



# Innovating Operations and Learning Processes



# Augmented Intelligent Solutions - AIS

Still working on this – we are not quite there! Need a human hand touching a robotic hand as a metaphor of enabling humans and decision making with AI

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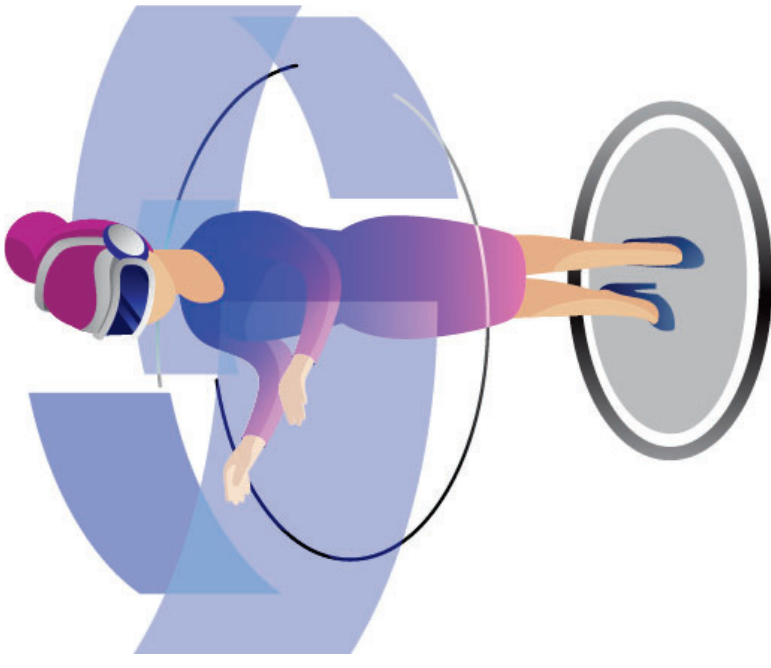
# Who We Are



## *Augmented Intelligent Solutions - AIS*

Augmented Intelligent Solutions (AIS) is a solution provider that brings together 80 collective years of industry expertise with specializations in technologies, utilities, transportation, education, operational excellence and marketing to drive a more digital workforce and deliver value-added, innovative solutions that leverage AI and XR technologies.

- AIS provides support and services through our partnership with Innovative Industrial Solutions (IIS) & RISE Corporation
  - Training development leveraging the power of micro-apps to enable learning and drive new capabilities in the workforce
  - Detailed scanning services, including scanning support for organizations who purchase their own scanners
- Our AIS solution framework is called, ELMOS



# Innovate: Engage \* Learn \* Manage \* Operate \* Safety



## **ELMOS** - Our Solution Framework

By leveraging AI, XR and scanning technologies, AIS is able to help organizations drive required business results through our framework, ELMOS.

<b>E</b>	<b>Engage</b>	Engage all generations and attract a new generation of top talent using the latest, innovative technologies designed to increase user engagement in training and everyday work activities
<b>L</b>	<b>Learn</b>	Transform learning programs to drive human performance processes, increasing understanding and knowledge retention, and improving safety
<b>M</b>	<b>Manage</b>	Implement Augmented Reality (AR) and predictive analytics (AI) for improved "Asset Management" processes
<b>O</b>	<b>Operate</b>	Provide real-time data visualization on an accurate model of the plant equipment to promote accurate decision-making to ensure for effective operations
<b>S</b>	<b>Safety</b>	Improve safety - with Engagement, improved learning by addressing specific issues, better workplace management of coworkers, and better operations utilizing intelligent software that continuously learns to drive process excellence

# Innovative Technologies



## *Innovative, Cognitive Enabling Technologies*



### Virtual Reality



objects using special equipment.

### Augmented Reality



among them: visual, auditory, haptic (touching), somatosensory (feeling pressure, heat, etc).

### Mixed Reality



computer screens) in real time.

In "slide show mode" this will show text then replace text with ph

# AIS Targets Operational Improvements



## *Solving High-Value, Complex Business Issues*

Some XR applications are not suitable for every situation; however, they can address a wide range of use cases! The question is –

*Do you have a **problem to solve?***

Through our **Discovery and Analysis** processes we can help with workable solutions that target improvements, solve safety issues and address human performance challenges, including

- **Monitoring equipment** located in hard-to-reach or dangerous places, and automatically track tools to avoid creating hazardous situations or FM foreign material risks
- **Guiding employees** to locate and identify correct equipment
- **Creating higher engagement** opportunities through on-boarding, safety, and Pre-job Briefs designed to engage employees in solving problems
- **Connecting SMEs**, in real-time, to support employees in the field
- **Innovating training courses**- providing interactive digital curriculums that trigger critical thinking, enhance understanding, and tie results into LMS
- **Driving knowledge retention** to support business continuity challenges

### **Consider...**

Where do you have 2 or 3 Subject Matter Experts (SMEs) that have been performing specific work activities for the past 30 years

If you have Task Qualifications and are down to 2 or 3 individuals qualified in specific tasks, consider an Augmented Reality Application to assist with KTR

