



ESNA's first webinar:

## **"Benefits of Using NES4 - Making the Smart Grid possible" .**

On December the 18th ESNA distributed its first webinar of what is intend to be the start of a long range of public presentations concerning the features of the NES AMM architecture, infrastructure and its related added value applications for AMM and Smart Grid applications, offered by our members.

We found Damian Inglin, product manager NES System software at Echelon willing to present this first webinar. In his presentation; “Benefits of Using NES 4 – Making the Smart Grid possible” he gave a detailed view in the new features of AMI system software



# Benefits of Using NES

## *Making the Smart Grid Possible*



*Energy Services Network Association*



## Who are we?

We are a global and a not-for-profit association  
of utilities and solution suppliers  
to promote and to expand the adoption of

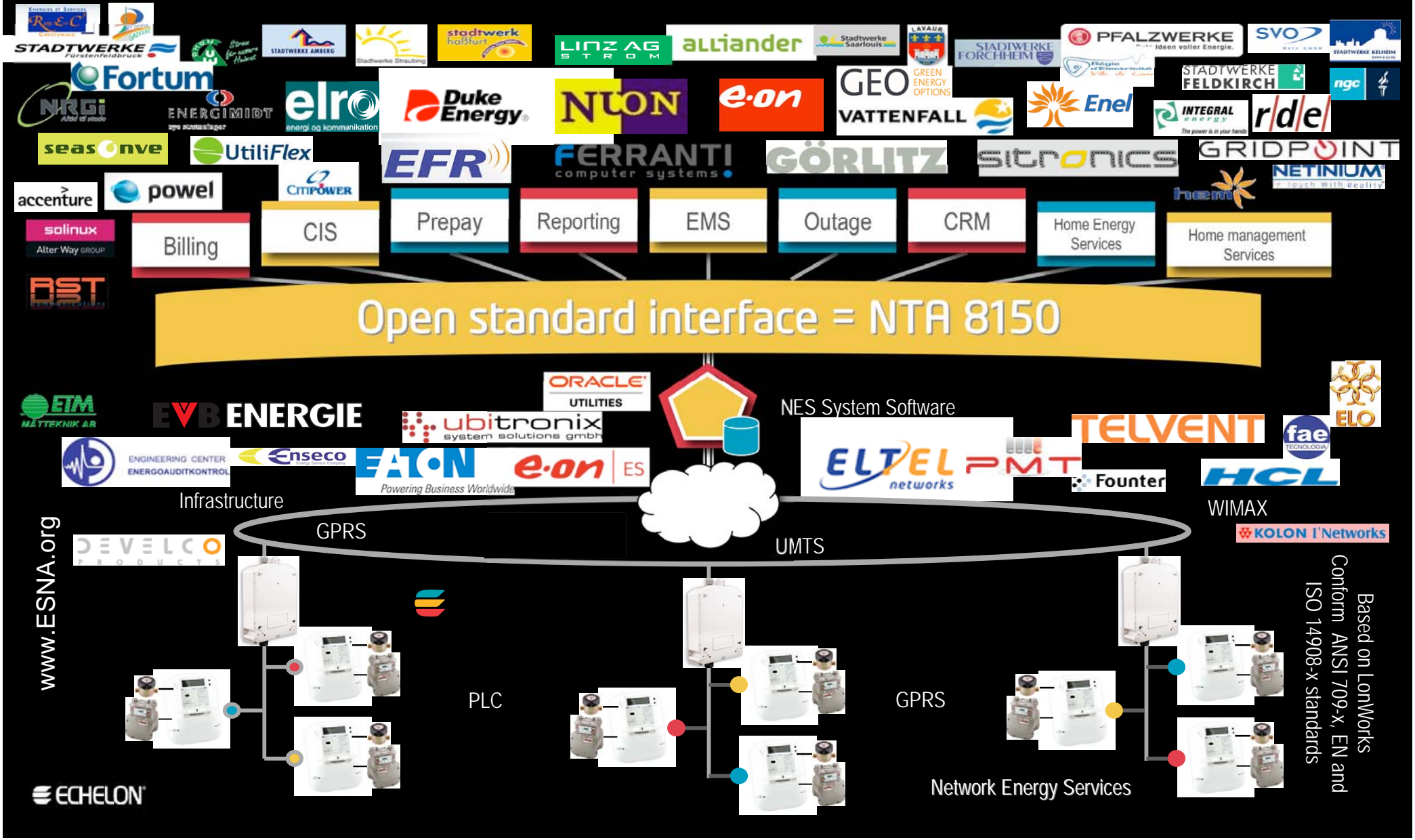
## Network Energy Services (NES) architecture and infrastructure

