

3DEXPERIENCE®

Transportation & Mobility Supplier segment

Q1-2021

DASSAULT SYSTEMES



The 3DEXPERIENCE® Company

- Solutions for Innovation & Business Transformation from Product to Consumer Experience
- 20,000 passionate people
- 4 Billion € revenue 2019, 88% Software

... and a true passion for the Transportation & Mobility sector



Partnering with innovation leaders in 11 industries



Investing for the Future ... with benefits for Automotive :

- Materials → Battery
- Cyber Physical Systems → Autonomous Driving
- Robots / Cobots → Generative Design
- Smart Cities → Mobility Services
- Value Chain → Collaborative Hub
- Internet of Experience → Industry 4.0

Growing from 3D design to 3DEXPERIENCE

▶ Partnering with the transportation industry for > 35 years



1982: First Automotive customers



2000: PLM & Digital Manufacturing



2014: Innovation platform

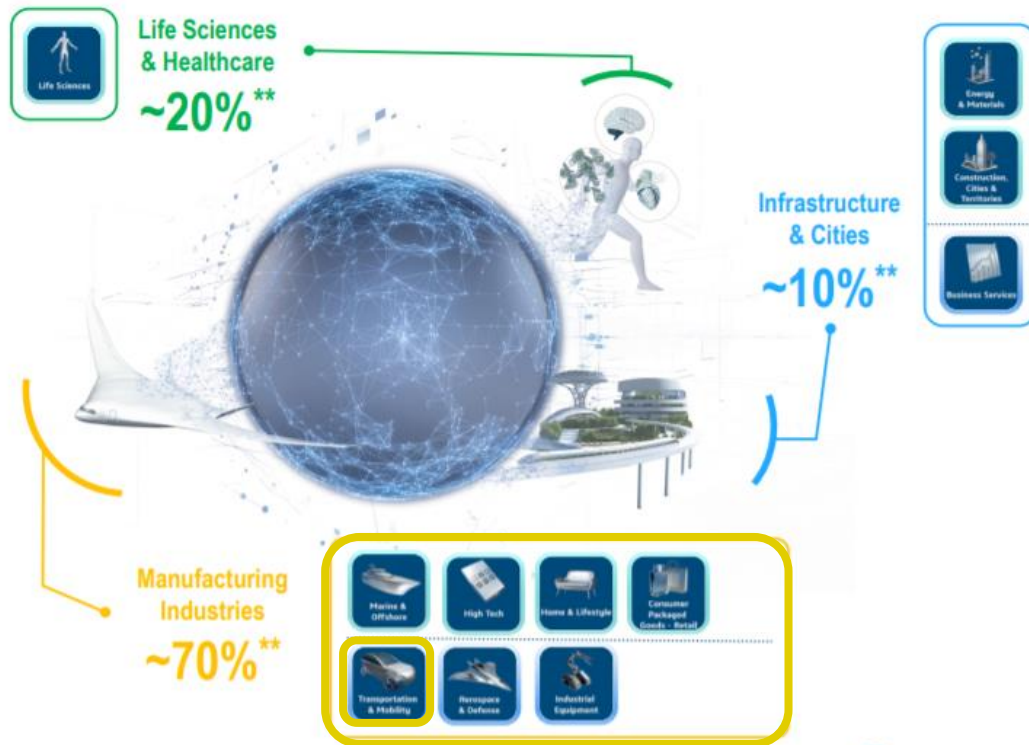


Dassault Systèmes Footprint

BEFORE



STARTING FROM 2020



* Approximate % of non-IFRS 2019 software revenue on a like-for-like basis (as if Meditata were consolidated in 2019 3DS figures)

** Approximate % of non-IFRS 2019 total revenue on a like-for-like basis (as if Meditata were consolidated in 2019 3DS figures)

To support a full digitalization strategy

New Experience Development (NED)

New Product Development (NPD)

Traditional development

Virtual product planning



Consumer in Business



Consumer to Business

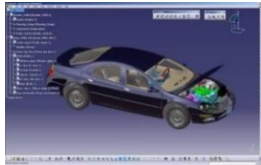


Technology centric planning

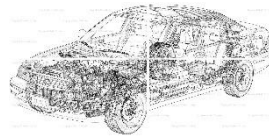
Virtual development



12 to 18 months

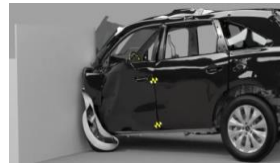


3 to 4 years



5 to 6 years

Virtual validation



<10 physical prototypes



100 physical prototypes



>700 physical prototypes

Virtual production



Smart production



Automated production



Mass manual production

Virtual sales



Online - 0 shop



Showroom - 0 product

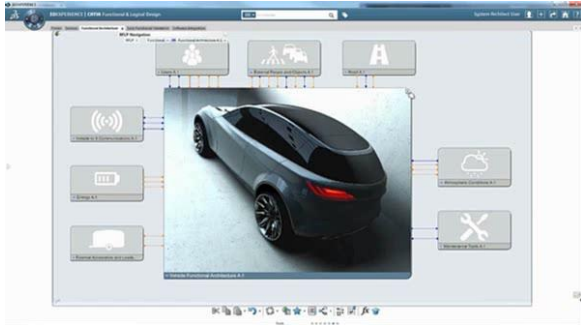


Traditional 4S shop

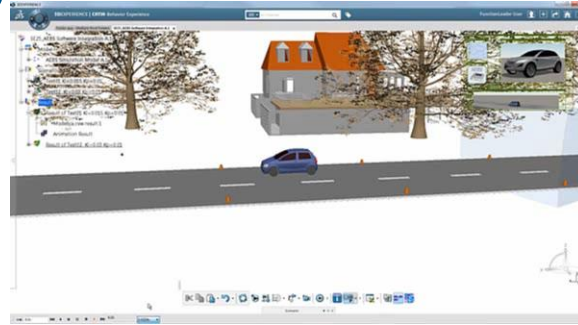
Providing Digital Continuity to Design, Validate & Experience



Systems Design



Virtual Validation

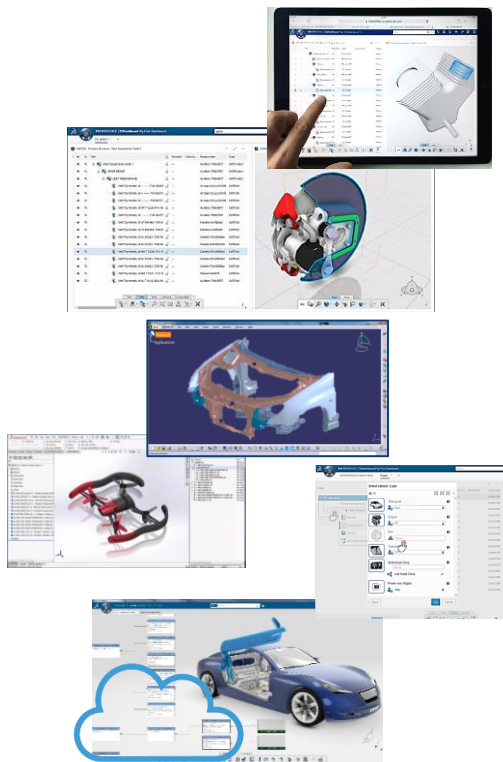


Usage Experience



3D For ALL

3D is a universal language. 3DEXPERIENCE provides access to 3D without needing specialist computers or skills.



Accessible on Smartphone

Accessible on Tablet

Accessible in Browser



Accessible on Workstation

Our Clients: Industry leaders and innovators

Transportation & Mobility

Aerospace & Defense

Marine & Offshore

Industrial Equipment

High-Tech

Consumer Goods - Retail

Consumer Packaged Goods - Retail

Life Sciences

Energy, Process & Utilities

Architecture, Engineering & Construction

Financial & Business Services

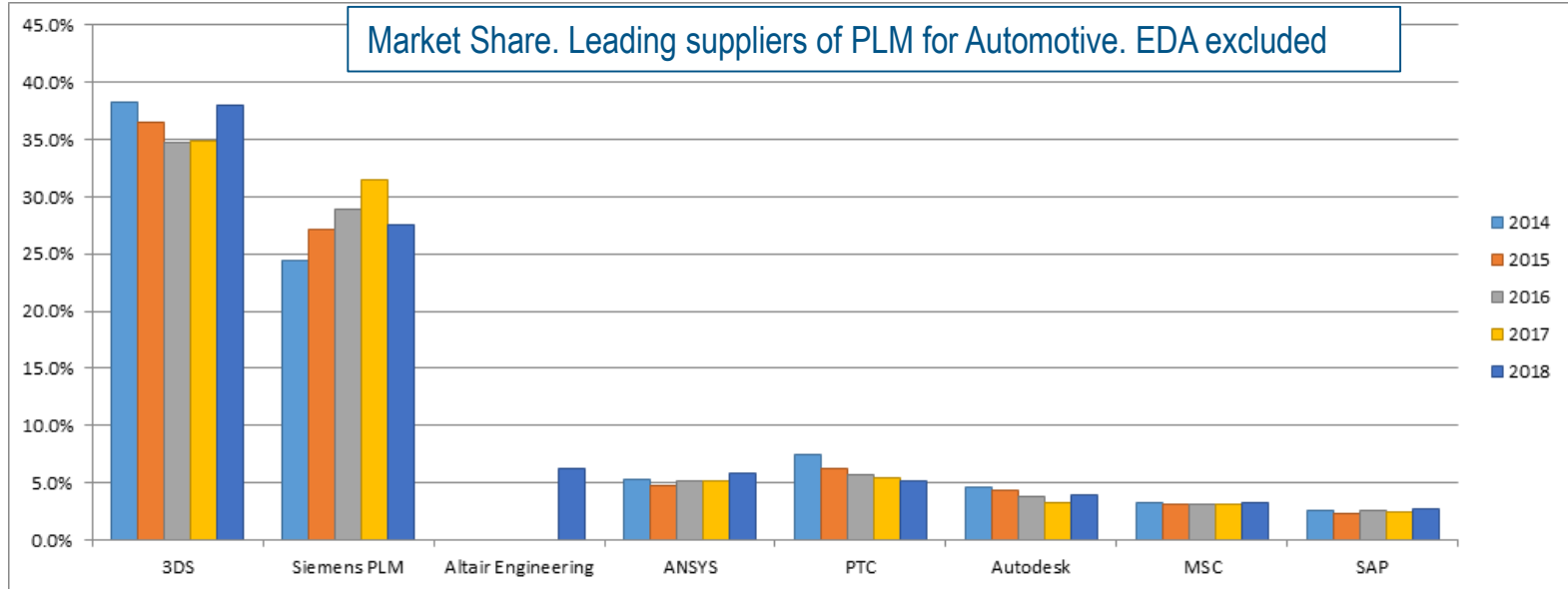
Natural Resources

Logos include: TOYOTA, Ford, HONDA, VW, KELL, brose, Valeo, FAW, Great Wall, faurecia, NIO, 蔚来, PSA, OPEL, RENAULT, HYUNDAI, MITSUBISHI MOTORS, SAIC, DONGFENG, MICHELIN, ASHOK LEYLAND, BOEING, DASSAULT, AIRBUS GROUP, SAFRAN, Bell Helicopter, NORTHROP GRUMMAN, LOCKHEED MARTIN, MBDA, KLM, DELTAMARIN, MEYER WERFT, ISONAVAL S.L., DSME, ORACLE USA, DOOSAN, BOSCH, MWV, BOBST GROUP, ABB, SANYO MACHINE WORKS, LTD., CLHBS, Valmet, VOLVO, SONY, ERICSSON, SAMSUNG, Google, Apple, Nikon, Panasonic, LG, PEGATRON, hp, Hisense, GUESS, UNITED COLORS OF BENETTON, GAP, PATEK PHILIPPE GENEVE, s.Oliver, Cartier, ROLEX, LUXOTTICA, adidas, P&G, Barilla, Coca-Cola, amcor, Tetra Pak, DANONE, L'ORÉAL, OCCITANE, OLYMPUS, Medtronic, GE Healthcare, SANOFI, J&J, AlkzoNobel, Bayer, Pfizer, stryker, BASF, ALSTOM, SAMSUNG HEAVY INDUSTRIES, GE Power & Water, Dow, ExxonMobil, SIMEI, SAINT-GOBAIN, sh p, SKANSKA, ARUP, BNP PARIBAS, LA POSTE, pwc, IBM, consip, DHL EXPRESS, RioTinto, AEM, Cerrejón, Technip, LAFARGE, Dundee, DE BEERS, AngloAmerican, AGNICO EAGLE.

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3DS is leading in Automotive PLM

See CIA post.



Source: ARC Advisory Group PLM Global Market Study. Oct 2019

We include cutting edge technologies to serve your innovation purpose

Latest acquisitions are targeting specifically the Automotive sector :

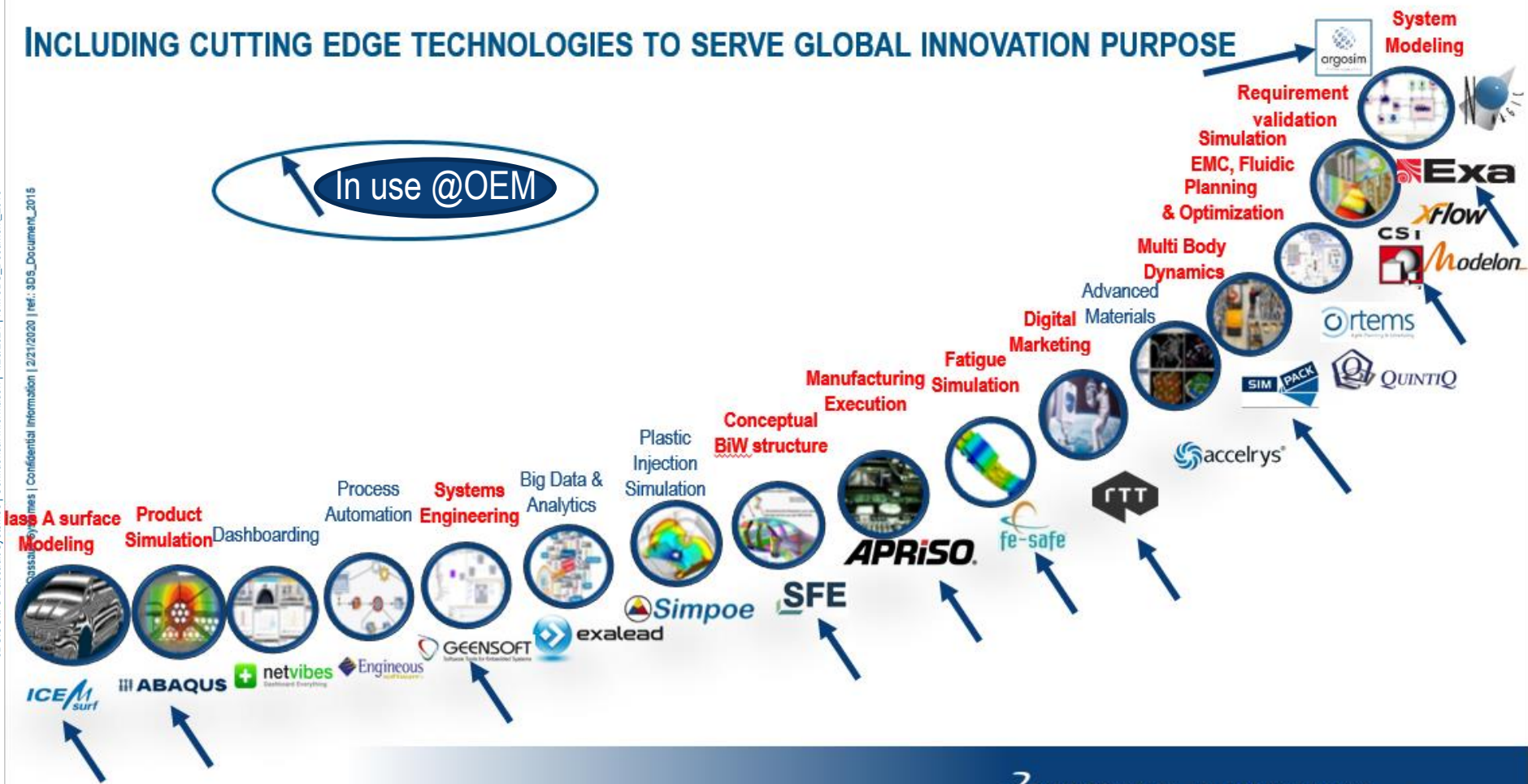
- 1) Electro Magnetics (CST, Opera)
- 2) CFD, Aerodynamics : xFlow & EXA
- 3) Model Based System Eng. : No Magic
- 4) Requirement validation: Stimulus

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INCLUDING CUTTING EDGE TECHNOLOGIES TO SERVE GLOBAL INNOVATION PURPOSE

In use @OEM

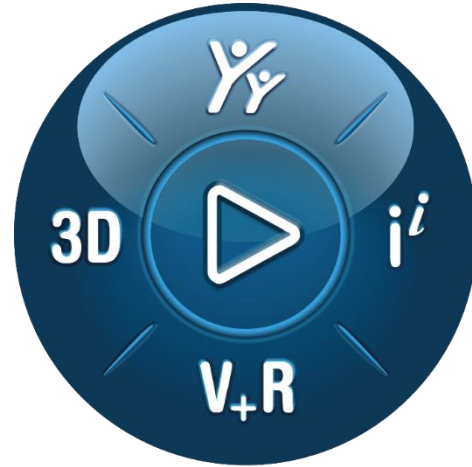


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 Dassault Systèmes | Confidential Information | 2/21/2020 | ref.: 3DS_Document_2015



WHAT IS THE 3DEXPERIENCE PLATFORM?

