Augmented Reality and O&G Facility Construction

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Modernization & Transformation

MD2 M&T Major Initiatives

- Full Field Digital Twin
- NextGen Apps
- LTE Near Field Wireless
- Automation and Robotics
- Asset GPS Tracking
- Autonomous Surface Vessel
  - ADCP Current Vessel
  - Live ROV Inspection
  - Live Subsea Intervention
- Live Site Walk-Down
- DPM Dashboard / Digitalize Procedures
- Collaborative Contracting
- Subsea WiFi
- LiDAR Cement / Drill Cutting Deposition Mapping
- Augmented Reality ROV Navigation
- Autonomous Inspection
- Machine Vision
- Office Guided Wireless Resident ROV

Mixed Reality
- Design Revacy/Relocation
- Human Factors Engineering
- Demographics/Segmentation
- Comfort/Health/Maintenance
- Remote Expert
- Control & Monitoring

Emerging Technology
Available Today
Virtual Reality (VR), Augmented Reality (AR), & Mixed Reality

According to Wikipedia

- Virtual reality (VR), which can be referred to as immersive multimedia or computer-simulated reality, replicates an environment that simulates a physical presence in places in the real world or an imagined world, allowing the user to interact in that world.

- Augmented reality (AR) is a live, direct or indirect view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data.

- Mixed reality (MR)—sometimes referred to as hybrid reality—is the merging of real and virtual worlds to produce new environments and visualizations where physical and digital objects co-exist and interact in real time.
Teams dispersed in different locations can actively collaborate using these technologies.

HoloLens and remote collaboration provide engineers a means to share their drawings and designs in 3D.
Construction

Safety inspections

Monitoring progress

Model versus reality

Increase productivity
Effective monitoring
Control waste
Improve human factor
Information Access
Communication
Collaboration

Defect detection

Quality improvement
After handover, remote collaboration tools will minimize the time for responding with access to globally available experts and Westlake office employees.
Integrated subsea navigation solutions for remotely operated vehicles (ROVs)
• Augmented reality view for ROV pilots
• Spatial awareness and increased navigation efficiency
• Remote Monitoring / Performance Management of Field Status
• “Offline” simulations of critical activities
• Subsea and Surface SIMOPs
• Subsea Tooling / Asset Tracking
• Virtual Boundaries, flyways and safe deployment zones
• Digital “On the Fly” Onshore Interventions
• Constructability Reviews
• Emergency Response
Implementation Consideration

- AR glasses are computing devices with access to the Internet
- Data protection – e.g. design details, intellectual property
- Windows or Android Based

Other Uses

- Virtual Walkthrough for Logical Network Design
- Physical Security Assessment
- Training and simulation