together with the value added applications for  
secured, reliable and cost-effective  
automatic meter management, Billing, CRM and CIS



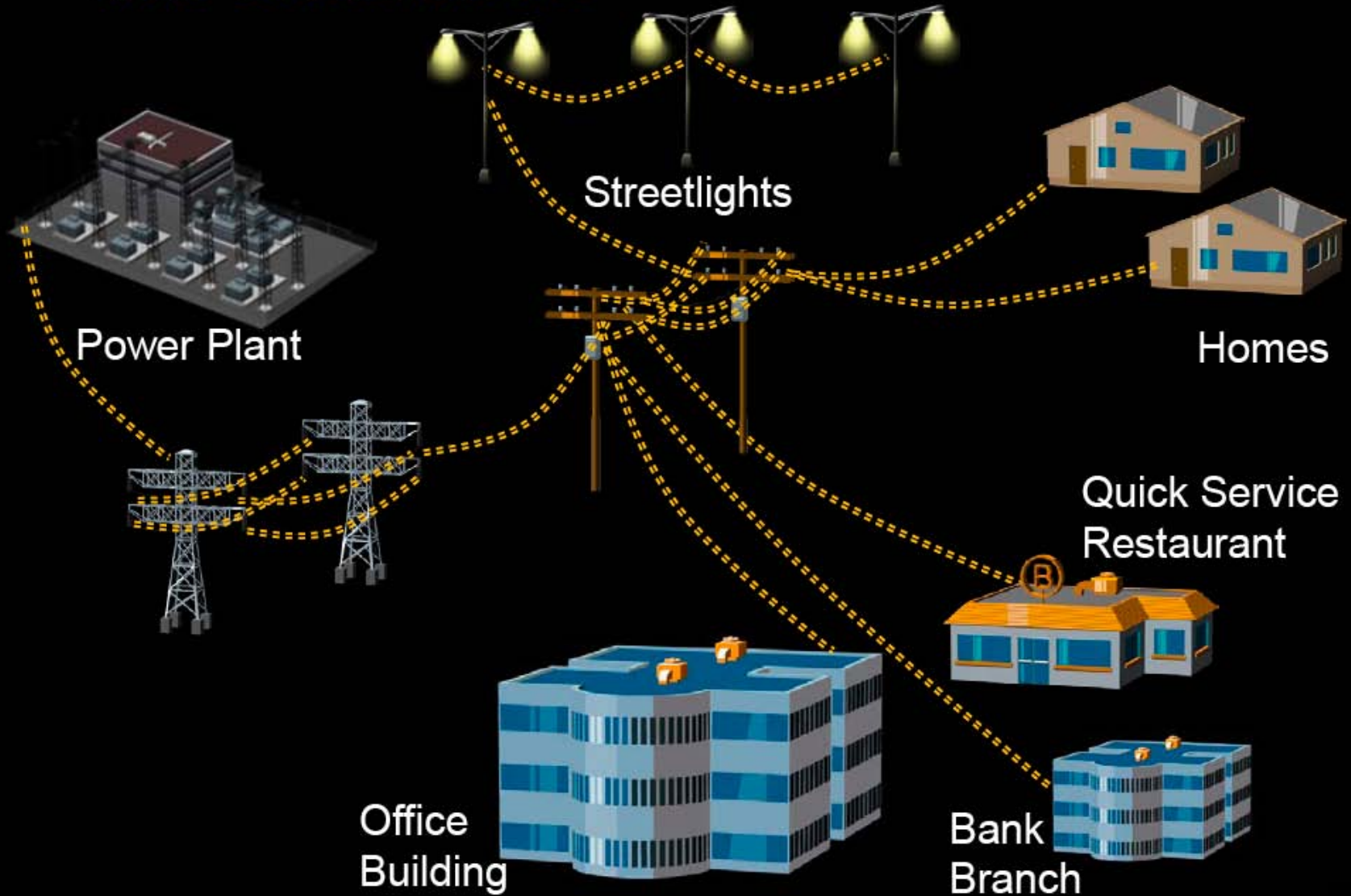


# Community & Added Value





# Smart Grid Connects Power Producers and Consumers





## What Makes the Grid Smart?

- 2-way communication connects utilities to smart devices
- Better, more accurate and timely information to users
- End-to-end encryption and authentication
- Automatically, remotely detects and resolves problems
- Pricing options, energy efficiency incentives, monitoring
- Cost-effective operation through insight and control of usage
- Adapts to next-generation technology and storage options

Interactive

Secure &  
Reliable

Accelerates  
Innovation

Flexible



# The Smart Grid Evolution

## Today (AMI)

Integrate existing services into new grid

### Applications

- Meter reading
- Net metering
- Time of use
- Basic outage detection
- Large load demand limiting

## Short term (Smart Grid 1.0)

Transform existing services using advanced communication

### Applications

- Pre-paid metering
- In-home displays
- Intelligent disconnect
- Fine-grain load control
- Advanced outage management
- Bi-directional metering (renewables)
- Automatic demand response

## Long term (Smart Grid 2.0)

Enable future services and foster innovation

### Applications

- Micro-grids/distributed generation
- Intelligent street lighting
- Vehicle to grid /grid to vehicle
- Storage/distribution of renewables (wind, fuel cells, solar)
- Fault prediction/outage prevention
- Energy asset management
- Other future applications...



## NES System

- Worldwide smart grid solution for smart metering
- Integrated, software driven solution
  - Intelligent system software, intelligent concentrators, smart meters
- Open, interoperable to meet future needs
- Embeds intelligence into the grid itself
- Metering becomes a true energy network

Smart  
Metering





## NES System Advantages

- Proven technology deployed in >30M meters worldwide
- In-field reliability > 99.6% of daily reads
- Integrated software/hardware smart metering solution
- Advanced features
  - Dynamic service/pricing, load profiling, theft/outage detection and pre-paid options
  - Network insight for immediate notification of outage, quality change, or service issue
- Future-proof – over-network updates allow utilities to roll-out new functionality

