IEC 61850
IED Configuration Tool v2

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RTDS APPLICATIONS & TECHNOLOGY CONFERENCE

2026 APPLICATIONS & TECHNOLOGY CONFERENCE

IRWINDALE, CALIFORNIA, USA

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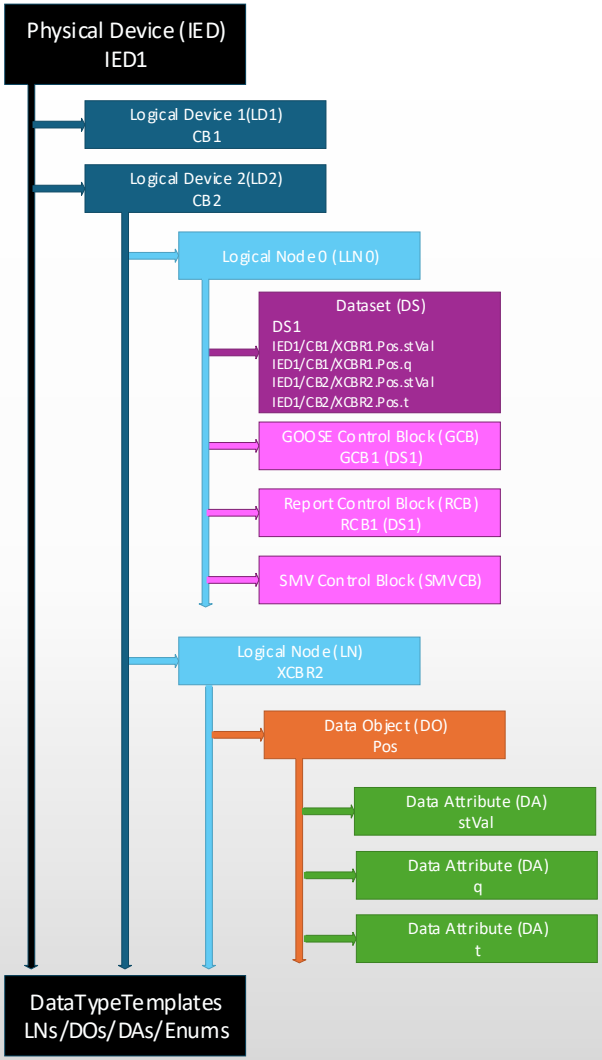
Outline

- Background
- Common ICT Use Cases
- ICTv1 – Challenges
- ICTv2 – Demonstration
- Summary

Background

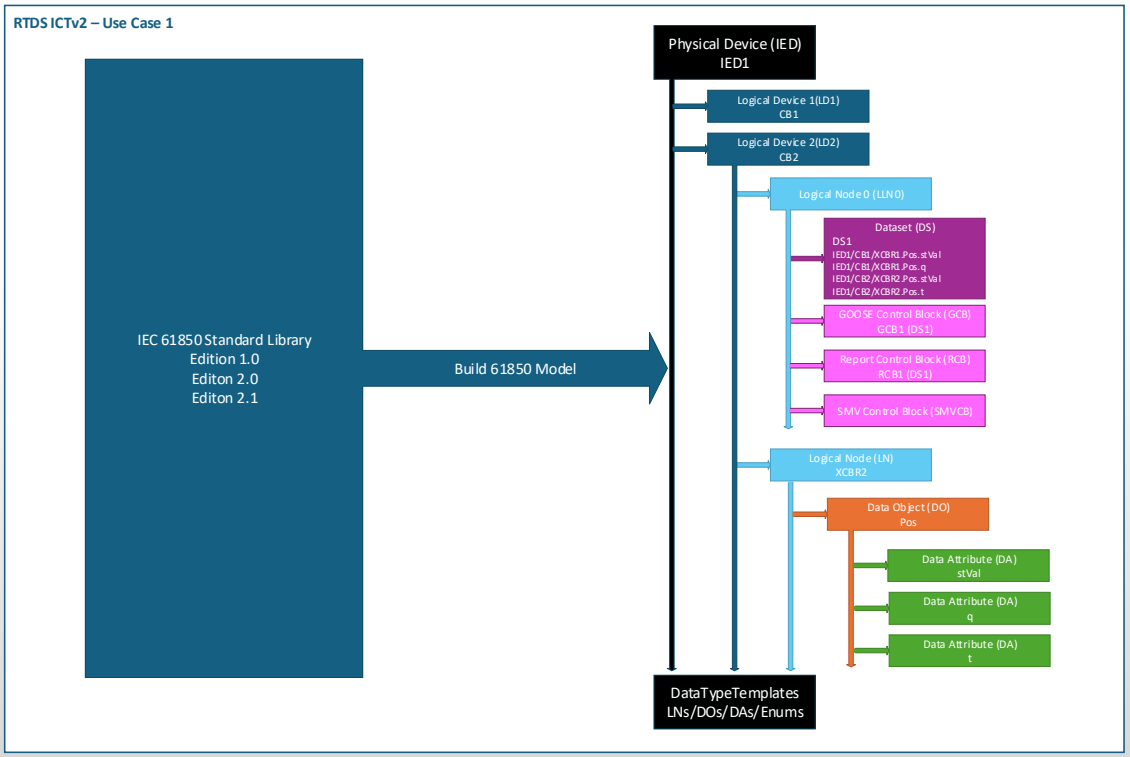
The IED Configuration Tool (ICTv1) is used to configure GTNETx2-GSE and GTNETx2-MU for IEC 61850 applications. However, user and utility feedback has identified significant complexity and usability challenges, making the configuration workflow difficult and time-consuming.



