# Manufacturing Industries / T&M

**Laurence Montanari**
Dassault Systèmes

CAPITAL MARKETS DAY 2020

3DS DASSAULT SYSTEMES

# My Experience in a Few Words

A strong expertise and knowledge of the automotive industry



► 1992: mechanical engineer at Renault



► Quickly moved to Services, holding various positions in this division: helpdesk, recall campaigns, after sales documentation, Accessories Program director.



**Dassault Systèmes Enables Renault's LCI to Experiment with an Electric Car for Last-Mile Delivery**

• Renault's in-house Cooperative Innovation Laboratory (LCI) uses 3DEXPERIENCE platform to imagine disruptive mobility solution for urban areas
• Real-time, secure collaboration on the cloud gives LCI team the agility of a startup
• Virtual value network connects diverse internal and external project team members

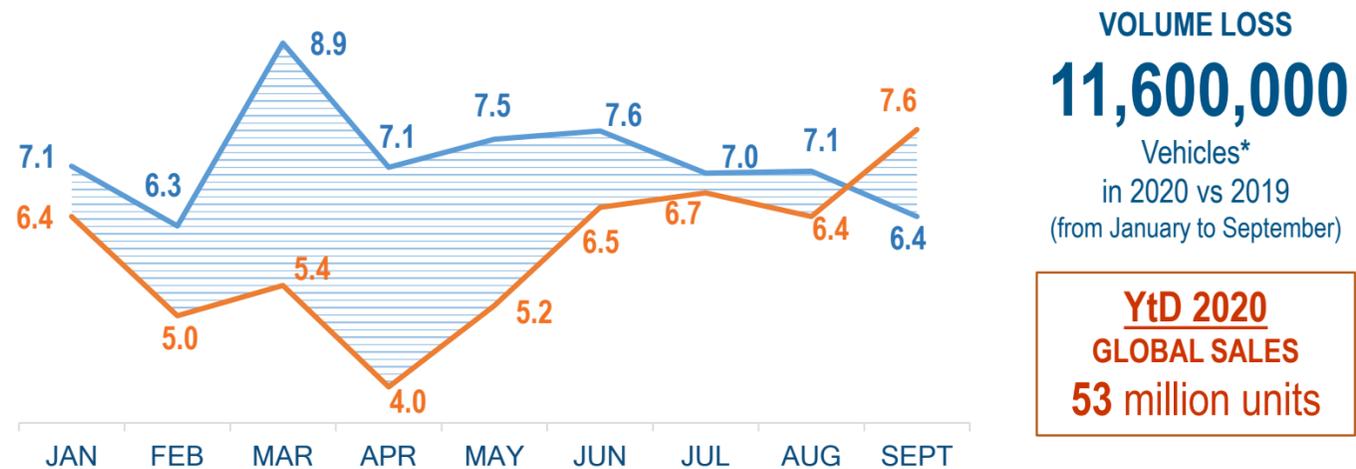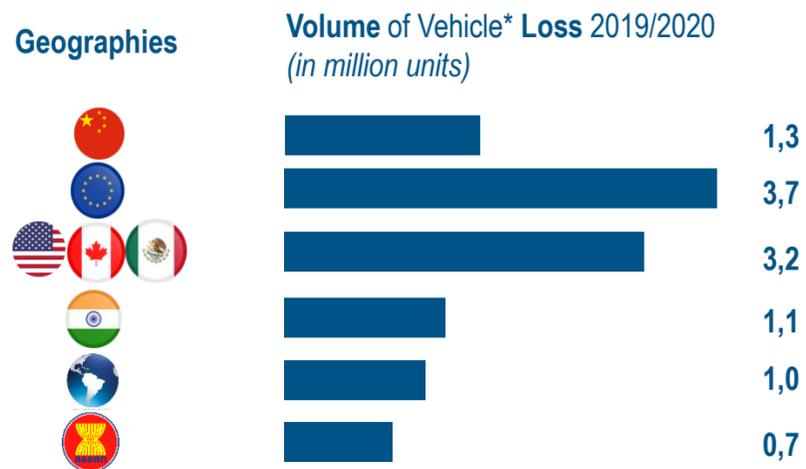Dassault Systèmes, Press Release May, 2019

