



Next Generation SCADA realized by IT technology for
renewable energy integration and energy saving

6/5/2017
NTT DATA corp

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NTT DATA
Global IT Innovator



NTT DATA : Who we are?

NTT DATA : Who we are?

Total Assets	Net Sales	Number of Employees	Consolidated Subsidiaries
¥20,702.4 billion ≐\$184billion	¥11,095.3 billion ≐\$99billion	241,600 (consolidated)	917



NIPPON TELEGRAPH AND
TELEPHONE CORPORATION

- Planning management strategies for the NTT Group
- Promoting fundamental R&D efforts

Telecommunications Carriers



NIPPON TELEGRAPH AND
TELEPHONE EAST
CORPORATION



NIPPON TELEGRAPH AND
TELEPHONE WEST
CORPORATION



NTT DOCOMO, INC.

BtoB IT Services

Managed ICT /
Data Center Network



NTT Communications Corporation



Dimension Data Holdings plc.

Software
(Application Layers)

NTT data

NTT DATA CORPORATION

NTT DATA : Who we are?

(Fiscal year ended March 31, 2016)

Net sales of over

¥1.5 trillion \approx \$14 billion

Fiscal year ended March 31, 2012 \gggg Fiscal year ended March 31, 2016

¥1,251.1 billion \rightarrow ¥1,614.8 billion



Net Sales

¥1,614.8 billion
 \approx \$14 billion

Operating Income

¥100.8 billion
 \approx \$0.9 billion

Total Assets

¥1,860.3 billion
 \approx \$16.6 billion

Number of Employees

110,000+

Consolidated Subsidiaries

258 +

Business Portfolio

Net Sales (outside) Operating Income (inside)

Net Sales

¥519.6 billion

Operating Income
(before amortization
of goodwill)

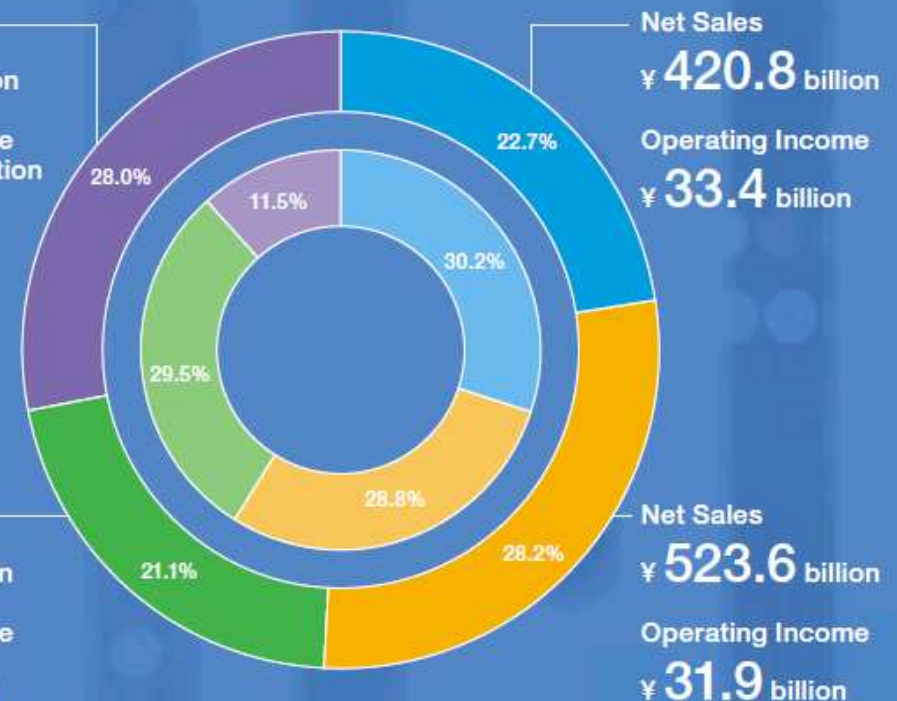
¥12.7 billion

Net Sales

¥391.8 billion

Operating Income

¥32.6 billion



Brand (Product Quality)

Global IT service ranking
(Net sales)

CMMI certification

10th

Level 5
(the highest level)

Public & Social Infrastructure Segment

Business that provides high-value-added IT services that play important roles in social infrastructure, such as government, medical, communication, and utility systems as well as in regional development.

Enterprise & Solutions Segment

Business that provides high-value-added IT services that support manufacturers, distributors, and service providers as well as payment services such as credit cards and platform solutions services, provided in collaboration with other IT services.

Financial Segment

Business that provides high-value-added IT services that support financial institutions to improve their business efficiency and offer good services.

