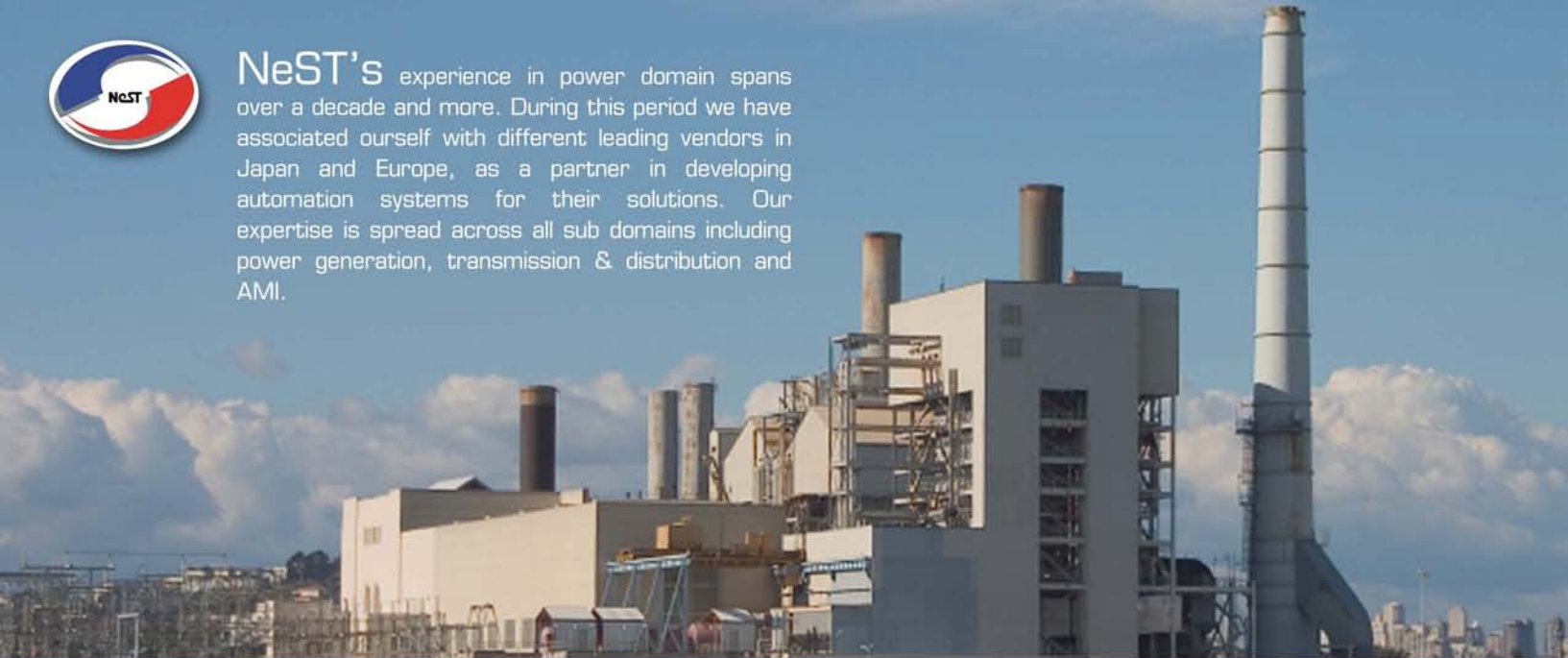


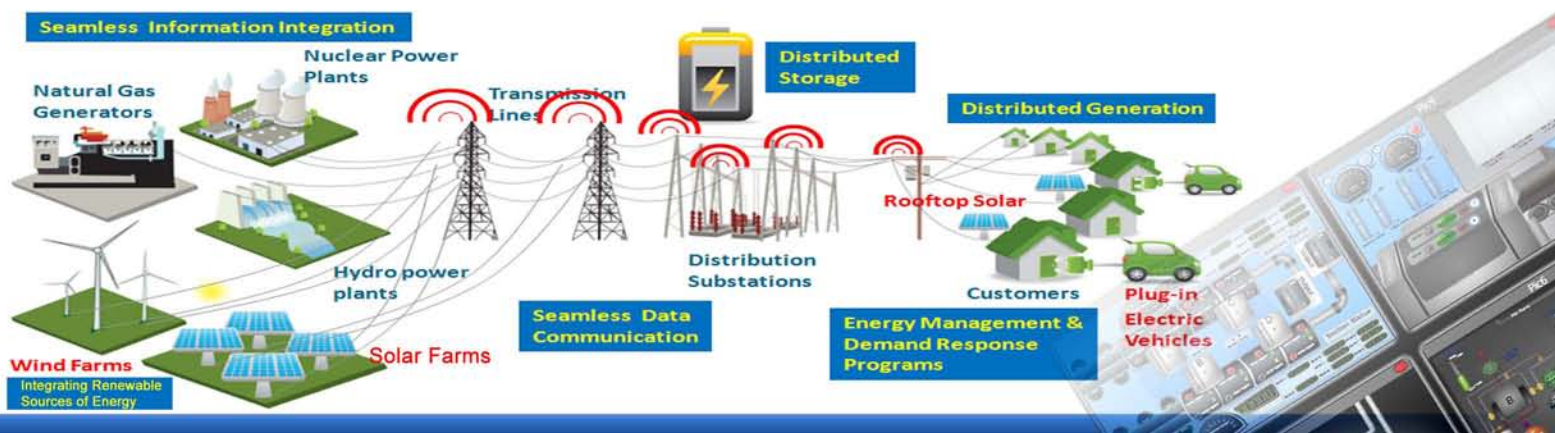


NeST's experience in power domain spans over a decade and more. During this period we have associated ourself with different leading vendors in Japan and Europe, as a partner in developing automation systems for their solutions. Our expertise is spread across all sub domains including power generation, transmission & distribution and AMI.

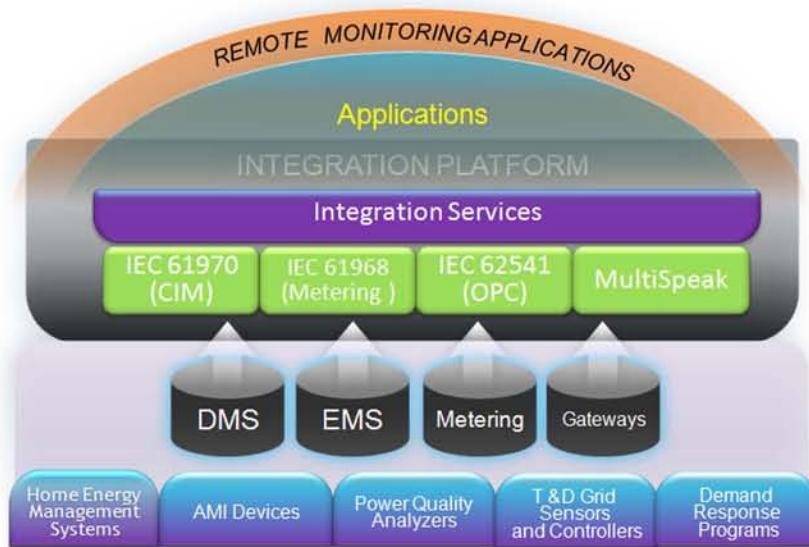


# Power Industry and SmartGrid

Product Engineering	H/W & S/W Development	Manufacturing	Product Sustenance	System Integration
Asset Management & Remote Monitoring	Transmission & Distribution	Generation	End Devices	
<ul style="list-style-type: none"> <li>Remote Monitoring Solutions (EAGLE)</li> <li>Asset Management Systems</li> <li>Network Management Systems</li> <li>Operation Support Systems</li> <li>Geographic Information Systems</li> <li>Meter Data Management Systems</li> <li>Outage Analysis</li> <li>Load Analysis</li> </ul>	<p>Development and Sustenance Services of Electronics and Large Scale Applications</p> <p>Transducers, DAQs, Controllers, RTUs, Gateways,</p> <p>Monitoring &amp; Control Applications</p> <p>SCADA, WebSCADA, IO-system, Alarm &amp; Diagnostic System, Operator Consoles, HMI, Reports, Expert systems, Mimic builders, 3D Modeling, Historian. Realtime &amp; Historical Trending. IEC TC 57, NERC &amp; ISA 99</p>	<ul style="list-style-type: none"> <li>Product Development</li> <li>Proto-typing</li> <li>Quality Certification</li> <li>Manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>Solid State Meters</li> <li>AMI (NICs, Access Points, Repeaters)</li> <li>Home Energy Management Systems (SmartNodes and Home Gateways)</li> </ul>	
Windows (WPF, WCF, OPC [DA, A&E, XMLDA, UA]), Apps on Linux, IEC 61850, IEC 61970, DNP3, CIM, IEC870-5-101/104, IEC60870-5, GOOSE		Zigbee, GSM/GPRS, PLC, BPL, WiFi, WiMax, Optical, Ethernet, Modbus, CAN		
AB, DF1 Protocol, MilsecNet, CIP, Modbus, Ethernet I/P, DeviceNet, LonNetworks		RoHS, CE, IEC 60526, DLMS/COSEM		
System Engineering and System Integration (Sourcing, Assembly, Integration, Testing, Shipping and I&C)				



## Competency



## Specific Focus

- ▶ **Grid Interoperability**
  - Intra-grid & Inter-grid operability
  - Standards (NIST & IEC) implementation
    - IEC 61970-Component Information Model (CIM)
    - IEC 62541-OPC/OPC UA
    - IEC 61968-Metering
    - MultiSpeak
- ▶ **Home Energy Management Systems**
  - Total solution
    - Smart energy nodes
    - Data concentrators
    - Data analysis and presentation software
    - Web based User Interfaces (UI)
  - Communication
    - HPLC, BPL, PLC, Zigbee, Home Plug (1.0 Power line communication)
    - 6LowPAN, OpenHAN, WiFi, Ethernet
    - MQTT (Message Queue Telemetry Transport)
- ▶ **Power Quality Analysis (PQA)**
  - Simulink models for
    - Magnitude of voltage
    - Voltage dip & interruption
    - Power frequency
    - Voltage unbalance
    - Flicker
    - Harmonics
- ▶ **Automatic Meter Infrastructure**
  - Smart meters
  - Meter Data Management Systems
    - Load analysis
    - Outage analysis
  - Field Area Network
    - ANSI C12.22 - Standard to transport of ANSI C12.19 table data (Meter data formats over networked connections)
  - Wide Area Network
    - PSTN, DSL, Cable, WiMax, PLC, BPL (Broadband over Power Line)

## Standards

- ▶ IEC TC57, NERC and ISA99
- ▶ IEC 870-5-101/104,
- ▶ IEC 60870-5,
- ▶ IEC 62325
- ▶ IEC 61970
- ▶ IEC 62541
- ▶ IEC 61968
- ▶ MultiSpeak
- ▶ IEC 61850
- ▶ GOOSE
- ▶ IEC 60526
- ▶ DLMS / COSEM
- ▶ IEC 60870 - 6
- ▶ BACnet
- ▶ LONWorks
- ▶ Z-Wave
- ▶ IEC 62351

## Development Services

- ▶ Development of Application Software
- ▶ Legacy System Porting/Migration
- ▶ Software Application Sustenance
- ▶ Interconnectivity and Interoperability
- ▶ Verification, Validation, Customization of devices and systems
- ▶ Reverse Engineering (Software & Hardware)
- ▶ Embedded Software and Hardware
- ▶ System Integration, Installation and commissioning
- ▶ Manufacturing – Electronics, Power Supplies, Cables, mechanical enclosures



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