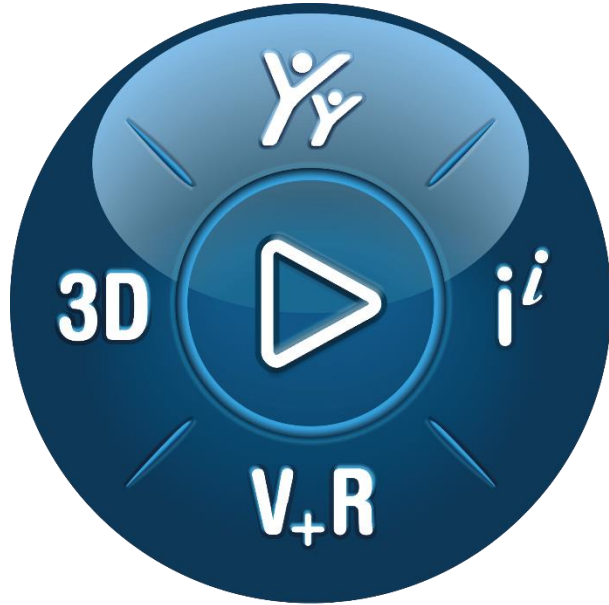


Motorcycle Value Proposal

July 2021



3DEXPERIENCE[®]



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Transport & Mobility Industry
Value Expert Sales
Transport & Mobility



Luca NOSCHESE

Italy Customer Process Industry
Partner Sales Manager - Sales
Expert Senior Specialist
CPE Industry Sales



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DSGS Transport & Mobility
Industry Solution Technical
Consultant, DSGS
T&M Industry



2 wheelers

1 journey



Agenda

Motorcycle Challenges & Trends

Motorcycle Solution Experience

Customer references

Q&A

Agenda

Motorcycle Challenges & Trends

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Q&A

Motorcycle segmentation

Speed and performance experience



3 wheelers



Urban mobility experience



- ROAD MOTORCYCLE
- OFF-ROAD MOTORCYCLES
- SCOOTER
- MOPED
- RECREATIONAL VEHICLES

Ride everywhere



Accessories Suppliers



Motorcycle – Geo Market

EMEA

- Mature Market
- Regional OEMs
- Premium brands
- Scooters in big cities
- One-digit growth
- Sport bikes
- High power engine

JAPAN

- Mature Market
- growth for >250cc
- Medium power Engine
- Electric Vehicles

DS Footprint ~15% TAM for Motorcycle
DS average in T&M = 17%

NAM

- Mature Market
- Strong local OEMs
- Premium brands
- Slow growth
- Leisure bikes
- High cc Engine

Africa

ASEAN

Latam

- Growing Market
- Regional OEMs & Low cost
- Small cc power
- Utility transportation

Environmental issues



Geopolitical change



Economics instability



Demographics change



High Tech Internet



New Trend : Electrification !

NEWS

Honda, KTM, Piaggio, and Yamaha Form Electric Battery Consortium

Firms aim to define a standard for swappable battery packs for motorcycles.

By Ben Purvis | Updated: March 2, 2021



Google

electric motorbike

- Zero SR
- Energica Ego
- Brutus V9
- Johammer J1.200
- Tacita T-Race Diabolika
- Damon Hypersport Premier
- Vespa Elettrica
- Gogoro Smartscooter S2
- Alta Motors Redshift MXR
- Victory Empulse TT
- Lito Sora
- Lightning LS-218
- Cake Kalk
- Tarform
- Arc Vector
- ...



What do Motorcycle Makers value the most?



Electric, Safe and Connected



Quality, Regulations & Cost



New Customer Experience



Mass Production to Mass Customization



Deploy **Systems Thinking** Approach



Optimize and **validate** architecture upfront



Explore ideas and to **Reinvent mobility** experience portfolio .



Improve **manufacturing operations** visibility and, efficiency through digital continuity

Benefits & KPIs

Increase safety and Technology offer to customers
KPI : Sales Increase

Decrease warranty cost related to electronics & software defects
KPI : number of recalls

Increase Brand Image and innovation image on the market
KPI : customer satisfaction