Groupe Renault

► Project leader of disruptive vehicles : Pre-Project of Twizy, Renault EZ FLEX

# 2020 is Tough for Car Manufacturers

## Year to Year vehicle sales : 2020 versus 2019
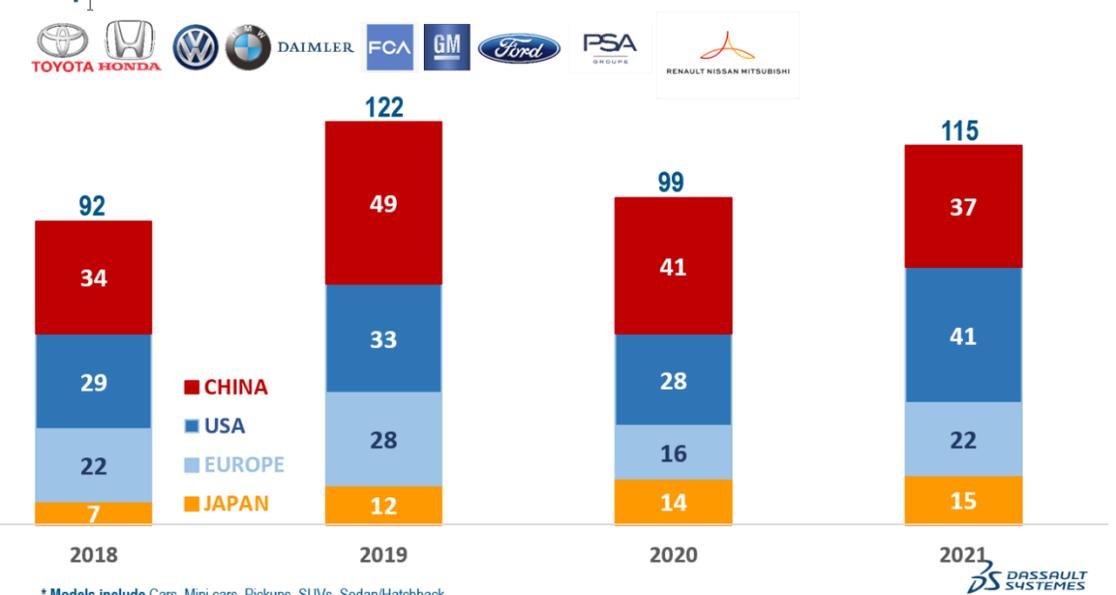**After months of losses, post lockdown sales were at the same level as last year**



Monthly sales chart (million units):
- 2019 (blue): JAN 7.1, FEB 6.3, MAR 8.9, APR 7.1, MAY 7.5, JUN 7.6, JUL 7.0, AUG 7.1, SEPT 6.4
- 2020 (orange): JAN 6.4, FEB 5.0, MAR 5.4, APR 4.0, MAY 5.2, JUN 6.5, JUL 6.7, AUG 6.4, SEPT 7.6

**VOLUME LOSS**
**11,600,000**
Vehicles*
in 2020 vs 2019
(from January to September)

**YtD 2020**
**GLOBAL SALES**
**53 million units**

### All Vehicles Global Sales - YtD 2020 *(million units)*

**Geographies** | **Volume of Vehicle\* Loss** 2019/2020 *(in million units)*

- China: 1,3
- Europe: 3,7
- USA/Canada/Mexico: 3,2
- India: 1,1
- (World): 1,0
- ASEAN: 0,7

## New vehicle projects are still going on



Top 10 OEMs – Number of Start of Production* – 2018-2021

OEM logos: TOYOTA, HONDA, VW, BMW, DAIMLER, FCA, GM, Ford, PSA GROUPE, RENAULT NISSAN MITSUBISHI

Stacked bar chart (CHINA, USA, EUROPE, JAPAN):
- 2018: total 92 — CHINA 34, USA 29, EUROPE 22, JAPAN 7
- 2019: total 122 — CHINA 49, USA 33, EUROPE 28, JAPAN 12
- 2020: total 99 — CHINA 41, USA 28, EUROPE 16, JAPAN 14
- 2021: total 115 — CHINA 37, USA 41, EUROPE 22, JAPAN 15

