

3DEXPERIENCE®

Industrialization of Construction

Lessons from High Volume Production

Construction Industry – How it compares to other industries?

1970's

**Operational Excellence
Lean Transformation**

2000's

Digital Transformation

2010's

...

CYCLE Time



B-737

- 82%
(FTE hrs/unit, 1972 - 1991)

18 days

2001

11 days

2005

- 55%

8 days

Today

TAKT Time



- 41%
(hrs/unit, 1979 - 2002)

3-5 min

2002

90 sec
(Toyota)

2012

- 75%

57.6 sec
(Toyota)

Today

On Time & Budget



1970's

**Engineering Standards
(Hardware)**

2000's

Investment Size ↑

**Field Excellence – Procedures
(Behaviors)**

Complexity ↑

DIGITAL

How do we digitally transform?

ROI ↓

Margin ↓

FTE – Full Time Equivalent **Cycle Time** – The complete time it takes to produce a single unit. **TAKT Time** – maximum amount of time in which a product needs to be produced in order to satisfy customer demand.



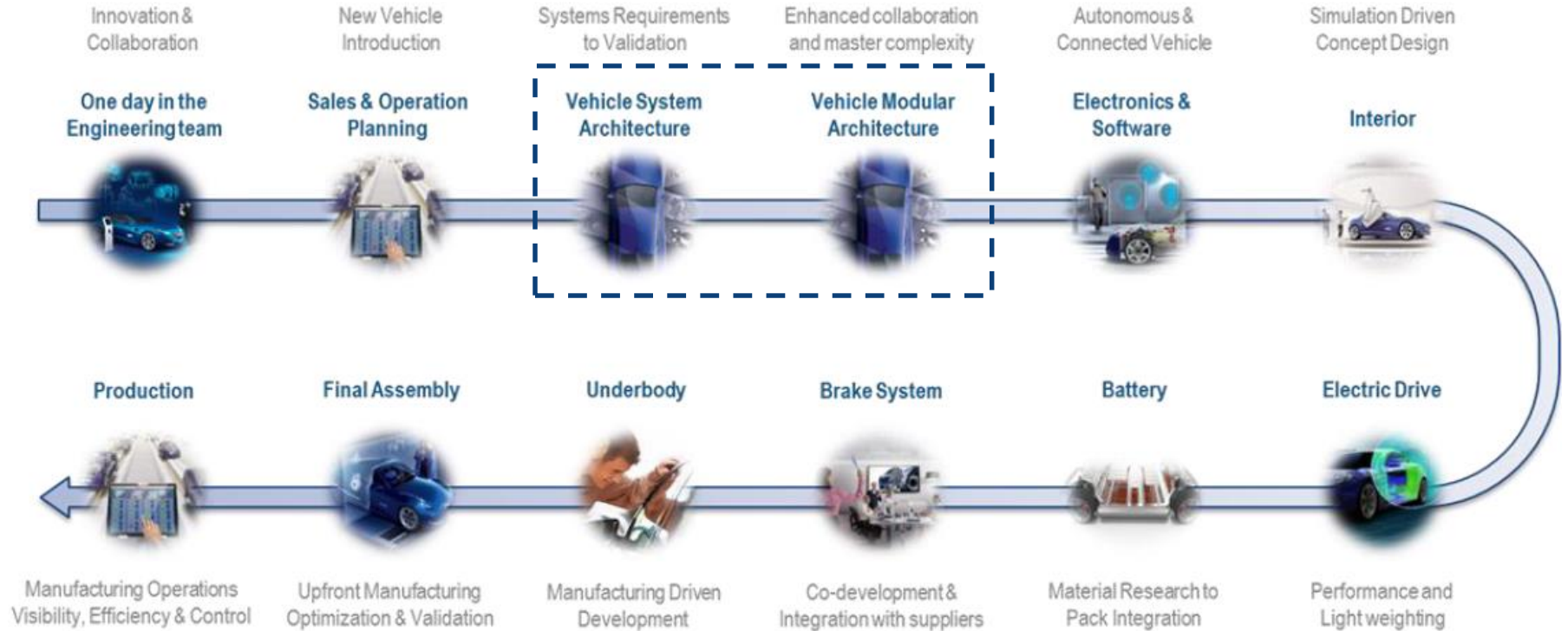
Transportation Industry Examples

Handling High Volume Production