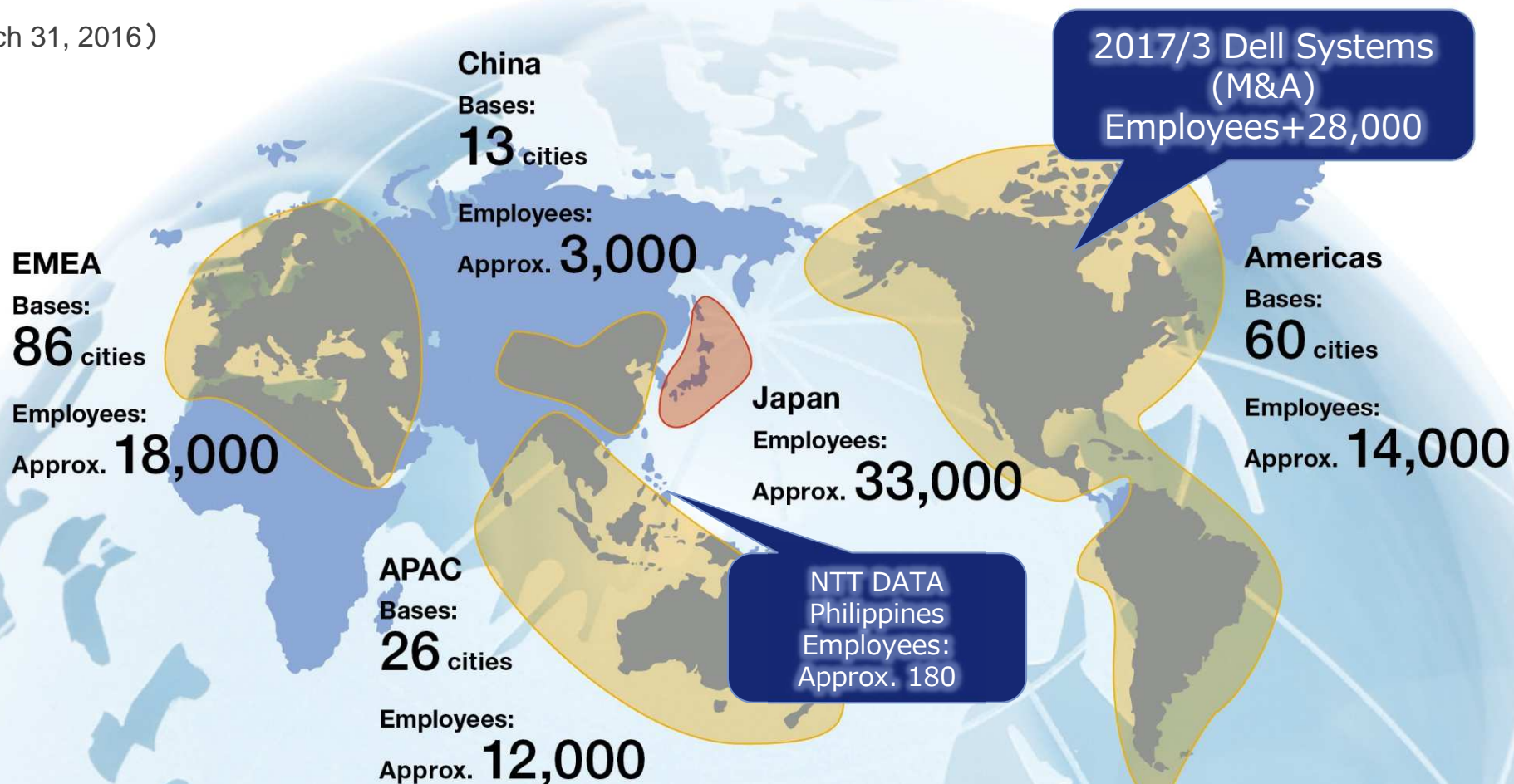
Global Segment

Global business that provides high-value-added IT services offered in each region and across regions.

Global Presence

- ◆ Location :185+ cities in 45 countries and regions
- ◆ Number of employees: approx. 110,000

(As of March 31, 2016)

