

# Field Strain Acquisition System

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# Background

- Systems integrator since 1994

Application areas include:

- Stress & Strain
  - Satellite components
  - Large structures
- Pressure
  - Combustion dynamics

# Previous Approach

- Medium channel count (<100)
- Manual sensor tracking
- “Manual” data acquisition setup (trim pots & jumpers)
- Hardware bridge configuration
- Long cable lengths – connector issues
- Multi-chassis synchronization
- Proprietary software – not scalable, no network support

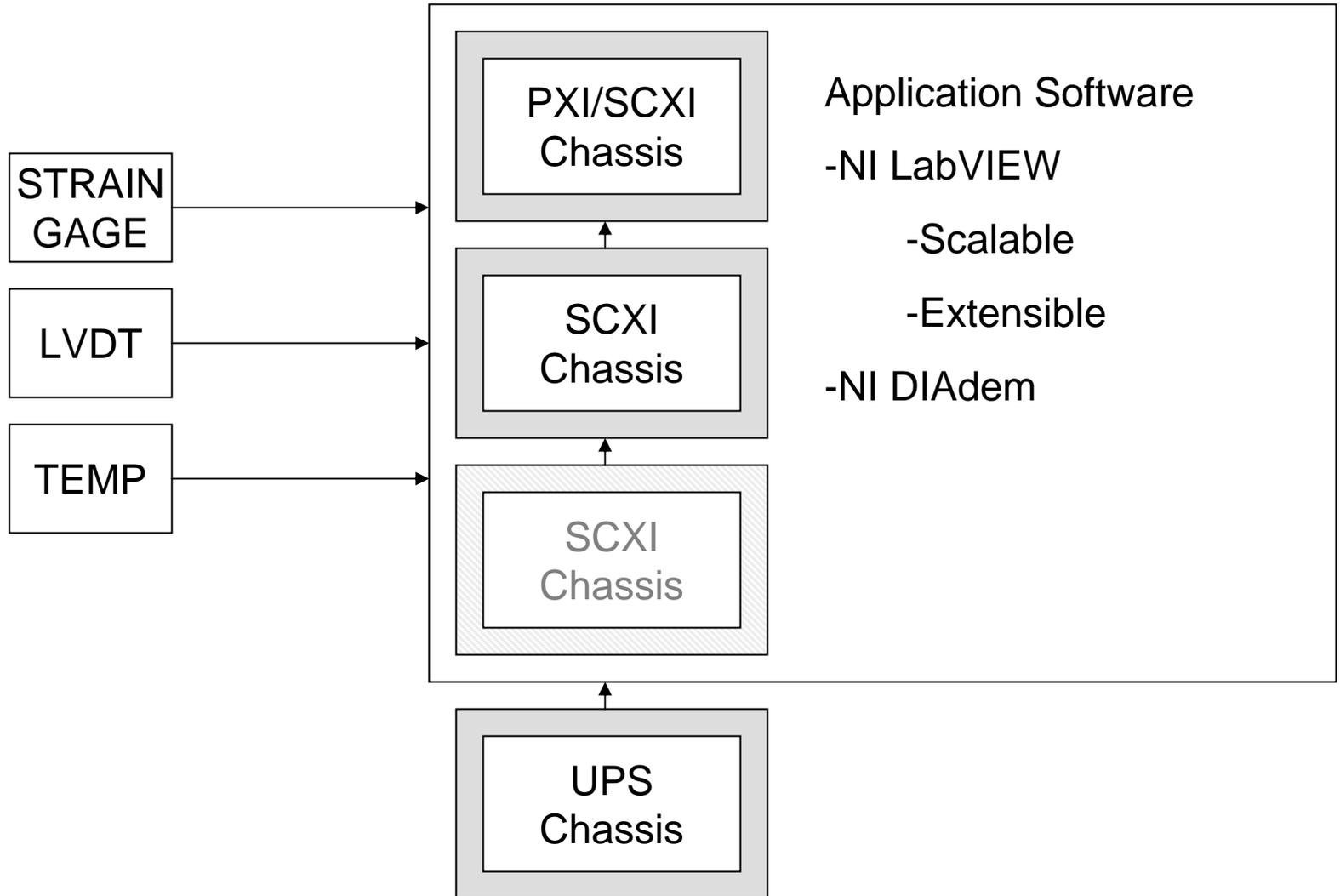
# Opportunity

- Provide a system to collect strain information for medium and high channel counts
- The system must be easy to configure and operate
- Data must be processed as collected and presented in user definable formats

