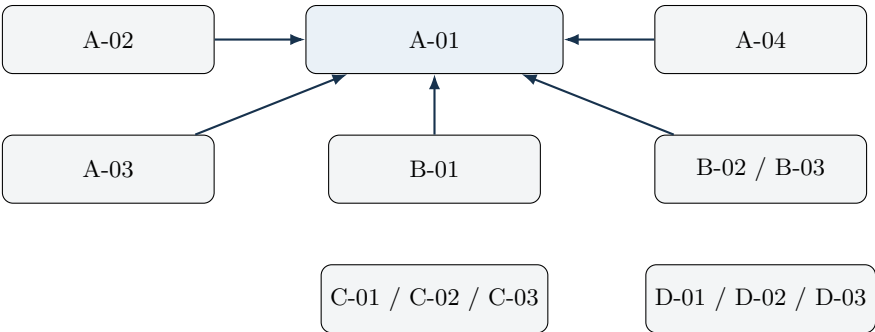

BDXT Engineering Portfolio

Public Sanitised Technical Disclosure

Coded engineering systems, chronology, portfolio boundaries and public evidentiary record



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EDITABLE WORD MASTER - make textual edits here, then return it for LaTeX/PDF regeneration

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Revision note

This contents page is intentionally static and editable. The final LaTeX table of contents will be regenerated after your edits.

Publication

This is the public edition of a larger controlled Intellectual property record. Its purpose is to document, in a citable form, the existence, broad purpose, system boundaries, maturity and development chronology of the coded engineering portfolio as at 5 September 2026.

Implementation boundary. This public edition intentionally omits implementation details, algorithms, equations, calibration methods, hardware selections, source code, private system interfaces, security implementation, validation thresholds, private source records and records. Those details remain in controlled records.

Background-work evidentiary purpose. The publication is intended to provide public evidence that the systems and broad development directions described here existed by the stated dates. It does not determine legal ownership, entitlement, inventor-ship, patentability or the effect of any employment or commercial contract. Those questions depend on the applicable facts and legal instruments.

Public release can affect patent, novelty, and trade-secret treatment. The author should make any patent/contract decisions with appropriate advice before publication if those rights matter.

Abstract

This document records a connected portfolio of drilling, field-evidence, diagnostic, tagging, alignment, sensing, survey, decision-support, exploration-governance and adjacent engineering systems. The portfolio is organised under codes A-01 through D-03. The public disclosure focuses on problems addressed, functional boundaries, integration relationships, evidence doctrine, maturity and chronology. Detailed working methods are intentionally withheld.

1 Disclosure.

1.1 What this document establishes

This document establishes that, by the dates recorded in the chronology section, the author-controlled programme includes the following broad propositions:

- a shared field identity and evidence spine for drilling operations;
- component, and system-based diagnostic reasoning linked to maintenance evidence;
- quality-gated field alignment and positioning records;
- physical tag workflows linked to safety and field evidence;
- machine-state acoustic evidence collection with human-reviewed labels;
- compact downhole sensing, logging, and non-magnetic trajectory research;
- calibrated operator decision support for drilling controls;
- evidence-governed exploration decision packs, and public-data activity intelligence;
- adjacent system leak-detection, competency-evidence and electrical-field research directions.

1.2 Not disclosed.

The public document does not disclose the private implementation knowledge needed to reproduce the systems. In particular it does not disclose:

- exact hardware components, dimensions, circuits, wiring, sampling rates or sensor placement;
- geometry reduction methods, calibration mathematics or movement calculations;
- signal-processing feature definitions, classifier features or scoring formulae;
- downhole sensor arrangement, telemetry topology or electrode/transmitter design;
- Rod-string, or hydraulic equations or operational calibration worksheets;
- internal persistence, retry, conflict, idempotency or API response mechanics;

- public-resolver trust or security implementation or lists of unfinished security controls;
- database schema, object identifiers, source-code structure or private archive names;
- repair ontologies detailed enough to recreate the internal knowledge model;
- customer, employer, mine-site or third-party confidential records.

2 System architecture

The portfolio is designed as connected systems rather than isolated applications. A-01 is the common field evidence and identity spine. Other systems may operate independently during development, but integration is intended to preserve shared context, provenance, review state and auditable evidence without creating parallel authoritative truth stores.

Editable public relationship summary. A-03 and A-04 contribute physical field context to A-01; A-02 and B-01 contribute machine and component context; B-02 and B-03 contribute downhole context. A-01 acts as the shared identity and evidence spine between role-aware field workflowm, reports and research evidence. Detailed interfaces remain intentionally omitted.

