Team 304: ATS Training Application

Sponsored by Florida Power & Light

Alexis Cross, Christopher Sopeju, Kaitlyn Gurtner, Kevin Rodriguez & Max Urscheler

Team Introduction

Alexis Cross

Technical Specialist

Christopher Sopeju

Lead Programmer

Kaitlyn Gurtner

Team Leader

Kevin Rodriguez

Lead Designer

Max Urscheler

Test Engineer

Presentation Outline

- Background
- Goals
- Concept & Design
- Results

Background

Project Liaisons

Florida Power & Light

- Genese Augustin
  - Lead Project Manager
  - Smart Grid & Innovation
- Troy Lewis
  - Engineer II
  - Smart Grid & Innovation
- Kyle Bush
  - Project Manager

Faculty Advisor

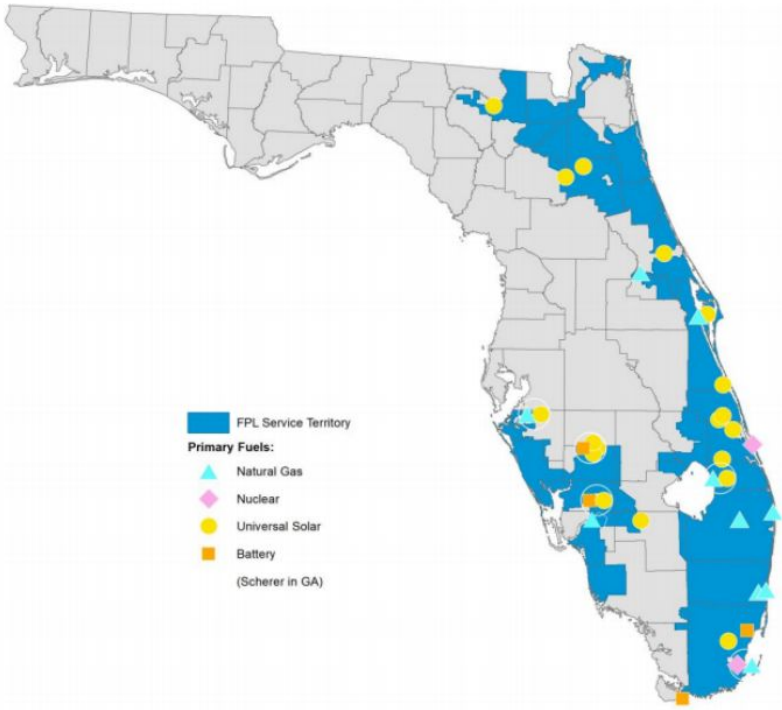
- Reginald Perry, Ph.D.

Kaitlyn Gurtner

Sponsor – Florida Power & Light

Subsidiary of NextEra Energy Inc. (NYSE: NEE)

Responsible for millions of people's electricity in the state of Florida.



Kaitlyn Gurtner

Objective & Motivation

Objective:

- Design an iPad application that will virtually train Florida Power & Light (FPL) employees

Motivation:

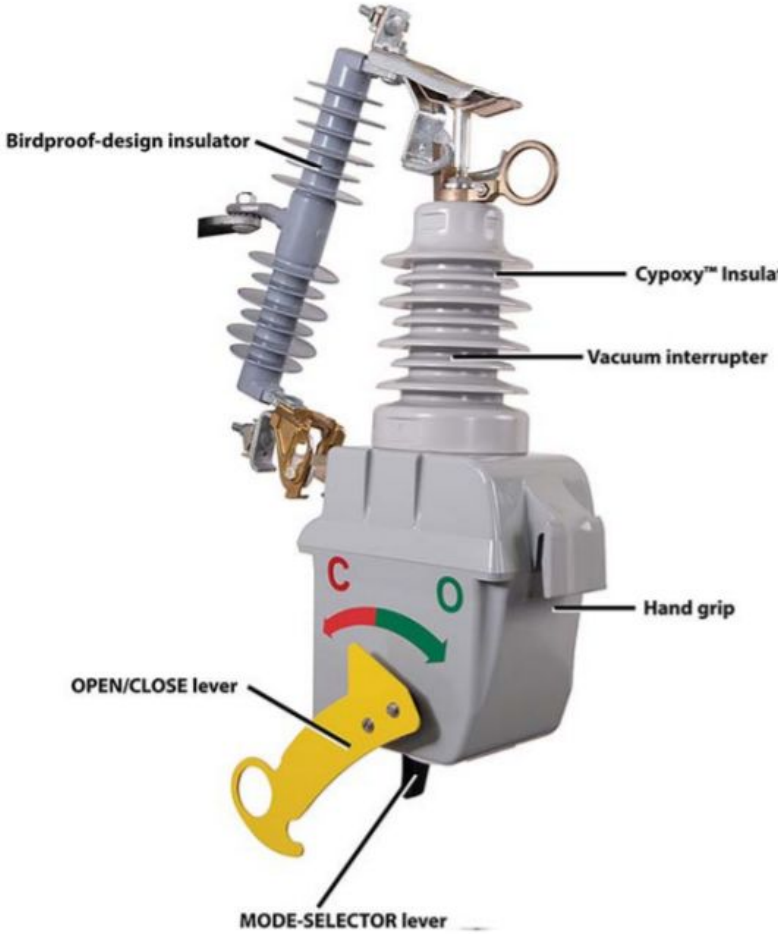
- Trains them on maintenance and troubleshooting procedures for the Automatic Transformer Switch (ATS)
- Will provide an in-depth look into the switch along with the various mechanisms that must be used during temporary and permanent faults
- Employees will be assessed on their knowledge of normal ATS operation, and maintenance and troubleshooting procedures.

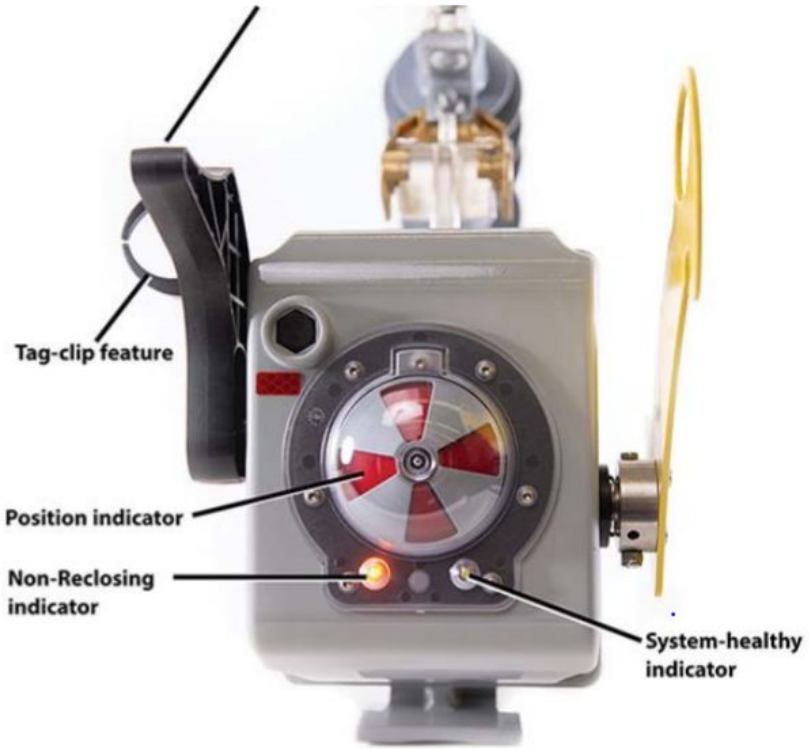
Kaitlyn Gurtner

Automatic Transformer Switch (ATS) Information

- Ensures the continuous delivery of electrical power

- Manual Operating Lever
- Non-Reclose Lever
- Position Indicator Semaphore
- System Health LED
- Non-Reclosing LED

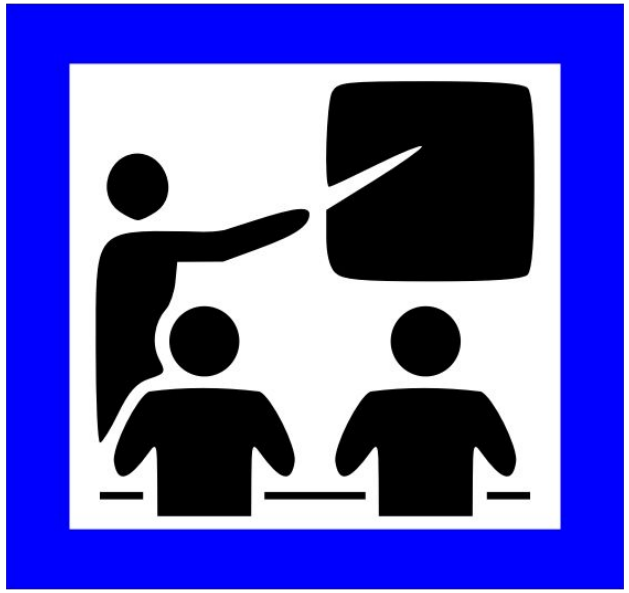




Kaitlyn Gurtner

ATS Operation - Training Procedures

- Normal In-Service Operation
- Operation During Permanent Fault
- Operation During Temporary Fault
- Non-Reclose Lever Operation
- Manual Open Procedure
- Manual Close
- Troubleshooting



Kaitlyn Gurtner

Project Goals

Customer Statement

Due to the COVID-19 pandemic, Florida Power & Light (FPL) desires an application that will virtually educate and train its employees on how to perform maintenance on an Automatic Transformer Switch (ATS). In order to give employees access to the final product, the application must be compatible with the FPL internal application store.

Alexis Cross

Customer Statement – Q&A

Questions

- Train on installation, maintenance or both?
- Augmented or virtual reality?
- More than just simulating maintenance?
- Specifically for iPad?
- Required production method?

Answers

- Maintenance only, employees know how to install
- Neither, rather a simulation
- Include portions to educate and assess knowledge
- Yes, must be iPad compatible
- No, any method acceptable

Alexis Cross

Customer Needs

Identifier	Need	Source
N1	Train FPL employees on ATS maintenance procedures	Cust.
N2	Conduct training in a virtual manner	Cust.
N3	User-friendly/intuitive	Cust.
N4	Interactive experience	Cust.
N5	Easily distributed among FPL employees	Cust.

Alexis Cross

Customer Requirements

Identifier	Requirement	Need(s) Met
R1	Educate on ATS components and their functions	N1
R2	Educate on ATS maintenance & troubleshooting procedures	N1
R3	Final design is an iPad application	N2, N3, N5
R4	Simulate ATS maintenance & troubleshooting procedures	N1, N2, N3, N4
R5	Assess the user's knowledge & provide feedback	N1, N4
R6	Provide feedback during simulations and assessments	N1, N3, N4
R7	Simulation behaves and appears like real life experience	N1, N3, N4
R8	Allow user to freely interact with ATS	N1, N2, N3, N4
R9	Enable user to request information on ATS components	N1, N2, N3, N4
R10	Demonstrate opening and closing of switch procedures	N1, N2, N3, N4

Alexis Cross

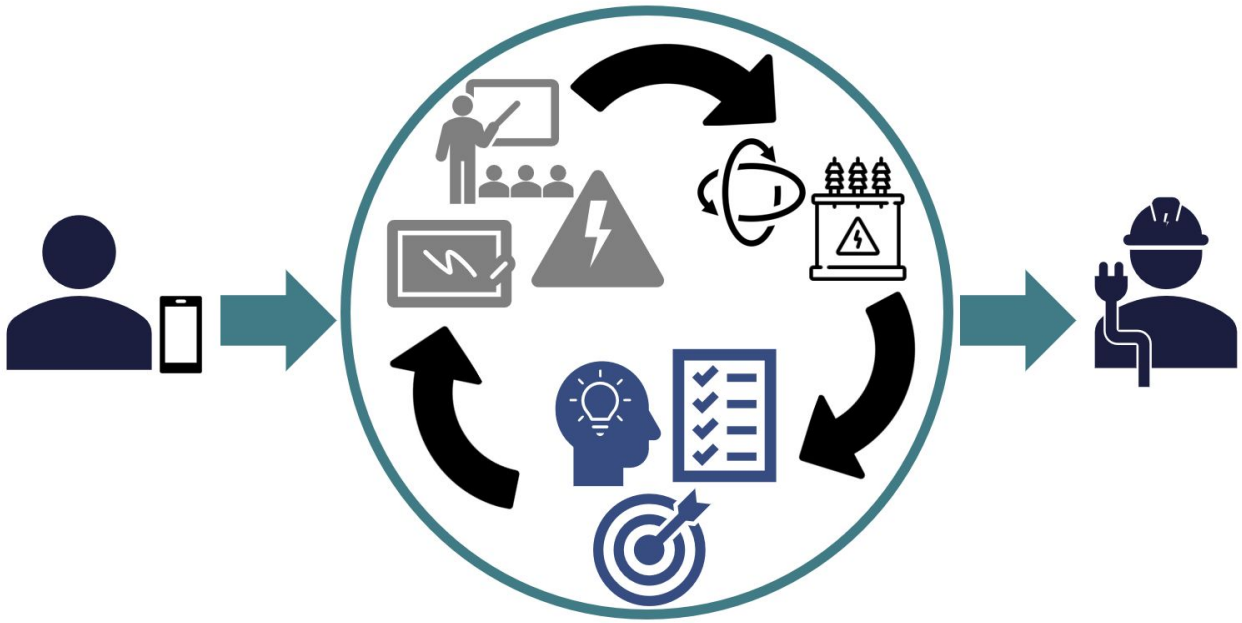
Key Goals

- Train and Test FPL Employees on ATS Maintenance
- Deploy via Virtual Platform
- User-Friendly
- Intuitive

Concept & Design

Kevin Rodriguez

Design Approach



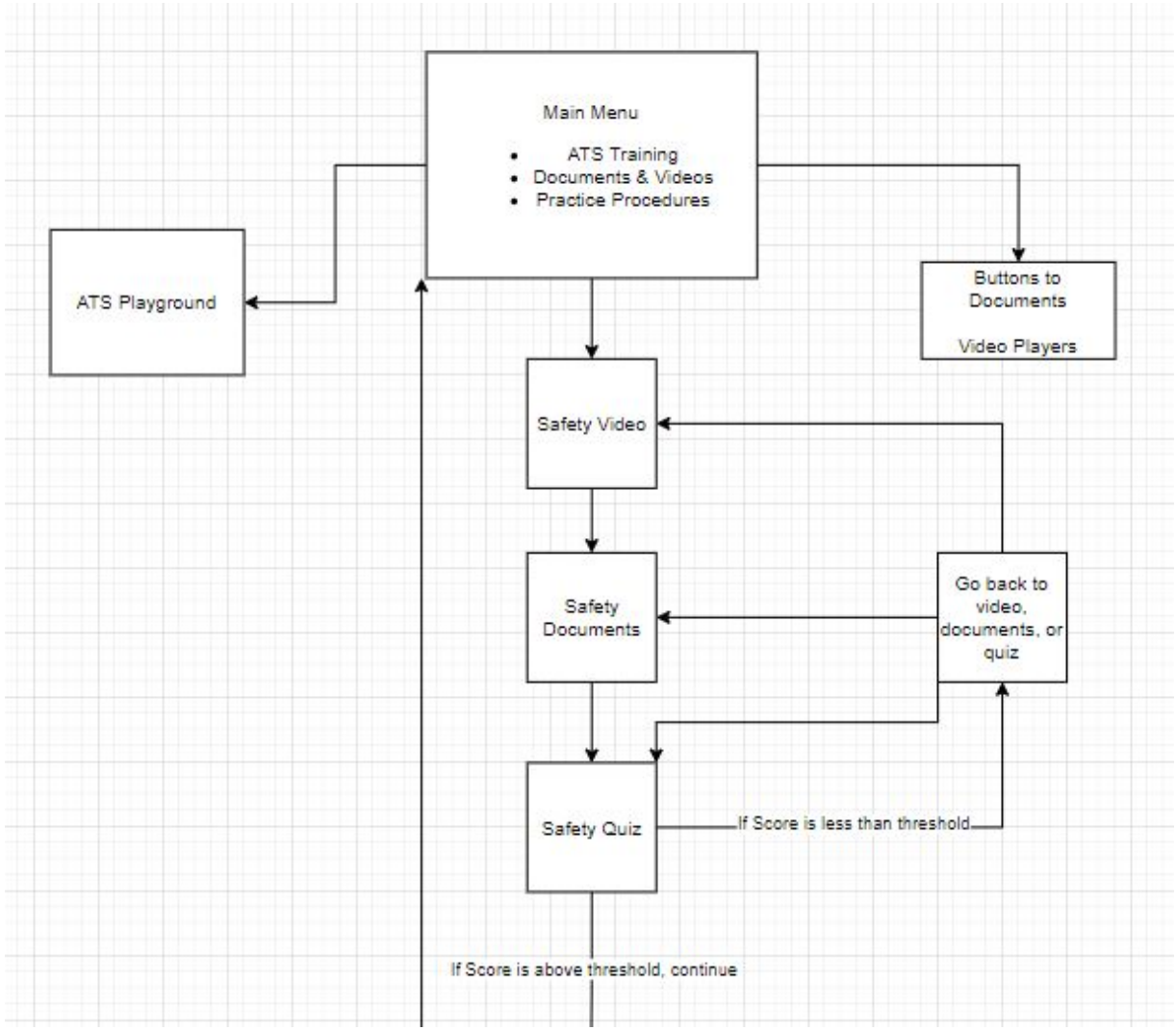
The application design will model an interactive training session and will consist of the following:

- Informative Videos
- Demonstrations of ATS and Components
- Ability To Interact With And Request Information On ATS
- Assessments Of End User's Knowledge

Kevin Rodriguez

Storyboard

- Main Components
  - Storyline/Tutorial
  - “Playground”
  - Documentation



Kevin Rodriguez

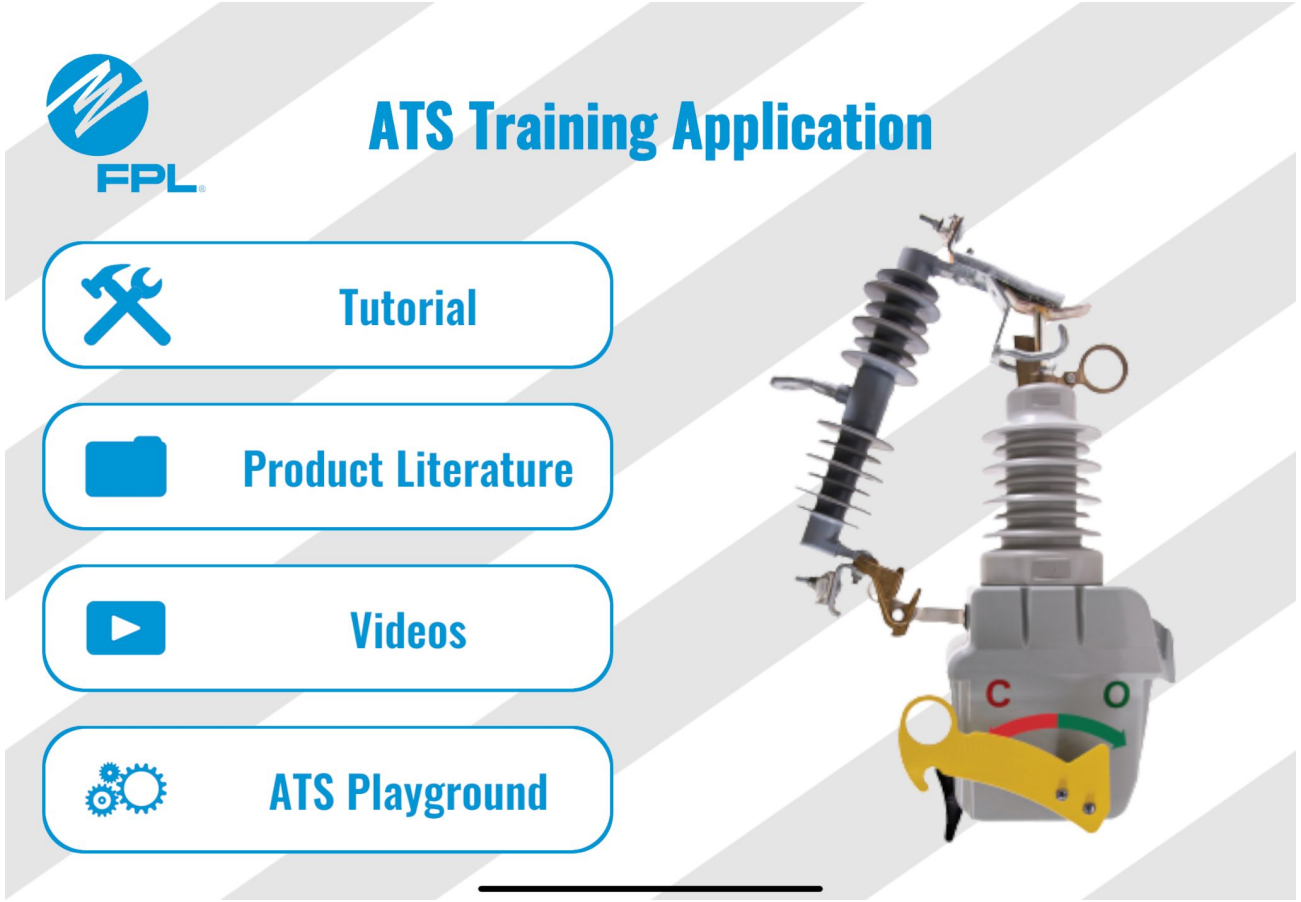
Selected Concept

- Production Method: Unity
- IDE: JetBrains Rider
- 3D Modeling: Maya
- Delivery Method: iPad Application
- Screen Design: Home/Menu
- Assessments: Multiple Choice & Scenario Based
- Build Tool: Unity Cloud Build

Kevin Rodriguez

Results

Main Menu



Max Urscheler

Tutorial Menu

Max Urscheler

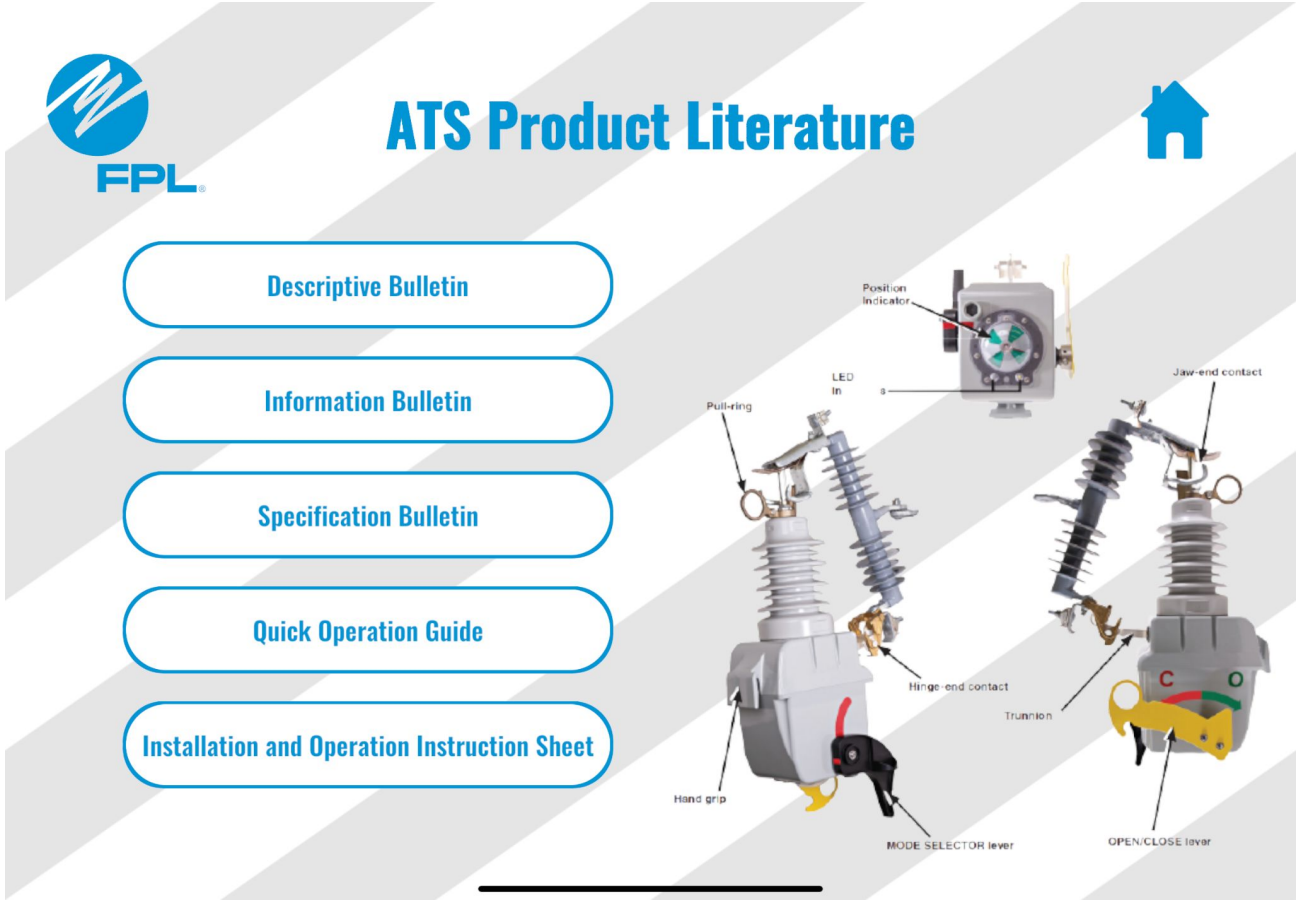
Tutorial - Video

Max Urscheler

Tutorial

Max Urscheler

Documentation Menu

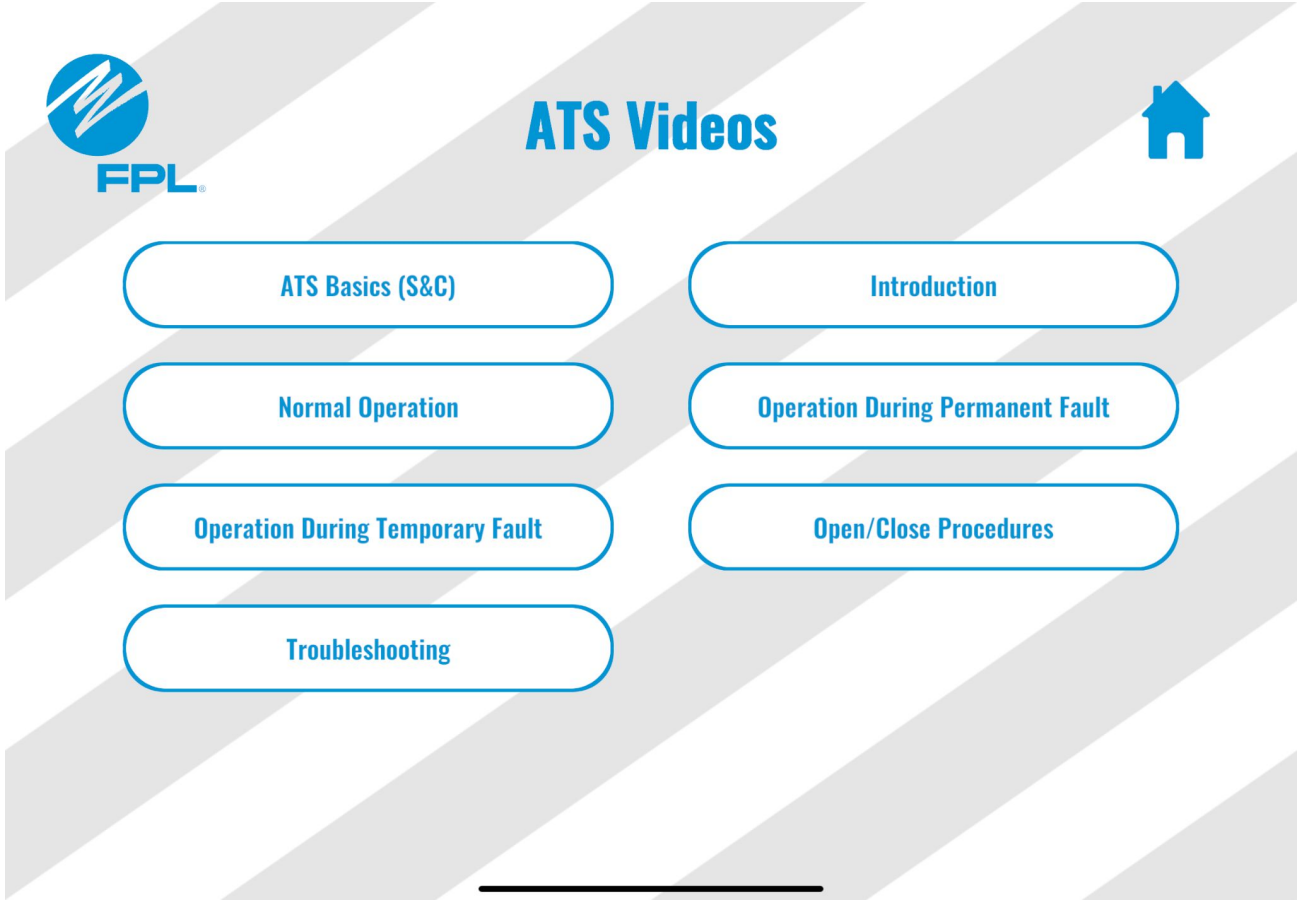


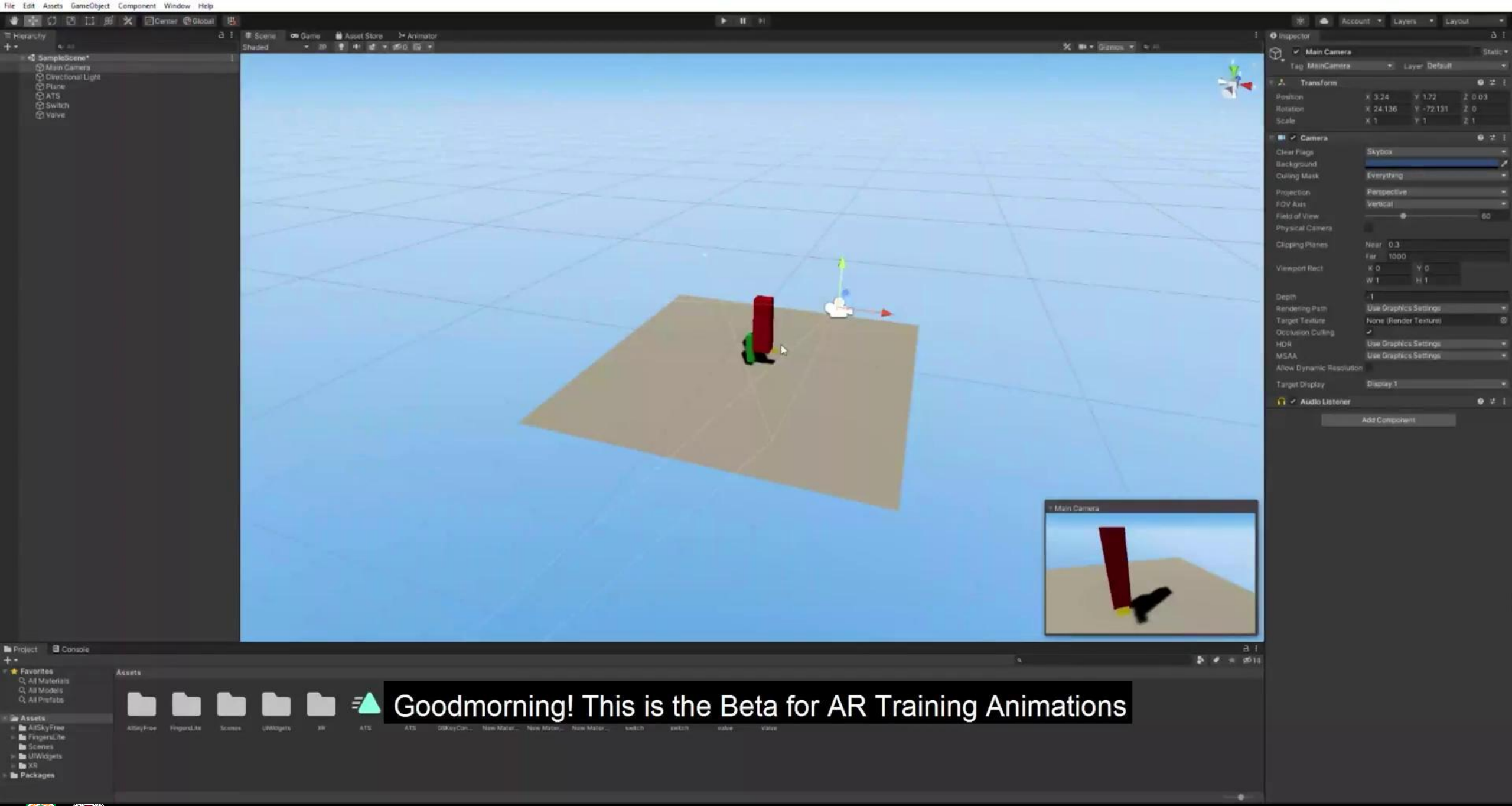
Max Urscheler

Documentation Menu - Video

Max Urscheler

Video Menu


FPL
ATS Videos
ATS Basics (S&C)
Introduction
Normal Operation
Operation During Permanent Fault
Operation During Temporary Fault
Open/Close Procedures
Troubleshooting


Goodmorning! This is the Beta for AR Training Animations

Project Challenges

- Learning Curve: C# & Unity
- Animations: Locking Z-Axis
- Deploying iOS Application via Windows

Summary

- iPad Training Application
- Focus: ATS Maintenance Procedures
- Satisfy Customer Needs, Requirements & Targets
- Implement Derived Concept

Questions?