EPIC PICG

Juan J. Castaneda

Grid Technology Innovation

Advanced Technology for Field Safety

WHAT IS AR?

Augmented Reality (AR) is the process of adding digital content to the real world

- Context-specific
- Actionable
- Will be used for our daily interaction with information

AR Industry Trends

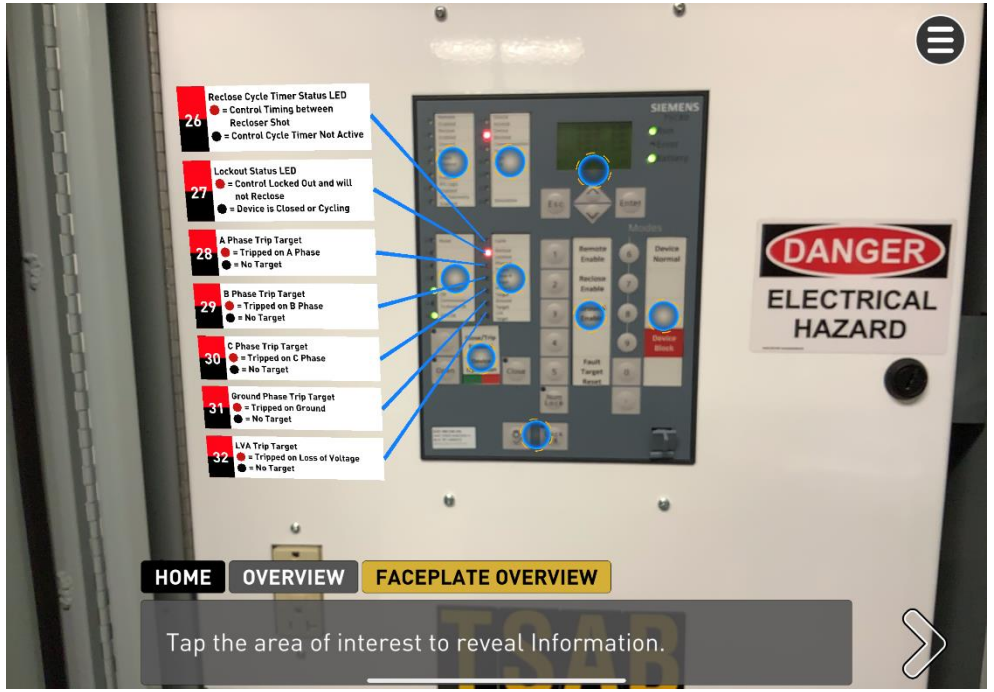
- Wearable (display) technology is expected to become a mainstream consumer device within the next 5-years.
- Apple is expected to release a VR device within 18 months.
- XR technology (AR/VR) will leverage 5G communication technology for edge computing and content delivery.
- Lockheed Martin has demonstrated an ~90% efficiency gain with tie-down installations on the Orion Spacecraft.
- Boeing now uses AR technology to streamline and increase the efficiency of aircraft electrical work.

Augmented Reality (AR) – EPIC II

Utilize the Remote Integrated Switch controller content to generate and demonstrate the benefits of Augmented Reality

Project Goals

- Improve field safety
- Proof of Concept (PoC) to demonstrate the effectiveness of a real-time virtualized job aid;
- Help field personnel better understand equipment;
- Assist field personnel with complicated equipment configurations or operations;
- Increase on-site job efficiency by demonstrating best practices;
- Reduce multiple job-site visits to resolve an issue.



AR Field Deployment – EPIC II

Planned EPIC III Project

We will demonstrate recent advancements in wearable technology while leverage the lessons learned from the RIS-AR demonstration, to expanded SCE's use cases. Project work included:

- Evaluation of wearable technology for a hands-free AR environment;
- Evaluate the capabilities and quality of electronic site inspections as a replacement for paper-based submittals;
- Leverage SCE's substation 3D modeling efforts to demonstration an AR solutions that helps field technicians navigate and identify equipment within a substation rack;
- Demonstrate an assistive AR tool that helps technicians with programming and troubleshooting substations relays.

Distribution Waveform Analytics

SOUTHERN CALIFORNIA EDISON®

Distribution Waveform Analytics (WP&RT)

For this project, the Distribution Waveform Analytics is looking to demonstrate distribution waveform telemetry and analytics capabilities that will enable support of wildfire prevention and resiliency objectives. The EPIC project will identify and demonstrate “next-generation” data recorder hardware device that enables detection of leading wildfire indicators by supporting open-platform Analytics and Machine Learning (ML) software that will enable Substation Waveform Analytics.

Key Benefits

1. Safety: Enhance SCE’s sensing and analytics capabilities to more quickly and accurately detect operational abnormalities
2. Reliability: Quicker and more accurate detection of operational abnormalities.

Potential Benefits

- **Increase safety**: This project is expected to enhance SCE's sensing and analytics capabilities so that the utility can more quickly and accurately detect operational abnormalities that may trigger wildfire ignitions and pose risks to the public.
- **Improve Reliability**: Through quicker and more accurate detection of operational abnormalities at the substation level, the project team anticipates improvements to SCE's reliability.
- **Reduce Costs**: lower deployment costs for substation sensors in order to adapt to and address data acquisition in response to increased wildfire risks
- **Operational Efficiency**: Deploys without major rewiring in the substation which avoids extensive engineering design and does not consume scarce rack space
- **Real-time Waveform Analysis**: Through a data driven approach, the real-time analysis of high-resolution waveforms, will uncover sub-transient events, which can lead to the detection of previously undetectable events.

Distribution Waveform Analytics

Strategy	Objective	Capability
Addressing Wildfire Risk	Observe and maintain a granular understanding of environmental dynamics and real-time asset conditions to improve wildfire response posture	Sensing, monitoring, and instrumentation of T&D assets in support of wildfire prevention and mitigation efforts
Addressing Wildfire Risk	Wildfire Data Analytics & Decision Support	Advanced data analytics solutions (e.g., automated image processing, machine learning, artificial intelligence, etc.) and decision-support tools in service of wildfire modeling, prevention, asset management, and response activities