Legend: ■ CHINA ■ USA ■ EUROPE ■ JAPAN

\* **Models include** Cars, Mini cars, Pickups, SUVs, Sedan/Hatchback

Transportation industry **still continues**
*to design, model, simulate cars & trucks* in order
*to launch new* **models next year.**

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# Car Manufacturers' Challenges of 21ˢᵗ Century Mobility

**SHARE PUBLIC SPACE**

*of cities between pedestrians, mobility with cars, public transports, transportation of goods for healthier life & well-being*

**ENLARGE DIGITAL EXPERIENCE WITH ITS END CONSUMERS**

*Automotive brands need to refine and digitize the customer experience to develop into the mobility providers of tomorrow.*

**RENEW AS AN AUTHENTIC PLAYER**

*of the 21st Century*
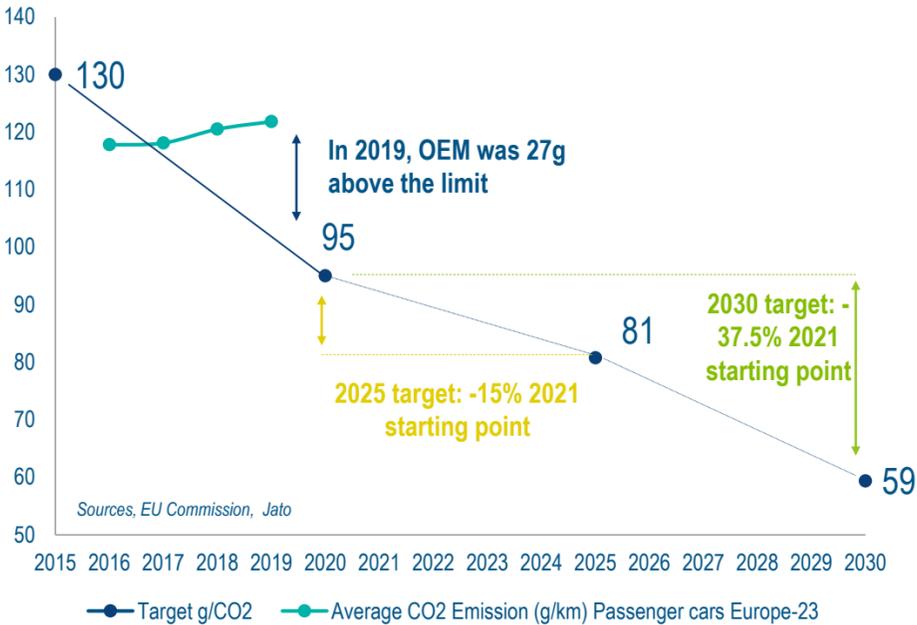*Traditional OEMs have a long history with Internal Combustion Engine*

**DEVELOP VEHICLES MORE RESPECTFUL**

*of the quality of the air and of the resources of the planet*
*Environmental Pollution is the 2ⁿᵈ major concern on a list of 21 tracked.*
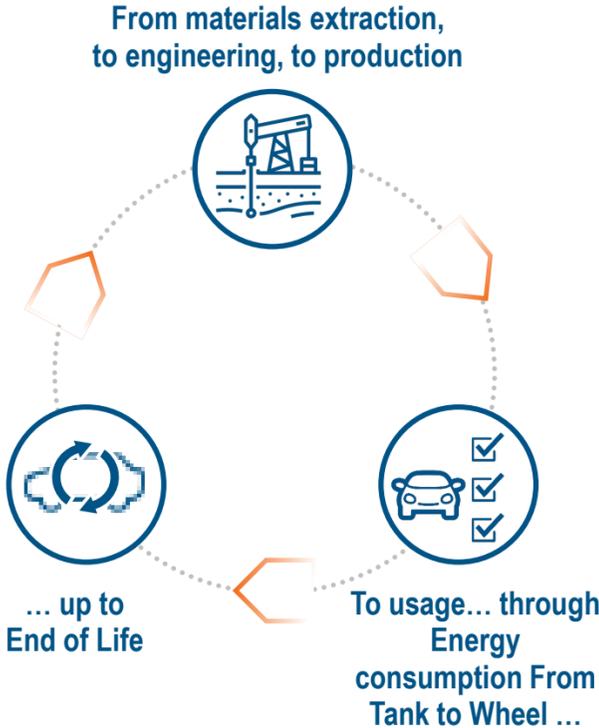
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# Develop Vehicles More Respectful of the Environment

