

Connected Energy Corp.

**Seamless Aggregation of Microturbines: a Framework
Approach**

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Advanced Communication and Control Project: Background

- DOE OETD FY03 Award for Phase 1
 - Proof of design for aggregation at many 10s kW
 - Period of Performance: June-Dec 2003, Completion Feb 2004
 - 20% cost share minimum
 - 5 Awards.
- Down-Selection Made for Phase II
 - Commercialization and demonstration involving >10 DER units for >1 MW
 - Feeder Connected DERs; ISO involvement
 - 3 awards made: Connected Energy led team one of them
 - < 2-year period of performance each
 - 50% cost share minimum
- Currently ACCP is in the commercialization phase.



Project Team and Collaborations

TEAM LEADER: Connected Energy

California

- Southern California Edison - demonstration sites
- CAISO
- California Energy Commission PIER Program

New York

- Long Island Power Authority - demonstration sites
- NYISO
- NY State Energy Research Development Authority - demonstration sites

Other Participants

- Sandia National Laboratory- Information and System Security Policies
- Mykotronx- Cryptography and Cypher modules
- Los Angeles County Sanitation District – demonstration sites
- Monroe County Department of Environment Services – demonstrations sites



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NYSERDA

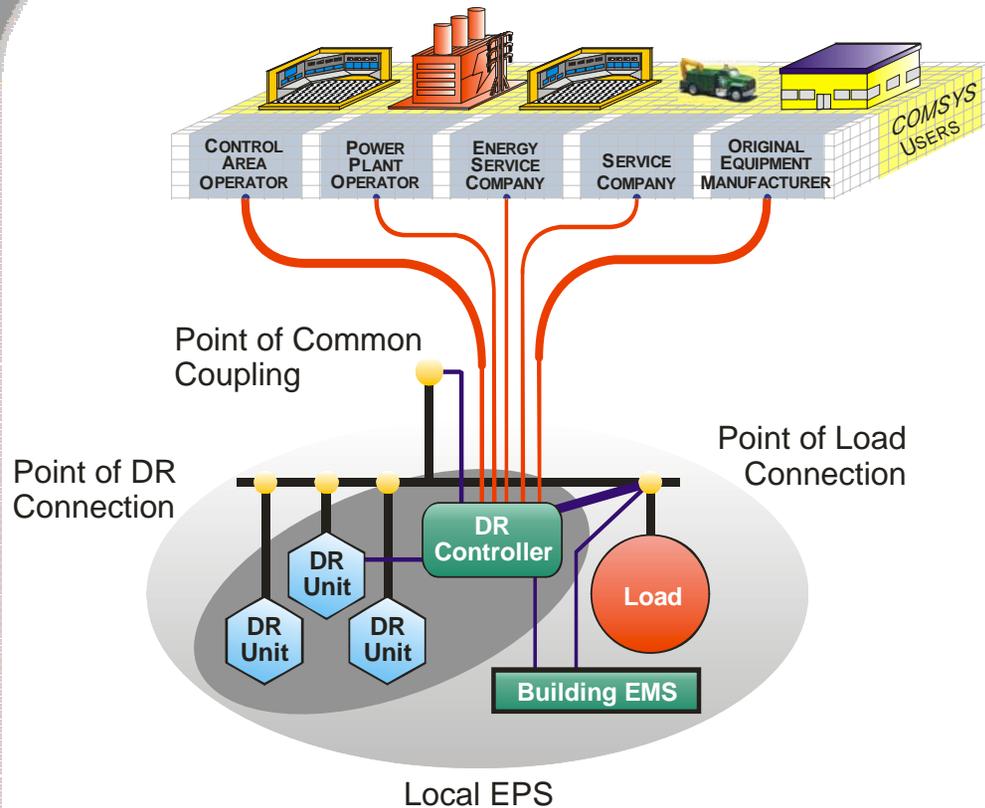


Project Demonstration Sites



Test Site	DER	Sponsor
Green Park Care Center, Brooklyn, NY	2 x 75KW TECOGEN Engines	NYSERDA
NYS Office of General Services, Long Island NY	TBD	NYSERDA
SUNY Farmingdale, Long Island, NY	3 x 5KW Plug Power Fuel Cells	LIPA
Winthrop Hospital, Long Island, NY	7 x 5KW Plug Power Fuel Cells	LIPA
Good Samaritan Hospital, Long Island, NY	3 x 5KW Plug Power Fuel Cells	LIPA
Rochester Airport, Rochester NY	2 x 750KW Wakashau Engines	NYSERDA / Monroe County
Monroe County DES, Rochester NY	TBD	Monroe County
Pebbly Beach Station, Catalina Island, CA	8.9MW (6) Engines	SCE
Lancaster WRP, CA	250KW IR Microturbine	LACSD/SCE
Puente Hills Landfill, California	8MW Caterpillar Engine	LACSD/SCE
Calabasas Landfill, CA	10 x 30KW Capstone Microturbines	LACSD/SCE
PAImdale WRP, CA	2 x 250KW Fuel Cell Energy Fuel Cells	LACSD/SCE

The Challenge: A highly heterogeneous system



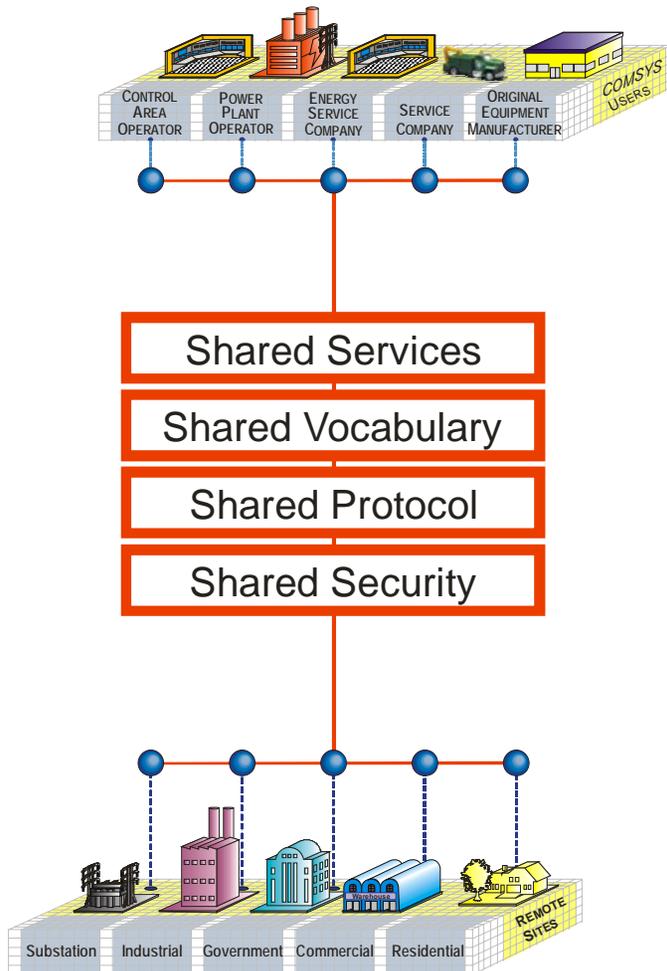
Many Players, Many Systems

- Communication between systems are highly diverse
- Ownership is fragmented, contains multiple stakeholders and equipment
- Current landscape dominated by legacy approaches
- Systems are highly configurable

Past and Current Practices:

- Closed systems
- Designed for Point to Point
- Single solution provider
- Strangles “best of breed”

The Vision: Aggregation through seamless interoperability



Easily Adopted

- Supports standards
- Interrogation/Discovery
- Self describing data

Industrial Strength

- Fault Tolerant
- Time sensitive delivery
- Prioritized Delivery

Secure

- Multi Layered
- AAA
- Autonomous
- Role Based

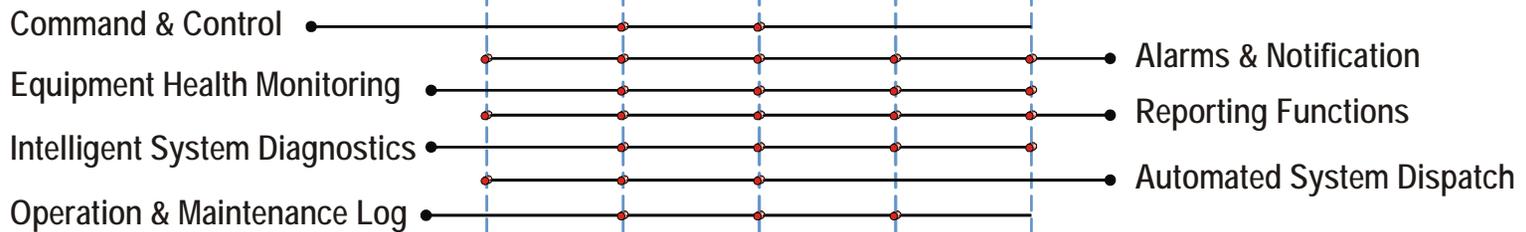
Interoperable

- Platform Independent
- Contractual
- Separate Data and Services



The Solution: A wide area scalable energy information network

COMSYS FUNCTIONALITY

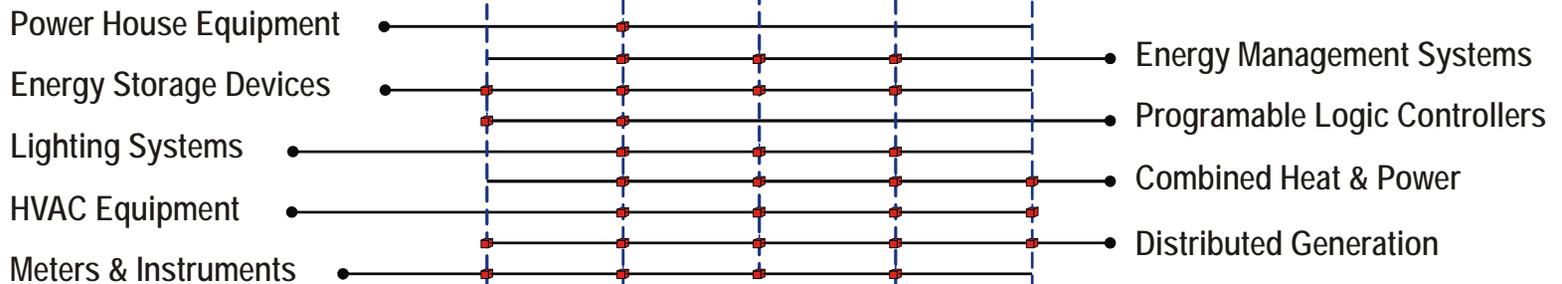


USER TYPES



SECURE DATA TRANSORT Internet VIA XML PROTOCOL

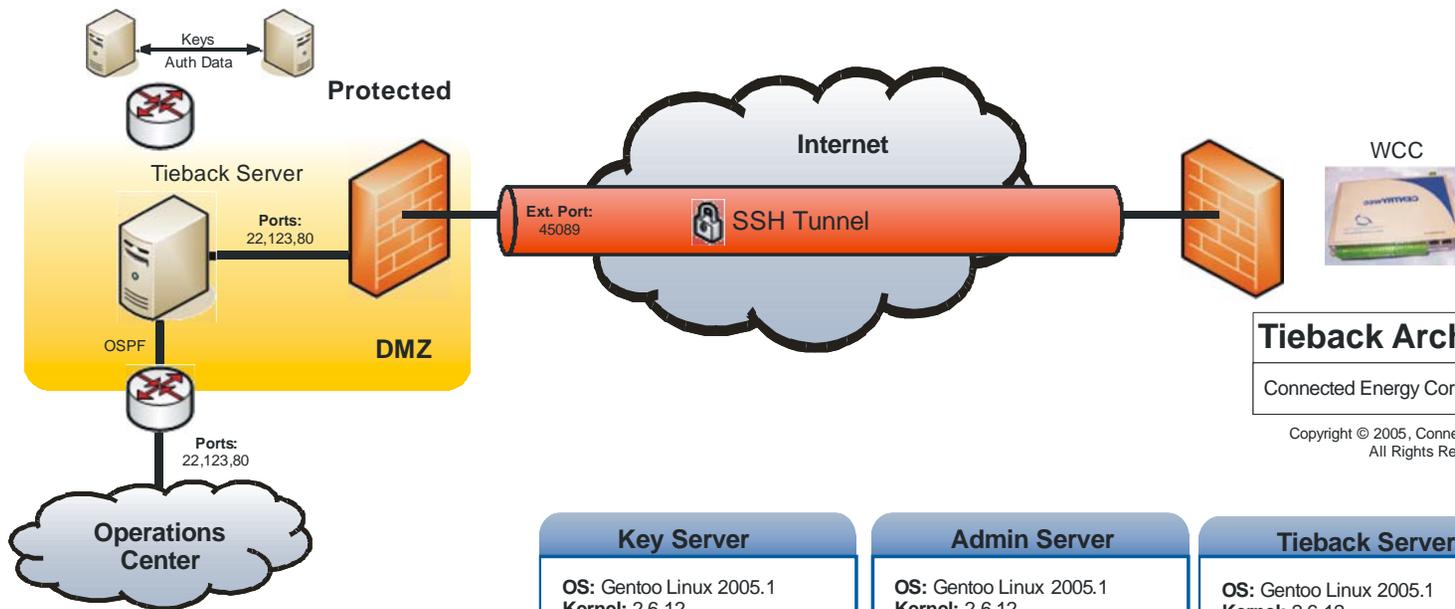
REMOTE SYSTEMS TYPES



REMOTE SITE TYPES



Security: An integrated approach

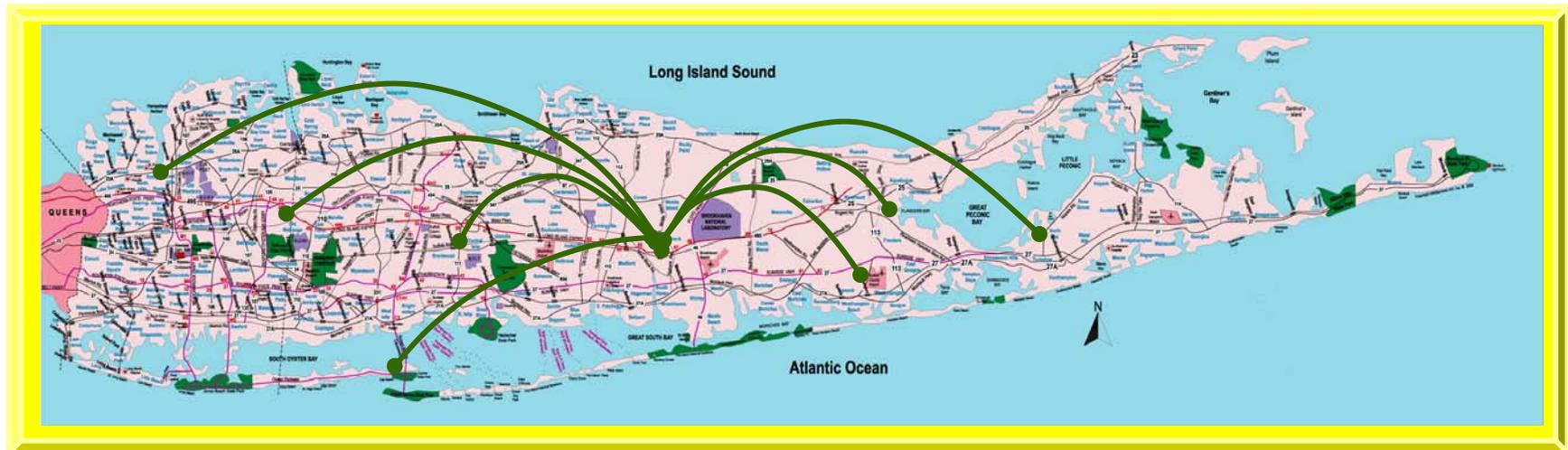


Tieback Architecture 2
 Connected Energy Corp. 12/12/2005

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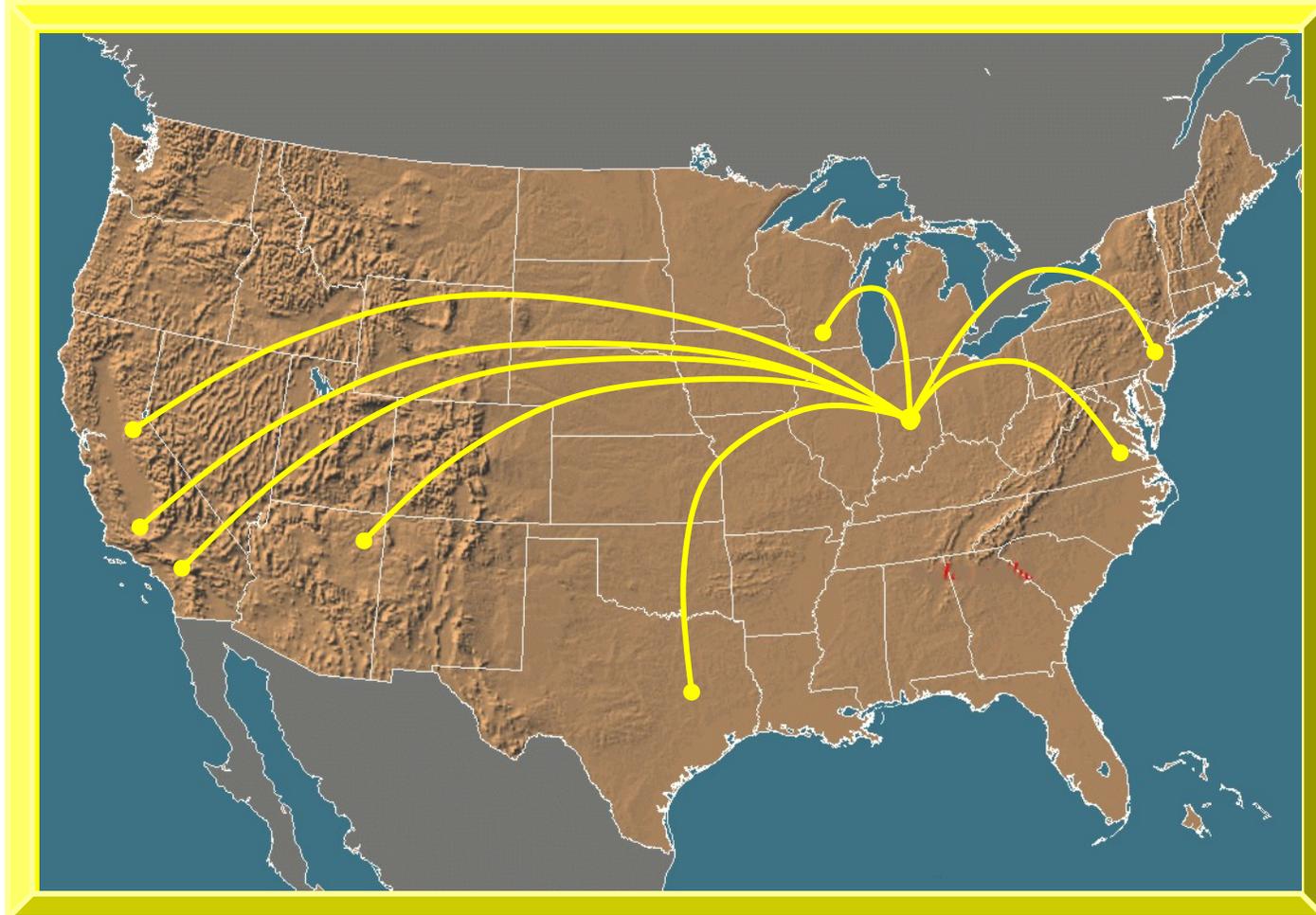
Key Server	Admin Server	Tieback Server
OS: Gentoo Linux 2005.1 Kernel: 2.6.12 <u>Applications:</u> OpenSSH Kerberos 5 - 1.4.2 xinetd (for kprop) ntpd iptables SQL	OS: Gentoo Linux 2005.1 Kernel: 2.6.12 <u>Applications:</u> OpenSSH ntpd iptables Tieback Admin Tools	OS: Gentoo Linux 2005.1 Kernel: 2.6.12 <u>Applications:</u> OpenSSH Tieback Zebra (Routing Daemon) ntpd iptables PPP

COMSYS™ Technology



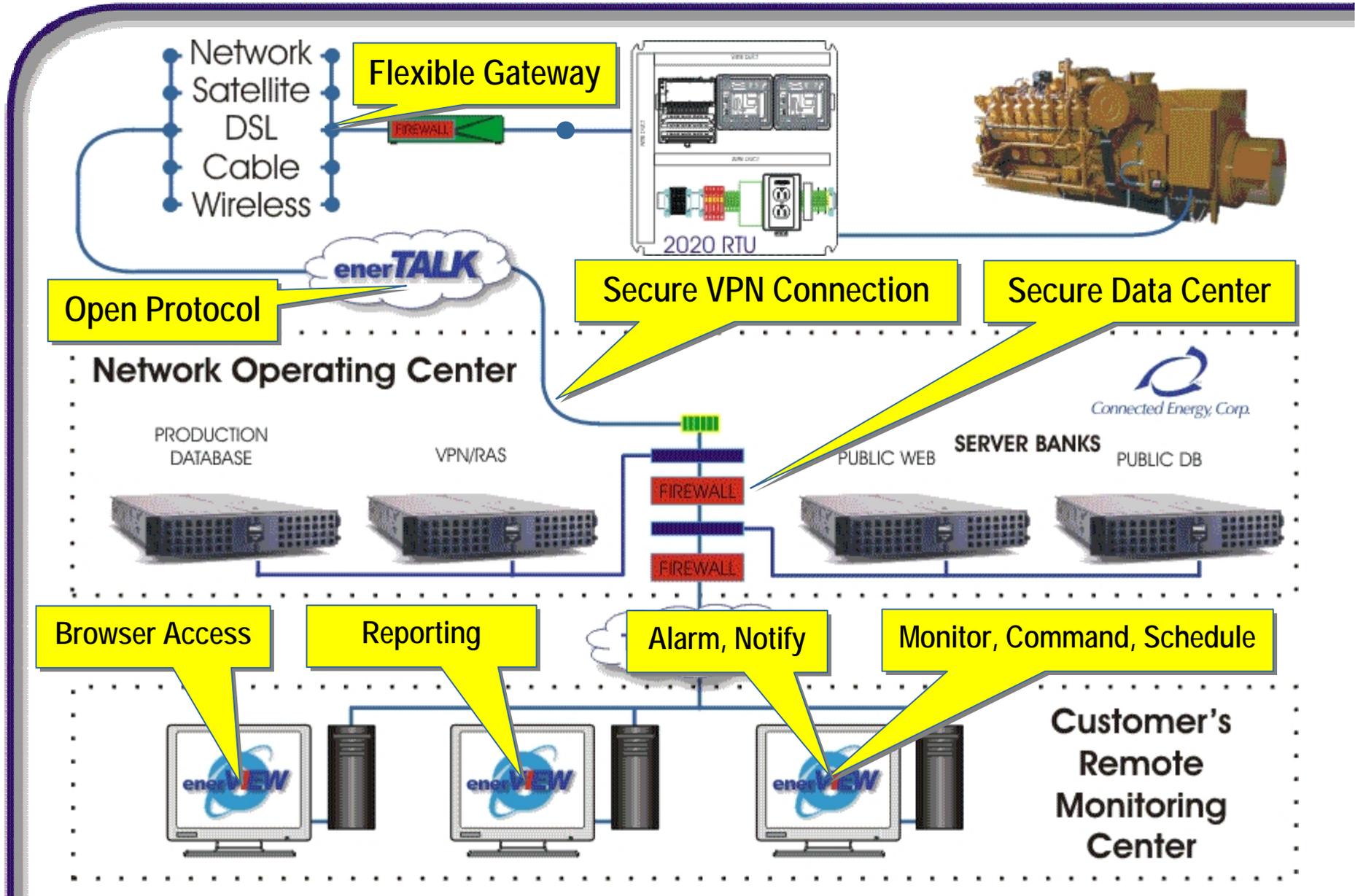
Interact with equipment and devices at many remote locations, concurrently, securely and in real-time.

COMSYS™ Technology

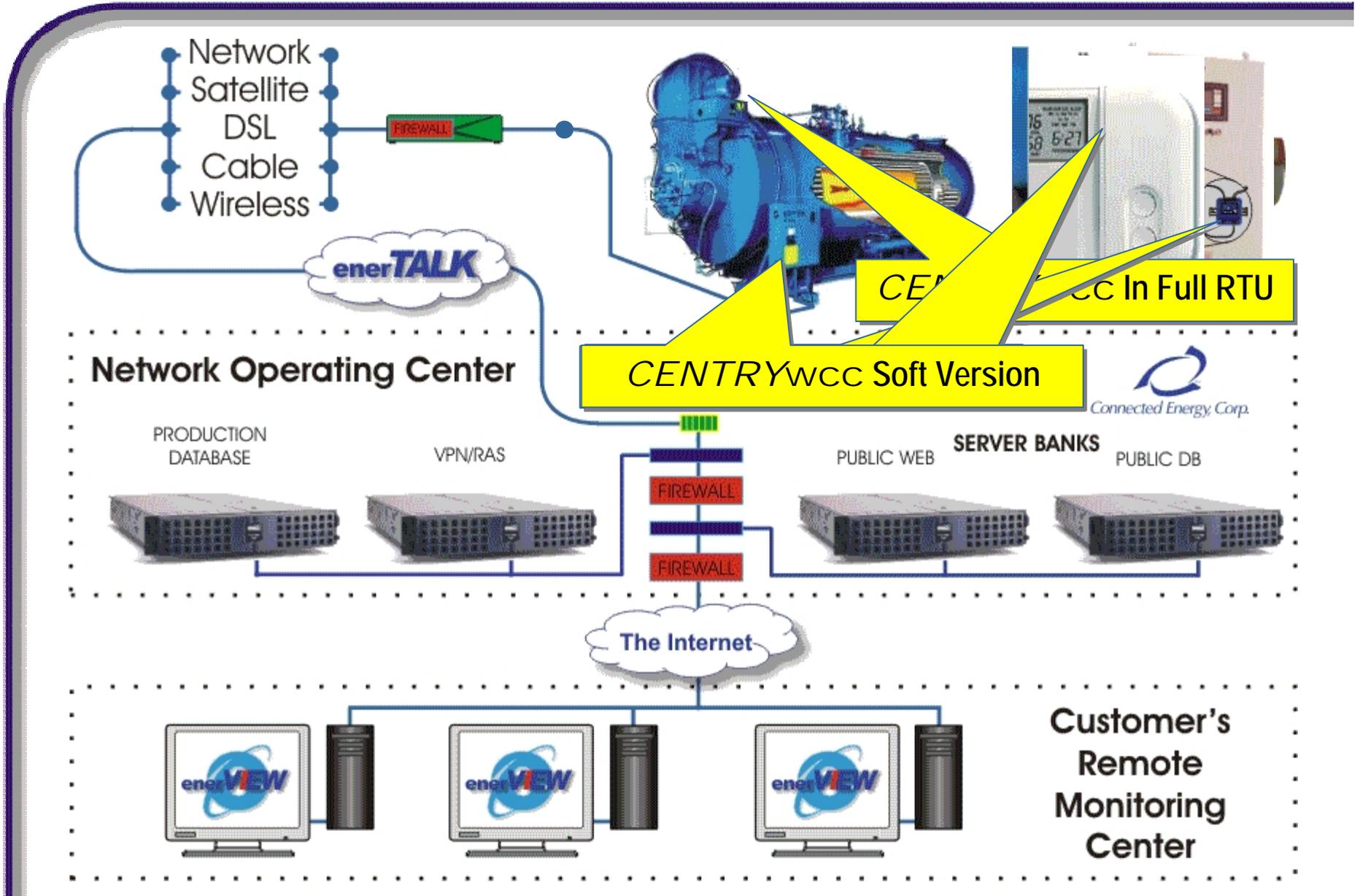


Monitoring and Control interactions on a local, county, state, national or global level

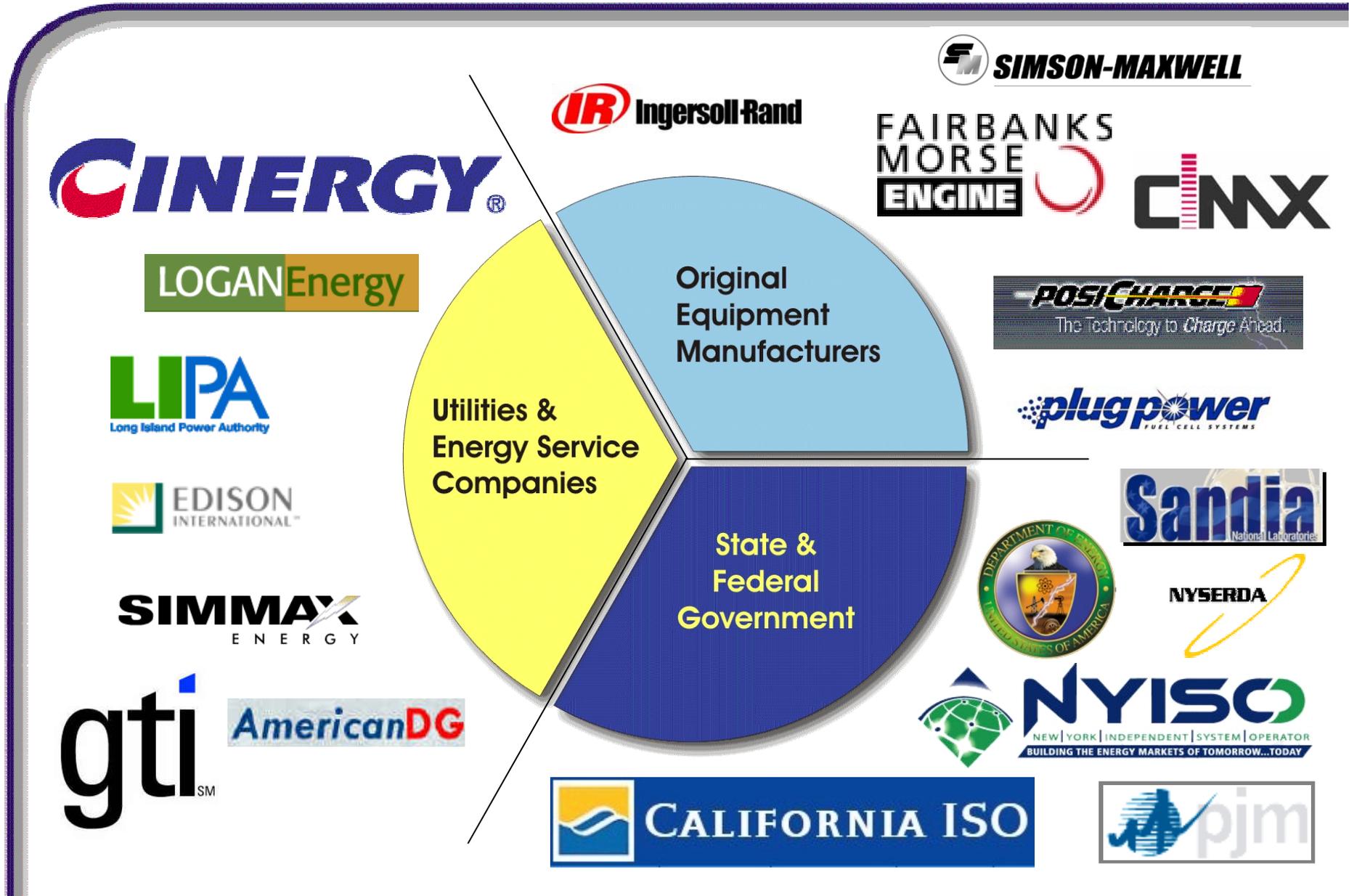
COMSYS™ Architecture



COMSYS Architecture



Customer Focus



Technology Summary

A pure web based solution to eliminate client side application maintenance

A Very Secure Solution

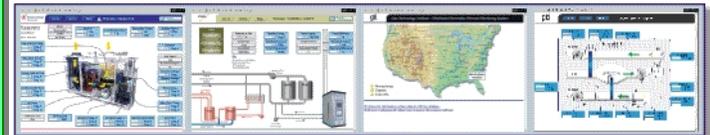
A hosted application to lower the customer's cost of development and deployment; thereby lowering risk

A free license communication protocol

A flexible site level connector designed to connect with disparate equipment



enerTALK™(XML) enerTALK™(XML) enerTALK™(XML)



Authorization Authentication Access

Alarming Notification Control Admin.

Data
Real Time

Data
Archive

Data
Site & Equip.

Data
User & App.

DB-API OLEDB ODBC XML

Connection Manager and Data Queues
Network Operation Center (NOC)

Internet Protocol Security (IPSEC)
Dial-Up DSL LAN Cable Satellite

enerTALK™(XML) enerTALK™(XML) enerTALK™(XML)



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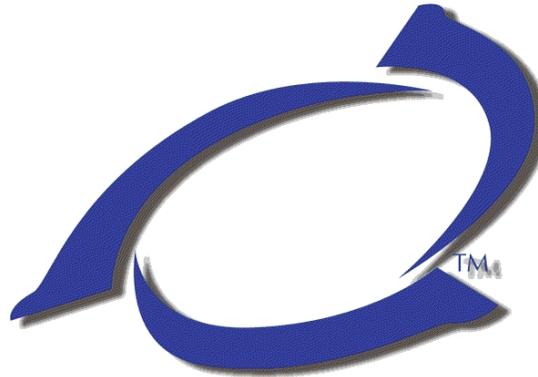


CENTRYwcc



Modbus, Discrete I/O, Proprietary, Ethernet





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