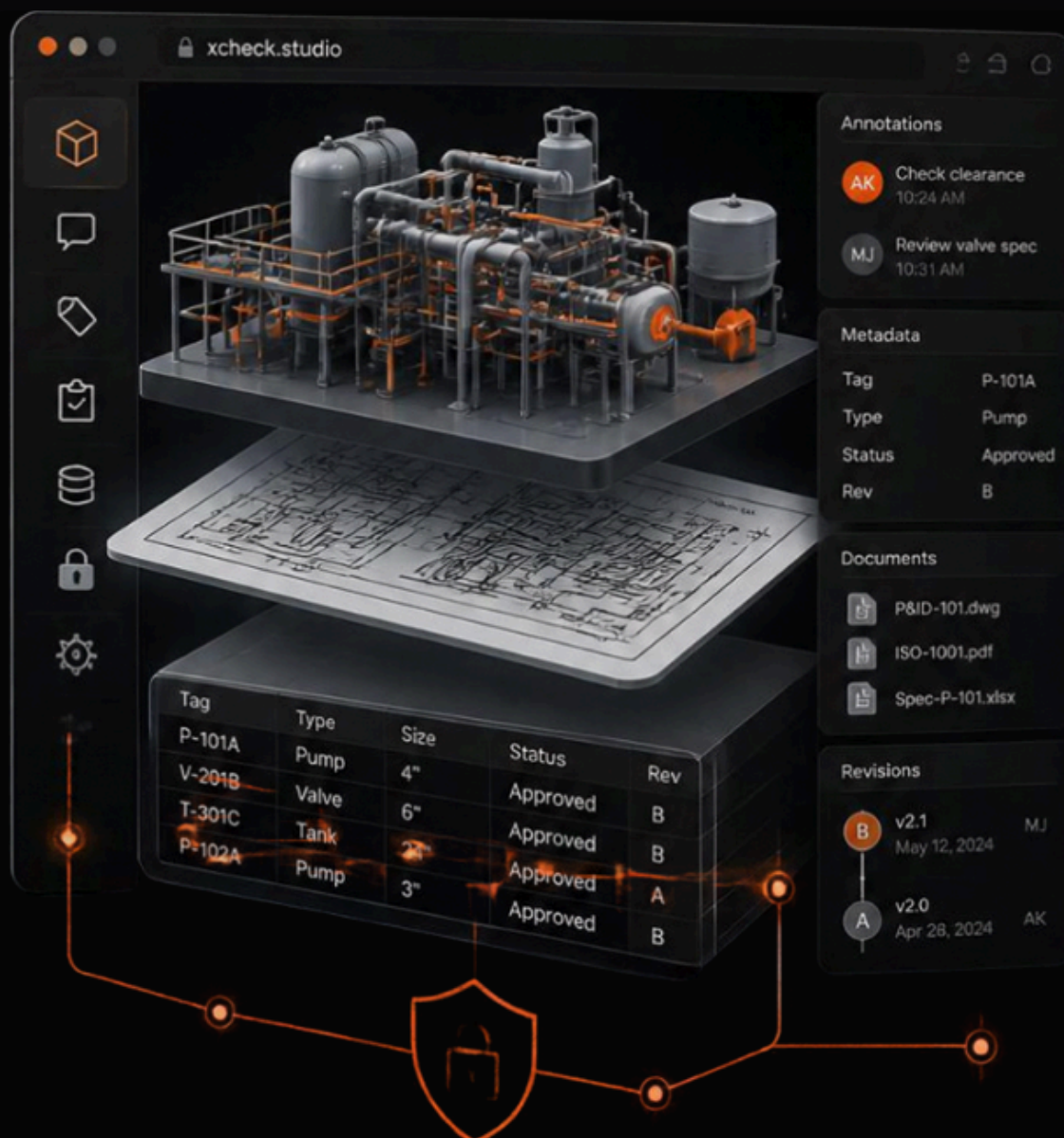


— ENGINEERING INFORMATION MANAGEMENT

The inherited **noise**: dealing with engineering data when a project changes hands

A sample scenario every Owner Operator should plan for — and how to turn a fragmented information estate into a single, verified engineering baseline.





One of engineering's core purposes is to make available concise, complete and unambiguous documentation to design, manufacturing, construction, operations and maintenance.