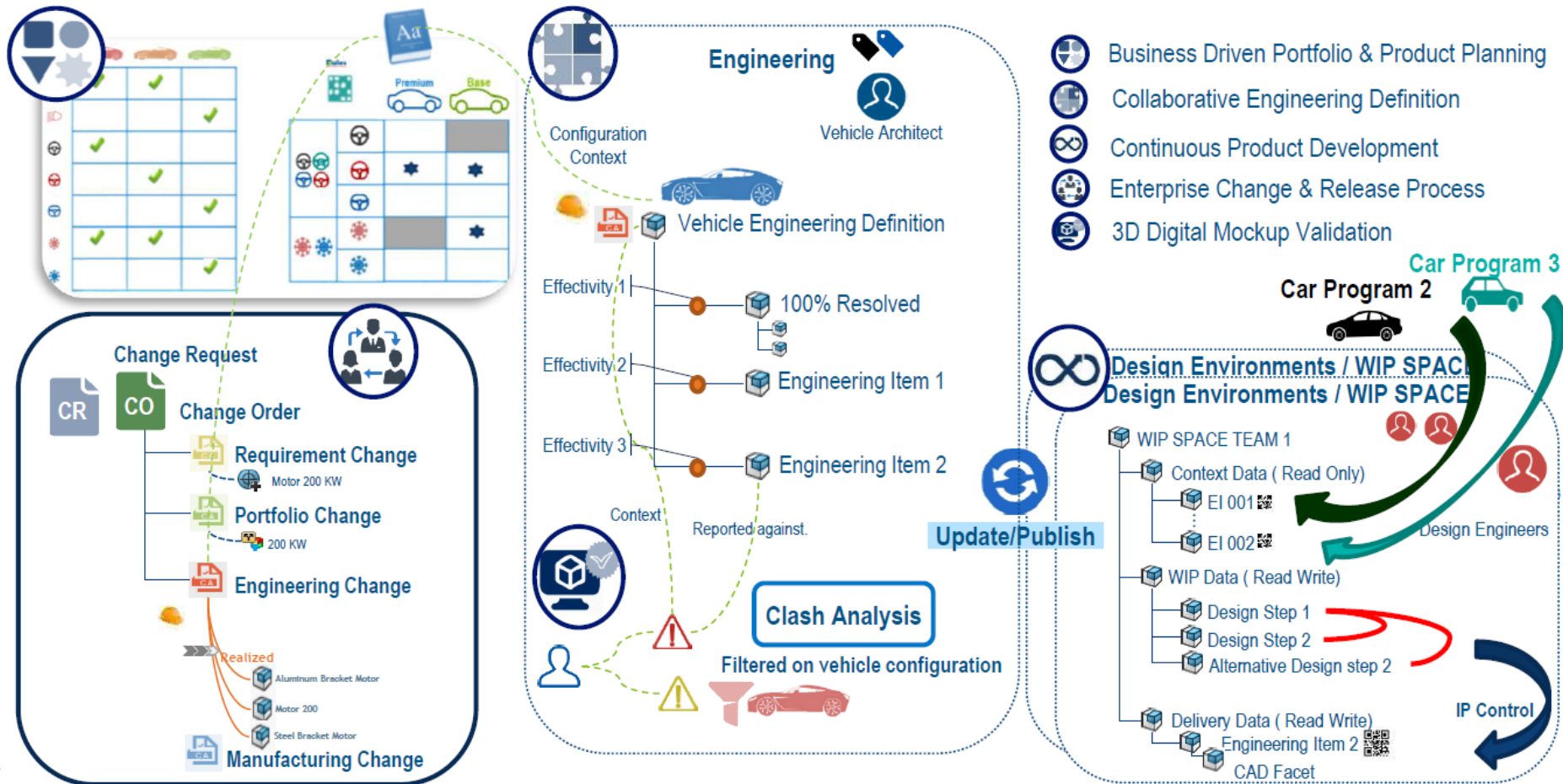
3DEXPERIENCE®

From Vehicle Concept to End Customer – An Automotive's Story

Summary

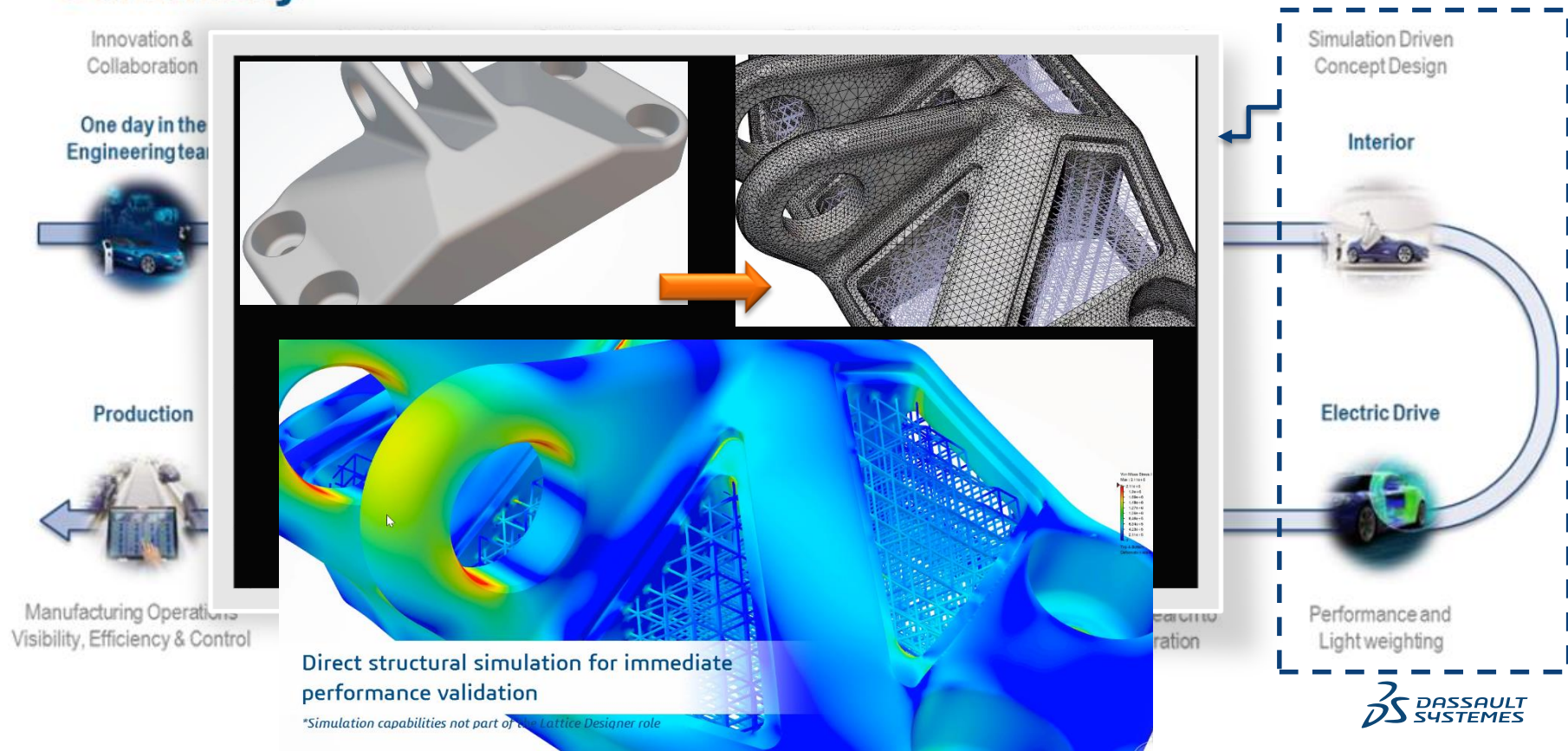


Multi Variant Design & Engineering Puzzle in Automotive



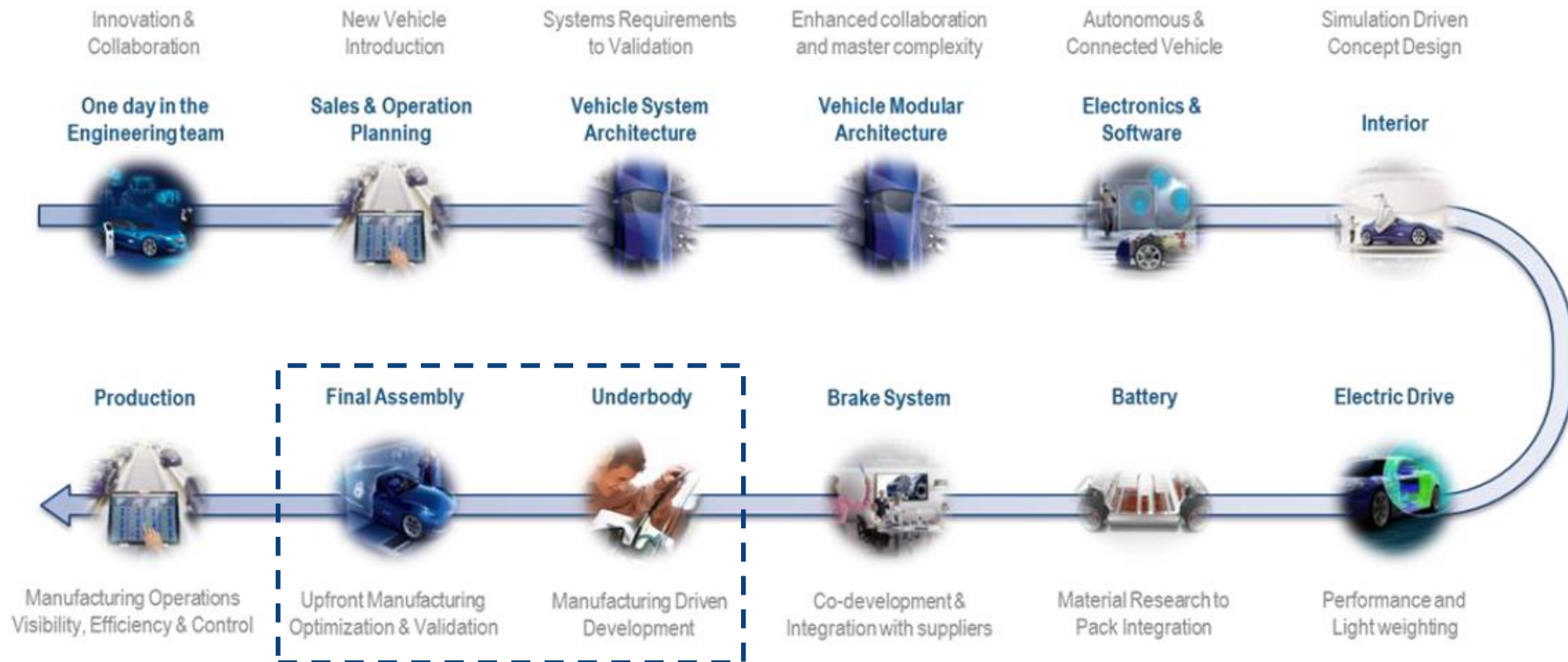
From Vehicle Concept to End Customer – Simulation studies

