

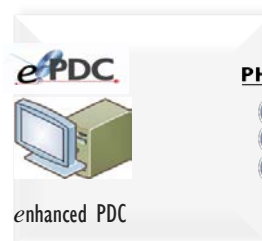
# Naming Conventions

## IEEE PC37.118.2 & WG10, IEC 61850

### NASPI

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# Presentation

- Naming considerations
- IED Naming (IEEE WG10)
- NASPI naming
- 61850 naming
- Update of synchrophasor standards status

# Naming background

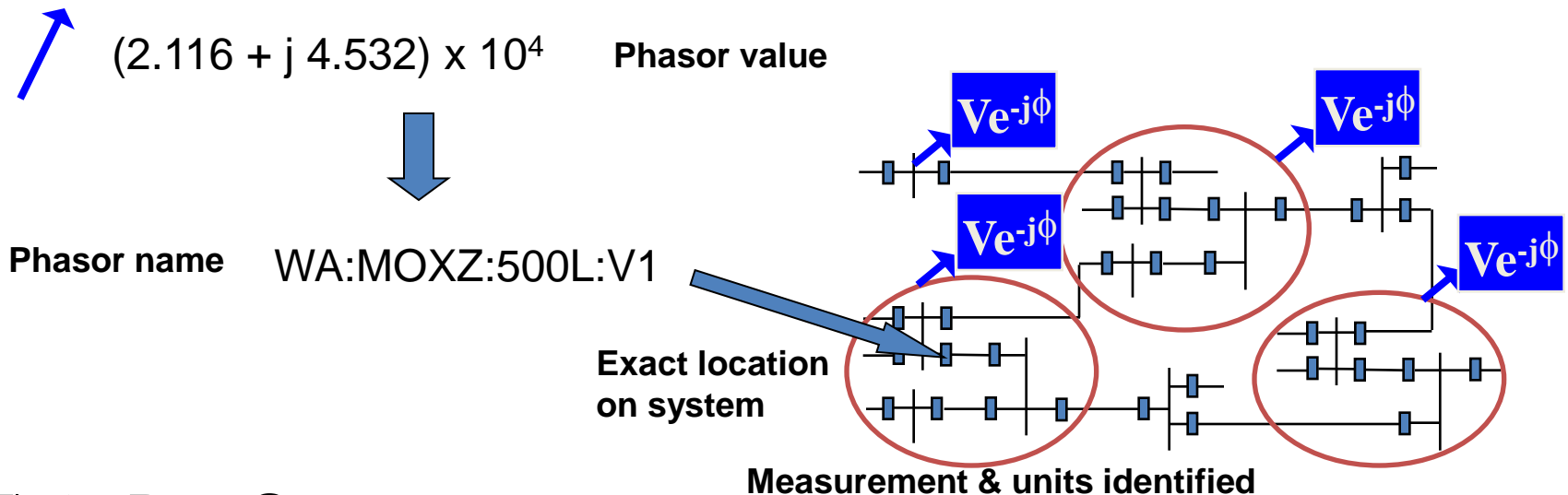
- Identification of information
  - What is this information?
  - How can I use it?
  - What context does it fit into?
- Type of information
  - Number, label, description, definition?
  - Reference – object, action, measurement?
- Relationships (context)
  - Physical system
  - Logical system
  - Operational relationships

# Naming difficulty

- Different naming conventions in industry
  - Historical development
  - Well established in company documentation & culture
- Great variability with human use
  - Easy to adapt in human language, not easy for machine
  - Different company naming not understandable by others
- Models typically not closely linked to users
  - Models use bus numbers, people use names
- Physical and virtual communication systems
  - Previous communications were physical & point-point
  - Modern communication is virtual links on physical system
  - Traditional naming does not identify linkage

# Ideal naming

- Signal names identify
  - Where they are from
  - What they represent – engineering quantity, units, etc
  - Measuring device & communication path
- Both human and machine readable
  - Human can understand and relate with minimal training
  - Consistent enough for machine interpretation



# C37.118-2005 naming

- Parameters named in configuration
  - Measuring device
  - Sending device
  - Phasors, analog signals, and digital channels
- Name characteristics
  - All names have 16 characters (spaces may be used)
  - ASCII characters
  - Names free form, user designated

# PC37.118.2 naming

- All previous C37.118-2005 messages retained
  - Configuration frames and naming retained
- New configuration frame (config3)
  - Same basic parameters as current frames
  - Additional parameters – data modification flags, PMU location, measurement characteristics, etc
  - New naming convention
    - Variable field – 1 to 256 characters
    - UTF-8 allows any character set (including ASCII)
    - Names free form, user designated

Name length - uint8, 1 byte	Name – UTF-8 coding (includes ASCII), 0-255 bytes
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# C37.111 (COMTRADE) naming

- Retains previous name spaces
  - Station, recording device, channel each 64 characters
  - Names free form, user designated
- Profile for synchrophasor recording
  - Station & recording device user designated
  - Channel combines station & signal
    - Station\_name:signal\_name
    - Names connected with colon, total 33 characters
    - Leaves room for added characters
    - May need additional definition for longer config3 messages



# IEEE WG10 device naming

- Naming convention for devices
  - Includes signal naming
- Method follows common conventions
  - Usual phase, breaker, voltage, etc
  - Human readable
  - Names separated by underscore
- *Company ID \_ Station ID \_ IED Type \_ Voltage Level \_ Equipment Type \_ Relay Panel \_ Relay House \_ Function Type \_ Phase ID \_ Input Type*
  - Examples
    - *CoA\_Stn42\_321\_345\_Fdr42\_12\_A*
    - *(Company A, Station 42, 321 relay, 345kV, Feeder 42, Panel 12, House A)*
    - *CoA\_Stn42\_DFR72\_345*
    - *(Company A, Station 42, DFR number 72. 345kV)*

# NASPI naming

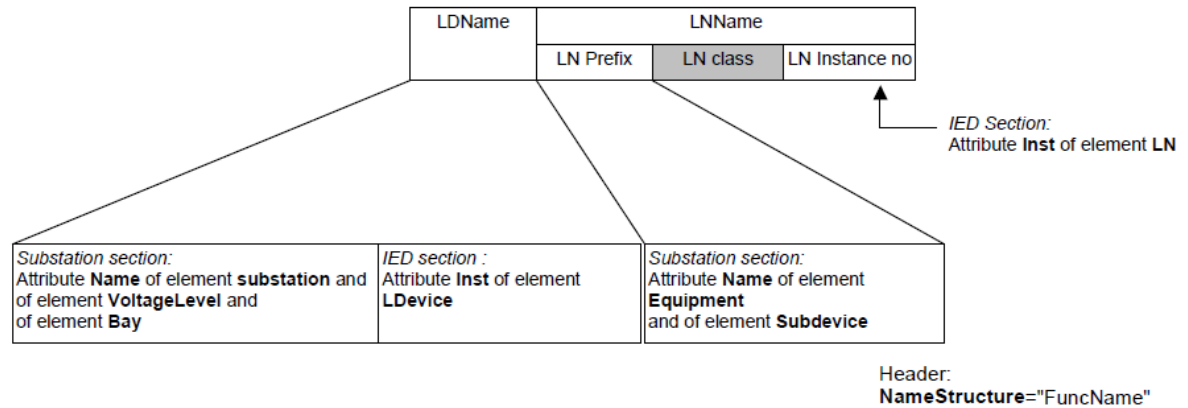
- Extensive registry information
  - Company, ISO, location, etc
  - PMU information including mfg, settings, class, etc
  - PMU ID code to relate to data
  - Full set of channel identification
- Station and channel naming
  - 16 byte coding to fit in 37.118 name space
  - Uses specified coding to keep within name space
- Refer to previous presentation for details

# IEC 61850 naming

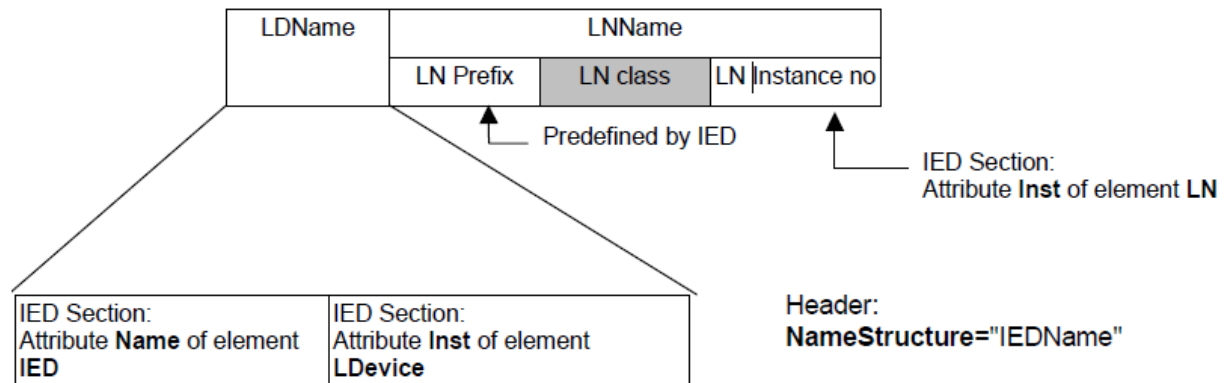
- SCL language
  - Combines all aspects of system
    - Device
    - Measurement
    - Communication
  - Structured method for deriving names
- There is a physical structure and a logical structure within it
  - Language attempts to embody both using UML
  - Uses constructs from IEC 61346

# IEC 61850 name options

- Function naming

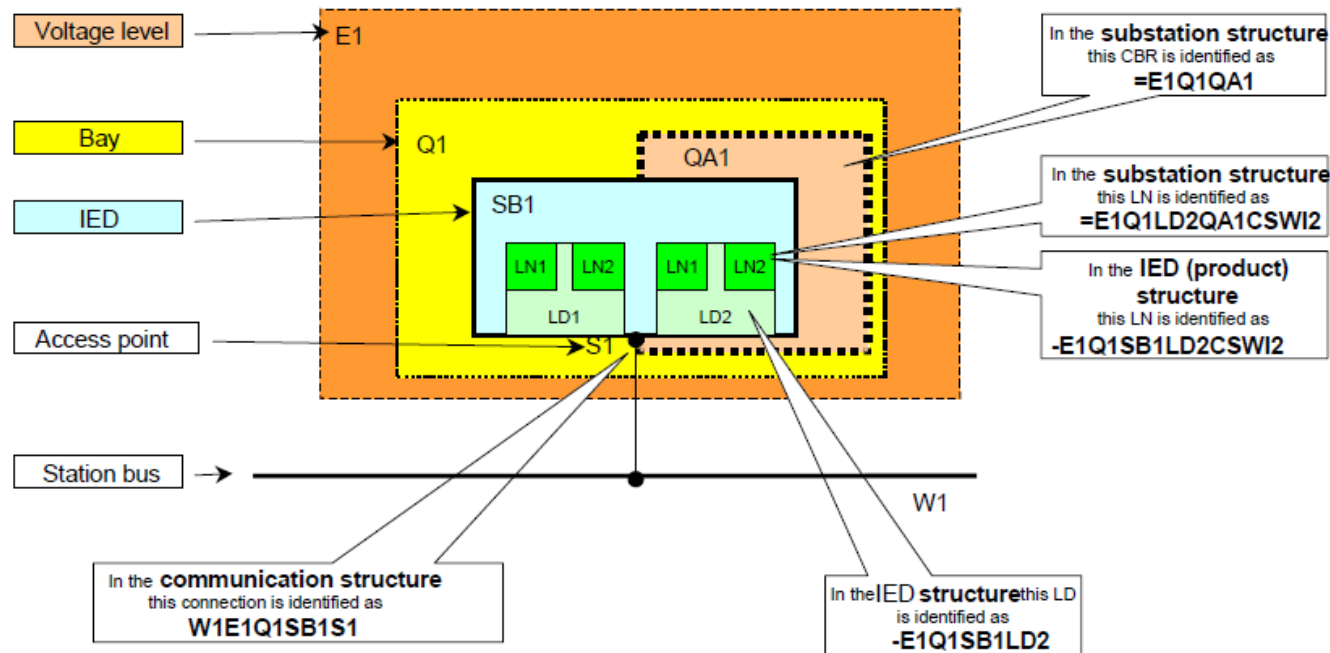


- Product naming



# IEC 61850 name generation

- Conventions for names from IEC 61346
- Recognizes functions (logical nodes) in IEC
- Designates external physical connections



# Synchrophasor standards outlook

- IEEE C37.118.1 for synchrophasor measurements
  - Approved by the sponsor (PSRC) in May
  - Balloting June 2 – July 2 with comment resolution to follow
  - Expected final approval in September 2011
- IEEE C37.118.2 for synchrophasor data transfer
  - Approved by the sponsor in (PSRC) May
  - Balloting June 3 – July 3 with comment resolution to follow
  - Expected final approval in September 2011
- IEC 61850
  - Referred to IEC for member consideration and approval
  - Expected final approval in September 2011
- Joint IEEE-IEC synchrophasor measurement standard - IEC 95-277
  - Will follow on after final approval of PC37.118.1

# Thank You - Questions?

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