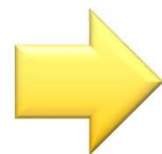




Why we are here? : Growing IT needs in Electric Power industry

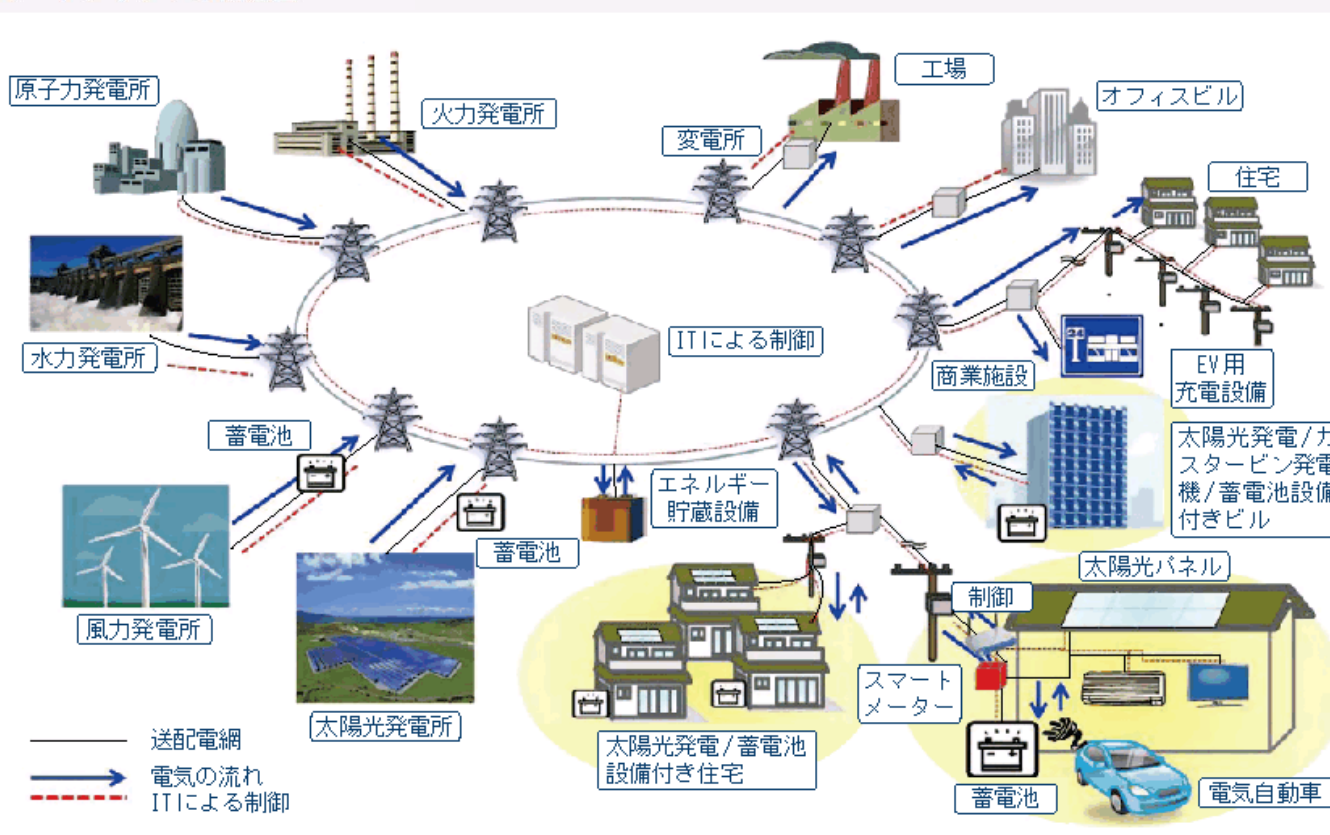
Growing IT needs in electric power industry