Summary



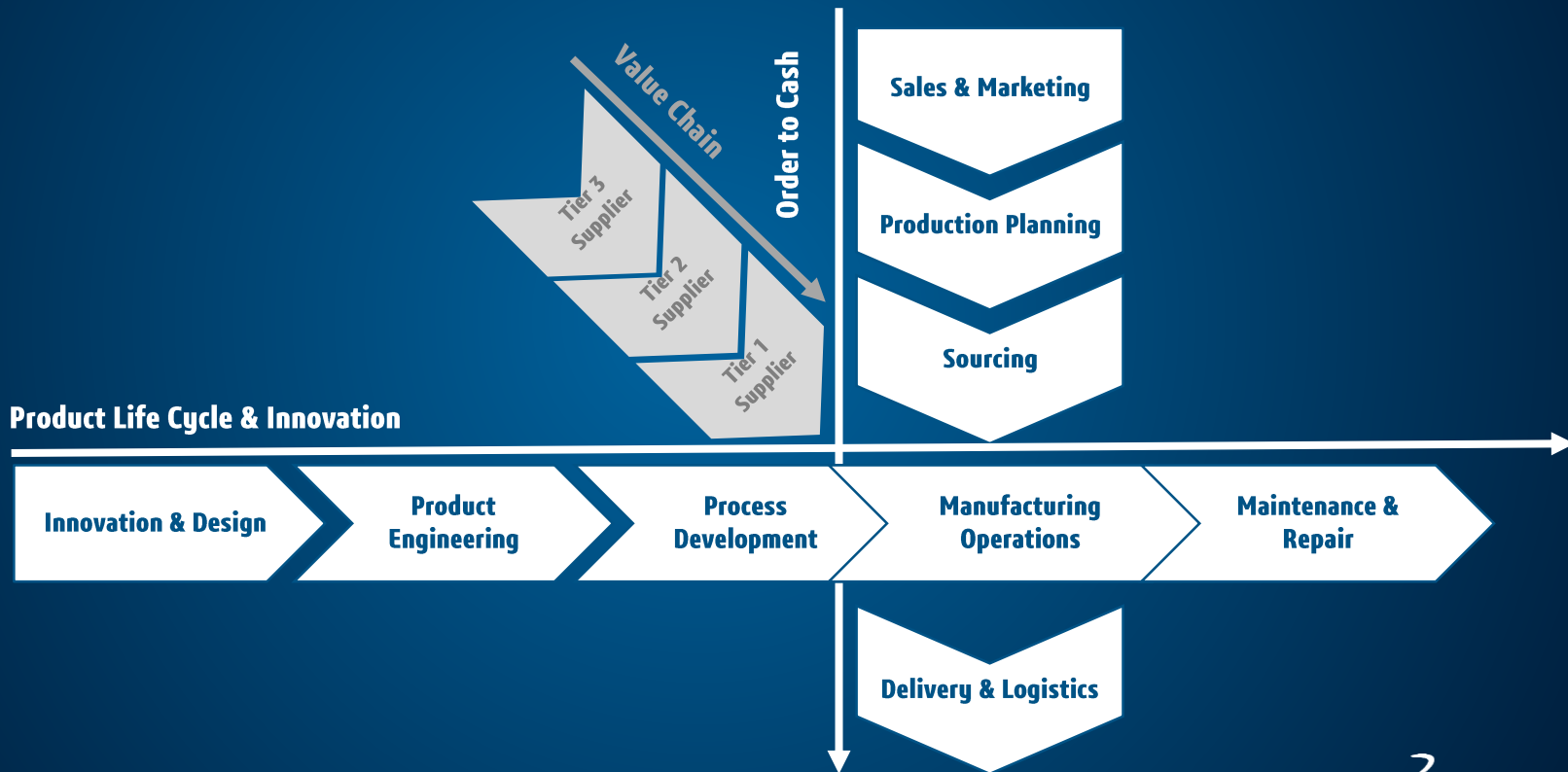
From Vehicle Concept to End Customer – An Automotive's Story