Simplified IEC 61850 Model Structure

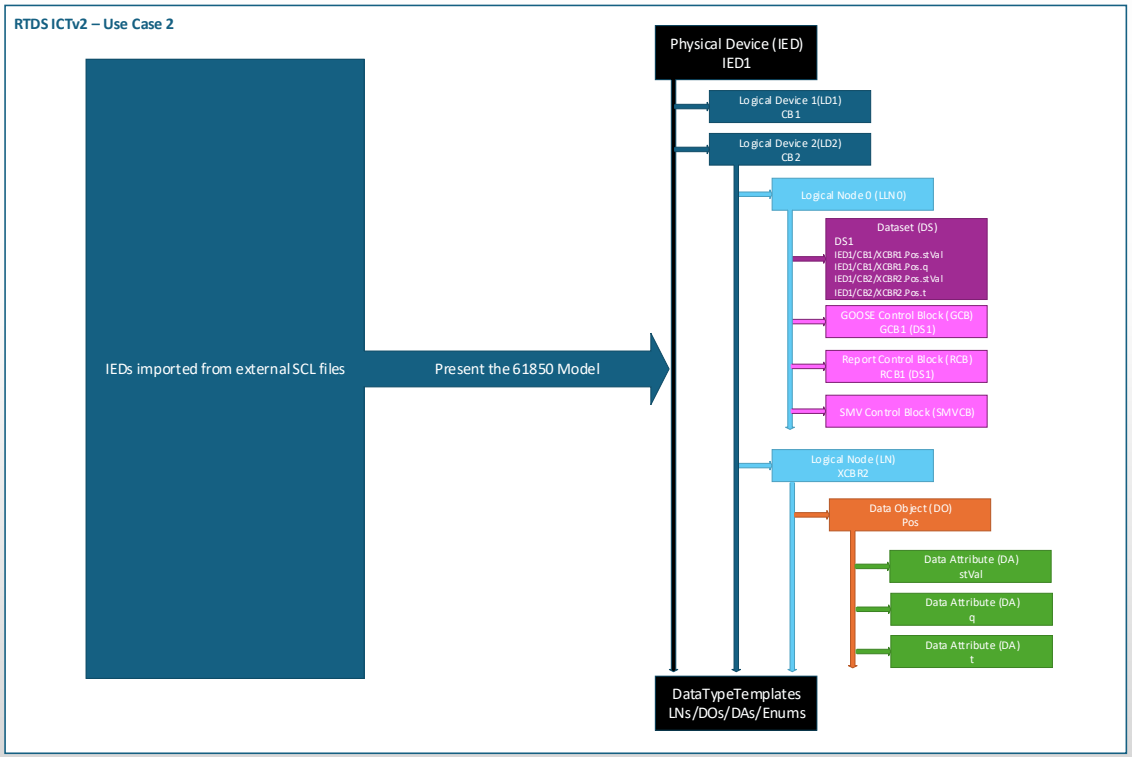
Overview - Use Case 1

Create an IEC 61850 data model from scratch using IEC 61850 standard data type templates within the tool



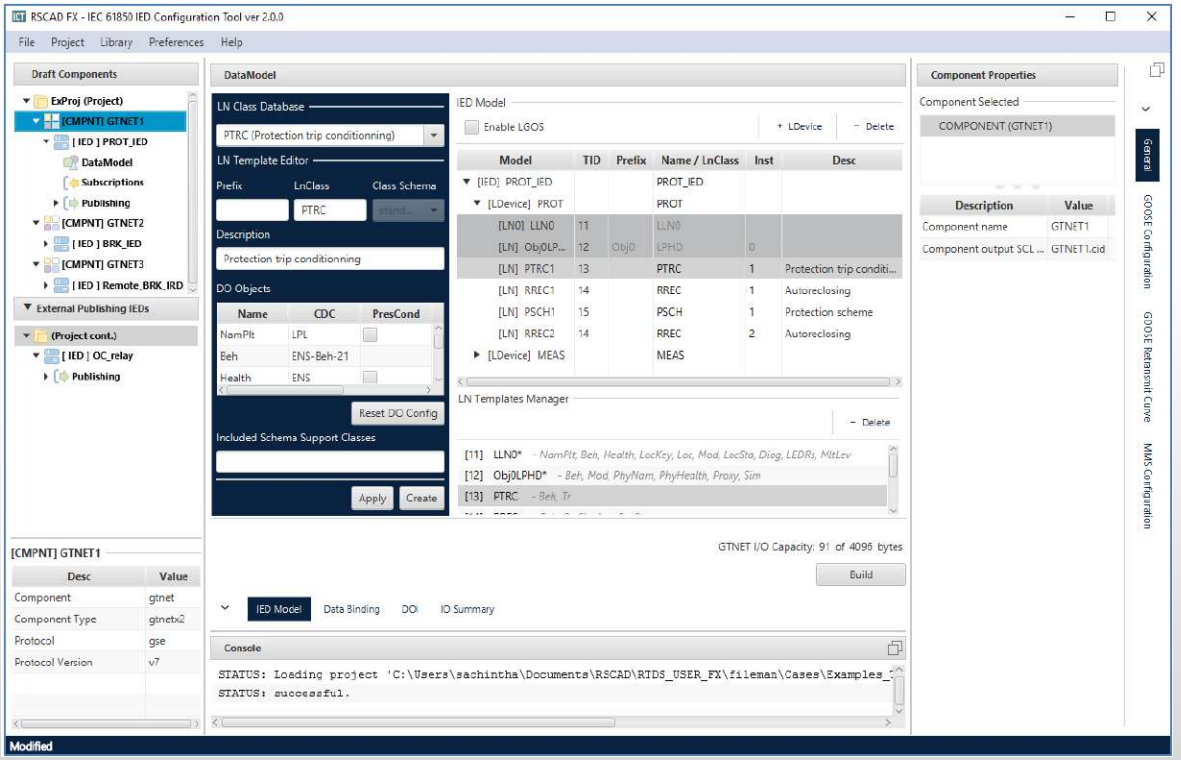
Overview - Use Case 2

Import a preconfigured SCL file to build and simulate the IEC 61850 IED data model defined in the file



