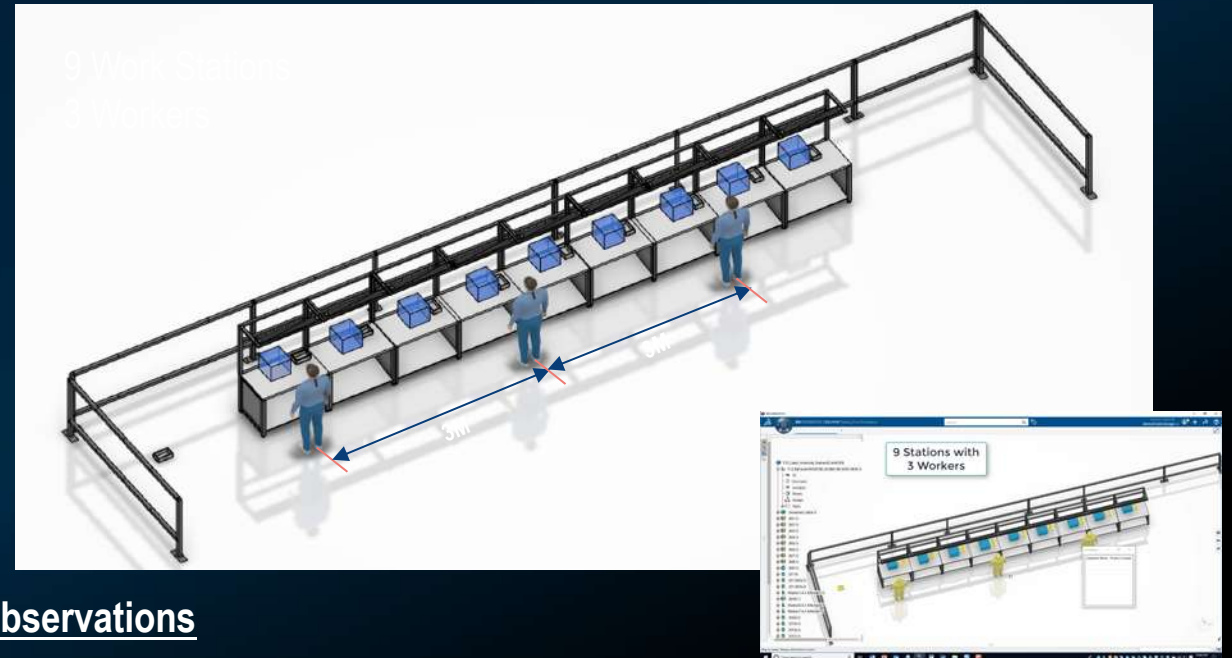
9 Work Stations
9 Workers



Observations

- Process time for each station is 10 Sec.
- Current Productivity is 2116 / shift

Model Maintaining Social distancing Norms



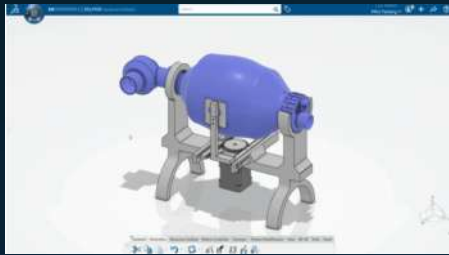
Observations

- Starting with 30% Worker Capacity at minimum 3m distance
- Productivity reduced to 761 job / shift

Pivoting to a New Product

Re-Purposing existing Production Line for Ventilator Manufacturing

1 :Ventilator Bill of Materials review



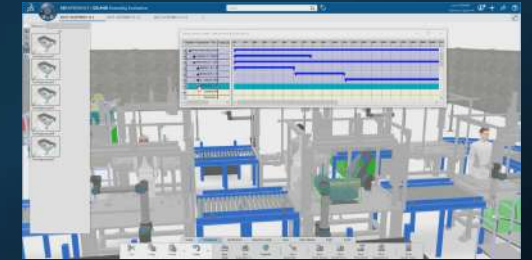
2: Plant & Equipment Bill of Materials validation



