

A background image showing a network of high-voltage power transmission towers and power lines against a clear blue sky. The image is partially obscured by a large, diagonal, semi-transparent red banner that covers the bottom half of the slide.

# Grid Automation Migration Challenges & Solutions

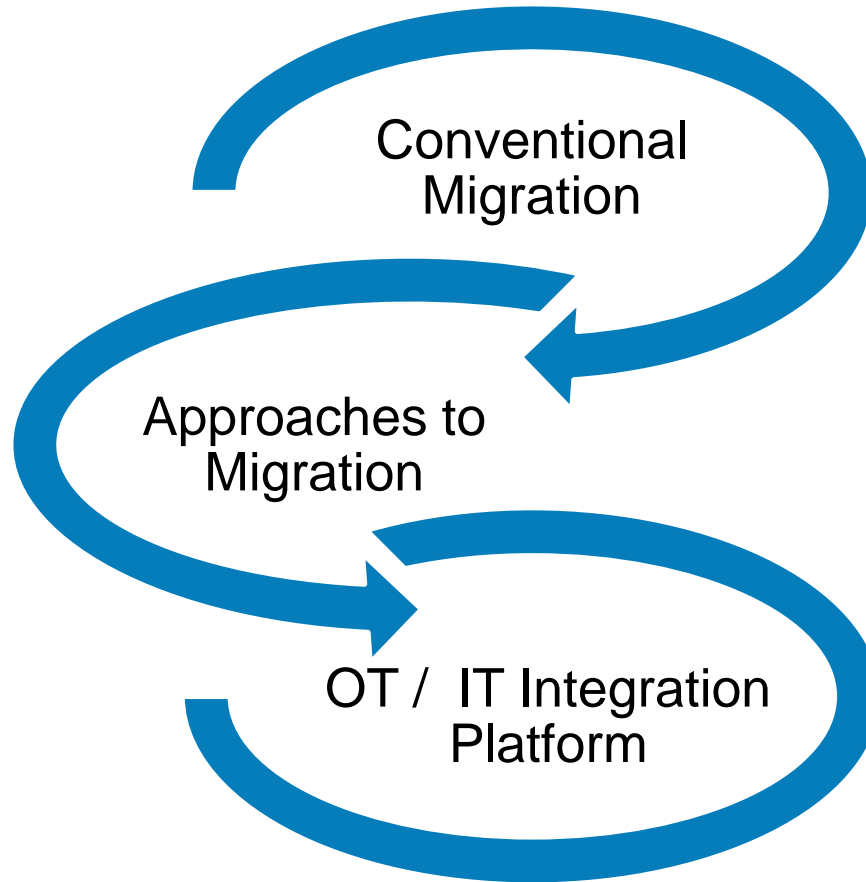
**IPCGRID 2018**

**Prasanth Gopalakrishnan  
CEO**



- What is driving utilities to modernize grid operations and add intelligence?
  - Operational efficiencies
  - Increase reliability
  - Reduce OPEX
  - Integration of DERs
  - Improve service level
  - Increase security

