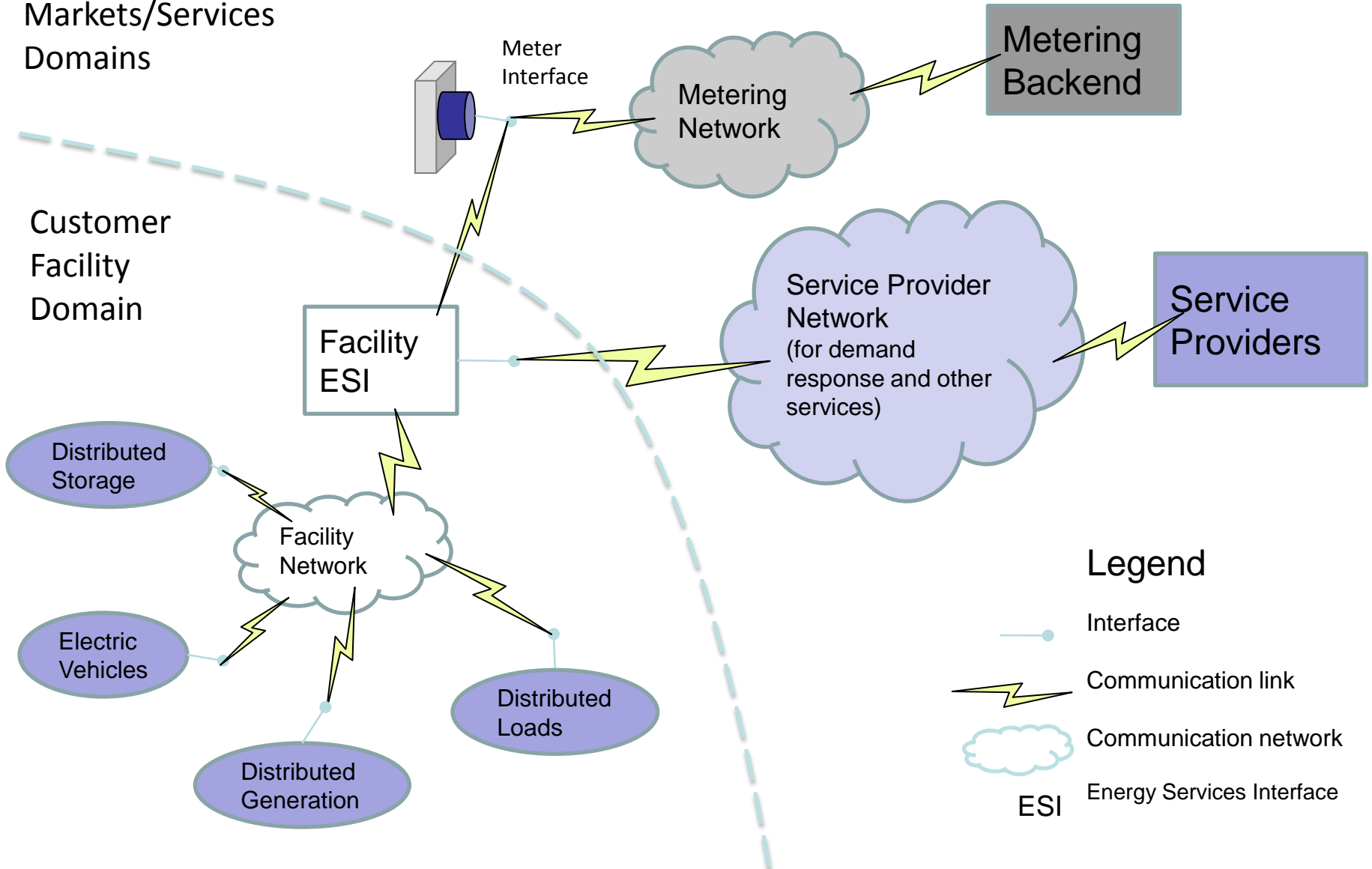# Meter, Facility Interfaces

Distrib/Grid Ops,
Markets/Services
Domains

Customer
Facility
Domain

Meter
Interface

Metering
Network

Metering
Backend

Facility
ESI

Service Provider
Network
(for demand
response and other
services)

