

Digital Twins στην Ναυτιλιακή Βιομηχανία

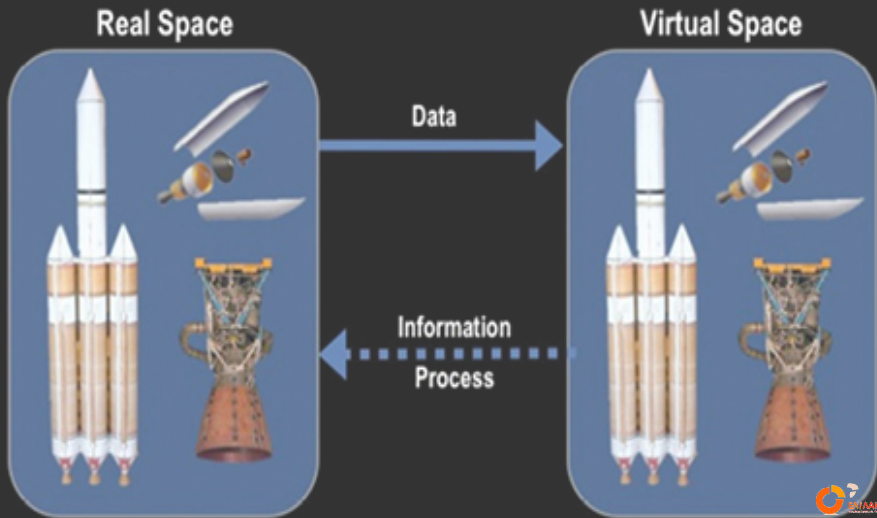
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17 Ιουλίου 2020

Πως ξεκίνησαν τα Digital Twin

After the launch of Apollo 13 on April 1970, no one could have predicted it would become a fight for survival as the oxygen tanks exploded early into the mission. It became a famous rescue mission as the world held its breath, with technical issues needing to be resolved from up to 200,000 miles away. A key to the rescue mission, however, was that NASA had a digital twin model of Apollo 13 on earth which allowed engineers to test possible solutions from ground level.

Information Mirroring Model



Τι είναι το Digital Twin

A digital twin is a digital representation of a physical object, asset or system: a ship, a car, a wind turbine, a power grid, a pipeline, or a piece of equipment such as a thruster or an engine. It can contain various digital models and collections of information and processes related to this object. Data can be in the form of graphical 3D-models, dynamic and discrete simulation models, virtualized control systems and communication networks, analytical models, data models, sensor data, relationship data, process data, as well as digital information such as documentation and reports

AN ADVENTURE TOO BIG FOR THE REAL WORLD



A STEVEN SPIELBERG FILM

READY PLAYER ONE

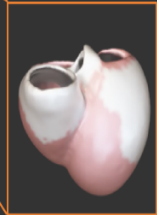
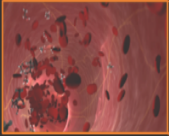
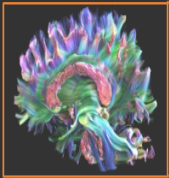
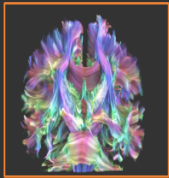
MUSIC BY ALAN SILVESTRI EXECUTIVE PRODUCERS ADAM SOMNER DANIEL LUPI
 CHRIS DEFARIA AND BRUCE BERMAN PRODUCED BY THE ERNEST CLINE
 SCREENPLAY BY ZAK PENN AND ERNEST CLINE PRODUCED BY DONALD DE LINE, P.G.A.
 KRISTIE MACOSKO KRIEGER, P.G.A. STEVEN SPIELBERG, P.G.A. DAN FARAH, P.G.A.
 DIRECTED BY STEVEN SPIELBERG



EXPERIENCE IT IN IMAX 3D REALD 3D DOLBY CINEMA







Digital twin –
lifelong, personalized
physiological model
updated with each
scan, exam

