SCE's Wide Area Situational Awareness System

ADVANCED TECHNOLOGY
Transmission & Distribution Business Unit

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Outline

- WASAS Design Considerations/Requirements
- WASAS System Design Overview

WASAS Design Considerations/Requirements

WASAS Design Considerations/Requirements

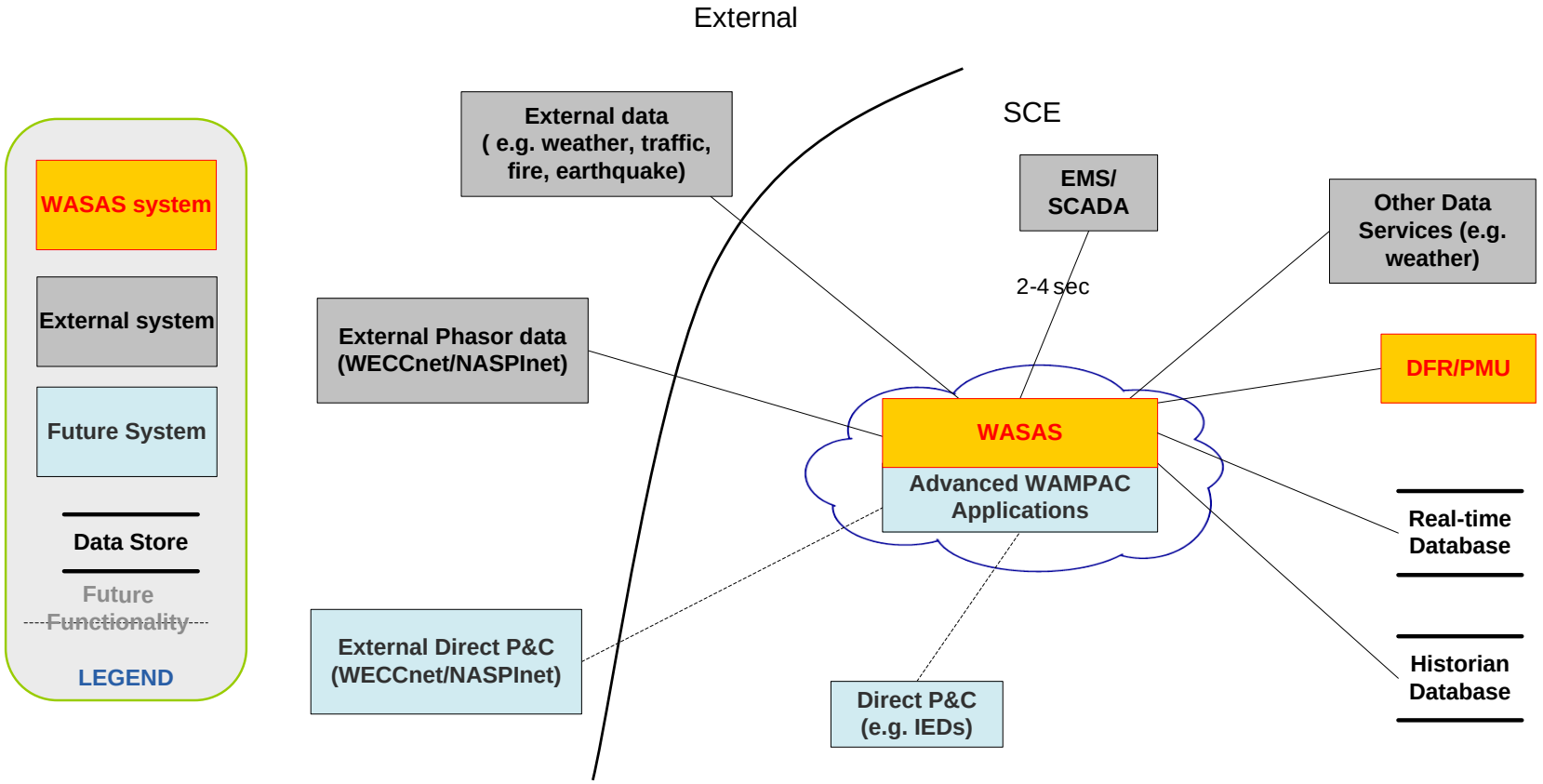
- Not a synchrophasor data only system – a wide-area situational awareness system primarily for use by control center operators
  - EMS/SCADA data
  - Non-electrical data (weather, fire, traffic, earthquake, etc.)
  - More will be added in the future!!!
- Not a standalone system – must interface with variety of external systems
  - Other SCE systems, such as EMS/SCADA, engineering database, etc.
  - External data servers for weather, fire, traffic, earthquake data
  - Synchrophasor data from phasor systems of other utilities (e.g. WECC member utilities)
  - May interface with more SCE internal and external systems in the future

WASAS Design Considerations/Requirements (cont.)

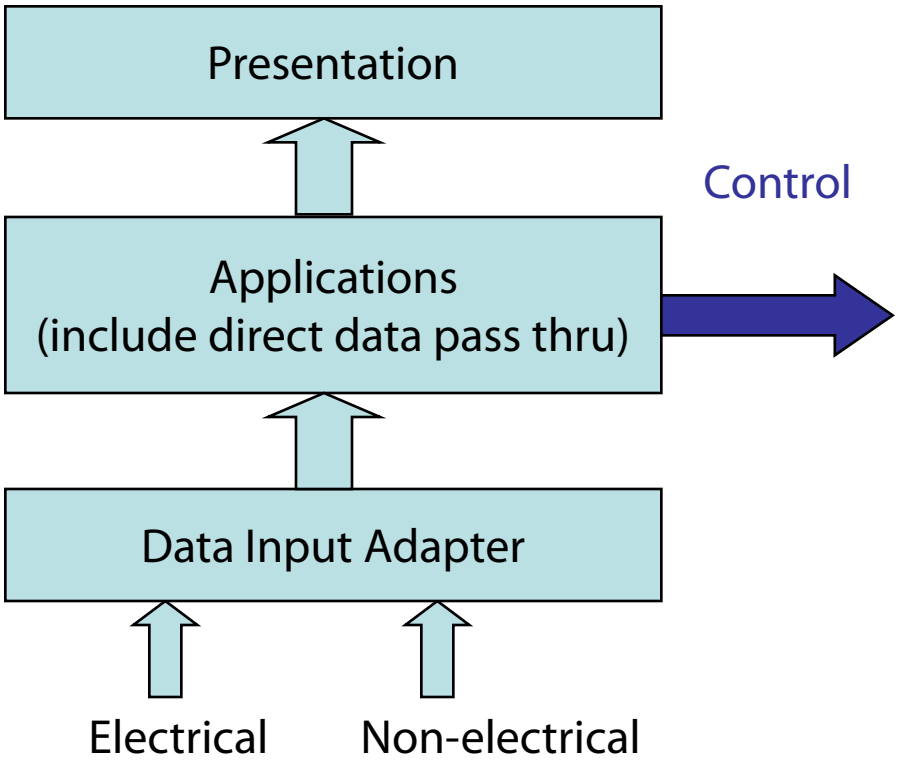
- Will need to evolve to become a wide-area monitoring, protection and control system (WAMPACS) over the time
  - Must be able to support all types of wide-area monitoring, protection and control applications
- System expansion anticipated
  - More phasor measurements from SCE and others
  - Other data (e.g. IED data)
- Will be part of SCE's overall Smart Grid deployment
  - Leverage SCE existing IT infrastructure and common services

WASAS Design Considerations/Requirements (cont.)

- Current WASAS deployment complete by end of 2011 as an approved GRC project including all procurement, engineering, deployment, installation, and testing processes



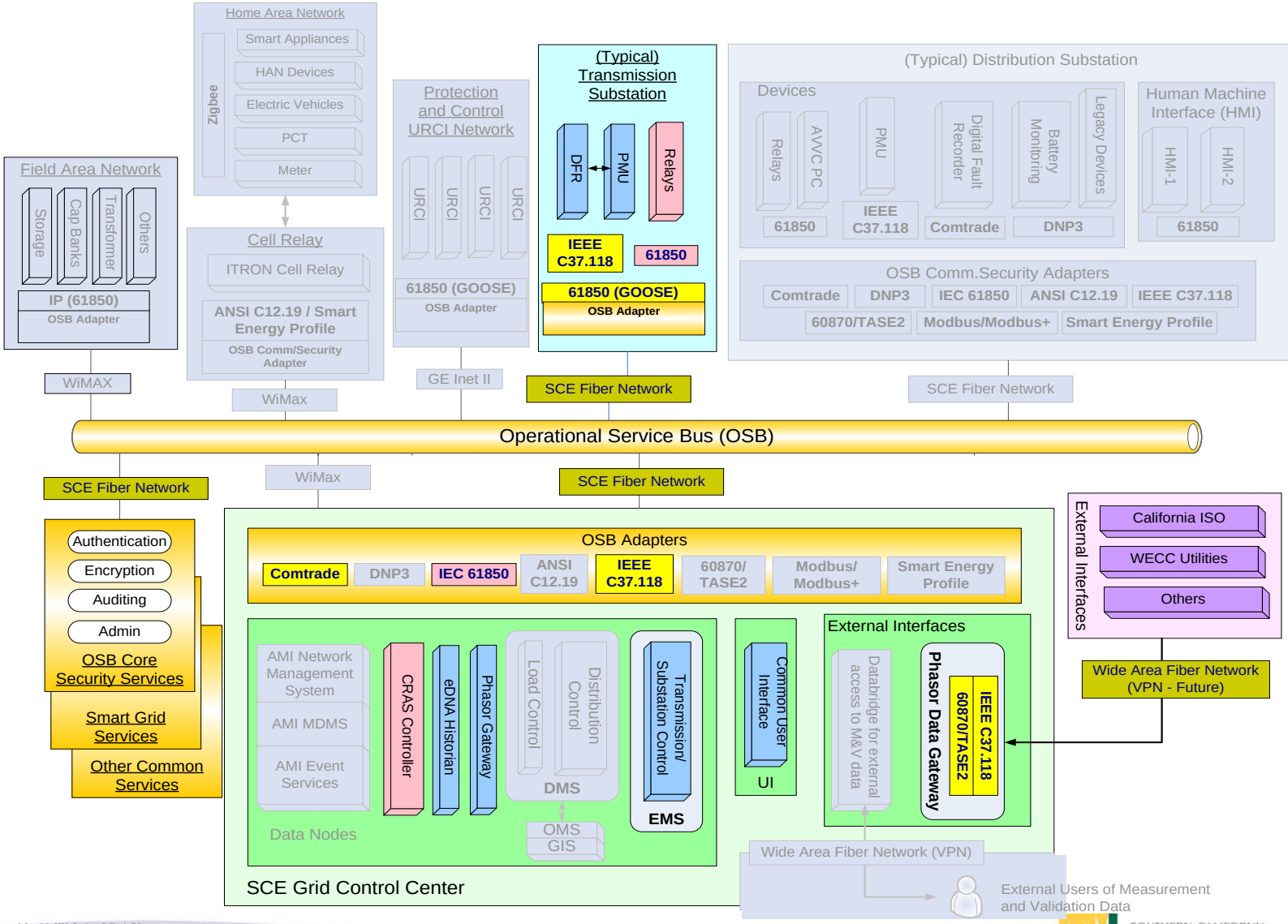
SCE's Vision About WASAS



- Separate presentation, application, and data interface parts with interfaces between
  - Presentation and application
  - Application and data input adapter
- Work with NASPI to make interfaces to become open standards

WASAS System Design Overview

WASAS as Part of SCE's Smart Grid Vision



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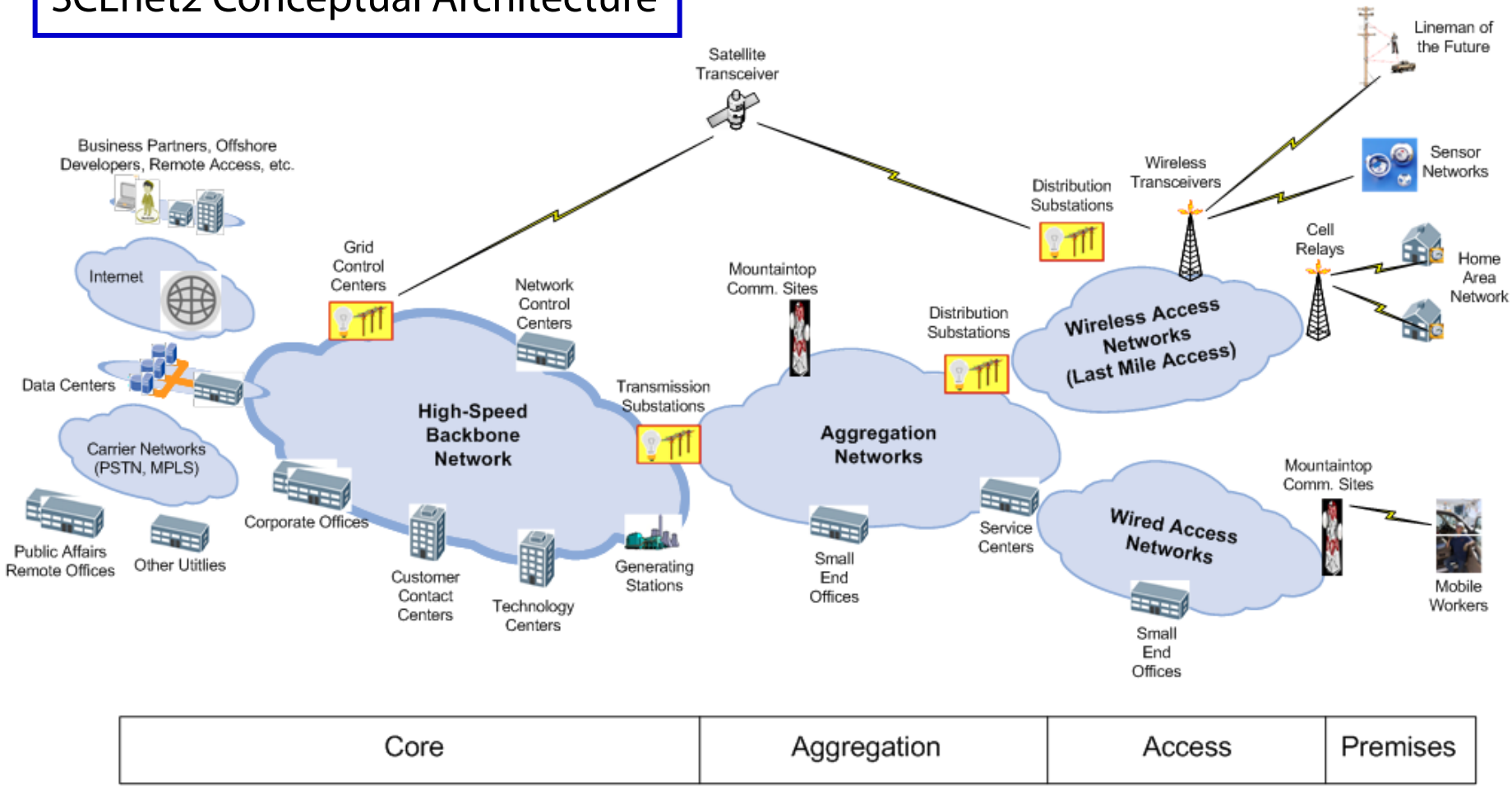
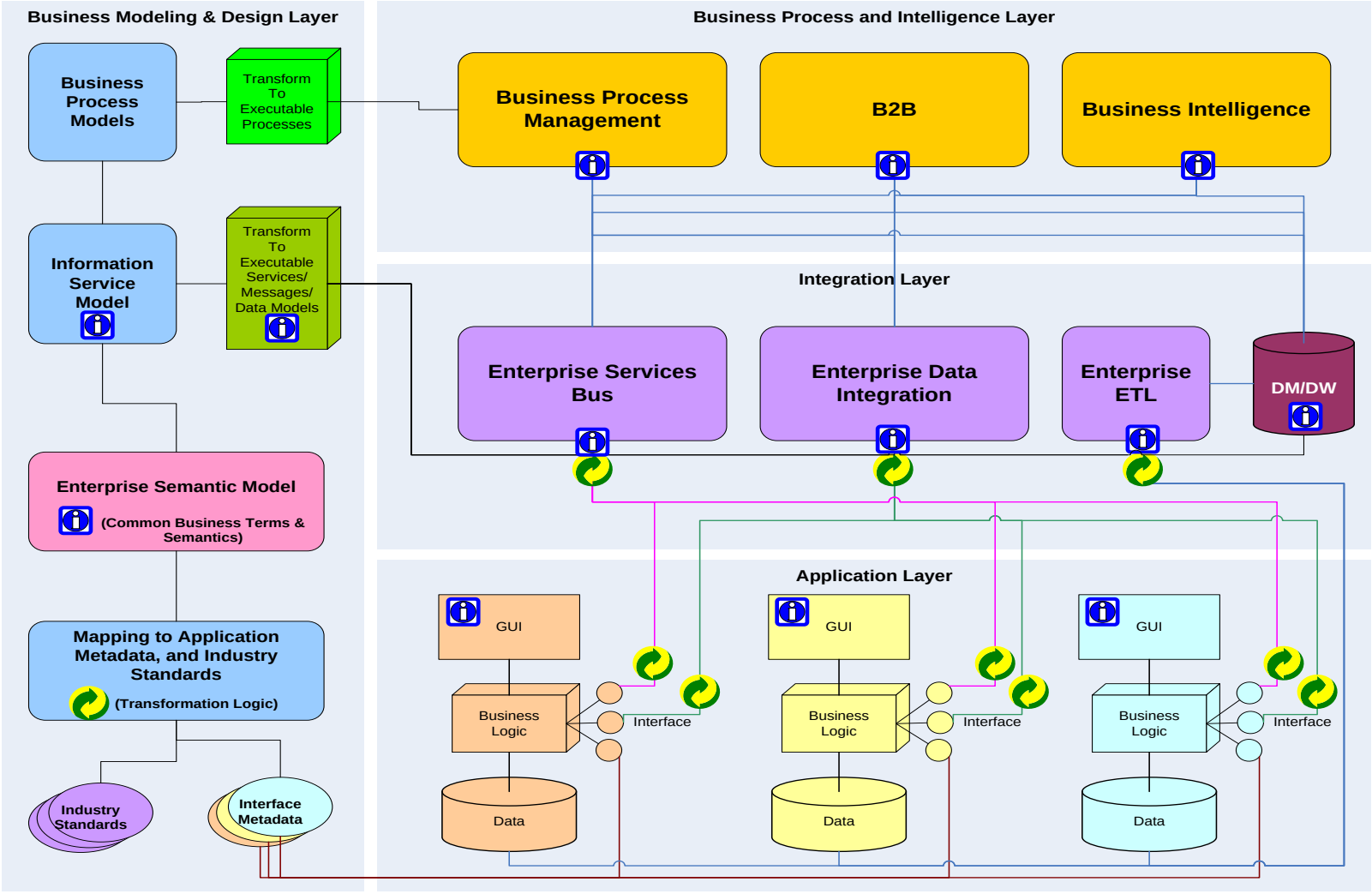
WASAS System Design Views – Network/Comm

SCEnet2 Conceptual Architecture



WASAS Architecture Principles



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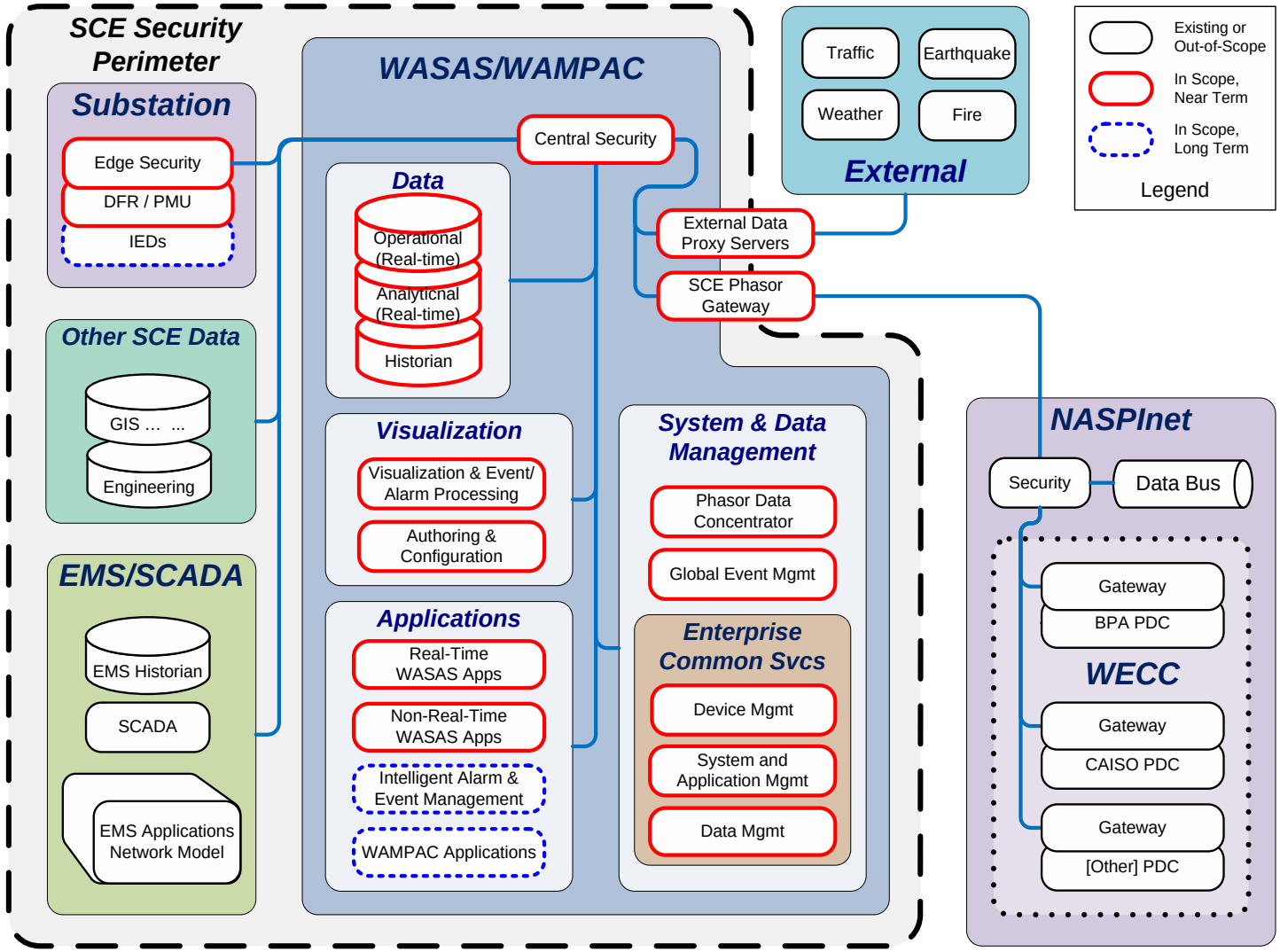
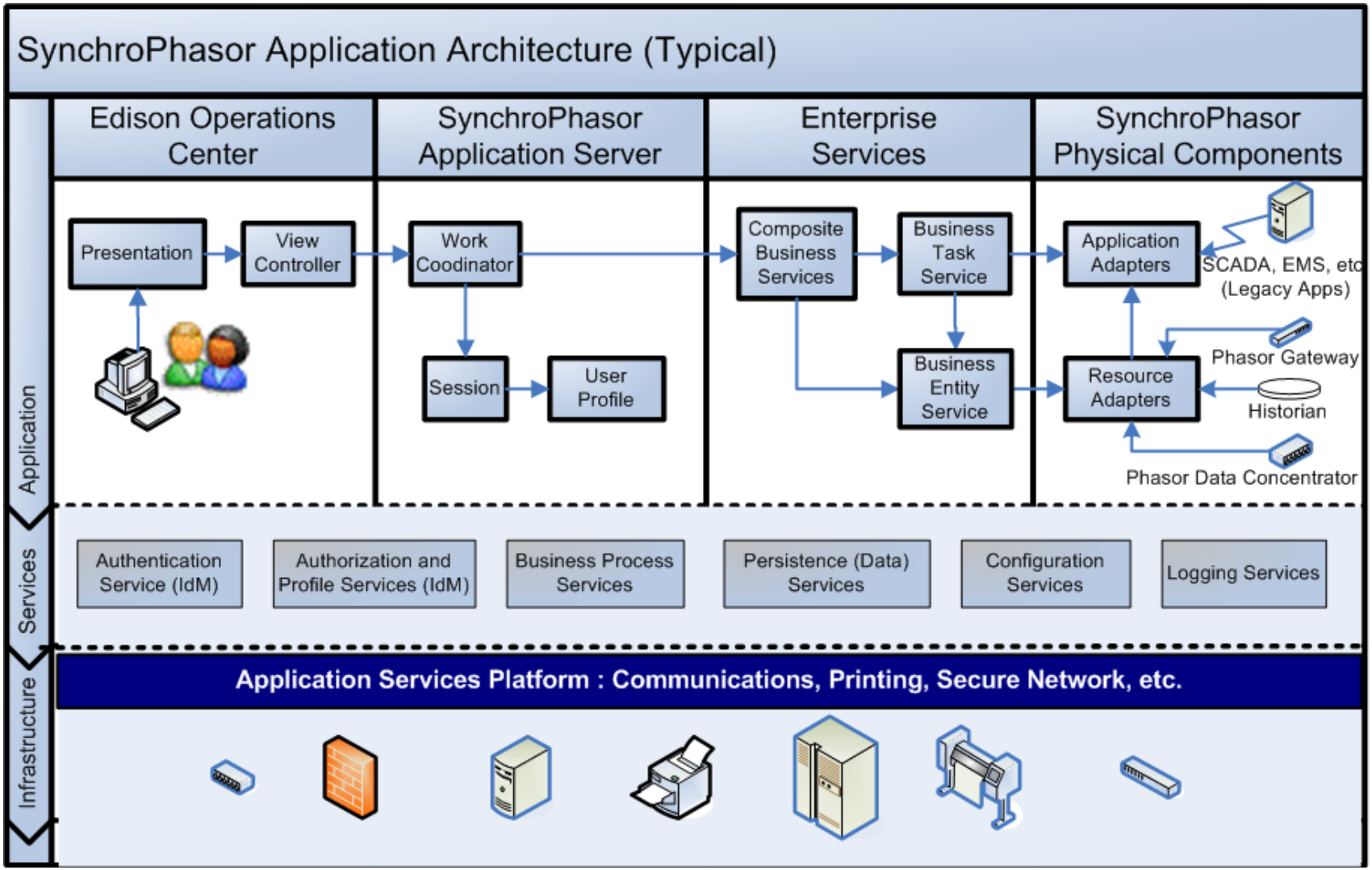
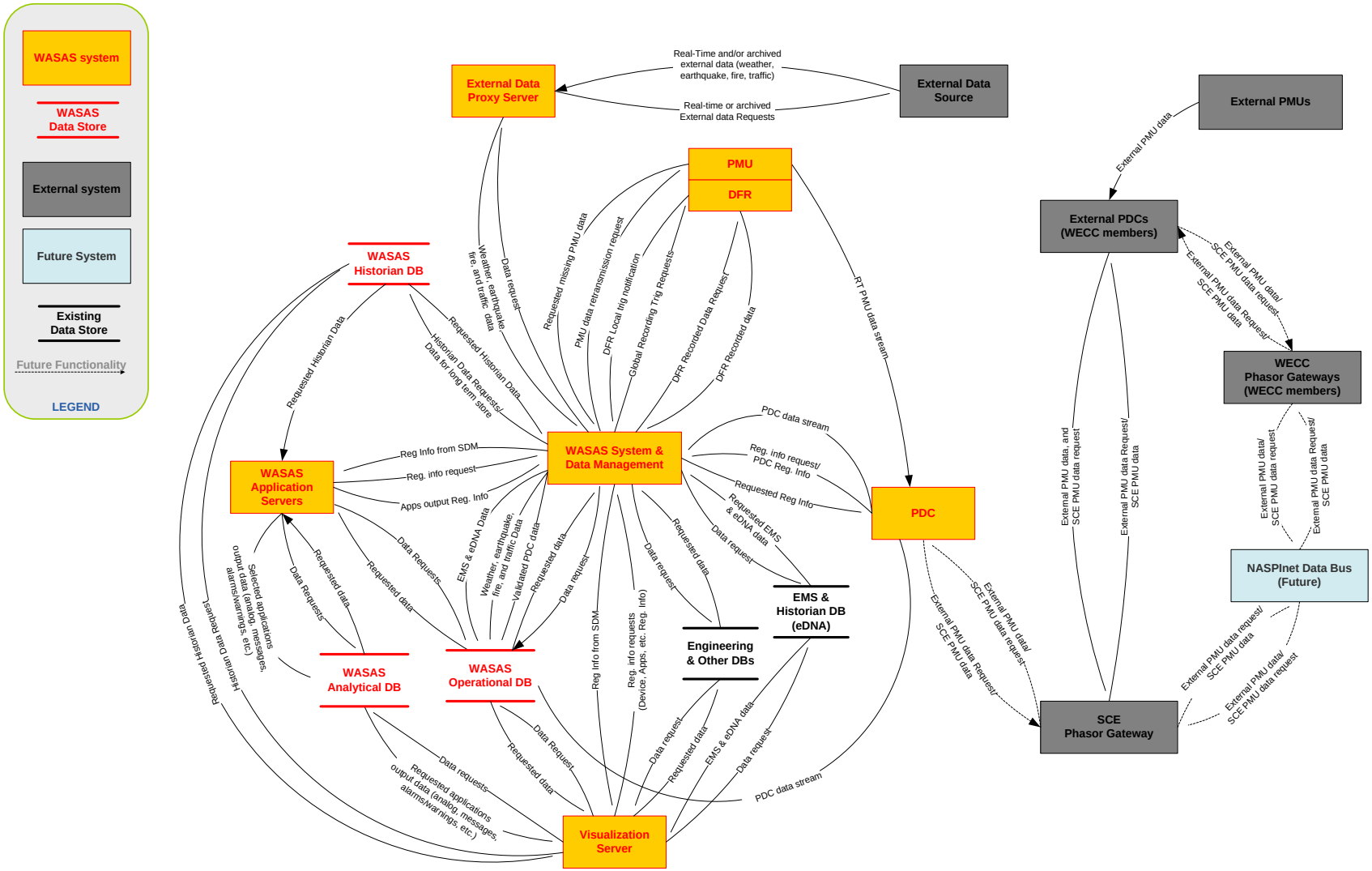
WASAS System Design Views – logical



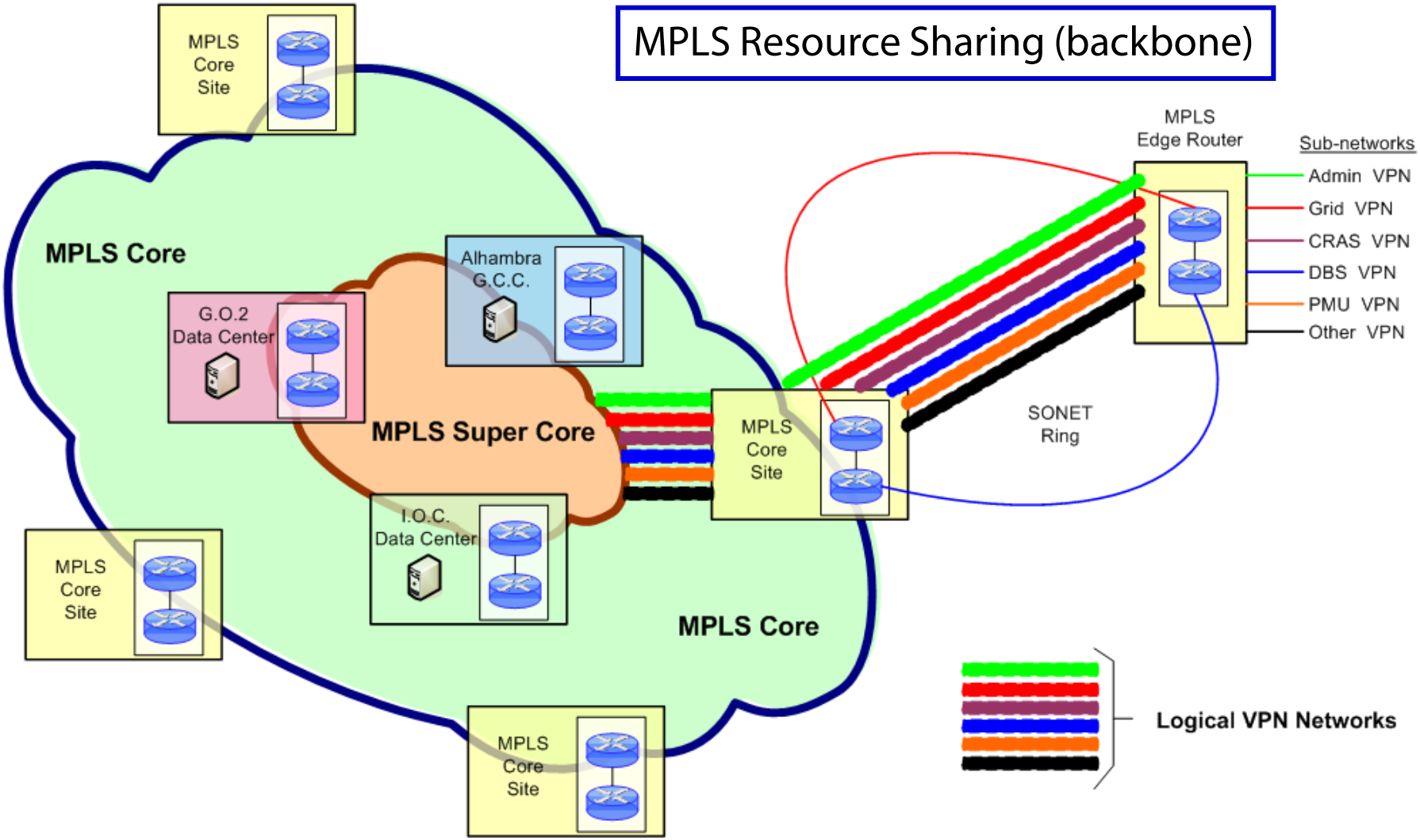
WASAS System Design Views – Application



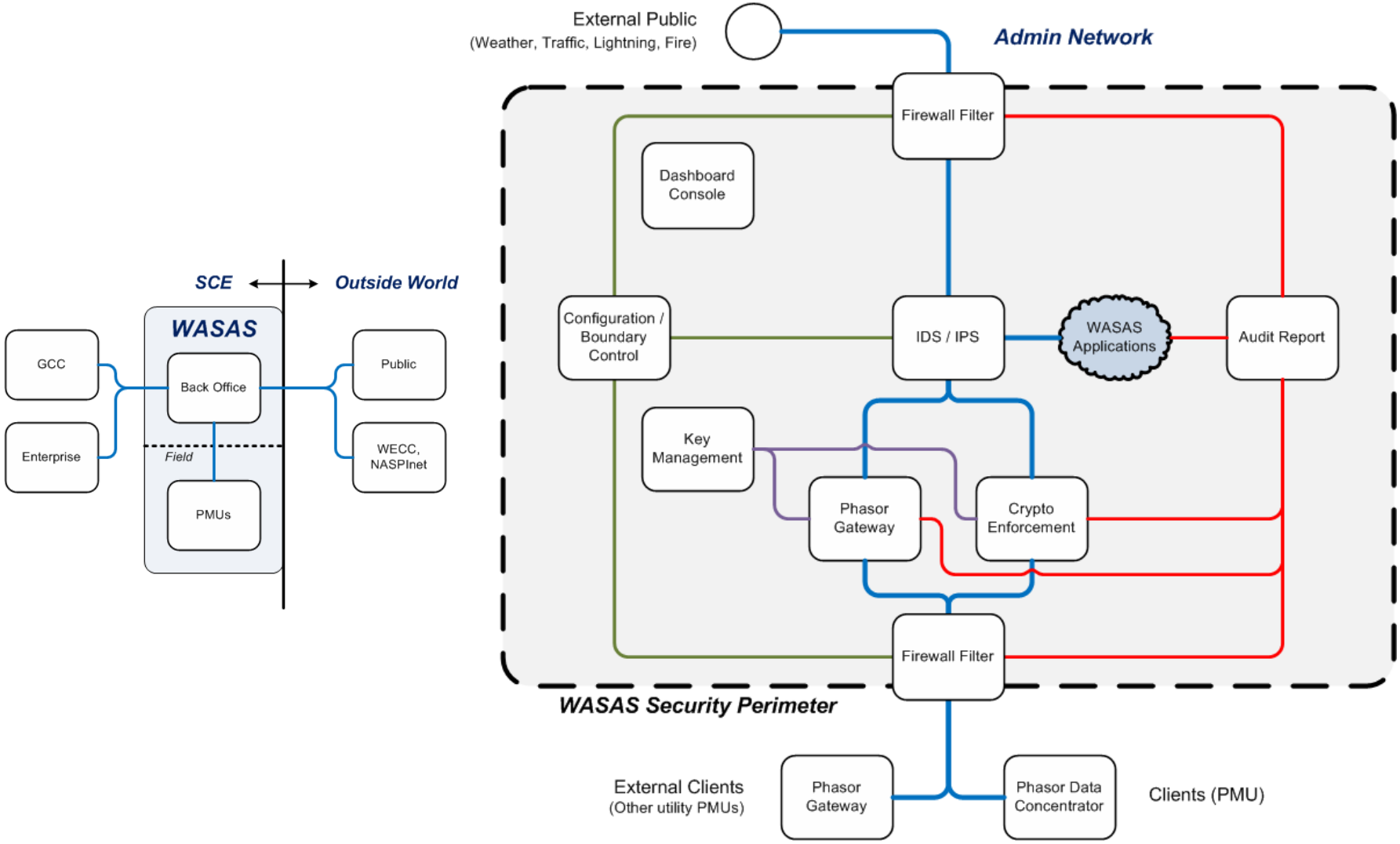
WASAS System Design Views – Data Flow



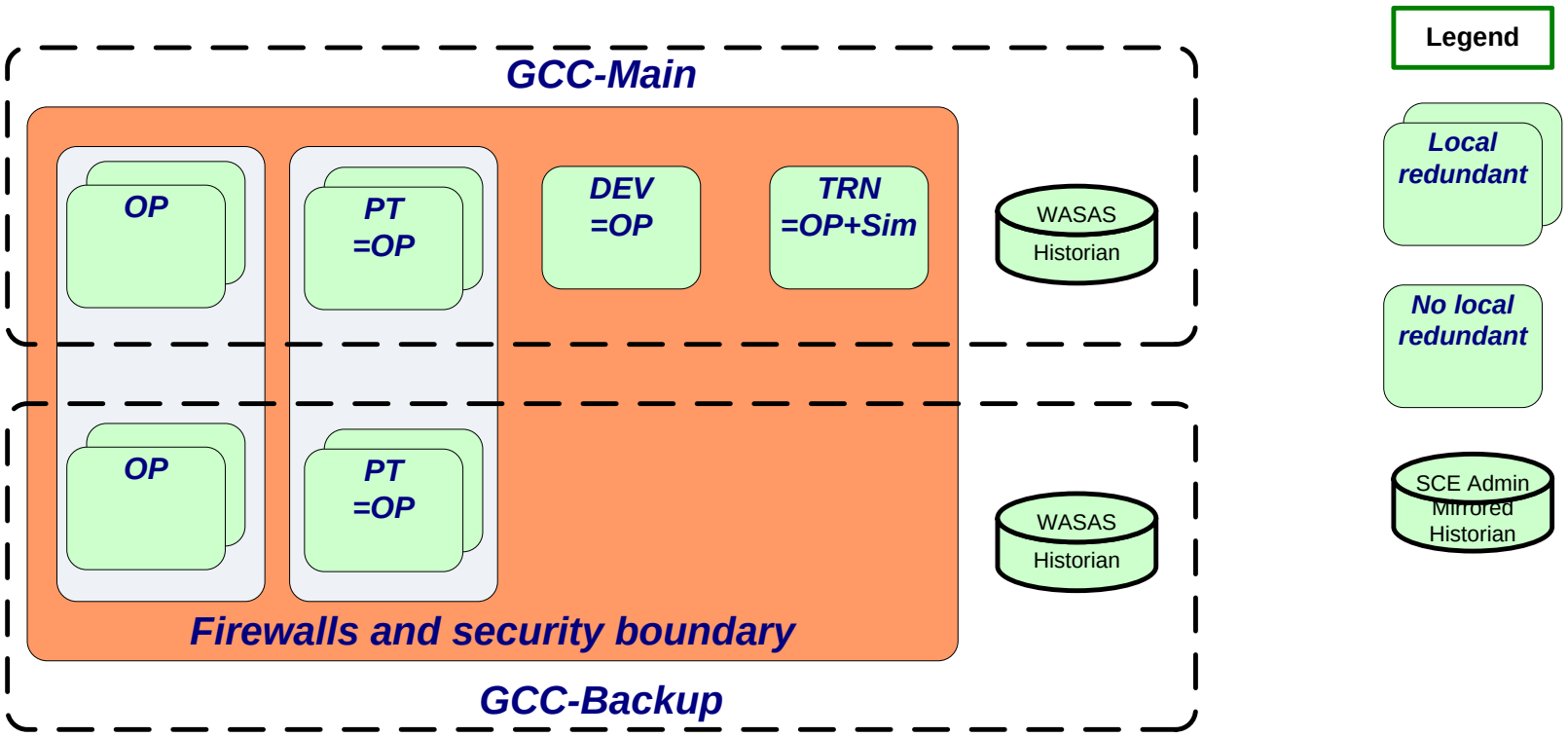
WASAS System Design Views – Network/Comm



WASAS System Design Views – Security



WASAS System Design Views – Deployment



- Four environments: Operation (OP), Production Test (PT), Development (DEV), and Training (TR)
  - Full redundancy for OP and PT
  - PT is exactly the same as OP
- External access of WASAS data is through WASAS external historian databases
  - Data are pushed from OP environment to external historian – no direct access from external

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For more information on SCE's Smart Grid strategy, news, and updates, go to: **www.sce.com/smartgrid**