



3DEXPERIENCE®

## A&D AI APPLICATIONS

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



# OUR BELIEF



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

# OUR LEGACY



1981  
3D  
Design

1989  
3D DMU  
Digital  
Mock-up

1999  
3D PLM  
Product Lifecycle  
Management



2012  
3DEXPERIENCE®  
platform



2020  
Virtual Twin  
Experience  
of **Humans**

# LONG STANDING RELATIONSHIPS WITH A&D CUSTOMERS



## AIRFRAME OEM



## AEROSPACE SUPPLIERS



## PROPULSION



## AIRLINES, MROs, AIRPORTS



## DEFENSE

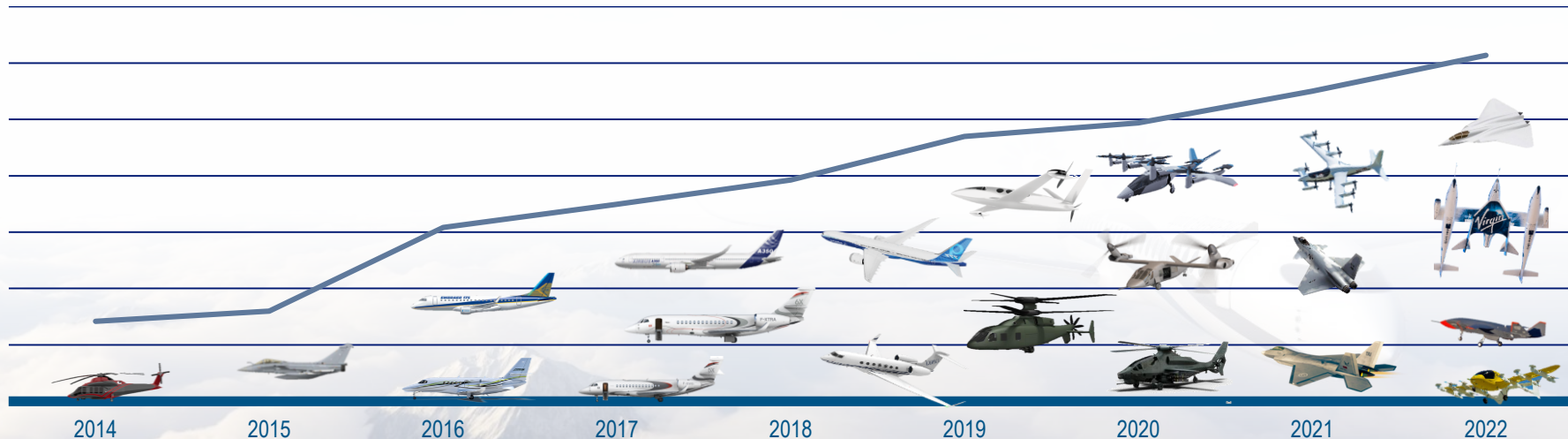


## SPACE



# A&D 3DEXPERIENCE RAMP-UP

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# KEY INDUSTRY CHALLENGES



**We are at a Vanguard of a New Industry**

Sir Richard Branson  
Founder  
Virgin Atlantic



**Digital is a sovereign space like space, land, air, sea, frequencies. Digital is political now.**

Bernard Charlès  
Vice Chairmen & CEO, Dassault Systèmes  
Le Monde



**"Hydrogen Plane is the ultimate solution – But a lot of work lies ahead"**

Guillaume Faury  
AIRBUS CEO

**49%**

of aerospace and defense executives believe that it will be imperative for their companies to increase sustainable and environmental responsibility performance 2 years from now, compared to just 22% today.

**63%**

of aerospace executives expect up to 55% of their revenues to come from more sustainable production processes in the next 3 years, down from the affluence design and new research of use and development materials.



**Setting us up for full type certification, at the end of 2023.**

Paul Sciarra  
Joby Executive Chairman  
SEC Filing



**Increase Agility, Increase Digitalization, Reduce Supply Chain Risk - which is all about Quality.**

Siva Balasubramanian  
VP of Factory Support Engineering, Spirit AeroSystems



**I need a smart, collaborative & data driven platform for sustainment.**

Bruce Litchfield  
VP of Sustainment Operations at Lockheed Martin



# AEROSPACE & DEFENSE PORTFOLIO

40 years of partnership with OEMs has driven our Aerospace & Defense Portfolio to include latest technological enablers :



- Model Based System Engineering in configuration (**MBSE**)
- Composite, 3D printing, Fasteners, Generative Design
- Augmented Workforce on the shopfloor (**AR/VR**)
- Unified Science Based coupling of Modeling & Simulation (**MODSIM**)
- Collaborative Simulation Lifecycle Management (**SLM**)
- Big Data Driven Operations (**AI/ML**)

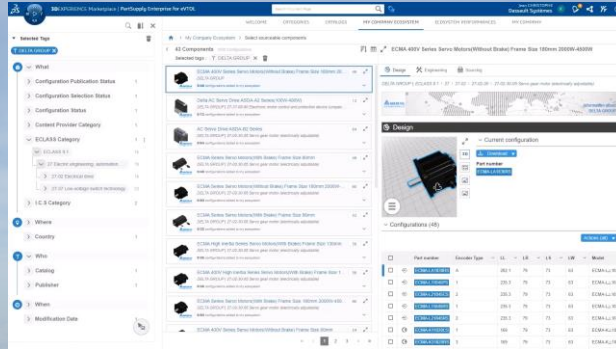
...integrated into the **Cloud** powered **3DEXPERIENCE®** platform

# MODSIM & DATA SCIENCE

→ IN ENTERPRISE →



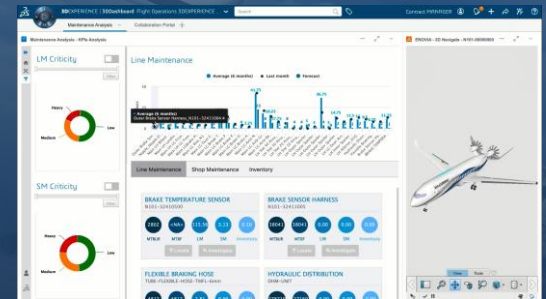
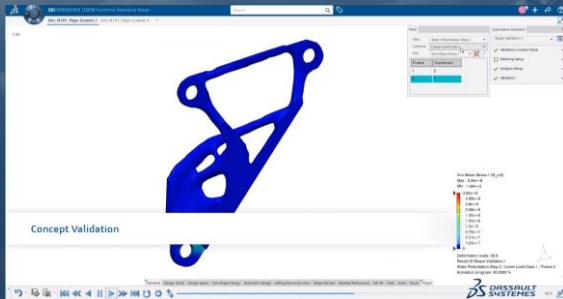
3DEXPERIENCE



IN DESIGN

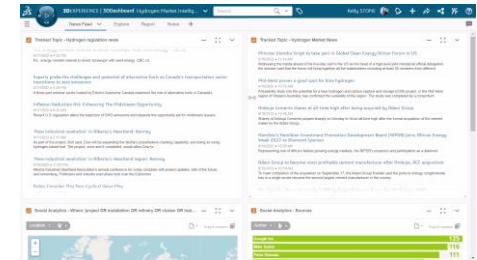
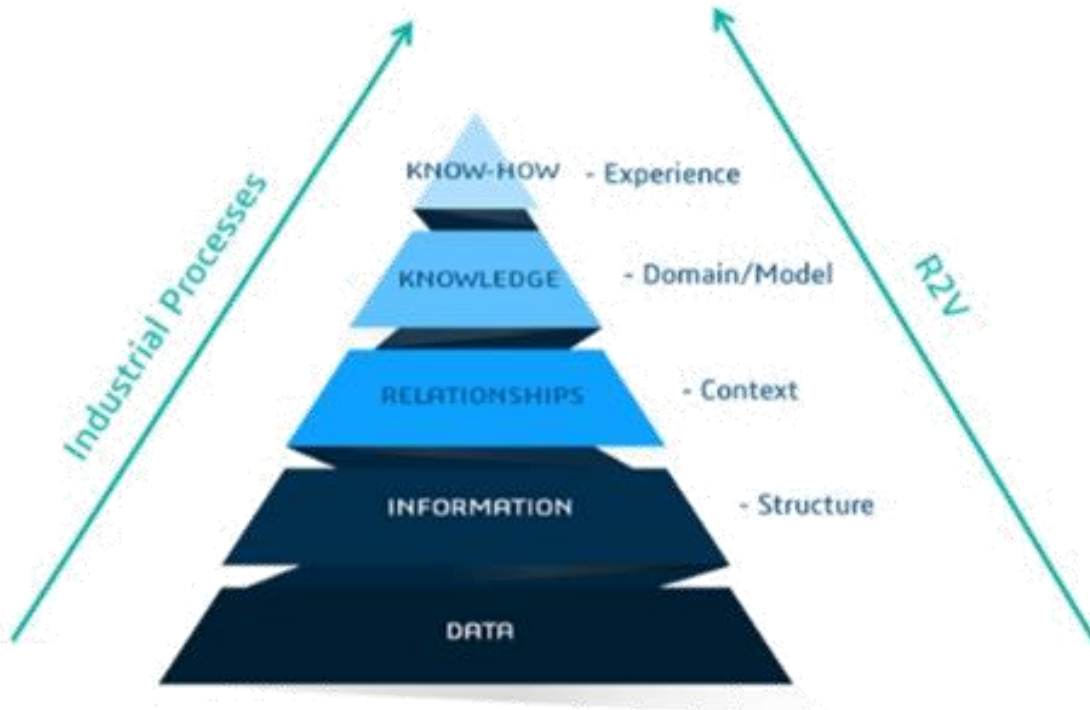
IN MANUFACTURING

IN OPERATIONS

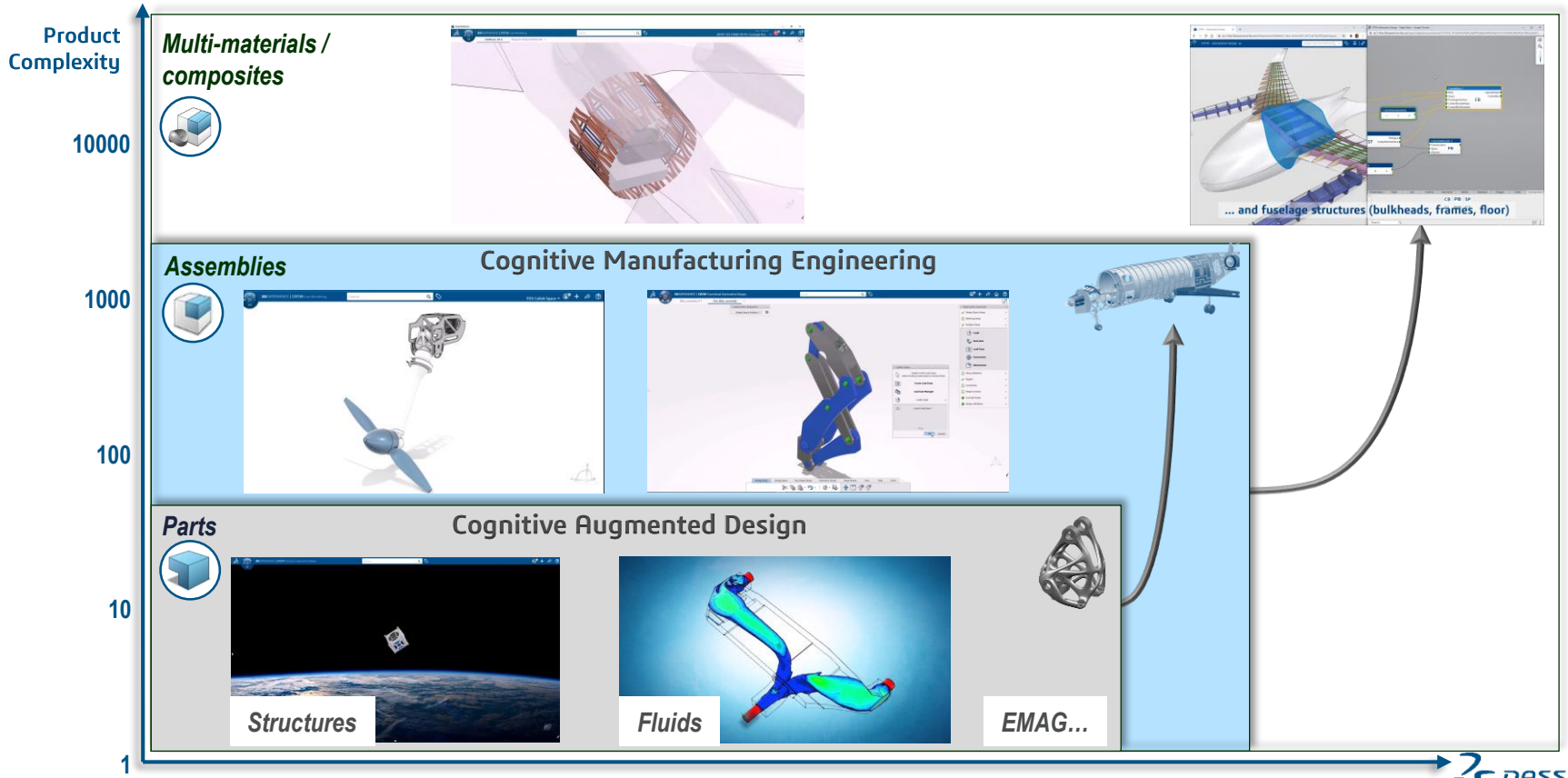




# FROM DATA TO KNOWLEDGE AND KNOW-HOW



# GENERATIVE AIRCRAFT?



# CYBER-SYSTEMS GENERATIVE ENGINEERING

Requirements, Traceability, Configuration & Governance, Compliance

System of Systems

## Cyber Systems of Systems Specification



Mission Modeling



## Cyber Systems Specification

Product Specification, Modeling and trade-off



Functional Modeling



Logical Modeling



## Cyber Systems Validation

Product Validation  
Design Validation and Studies

Real World

Hardware In the Loop

Software In the Loop

Model In the Loop

System

Logical  
Physical

## Cyber Systems Model Based Design

Continuous multidisciplinary integration

Mechanical



Modeling



Simulation

Fluid



Modeling



Simulation

Other Disciplines

Magnetics

...

Electrical



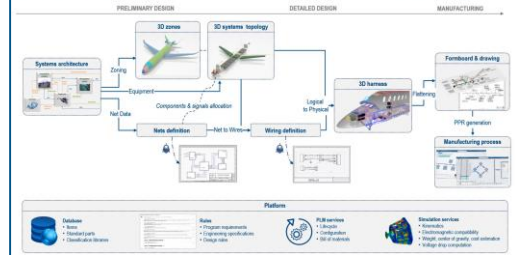
Software



Component

## MBSE to Electrical

End to End Systems Architecture & Electrical Process



## MBSE to Software





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