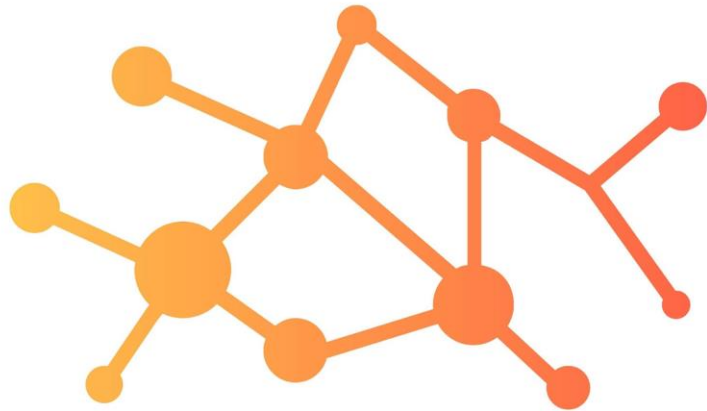
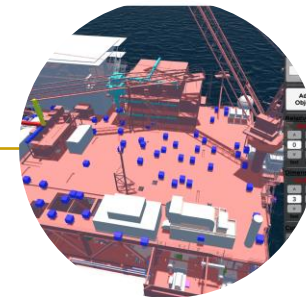