Increase Continuously Manufacturing efficiency
KPI : uptime production

Business Drivers

Business changes

Agenda

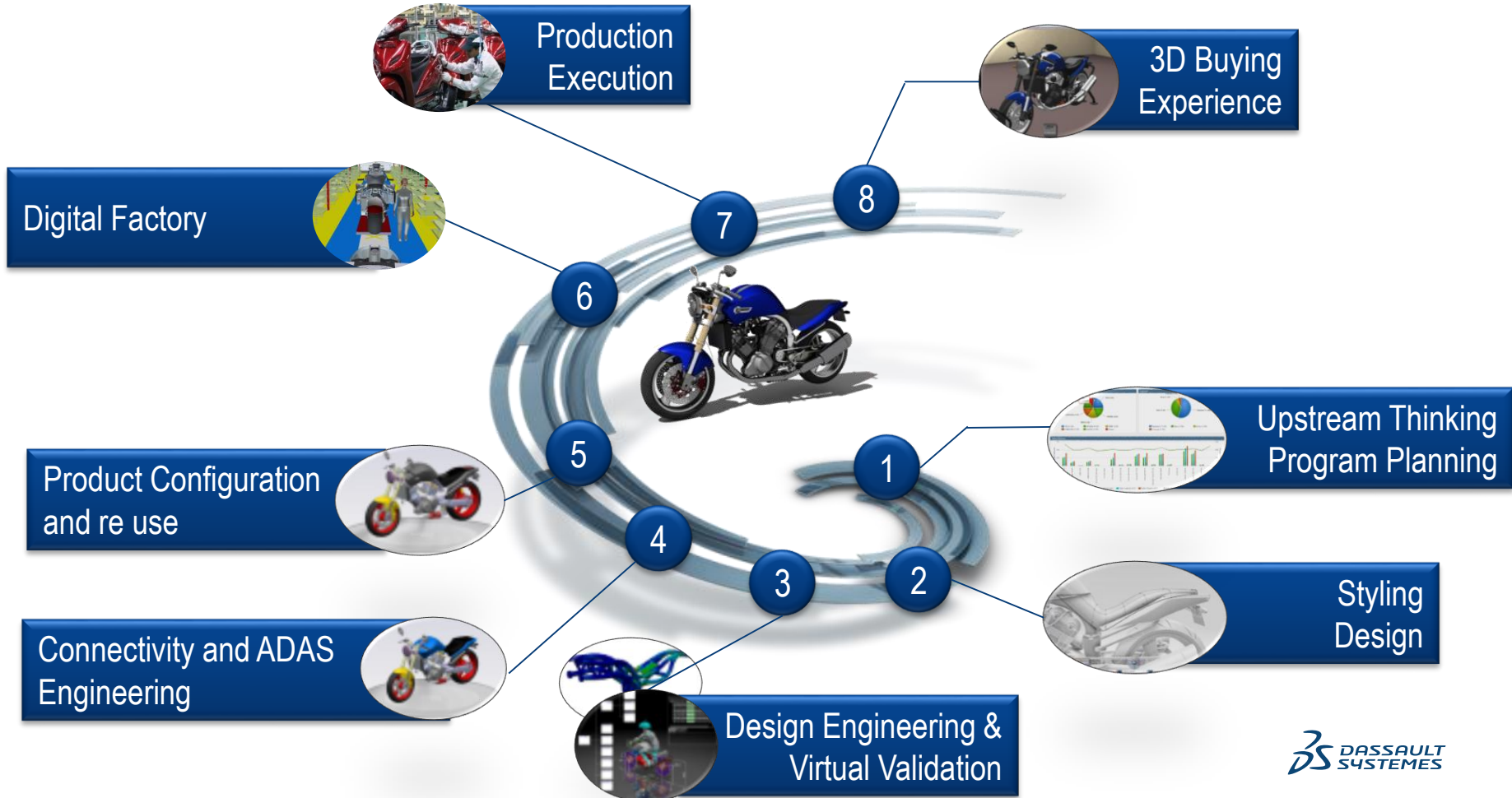
Motorcycle Challenges & Trends

Motorcycle Solution Experience

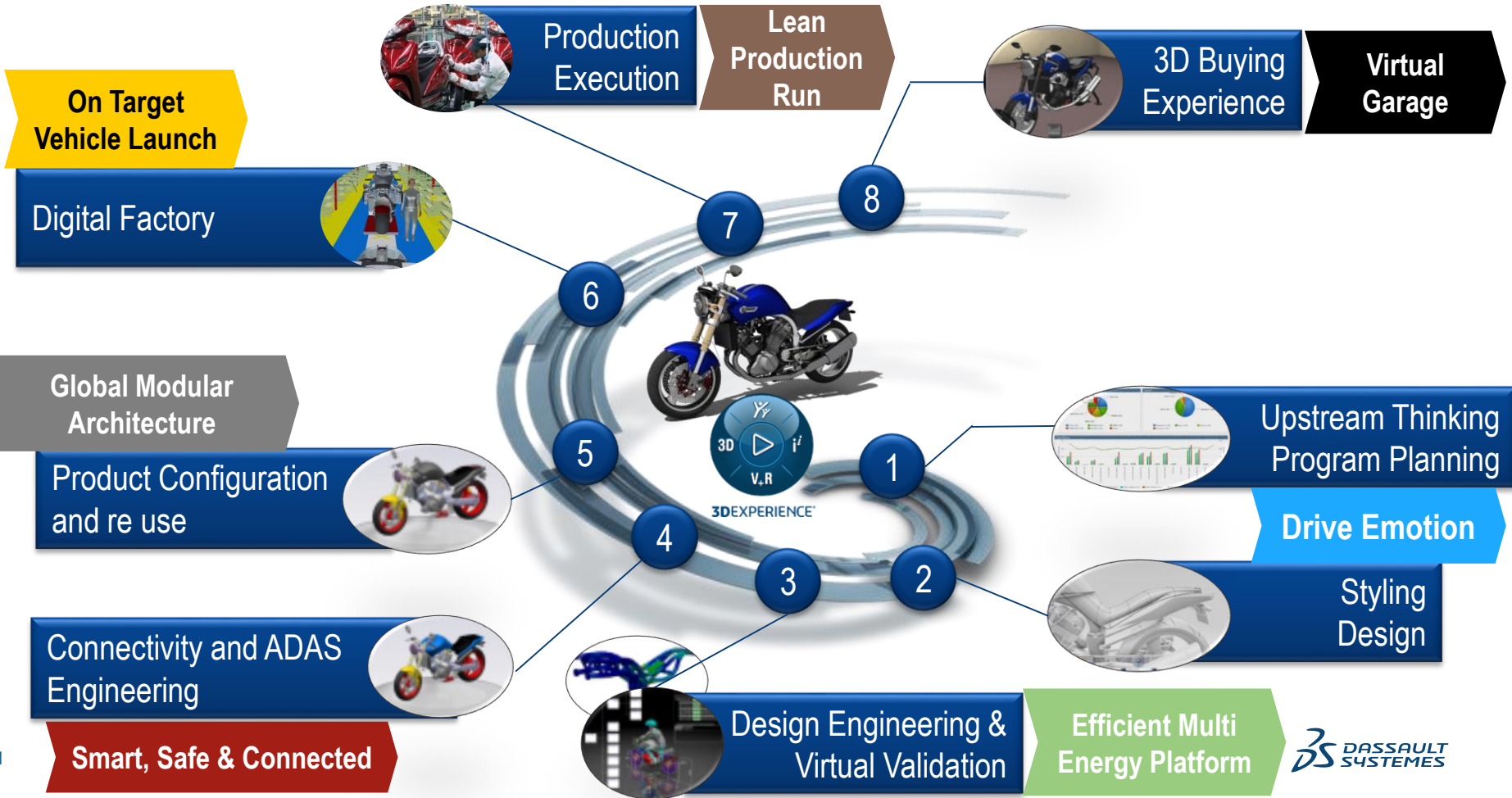
Customer references

Q&A

From market analysis to sales



End to End Solutions for motorcycle



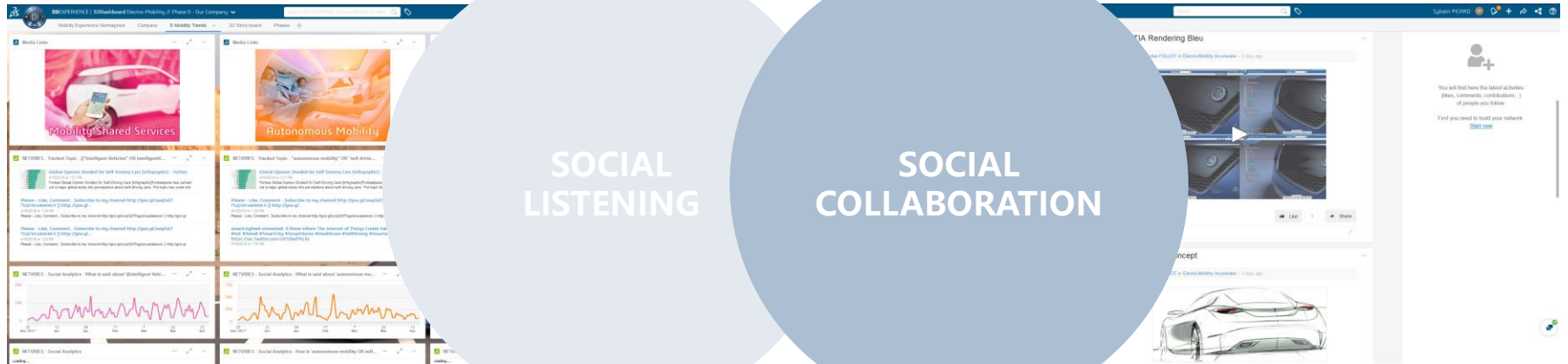
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Briefing, ideation & market watch | overview

