

Innovation for Eco-Sustainability



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DASSAULT SYSTEMES



Market factors for sustainability

Business rules

Regulatory
Compliance
& taxes



Business
regulations
(CSR)



People's voice

Customers
demand



Media and
communities'
lobby



Market conditions

Competitors



Energy cost



Environmental impact

Cradle to Cradle

- 3D product Life experience empowers a smart resource usage and a dematerialized relation to the world.
- 3D empowered collaboration platform optimizes the resources we use from the planet.
- Sustainable strategies create new usages and buying criteria for products, cities and service businesses.

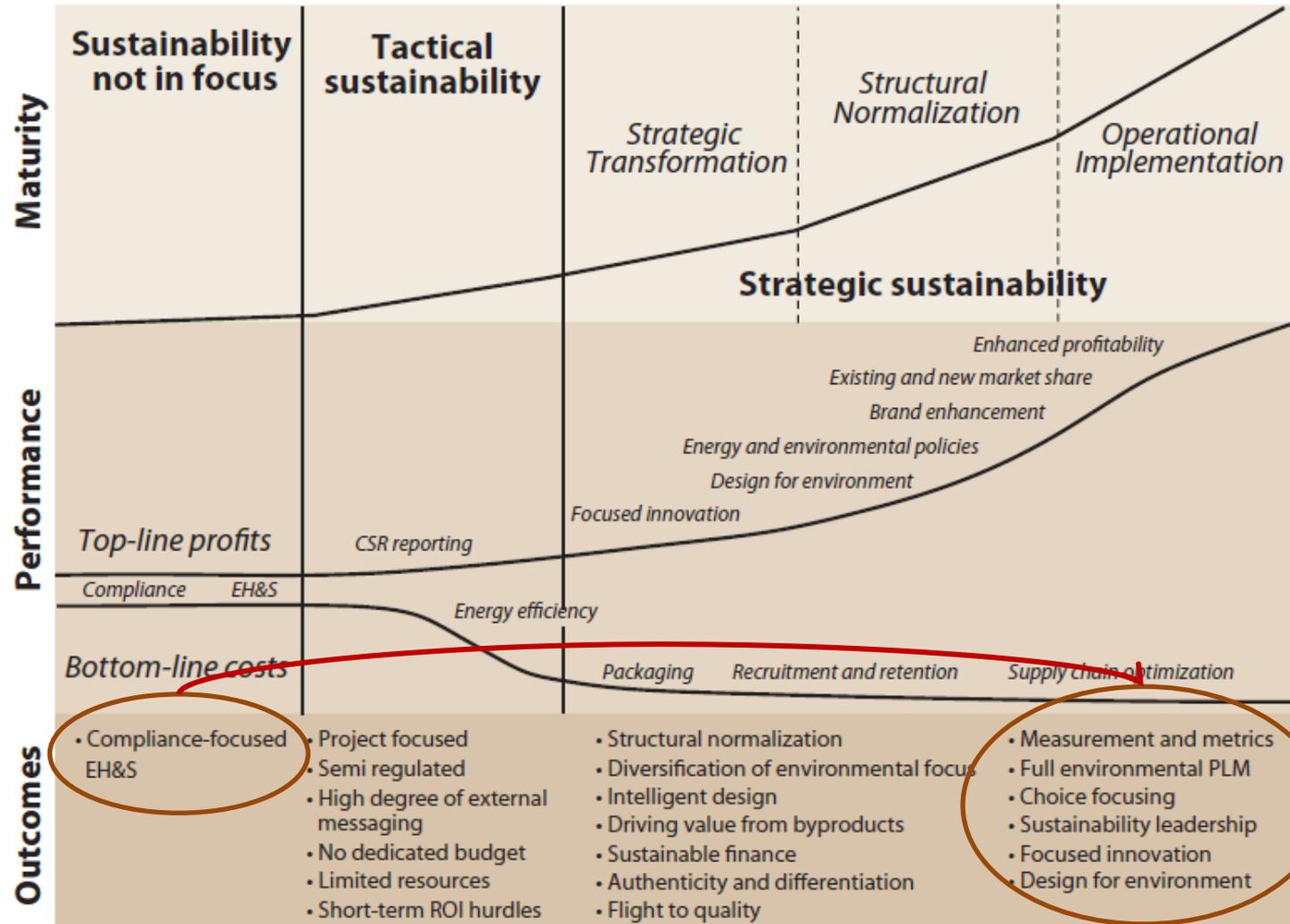


- How to achieve **competitive advantage** by delivering **eco-friendly product**?
- How to prepare **growth** and lessen environmental impact ?
- How to provide consumers with relevant data to **influence purchasing and consumption behaviors**?

Trends

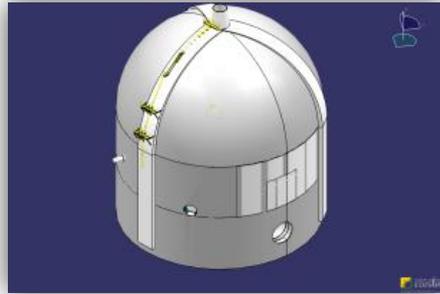