ICTv1 Challenges

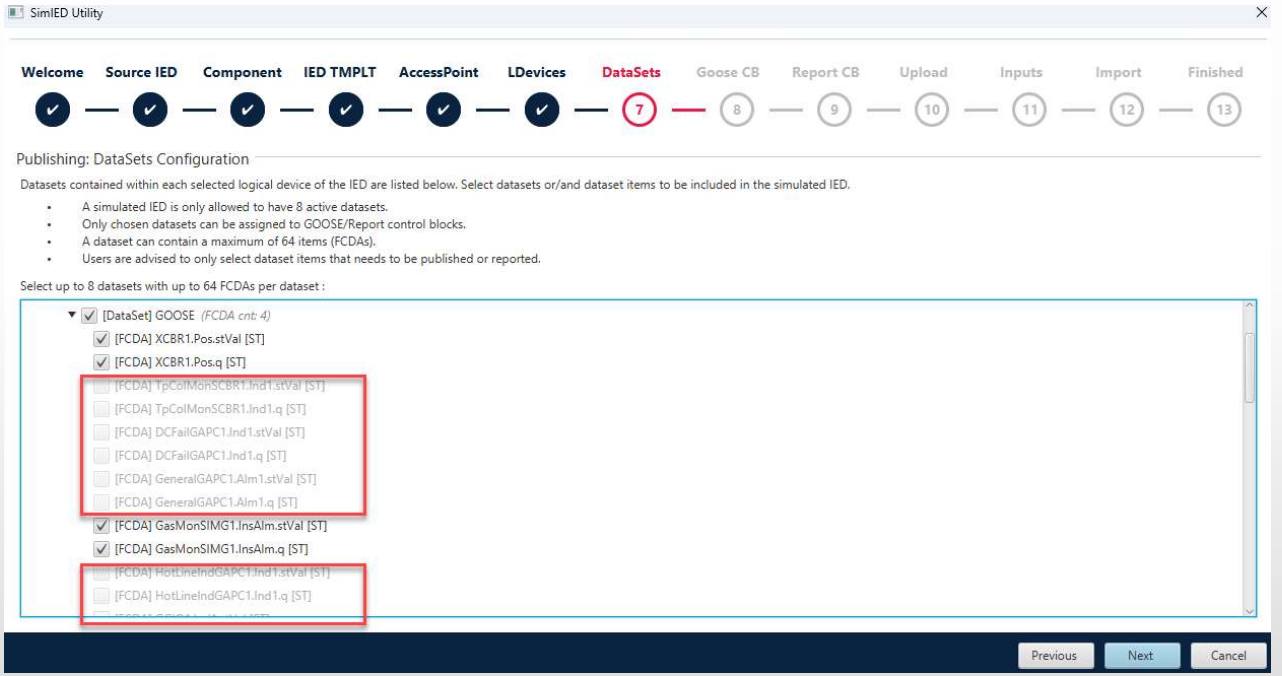
Excessive workflow complexity



ICTv1 Challenges

Limited Modeling Flexibility

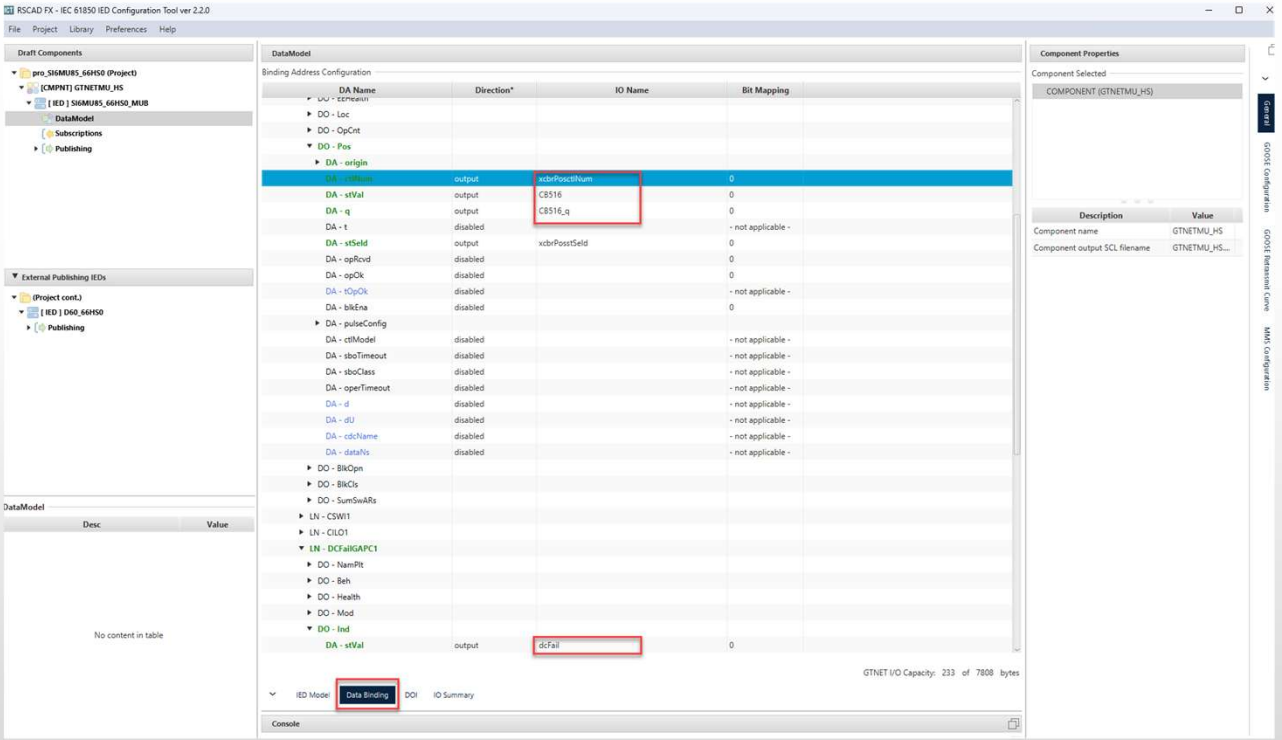
Vendor-specific Logical Nodes (LNs) and Data Objects (DOs) are not supported, limiting flexibility when modeling real-world IEDs



ICTv1 Challenges

I/O Naming and Mapping

RSCAD I/O names require configuration at multiple hierarchy levels, which increases setup complexity and the likelihood of mapping errors



ICTv1 Challenges

Scaling and Consistency

- As the size of a project grows, the configuration workflow in ICTv1 becomes increasingly difficult to scale.
- Repeating the same configuration patterns across multiple IEDs requires manual, error-prone duplication, making it hard to maintain consistency.
- As a result, inconsistencies are frequently discovered late in the project, leading to rework during integration or testing phases.