It's a **Business Experience Platform**
available on premise and in public
or private cloud



To enable our clients to create
realistic /appealing **Experiences**
for their ultimate customers
or consumers

3DEXPERIENCE®

3DEXPERIENCE as enabler

For an Agile R&D & Manufacturing with a lean approach enabled by 3DEXPERIENCE

MUDA elimination with the 3DEXPERIENCE®

Waiting



- Issue Management
- Change Management
- Notifications
- Task Manager
- SWYIM
- Assignee & roles designation

Defects



- Issue Management
- Apriso – plant production track
- Simulation

Transport/Transfers



- Some incompatibilities detected (but not all)
- Overmailing avoided
- System Traceability
- Project Manager

Overprocessing



- Assignee & roles designation
- OnePart reduce
- Libraries/Catalogs
- Change Management
- Real-time sync. of datas
- Requirement Management



Lean Six Sigma aims to...

Improve the effectiveness and efficiency of processes, products and services by...



Identify and solve problems



Reduce variations



Be data-driven

Sourcing management will be strategic , cost optimization, scheduling etc.../...

*Muda is a Japanese word meaning "futility; uselessness; idleness; superfluity; waste; wastage; wastefulness", and is a key concept in the Toyota Production System as one of the three types of variation.

3DEXPERIENCE Platform – Values & Foundations



**Unified user experience
Web Client**



data-driven



Business Dashboarding



model-based



Deliver Experience



**Shared Services
& Controlled TCO**



Platform Openness



Designed for Cloud



3DEXPERIENCE®

Trends of Automotive Market
are driving our solution
offering

Transportation & Mobility | **INDUSTRY BUSINESS DRIVERS**

Electric, Connected and Autonomous Vehicles



New Customer Experience



Quality, Costs, Regulations



Mass Production to Mass Customization



The entire automotive industry is in a paradigm shift



PLANT CLOSURE
**Covid-19 Is Bad for the Auto Industry
—and Even Worse for EVs**

ERIC ADAMS



**China turns to online car sales
as virus spreads**

As consumers stay at home over coronavirus fears, carmakers are making it easier to buy online.

27 February 2020 | Business

faurecia

03.11.2019 <

SUSTAINABLE MOBILITY, STRATEGY

**Faurecia and Michelin to create a global leader
in hydrogen mobility**



M

**Digitalisation of the Automotive
Industry — Mercedes Benz Industrie
4.0**

FINANCIAL TIMES

**Decline of motor industry drives global
economic slowdown**

Car production shrank for first time in decade, accounting for a quarter of GDP fall

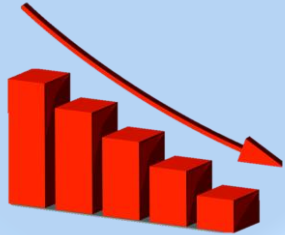
THE WALL STREET JOURNAL.
**Auto-Parts Suppliers Teeter as Car
Production Halts**

Shutdowns ripple through supply chain, prompting some to consider layoffs, delayed payments and adjustments to loan terms

DASSAULT SYSTEMES | The **3DEXPERIENCE**® Company

It is a challenging time for the industry

A Slowing Market



Companies
are reacting

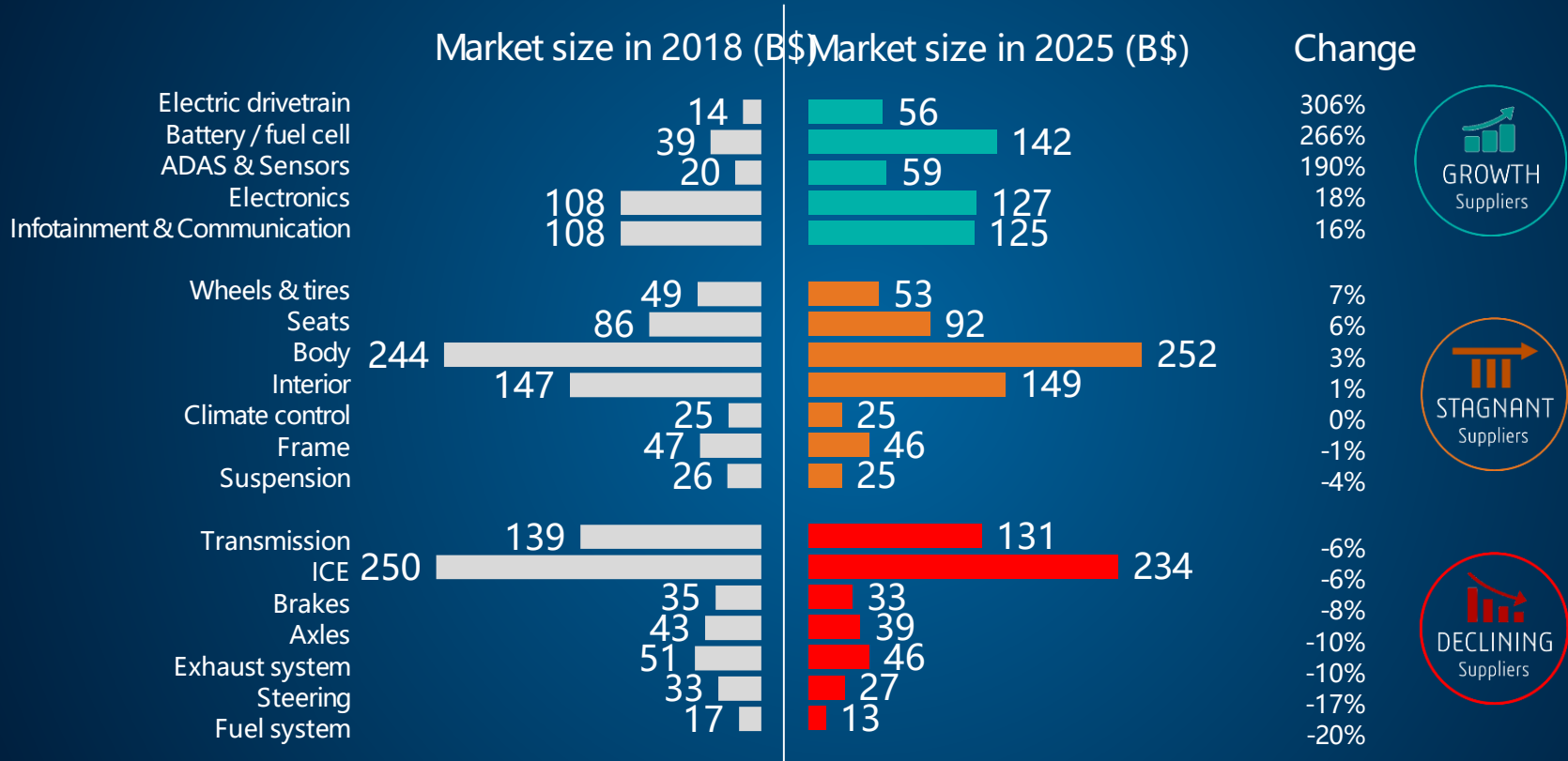
Digitalization



Technology
Innovation



The impact is being felt by traditional suppliers



Source: 2019 Global Automotive Supplier Study - Deloitte



**EXPAN
D**

Develop cutting-edge technologies to maintain leadership

Shift investment and focus resources on high-return product areas

Invest in developing markets with less technological investment

**DEFEN
D**

Acquire competitors to maintain growth

Acquire or merge with peers to scale benefits and maximize cash flow

Harvest remaining value by consolidating & leveraging scale

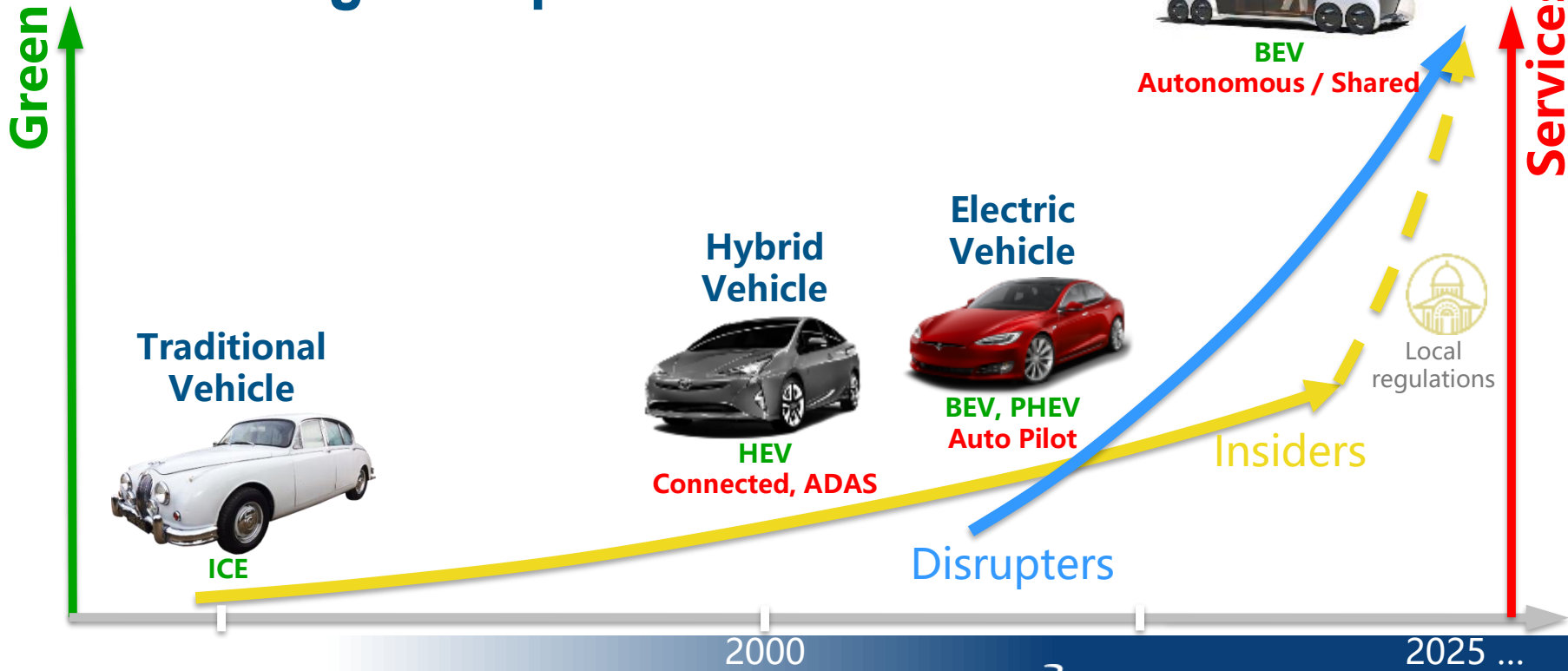
PIVOT

Spin off growth segment from larger parent

Align on a long-term strategy & remove product that do not contribute

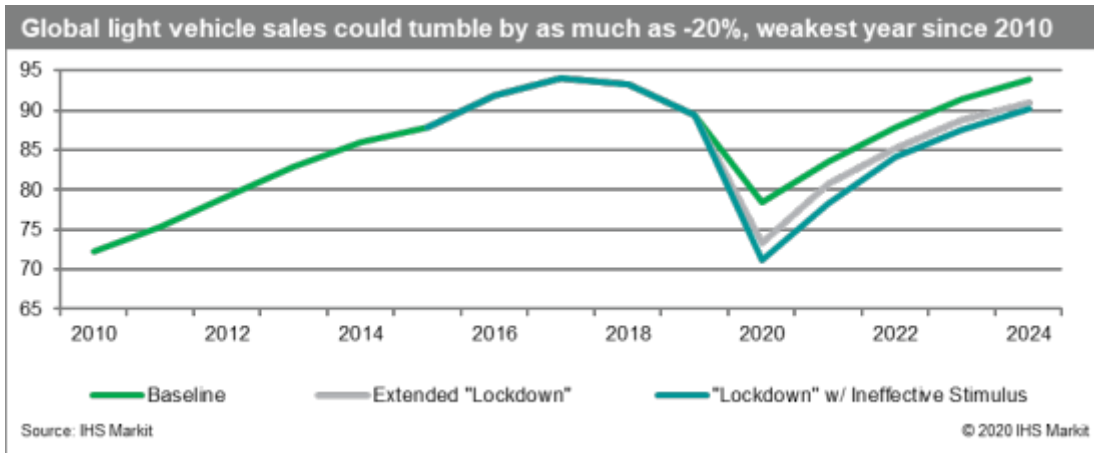
Sell businesses in difficulty to competitor to revise strategy

The world of mobility is being disrupted...



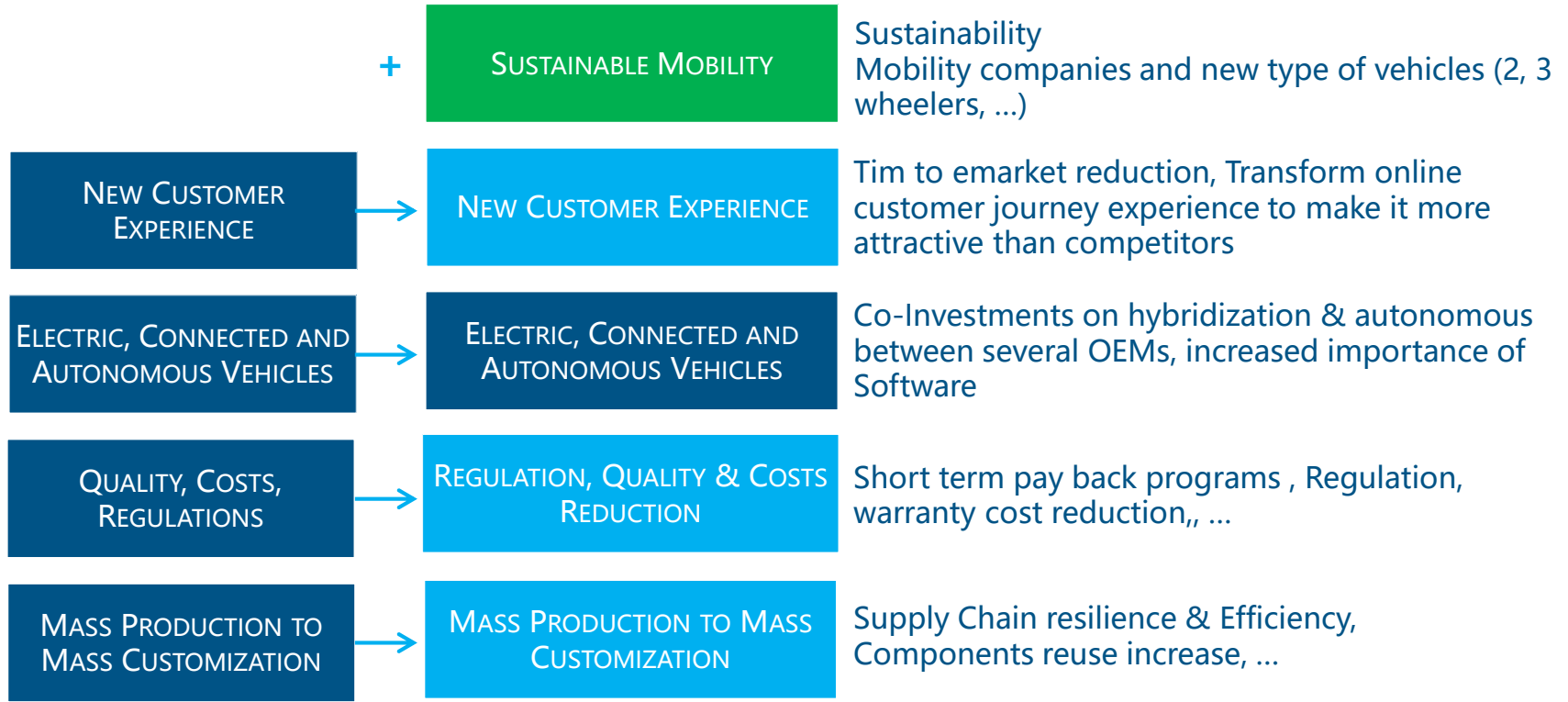
Transportation & Mobility Industry Context :A Disruption Period

- Sudden stop of customer purchases impacts global vehicles production
- Today's challenges represent a real opportunity to reshape the industry's mindset and retool processes.



- It is not only the time to build the mobility industry of tomorrow, but also to focus on programs with short term payback.
- Dassault Systèmes' 3DEXPERIENCE platform allows OEMs to reinvent development of cars, improve productivity and adapt to new customer demands.