Summary



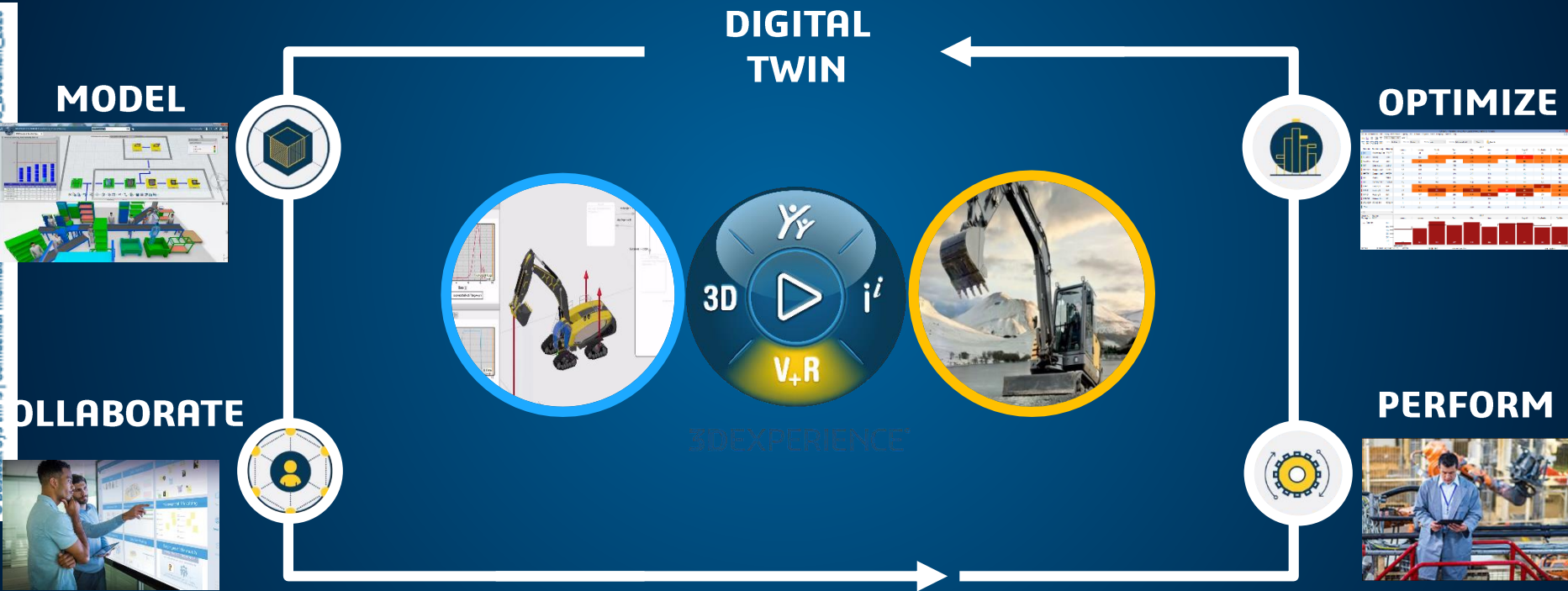
Digitally connect All axes of Production

Multi-faceted Production System On a single platform



Experience Continuity across the value chain

© Dassault Systèmes | Confidential Information | Internal Use Only | 3D Experience Document_2020



Resource → Workcell → Line → Plant → Enterprise → Value Network

Model your Industrial Operations (Example)