Person-centric
prevention



holistic treatment

Questionnaire & Checklist

Improvement Request

Spare Part Ordering

Automatic Onboarding & Topology Detection

Service Ticket

Asset Health & Key Indicators

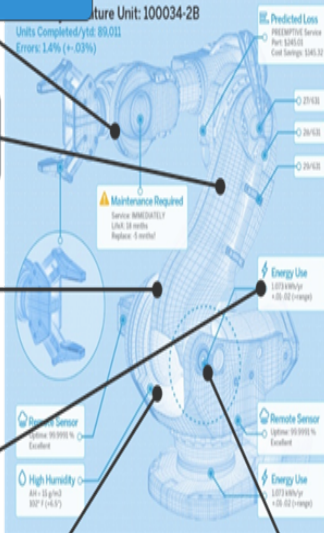
Work Orders & PM Notifications

2D Sensor Chart and Alert List

3D Repair Instructions

Failure Mode based Predictions

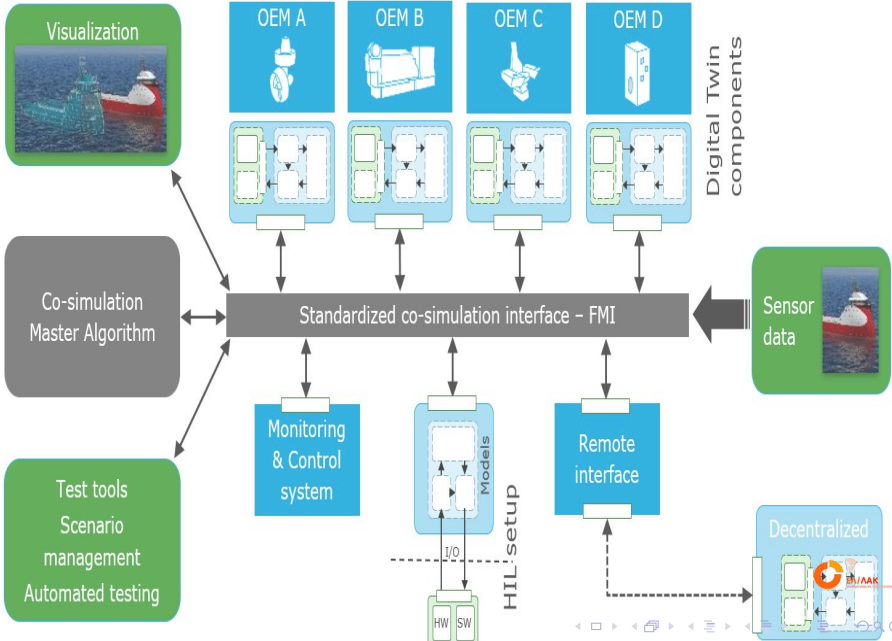
Error Codes and Knowledge Base





Digital Twins Marine Layers	IT Technologies	IT Applications	Marine Applications	Paradigm shift	Stakeholders
Static Drawings	Standar format	CAD/CAM	Ship building	Drawings Intellectual Property	Shipyards
	Drawing sharing	3d Printing	Equip. Manuals	Spare parts market	Suppliers
	Open Repositories	3D Visualization	Equip. Marketplace	Onshore – Offshore Maintenance	Shipowners
	3d Scanning	Version Control ie GIT	Equip. Visualization	Shipbuilding collaboration	Technical Academia
		3d Scanning	Educational applications		Finacial Academia
Objects		Spare Parts Const.			
	Standards	Conn. ERP	Advanced shipbuilding		IoT Companies
	Semantics	Conn. Databases	Monitoring		IT Companies
	Serv. Orient. Archit.	Conn. Sensors	Remote Ship Operation		Telcos - Networking
	DLT	Advanced CAD/CAM	Maintenance plann.		Equipment Manufacturing
Georeferenced Objects	Message Brokers	Advanced Ship Vis.	Advanced Ship Visualization		Technical - Insurance - Marine operations Academia
		DLT - Blockchain			Logistics
	Indoor Positioning Systems	Drones	Remote Operation in Hazardous Environment		
Object's Physics	Photometry	Robotics	Autonomus on board vehicles		
	Lidar		Surveillance		
	Network connectivity		Advanced Ship Building		
			AR VR Application		
	Big Data Analytics		Equipment simulation	Reduction in the cost of ship building	
Object's Physics	Finite elements analysis software		Operation simulation	New ways of compliance and ship insurance	
	Physics Engines			Data driven manufacturing	
	Video editing			Data driven operation	
				Digital design, digital assembly and simulation before physical commitment	
	Video animation				

The Open Simulation Platform Architecture





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Τι θέλουμε

- ▶ Δημιουργία ενός οικοσυστήματος για τα digital twin
- ▶ Επικέντρωση στο ρόλο τους στη ναυτιλία
- ▶ Ανάδειξη του ρόλου της ανοικτότητας στα digital twin

- ▶ <http://www.ellak.gr/η-εελλακ/> (Περί ΕΛΛΑΚ)
- ▶ <http://www.ellak.gr/wikis/χώρος-συνεργασίας/ομάδες-εργασίες/> (Ομάδες Εργασίας ΕΛΛΑΚ)
- ▶ <https://eellak.ellak.gr/sinergasies/>
- ▶ <https://opensimulationplatform.com/>

Wir müssen wissen wir werden wissen
Πρέπει να μάθουμε θα μάθουμε...
David Hilbert 1842 - 1943