— adapted from **Joe Brouwer** (Technet), from his Boeing days

01 · THE SCENARIO

A project inherited mid-flight

Picture a capital project — greenfield or brownfield — where the EPC contract ends partway through construction. It can happen for many reasons: termination for convenience, contractor default, a commercial dispute, insolvency. Whatever the cause, the Owner Operator is left holding the project.

By the time construction is underway, a great deal of detailed engineering already exists. Much of the design should have reached **Issued for Construction (IFC)** or **Approved for Construction (AFC)** status. So the Owner inherits a *significant* body of engineering information — not a blank sheet.

That sounds like an advantage. The catch is subtle, and it is the whole point of this piece: **inheriting the information is not the same as inheriting a trustworthy record of the facility.**

02 · WHY IT ISN'T A CLEAN HANDOVER

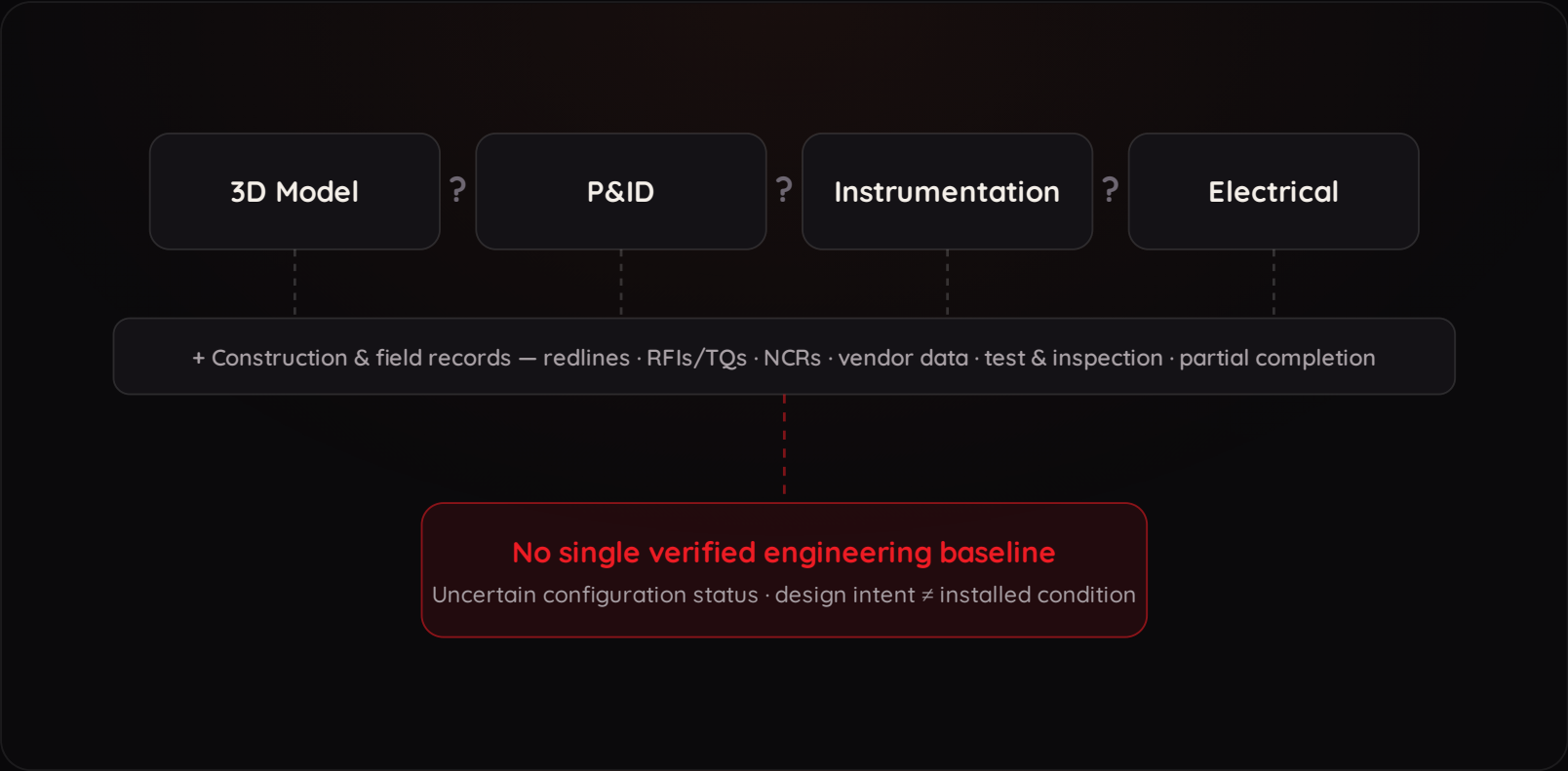
Intelligent databases — but never an integrated environment