# Agenda

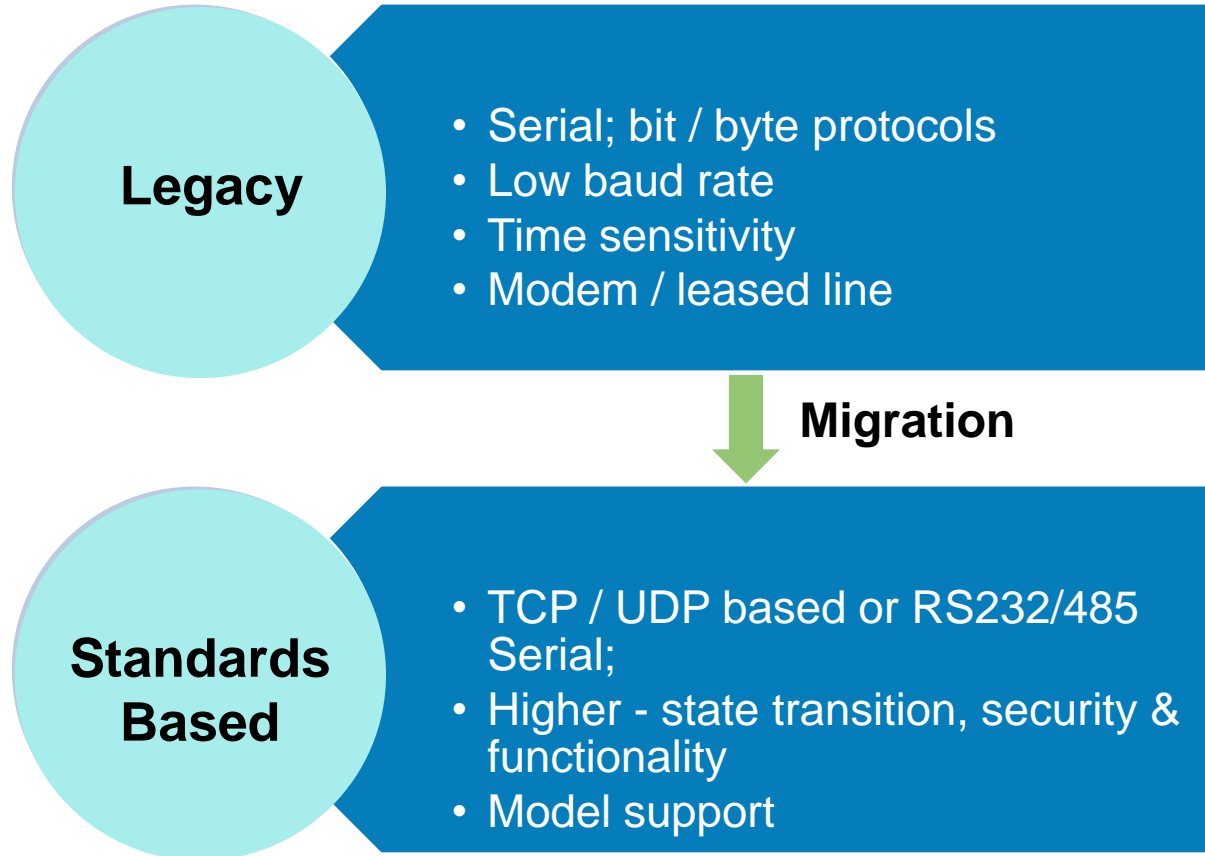




Grid Automation Case Studies

# CONVENTIONAL MIGRATION

# Device / Sensor Migration



# Case Study – Translation @ Control Center



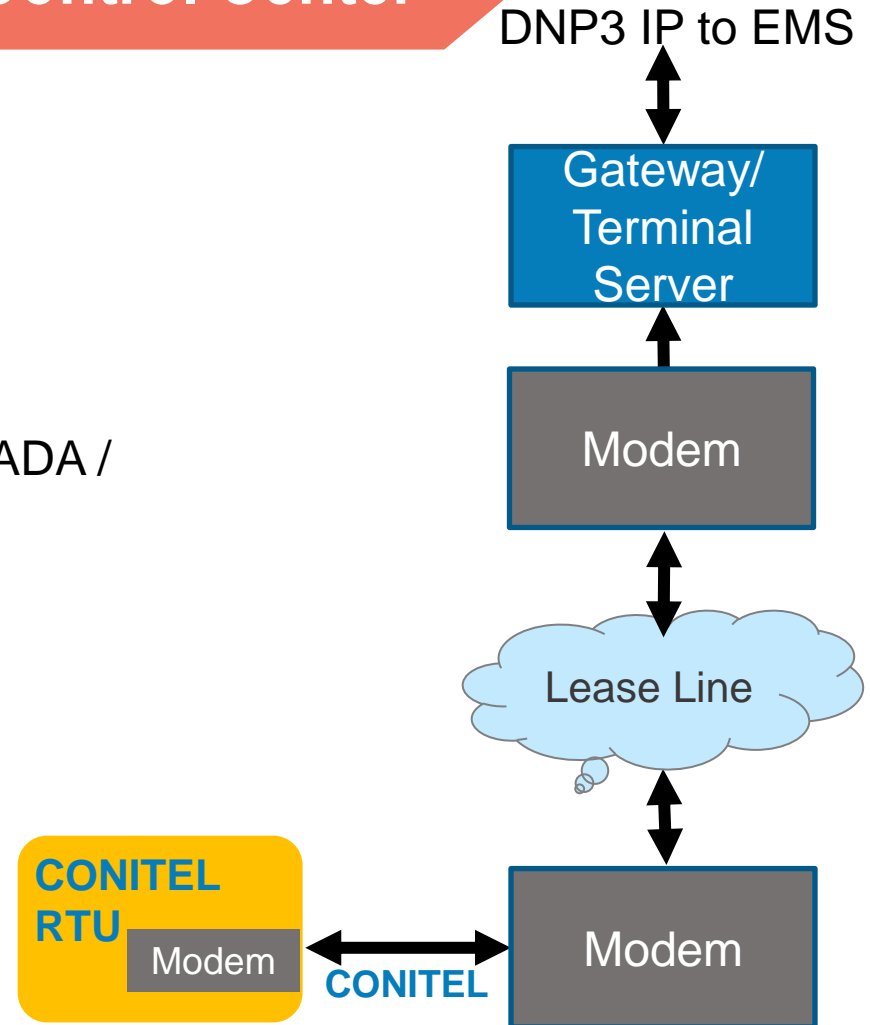
## Eastern US Utility

### Challenges

- Support CONITEL at control center
- Retain leased line while migrating SCADA / EMS to DNP3