*Be inspired and connected
to
fulfill customer's desire*

SOCIAL
LISTENING

SOCIAL
COLLABORATION



Naca 1000

https://eu1-five.3dexperience.3ds.com/#dashboard:fd:dbca-09a1-44ee-be4d-cc3da21a30f6/Naca%201000

3DEXPERIENCE | 3DDashboard Naca 1000


Search INDTM-internal

Xavier MELKONIAN


Naca 1000 Trends Ideation Portfolio Team posts

3DSwym Content - Content Viewer


Maximize




3DSwym Content - Content Viewer



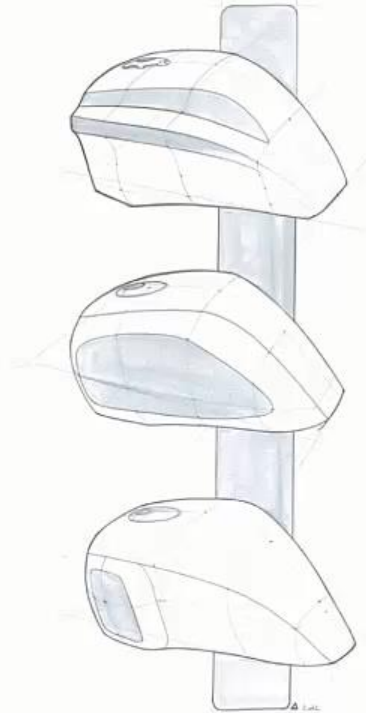
3DSwym Content - Content Viewer



3DSwym Content - Content Viewer



3DSwym Content - Content Viewer



3DSwym Content - Content Viewer

CATIA for Creative Designers

from art to part

Ideation

Creativity

Concept

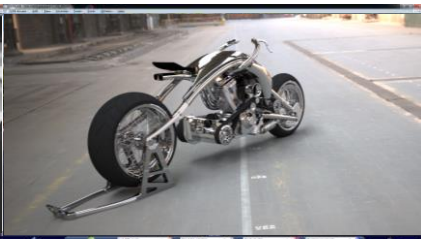
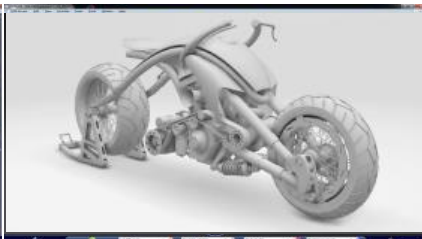
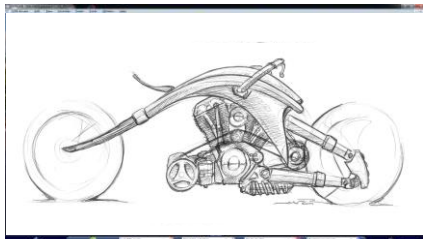
Concept modeling