On a project like this, each discipline is authored in its own intelligent system — a 3D model tool, a P&ID system, an instrumentation tool, an electrical tool. Each database is clever *within its own discipline*. But they were operated as separate islands, not as one connected engineering information environment.

That means the relationships, revisions and configuration status *between* systems were never continuously reconciled. The 3D model, the P&ID and the instrument index can each be internally

consistent and still disagree with one another.

Construction then adds a second, messier stream of information: field changes, fabrication changes, vendor updates, redlines, site instructions, RFIs and technical queries, inspection records, test packs and partial-completion records. Some of it was fed back into the native engineering databases. Much of it lives only in drawings, spreadsheets, contractor systems and site records.



The inherited estate: intelligent discipline systems and a second stream of construction records — valuable, but never reconciled into one baseline.

THE CORE PROBLEM, IN ONE SENTENCE

The Owner Operator has inherited multiple intelligent engineering databases and construction records, but does not yet have a single, reconciled and verified engineering information baseline that proves **what was designed, what was approved for construction, what was actually installed, and what remains to be completed.**

03 · THE INFORMATION CONDITION

Highly valuable, but of uncertain configuration status

What the Owner actually holds is a mixture: approved design intent, construction work-in-progress, partially incorporated field modifications, and incomplete as-built information — all blended together with no clear marker of which is which.

Until that estate is **captured, frozen, audited, reconciled and verified**, there is no dependable engineering baseline to safely support the completion of construction, commissioning, start-up and eventual operations. These eight issues are where it most often bites:

4.1

No single authoritative baseline

Disciplines were authored independently, so the same tag, line, instrument or cable can carry different attributes, revisions or approved configuration across systems.

4.2

Design intent ≠ installed condition

Once construction starts, reality diverges from the approved design through field changes and substitutions that were never back-populated into the native databases.

4.3

Revision & configuration uncertainty

The native database, the issued PDF, the site copy and the construction redline can each represent a different revision — and a redline doesn't prove the change was accepted.

4.4

Fragmented construction feedback

RFIs, TQs, NCRs, redlines, inspection results, work packs and test packs are scattered across document systems, contractor folders, spreadsheets and physical records.

4.5

Incomplete vendor data

Final certified drawings, data sheets, manuals, spare-parts and serial numbers often mature late — leaving doubt over which vendor data matches the equipment actually installed.

4.6

Partial completion & commissioning readiness

Some systems are mechanically complete, some still under construction, some not yet released for pre-commissioning. Maturity varies by system and area.

4.7

Loss of EPC knowledge & context

A termination interrupts the normal transfer of design rationale, open decisions, assumptions and in-progress knowledge. Context that isn't captured is quickly lost.

4.8

Uncertain data ownership & recoverability

Access to native databases, project schemas, catalogues and configurations may be unclear. Receiving flat PDFs alone would badly reduce the long-term value of the asset.

04 · A MENTAL MODEL THAT HELPS

Engineering information status is a spectrum, not a switch

The instinct is to sort everything into "complete" or "incomplete". In reality, at termination, objects and documents sit simultaneously across several configuration states. Being explicit about the state of every item is half the battle.

● Approved design	Engineering formally reviewed and approved.
● IFC / AFC	Issued or approved for construction — the design intent released to site.
● Construction WIP	Still being developed or changed when the contract ended.
● Installed	Physically installed, but not yet reconciled against the intelligent model.
● Field modified	Installed configuration differs from the issued design.
● Redlined	A change was recorded in the field but may not be incorporated in the native source.
● As-built pending	Construction substantially complete, engineering source not yet updated or verified.
● Verified as-built	Reconciled against the accepted installed condition.
● Commissioned	Tested, functionally accepted and released per commissioning requirements.