**The 3DExperience Platform connects the dots between all sustainability domains**

Sustainability **Regulations** now encompass the complete lifecycle from **Cradle to Grave**



140
130 → 130
120
110
100 → 95
90
80 → 81
70
60 → 59
50

In 2019, OEM was 27g above the limit

2030 target: - 37.5% 2021 starting point

2025 target: -15% 2021 starting point

Sources, EU Commission, Jato

2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

— Target g/CO2    — Average CO2 Emission (g/km) Passenger cars Europe-23

European CAFE target:
road to 0 gCO$_2$/km in 2050

From materials extraction, to engineering, to production

To usage… through Energy consumption From Tank to Wheel …

… up to End of Life

End to end Traceability: Lifecycle Assessment, Rare Material, Circular economy

Electrification/ Hybridization Technology

Analytics to assess environmental footprint
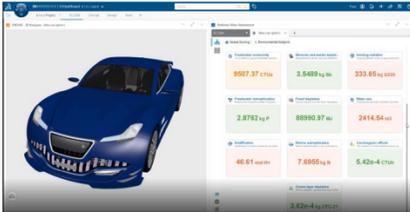
Close Loop between R + V and data as evidence: Real world experience to continuously improve mobility experience's environmental footprint
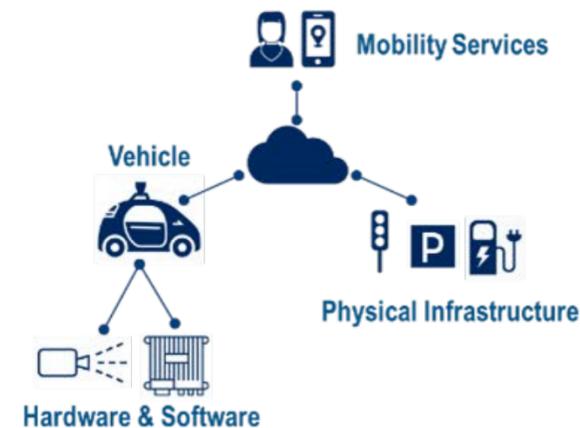
**3DS DASSAULT SYSTEMES**