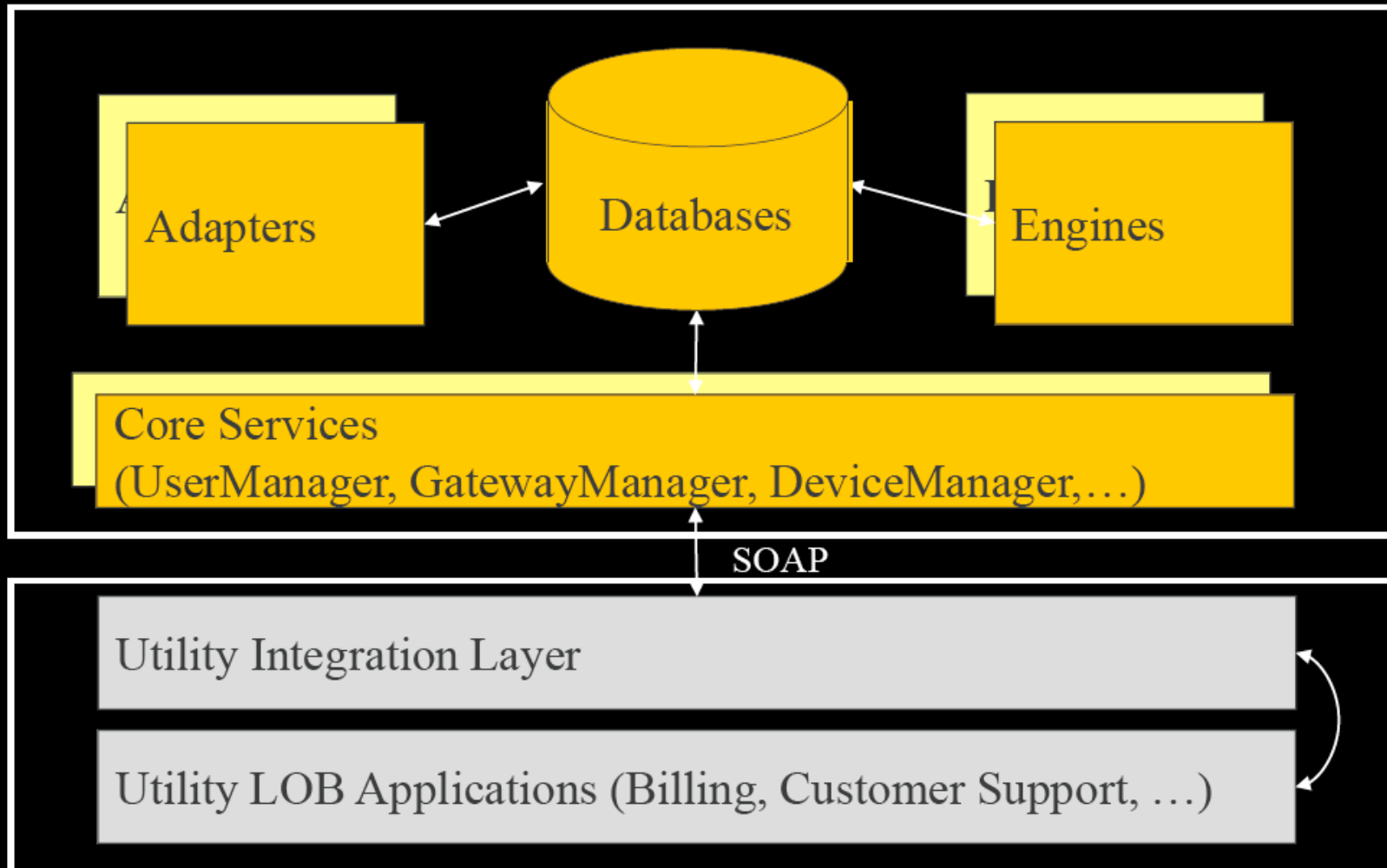


## System Software: Role

- Enterprise access server to NES System
  - Robust yet easy-to-use interface to manage, control and configure the NES system
- Easy creation of powerful applications
  - Automated access to system functionality & data
  - Automated topology and communication management
  - Standards-based to readily integrate with utility applications

# Program Architecture

## NES System Software Servers





## Efficient Operational Organization

- Over 400 Web services & events
  - Infrastructure
    - ...add meter, alter concentrator configuration
  - Data collection
    - ...on-demand read, meter power quality data
  - Control
    - ...remote disconnect and connect, load control
  - Event handling
    - ...meter tamper, power outage
- Core Services
  - Automated time, communication, device management