Service
Providers

Distributed
Storage

Facility
Network

Electric
Vehicles

Distributed
Generation

Distributed
Loads

Legend

Interface

Communication link

Communication network

ESI   Energy Services Interface
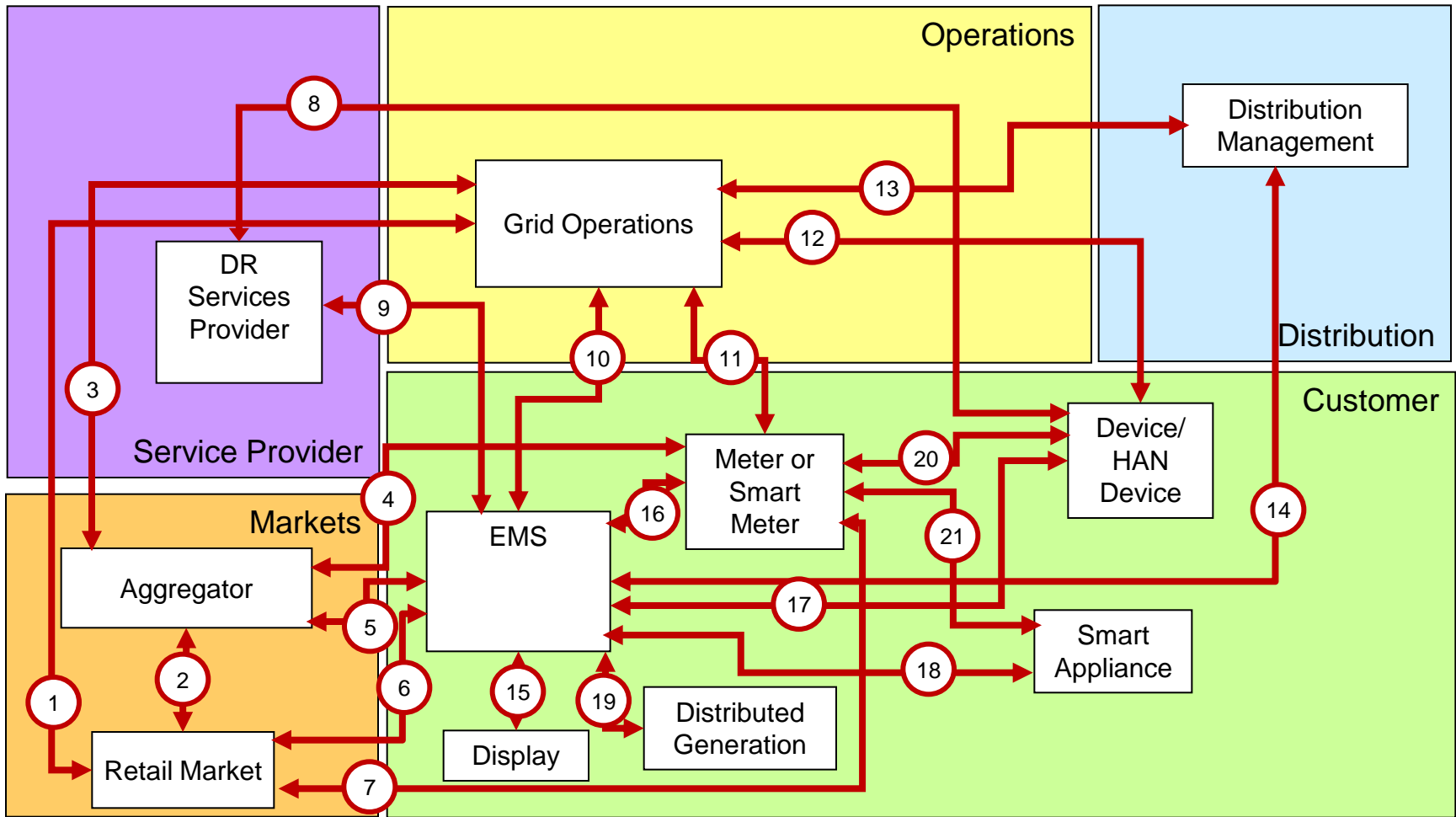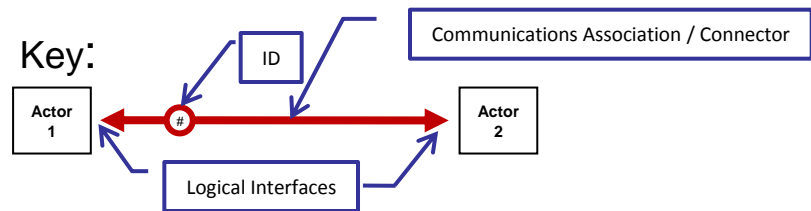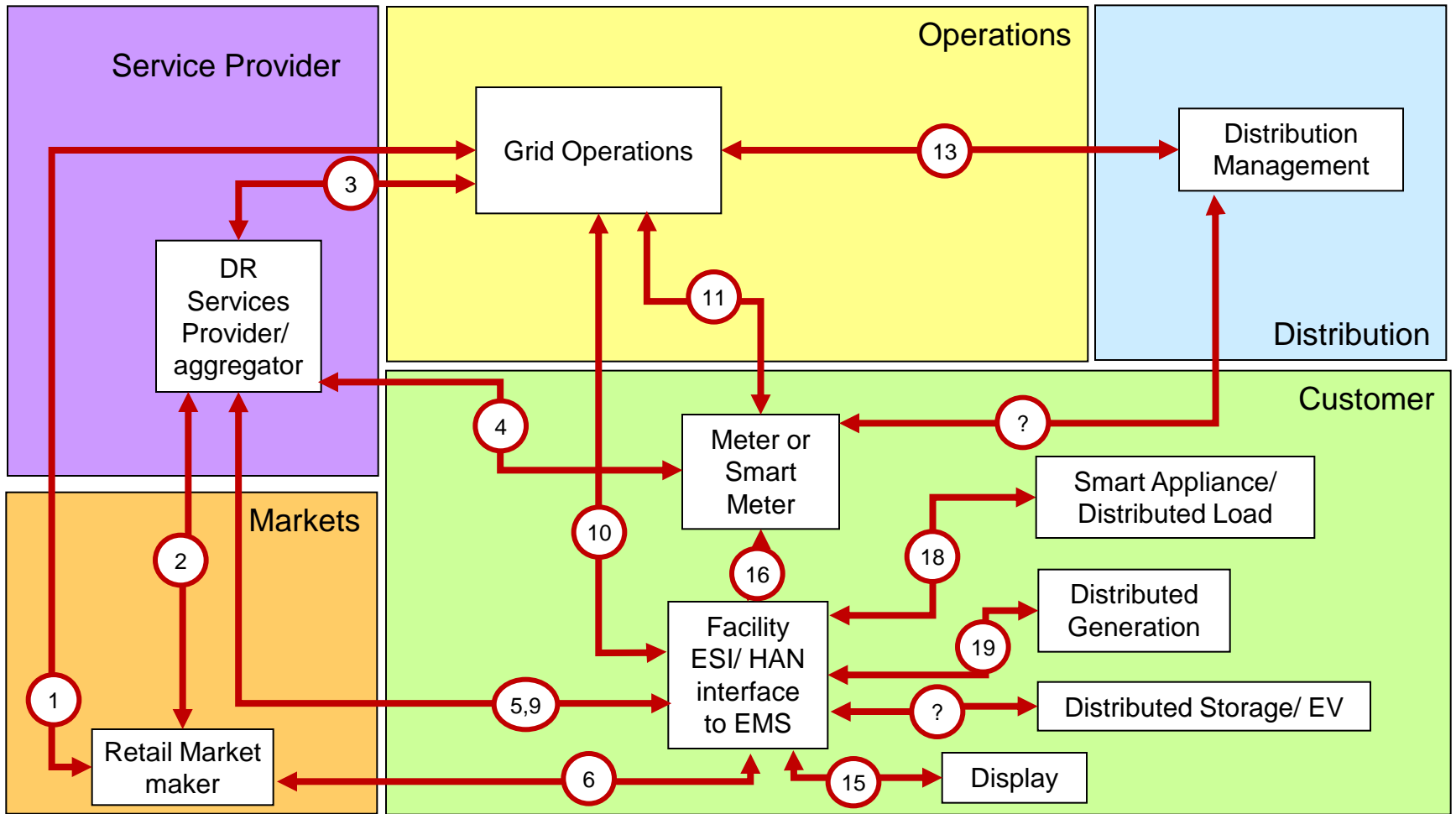
ORIGINAL Demand Response Use
Cases: Actors and Logical Interfaces

