Introduction to the GGIO Logical Node

Careful readers may notice that the telemetering, telesignalling, telecontrol, and setpoint examples we provide all use the GGIO logical node type. In fact, if you have special requirements, you can try other logical node types as well. We use GGIO here because GGIO (Generic Process I/O) is a generic logical node in IEC 61850. It is used to describe input/output signals that are not covered by standard LNs, including vendor-defined or general signals. When certain field measurements, binary statuses, or remote control commands do not have a corresponding standard LN, they can be hosted under GGIO.

📖 **Common use cases:**

Application type	Function	Examples
Telesignalling	Acquire binary status (On/Off)	GGIO1.Ind1, GGIO1.Ind2
Telemetering	Acquire analog values (voltage, current, temperature)	GGIO1.AnIn1, GGIO1.AnIn2
Telecontrol (Setpoint)	Remote control commands, setpoint adjustment	GGIO1.SPCSO1, GGIO1.AnOut1

📌 **Relationship between GGIO and telesignalling, telemetering, setpoint**

Concept	Definition	Representation in IEC 61850	Common GGIO mapping
Telesignalling	Remotely acquired **binary status**	DO of type Ind (Indication)	GGIO1.Ind1.stVal
Telemetering	Remotely acquired **analog value**	DO of type AnIn (Analog Input)	GGIO1.AnIn1.mag.f
Setpoint (Control)	Remotely issued **command or setpoint**	DO of type SPC (Single Point Control) or AnOut	GGIO1.SPCSO1, GGIO1.AnOut1

📌 **Pros and cons of GGIO**

Advantages	Disadvantages
Flexible; can host virtually any signal	Ambiguous semantics; requires additional documentation
Facilitates compatibility and extensibility	Not ideal for multi-vendor interoperability and auto-modeling
Suitable for special/small/temporary devices	Not conducive to consistent project-wide specifications

📌 **Summary**

- Telesignalling, telemetering, and setpoint are essentially different data types and operation modes of a device.
- In IEC 61850, always prefer standard LNs; use GGIO only when standards do not cover the need.
- GGIO acts as a generic signal container, corresponding to data objects such as Ind (telesignalling), AnIn (telemetering), and SPC/AnOut (setpoint/control).