05 · WHAT'S AT STAKE

Why this is a risk register, not a filing problem

Use the inherited information without recovery and reconciliation, and the exposure runs straight through the project and into operations:

Construction continuity A successor contractor works from an incomplete baseline — duplicate work, rework, unsafe assumptions.

Commissioning & start-up Loop checks, energisation and functional testing depend on reliable tag, connectivity and configuration data.

Process safety Incorrect P&IDs, instrument data or equipment relationships undermine hazard controls, isolation planning and operating discipline.

Cost & schedule Poor information quality drives field verification, re-engineering, change management and contractor claims.

Asset handover Operations inherit document packages without a trusted digital asset baseline.

Maintenance & integrity CMMS, EAM, RBI, inspection and spare-parts processes seed from incomplete or inconsistent master data.

Regulatory assurance Hard to demonstrate traceability between approved design, installed condition, testing and final acceptance.

Digital twin / AIM Future asset-information and digital-twin initiatives are constrained without identifiers, relationships and source authority.

The Owner has a lot — just not the one thing that matters

✓ WHAT THE OWNER LIKELY HAS

- ◆ Intelligent 3D, P&ID, instrumentation and electrical data
- ◆ IFC / AFC drawings and documents
- ◆ Vendor information, construction records and redlines
- ◆ Inspection and test records; partial completion data
- ◆ Valuable engineering history and structured object data

◆ WHAT THE OWNER DOES NOT YET HAVE

- ◆ A proven, cross-discipline source of truth
- ◆ A fully reconciled revision / configuration baseline
- ◆ A complete, auditable design-to-field change record
- ◆ Verified correspondence between master data and installed condition
- ◆ Complete as-built & commissioning-ready asset information
- ◆ A trusted operational handover baseline

The inherited engineering information is substantial and potentially high-value — but it is fragmented, uneven in maturity, and not yet demonstrably aligned with the physical plant. The central challenge is **information assurance and configuration control**, not simply document collection.

The outcome to aim for: a governed information baseline

The problem is only "under control" when the Owner can establish a governed baseline that supports safe project continuation and eventual operations. Concretely, that means being able to:

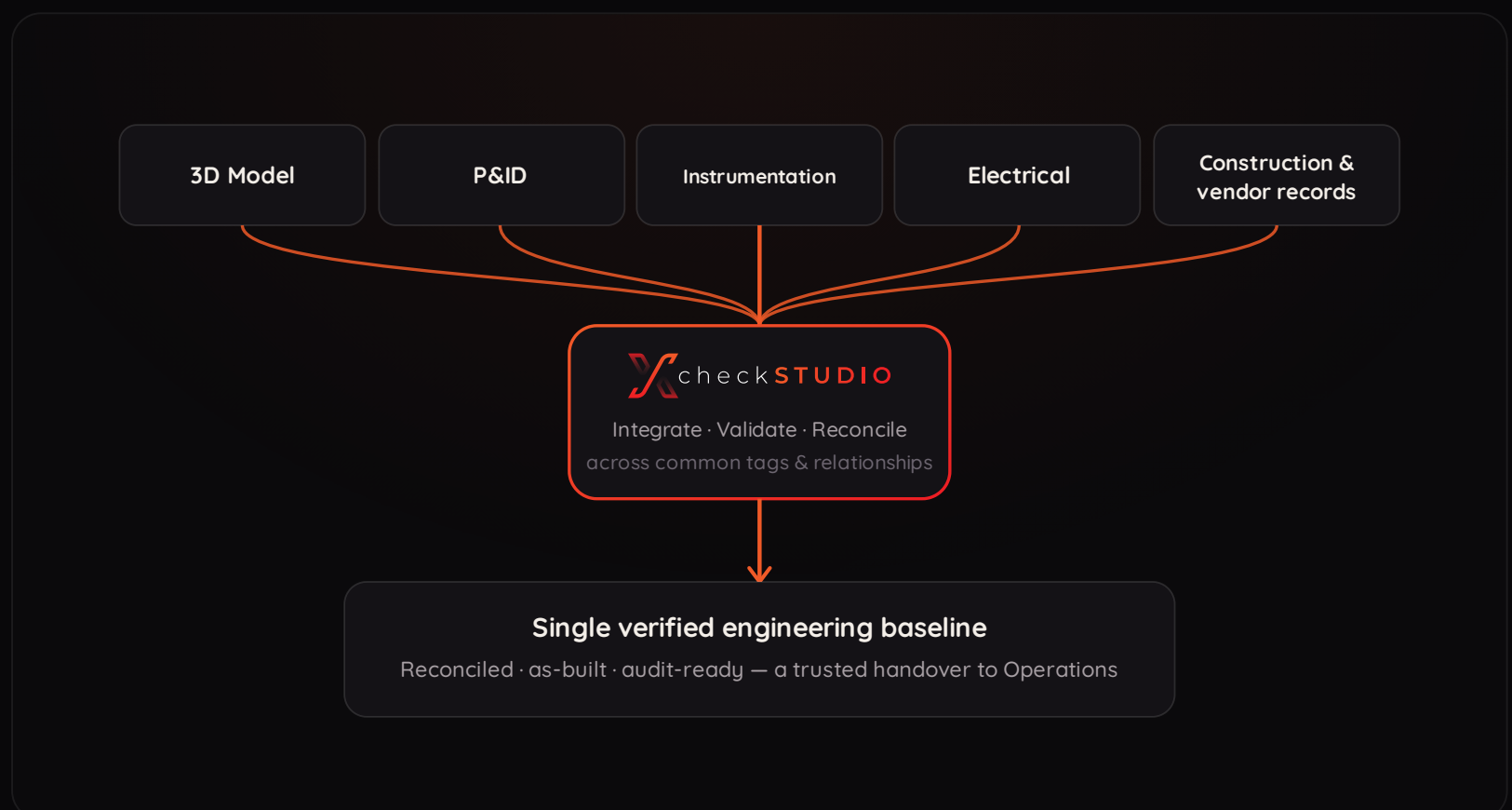
- ◆ Preserve and recover all native engineering sources and their **configuration metadata** — not just flat exports.
- ◆ Identify the **authoritative revision and status** of each key engineering object and document.

- ◆ Reconcile **3D models, P&ID, instrumentation and electrical** information across common tags and relationships.
- ◆ Capture and disposition construction changes — redlines, RFIs/TQs and vendor updates — against the right objects.
- ◆ Relate engineering information to **physical completion and commissioning status**.
- ◆ Surface **gaps, conflicts and items requiring field verification** — before they become field surprises.
- ◆ Progressively convert the inherited project information into a **verified as-built baseline**, and hand Operations trusted, structured information rather than a disconnected pile of documents.

08 · HOW XCHECKSTUDIO CLOSES THE GAP

From a fragmented estate to a single source of clarity

That required outcome is, almost line for line, what **XcheckStudio** is built to deliver. Rather than forcing every discipline into one authoring tool, it sits *across* them — ingesting the 3D models, P&IDs, instrumentation and electrical data alongside the construction and vendor records, and relating everything through common tags and relationships.



XcheckStudio integrates discipline data across common tags and relationships to build one verified, auditable baseline.

◆ INTEGRATE

Loads and connects the intelligent discipline datasets plus construction and vendor records into one environment — **without replacing** the native authoring tools.

◆ VALIDATE

Runs **comparison and compliance checks** across disciplines to expose where the 3D model, P&ID, instrument index and electrical data disagree — the mismatches that would otherwise surface on site.

◆ RECONCILE

Threads information to a single digital representation of each asset, making revision and **configuration status** explicit and traceable across systems.

◆ GOVERN & HAND OVER

Captures and dispositions change, flags gaps and field-verification items, and progressively promotes the estate into a **verified as-built baseline** Operations can trust.

Access & Interact

See all discipline data together — 3D, P&ID, instrumentation, electrical, documents.

Validate & Analyse

Comparison, compliance and configurable industry checks that prove consistency.

Share & Collaborate

One governed baseline for the whole team through continuation, commissioning and operations.

Turn an inherited estate into a trusted baseline

For an Owner Operator recovering a project mid-stream, the difference between a pile of documents and a verified engineering baseline is the difference between risk and readiness. That is exactly the gap XcheckStudio was built to close.

XcheckStudio — Your Single Source of Clarity.