Sustainability : a new competitive edge

AMR Research Sustainability Maturity Model



Source: AMR Research, 2008

Innovation spiral

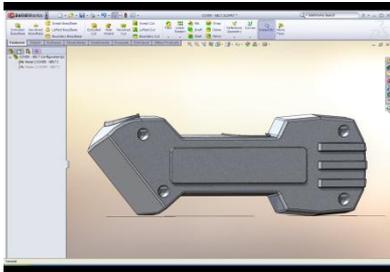


Drive zero waste and Eco Efficiency Solutions

Visualize ecological impact

Recycle

Quantify Environmental impacts



Eliminate complexity and waste



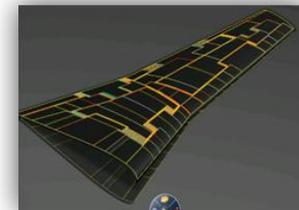
Imagine new solutions



Invent new material



Optimize energy efficiency



Eco Sustainable Design Processes

Concept Initiation New Product Development Concept Freeze Design Freeze Product Validation Manufacturing Validation Start of production Market Launch End of Life

Sustainability can be implemented in 3 domains:

Eco Experience

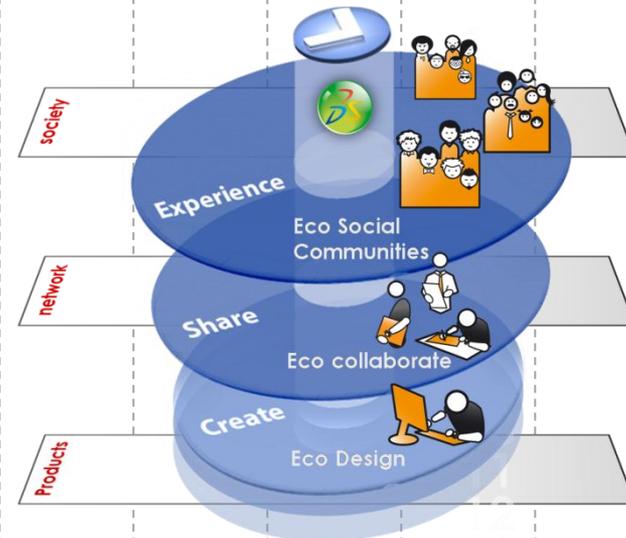
- Lifelike experience to minimize the use of resources and more easily share rich information

Eco Share

- Sustainable processes to efficiently manufacture eco friendly products

Eco Create

- Product without hazardous substances and with optimized functionalities to limit their impact on the planet.



