

## 01 / INSTRUMENT DATA QA

# Instrumentation Document Review

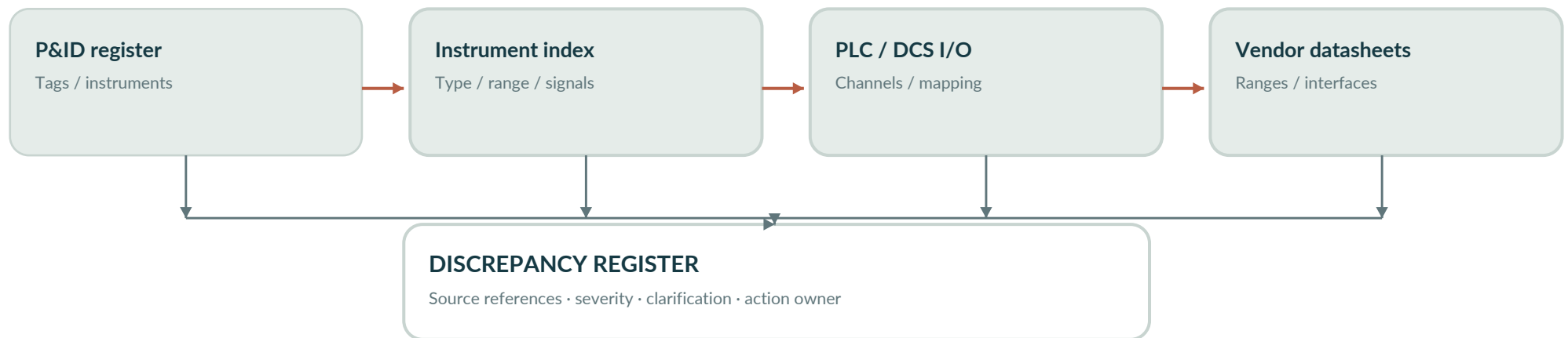
Reconciliation example across P&ID, Instrument Index, I/O List and vendor data

Simulated input set

9 sample instrument tags

6 deliberate discrepancies

## RECONCILIATION WORKFLOW



Self-developed synthetic test case with deliberately inconsistent records. All tags, ranges and source registers are invented for demonstration. No real plant data or vendor documents have been reviewed.

02 / SOURCE RECONCILIATION

# Sample tag reconciliation

Example input comparison; mismatches are intentional and are resolved by the responsible project team.

| TAG     | P&ID EXTRACT         | INSTRUMENT INDEX         | I/O EXTRACT          | RESULT     |
|---------|----------------------|--------------------------|----------------------|------------|
| PT-101  | 0–10 barg / pressure | 0–16 barg                | AI-001 / 4–20 mA     | Mismatch   |
| LT-102  | Radar level          | Ultrasonic level         | AI-002 / 4–20 mA     | Mismatch   |
| FT-103  | Flow measurement     | Listed in index          | Missing from I/O     | Missing    |
| XV-104  | On/off valve         | Actuated valve           | DO-004 only          | Clarify    |
| AIT-105 | pH measurement       | Range TBD                | AI-005 / 4–20 mA     | Incomplete |
| TI-106  | Local indication     | Local indicator          | No remote I/O needed | Aligned    |
| LS-107  | Low-level switch     | Discrete switch          | DI-006 / dry contact | Aligned    |
| PT-108  | 0–6 barg / pressure  | 0–6 barg / 4–20 mA       | AI-008 / 0–10 V      | Mismatch   |
| PSH-109 | Pressure switch high | Discrete pressure switch | DI-009 / dry contact | Aligned    |

For real work, each discrepancy is tied to document number, revision and source location. "Aligned" only means no discrepancy found in this simplified example; it is not an engineering validation of the instrument.

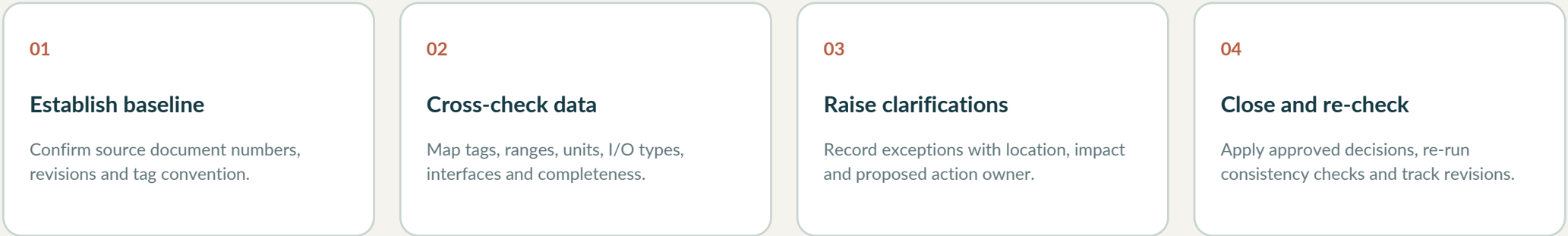
# Exception & clarification register

Proposed actions are engineering questions, not unilateral design changes.

| REF    | TAG     | SEVERITY* | OBSERVATION                             | REQUESTED ACTION                               |
|--------|---------|-----------|-----------------------------------------|------------------------------------------------|
| TQ-001 | PT-101  | MAJOR     | P&ID / Index pressure span mismatch     | Confirm design range and transmitter sizing    |
| TQ-002 | LT-102  | MAJOR     | Radar vs ultrasonic technology mismatch | Confirm measurement principle with process     |
| TQ-003 | FT-103  | MAJOR     | No corresponding I/O channel found      | Confirm required signal and channel assignment |
| TQ-004 | XV-104  | MINOR     | No end-position feedback in I/O list    | Check control philosophy and need for feedback |
| TQ-005 | AIT-105 | MINOR     | Missing instrument measuring range      | Request vendor/process range and units         |

\* Severity is indicative. Real priority is assigned against client risk criteria and design phase. All six entries remain OPEN / pending clarification; the author has not changed source engineering decisions.

# Review method & handover



## TYPICAL SUBCONTRACT DELIVERABLES

|             |                                                   |
|-------------|---------------------------------------------------|
| QC-REG-001  | Document reconciliation register (XLSX / PDF)     |
| TQ-REG-001  | Technical query / exception register (XLSX)       |
| TAG-MAP-001 | Tag mapping / instrument I/O change matrix (XLSX) |
| DCR-001     | Document revision and close-out summary (PDF)     |

Boundary: document-data QA does not replace process calculations, SIL assessment, instrument sizing, metrological verification or the approval responsibilities of the EPC, OEM or operator.