A-02	A-01	A-04
A-03	B-01 C-01 / C-02 / C-03	B-02 / B-03 D-01 / D-02 / D-03

2.1 Common doctrine

Across the portfolio the public design doctrine is:

1. evidence before claim;
2. intermittent connectivity (offline) is a normal field condition;
3. shared context and stable identity across systems;
4. explicit distinction between observation, inference and authority;
5. human review where evidence is uncertain or safety-relevant;
6. conflicts and limitations are surfaced rather than silently hidden;
7. promoted engineering states are versioned and evidence-backed.

3 A-01

A-01 is the common field evidence and operations platform. It is intended to preserve drilling context across organisations, sites, equipment, holes, shifts, people, and evidence-generating activities so that important operational information can be captured, reviewed and reconstructed rather than disappearing into informal handover or isolated records.

3.1 Public capabilities

The public capability boundary includes role-aware field capture, safety and operational evidence, maintenance/fault records, inventory-related evidence, survey/alignment evidence, attachments, signatures, audit history, exports and operation during intermittent connectivity.

A-01 is designed so that locally captured evidence can survive interruption and later reconcile with authoritative state without creating duplicate authoritative records. Detailed local-storage, retry, conflict and server-reconciliation mechanics are intentionally withheld from this document.

3.2 Boundaries

Implemented software and field-client work exist. This publication does not claim completed hardening, regulatory certification or universal production readiness.

4 A-02

4.1 Public purpose

A-02 represents machinery and drill systems as structured diagnostic relationships rather than a flat list of faults or simple maintenance records or work orders. The public proposition is a diagnostic environment in which observed symptoms, candidate causes, tests, measurements, source-controlled technical knowledge and maintenance outcomes can be connected to stable component and equipment context.

4.2 Public capabilities

The system supports diagnostic paths, ranked possibilities, evidence-backed checks, local diagnostic history and a later component-centric extension that can associate approved technical information and repair history with physical components.

The public version does not disclose the detailed graph ontology, ranking implementation, repair-branch schema or internal source-extraction methods.

A ranked possibility is not a proven failure. Safety-critical values and repair limits require approved technical sources and human review.

5 A-03

5.1 Public information

A-03 is a field positioning and alignment system using multiple positioning observations, calibrated geometry, quality gating and auditable records to support initial alignment, repeat setup and hole re-entry guidance.

5.2 Public capabilities

Publicly disclosed features include quality-aware heading, alignment, calibration controls, repeatable setup records, fault and or quality logging and exportable alignment evidence.

The exact hardware selection, sensor-selection logic, calibration procedure, geometric reduction, tolerances and movement calculations are intentionally withheld.

5.3 Maturity of project

A working hardware/software candidate exists. No blanket survey-grade accuracy claim is made by this publication (other than current competing technology is below dog shit); repeatability and external-reference validation govern operational claims.

6 A-04

6.1 Purpose

A-04 links physical tags or machine-readable references to information, safety workflows and evidence capture. It is intended to support both controlled standalone use and later integration with A-01.

6.2 Public Capabilities

The public architecture includes read-only public context where appropriate, offline-capable field context, safety-document routing, isolation/LOTO evidence, signatures, attachments and later reconciliation of field evidence with an authoritative system.

Detailed encoding, trust, synchronisation and security implementation are intentionally withheld.

Possession of a tag is not equivalent to organisation membership or operational authorisation. Mutable safety/LOTO truth is not treated as public read-only page state.

7 B-01

7.1 Purpose

B-01 is a machine-state research system using vibrational observations and human-confirmed labels to build structured evidence of drilling sequence and operating states.

7.2 Public Capabilities

The programme includes multi-source sensing, derived evidence, time-linked human confirmation and a human-reviewed suggestion workflow in which inferred output remains subordinate to confirmed evidence.

Detailed sensing, processing, feature and model implementation are intentionally withheld.

The system is experimental. It is not publicly claimed to determine geology, bit condition or predictive failures automatically.

8 B-02

B-02 is a compact downhole sensing and data-logging platform intended to validate repeatable inertial acquisition, calibration, durable local recording, timing behaviour and recovery from interrupted operation.

The existence of a physical/electronic prototype and endurance/timing qualification work is disclosed. Detailed hardware, acquisition, storage and qualification methods are intentionally withheld.

No survey-grade north-seeking or downhole-survivability claim is made in this public edition.

9 B-03

9.1 Public purpose

B-03 investigates a non-magnetic downhole trajectory architecture combining gravity and inertial observations, uncertainty-aware trajectory propagation and an optional formation-coupled communications concept.