ICTv2 Objectives

- **Speed up IED configuration**, reducing engineering time and effort
- **Enable realistic utility-grade modeling** with support for vendor-specific IEC 61850 Logical Nodes and Data Objects
- **Improve interoperability and reuse** by supporting multiple SCL files within a single project
- **Reduce errors and improve consistency** through automated I/O naming
- **Increase productivity** with efficient bulk editing of I/O names
- **Minimize rework** with easy IED model comparison and fast configuration reloads
- **Enhance reliability and performance** through optimized CID file generation
- **Simplify project management and long-term support** by embedding ICT project files directly in the RSCAD RTFX file
- Deliver all enhancements without requiring firmware changes

IEC 61850

IED Configuration Tool v2

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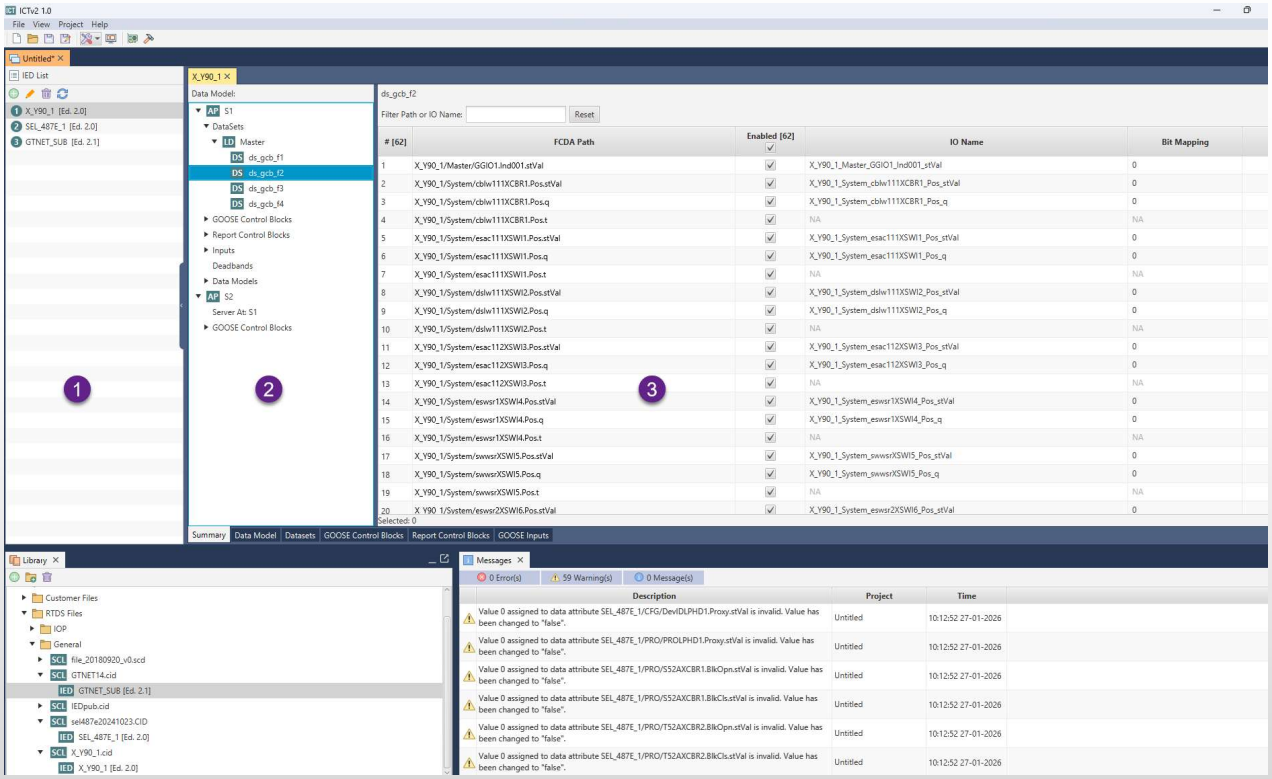
Your world in real time.