Design for Optimization

Optimize Material Selection & Design

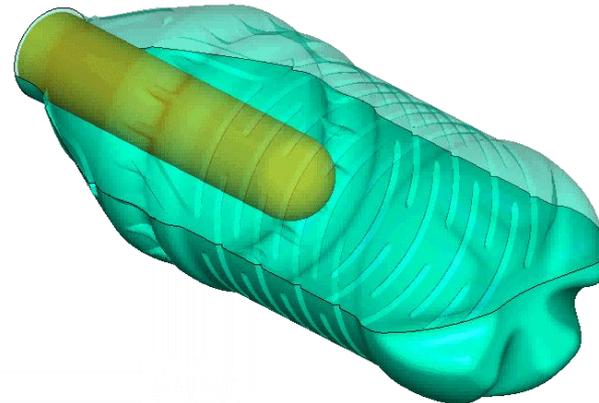
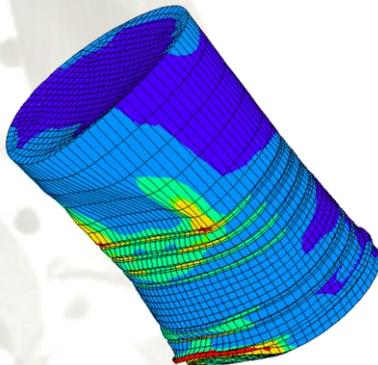
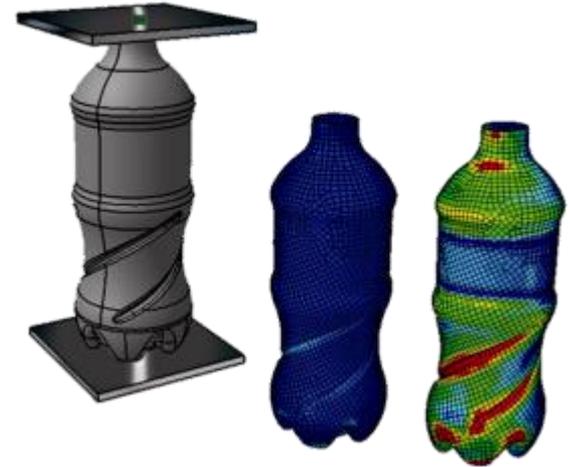


■ Objective:

- Select the optimum material
- Maximize design performance
- Minimize material usage / weight

■ Solution: Simulate stresses during

- Manufacturing
- Shipping
- Consumer use



Design for Material Efficiency

Calculate holistic environmental impact



Assess the environmental impact of the material based on international standard database

The manufacturing processes (injection, casting, ...) are factorized in the dashboard

The environmental impact is documented in a detailed document ready to be shared .

HOW ?
How to select the less impactful materials ?