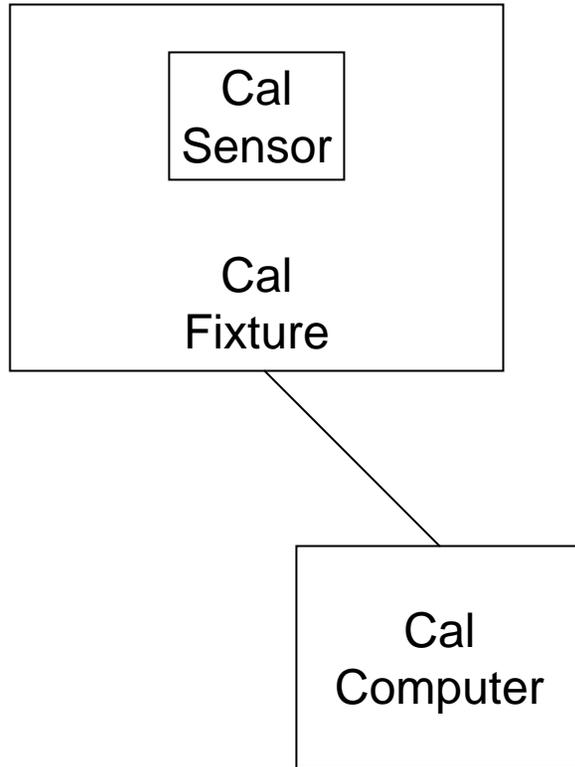
# Design Goals

- Reduce bookkeeping during tests
- Simplify installation
- Improve interconnect reliability
- Improve data fidelity
- Fault tolerance
- Dynamic tests