Refinement

Detail modeling

Design Validation

Visualization & Experience



Rough Idea sketch
> More design alternatives

Early Stage 3 D / Digital Clay
> Early stage Validation

Detail Concept rendering in 3D/ 2D.
> More quality and quantity, same time



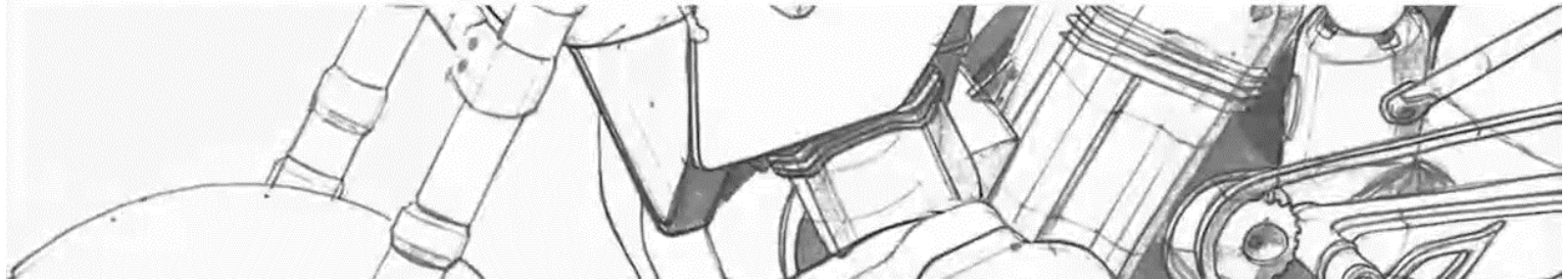
3DEXPERIENCE™

CATIA for Creative Designers

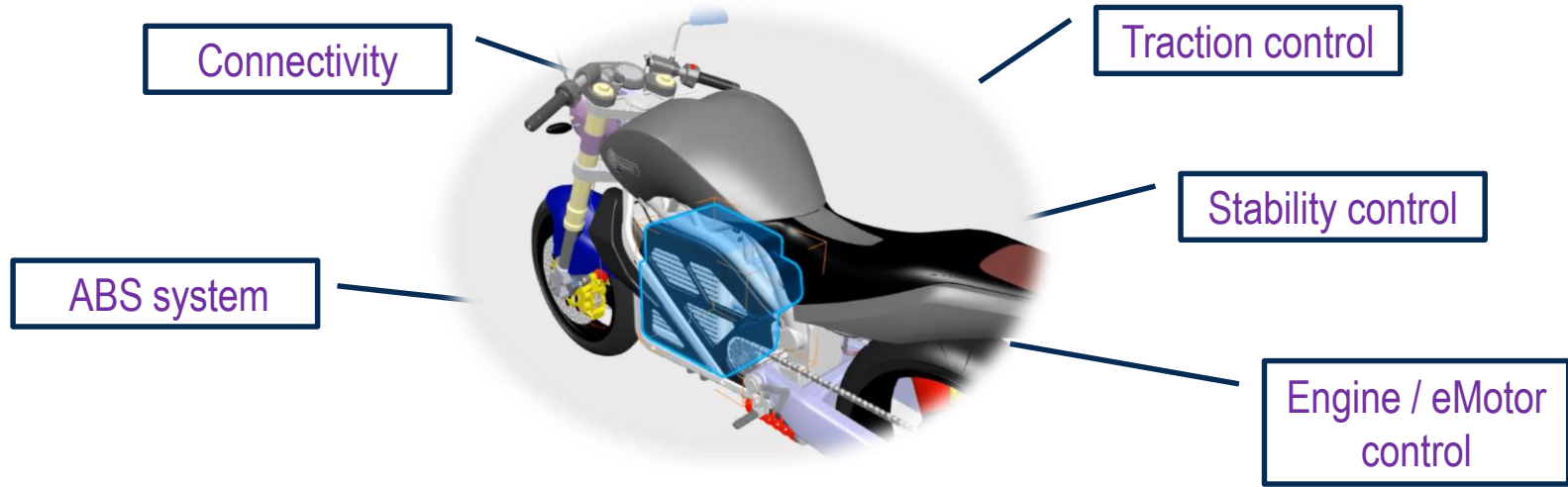
from art to part



NACA 1000



Innovation thanks to latest technology integration



The concept of **Virtual Mock up** that integrates geometry, electronics, software and simulation is necessary to design and simulate the car of the Future.

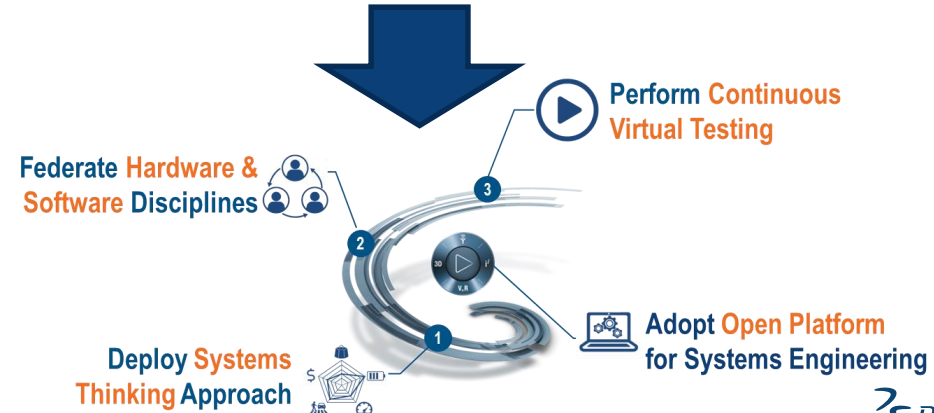
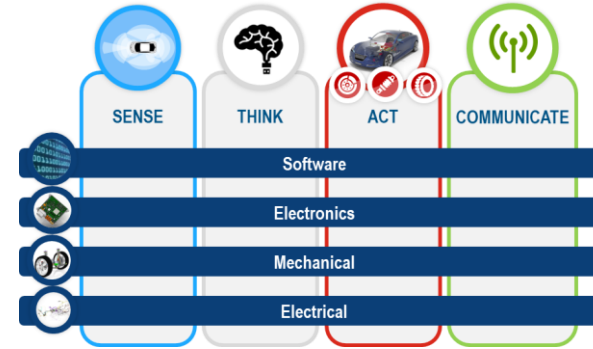
KPI : % SW re-use, safety target, E/E cost reduction

Ensure full traceability of Embedded System from Requirement to SW delivery

Adopt new engineering strategy based on Model Based System Engineering (MBSE)

Streamline **collaboration & traceability** between disciplines and suppliers

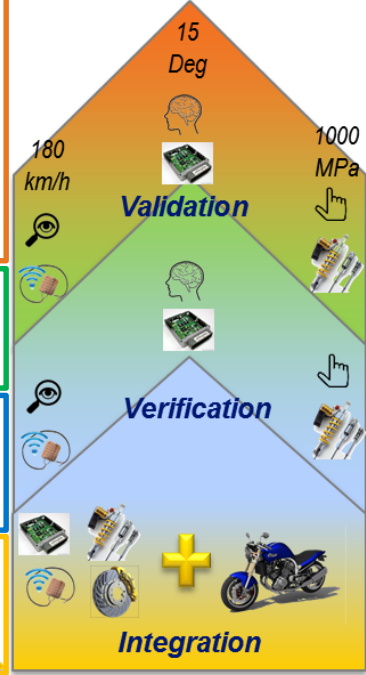
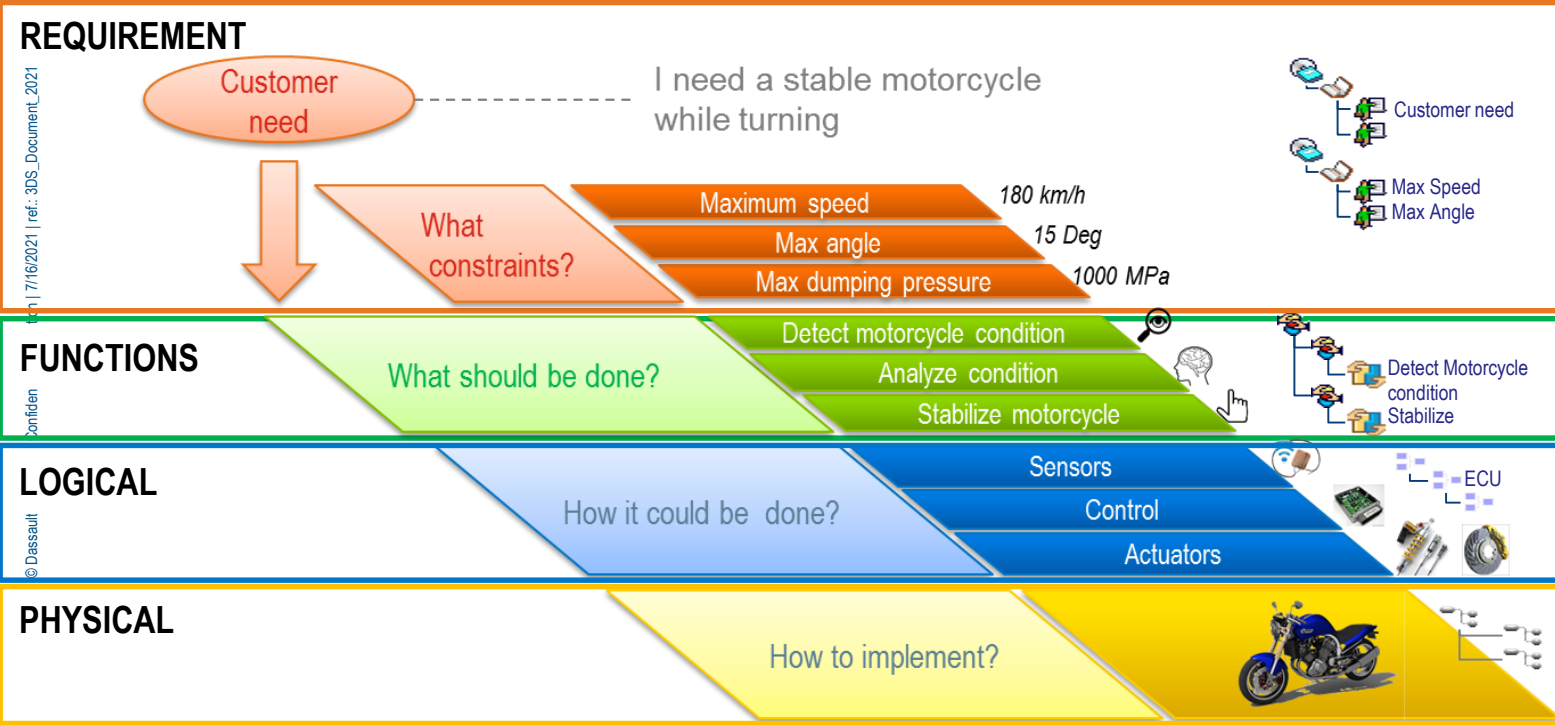
Synchronize software, electronics, mechanical & electrical components into **an unified environment, supporting configuration and change management**



RFLP approach for system engineering



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17/16/2021 | ref.: 3DS_Document_2021

Confiden

© Dassault

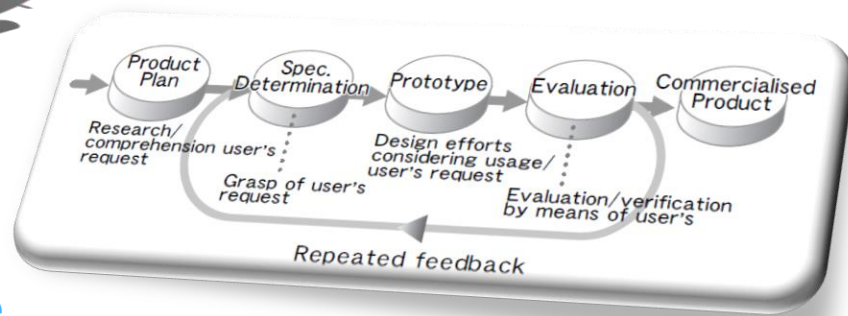
Global product development - Challenges

How to develop faster variants of motorcycle, targeting different geos?



How to support external actors in the motorcycle development?

How to ensure quality through the whole motorcycle development process?



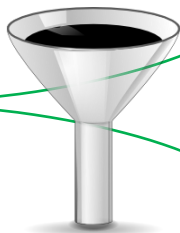
One global definition, including local specifications



Global specifications



Global model
150% digital mock up



Local specifications 1



Major Variant 1



Minor Variant 1.1



Local specifications 2



Major Variant 2



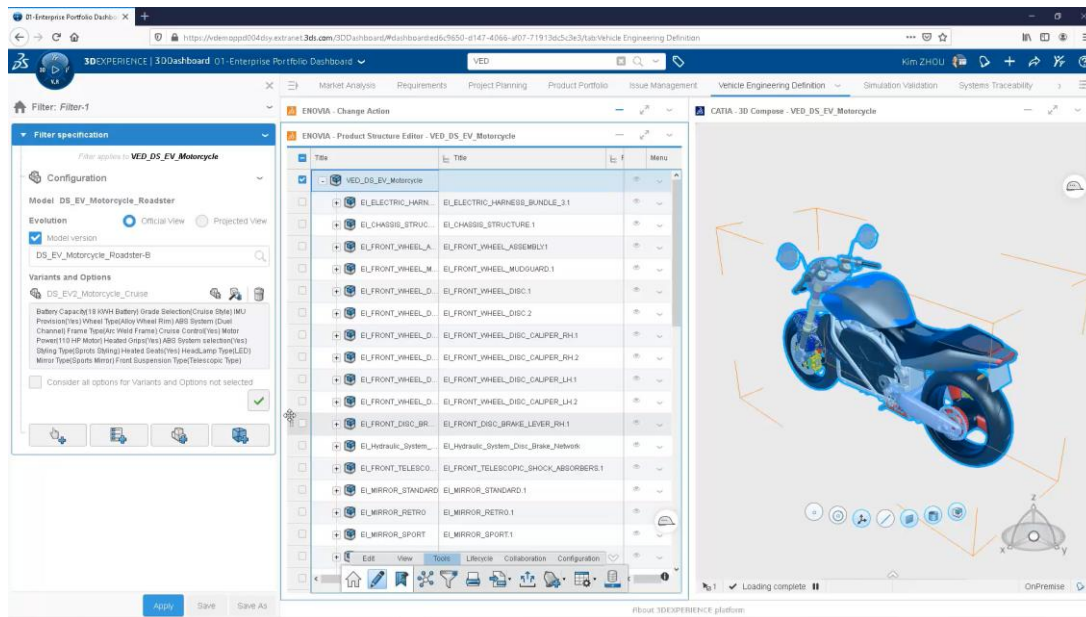
Minor Variant 2

Complete and unique Mock up with all variants to optimize re use and to facilitate concurrent engineering

One global definition, including local specifications

Every OEMs are looking to perform economy of scale, leveraging their own global R&D org or partner alliances. Modularization is key and OEMs are looking for help to restructure their development process.