### Benefits

- Cost effective transition
- Fast deployment, minimal disruption



# Case Study – Translation @ Edge



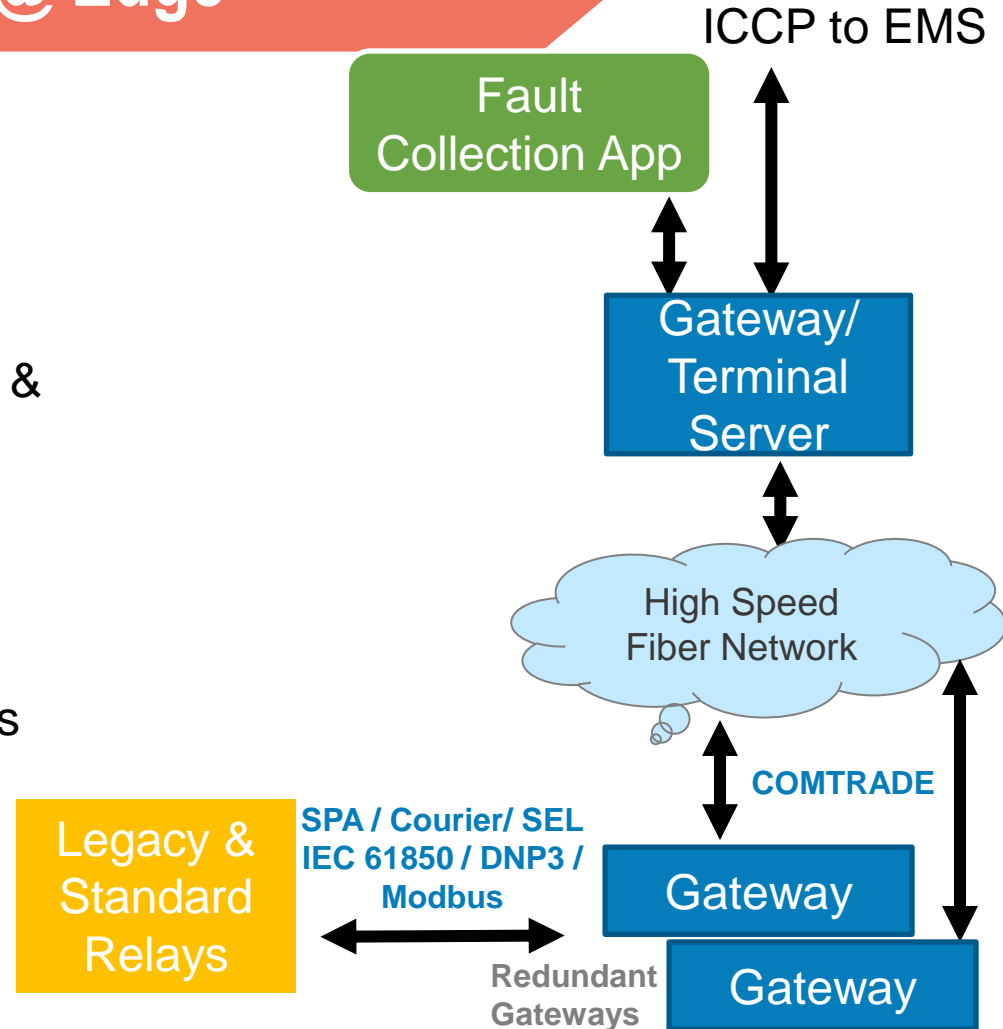
## Utility in Asia

### Challenge

- Monitor/upload fault files from legacy & standards based relays for asset monitoring and configuration

### Benefits

- Protocol conversion at edge simplifies upstream communication
- Minimal changes required at control center