HAN: Home Area Network
EMS: Energy Management System
DR: Demand Response

Operations

Distribution Management

Distribution

Customer

Grid Operations

DR Services Provider

Service Provider

Markets

Aggregator

EMS

Meter or Smart Meter

Device/ HAN Device

Smart Appliance

Retail Market

Display

Distributed Generation

Key:

Communications Association / Connector

ID

Actor 1

#

Actor 2

Logical Interfaces

Service Provider

Operations

Grid Operations

13

Distribution Management

3

DR Services Provider/ aggregator

Distribution

11

Customer

4

?

Meter or Smart Meter

Smart Appliance/ Distributed Load

Markets

2

10

18

16

Distributed Generation

Facility ESI/ HAN interface to EMS

19

1

5,9

?

Distributed Storage/ EV

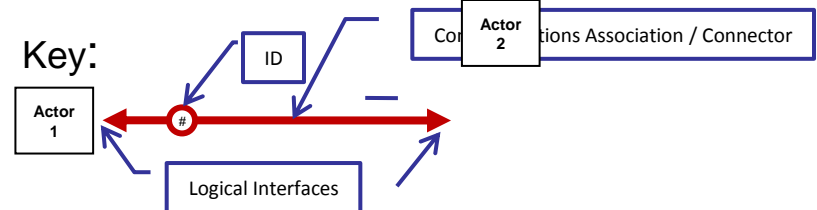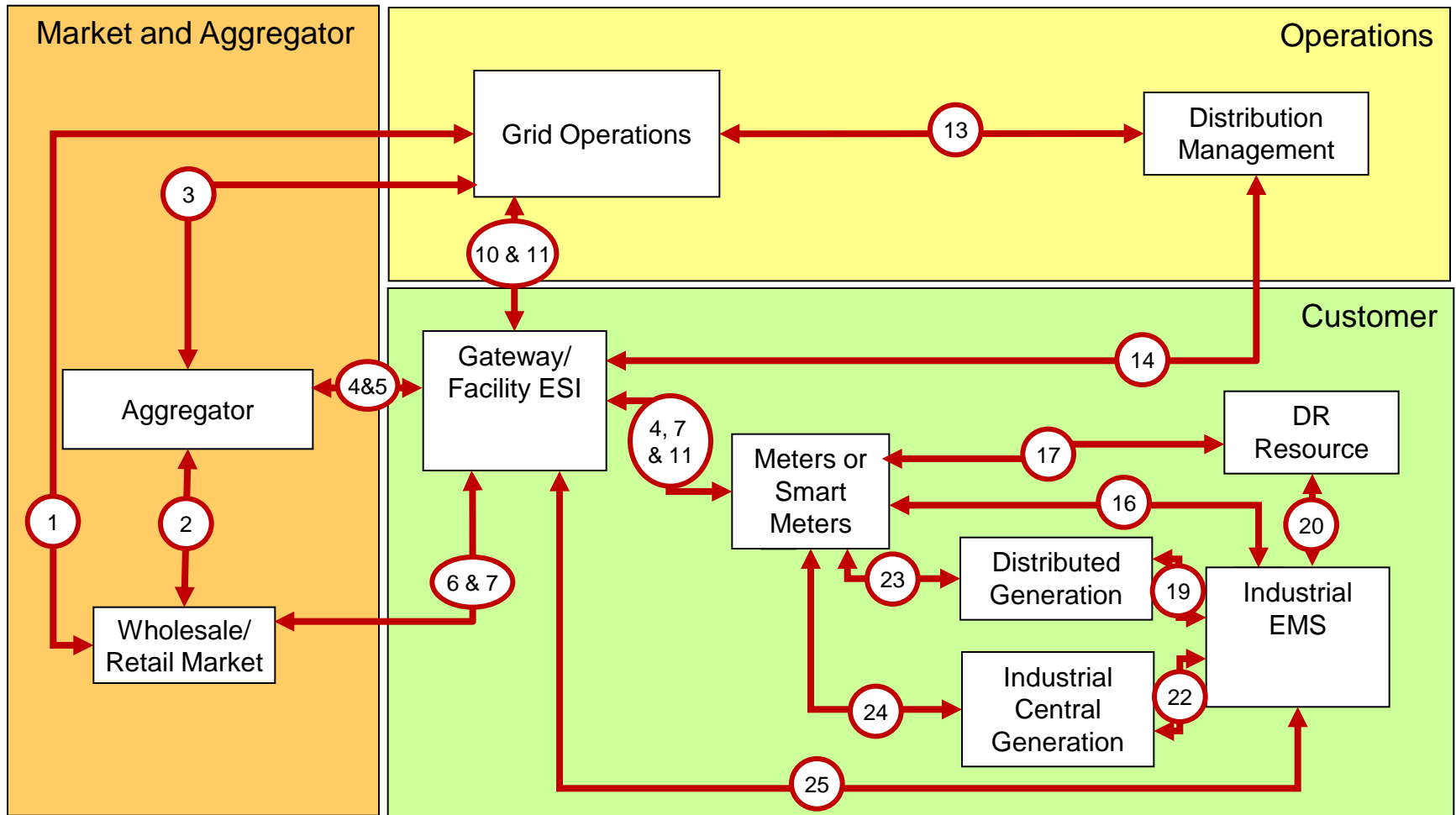**Retail Market maker**