# Renew as an Authentic Player of the 21$^{st}$ Century

**"Electrical, Electronic, Software" System-Driven approach to develop mobility experiences**



**NEW Mobility Experiences**

**NEW Value Networks**

**NEW Ways of Working**
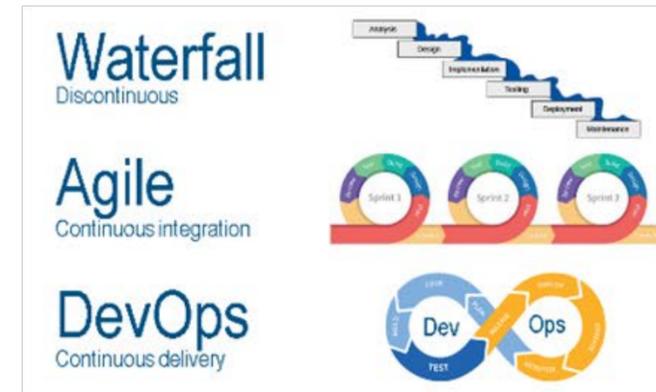
**Investment in Europe on E-Mobility ($Bn)**

60.0

x19

3.2

Mid 2017 to Mid 2018

2019

*Sources: Transport & Environment*
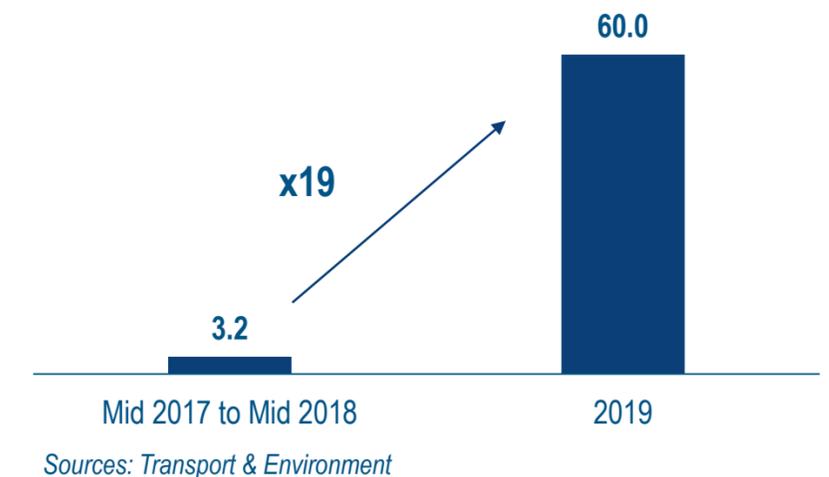
Leveraging current  CATIA MAGIC installed base: present at 7 out of 10 major T&M OEMs

**Extension to software and model design will double our potential of 3DEXPERIENCE users**

▶ Reduction of design change requests by 40%     ▶ Reduction of development costs by 30%

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# 9 out of 10 EV Startups Using 3DEXPERIENCE

| # | Name | Geo | Solutions |
|---|------|-----|-----------|
| 1 | TESLA | 🇺🇸 | 3D ▷ i³ V,R |
| 2 | RIVIAN AUTOMOTIVE | 🇺🇸 | 3D ▷ i³ V,R |
| 3 | NIO | 🇨🇳 🇺🇸🇪🇺 | 3D ▷ i³ V,R |
| 4 | WELTMEISTER — WM Motor | 🇨🇳 | NP |
| 5 | NIKOLA MOTOR COMPANY | 🇺🇸 | 3D ▷ i³ V,R |
| 6 | XPENG — Xiaopeng Motors | 🇨🇳 | NP |
| 7 | Faraday Future | 🇨🇳 🇺🇸 | 3D ▷ i³ V,R |
| 8 | LUCID | 🇺🇸 | 3D ▷ i³ V,R |
| 9 | chargepoint | 🇺🇸 | NP |
| 10 | PROTERRA | 🇺🇸 | 3D ▷ i³ V,R |

# 3DEXPERIENCE Platform Covers Development From Semiconductors to Carmakers

**Automotive Carmaker**

Smart, Safe & Connected
Efficient Multi-Energy Platform
Global Modular Architecture

JAGUAR  LAND ROVER  PSA GROUPE  TOYOTA  Ford

**Vertical Integration**

**Automotive Suppliers**

Lean Production Run
Adaptive Connected Systems
High Performance Electronics

BOSCH  Valeo  faurecia

**Semiconductors**

High Performance Semiconductor

ST life.augmented  NXP  SAMSUNG

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# Share Public Space

A  multi-players' collaborative platform to integrate data, model future scenarii & operate

BCG asked 5,000 people around the world what mode of transportation they would choose for making different types of journeys **in the future**.
**For medium or long trips:  they are still considering using a vehicle**



| short trips (<2km) | Medium trips (<5km) | Long trips (>5km) |

- ■ Private car
- ■ Autonomous vehicle (robo pod, robot taxi, robo shuttle)
- ■ Micromobility (e-scooters, e-bikes, …)
- ■ taxi/ride hailing
- ■ Public tranportation
- ■ Walking