- one single IP platform to serve WW engineering centers
- Flexible platform to quickly engage collaboration with new partners
- Increased collaboration between designers, architects, product managers



- >> Reduce cost of duplicated component by 50%
- >> Reduce Engineering process by 30%



TWO-WHEELER SIMULIA SOLUTIONS

 SIMULIA

Design Optimization thanks to simulation



Electric Drive Engineering

Noise & Vibration

Battery Engineering

Electromagnetic Performance

Electric Drive System Design

Thermal Management

Electric Drive Design

Lubrication

Electric Drive Performance

Related Processes

Strength & Stiffness

Electric Drive Control System Design & Verification & Validation

Durability

Detailed Design

Conceptual Design

Power Electronics Engineering



Example 1 : focus on Weight Reduction of a Motorbike Support Frame with **SFE Concept**

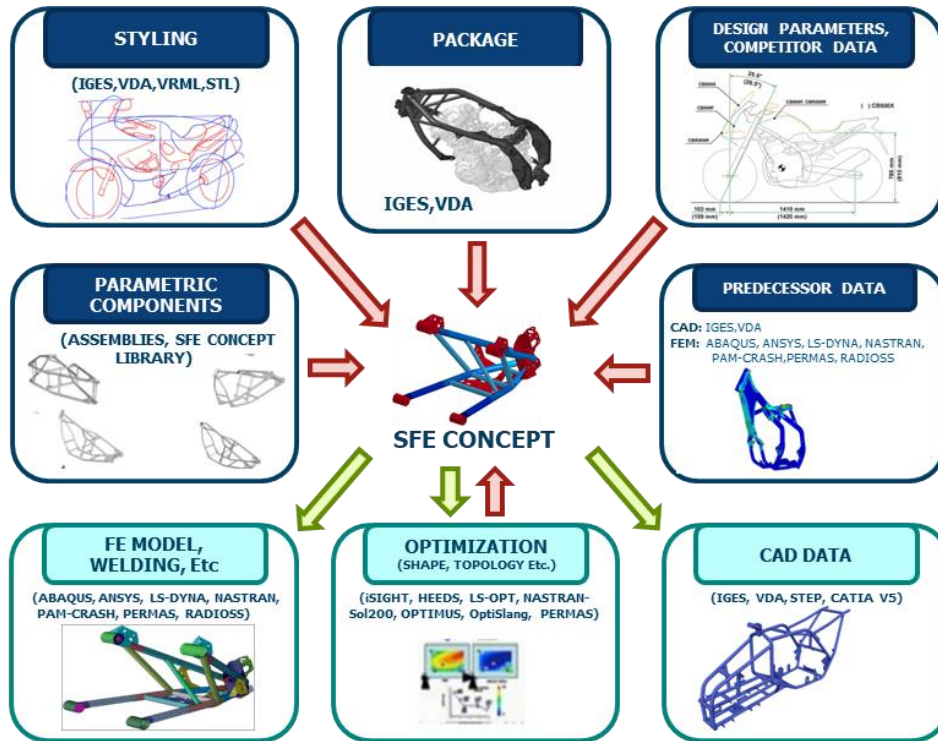


Objective:

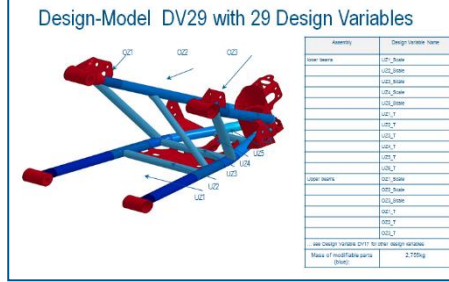
Weight Reduction
Performance Improvement For
Crash, Vibration & Durability

Function:

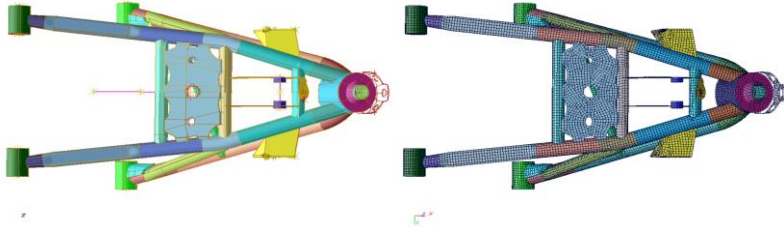
Fast Parametric Geometry Design
Simulation Ready Geometry
Interfaces With Nastran/LS
Dyna/ModeFrontier/Isight



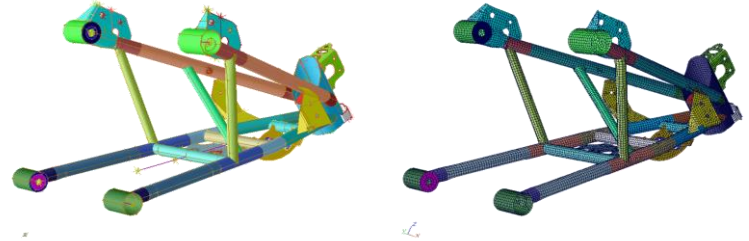
Design-Model (29 Design Variables)



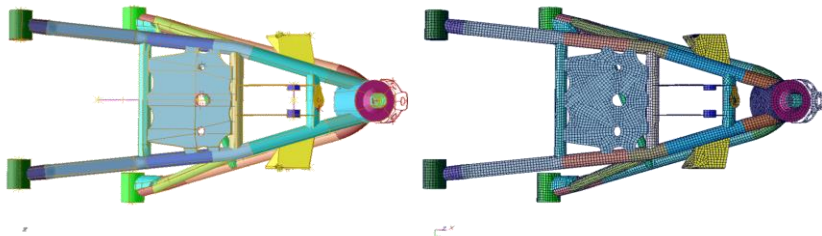
Animation: Variation of lower beams



Animation: Variation of supporting pipes und space diagonal



Animation: Variation of cross member



RESULT : Convergence in ~ 50 Simulations

Mass Reduction:

- 730g (15.0 % of total mass)

Example 2 : focus on Weight Reduction by shape optimization with GDE



Objective:
Weight Reduction

Function:

Function-Driven Generative Design

Explore and generate lightweight shapes, on target, with a design solution addressing both additive and conventional manufacturing processes.