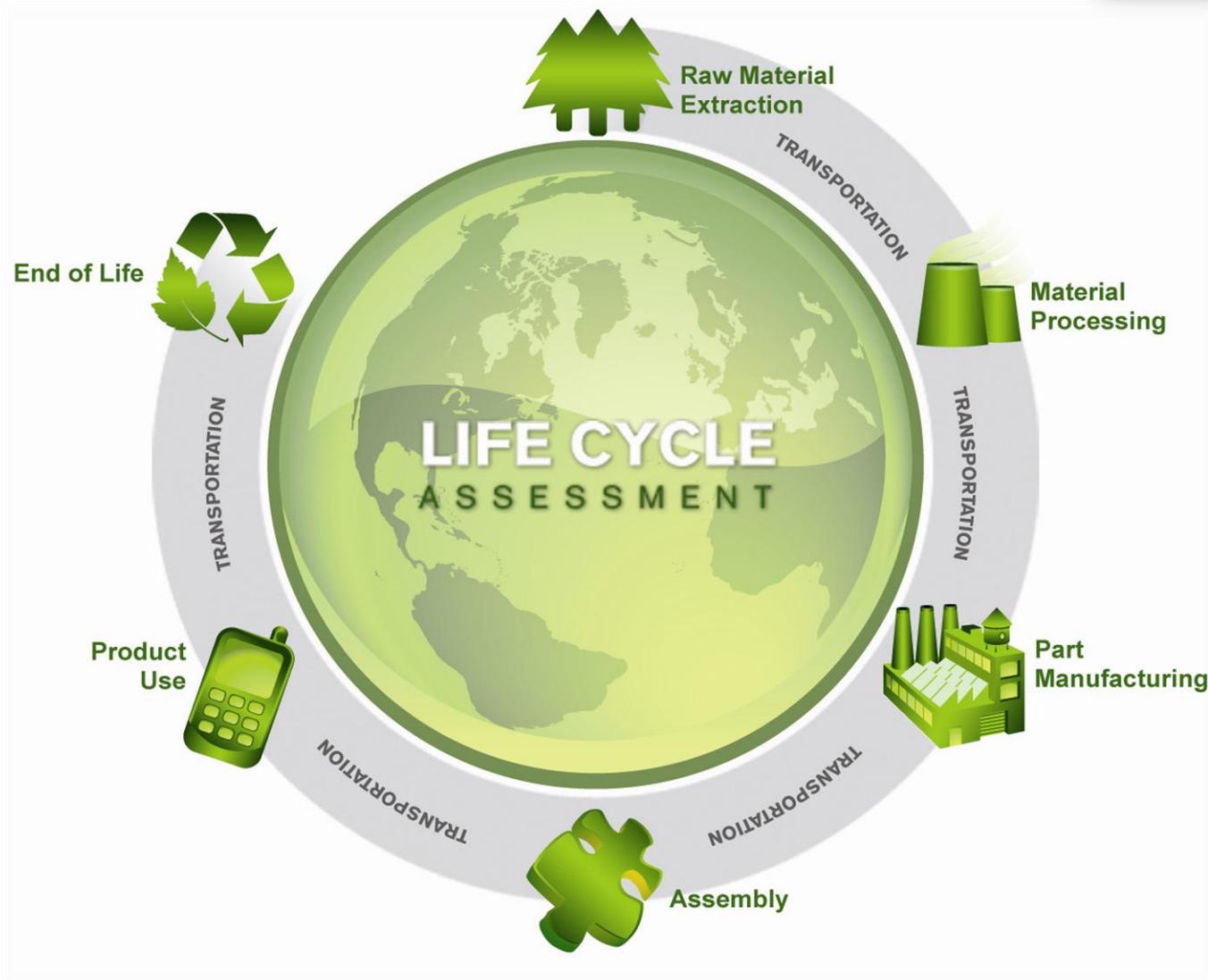
HOW ?
How to select the manufacturing process ?

HOW ?
How to quickly document the choices ?

Sustainable Design

With Life Cycle Assessment

1	On line 3D Experience
2	Environmental supplier collaboration portal
3	Design for Compliance
4	Design for Optimization
5	Design for Durability
6	Design for Clean Production
7	Design for material efficiency



Environmental Impact Factors



Carbon Footprint



Total Energy



Air Acidification

Water Eutrophication

Design for Material Efficiency

Integrate Life Cycle Assessment and CAD

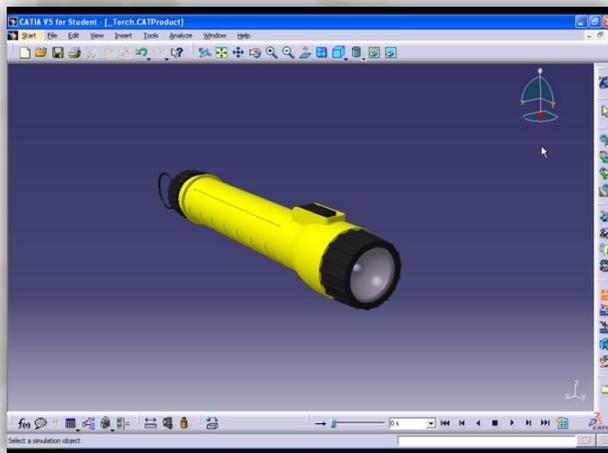


Objective:

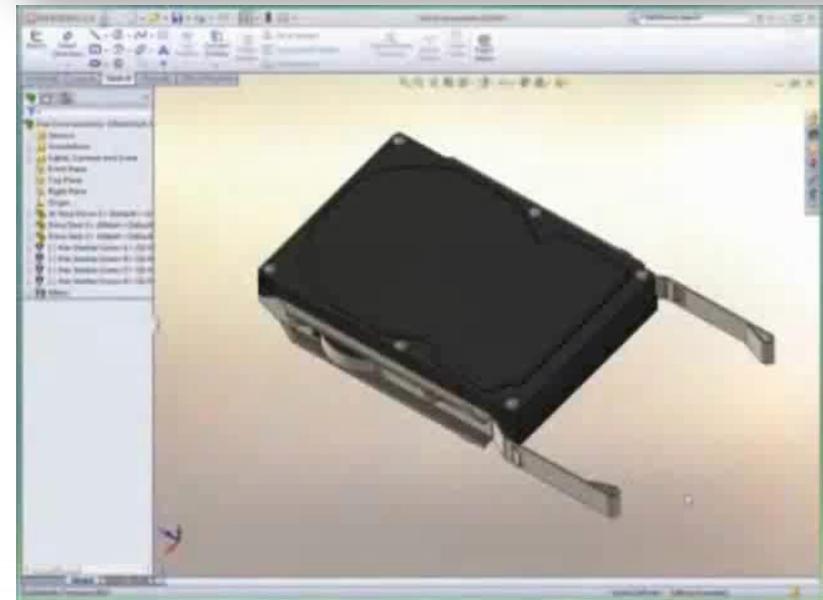
- Environmental Impact dashboard integrated in the design tool
- Eco design tool with compact impact analysis tool connected to database
- Compare Version A and B

Integration with LCA Software

- Carbon Footprint
- Energy Consumed
- Air Acidification
- Water Eutrophication



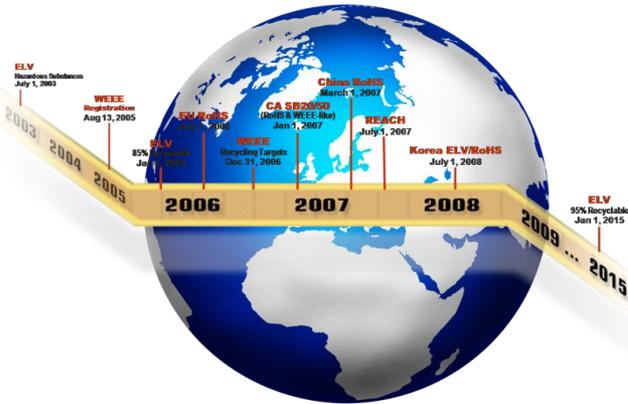
Pilot integration for CATIA



Integration in SolidWorks

Design for Compliance

Challenges to comply and operate globally



Every industry and every country defines its own restrictions

Multiple stakeholder need to collect, analyze and report compliancy information and be ready to report

Suppliers bring an additional level of complexity that need to be managed

HOW ?
How to comply with changing rules ?

HOW ?
How to share compliancy information internally?

HOW ?
How to involve the supply chain in compliancy effort?

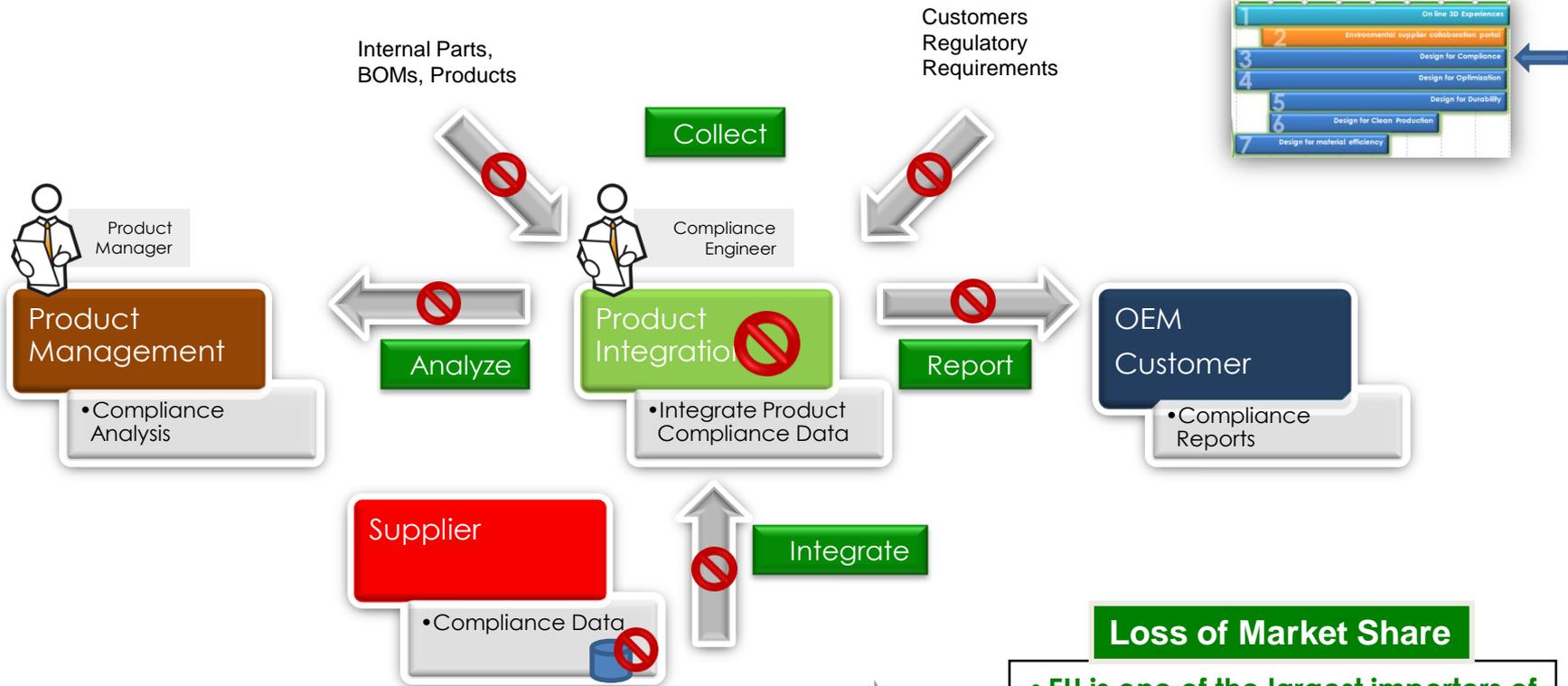
Compliance Impact to Industry



		Industry Vertical									
		Automotive	Hi-Tech	A & D	Consumer	CPG	Industrial Equipment	Life Sciences	Business Services	Energy	Ship
Legal Directives / Mandates	E.U. ELV										
	E.U. RoHS										
	China RoHS										
	Korea RoHS										
	REACH										
	AAFA Restricted Substance List										
	Food Ingredients										
	California RoHS										
	California Proposition 65										
	Cosmetic Ingredients										

Regulatory Compliance without PLM

No formal process to “Design for Compliance”



- Material compliance requirements not part of product definition
- Supplier declarations of compliance are provided late
- Compliance problem found late in product development cycle
- Reporting of compliance to customer is highly manual

Loss of Market Share

- EU is one of the largest importers of Hi-Tech products
- China is the fastest growing market for Hi-Tech products

High Cost of Development

- Re-engineering late in development is 2-5x more costly than early changes

Regulatory Compliance with PLM

Collect, integrate, and analyze throughout a product's lifecycle.



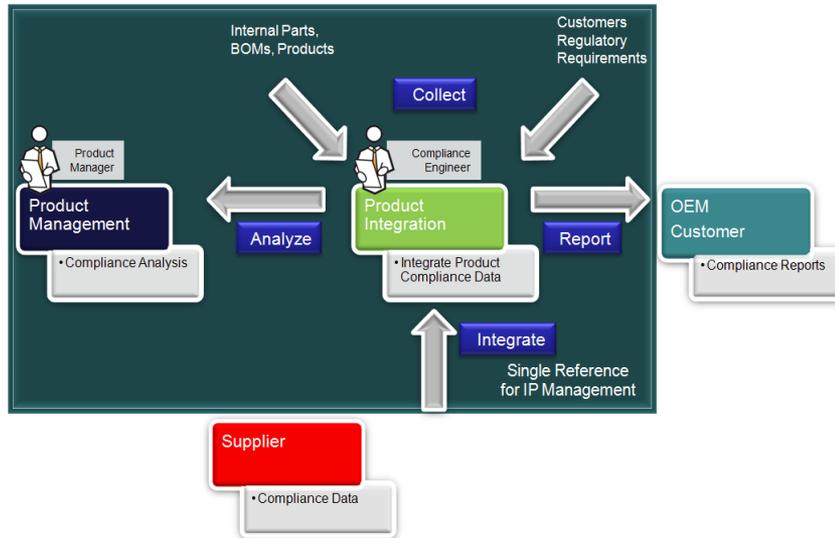
DS V6 delivers a Single PLM IP Reference and Ready to Use Business Processes to:

- Include material compliance requirements throughout the product lifecycle
- Improve compliance declaration collection efficiency through automation & industry standard exchange formats
- Enhance sourcing and supplier collaboration by measuring & Scorecarding of supply chain performance
- Decrease response time to customer requests for compliance reporting

Reduce cost of compliance

Improve supplier selection

Improve data quality and efficiency



Industry Solution Process Coverage

- Compliance Definition Management
- Material Declaration Collection
- Compliance Data Management
- Material Compliance Assessment
- Product Conformance Management
- Supply Chain Risk Assessment
- Compliance Impact Analysis

Lifelike Experience Enhances Eco-Design

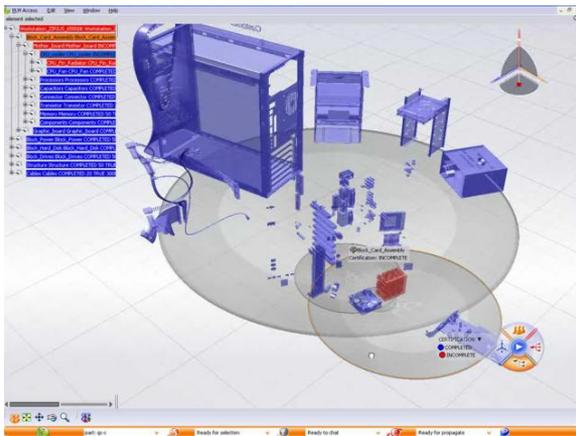
- ❖ Reach farther into the product lifecycle eco-system to maximize the impact of Eco-Design decisions
 - Collaborators and even customers can interact in an immersive environment via 3DLive
 - OOTB compliance management with 3DLive → end-to-end Eco-Design



Immersive Eco-Design for Decision Making

ENOVIA 3DLive is used to search, navigate, work, and collaborate in real-time with intuitive environmental design data

In this example, simple color codes indicate the eco-friendliness of parts in a design



Compliance Management

Materials Compliance Central enables adherence to new environmental compliance regulations and identification of areas of opportunity for Eco-Design