Identifying use cases for specialized “Advanced Electronic Assistance” in the field can be easily found in your Maintenance and Operational Activities

Learning that leverages XR-type applications can both improve employee satisfaction and increase understanding of complex processes

## *Leveraging AI and XR to Deliver Value-Added Solutions*

ELMOS solutions can transform current operations, maintenance and learning processes into digitally enhanced solutions that provide greater cost and processing efficiencies for businesses. These include:

- **Engagement and Learning Transformation Focus** – leveraging current curriculums, applying XR applications to create virtual and augmented environments to drive human performance to the highest levels, including:
  - Virtual Environments where teams can learn, collaborate, practice, assess, and receive performance feedback.
  - Knowledge management frameworks to document, retain, promote and sustain specific knowledge and skills requirements for processes, tools, and equipment to ensure knowledge retention, business continuity, and worker safety.
  - New, effective methods in delivering e-learning activities using micro-apps that incorporate higher-engagement events that trigger understanding.



AIS uses the term “Learning” as it is *more encompassing* than training. Learning occurs not only in formal training, but while workers are engaged on-the-job, in-the-field, in discussions with colleagues, including many informal situations.



# Applying ELMOS



## *Leveraging AI and XR to Deliver Value-Added Solutions*

### Maintenance, Operations and Safety Focus

- **Operational and Monitoring Tools** – obtaining real-time data from plant specific areas, converting data into visual displays, providing analysis of data, and validated decisions
- **Scanning Services** – in partnership with IIS where our staff can take collected data to create ELMOS solutions.
  - Scanner / Camera products: LEICA RTC360 – 1” accuracy of 30’ and .25” at 30 meters
  - Planning Applications – detailed 3D (digital twins) designing workable plans to support outages or online
  - Scanning, as a service – 3D scanning and modeling as a service
- **Pre Job-Brief Applications** – accurate 3D models of plant/facility applied to Nuclear ALARA Briefs provide a more thorough, detail of location information before going into the field to discuss safety issues.

# Targeting Our Utility Industry



## Three Critical Business Challenges

### #1 Workforce Turnover

#### Retiring Workforce

- 50% of current workforce retiring in the next 5 years
- Knowledge Transfer and Retention (KTR) to ensure for business continuity



### #2 Generational Differences

#### New-Hire Generational Differences

- Less driven by money
- More driven by job satisfaction and work-life balance
- Significant differences in worker-engagement preferences



### #3 O&M Cost Management

#### Driving Reduction in O&M costs

- Utilities O&M expenses must come down!
  - DNP Delivering the Nuclear Promise
- Efficiencies must be realized to drive a decrease in customer rates.



# How AI and XR Can Help Solve Our Business Challenges



## 1 – Retiring Workforce

AIS Knowledge Management Solutions can mitigate loss of key competencies with our retiring workforce.

- Targeted learning modules can simulate environments that require specialized processes and skills to be executed that, currently, only a handful of employees perform. Using XR, new employees can learn, practice, and execute these activities.

- Examples Include
- Reactor Coolant Pump Seal Package Maintenance
    - 3 Mechanics left on site Qualified to Rebuild these seal packages (Targeted AR Module in 2021)
  - Worker Protection Assurance (Lock Out Tag Out) Training Module
    - Virtual Reality Module to train Contractors and Plant staff requalification

- Learning solutions using AR provides “just in time” training to be accessed on an as-needed basis to refresh knowledge for complex processes or one-off activities that are performed infrequently.

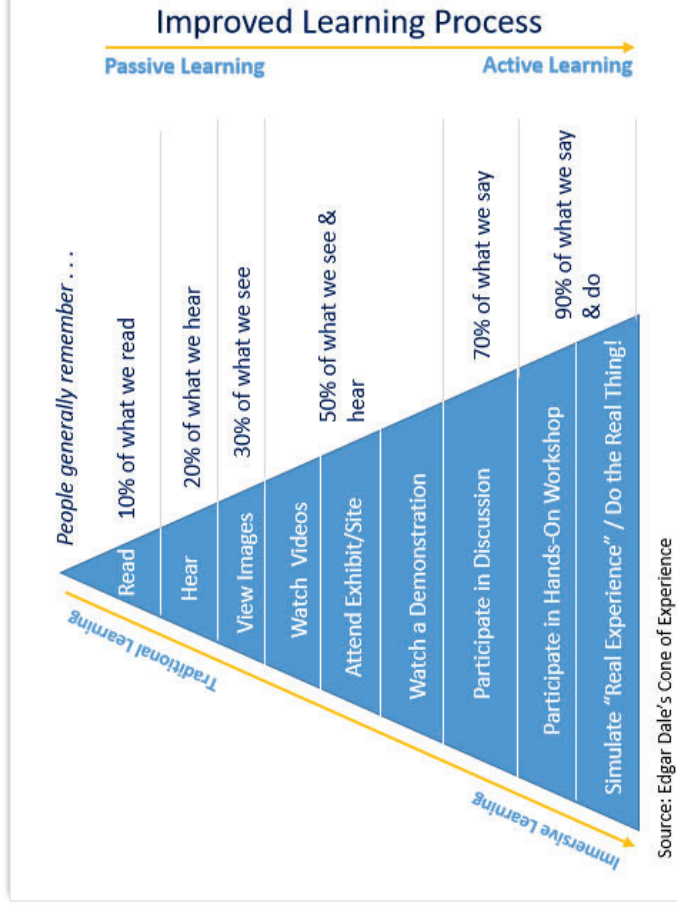
# How AI and XR Can Help Solve Our Business Challenges



## 2 – New Hire Generational Differences

AIS Learning Solutions offer learning solutions that not only engage new-hires with cutting-edge technology, our solutions also provide greater cost efficiency in training delivery modalities while improving learning quality and increased content retention.