Weight

Stiffness

Durability

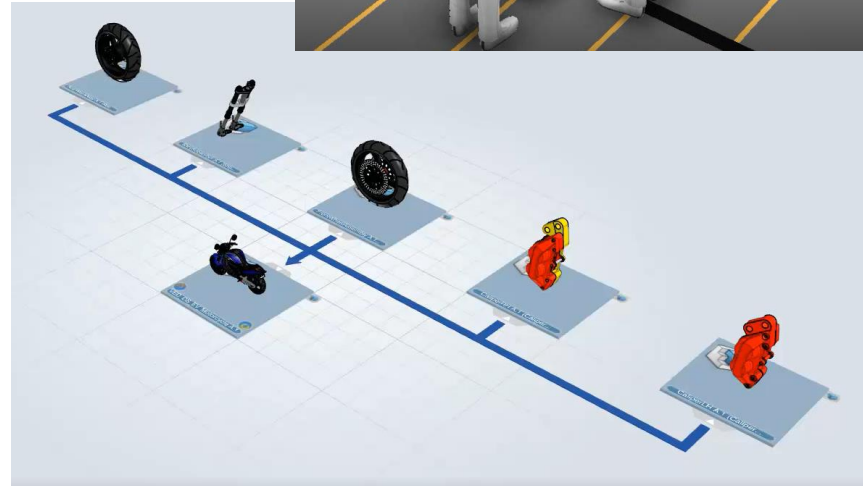
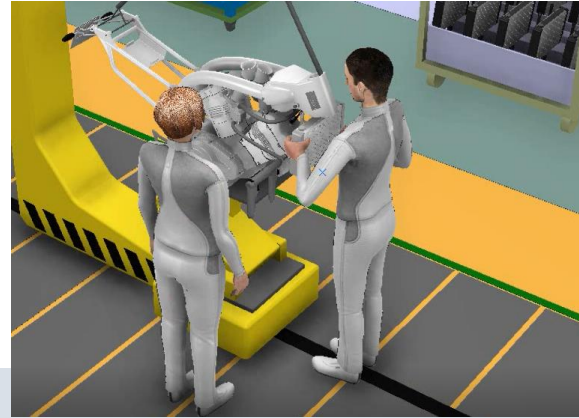
Cost
Material | Engineering | Manufacturing

Materials

Final Assembly Process Engineering & Virtual Build

Comprehensive 3D product assembly simulation to define MBOM, process plans with time analysis, workload balancing, and human simulation.

- Build the Virtual Twin of the process and factory
- Increase production and maximize resource utilization with offline programming of complex robotic systems
- Avoid costly damage and rework through virtual validation of tools and processes
- Accelerate the speed of incorporating engineering change to the assembly robots, cells and line
- Virtually verify robot movements and optimize the use of shop floor space and cycle time



FROM MASS PRODUCTION TO MASS CUSTOMIZATION

- ▶ *Improve visibility, efficiency and control of manufacturing operations, within and across plants*
- ▶ **Sales & Operations Planning**
 - ▷ *Optimize demand and supply planning, forecasting and what-if scenario*
- ▶ **Master Planning**
 - ▷ *Optimize planning to reduce lead time and inventory*
- ▶ **Operational Scheduling**
 - ▷ *Schedule and monitor production*
- ▶ **Manufacturing Operations Management**
 - ▷ *Improve visibility, control and synchronization of global production*



Ride new Marketing & Sales Experience

- ▶ The Business of Connected Media
 - ▶ Nearly 50% of all industry growth will come from digital services over the next 10 years
 - ▶ Over the longer term, the majority of value will be delivered as experiences
 - ▶ Ultimately, digital experience value will displace value in manufacturing and trade of physical goods

The Experience
is the Product



Ride new Marketing & Sales Experience

Marketing in the Age of Experience



Use your 3D Assets to build unique Sales & Marketing deliverables :

- Fast production process
- Access to any variant of motorcycle

DEMO time

Already available in :



EXPERIENCE
Center



CATIA

ENOVIA

SIMULIA

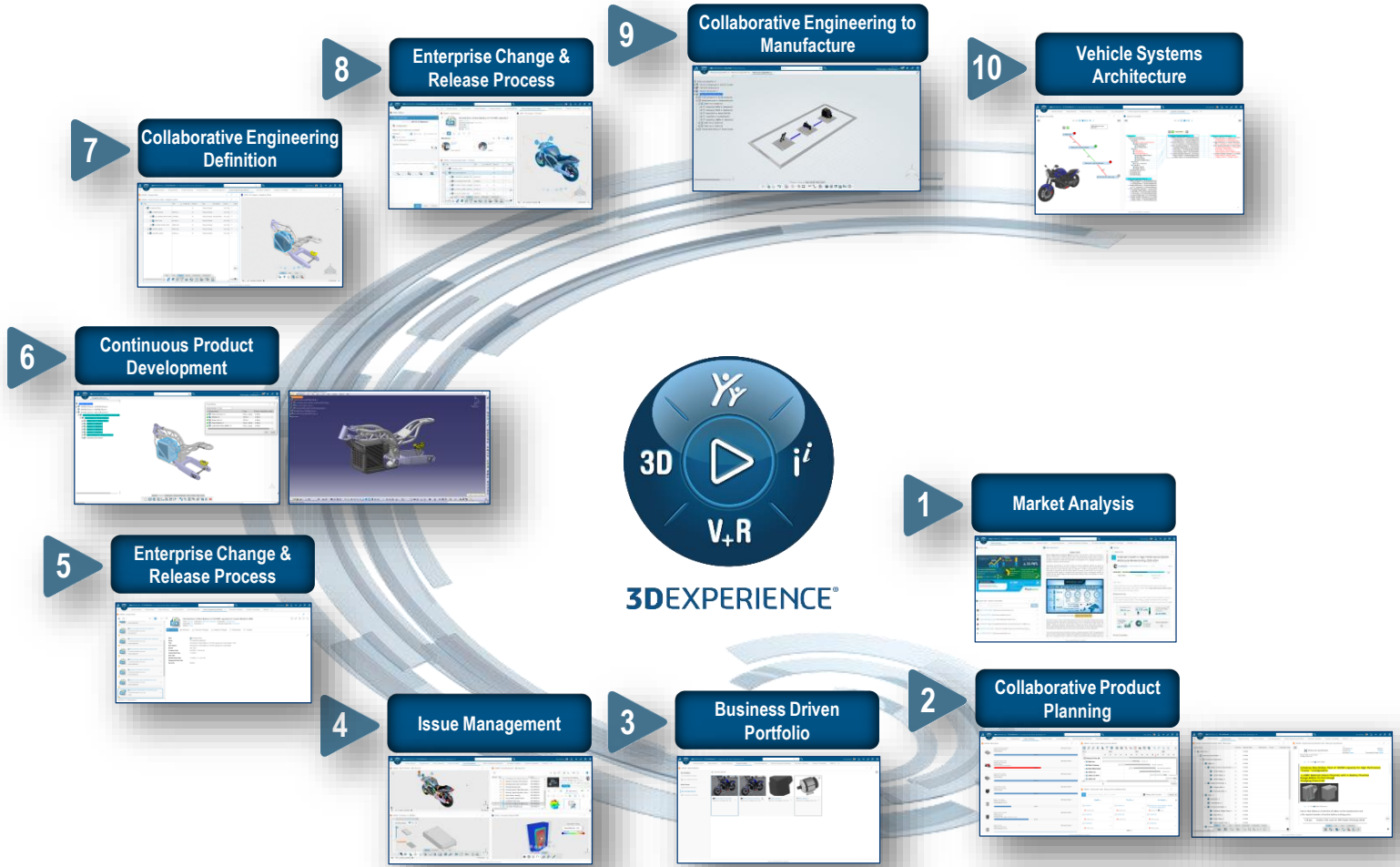
DELMIA

3DEXPERIENCE for Motorcycle **i**

3DEXPERIENCE R2021x

WIKI

[Request](#)