Transportation & Mobility Business Drivers



2019

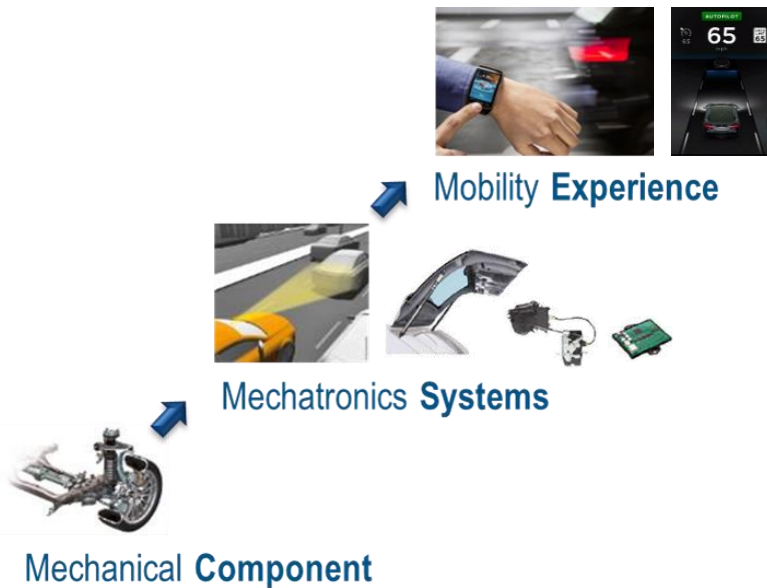
2020+

Fast-paced Innovation

80% of automotive innovation driven by **Electronics & Software**



Shift from Automotive Product to **Mobility Experience Business**



Electro-mobility

Autonomous Driving

Connected Experience

Mobility as a Service

Meeting at the restaurant at 12:00
Link & Go will pick you up at 11:35

3DEXPERIENCE | Business Metroville

PARKING METER N° 41
Available parking spaces: 3

Transaction Zones, Transaction Types, Duration

Automotive Market transformation

rent_2015

Move out of Diesel

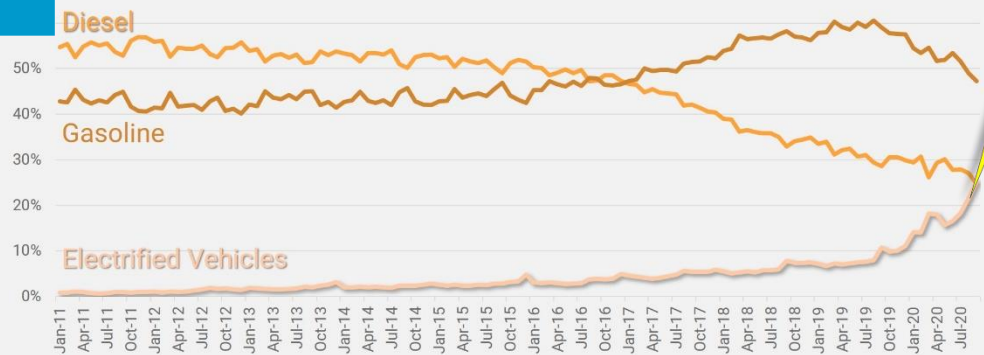
Move In

Move to Electric.

Move Out



Monthly Car registrations by fuel type
As % of total. 2011 - 2020 Europe-27



Automotive Market shift

- Move from Mechanical to SW.
- Need to streamline and be more efficient

A double change is needed:

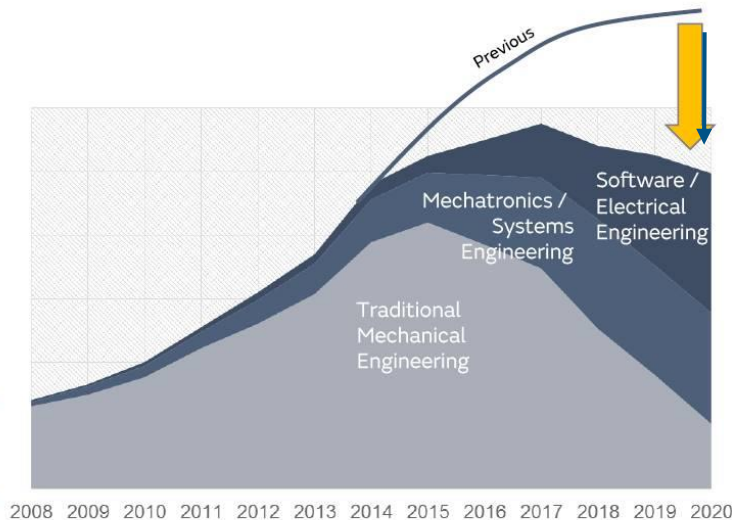
- Build the future
- Optimize current operations

Delivering our promise to drive efficiency in mechanical areas, and grow mechatronics and software capability



5

Engineering Resource Heads and ED&T



- Carefully selected to maintain and grow skills

- Obsessed with streamlining traditional mechanical engineering, optimising prototyping and simulation

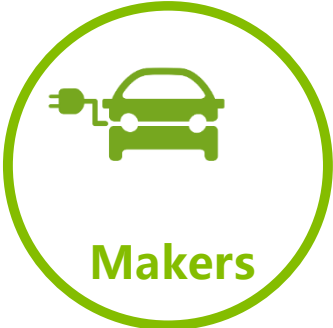
- Driving efficiency to self fund and make headroom for growth in software and mechatronics skills

JLR communication to Analysts

We are transforming our efficiency to reduce cost and improve product quality

ENCE[®] Company

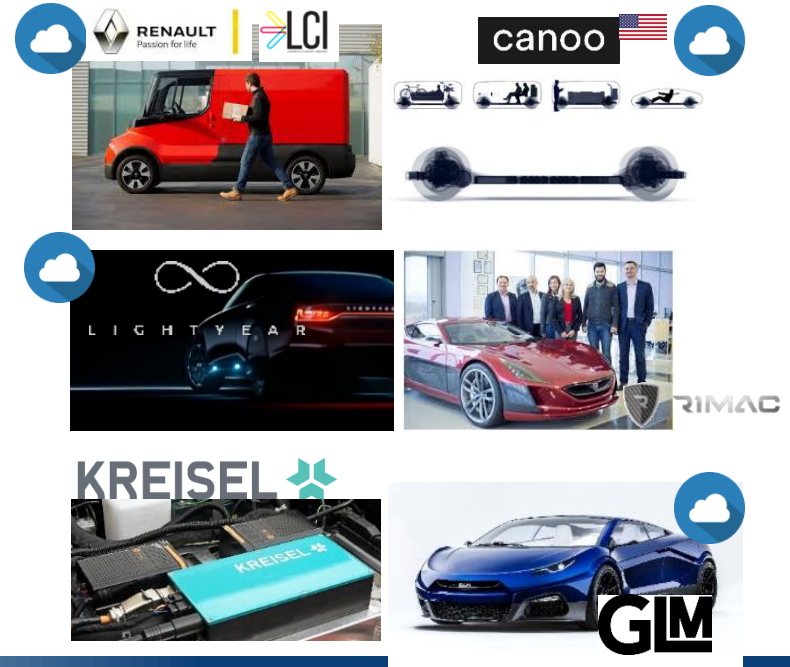
New mobility players shaking the market



Top 10 WW Electric vehicle startups

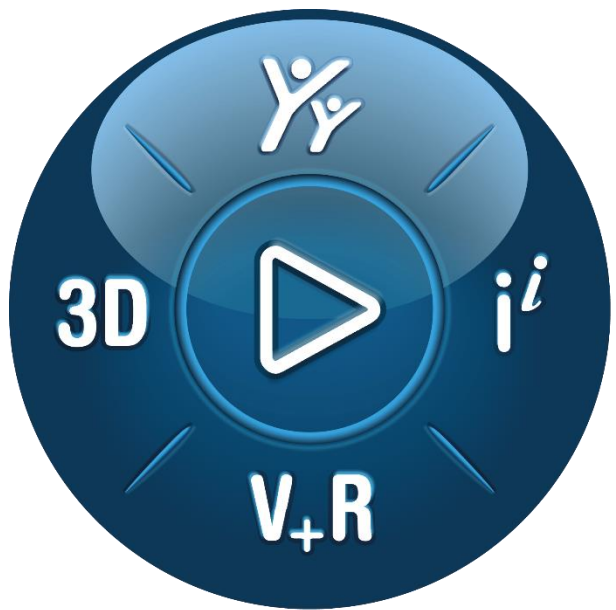
#	Name	Geo	Fundings	Solutions
1	 TESLA		\$16B	
2	 RIVIAN AUTOMOTIVE		\$5.6B	
3	 NIO		\$3.5B	
4	 WELTMEISTER		\$2.7B	CATIA V5
5	 NIKOLA NEXT-GEN LOGISTICS		\$2.5B	 
6	 X P E N G		\$2.2B	
7	 Faraday Future		\$2B	
8	 LUCID		\$1.1B	
9	 PROTERRA		\$681.8M	
10	 OLA		\$306.3M	

+ selection of others key  customers



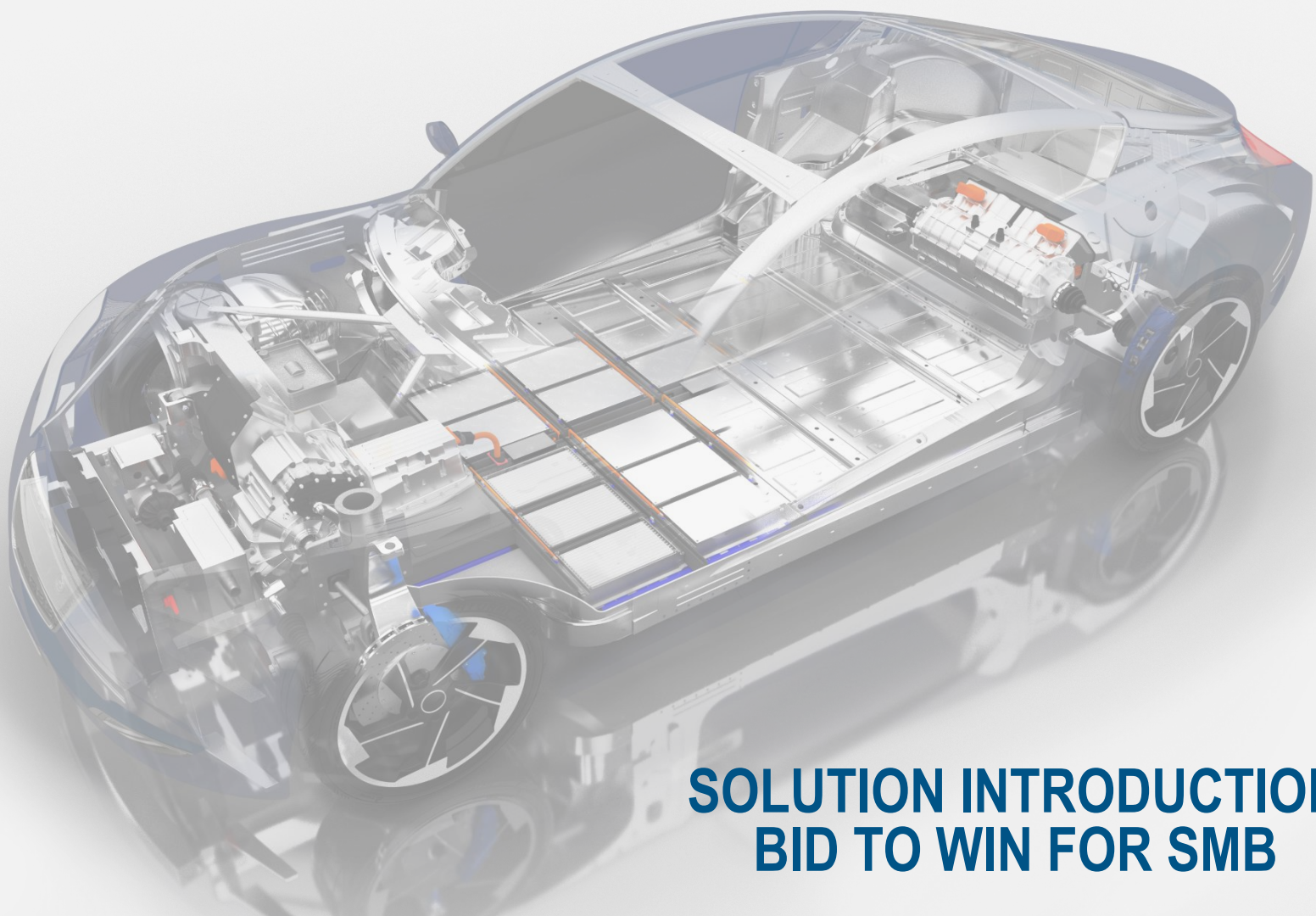
Source (Nov 14th, 2020): <https://www.energystartups.org/top/electric-cars/>





3DEXPERIENCE®

A comprehensive set of
solutions for suppliers



**SOLUTION INTRODUCTION
BID TO WIN FOR SMB**

From Product Engineering to Experience Engineering & Manufacturing

Lean Production

Global Validation for Proven performance



PLANNING



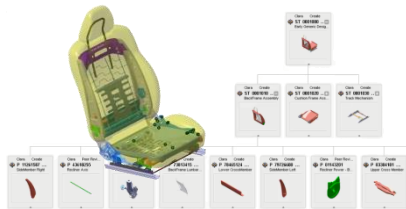
RUN



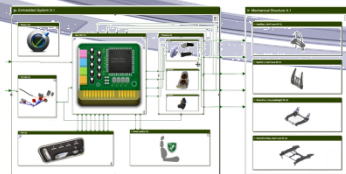
Sell an **Experience**



Manage with **Seamless Global Collaboration**



3DEXPERIENCE®



Design as a **System**

Think it for **Consumers**





What do Suppliers value the most?



OPERATIONAL EXCELLENCE



PRODUCT INNOVATION



GROWTH AND GLOBALIZATION



BUSINESS DIVERSIFICATION

Business Drivers WHY ?

Business changes WHAT ?

Benefits & KPIs

ENABLER How ?



Reduce time to market



Improve certification process for new product technology



Increase manufacturing footprint



Increase reuse of company knowledge

Increase % of profits per system & component, +20% revenue

Excel in cost, Quality and Delivery, 20% TTM

Obtain Joint Venture agreements, 30% TTM

Minimize validation and warranty costs



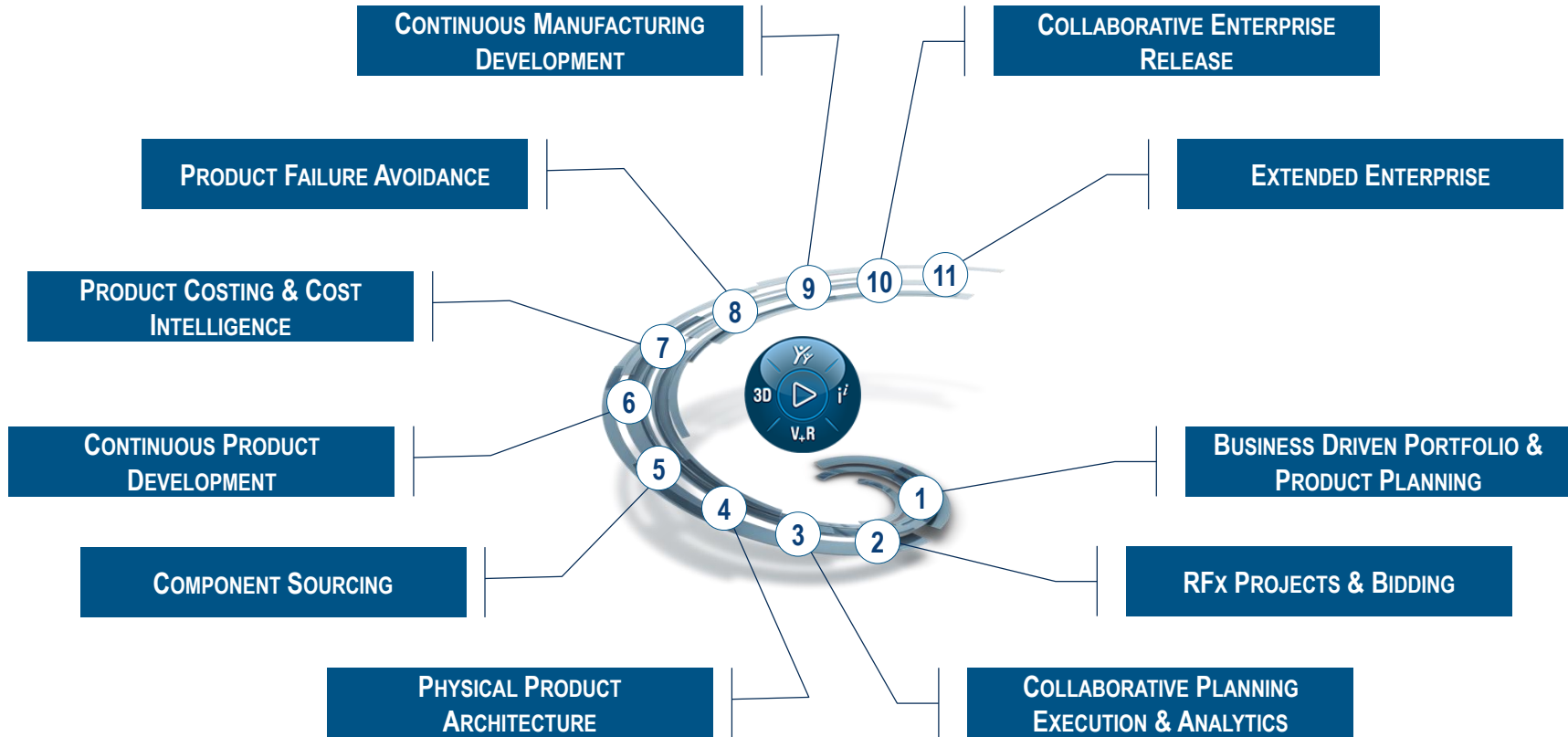
Bid to Win

Win New Opportunities,
Design to Value,
Deliver on Target

- PORTFOLIO & PRODUCT PLANNING
- RFX PROJECTS & BIDDING
- COLLABORATIVE PLANNING EXECUTION & ANALYTICS
- PHYSICAL PRODUCT ARCHITECTURE
- COMPONENT SOURCING
- CONTINUOUS PRODUCT DEVELOPMENT
- PRODUCT COSTING & COST INTELLIGENCE
- DESIGN FAILURE AVOIDANCE
- CONTINUOUS MANUFACTURING DEVELOPMENT
- COLLABORATIVE ENTERPRISE RELEASE
- EXTENDED ENTERPRISE



Scope of the *Dassault Systemes* proposal for suppliers



Transportation & Mobility Industry Solution Priorities

#3 Vehicle Electrification

E-motors
Battery Development
Generative Design (Simulation based Design)

“Reduction of warranty cost by 20%”



#2 Model Based System

System Architecture
ADAS & Autonomous Driving
E/E & SW Development



“Reduction of development cost by 30%”



#4 Mass Personalization Manufacturing & Operations

Digital Manufacturing
Production Scheduling

“reduced cost per vehicle, increased market share”



3DEXPERIENCE®

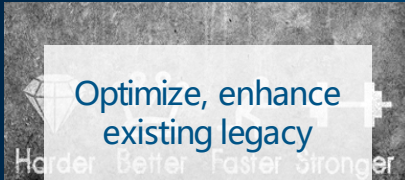
#1 Innovation Collaborative Platform

Engineering & Manuf. data management
Configuration & Change
Program / Risk / Cost / Issue Management

*“Lead time reduction by 30%, 40%
Reduction of change request”*

Business Drivers are addressed by objectives and benefits

Business Drivers



Objectives

Extend and unify development processes globally ...