PROCESS
ENGINEERING



FABRICATION



ERGONOMICS

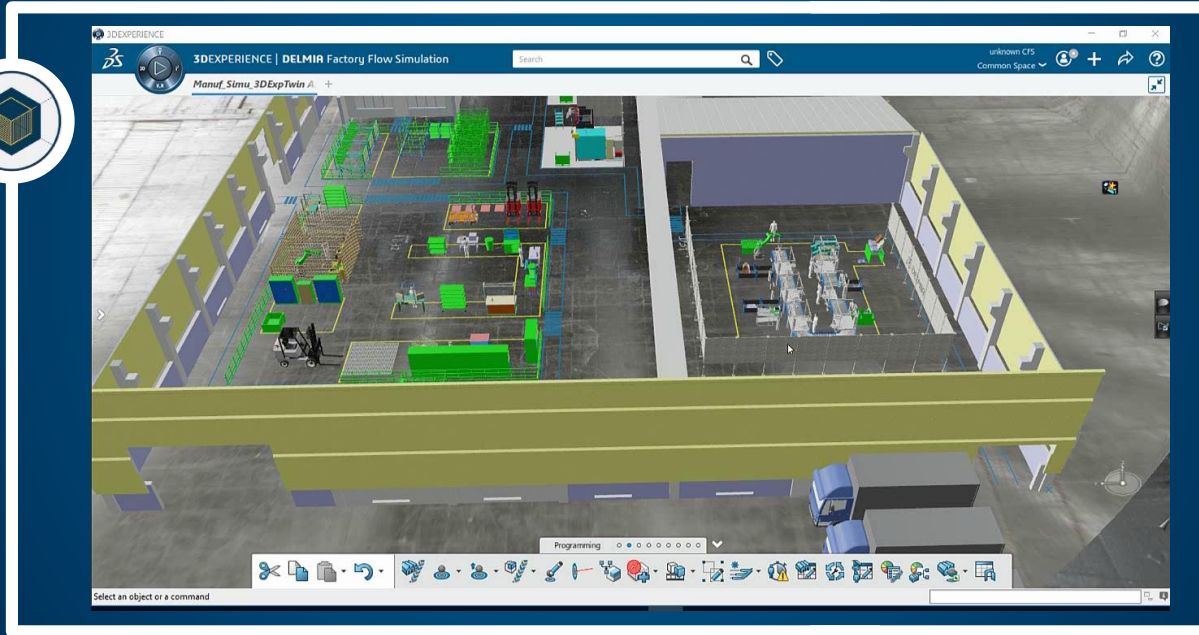


ROBOTICS



INDUSTRIAL

MODEL



High Volume Smart Production in Automotive



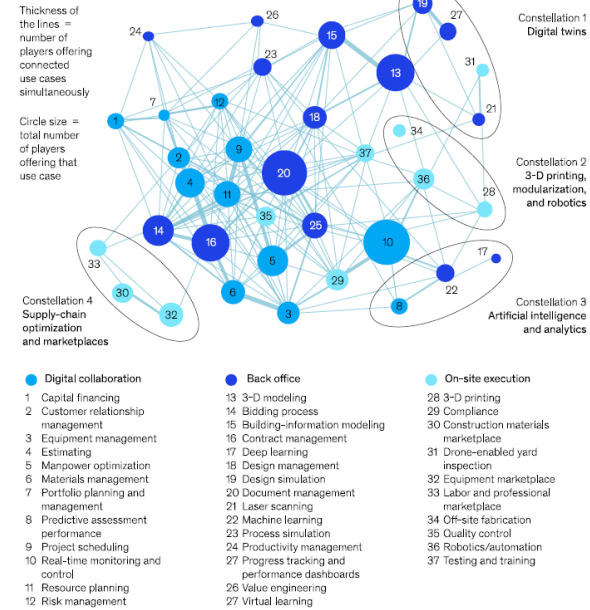
Platform Era in the Construction Industry

McKinsey report – Oct 30 2020

- It is time to solve the pre-existing productivity and data-visibility issues
- Further efficiencies to be unlocked with deeper integration of technology solutions
 - ▷ Leverage data from connected teams and equipment
- A connected platform is where the emerging technologies will be built

The largest construction industry clusters of use cases include 3-D printing, modularization, and robotics.

Construction technology industry map¹



¹ All project life-cycle phases ~2,400 firms. Mapping during 2018 was focused on the full project life cycle vs construction phase in 2017. Source: Pitchbook; Precip; McKinsey analysis

To recap...