3DEXPERIENCE for Motorcycle-Scenario1

Dashboard for SWYM, News Feed Reader and Widgets for Market analysis

Market Analysis

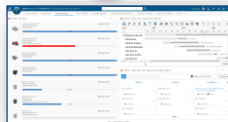
1



Navigate through Project Planning, Tasks & Gantt & Requirements

Collaborative Product Planning

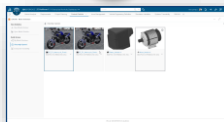
2



Manage Portfolio variability and complexity. Set Models and Rules for the new High Performance configuration

Business Driven Portfolio

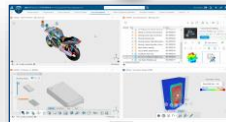
3



Issue Management for Battery heating and its Simulation with 3D Markup

Issue Management

4



Modify Change Action to add assignee and Context Data to introduce new Battery Pack

Enterprise Change & Release Process

5



Navigate through existing structure and explore the Design Environment

Continuous Product Development

6a



10

Vehicle System Architecture

Check consistency of the overall process through system traceability



9

Collaborative Engineering to Manufacture

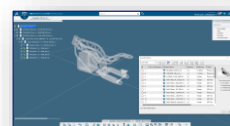
Generate the MBOM for new Configured Product and update the Process Plan for new Battery Pack



8

Enterprise Change & Release Process

Add the Battery pack in Motorcycle VED Review Official & Projected Views for new Cruise Model and Check the Thermal Simulation, then Approve & Complete the CA



7

Collaborative Engineering Definition

Add battery pack in delivery node and Save with Options



6b

Continuous Product Development

Add higher capacity battery Pack in the Design Environment-In work node and change the maturity. in 3DEXPERIENCE platform native client

Motorcycle Experience 20x-Storyboard

Story(1/1)

- ▶ There is an OEM who manufactures Electric Motorbikes
- ▶ Project Manager navigates through his dashboard and explore the news through news feed reader about the new market research done on high performance electric motorbikes, which has the growing potential in coming years.
- ▶ Then he decides to have new configuration of the bike to cater the market need and posts the Idea in Internal SYWM community.
- ▶ In Internal SWYM community Product manager and Product Engineer comments the Suggestion to implement this Idea.(Related to component to be changed and project/task Creation)



3DEXPERIENCE™

3DEXPERIENCE for Motorcycle

3DEXPERIENCE R2021x Training Video
Collaborative Engineering to Manufacturing



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Can be shared by 3DS channels with customer/prospect under NDA





3DEXPERIENCE for Motorcycle Teaser 2021x



Agenda

Motorcycle Challenges & Trends

Motorcycle Solution Experience

Customer references

Q&A

Traditional players



**BMW
MOTORRAD**



R 1250 RT



C3 04 : Electric



Gold Wing



Africa Twin

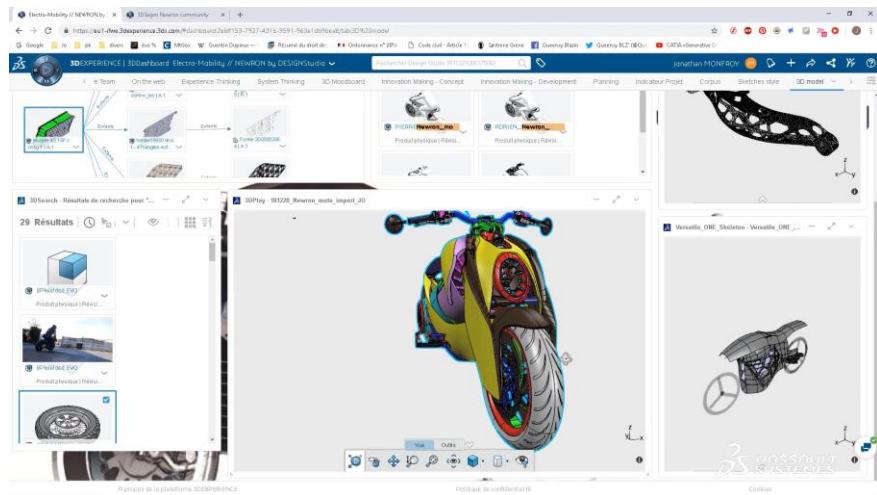
NEWRON



Customer Testimony



https://www.youtube.com/watch?v=s3e_kFydy5Y



EV small delivery vehicles under the brand Musoshi.



"The 3DEXPERIENCE platform helps us shorten development cycles and deliver high-quality electric vehicles with end-to-end continuity."

— Sezer CİNDEMİR, R&D Manager, SGN

Challenge

As a startup, SGN designs and manufactures electrified delivery and mobility vehicles that combine compact size, ample storage and ease of use in challenging traffic areas like highly populated cities and narrow streets. SGN needed a solution that could meet its product development requirements and accelerate its go-to-market.

Solution

The company adopted the 3DEXPERIENCE® platform to accelerate the research and development for its electric vehicles and centralize the design and engineering applications in a single secure environment.

Benefits

The 3DEXPERIENCE platform helped SGN manage its R&D processes in the same platform, ensuring CAD, EBOM and MBOM data accuracy. The platform enables efficient collaboration among teams that accelerates the delivery of reliable and high-quality products, and improves overall customer satisfaction.



<https://www.3ds.com/insights/customer-stories/sgn>

Call to Actions

Customer situation



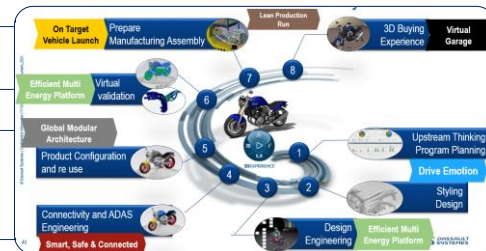
Simulation Without Limits
Powerful, scalable simulation integrated with SOLIDWORKS

SOLIDWORKS Value Up with DELMIAworks Manufacturing ERP



CATIA 3DEXPERIENCE Connected Engineering

Connect Your Design Environment for Experience Innovation



Electric Vehicle Startup

Electro Mobility Accelerator

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



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Q & A