# Case Study – Translation @ Edge



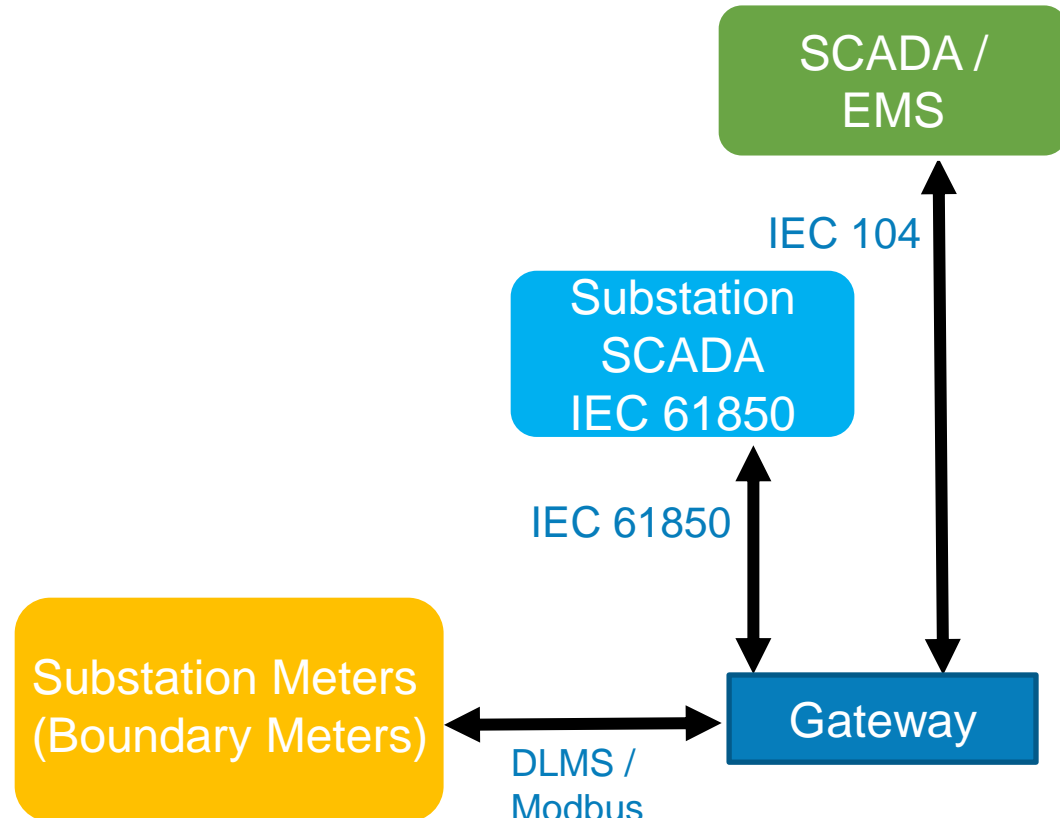
## Utility in Europe

### Challenge

- Translate DLMS / Modbus substation meter data to IEC 61850 to local SCADA and IEC 104 / DNP3 to DMS/EMS

### Benefits

- Pushes complexity to the edge simplifying upstream







# APPROACHES TO MIGRATION



# Integration & Migration Challenges

## Integrate at Edge

- Gateways support legacy & standard protocols
- Gateways for security compliance
- Gateways for transition from leased lines to IP
- Integrate IT layer – JSON/REST or MQTT or OPC-UA Interface to IT

## Centralized Integration

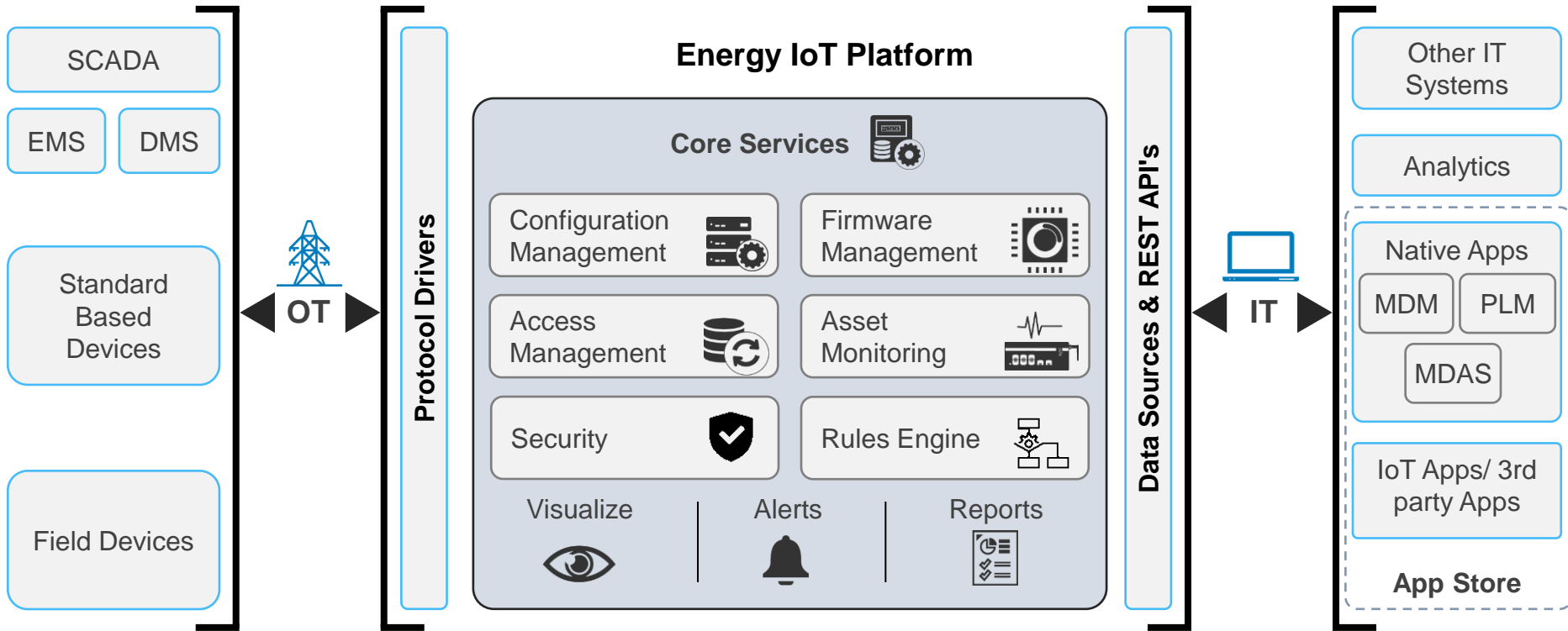
- New SCADA/DMS - legacy supported front end at control center for translation
- Existing SCADA/DMS – Current protocol supported; front end at control center to translate new to legacy
- Integrate from the SCADA – Add JSON/REST or MQTT or OPC-UA Interface to SCADA for integration with IT