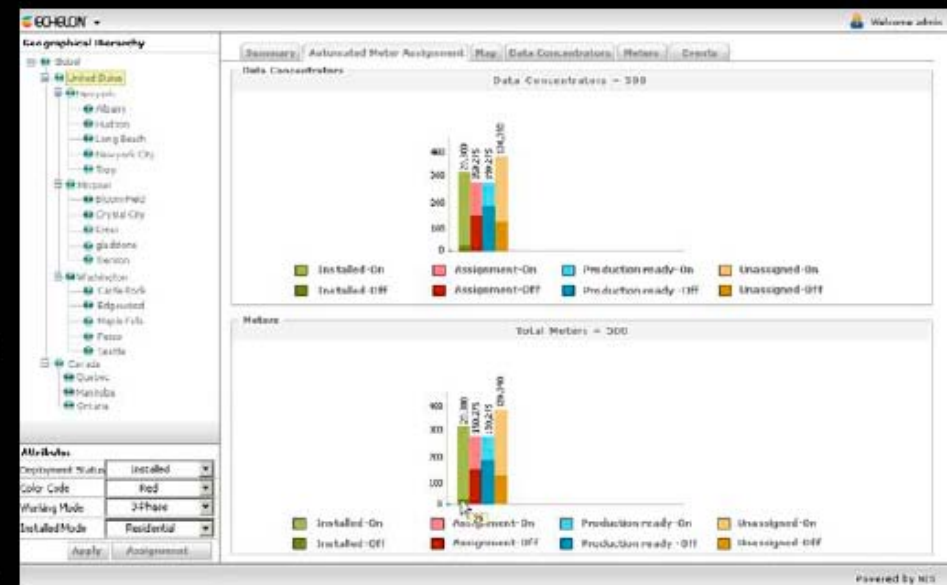
## Scalability

- Architected with scalable enterprise components—  
Storage Area Networks and IP Load Balancers
- Redundancy and failover via engine design and  
task distribution framework
- Proven scalability to 5 million meters
  - 4,000 meter installations per day
  - 5 million meter billing reads including demand)and  
load profiles (4 channels, 15 minutes) per day
  - 400,000 on-demand meter reads per day
  - WAN communication—midnight to 6AM
  - All results delivered by 8AM

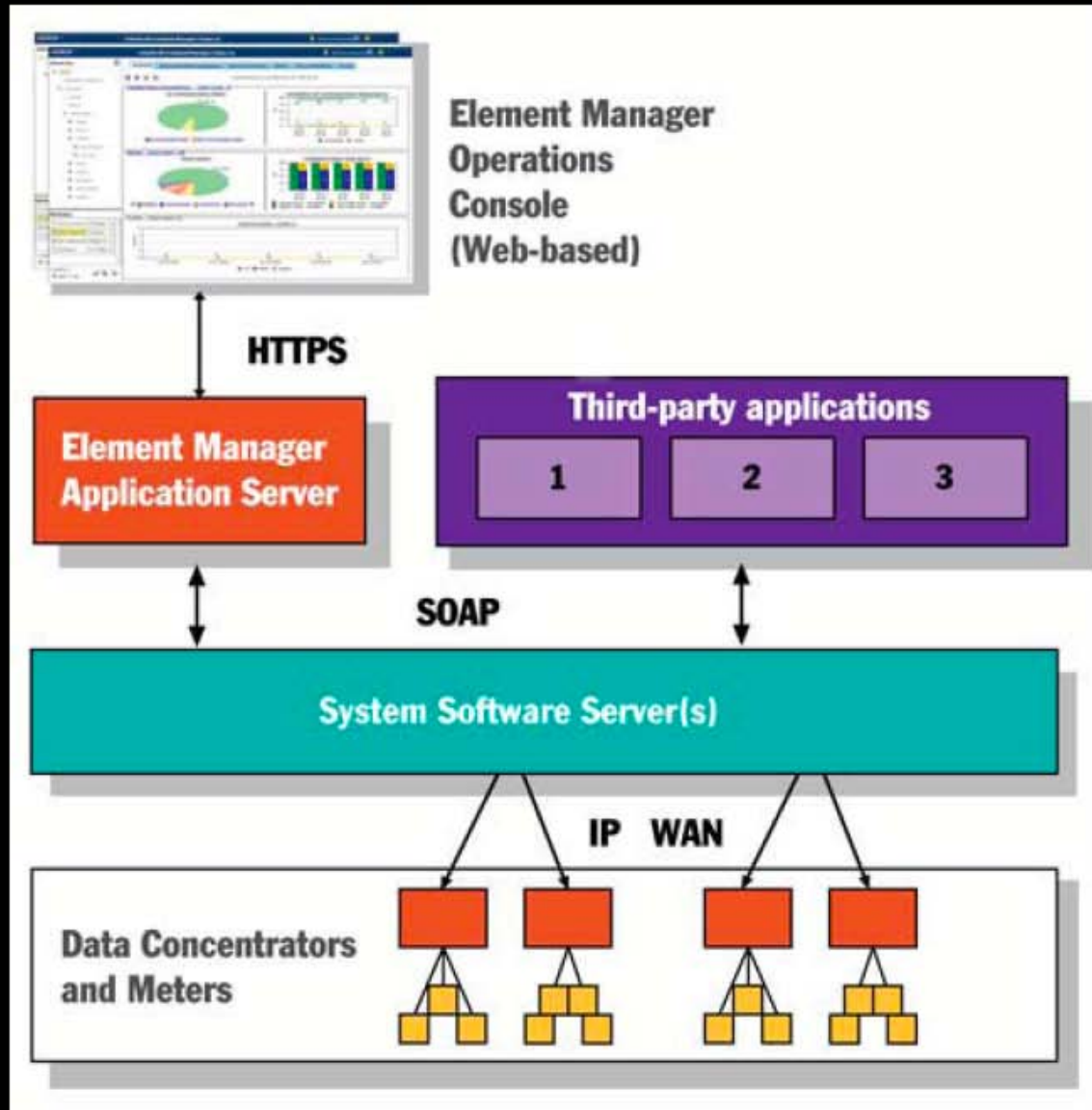


## Element Manager Overview

- Web-based element management tool for the NES System
- Co-exist with other NES applications
- Graphically displays configuration and real-time performance of the NES system
- Helps utilities meet service level agreements such as meter data deliveries
- Proven scalability

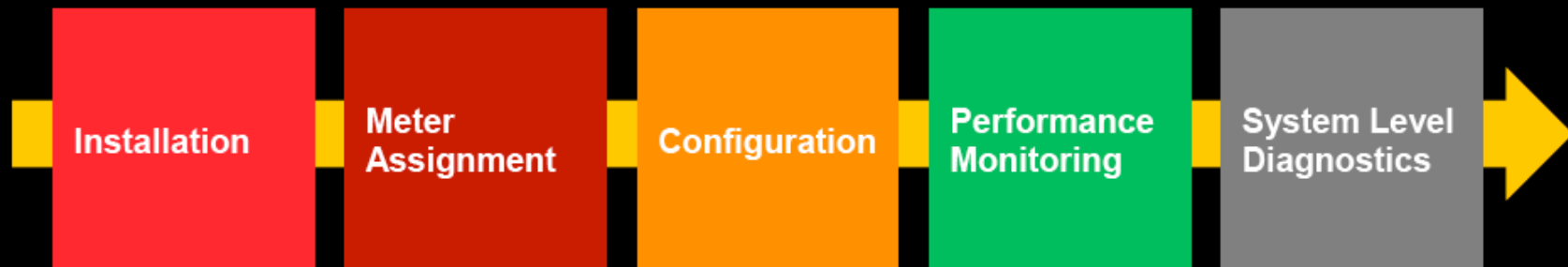


# Smart Grid Service Center Architecture



- Billing
- Pre-pay
- Power quality
- Load shed
- Outage management
- In-home device management

## Lifecycle and Deployment Processes



- Manages meters through their lifecycle and supports established processes at the utility
- Processes and operations are supported through easy assignment of completely customizable hierarchy and attribute information
  - Displaying hierarchy tree for easy navigation
  - Managing any number of attributes managed in the system with a selection of often used (favorite) attributes pre-selected for easy filtering



## **NTA 8150 Standardization**

- Link from generic smart metering infrastructure to a utility's IT infrastructure
- NEN (Dutch) workgroup
  - network operators
  - Smart metering industry partners
  - metering related IT solutions
  - ESNA
- Standardizing at IT level promotes interoperability while enabling innovation at the network and device level, encompassing different Smart Metering infrastructures and protocols





ESNA

**Thank You**



*Energy Services Network Association*