# System Block Diagram

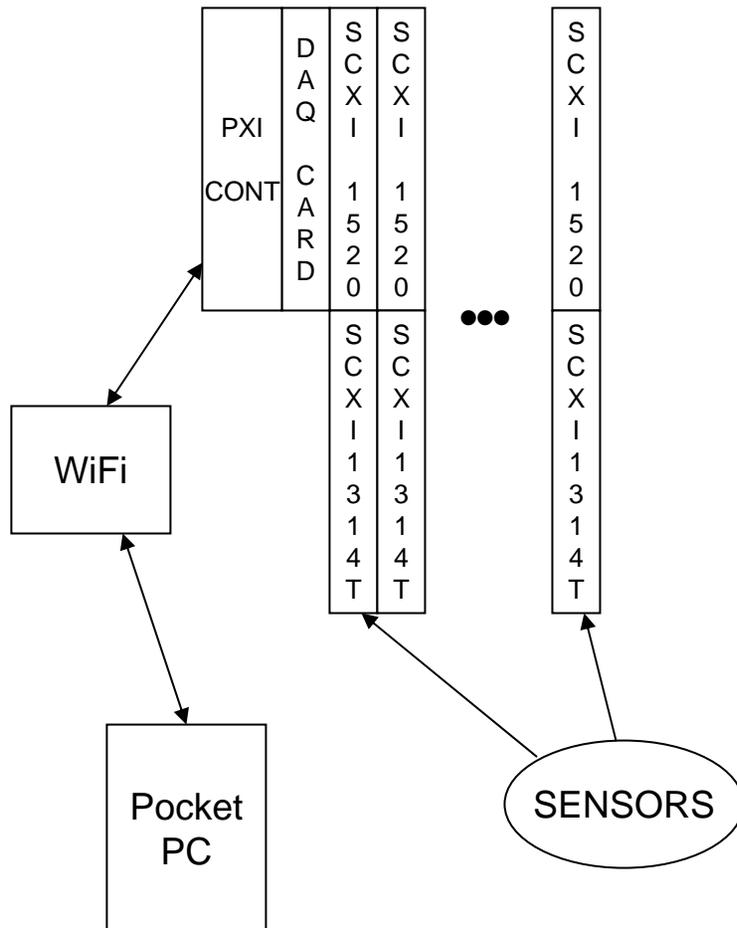


# Calibration



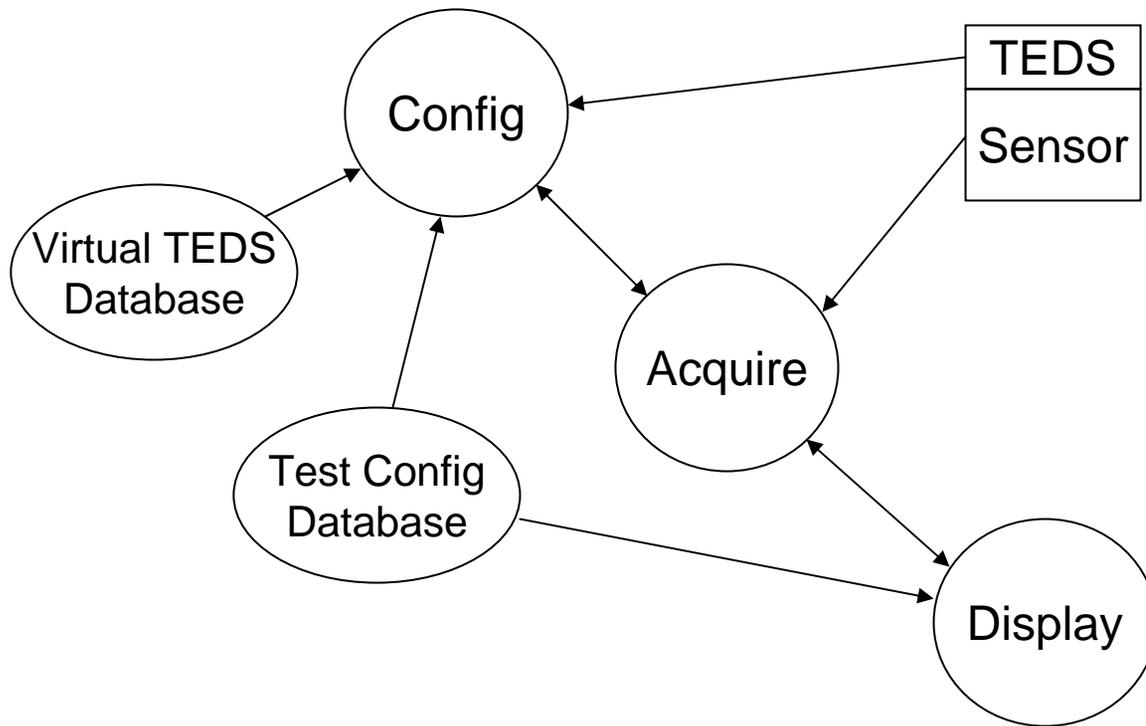
- Gather User Info
- Stimulate Sensor
- Generate TEDS

# Field Hardware Details



- Hardigg Cases
  - Rugged standard rack
  - Stackable
- PXI/SCXI
  - 160 channels
  - Expandable
- TEDS
- Pocket PCs
- Wireless network

# Field Software Details



- Virtual TEDS
- Physical TEDS
- LabVIEW
- DIAdem

# System Growth

- Wireless FieldPoint RT
- Other wireless
- Additional sensor types
- Differential GPS

# Benefits of TEDS

- Automatically Track Sensors
- Automatic Bridge Configuration
- Eliminates Scaling Errors