# Edge Vs Control Center Migration

	Edge	Control Center
<b>Pros</b>	Standardize on one up stream protocol	Centralize complexity
	Complexity & security managed at edge; phased migration possible	Easy to migrate SCADA without affecting field devices
	Easy to migrate field devices with minimal change at control center	Asset & device monitoring possible with the new gen gateways
<b>Cons</b>	Need to manage more individual devices/protocols	Troubleshooting can be more complex; entire data path may require review to solve a problem
	Staff needs to be trained on new and old protocols and interfaces	Need to retain dedicated comm to bring legacy data to control center
		Lack device management & monitoring

# An Ideal Integration Architecture





# MIGRATION PLATFORM



# Making Energy Smart – Drivers

## Improved Operational Reliability

Improve Asset Health and Efficiency, Reduce Downtimes and losses

## Consumer & Community Participation

Facilitate Bi-directional flow of information; new business models & consumer decisions

## Renewables & the New Energy Landscape

Integrate Distributed Energy Resources & Electric Vehicle Charging

## Data Governance & Security

Ensure data protection, management and role based access control

# Making Energy Smart –The Ever Increasing Need for Data & Security



Improved Operational Reliability

Consumer & Community Participation

Renewables & the New Energy Landscape

Data Governance & Security

SCADA

Predictive Analytics

Head End System

Consumer portal

Distributed Generation

Identity management

Security Management

Device Management

IED RTU

Devices Sensors

Smart meter

Phones Grid edge devices

EV charging Station

Solar

Power storage

# Making Energy Smart –The Ever Increasing Need for Data & Security



Improved Operational Reliability

Consumer & Community Participation

Renewables & the New Energy Landscape

Data Governance & Security

SCADA

Predictive Analytics

Head End System

Consumer portal

Distributed Generation

Identity Management

Security Management

Device Management

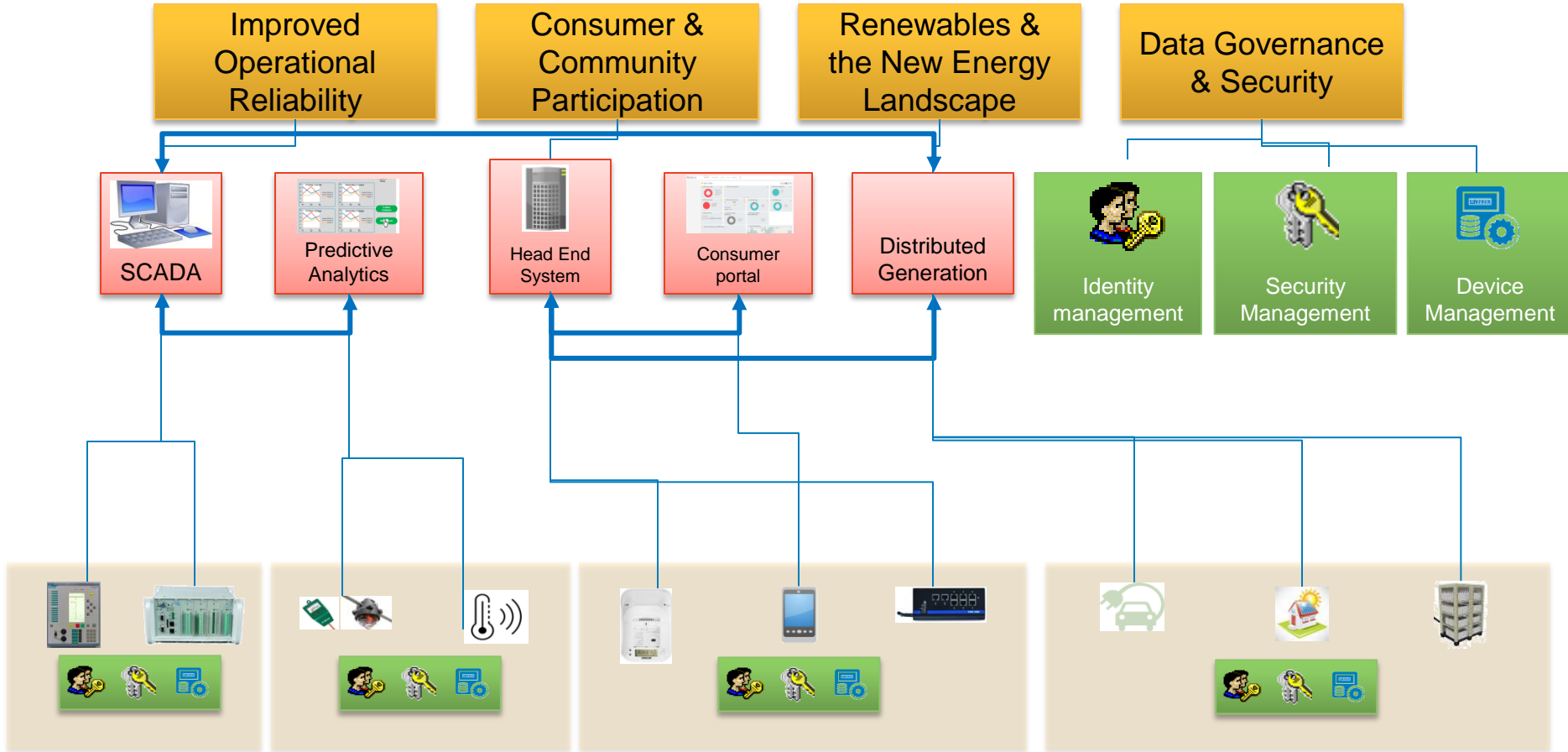
You need a solution that can  
**SIMPLIFY**

How do you handle this  
Complexity?





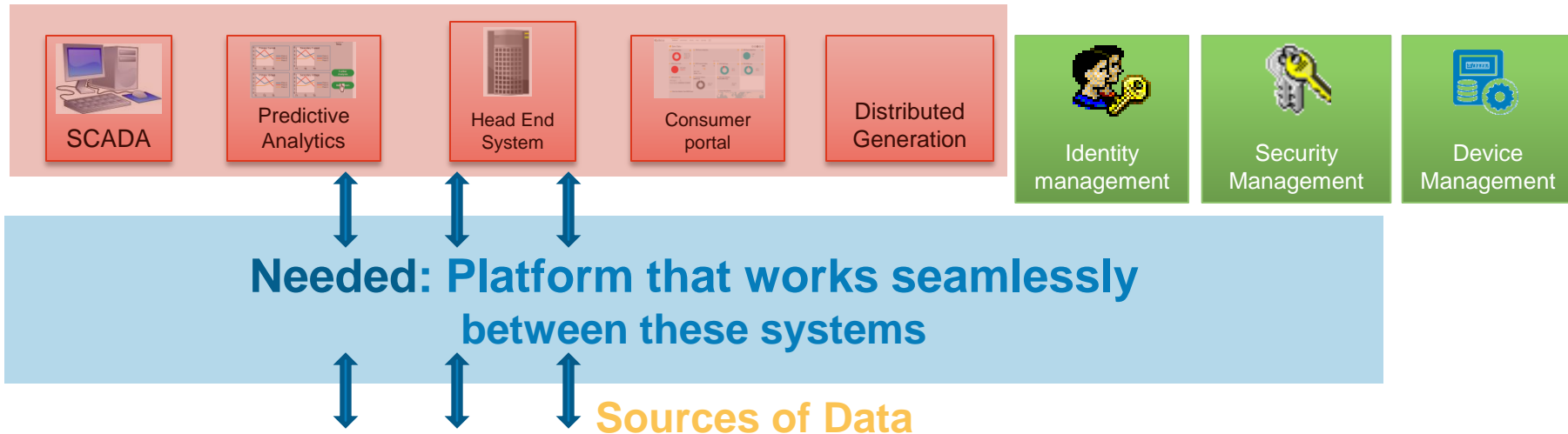
# Remove the Layers of Complexity



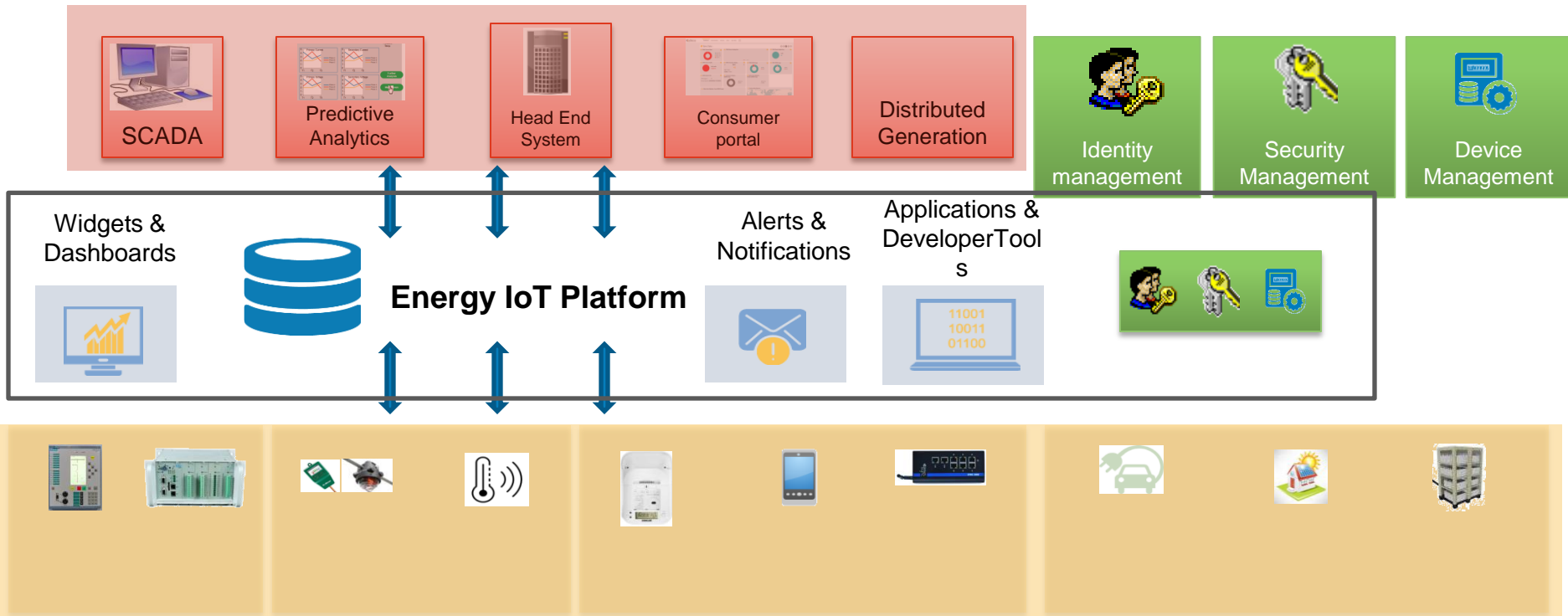
# Remove the Layers of Complexity