3:Plant and Equipment allocation & plant layout changes



4 :Product build up assembly evaluation



5: General & multipurpose tooling validation



7 :Robots/Cobots introduction for “Social Distance” requirements on plant



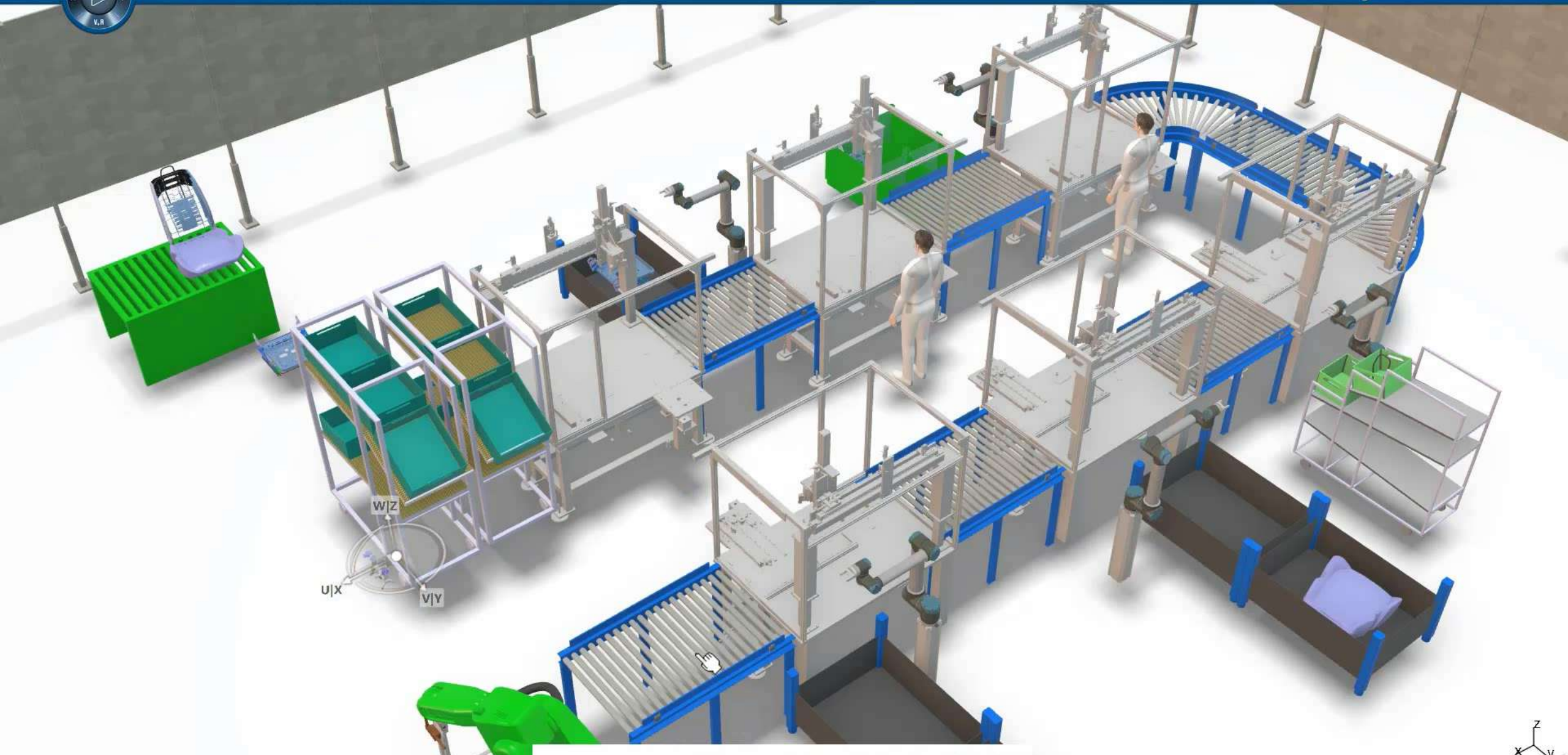
8: Safety , social distancing of workers



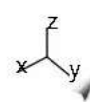
9: Optimization for throughputs with safety constraints



10 : Reason to believe – Invest right and validate with 3DEXPERIENCE Platform



W|Z
U|X
V|Y



Star Review the entire process in context

Touch



Call to Action

Virtual Twin Experience to address the “Next Normal”

- ▶ Lets collaborate to establish your operational **resiliency** by creating Virtual Twin Experiences
- ▶ Leverage DS On-Cloud solutions to accelerate Virtual Twin Experience adoption
- ▶ Re-think the “art of possible” so that you can quickly **pivot** your operation to critical emergency needs or take advantage of a new opportunities



- ▶ Ensure efficient layout plans to meet safe practices and worker health & safety principles
- ▶ Show the way forward by providing insight to making a manufacturing strategy successful



- ▶ Develop a Virtual Twin Experience project to deliver better customer service, faster NPI, and higher quality with continuous communication and experimentation.