User Interface

Modular, task-focused user interface

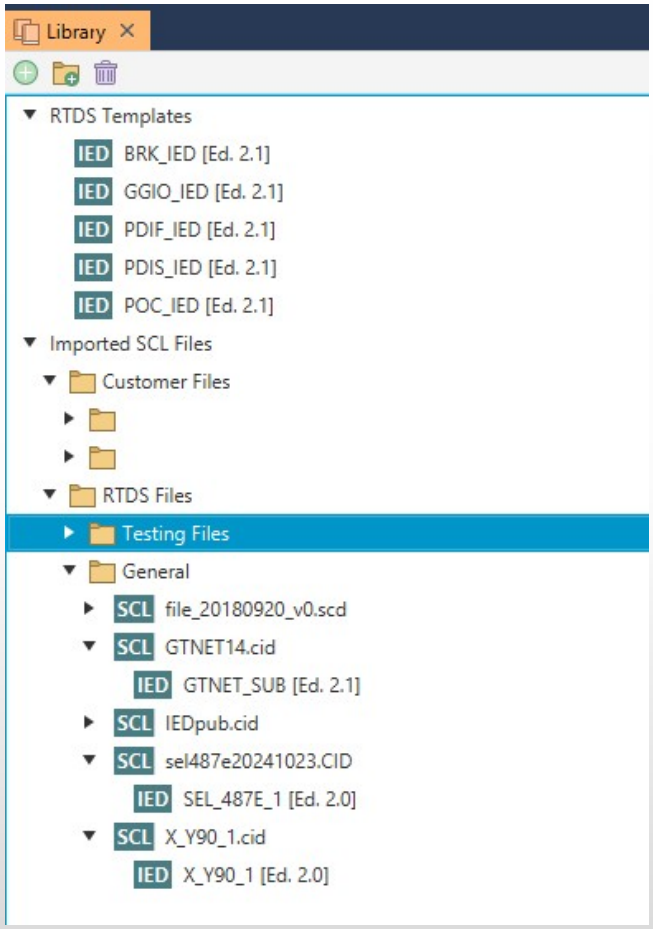
Fewer panels, clearer workflows, lower cognitive load



SCL Library

Scalable SCL library support

Multiple large SCL files, multi-IED projects



IED List

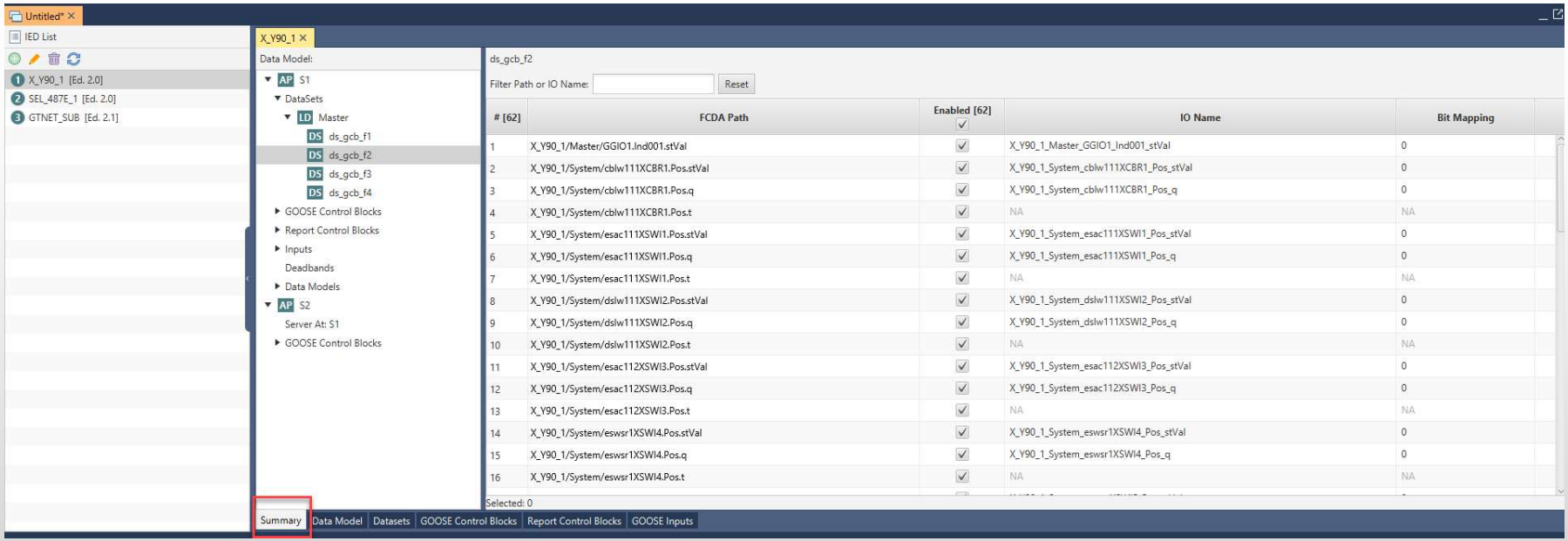
Centralized IED management

All project IEDs in one place

Summary Panel

Single-panel IED configuration

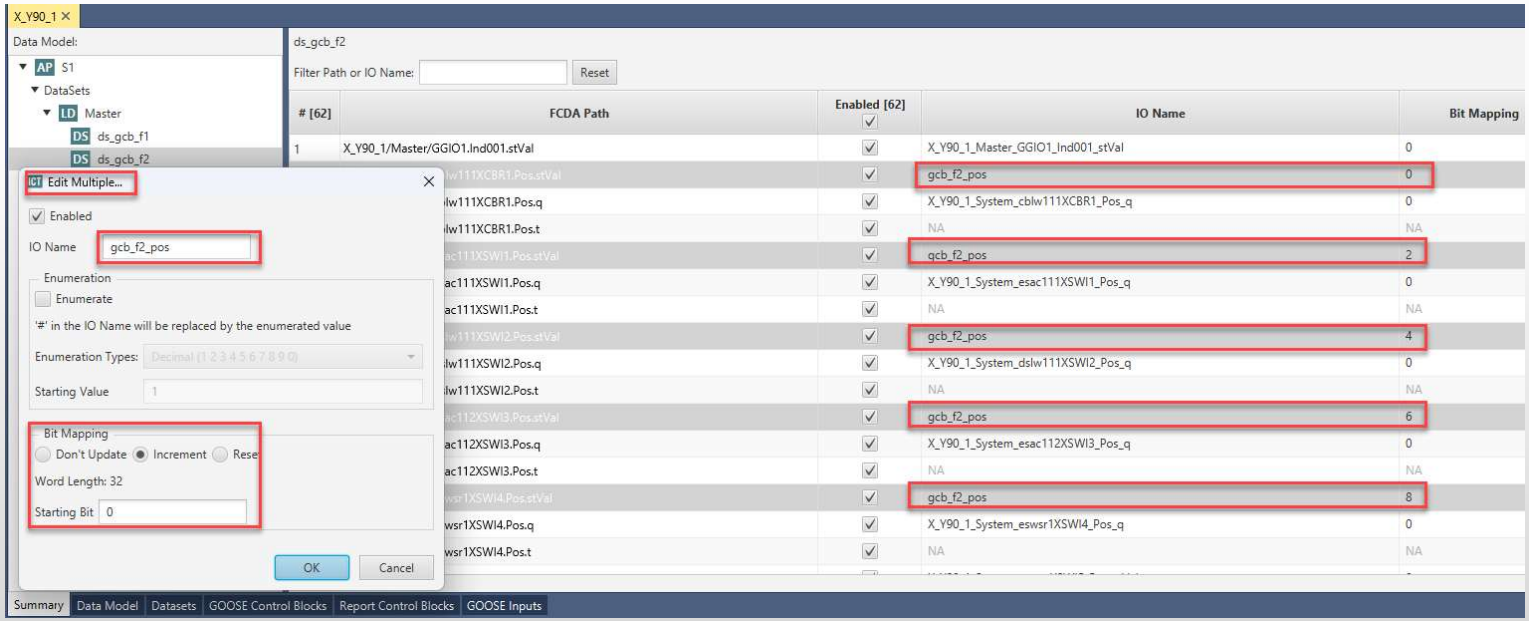
Datasets, control blocks, inputs, data model