- ▶ Embrace Digital Transformation
 - ▶ *Use 3D, VR, AR as aids*
- ▶ Think Smart Construction:
 - ▶ Modularity
 - ▶ Autonomy thru Robotics
 - ▶ ...
- ▶ Consider a Platform to carry out your Digital Transformation

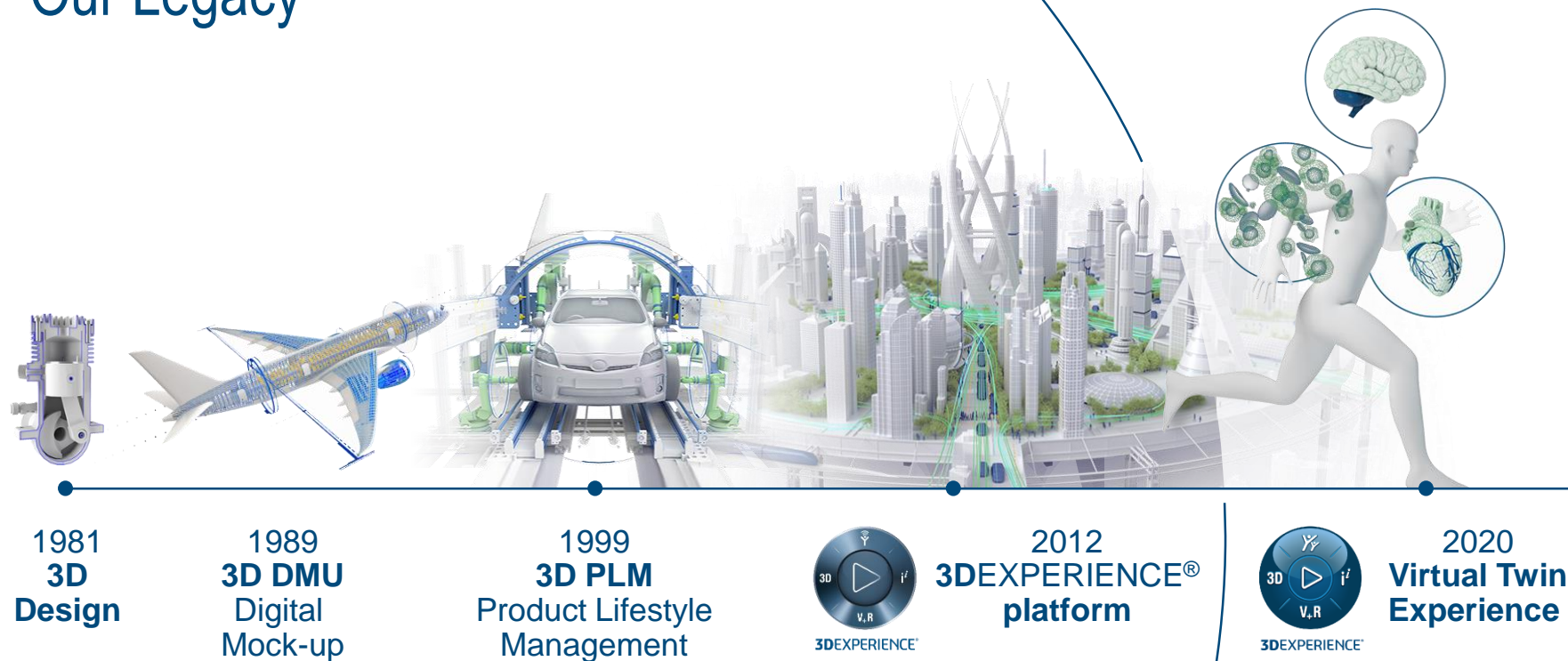


Muthu Sivanantham
Energy Industry
Solutions Leader

Muthu.Sivanantham@3ds.com

[linkedin.com/in/muthusivanantham/](https://www.linkedin.com/in/muthusivanantham/)

Our Legacy



Our Clients: Industry leaders at the heart of innovation

	Transportation & Mobility	            
	Aerospace & Defense	           
	Marine & Offshore	       
	Industrial Equipment	          
	High Tech	          
	Home & Lifestyle	              
	Consumer Packaged Goods – Retail	       
	Life Sciences	         
	Energy & Materials	         
	Construction, Cities & Territories	         
	Business Services	   