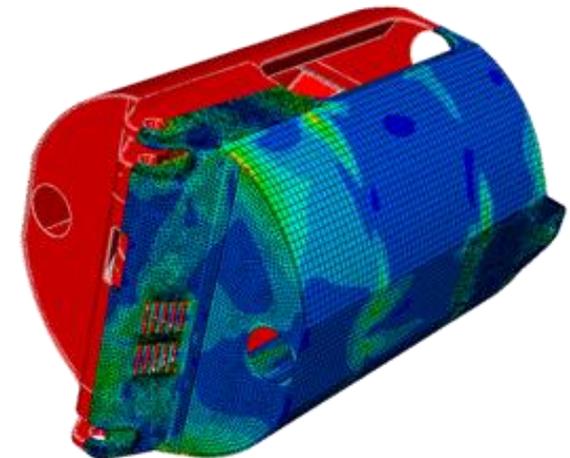
Name	U of M	Type	Usage	RoHS					
				EU RoHS	JIG A	JIG B	IPC 1752	California RoHS	China RoHS
GPS-MCC-75623	EA (each)	Hard...		■	■	■	■	■	■
BTN-200256	EA (each)	Mold...	Refer...	▲	▲	■	■	▲	▲
BOM PowerView	EA (each)	Mold...	Refer...	▲	▲	■	■	▲	▲
BTN-20057	EA (each)	Mold...	Refer...	▲	▲	■	■	▲	▲
BTN-20058	EA (each)	Mold...	Refer...	▲	▲	■	■	▲	▲
CP-30567	EA (each)	Mold...	Refer...	▲	▲	■	■	▲	▲
CN-000100	EA (each)	Con...	Refer...	▲	▲	■	■	▲	▲
CN-000400	EA (each)	Con...	Refer...	▲	▲	■	■	▲	▲
HA-750356	EA (each)	Fast...	Refer...	▲	▲	■	■	▲	▲
SCR-200211	EA (each)	Part	Refer...	▲	▲	■	■	▲	▲
PCB-20756	EA (each)	Circ...	Refer...	▲	▲	■	■	▲	▲
100-2044	EA (each)	Tran...	Refer...	▲	▲	■	■	▲	▲
110-2032	EA (each)	Cap...	Refer...	▲	▲	■	■	▲	▲
110-2033	EA (each)	Cap...	Refer...	▲	▲	■	■	▲	▲
110-2034	EA (each)	Cap...	Refer...	▲	▲	■	■	▲	▲

Pelamis Wave Power



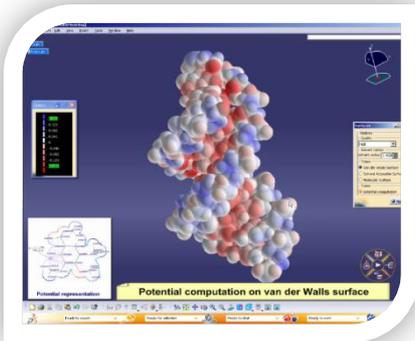
Tap the energy all around us

- Building machines to harvest *wave power*
- First 2.25 MW wave farm installed and in production off coast of Portugal
- Simulation of machine behavior, impacts from boats
- Benefits:
 - Simulate safety events that cannot be tested
 - Hasten development of alternative (green) energy option for industry consideration

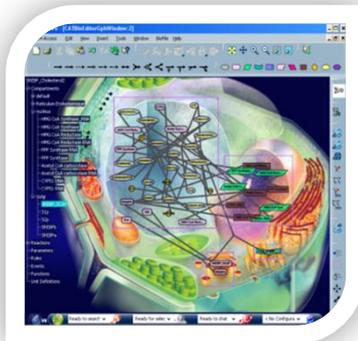


Sustainable development

Roadmap to a better world through innovation



2015 Simulate and understand life



Digitalize natural resource



Create sustainable habitat



2015



2010

Optimize resources and control environmental footprint

2008



Design



simulate



experiment



manufacture

1985



Create products

DS

INDUSTRY
KNOWLEDGE . PROCESS . VALUE

Innovation for Eco-Sustainability

THANK YOU



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