

WHAT IS NEXT: SYNERGISTIC INTEGRATION OF AI SOLUTIONS

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Artificial intelligence is the new spreadsheet like technology. It is easy to use and provides immediate benefits. Everyone is developing solutions and achieving promising results. How could we improve the design of the solutions so they can work together generating synergy? Once each one is designed to feed the other then a new and powerful solution emerges.

That is the basic difference between Tesla cars and most of the other car manufacturers in the market. While all the subsystems are integrated synergically in Tesla, they are independent in the other cars. The result is simple. Tesla can drive alone door to door while the others just cannot. Why the other car manufacturers are taking so long to catch up Tesla considering they had many solutions to help on car safety and steering? Just because they have not been designed to work together.

Taking the same idea in the oil & gas market it means the difference from small nice to have solutions to unmanned offshore platforms. This goal must be considered since the beginning and each part designed appropriately to accomplish this target.

Let's take the example of the following IA solutions combined to maximize results: evaluate coating rust grade in photos, evaluate anomalies in photos, evaluate corrosion progress, evaluate cathodic protection, risk evaluation and repair prescription. When considered isolated they are useful tools but when integrated they open door to evaluate corrosion progress considering coating degradation and risk considering corrosion and anomalies. Repairs can be automatically outlined to reduce risks until next planned maintenance. Inspection plans can be directed to critical areas reducing costs and risks. To reach unmanned offshore platforms, we have to think about robots doing inspections and repairs. At this point accuracy requirements increases to the maximum. Models built for FEA would not suffice and accurate 3D models are necessary. Most existing 3D models produced today in the market are not accurate enough nor even for FEA. It is time to integrate IA solutions and different models to provide the expected technology for the next decade.

It leads to the digital twin not as a database but as an avatar of the existing asset. Every algorithm, database, sensor data and models must be integrated in a synergistic way.

Considering an offshore platform is far more complex than a self-driving car we must consider splitting the job among different partners. Software architecture becomes crucial to allow integrations. Monolithic software is not acceptable anymore. Open and scalable architecture based in containers and micro-services becomes essential. Going to cloud is a must since it is where the integration happens allowing multiple partners to successfully develop a complex solution.

On top of that we must consider the human factor, the resistance to adopt new technology. The software interface must be attractive and easy to use and some gaming features to stimulate younger professionals.

PALAVRAS-CHAVE: IA, DIGITAL TWIN, STRUCTURE, INTEGRITY, COATING, CATHODIC PROTECTION, INSPECTION, REPAIR, MAINTENANCE

APOIO: The author is grateful to ANP for the strategic support provided through the R&D levy regulation in Brazil