Dataset-Level I/O

Dataset-level I/O configuration

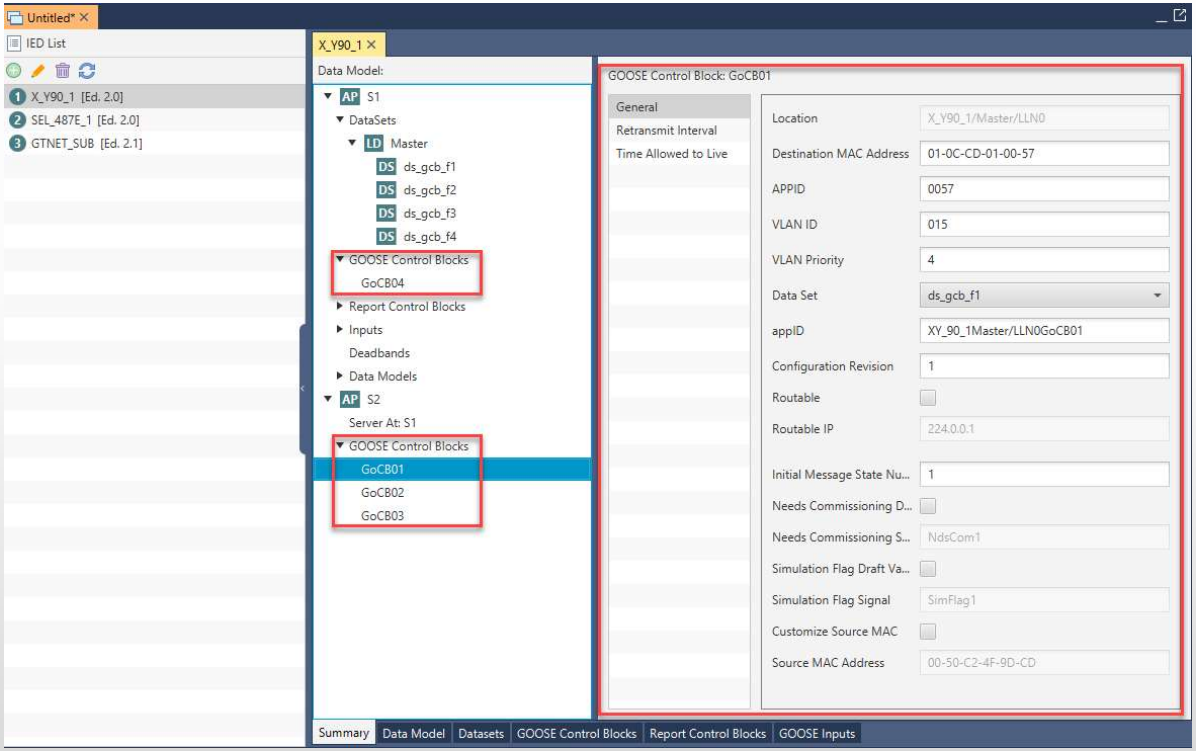
Automatic naming and bulk editing



GCB / RCB

Unified GOOSE and report configuration

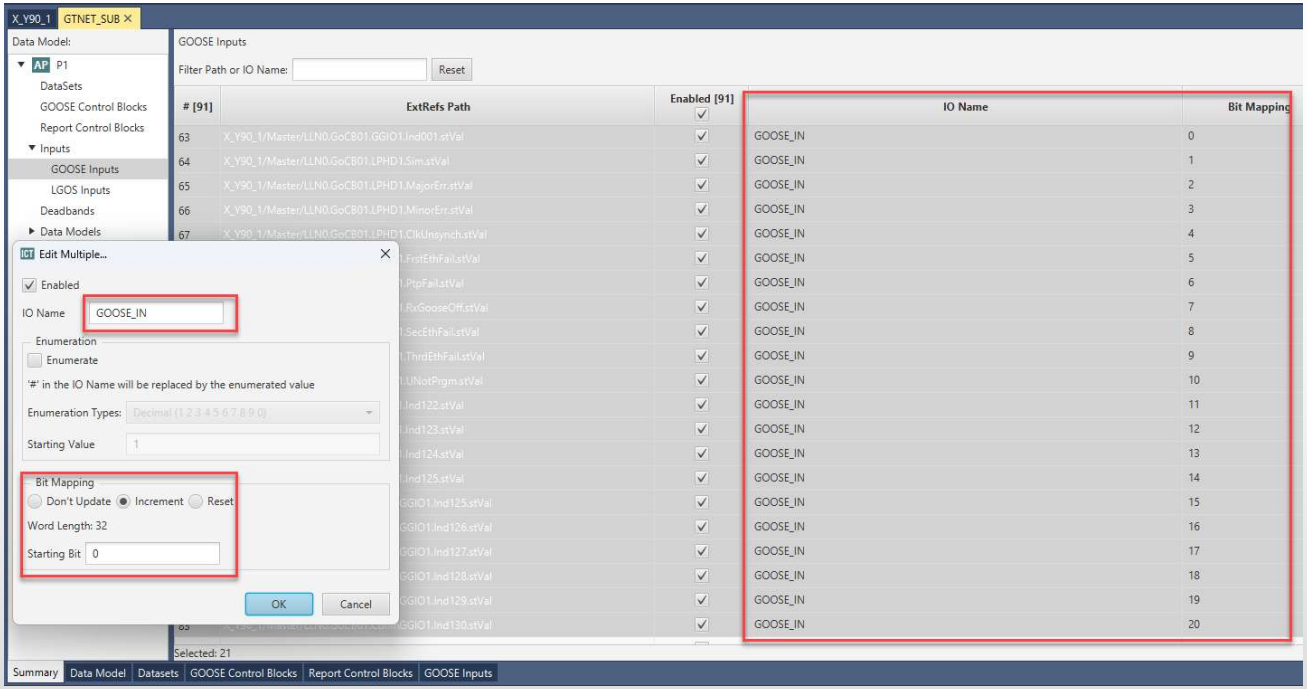
Communication and timing in one view



GOOSE Inputs

Efficient GOOSE input management

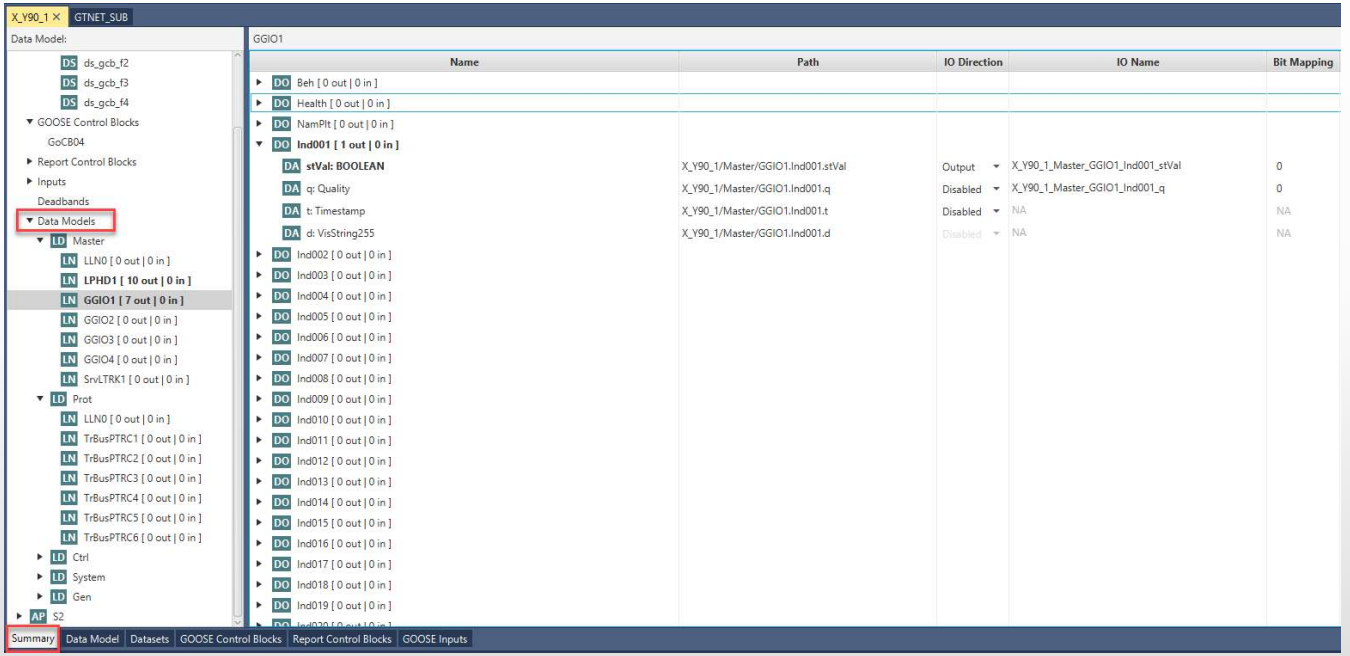
Automatic naming and batch edits



Data Model View