## Systems Demanding Data

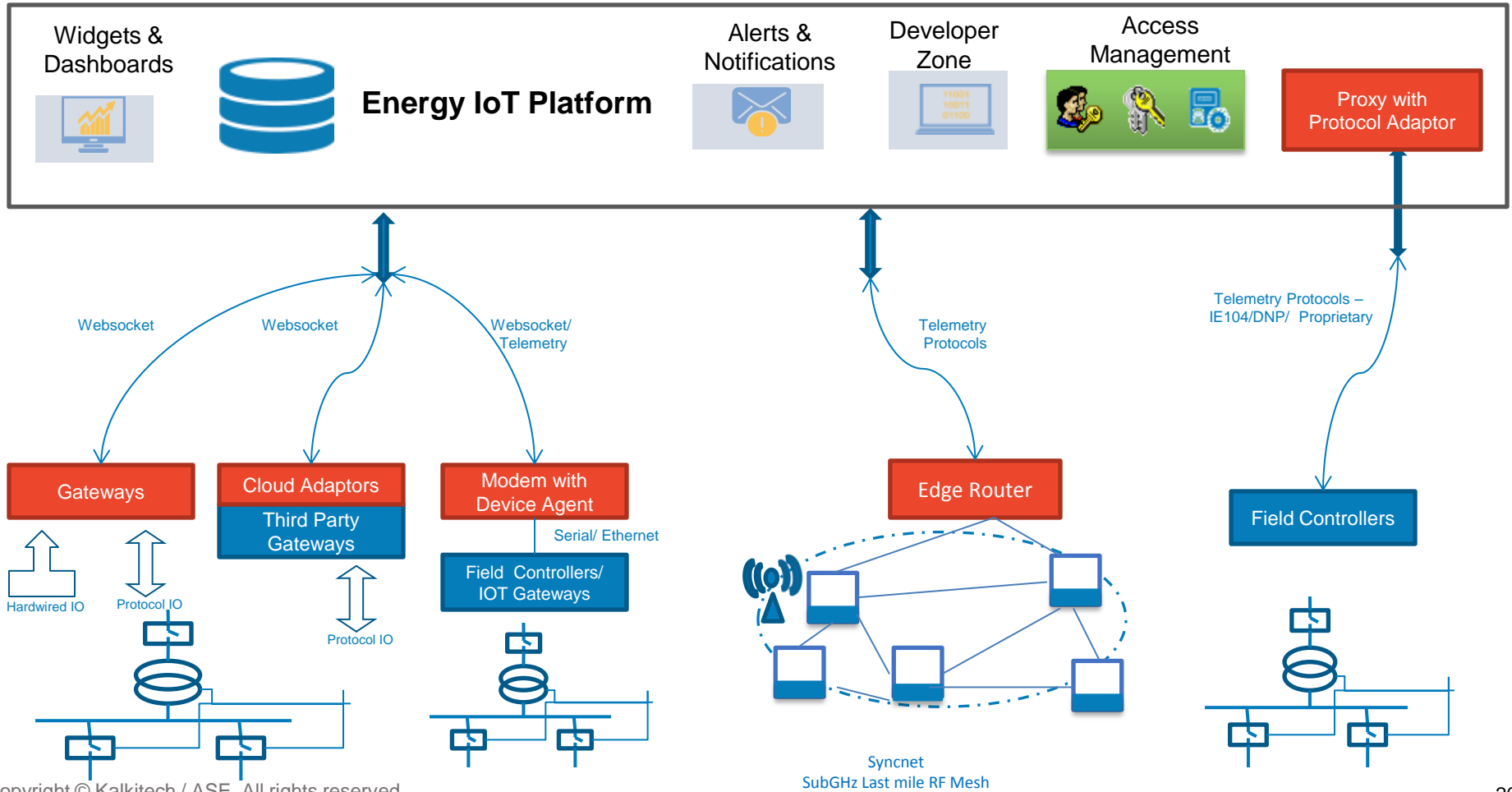


# Remove Layers of Complexity



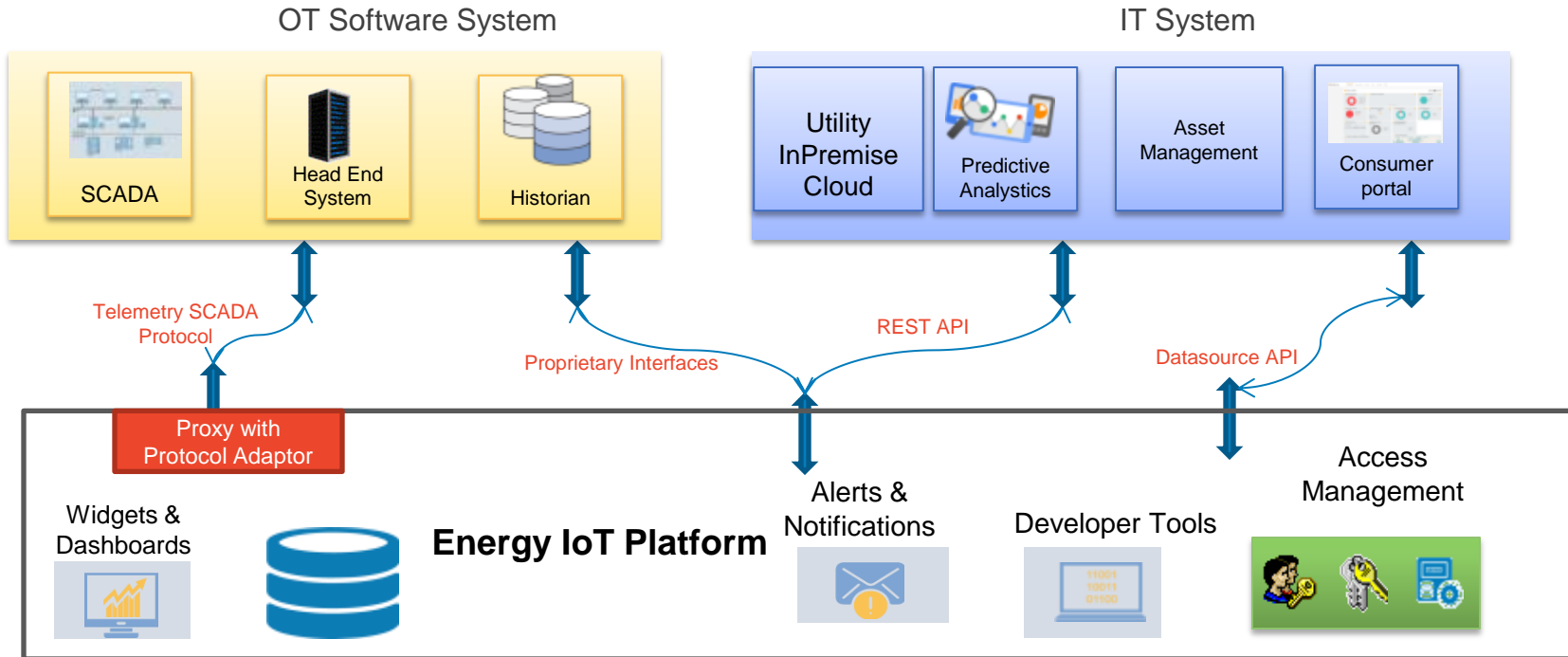


# Field Data & Device Integration





# IT & OT Data Center Integration





# Thank You

*E-mail: [prasanth@kalkitech.com](mailto:prasanth@kalkitech.com)*

*Learn more about Grid Automation & Migration solutions at  
[www.kalkitech.com](http://www.kalkitech.com)*