- ◆ Deregulation
- ◆ Decentralization
- ◆ De-Carbonization
- ◆ Digitalization



“IT” is a key for challenges

スマートグリッドの概念図



出典：経済産業省「次世代エネルギーシステムに係る国際標準化に向けて」

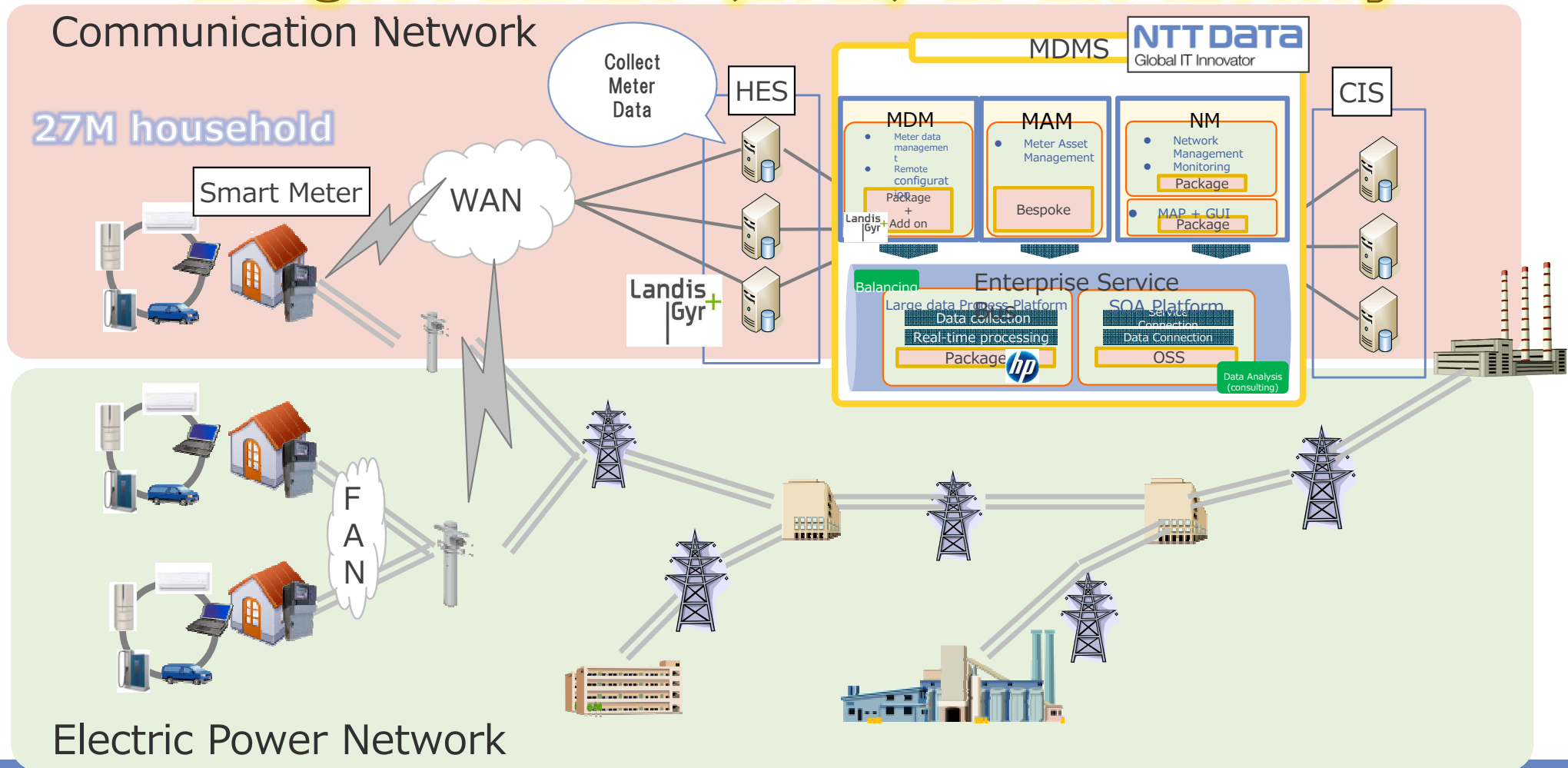


Success Stories in Electric Power Industry

TEPCO-MDMS Project

- ◆ Tokyo Electric Power Company (TEPCO) : 5th largest utility in the world
- ◆ NTT DATA integrated MDMS(Meter Data Management System): Management system for Data, Asset , Network on top of the flexible enterprise service bus

Largest MDMS (27M) in the history









Back Ground

◆ Next Generation SCADA:

SCADA of the utilities, by the utilities, for the utilities

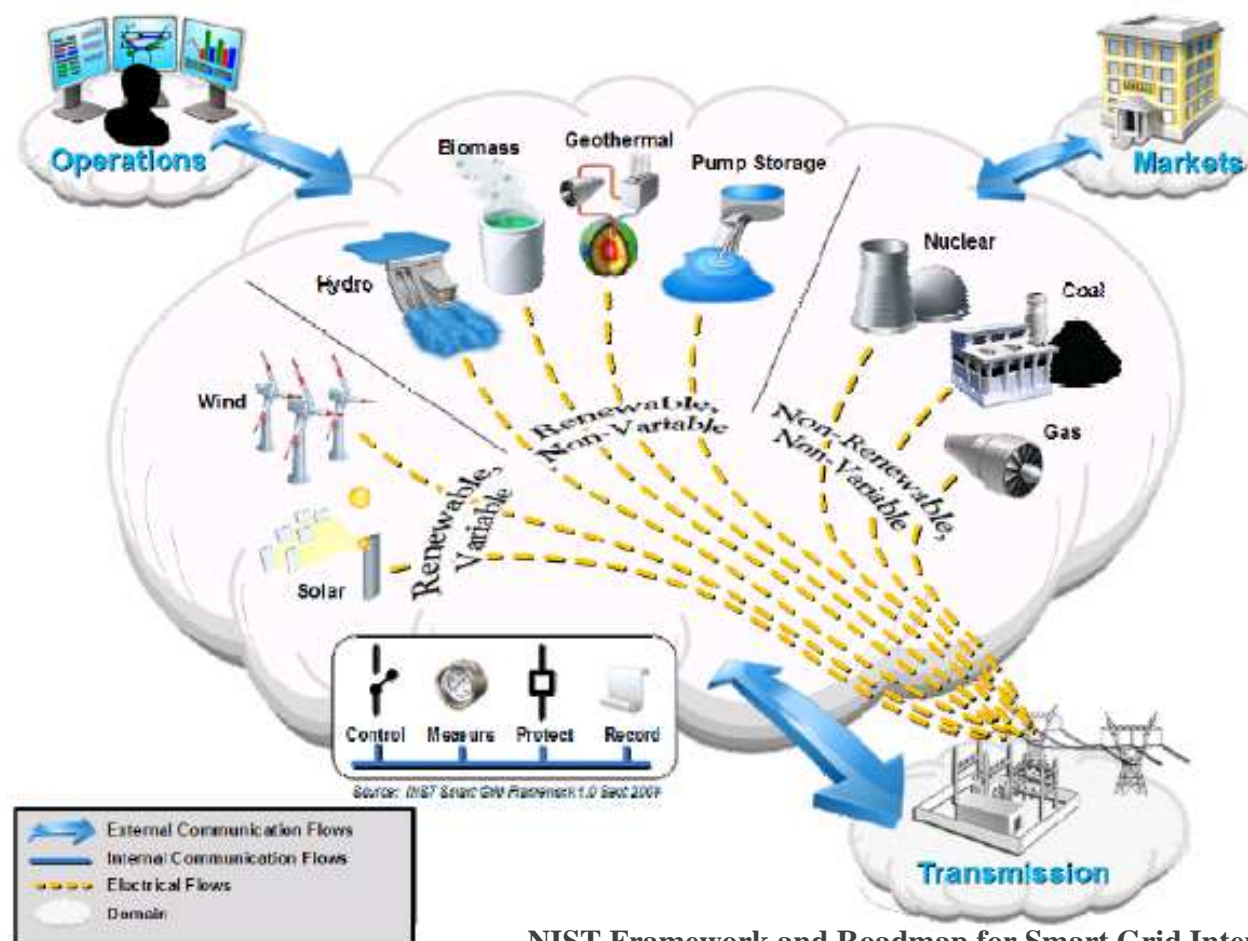
◆ Consortium members:

Company	Role
Tokyo Electric Power Company(TEPCO) 	<ul style="list-style-type: none"> • Consulting • Assessment • Requirement definition <ul style="list-style-type: none"> -Reliability, Interoperability, Redundancy, Security • Verification
Toshiba 	<ul style="list-style-type: none"> • Development <ul style="list-style-type: none"> -SCADA platform -SCADA Application
McAfee 	<ul style="list-style-type: none"> • Development <ul style="list-style-type: none"> - Security component
NTT DATA 	<ul style="list-style-type: none"> • Project Management • Network Design • System/NW Integration

Needs for renewable energy integration

- ◆ SCADA enables power grid to integrate, monitor and control RE generation

SCADA is “a must” for RE integration



NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 3.0

Specification: Utility-oriented and interoperability

- ◆ Fully compliant to IEC standard (No vendor lock-in)

Cost-competitiveness, interoperability for every utility

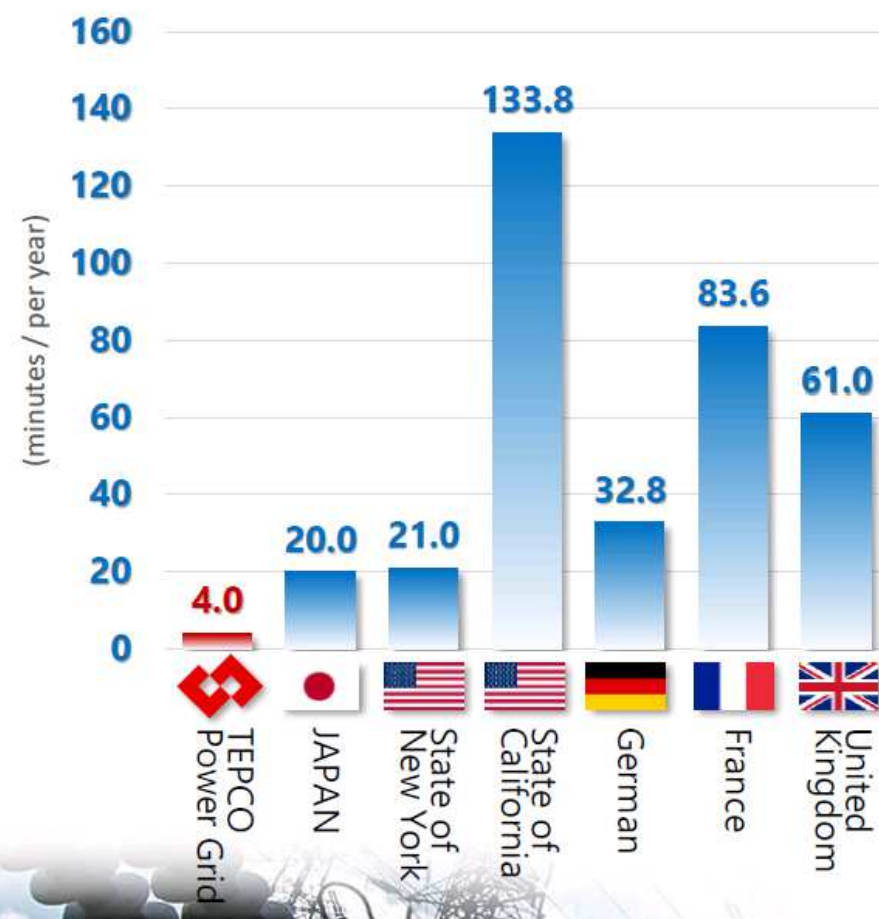
Platform	CIM Standard	
EMS/DMS/NMS	Core DBMS	Import/Export
Network Manager Asea Brown Boveri(ABB)	No	Yes
eTerra Alstom Grid	No	Yes
PowerOn Advantage/Reliance General Electric(GE)	No	Yes
Spectrum Power Siemens	Yes	Yes
ADMS/Oasys Schneider Electric	No	Yes
Next Generation SCADA	Yes	Yes