Complete IEC 61850 data model visibility

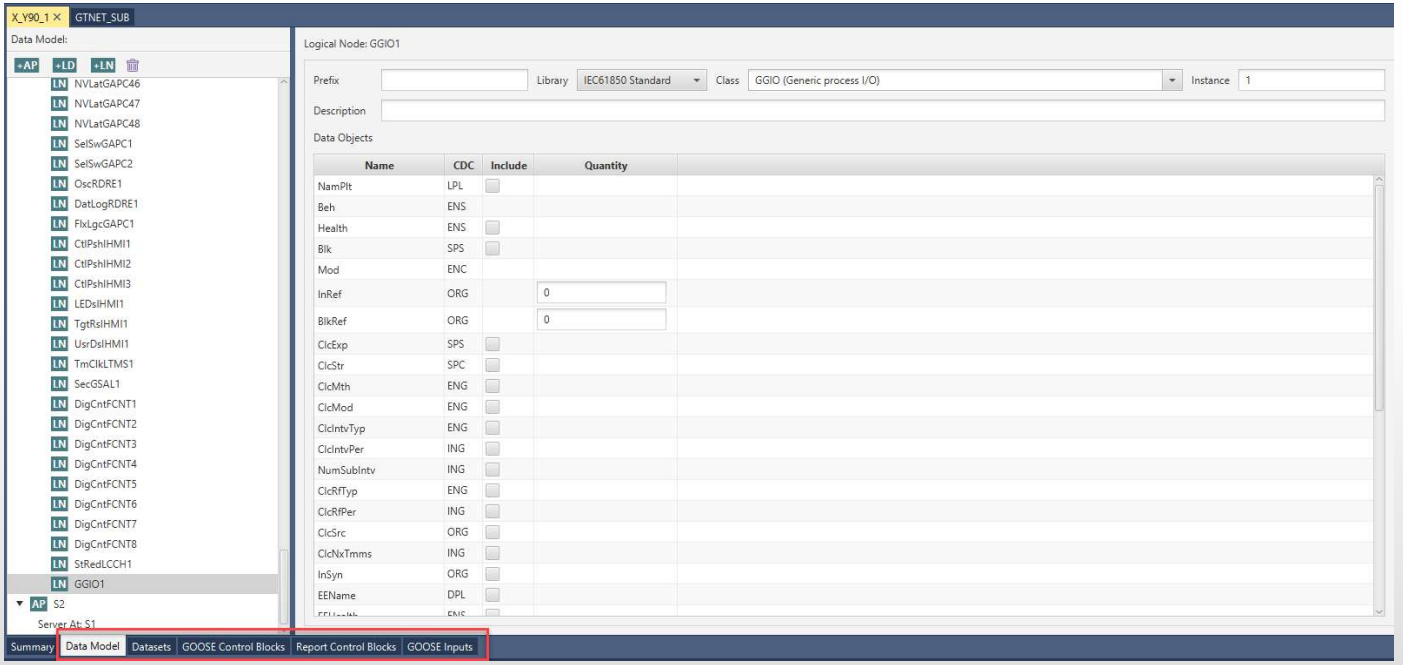
I/O naming synchronized across hierarchy



Function Panels

Detailed control when needed

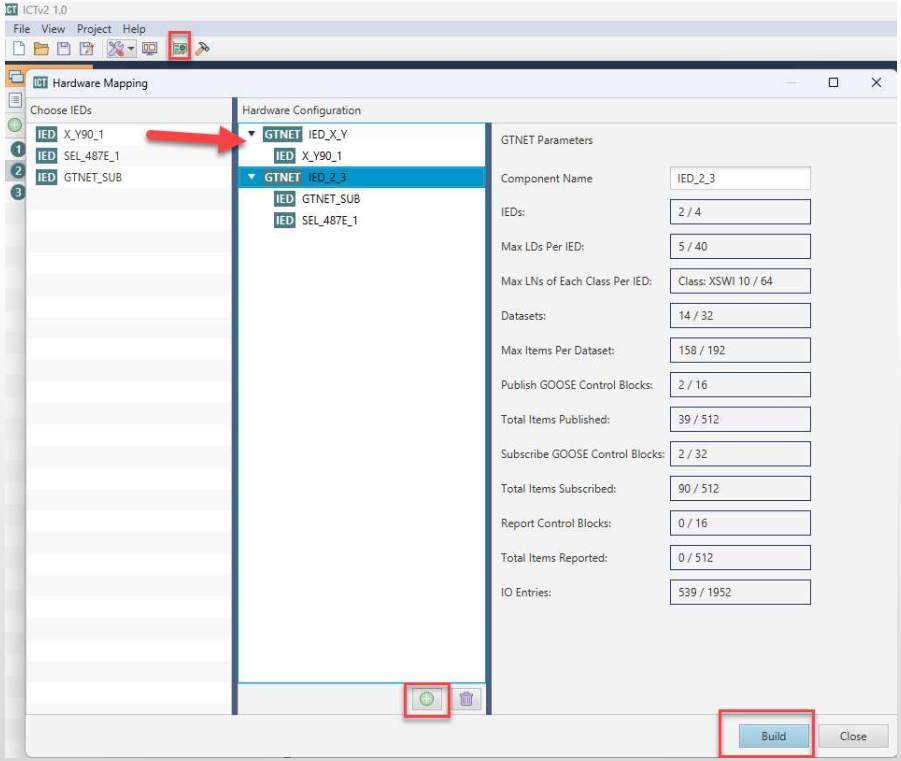
Advanced edits without cluttering the main workflow



Hardwire Mapping

Fast, intuitive GTNET mapping

Drag-and-drop with one-click build



Summary

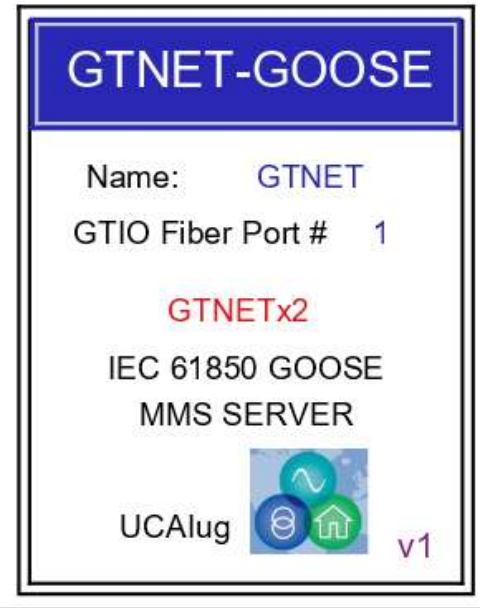
ICTv2 simplifies large-scale IEC 61850 engineering

Faster setup, fewer errors, predictable workflows

Minimum Requirements

RSCAD FX 2.7

- GTNETx2-GOOSE-v1 RSCAD Component
- GTNETx2-GOOSE-v1 firmware
  gtnet-goose_v1.11.bin
- NovaCor 1.0
  WIF version 5.145 Build 7
  RTFPGA version 0367b
- NovaCor 2.0
  WIF version 6.145 Build 7
  RTFPGA version 0423b



Thank You!

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