Automation,  
Instrumentation  
& Monitoring



IoT & Digital Twin  
Technology

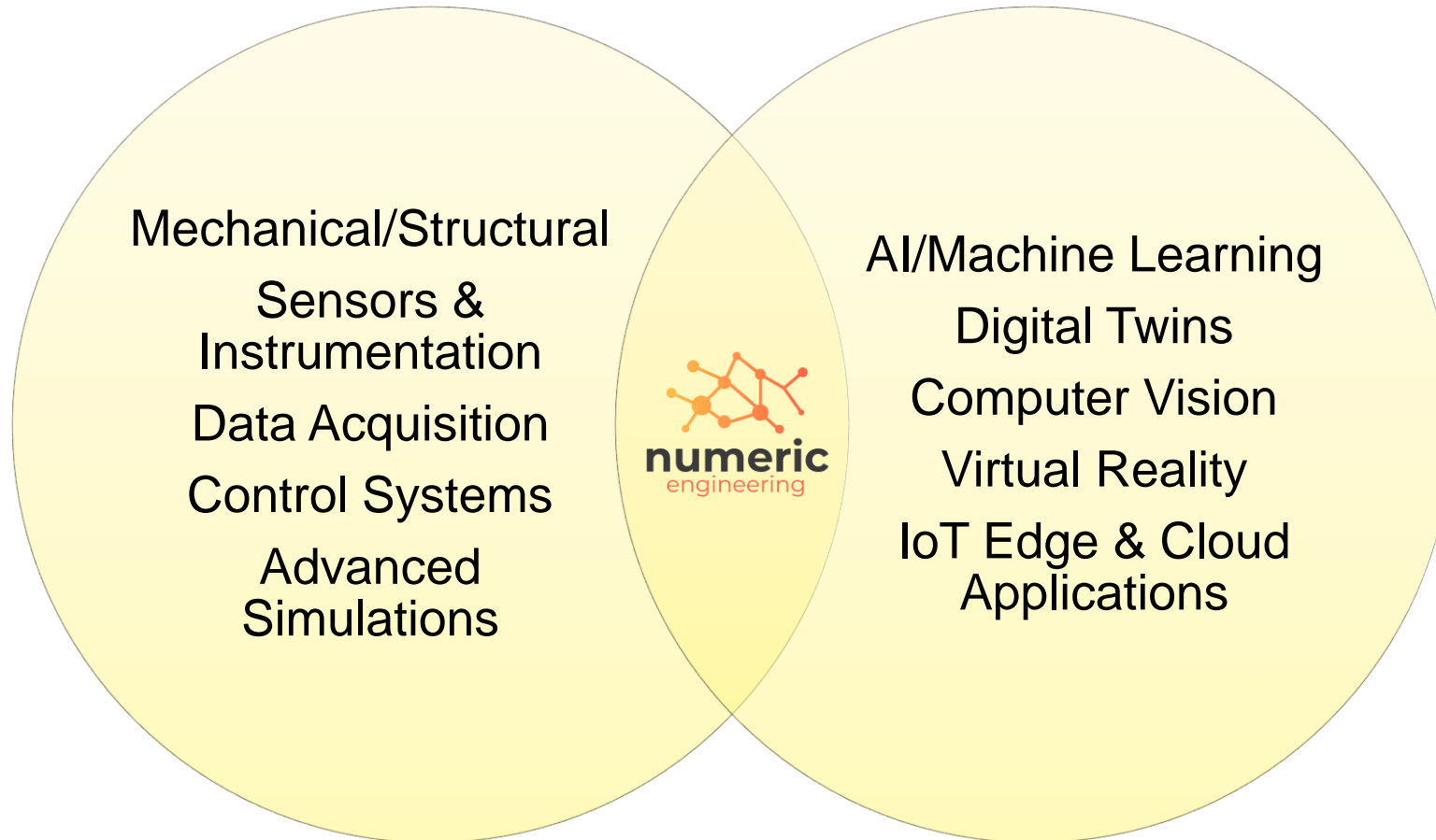
**numeric**  
engineering



Custom  
Software  
Development



# Numeric's Domain Knowledge Intersection



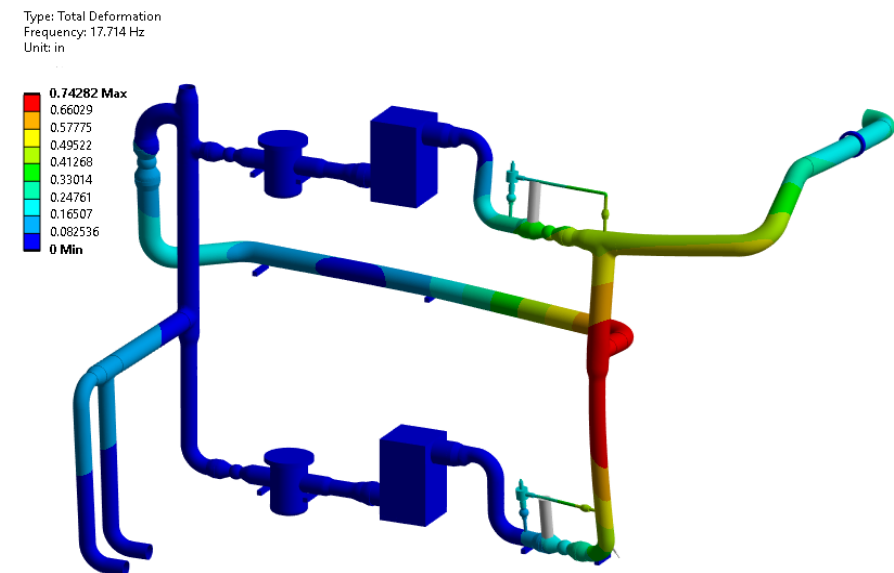
Numeric Engineering provides novel and reliable technical solutions by uniquely combining traditional engineering practices with emerging technologies such as Internet of Things (IoT), Edge Computing, and Artificial Intelligence (AI).



# Automation, Instrumentation & Monitoring

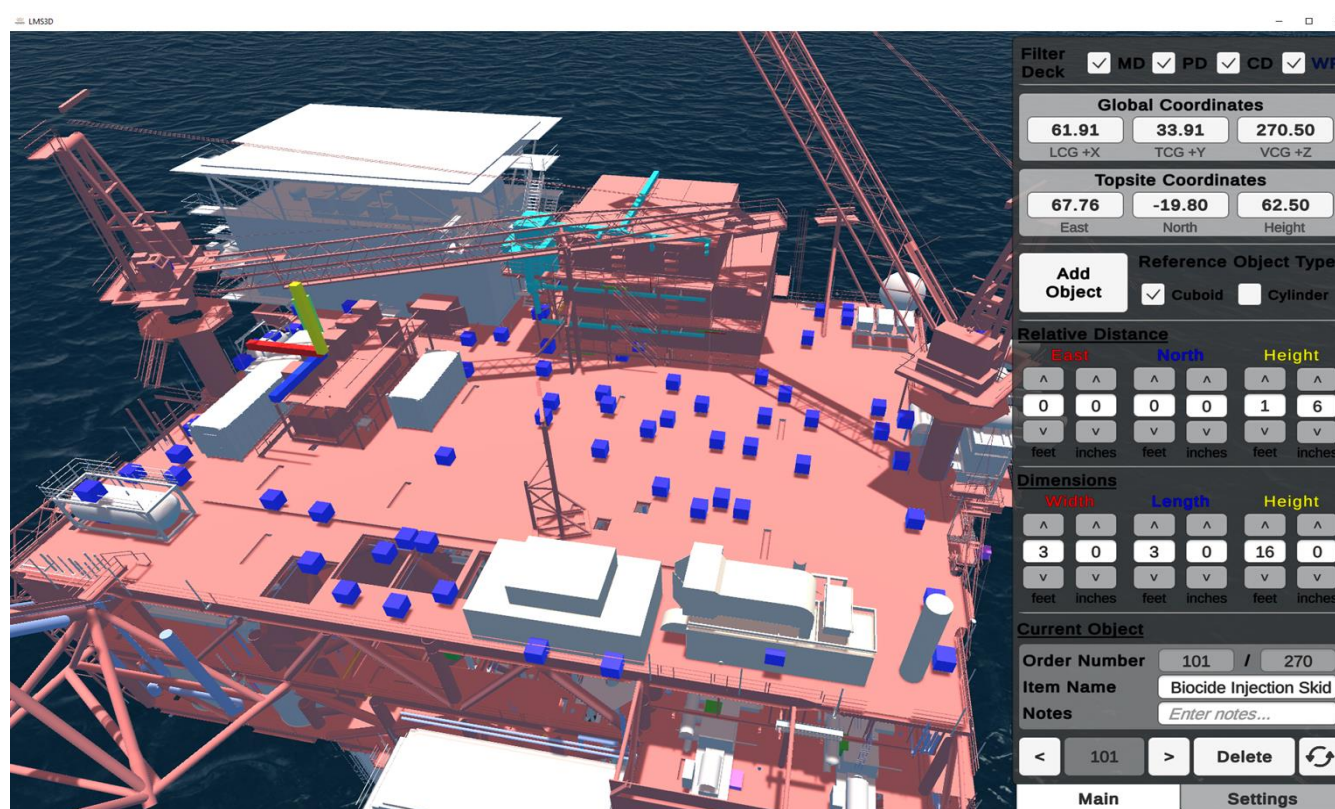
Instrumentation & Control Systems Engineering  
Industrial Networking & Communication  
Control Panel Design, Wiring & Expansions  
PLC Engineering & Programming  
Condition Monitoring





# IoT & Digital Twin Technology

Physics & Machine Learning Based Digital Twin Technology Development  
Edge & Cloud Computing  
Engineering Studies for Faster, More Efficient & More Reliable Operations



# Custom Software Development

Numeric Engineering's Flagship Product – Load Management System

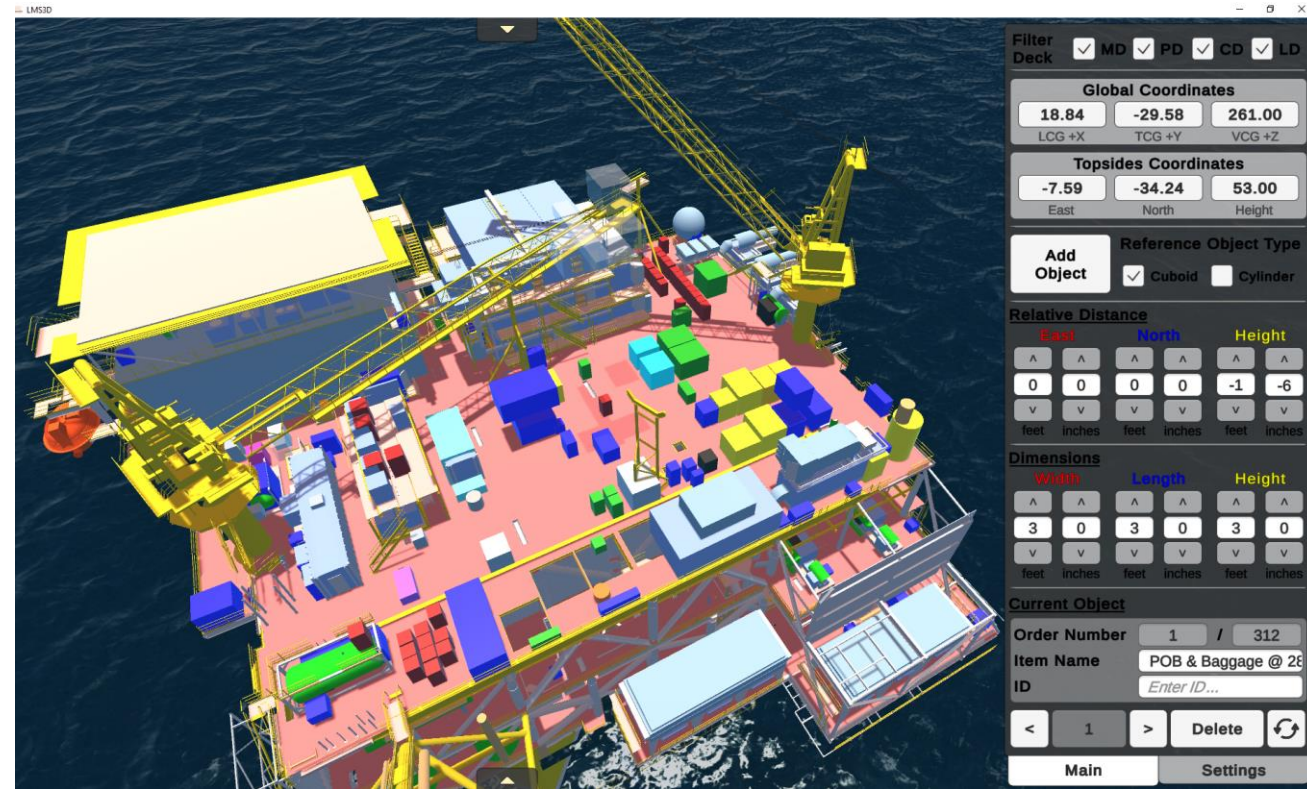
Development of Virtual Sensors – Redundant Tendon/Mooring Line Monitoring System