Specification: Reliability

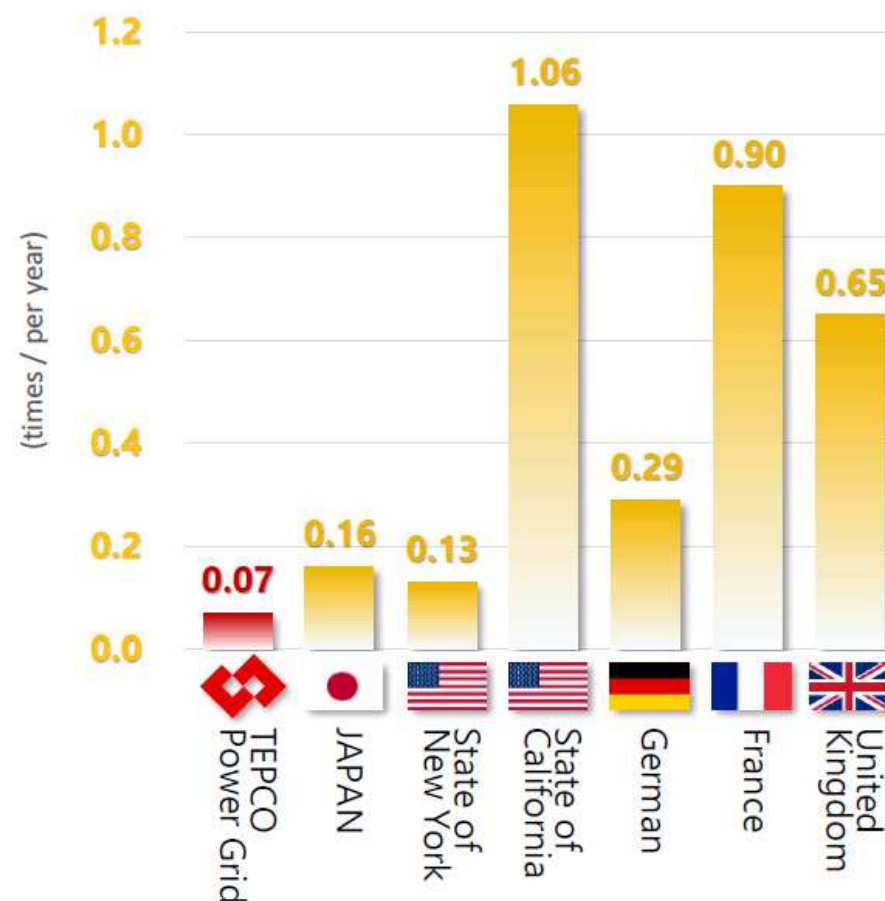
- ◆ Japan has a record electricity reliability in the world
- ◆ TEPCO's reliability requirement is most severe in Japan
- ◆ Next-Gen SCADA has been upholding its reliability updating over the decade

Reliability enabler for the world best utilities

Duration of Outage per contract of each country



Frequency of Outage per contract of each country



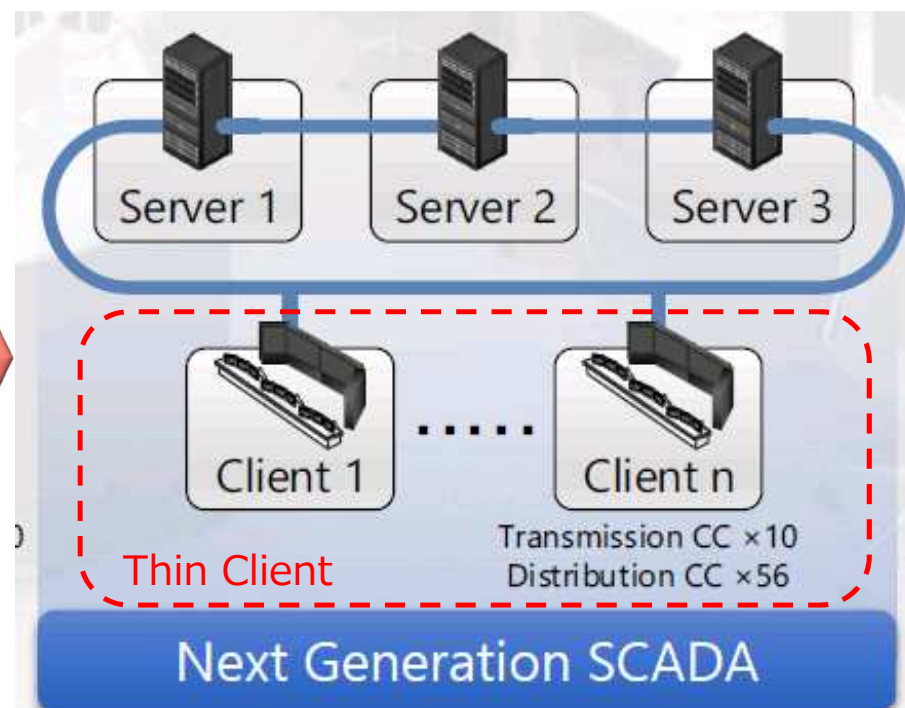
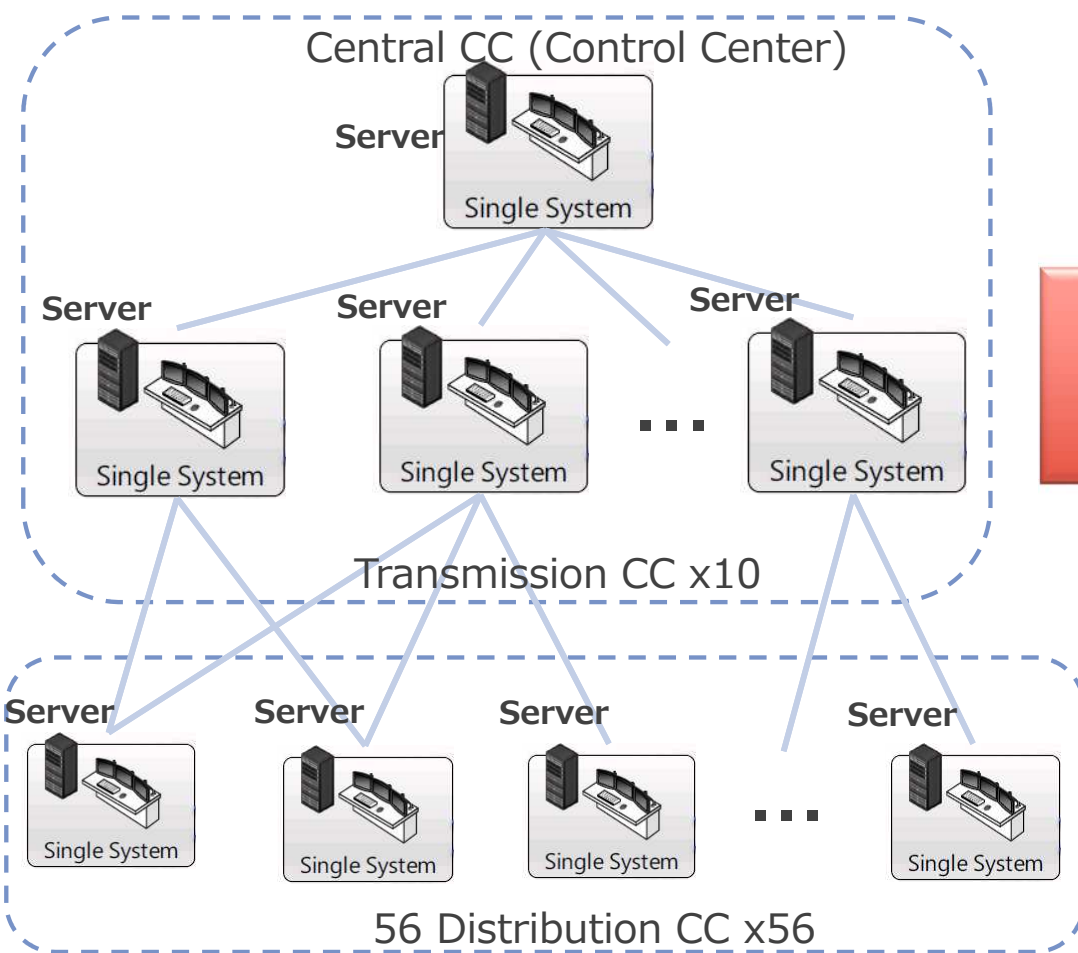
Specification: Cost-Effectiveness

- ◆ Centralized server structure with thin-client (No server in each location)
- ◆ Minimum cost for installing, updating, operation and maintenance

Simple structure & Minimum cost

Existing SCADA system

Wide Area Distributed triple system

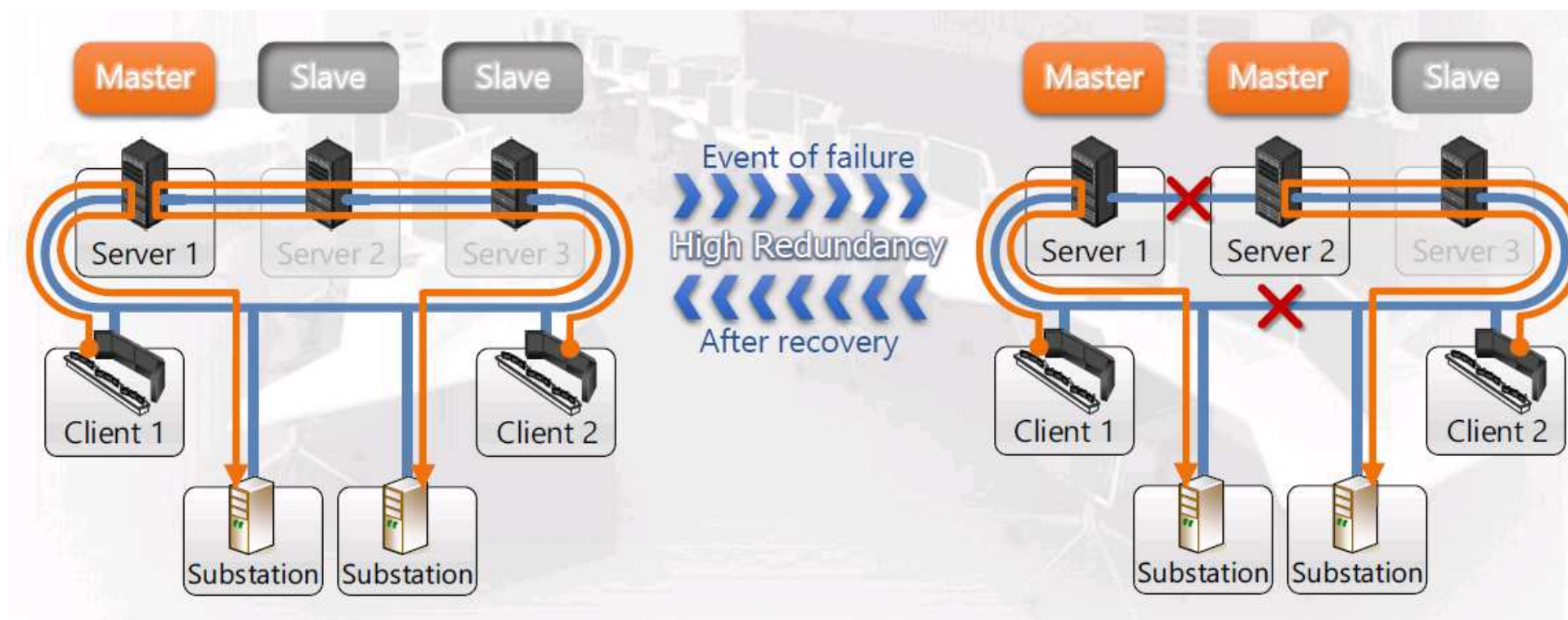


Supervisory control over 1580 substations

Specification: Redundancy

- ◆ Triple server structure: proved to be most cost-effective with high redundancy
- ◆ Control centers keep running at least one Master is alive and connected

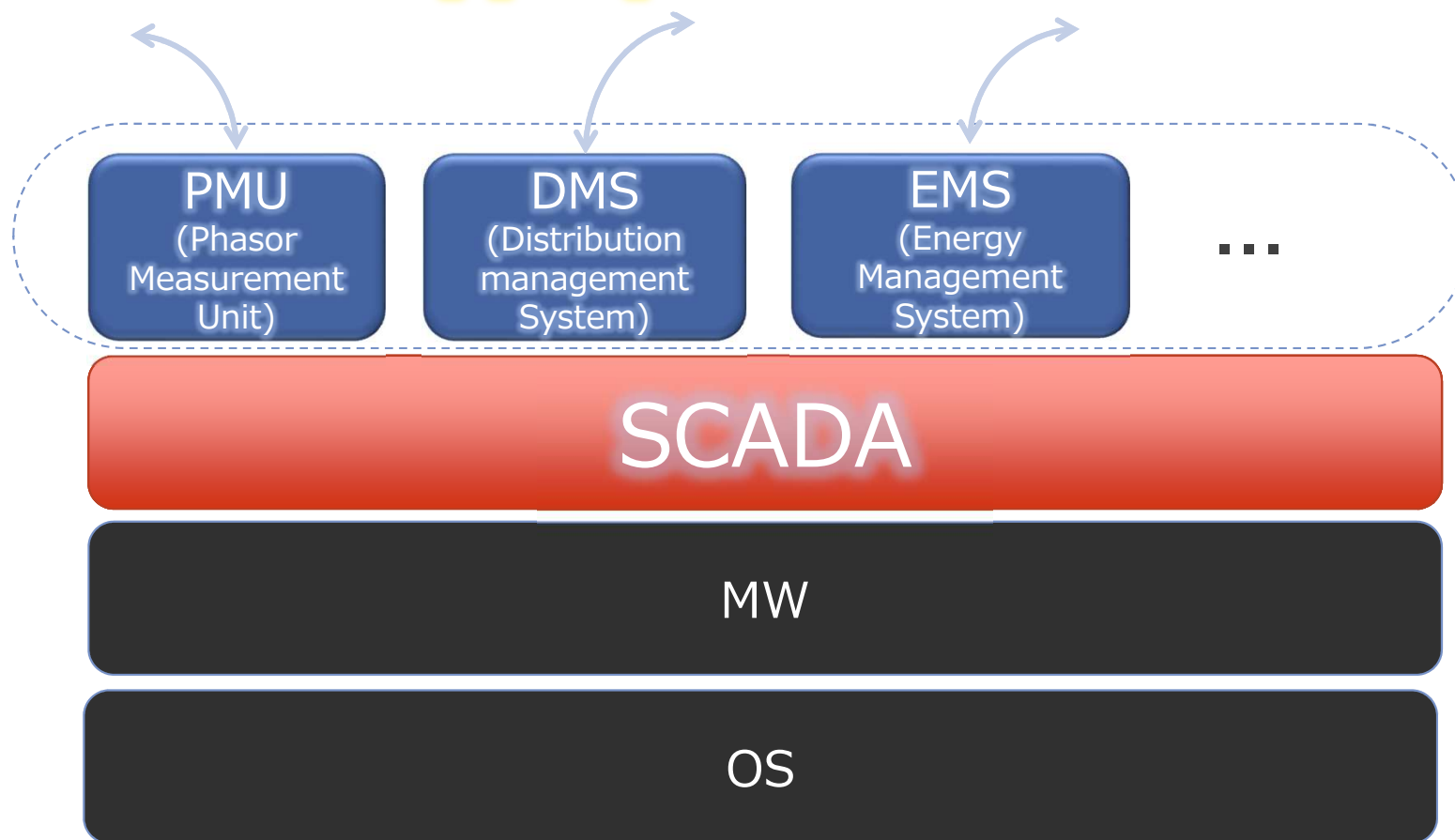
Redundancy with cost-effectiveness



Specification: Flexibility and Scalability

- ◆ Able to pick up appropriate solutions on top of the “SCADA platform”
- ◆ EMS, DMS, PMU … Standard components are “ready to go”

Expandable: Appropriate solutions for utilities



Structure of Next Gen SCADA

Specification: Security

- ◆ IDS(Intrusion Detection System)/IPS(Intrusion Prevention System) : Compliant to NIST SP 800-82rev2 and ISO/IEC15408
- ◆ Palm vein authentication is required for every control with authority

Absolute security for utility operation



**Thank you for your attention
and
we hope to be of service to you in the future.**