6

15

Display

Removed Interfaces: 7 (meter doesn't get market signals), 8 (SP talks to devices through ESI), 12 (no grid op cnx to HAN device), 14 (not sure on this one), 17 (same as 18), 20-21 (meter doesn't talk to devices, but for AMI case ESI can be put in meter)

B2G Demand Response Use Cases:
## Actors and Logical Interfaces

HAN: Home Area Network
EMS: Energy Management System
DR: Demand Response

Key:

ID

Connections Association / Connector

Actor 2

Actor 1

#

Logical Interfaces

Market and Aggregator

Operations

Grid Operations

Distribution Management

③

⑬

Customer

⑩ & ⑪

Gateway/ Facility ESI

⑭

Aggregator

④&⑤

DR Resource

④, ⑦ & ⑪

Meters or Smart Meters

⑰

⑯

⑳

①

②

⑥ & ⑦

Distributed Generation

⑲

Industrial EMS

②³

Wholesale/ Retail Market

②⁴

Industrial Central Generation

②²

②⁵

I2G **Demand Response Use Cases: Actors and**

Logical Interfaces

Key:

Communications Association / Connector

ID

Actor 1

#

Actor 2

Logical Interfaces

ESI: Energy Services Interface
EMS: Energy Management System
DR: Demand Response
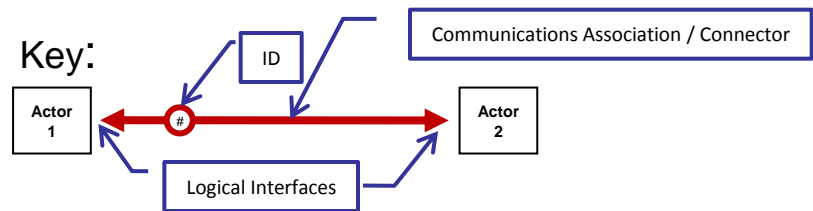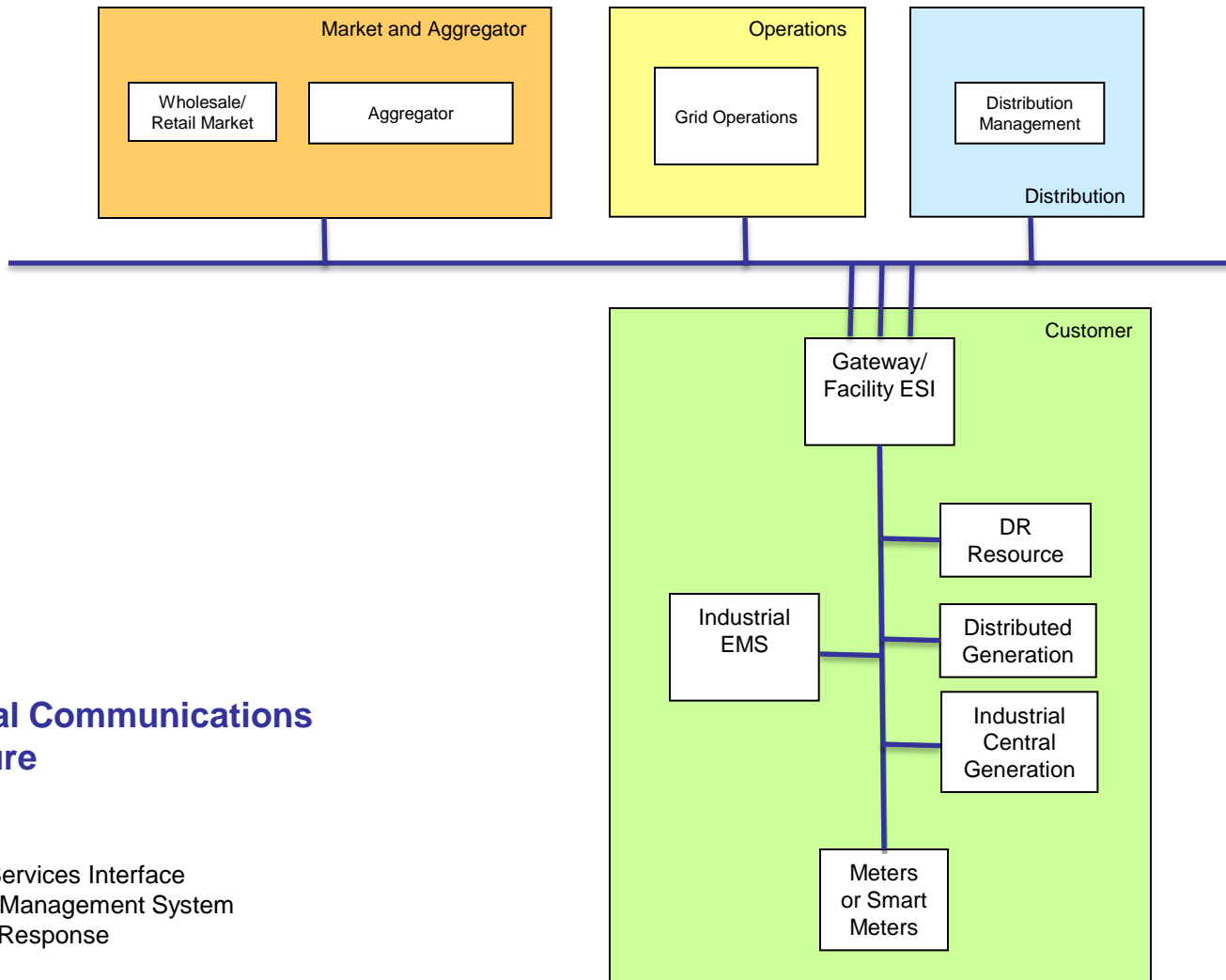
I2G Logical Communications Architecture

ESI: Energy Services Interface
EMS: Energy Management System
DR: Demand Response

Market and Aggregator

Wholesale/ Retail Market

Aggregator

Operations

Grid Operations

Distribution Management

Distribution

Customer

Gateway/ Facility ESI

DR Resource

Industrial EMS

Distributed Generation

Industrial Central Generation

Meters or Smart Meters

Communications domain

Key: