Using IEC 61850 SCL to Configure DNP Systems

Distributech 2016

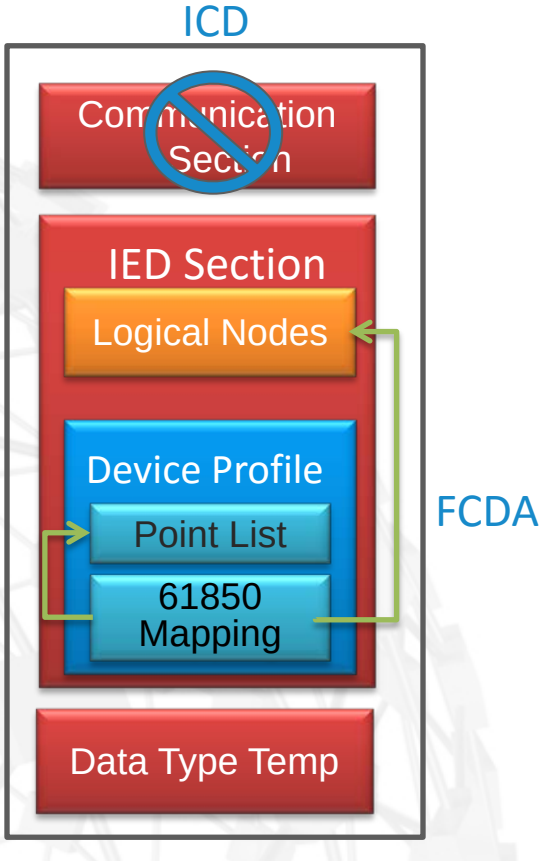
Outline

- Standards Involved
- Possible Workflow
- Re-Usability Provided

Standards Involved

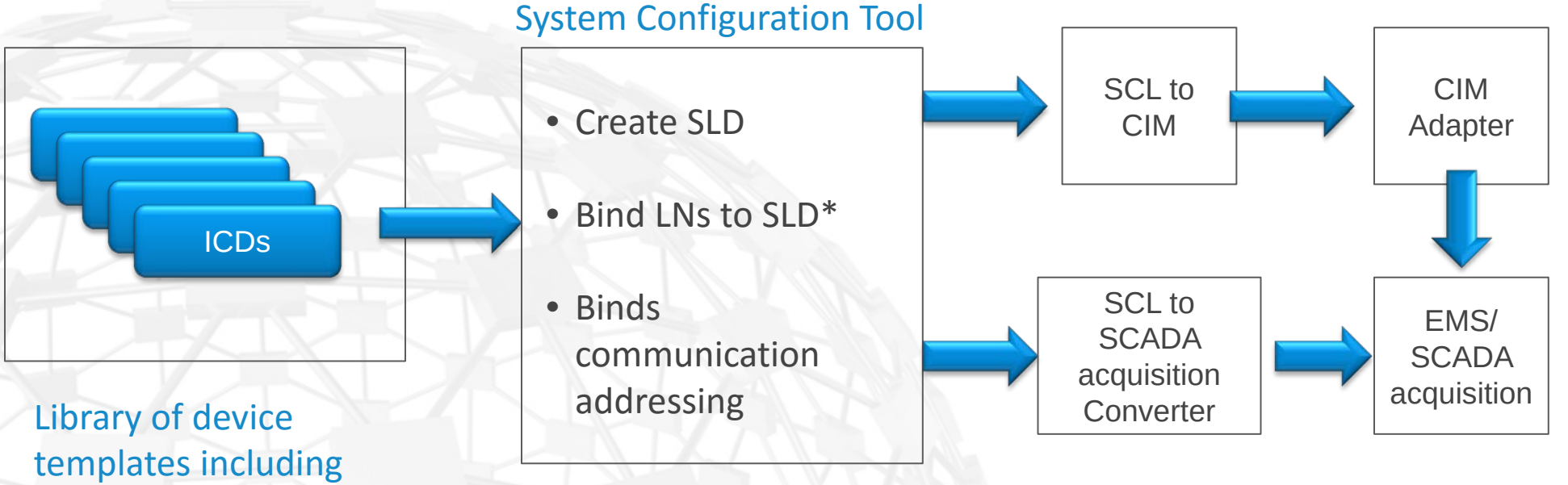
- IEEE 1815.1: Exchanging information between networks implementing IEC 61850 and IEEE Std 1815 (Distributed Network Protocol – DNP3)
  - Provides device capability profile
  - Master and slave addressing
  - Point list
  - DNP to 61850 mapping information
- IEC 61850-6: System Configuration Language
  - Substation SLD editing capability
  - IED data model
  - Communication addressing

Concept: Embed DNP Profile in ICD



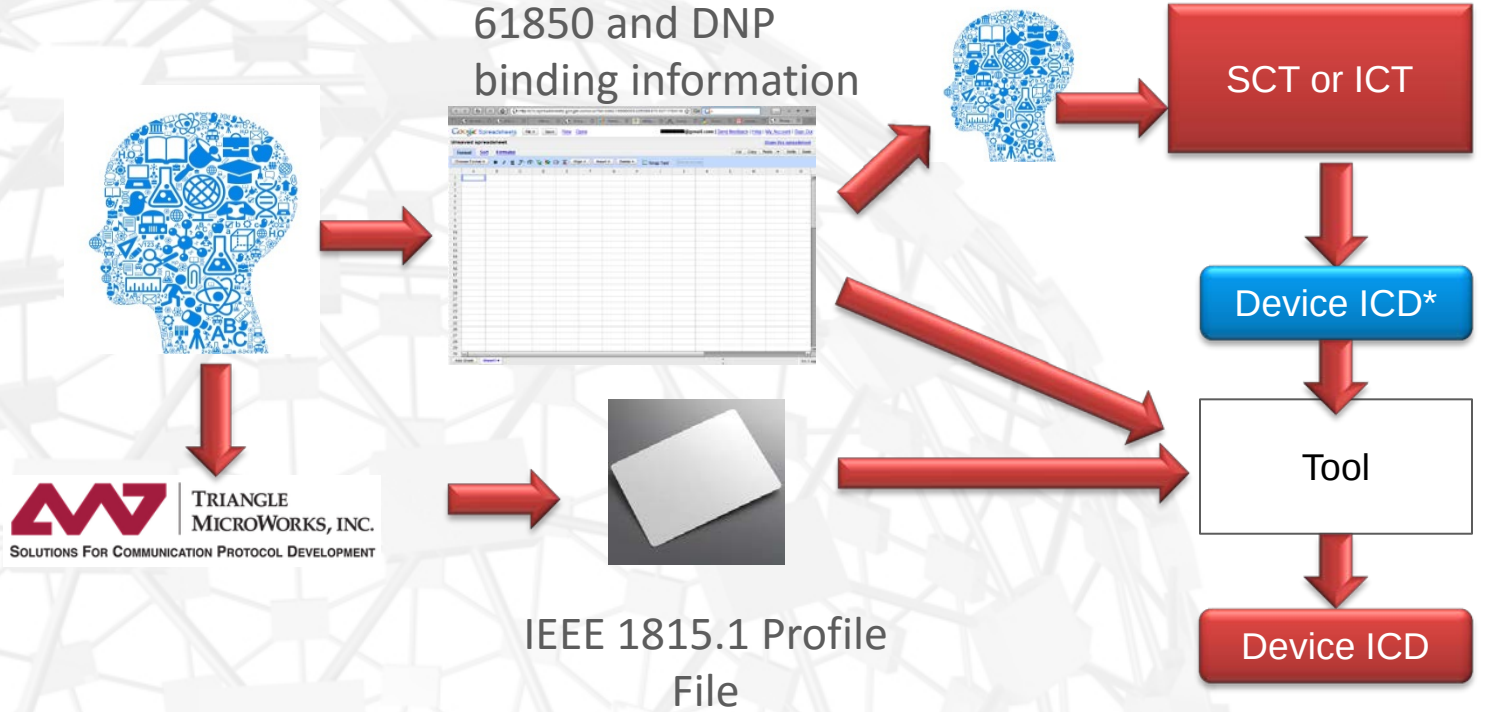
High-Level Workflow

CIM model extensions may be required



Library of device templates including template DNP to 61850 mappings

How to create library of ICDs?



Spreadsheet to DNP profile creation in ICD(TBC)

SCT is used to…

- Name the IEDs
- Create SLD
- Bind Logical Nodes to SLD
- Assign Communication addressing *(see next slide)*

Result is instantiated Logical Nodes, bound to Substation equipment, and mapped to the DNP information

Communication Information

- Current SCL tools don't support addressing extensions for IEEE 1815.1 embedded files, and may not ever support this as it is "private".

- IEEE 1815.1 did not address the use case of "Template" use in SCL.
  - » Did not define specific SCL P-Types for
    - Outstation address
    - Expected master address
    - DNP Port
    - Others…

Communication Information in 1815.1

- Some must be ignored when using “Template”
  - AccessPoint
  - IP Address
  - Subnet mask
  - IP Gateway
- Doesn’t support IPv6.

Status

- Software delivered
- Operational in Customer Lab
- Integration of other information into CIM model next.