Integrate value and quality based processes together ...

Adopt new development solutions and methodologies ...

Introduce and deploy digital manufacturing within development ...

Benefits

to increase and simplify development capabilities

to optimize portfolio diversity while controlling cost and quality

to validate upfront more innovation within development process

... to optimize production capabilities and flexibility

Business Changes

DEPLOY SEAMLESS GOVERNANCE



IMPLEMENT REAL TIME ANALYTICS



UNIFY MULTI-DISCIPLINE ENGINEERING

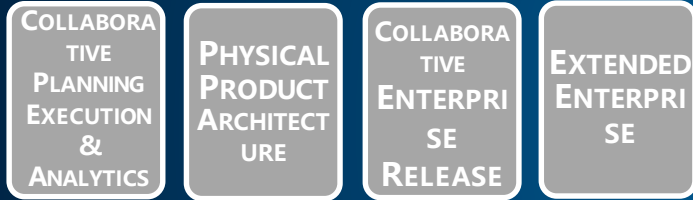


INTEGRATE LEAN AND FLEXIBLE MANUFACTURING



Business changes are enabled by IPEs

Business Changes



Deploy Seamless Governance

Implement Real-Time Analytics

Unify Multi-Discipline Engineering

Integrate Lean & Flexible Manufacturing



Engineering based Manufacturing definition and update



CONTINUOUS MANUFACTURING DEVELOPMENT



INTEGRATE LEAN AND FLEXIBLE MANUFACTURING



PERSONALIZED MANUFACTURING



AUTOMOTIVE SUPPLIERS PLAYGROUND

Automotive supplier faces challenges in connecting to all the dimensions of an OEM Contract

Optimize, enhance existing legacy

Harder Better Faster Stronger

Develop new technologies, transform business model

Globalize business and operations



Deploy Seamless Governance

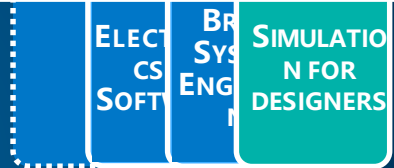


A unique governance between disciplines and extended to OEM and sub-suppliers

Unify Multi-Discipline Engineering



Multi-disciplines design & simulation from designers to experts



**SPECIALIZED
ADDITIONAL
PROCESSES**

Implement Real-Time Analytics



Bidding, Costing, Quality, Sourcing, Standardization, ...

Integrate Lean & Flexible Manufacturing



Engineering based Manufacturing definition and update



**SPECIALIZED
ADDITIONAL
PROCESSES**

Automotive Supplier Playground

Deploy Seamless Governance



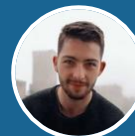
A unique governance between disciplines and extended enterprise to OEM and sub-suppliers



Unify Multi-Discipline Engineering



Multi-disciplines design & simulation from designers to experts



EXTENDED
ENTERPRISE

CONTINUOUS
PRODUCT
DEVELOPMENT

ELECTRONICS &
SOFTWARE

INTRO

OEM REQUIREMENT

Implement Real-Time Analytics



Bidding, Costing, Quality, Sourcing, Standardization, ...



RFx
PROJECTS
& BIDDING

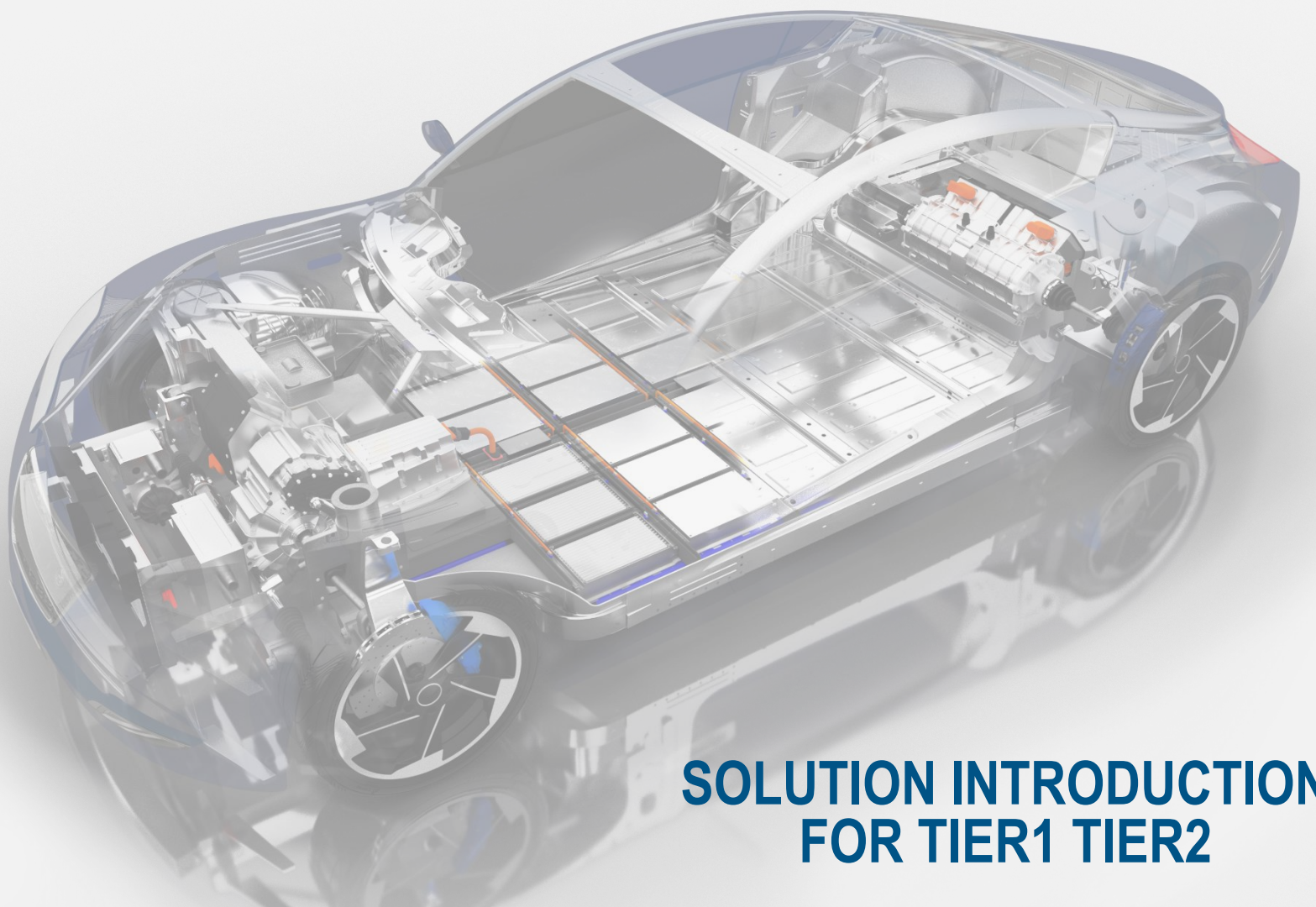
Integrate Lean & Flexible Manufacturing



Engineering based Manufacturing definition and update



CONTINUOUS
MANUFACTURING
DEVELOPMENT



**SOLUTION INTRODUCTION
FOR TIER1 TIER2**

Industry Solutions Portfolio 21xFD03: a major milestone

3DEXPERIENCE | 3DSwym Transportation & Mobility

Transportation & Mobility | MyOffer | What to Sell 2021 & What's New in R2021xFD03

By Frédéric MERCERON - Transportation & Mobility 2020-11-22 - Edited

545 views | 37 likes | 6 comments

View first comment

Frédéric MERCERON - 2020-11-22
Status change to: **Mature**

Frédéric MERCERON - 2020-11-22
Status change to: **In Use**

Ales ALAJBEGOVIC - 2020-11-23
Excellent offer for the T&M Industry
Unlike 1 - Reply

Matthias FRIEDRICH - 2020-12-03
@Chavdar GEORGIEV @Henning STAUFENBERG
Like - Reply

Lui MANCINI - 2020-12-03
This is great...thanks Fred
Like - Reply

Write a comment

LEAN PRODUCTION RUN
IMPROVE VISIBILITY, EFFICIENCY AND CONTROL OF BRANCH ACTIVATION OPERATIONS, DESIGN AND ACTION PLANNING

VEHICLE SAVINGS
IMPROVE SAVINGS THROUGH MORE SUPPORTIVE DESIGN OPERATIONS

ON TARGET VEHICLE LAUNCH
RAISELY INDUSTRIAL VEHICLES FOR OPTIMIZED MARKET ACTIONS

SMART MOBILITY OPERATIONS
IMPROVE BUSINESS THROUGH MORE SUPPORTIVE MODELS

BID TO WIN
WIN NEW, PROFITABLE OPPORTUNITIES, DESIGN TO VALUE, DELIVER ON TARGET

ELECTRO MOBILITY ACCELERATOR
ENABLES INNOVATORS TO ACCELERATE INNOVATIONS TO MARKET AT COMPETITIVE COST AND OPTIMAL QUALITY

GLOBAL MODULAR ARCHITECTURE
FINANCE COLLABORATION AND MASTER COMPLEXITY TO DRIVE PROFITABILITY

DRIVE EMOTION
CREATE 3D MODELS AND VISUALIZE VIRTUAL DESIGNS IN A FULLY IMMERSIVE ENVIRONMENT

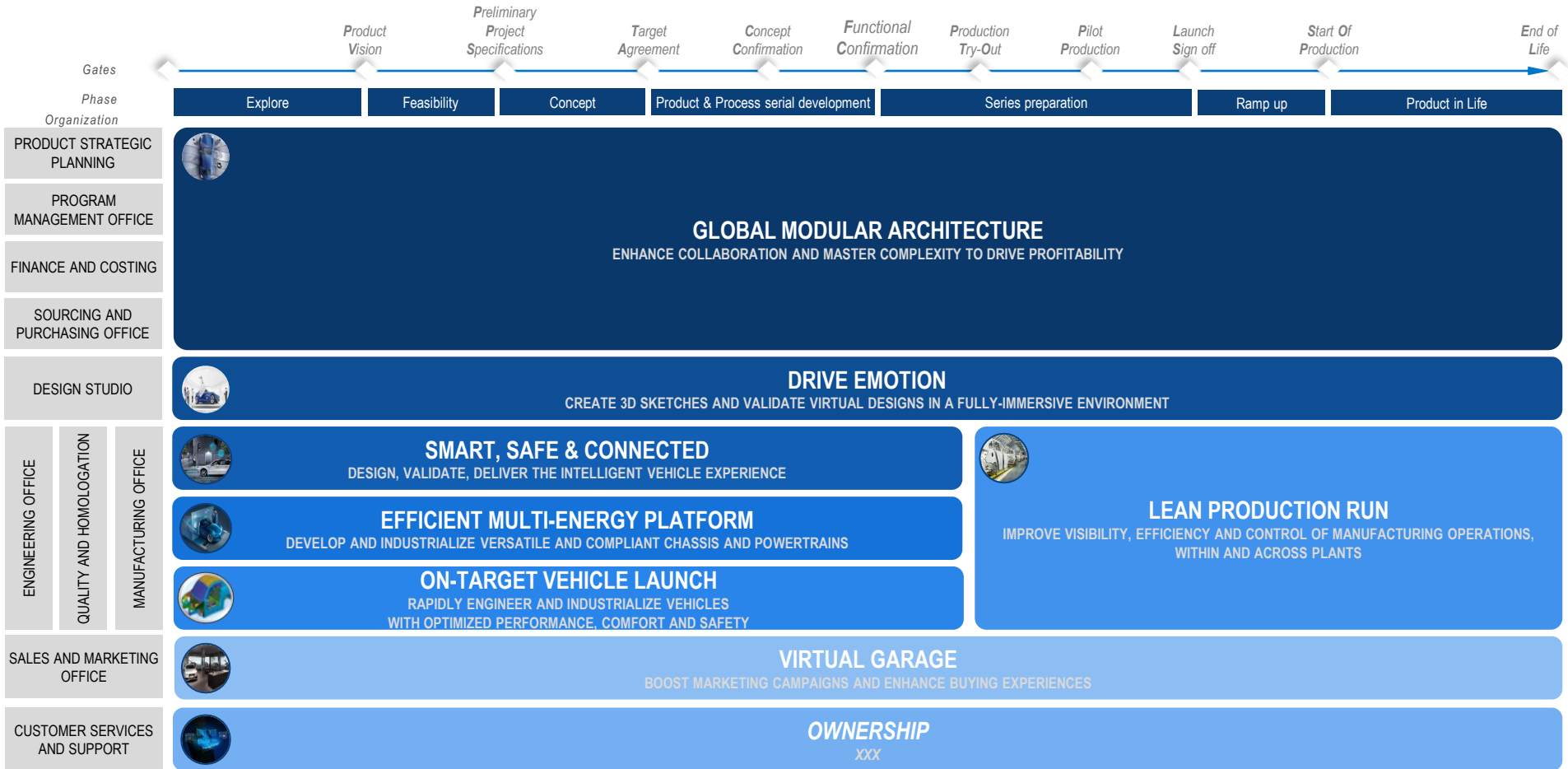
EFFICIENT MULTI-ENERGY PLATFORMS
DEVELOP VEHICLES PLATFORMS WITH OPTIMIZED COMFORT AND SAFETY

SMART, SAFE & CONNECTED
DESIGN, VALIDATE, DELIVER THE INTELLIGENT VEHICLE EXPERIENCE

R2021xFD03 Delivered Values Summary

Transportation & Mobility Portfolio has been updated in R2021x to answer our customers expectations, into

https://dsex001-eu1-215dsi0708-3dswym.3dexperience.3ds.com/#community:165/idea:UM_E8bbJTYidShmiRi-b9w



TRANSPORTATION & MOBILITY REFERENCES



LEAN PRODUCTION RUN
IMPROVE VISIBILITY, EFFICIENCY AND CONTROL OF MANUFACTURING OPERATIONS, WITHIN AND ACROSS PLANTS

VIRTUAL GARAGE
BOOST MARKETING CAMPAIGNS AND ENHANCE BUYING EXPERIENCES

ON-TARGET VEHICLE LAUNCH
RAPIDLY INDUSTRIALIZE VEHICLES FOR OPTIMIZED MANUFACTURING

MOBILITY OPERATIONS
IMPROVE MARGINS THROUGH NEW BUSINESS MODELS



EFFICIENT MULTI-ENERGY PLATFORM
DEVELOP VERSATILE PLATFORMS WITH OPTIMIZED COMFORT AND SAFETY

BID TO WIN
WIN NEW, PROFITABLE OPPORTUNITIES, DESIGN TO VALUE, DELIVER ON TARGET



SMART, SAFE & CONNECTED
DESIGN, VALIDATE, DELIVER THE INTELLIGENT VEHICLE EXPERIENCE

GIL canoo LIGHTYEAR
ELECTRO-MOBILITY ACCELERATOR
ENABLES EV INNOVATORS TO ACCELERATE INNOVATIONS TO MARKET AT COMPETITIVE COST AND OPTIMAL QUALITY



GLOBAL MODULAR ARCHITECTURE
ENHANCE COLLABORATION AND MASTER COMPLEXITY TO DRIVE PROFITABILITY



DRIVE EMOTION
CREATE 3D SKETCHES AND VALIDATE VIRTUAL DESIGNS IN A FULLY-IMMERSIVE ENVIRONMENT



2021 Transportation & Mobility Portfolio on 3DS.com

3DEXPERIENCE | My3DEXPERIENCE

Transportation & Mobility



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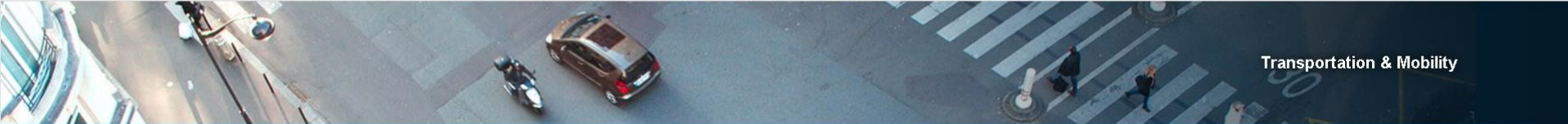
3DEXPERIENCE | My3DEXPERIENCE

Search



Log in

Transportation & Mobility



Transportation & Mobility

SOLUTIONS



Bid to Win



Drive Emotion



Efficient Multi-Energy Platform



Electro Mobility Accelerator



Global Modular Architecture



Lean Production Run



On-Target Vehicle Launch



Smart, Safe & Connected

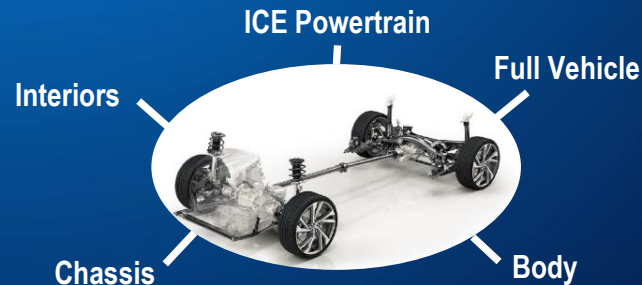
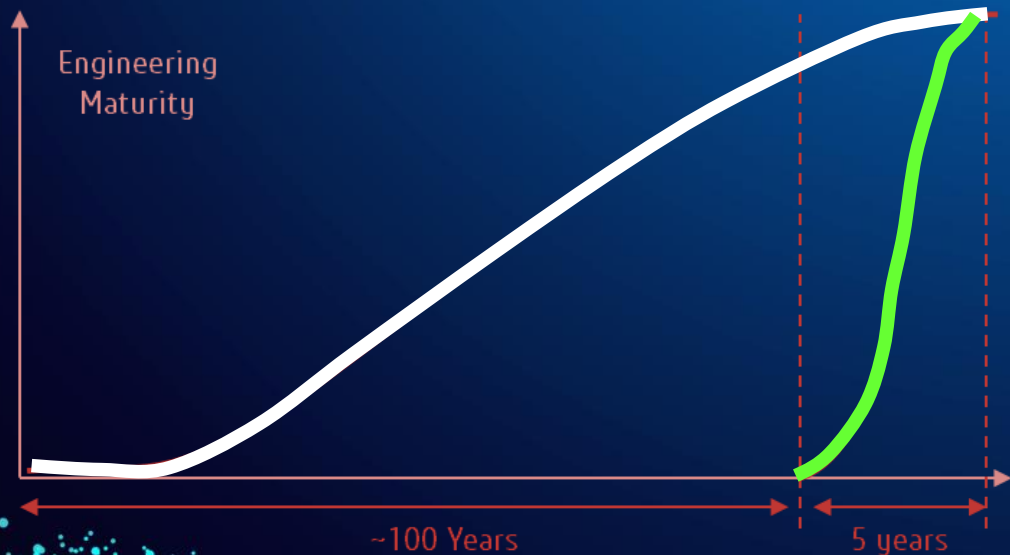


Virtual Garage

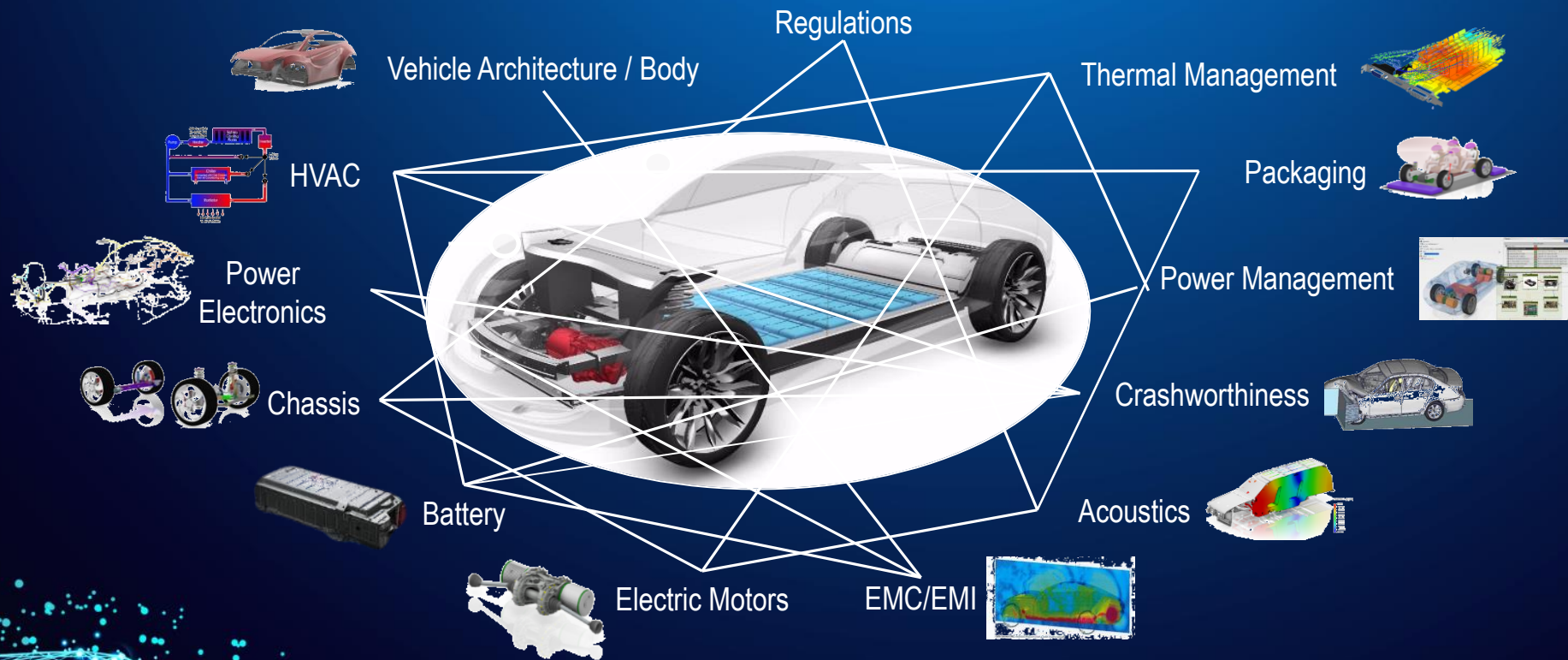
Architecture & Technologies evolution



A faster technology ramp-up is required



Facing new technological challenges



Needing new type of high end simulations

Sensor Positioning



PowerFLOW

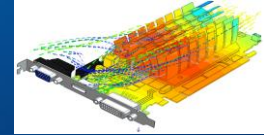
Vehicle Aerodynamics

PowerFLOW

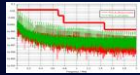
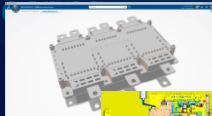
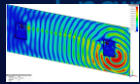


Thermal Management

PowerFLOW

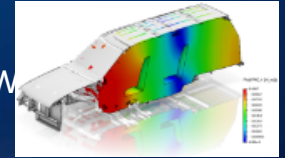


Power Electronics

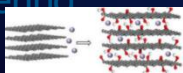


Acoustics

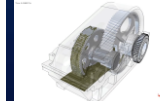
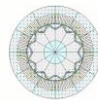
PowerFLOW



Battery Engineering

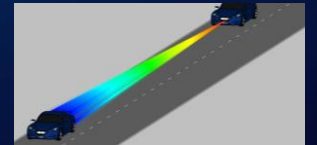


Electric Motors

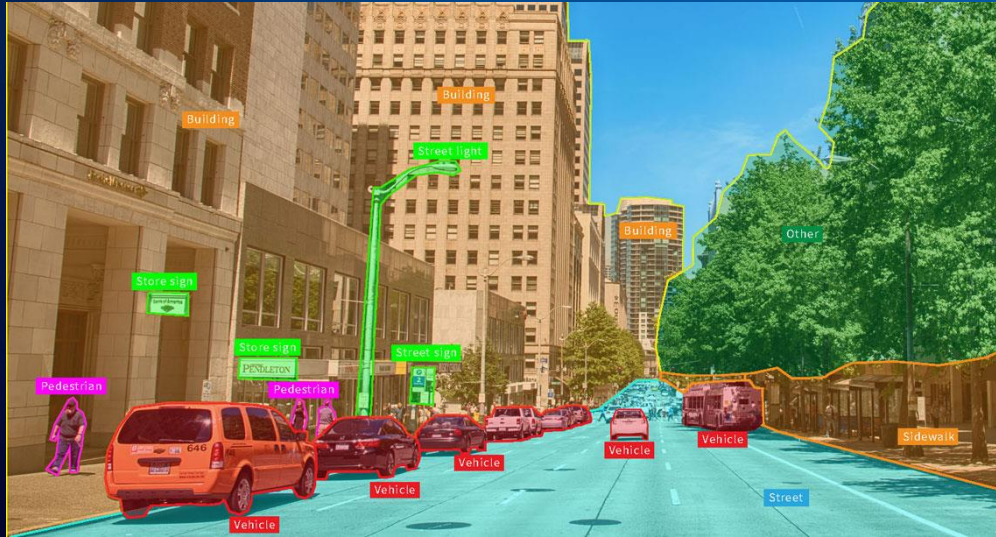


xflow

Connected Vehicle Communication



Cyber Physical Systems



2



Roadmap to Cyber Physical System

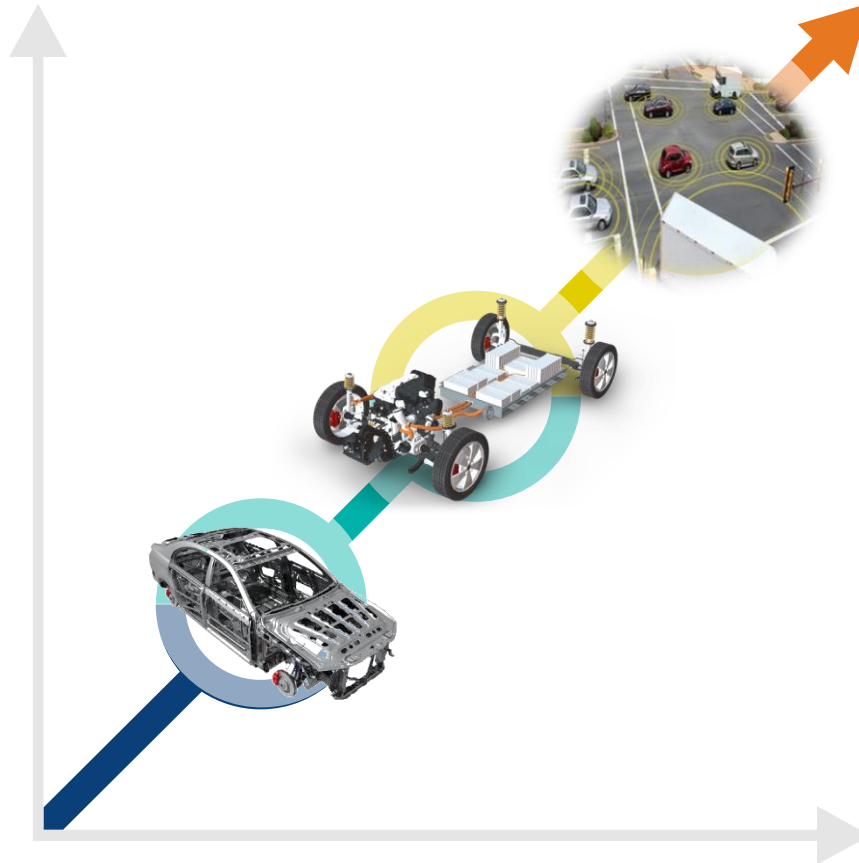
CYBER PHYSICAL SYSTEM

Integration of software-intensive and physical processes interacting together in an unpredictable world

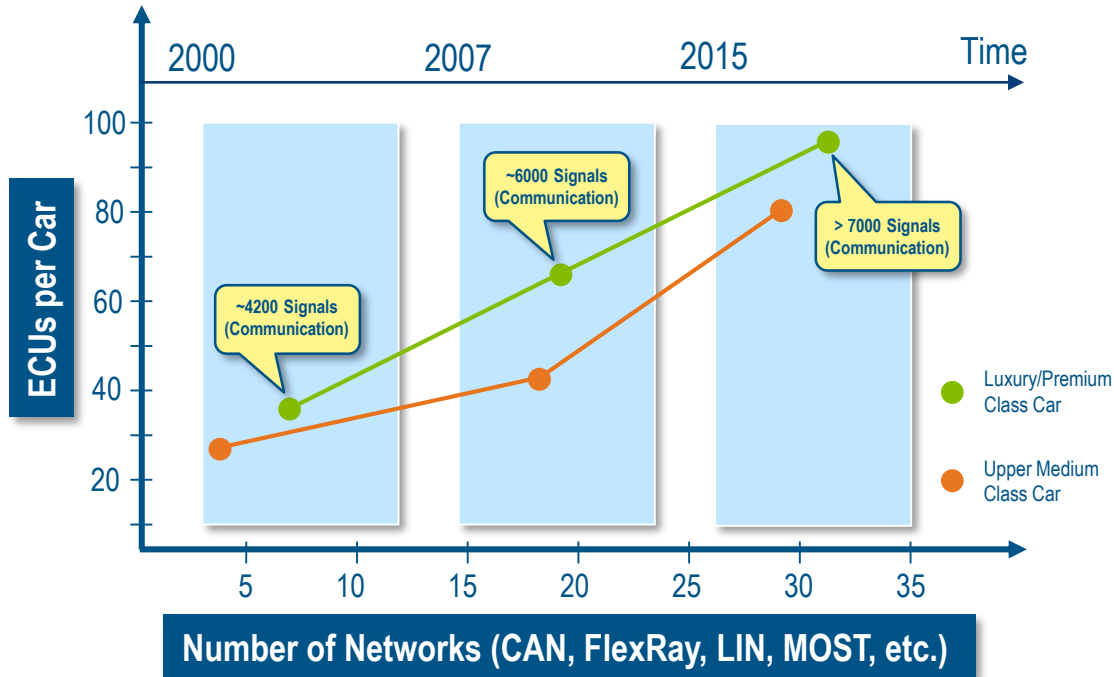
MECHATRONICS

Multidisciplinary integration of mechanical and electronic systems

MECHANICAL



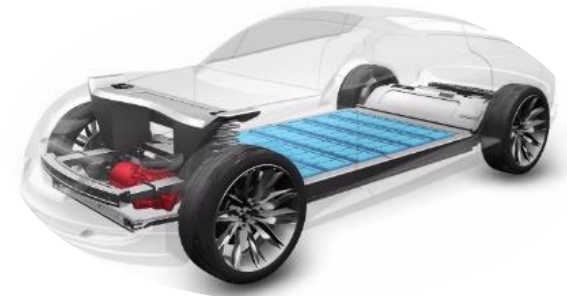
Automotive Complexity – Electronics & Software



Configuration Complexity

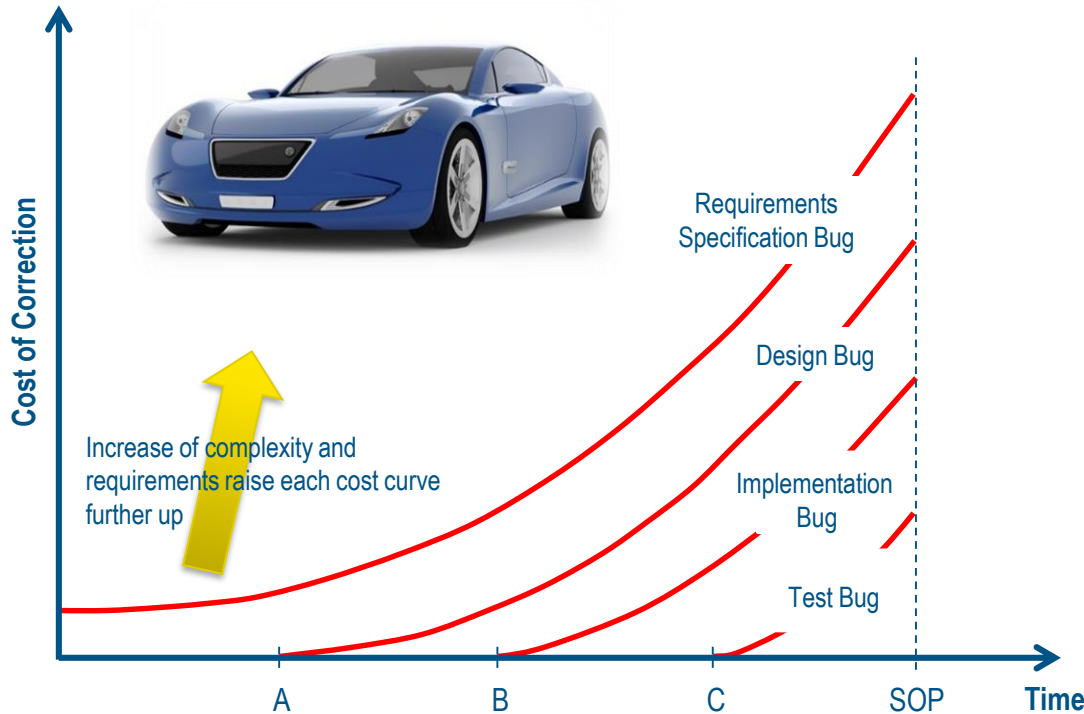
„32 system function components with 1.200 parameters can lead up to **30.000 configurations per ECU.**“

Source:
AUTOSAR Methodology @ BMW (B. Jäger)
9th AUTOSAR Open Conference, Gothenburg



Source: Architekturgesteuerte Elektrik/Elektronik Baukastenentwicklung im Automobil (L. Brandt)

Systems Complexity – The Cost of Correction



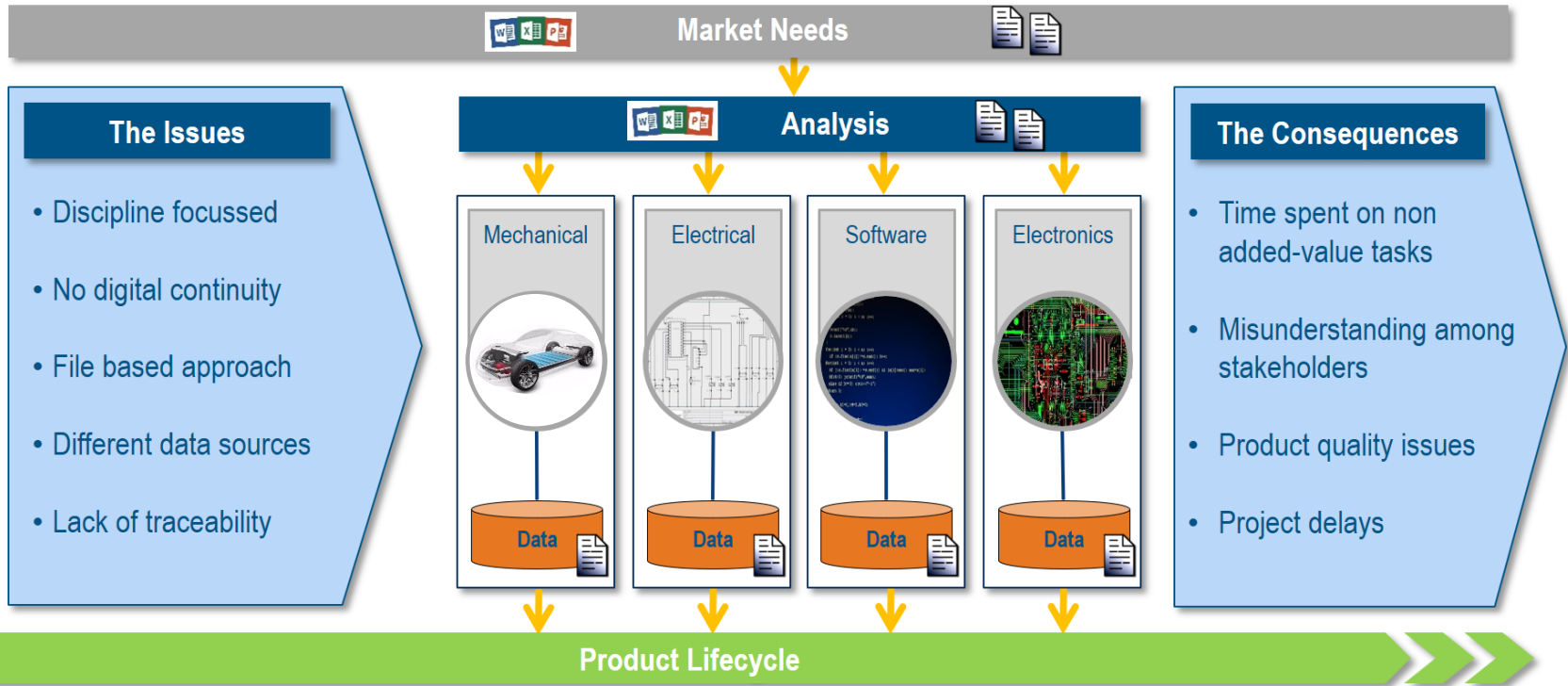
Rule of Thumb

“Cost of correction increases at a subsequent stage by a factor of ~ 10 ”

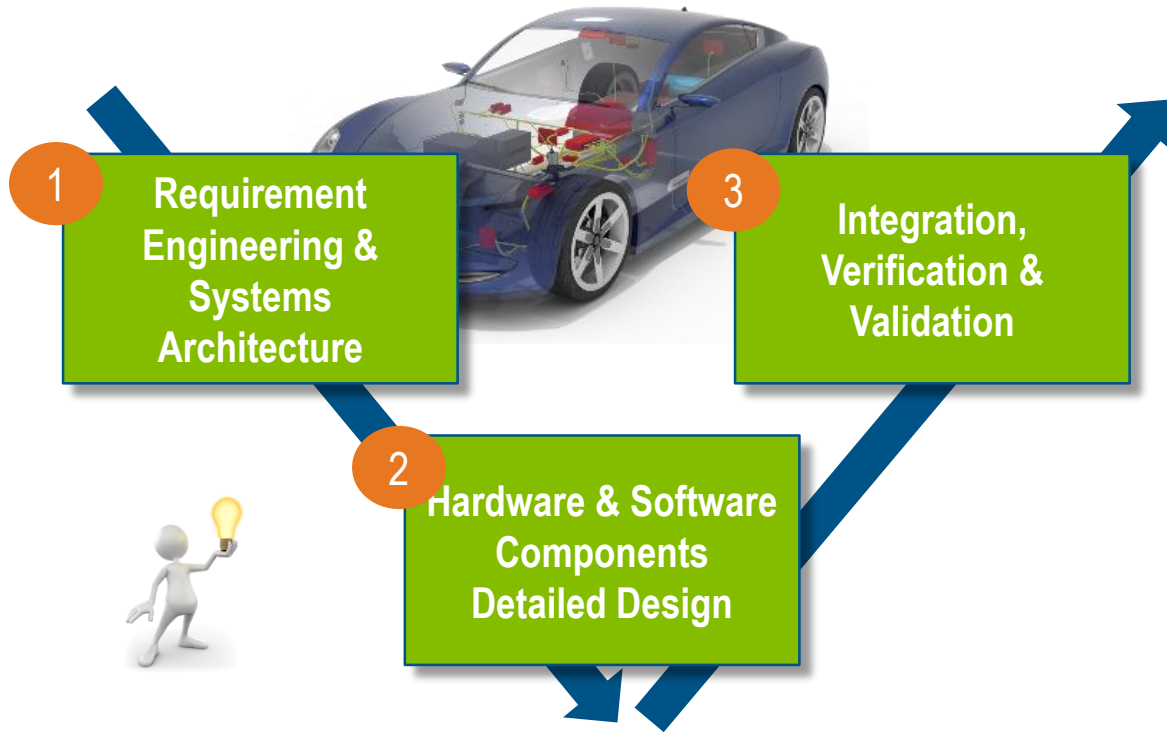
Example:

Fixing a requirements bug uncovered in the design phase is ~ 10 times more expensive than uncovering & fixing it in the requirements phase already

A Key Problem – Thinking in “Discipline Silos”






Systems Engineering – Break the Silos!

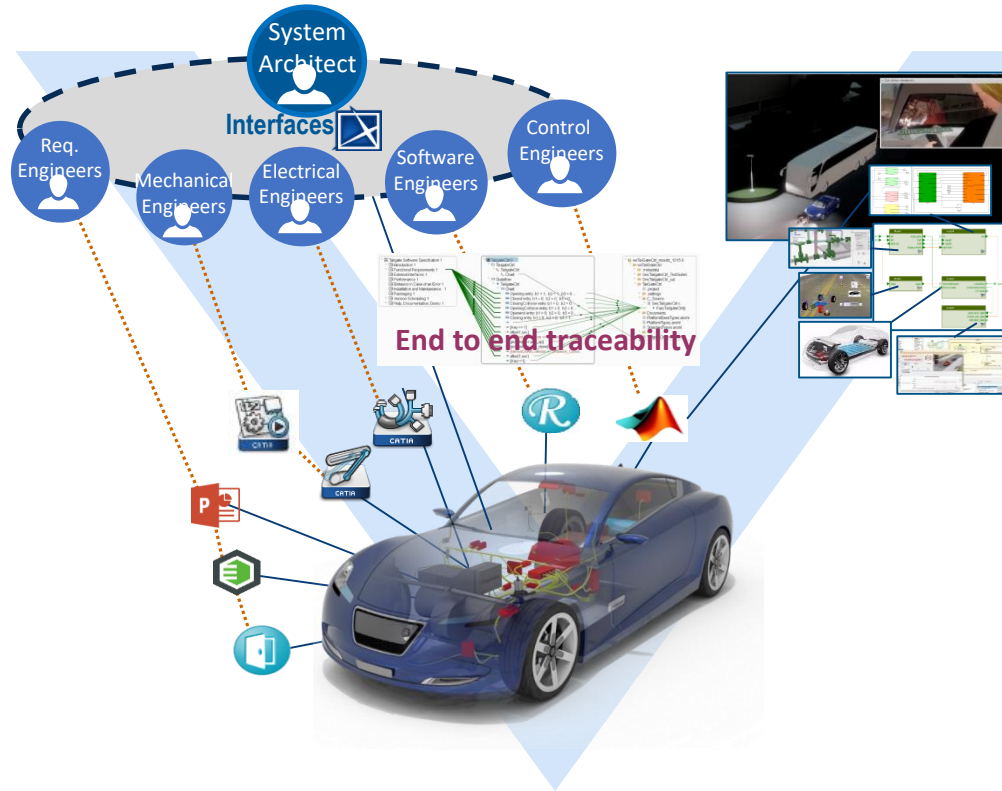


- 1 How to better **consolidate stakeholders needs** and **early validate best solution concepts**?
- 2 How to improve **multi-disciplines collaboration** and **OEM/Suppliers exchanges**?
- 3 How to decrease **Integration & Validation time & cost**?

Systems Engineering – A cultural Business Change

- 1 How to better **consolidate stakeholder needs** and **early validate best solution concepts**?
➔  **Deploy Systems Thinking Approach**
- 2 How to improve **multi-disciplines collaboration** and **OEM/Supplier exchanges**?
➔  **Federate through Digital Continuity**
- 3 How to decrease **Integration & Validation time & cost**?
➔  **Perform Continuous Virtual Testing**

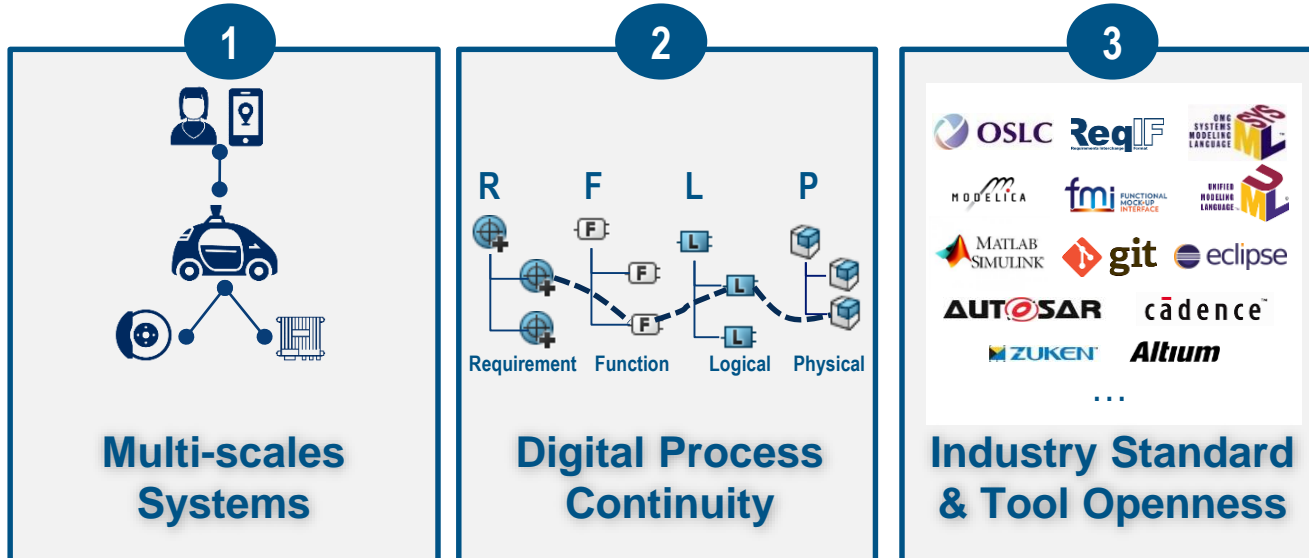
Model Based Systems Engineering



► Key principles:

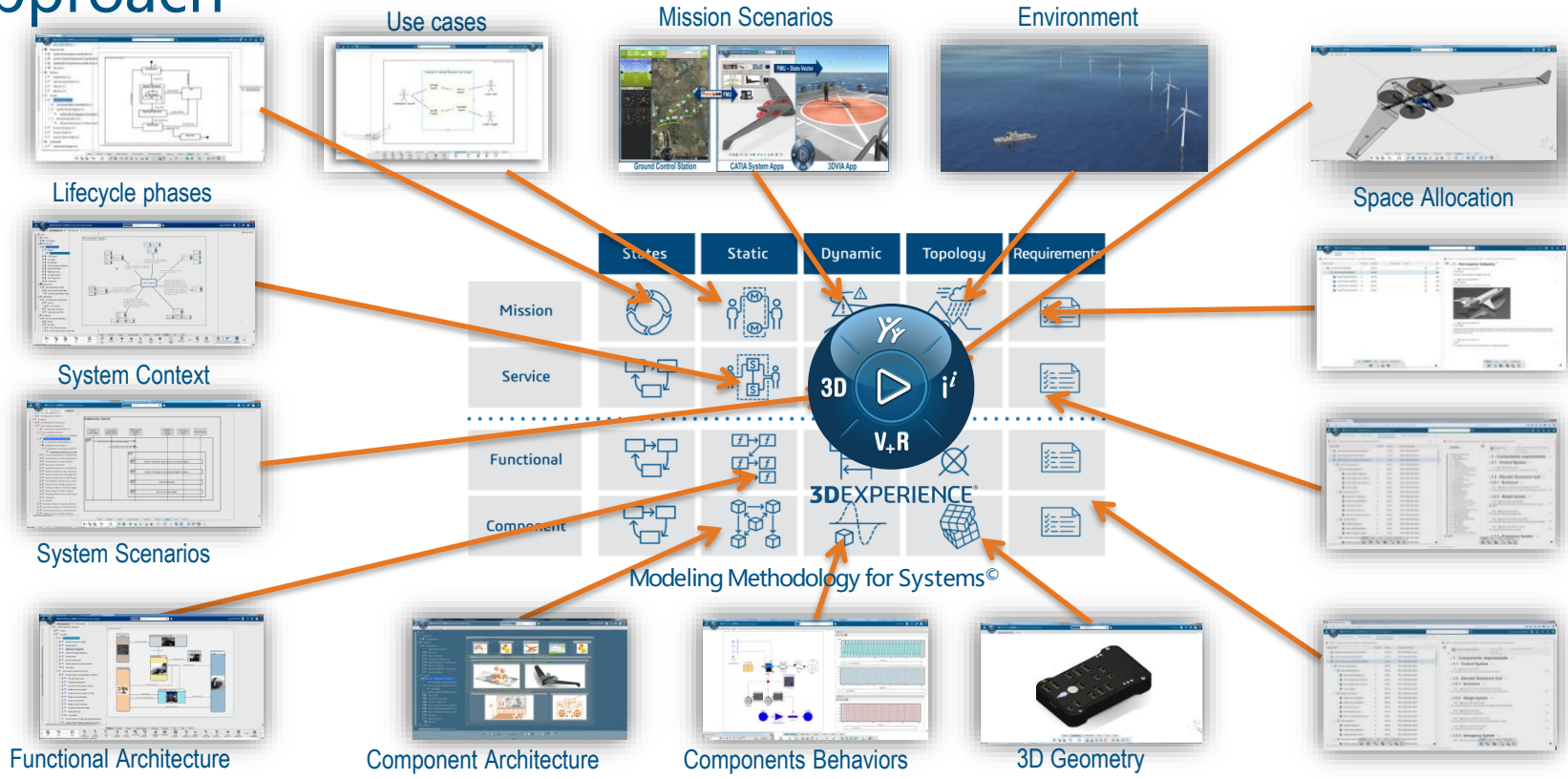
- Different disciplines working together on single source(s) of truth
 - Federate models and data without duplication.
- Provide traceability throughout models / toolchain
- Common configuration management, integrations, and model transforms – across programs
- Perform integration & validation all along the V Cycle, continuously

Dassault Systemes Strategy for MBSE



3DEXPERIENCE Twin

Model Based Systems Engineering needs a platform approach



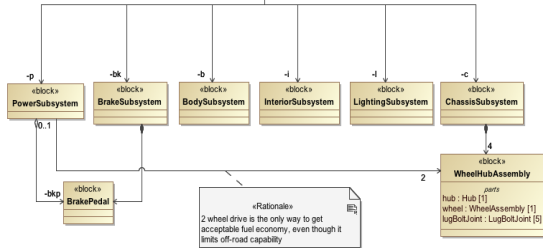
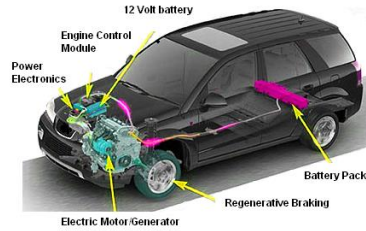
© Dassault Systèmes | Confidential Information | 1/25/2021 | ref.: 3DS_Document_2020

© Dassault Systèmes

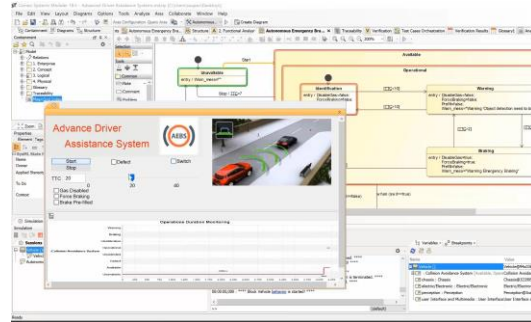
Model-Based Systems Engineering

Modeling

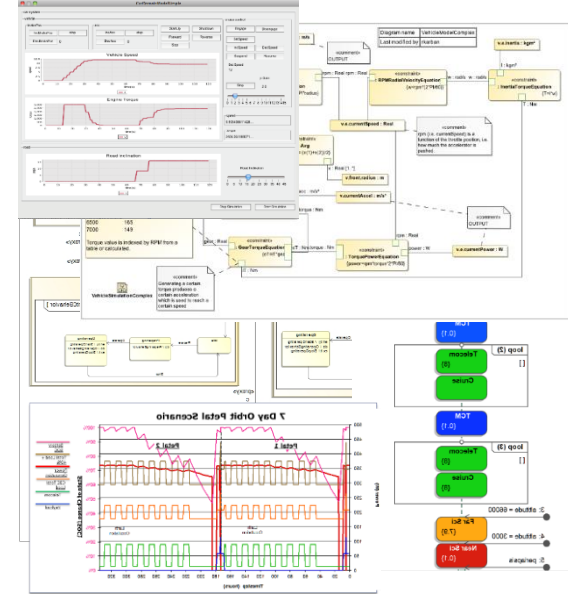
Example of a Hybrid SUV



Simulation



Analysis



Open Platform for Systems & Software

Navigate, collaborate and trace engineering assets coming from multi-sources & multi-formats in one unified 3DDashboard.

My Requirements

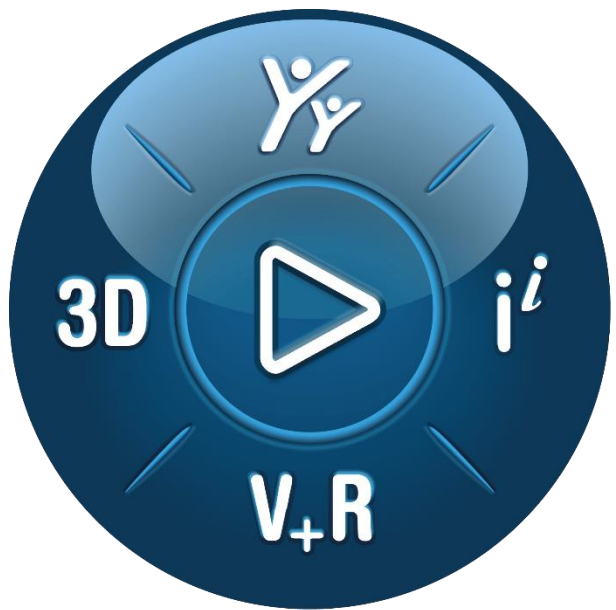
My Tasks

My Deliveries

My Collaborative Reviews



Data Connectors



3DEXPERIENCE®

ADOPTION - 3DEXPERIENCE references in Automotive

3DS presence at traditional players (non exhaustive)...

: 3DEXPERIENCE & V6
Architecture customers



1.1 Car & Light Truck
OEMs



1.2 Racing Cars



1.3 Motorcycles



1.4 T&M Industry
Suppliers



1.5 Trucks and
Buses



1.6 Trains

..and at EV Startup selecting 3DEXPERIENCE (Non exhaustive)



BOSCH

Activity :BOSCH Car Multimedia focuses on smart solutions designed to make the Integration of entertainment, navigation, telematics, and driver assistance.

Employees : 400,000+ Company revenue: 78.1Beuros

Challenges & Business Drivers

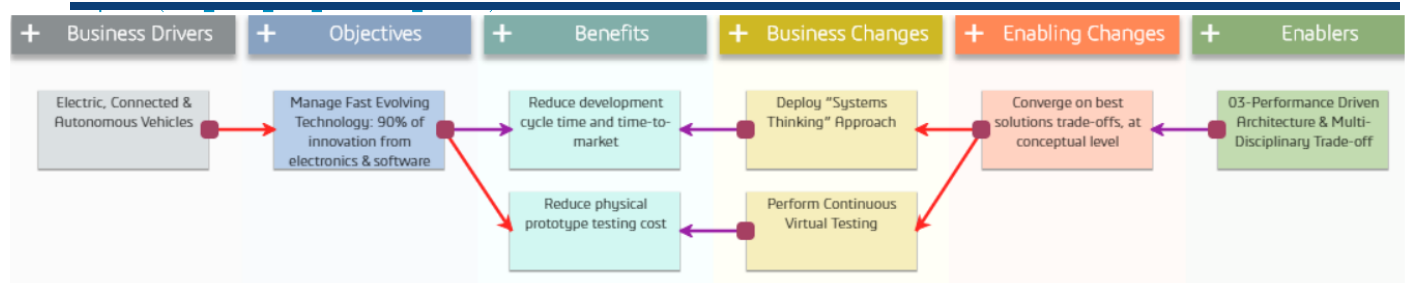
Shorten engineering process, Reorganize and optimize data and process across 10 business units
Improve quality of digital twin well in advance of physical prototype testing



Benefits

Full MBSE Approach enables virtual test & validation
Reduce warranty & maintenance cost
Reduce Physical prototypes and tests

Solution :



3CON Technology

Activity : Automotive interior Production Equipment
Size : 370 employés, Turnover 72Mio€

Challenges & Business Driver

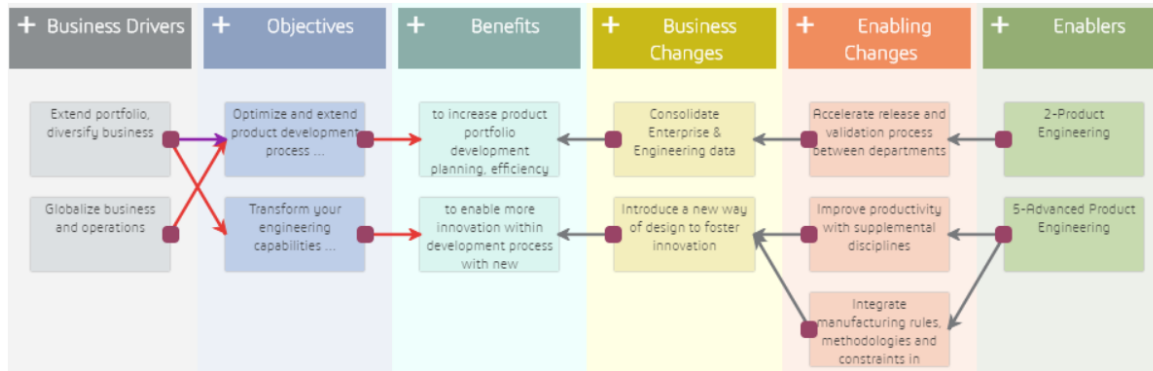
3CON, a global leader in manufacturing equipment for the automotive industry, needs to extend his portfolio and diversify business lines, strong need for business and operation globalization.



Benefits

3CON has improved design productivity by **30%** with the 3DEXPERIENCE platform

Solution : Bid To Win



SL Corporation

Activity : Automotive interior Production Equipment
Size : 400 employés in R&D, Turnover 68Mio€

Challenges & Business Drivers

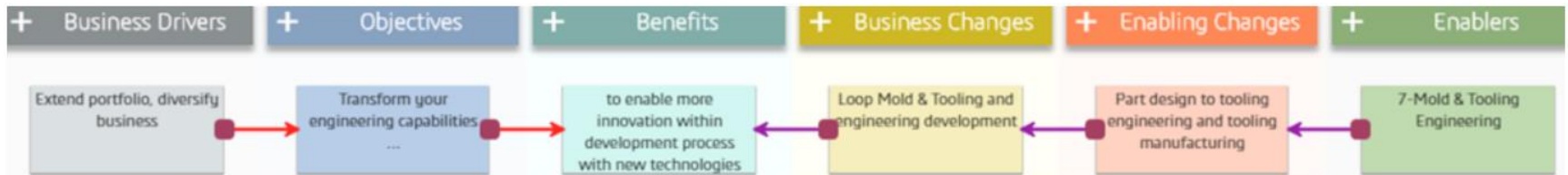
Collaboration, Governance of projects , Agility for changes, Capture & reuse Know-how in the system



Benefits

- Shorten design time (Enhanced Productivity: **13%**)
- Enhanced design quality (**Over 10%**)
- Reduced cost of rework

Solution : Bid To Win



SCHAEFFLER

Activity : Global Automotive and Industrial supplier
Size : 92500 Head count, Turnover 14.241Bn€

Challenges & Business Drivers

- Implement worldwide Methodology for Time Analysis.
- Lean & Industry 4.0 initiative
- Globalize Business & operations.



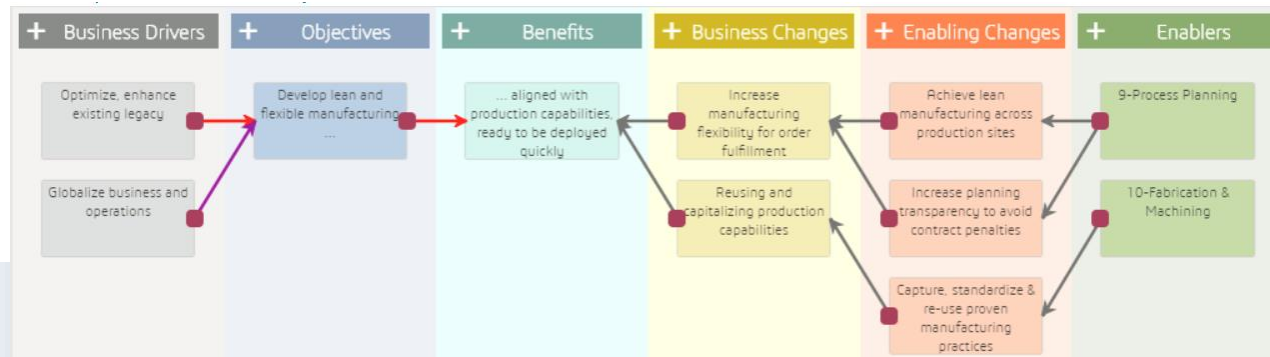
Benefits

Enable collaboration among MTM time analysts and process planners by having both communities using 3DEXPERIENCE as worldwide platform

Solution :

Bid To Win

SCHAEFFLER



SUPRAJIT

Activity : Global Automotive and Industrial supplier
Size : 5000+ Head count, Revenue \$200 Million

Challenges & Business Drivers

Suprajit Engineering, India's largest cable maker and global leader in the two-wheeler cable market, wanted to boost productivity, reduce product development cycle times and meet its customers' requirements in a cost-efficient way.

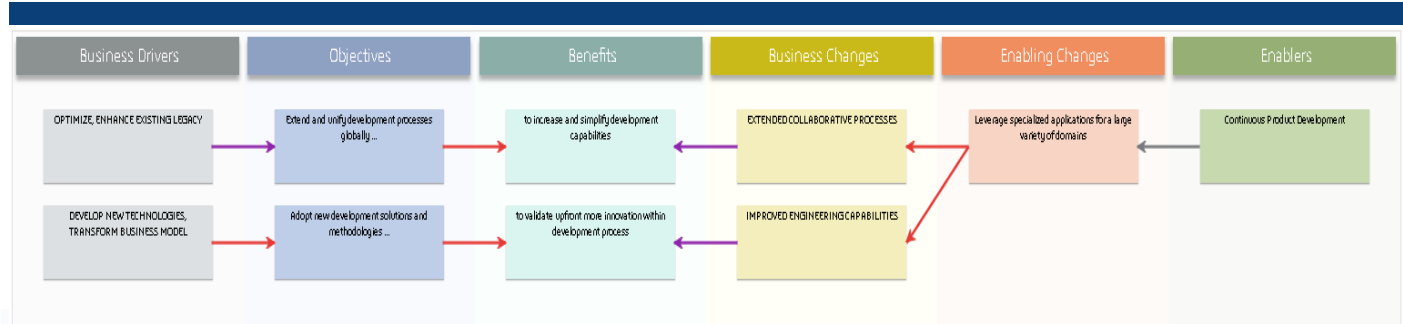


Benefits

Suprajit Engineering benefits from an integrated solution, providing a centralized 'single source of truth,' which syncs multi-site projects, development changes, product data and requirements management in real time, part management and change orders and thereby improved efficiency in this area by more than 30%.

Solution :

Bid To Win



PSA

Challenges & Business Drivers

Facilitate multi-disciplines collaboration

Enable development of driverless car, address exponential increase of requirements

Systematic testing of all detail requirements

Benefits

5 to 7% Productivity gains yearly through R&D transformation:

Reduction of physical tests

Avoid physical prototype cost for passive safety (200K€ per proto)*

Full coverage of requirements by virtual tests,

Enhanced innovations capabilities,.../...

2.000 OPEL employees fully operational with The 3DEXPERIENCE after 1 year deployment

Activity : GROUPE PSA (+OPEL) is one of top 10 WW car makers, selling products under the brands Peugeot, Citroën and DS : Employees 184000

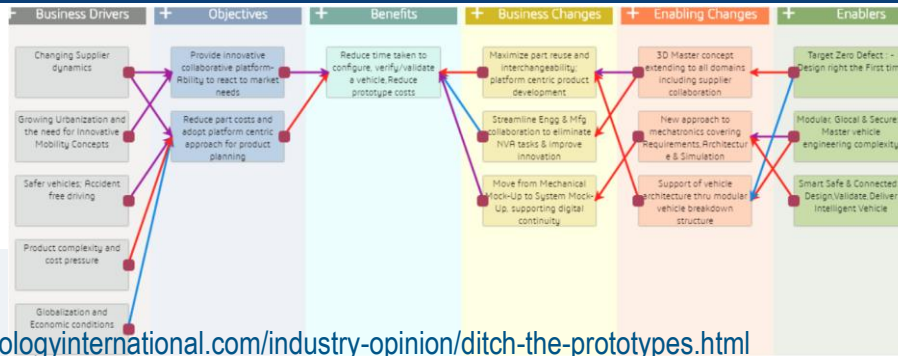


Solutions :

Target Zero Defect

Modular Glocal Secure

Smart Safe & Connected



Dassault Systèmes
Named Key Supplier
by Groupe PSA for its
Digital Transformation

AUDI

Activity :Premium Brand in Passenger Cars, part of VW Group
AUDI AG designs, engineers, produces, markets and distributes premium cars

Revenue: 60.1B€, Employees: 90k

Challenges & Business Drivers

AUDI's strategy 2025 focuses on :

1)digitalization, 2)sustainability and 3)urbanization.



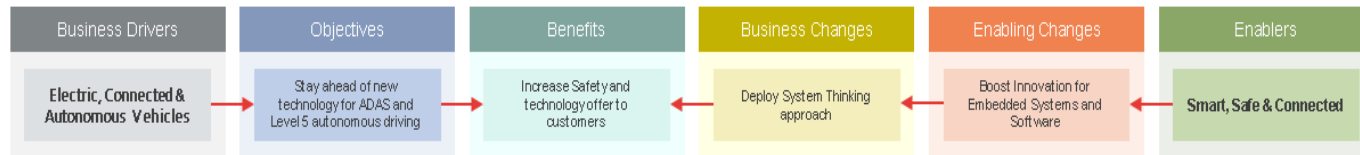
Benefits

Holistic Systems Engineering approach
Enable cross-department Collaboration
Introduce ASIL and ISO26262
Establish systems architecture framework



Solution :

Smart Safe & Connected



Not a Public reference

Challenges & Business Drivers

Quality cost & regulation

Supplier integration

Increasing complexity in car projects

Activity :Premium Brand in Passenger Cars,
Becoming a tech company for premium mobility
and premium services

Revenue: 75.3B€, Employees: 125k



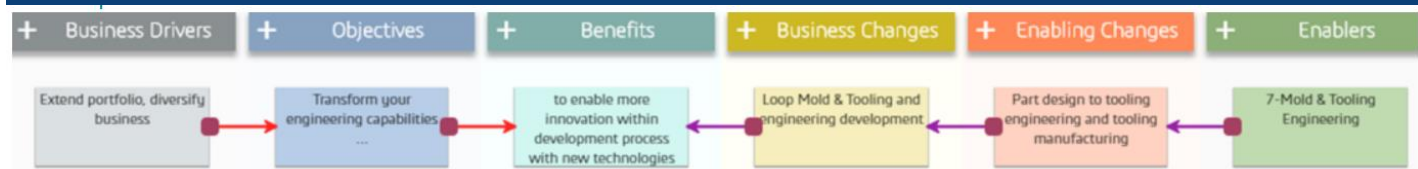
Benefits

Zero physical prototype for passive safety (250K\$ per physical prototype)*

Process-oriented workflow

Increased quality

Enable cross-department Collaboration



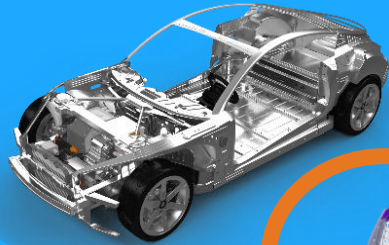
Solution

- CATIA SFE CONCEPT
- Mold and Tooling design

* <https://www.automotivetestingtechnologyinternational.com/industry-opinion/ditch-the-prototypes.html>

Internal Add on for 3DS

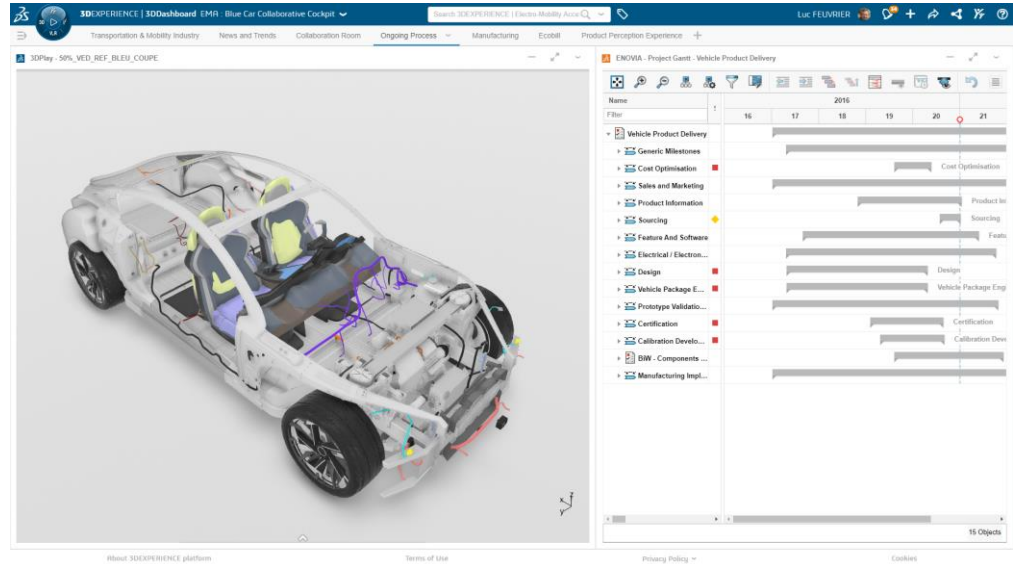
T&M demonstration by segments → a key differentiator



TRANSPORTATION & MOBILITY Industry | 3DEXPERIENCE

Demonstration

Demonstrate the values of the 3DEXPERIENCE to our customers



TRANSPORTATION & MOBILITY Industry | 3DEXPERIENCE Demonstration

Aligned with
Transportation & Mobility

Industry Solution Experience
Industry Process Experience

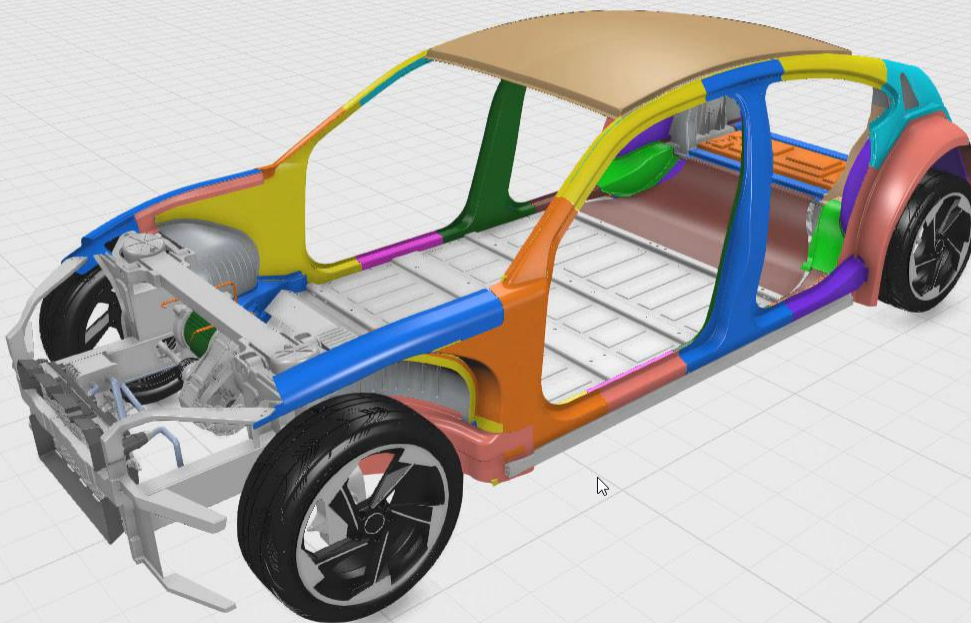


TRANSPORTATION & MOBILITY Industry | 3DEXPERIENCE Demonstration

Dedicated Industry Dataset

Scenario & Story telling





View Tools



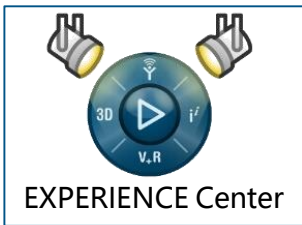
TRANSPORTATION & MOBILITY Industry | 3DEXPERIENCE

Demonstration

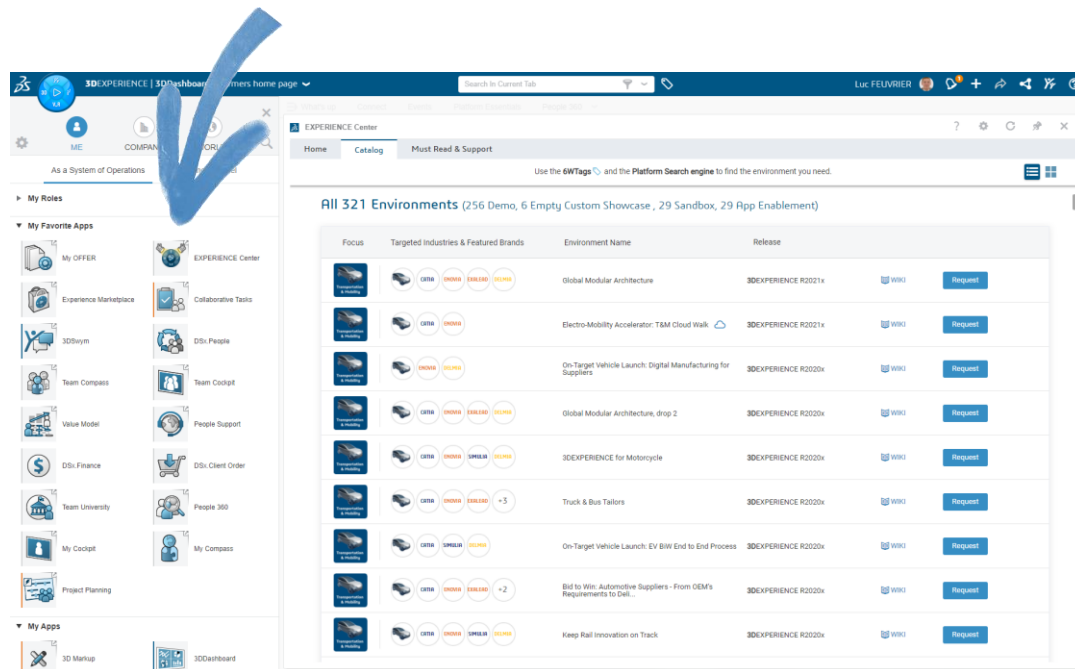
Accessible for both channels

CUSTOMER SOLUTION EXPERIENCE
CUSTOMER PROCESS EXPERIENCE

Accessible Through a new Apps



Available server in local geo



The screenshot displays the 3DEXPERIENCE user interface. At the top, there's a navigation bar with the 3D logo and user information. Below it, a search bar and navigation tabs are visible. The main content area is titled 'EXPERIENCE Center' and shows a list of environments. A blue arrow points to the 'EXPERIENCE Center' app icon in the 'My Favorite Apps' section.

Focus	Targeted Industries & Featured Brands	Environment Name	Release	Wiki	Request
	OTM, ONS, ENR, SML, SMLA	Global Modular Architecture	3DEXPERIENCE R2021v		
	OTM, ONS	Electro-Mobility Accelerator: T&M Cloud Walk	3DEXPERIENCE R2021v		
	OTM, ONS, SMLA	On-Target Vehicle Launch: Digital Manufacturing for Suppliers	3DEXPERIENCE R2020v		
	OTM, ONS, ENR, SML, SMLA	Global Modular Architecture, drop 2	3DEXPERIENCE R2020v		
	OTM, ONS, SMLA, SMLA	3DEXPERIENCE for Motorcycle	3DEXPERIENCE R2020v		
	OTM, ONS, ENR, SML, SMLA	Truck & Bus Tailors	3DEXPERIENCE R2020v		
	OTM, SMLA, SMLA	On-Target Vehicle Launch: EV BIW End to End Process	3DEXPERIENCE R2020v		
	OTM, ONS, ENR, SML, SMLA	Bid to Win: Automotive Suppliers - From OEM's Requirements to Del...	3DEXPERIENCE R2020v		
	OTM, ONS, SMLA, SMLA	Keep Rail Innovation on Track	3DEXPERIENCE R2020v		

3DSwym News

COMMUNITIES CONVERSATIONS

Find communities

What's New

Favorite Communities

- Value Network Engineering Collaboration | ...
- 3DS Top Management FRANCE | Retour su...
- Supplier Collaborative Hub
- 3DS FRANCE People
- 3DS Campus Live
- Transportation & Mobility : Internal
- Transportation & Mobility**
- The EXPERIENCE Center
- 3DS Transportation & Mobility
- Business Experiences Initiative
- The EXPERIENCE CENTER Operations
@Florette D HUMIERES @Charles TALOPP @Husuel...
- One Industry
Bonjour Xavier, thanks for this feedback. We presente...
- T&M Manufacturing Demo
Project Status review W38
- DS Campus - Transport & Mobilité
Pour cette photo de Bonne Nouvelle :
- Transportation & Mobility R&D

Transportation & Mobility Private

NEW | WTS 2021 | T&M Demonstrations Portfolio R2020x & R2021x

By Luc FEUVRIER 2020-11-20 - Edited



T&M team has delivered, more than ever, a huge number of demonstrations to help all worldwide technical sale teams to demonstrate the value of the 3DEXPERIENCE. In addition, in 2020, for the first time, we are also delivering a new kind of demonstration, On the cloud, to allow all of us to introduce the 3DExperience platform in few minutes.

28 2

- Barry ELLEDGE - 2020-11-21
Thanks to the team for all of the awesome and helpful work. This is a post to bookmark!
Like - Reply
- David DA SILVA - 2020-11-27
All this content will be really useful. @Luc FEUVRIER do we have more material put in place for defining the P&O in the video OEM Data Exchange Online Collaboration | R2020x FD02 (Video) ?
Like - Reply

Write a comment

Capital Market Day 2020 - T&M Presentation for Analysts on November 17, 2020

By Dorvale NANA 2020-11-20 - Edited



During the last Capital Market Day on November 17 2020, Laurence Montanari (VP Transportation & Mobility Industry) took the opportunity to recall the power of the 3DEXPERIENCE Platform for the present and the future of the automotive sector.

The 3DEXPERIENCE Platform is a major asset

Navigation icons: Home, Photos, Mail, Lightbulb, Question mark, Book, Shopping cart, and a dropdown arrow.

Community details

Sharing passion, customer experiences & news. Defining new industry offers, sales initiatives and workshops... in other words anything automotive!

Members

Timeline



TRANSPORTATION & MOBILITY Industry | 3DEXPERIENCE Demonstration



Key Transportation & Mobility segments supported



R2020x | 9 demonstrations available



R2021x | 1 demonstration available



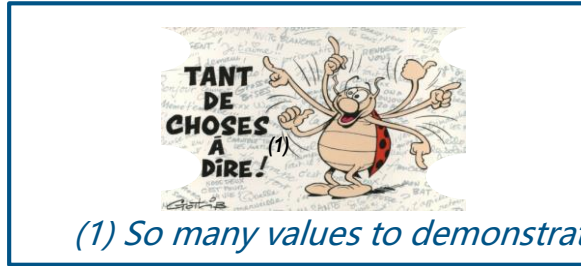
R2021x | 1 demonstration available



*First World Wide
Cloud demonstration*

For SALES People

TRANSPORTATION & MOBILITY Industry | 3DEXPERIENCE Demonstration



Learn 3DEXPERIENCE values

Present 3DEXPERIENCE Values to Customer

Adapt scenario for your customer

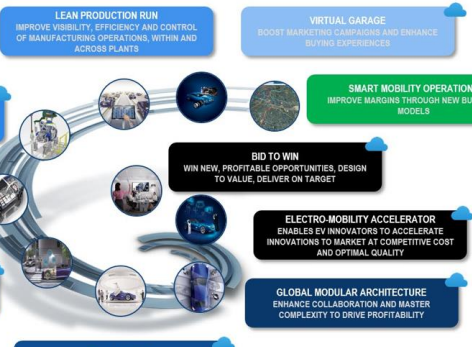
Target initiatives : Where to find the information

- ▶ My Offer
- ▶ <https://media.3ds.com/smartclass/industryinitiatives/list.html?tm>

The screenshot displays the 3DEXPERIENCE | 3DDashboard interface. The top navigation bar includes the 3D logo, the text '3DEXPERIENCE | 3DDashboard', a user profile 'Swymers home page', and a search bar. Below the navigation bar, the 'My OFFER' section is visible, featuring an 'Explore' button and a 'Catalog' link. The main content area is titled '01. Transportation & Mobility' and includes a 'COMMUNITY' section with a 'Transportation & Mobility' card. The 'Key Links' section at the bottom contains three cards: 'ENABLEMENT Industry Essential (3DS...', 'REPLICATION INITIATIVE Industry Replication Initi...', and 'CUSTOMER CASE Public & Non Public Cus...'. A red arrow points from the text 'Select the hyper Link' to the 'REPLICATION INITIATIVE' card, which is also circled in blue.

Select the hyper Link

More T&M Assets for you



1 Unified Dataset for the "La Bleue" Battery Electric Car

45 Customer Playgrounds in Valez and Customer Site

8 Playgrounds displayed Events across the world

Customer Cases Navigator

New Search Back

262 Matching Cases

300N ANLAGENBAU GMBH
ADAM OPEL AG
ADIENT
ADVICS CO LTD
AISIN AW
AISIN SEIKI CO., LTD.
AIST DM
AMBER DUAL
ANADOLU ISIRU
APM ENGINEERING & RESE
ASHOK LEYLAND
AUDIAG
AUTOBUS LION INC
AUTOLIV
AUTOMOBILI PININFARINA
AUTOMOBILUS INTELLIGENT
AUTOWAZ
BEIJING CHU AUTOMOTIVE
BENTELER AUTOMOTIVE
BLUTEC
BMW
BOMBARDIER RECREATION
BORGWARNER

Brands: CATIA, GOLDWORKS, ENOVIA, DELMIA, SIMULIA, GEOVIA, EKALOAD, JSDVA, BIOVIA, NETVIBES, 3DEXCITE, QUINTIC

Geos: AP South, China, EuroCentral, EuraMed, EuroNorth, JapanWest, India, Europe, Korea, LATAM, NAM, Russia

Functional Domains: Public Reference (Yes/No), Releases (or Cloud), Year, Channel (CS, CP), Implementation Partners

Industry Segments: Industry Solution Experiences and Industry Process Experiences

Industry Success Cases: TARGET Initiatives

Search by Word

Transportation & Mobility Challenges Segments Solutions Resources Contact

Transform future vehicle innovation

The next generation of new vehicles is accelerating faster than ever before. Learn how the 3DEXPERIENCE platform can accelerate the development of your sustainable vehicle, including key domains of VEHICLE CONCEPT DESIGN, VEHICLE ENGINEERING, and VEHICLE MANUFACTURING.

Information for Transportation & Mobility of the future and for which Benefits?

Business objectives	Business Benefits	Business Changes	Enabling Changes
Attract new customers	Design and production cycle time reduction	Customer data and insights for the new marketing and sales strategy	Enhanced Productivity and Quality
Optimize fleet size (fleet management)	Reduce fleet size and maintenance costs	Reduce fleet size and maintenance costs	Enhanced Productivity and Quality
Reduce fleet size (fleet management)	Reduce fleet size and maintenance costs	Reduce fleet size and maintenance costs	Enhanced Productivity and Quality
Reduce fleet size (fleet management)	Reduce fleet size and maintenance costs	Reduce fleet size and maintenance costs	Enhanced Productivity and Quality

Portfolio Navigator Week 49 1 2020

3DEXPERIENCE DELTAGEN
3DEXPERIENCE Open
3DEXPERIENCE Platform
ATAC Smart Drawings
3DEXPERIENCE Platform
3DEXPERIENCE Platform Resources
3DEXPERIENCE Platform Online Learning Experience
ATAC Smart Drawings
Autosar Building
Autosar Far CATIA V8 Products

3DEXPERIENCE DELTAGEN
3DEXPERIENCE Open
3DEXPERIENCE Platform
ATAC Smart Drawings
3DEXPERIENCE Platform
3DEXPERIENCE Platform Resources
3DEXPERIENCE Platform Online Learning Experience
ATAC Smart Drawings
Autosar Building
Autosar Far CATIA V8 Products

Discover our strategic capabilities

Vehicle Concept Design

Vehicle Engineering

Vehicle Manufacturing



Select the hyper Link

Useful links where to find information

<https://ifwe.3ds.com/transportation-mobility>

<https://youtube.com/playlist?list=PLMEjN73iIFkeTsvS1gZaUkgynXh8wydpf>

<https://www.linkedin.com/pulse/automotive-disruption-explained-why-incumbent-must-lichtmannecker>



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Thank you



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