Patented Computer Vision Technology Applications



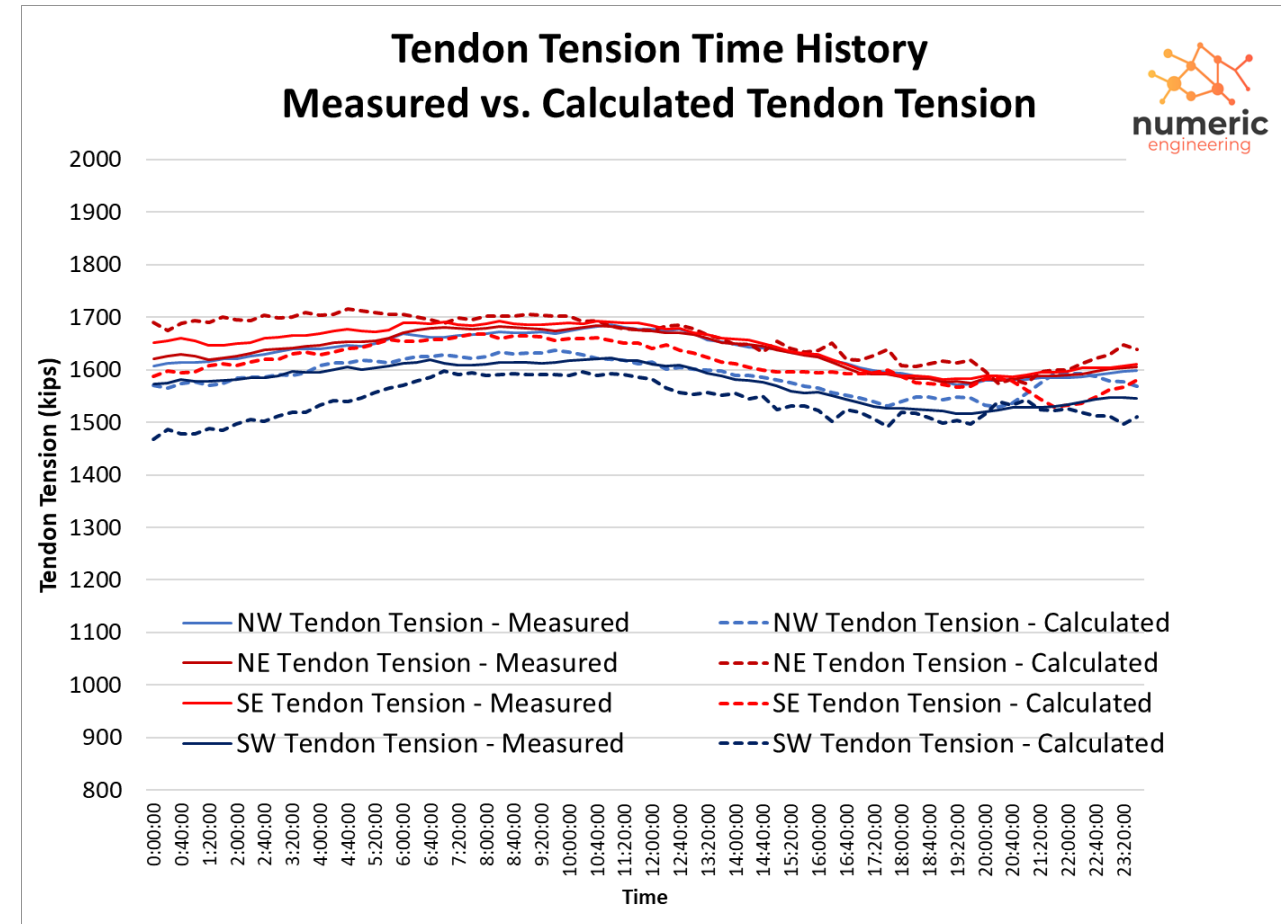
# Numeric LMS – An Operator-Driven Solution

- The LMS software is a custom weight management solution that was designed based on continuous operator feedback.
- LMS utilizes a floating platform Digital Twin Module. The Module receives real time monitoring data from various sensors and processes the information to determine the optimum ballast tank water levels at a given time and assists the platform personnel in maintaining a safe operating load condition of the platform.
- With its intuitive deck survey module, operators were able to identify and rectify 500kips of phantom weight, bringing phantom loads to an acceptable level.



# Numeric Redundant TTMS

- Software + Hardware Solution.
- Most existing TTMS systems don't have a redundant mechanism to take over in case of a system failure.
- There is no easy method to analytically calculate the tendon tensions as the existing sensors, such as wind, wave and current, give only a rough estimate of the horizontal force (eccentricity) acting on the platform.
- Ballasting and de-ballasting operations solely rely on the readings from TTMS.
- A redundant TTMS system is also needed for monitoring the accuracy and the stability (drift issues) of the existing TTMS system.



# Numeric Computer Vision

- Numeric Engineering has a patented computer vision application that is able to track 6 degrees of freedom (DOF) motions of structures in challenging offshore environments (Patent Number: US 11,461,906 B2).
- Much more reliable and robust than indirect estimation of displacements from accelerometers and/or strain gauges.
- Lower cost, lower complexity, less power consumption and less storage requirements as compared to Laser Scanning.
- Suitable to be utilized on remotely operated vehicles (ROV).
- Ideal for component monitoring in challenging environments.
- Allows for safer, faster installation campaigns.