- Research\* indicates that Millennials (84%) and Gen-Z (91%) use devices and define gaming as part of who they are.
- Implementing XR learning solutions is as a recruitment tool for these generations.
- Studies have shown that XR solutions positively improve understanding and knowledge retention.
- XR solutions can impact and improve the quality of training delivery and learning results.
- VR experiences promote multi-sensory experiences: visual, audio, and haptic (touch, manipulate). Training solutions can include learning, practicing, integrated assessments with auto-feedback to users, instructors, managers.



# How AI and XR Can Help Solve Our Business Challenges



## 3 – O&M Cost Reduction

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O&M cost reductions can be achieved through better operations, safety and asset management.

Let's consider some of the positive impacts with using better Data derived from AI processes:

- Data, analytics and its visualization is the future of personnel and asset management.
- Devices, sensors, networks *enable* the important components: visualization and analytics.
- AI solutions and data visualization can be applied to the models so asset operators can better determine data quality and problem identification even before entering the work area.

**Safety:**

- Improved Safety is a target area where XR and AI can provide quality methods to learn, identify and mitigate the hazards in your work area.

# Customer Engagement Results

## Engagement and Learning: LOTO-Targeting Safety in Complex Situations

*Will replace with a full picture of the new, generic room*



## Lock Out – Tag Out



Improve efficiency and Reduce costs associated with LOTO training



Ensure for a high-quality, learner engagement process and variable course-delivery options that address specific learning groups



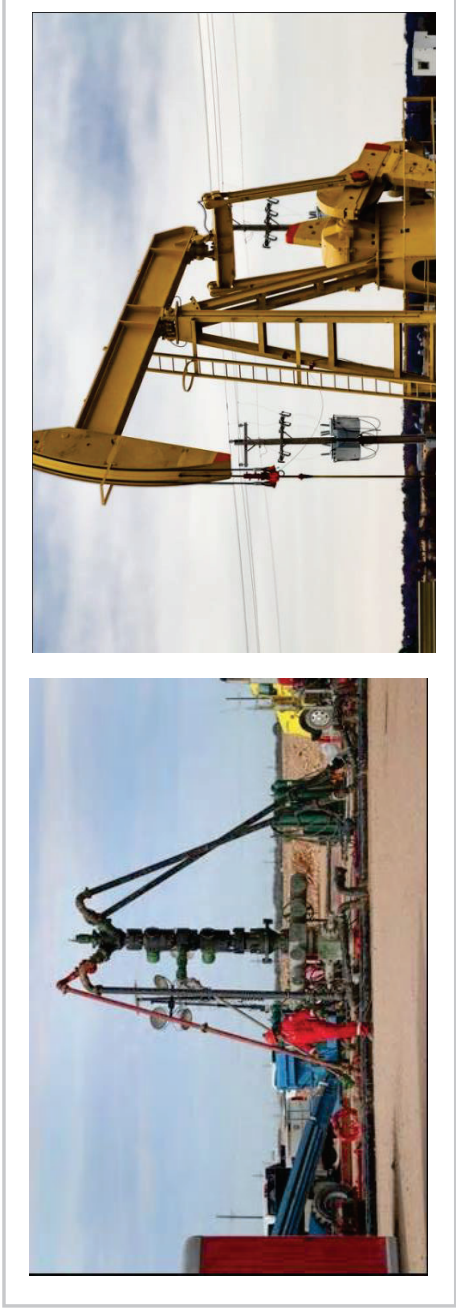
Drive an improved human performance result by reducing errors associated with LOTO process



Create a customizable environment to allow instructors to substitute in and out safety issues based on feedback metrics

# Customer Engagement Results

## Planning: Enhanced Coordination for Actionable Problem-Solving



A major Oil and Gas company needed to enable dramatic improvements to complex **field planning, monitoring, operations and training**. Field planners are able to import satellite and aerial images, equipment models, geospatial information and operational data to plan and problem solve across expansive and remote geographies



More efficient planning



Team-wide access to key information and visual content



Enhanced coordination with remote experts



Reduced Travel Expenses

## Field-Planning

### Oil & Gas Industry Site Scan



# Customer Engagement Results

*Operations: Enabling Operational Excellence*



## Substation Switching Safety



Reduction in errors and adverse events



Paperless integration with Maximo Work Order System



Real-Time Remote Subject Matter Expert Support



Reduce downtime due to outages



Automated Equipment Identification