**Mobility option preference across trip distances (%)**
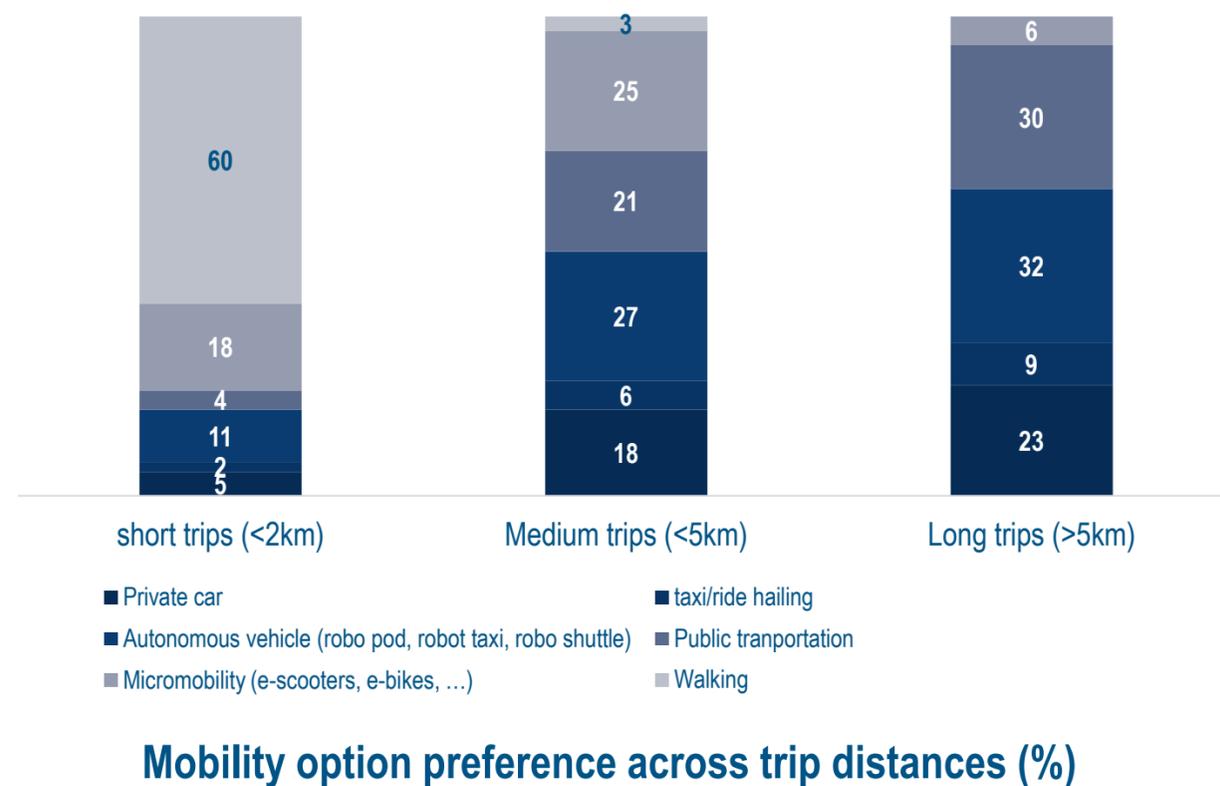
**The overall mobility market will evolve around three pillars**

**Alternative powertrain**
- EV
- PHEV
- Hydrogen, …

**Connected and autonomous vehicles**
(not only cars)

**Mobility as a Service**
- Ride sharing
- Mobility providers

**$1 Tn**
**Expected market**
**Size in 2030**

# Share Public Space

A multi-players' collaborative platform to integrate data, model future scenarii & operate

**Operate**

**Public Transport Scheduling & Operations**

**Mobility Service Operations**

**Mobility Fleet / Asset Management**

**Public Transport Planning**

**Strategic Mobility Requirement**

**Validate / Certify New Mobility Systems**

**Design**

**Design New Mobility Services & Experience**

# Enlarge Digital Experience with its End Consumers

**3D**EXPERIENCE **closes the loop between Engineering and Marketing**



Emotional Value

Product Data

Personalized Content

Digital, Social, Web

Selling Mobility Services

New Dealer's Mission