9.2 Public disclosure

The broad combination and research direction are disclosed. Detailed sensing, orientation, communications, processing and uncertainty implementation are intentionally withheld.

9.3 Project maturity

The system remains gated research. Measurement performance, survivability, communications performance and metrology must be experimentally established.

10 C-01

10.1 Public purpose

C-01 provides operator decision support around drilling controls and machine loading using rig-specific calibrated relationships and explicit limits rather than a universal fixed chart.

10.2 Public disclosure

The existence of calibrated control and loading relationships within an operator-facing decision-support workflow is disclosed. Equations, pressure and force conversions, rod BHA assumptions, calibration coefficients and operational decision rules are intentionally withheld.

The system is decision support, not autonomous control, and does not override OEM limits, site procedures or competent operator judgement.

11 C-02

11.1 Public purpose

C-02 is an evidence-governance system for exploration and technical decision packs. It is designed so conclusions remain traceable to versioned evidence, provenance, uncertainty and explicit review/gate state.

11.2 Public disclosure

The public proposition is version-controlled evidence packs with auditable provenance, uncertainty and review decisions. Registry schema, internal predicates, uncertainty coding, override mechanics and claims-projection algorithms are intentionally withheld.

12 C-03

C-03 investigates multi-temporal public-data analysis for transparent evidence of exploration activity or intent. It is deliberately distinct from resource estimation or deposit-probability prediction.

The system combines physical activity, temporal persistence, spatial organisation, contextual evidence and false-positive controls into human-reviewable analysis. Exact feature engineering, weights, scoring equations, thresholds and ranking logic are intentionally withheld.

12.1 Maturity

Any score or ranking is evidence of activity/intent only; it is not a compliant resource estimate or geological truth claim.

13 D-01

D-01 is a handheld diagnostic concept combining directional acoustic sensing with a pressure reference to help localise leaks and support empirical severity/decay assessment.

13.1 Public disclosure

The functional combination is disclosed. Detailed sensing, calibration, communications and severity-estimation implementation are intentionally withheld.

It is a diagnostic aid concept, not a certified pressure-safety or gas-detection instrument.

14 D-02

14.1 Purpose

D-02 defines a layered competency-evidence architecture separating general induction, site-specific requirements, task competency, supporting evidence, revision, expiry and renewal.

The architecture can structure evidence but does not itself confer statutory, employer or site competency. Site-controlled content remains externally governed.

15 D-03

D-03 preserves a research direction investigating whether drilling-coupled electrical-field observations could provide a coarse independent constraint or geological/electrical context.

The public document records only the research direction. Detailed sensing, acquisition, modelling and interpretation methods are intentionally withheld.

No validated localisation or trajectory performance is claimed. Established electrical/resistivity/IP/EM methods remain prior art or third-party methods.

16 Cross-system public integration principles

The public portfolio integration rules are:

- systems converge on shared operational context and evidence rather than separate authoritative histories;
- evidence carries provenance, time, actor/context and quality/review meaning appropriate to its source;
- public/standalone evidence intake is distinct from membership or operational authority;
- inference remains distinguishable from confirmed technical fact;
- field systems are designed to tolerate interruption and reconcile later;
- specialised hardware/apps may remain separate while still contributing evidence into a common operational record.

Detailed identifiers, schemas, event tuples, reconciliation state machines and private integration contracts are not published here.

17 Documentary chronology

The table below records the earliest currently indexed documentary evidence for selected coded systems. It does not assert that the listed date is necessarily the original moment of conception.

Date	Code(s)	Public chronology statement
31 Mar 2026	A-01 / A-02 / A-03 / C-01	Early multi-system technical and provenance record.
15 Apr 2026	B-01	Prototype sourcing/integration evidence exists.
25 Apr 2026	B-01	Consolidated architecture record exists.
19 May 2026	A-03 / B-01	Project-specific IP/data-boundary records exist.
13 Jun 2026	C-03	Public-data exploration-activity concept documented.
15 Jun 2026	Portfolio / D-02	Integrated portfolio and competency architecture documented.
26 Jun 2026	B-02	Downhole engineering build evidence exists.
7–8 Jul 2026	D-01	Build and calibration-development records exist.
20 Jul 2026	B-03	Non-magnetic downhole trajectory/communications concept documented.
4 Aug 2026	C-01	Calibrated drilling-control decision-support records exist.
13 Aug 2026	Portfolio	Controlled 120-day/four-year architecture and provenance baseline established.
30 Aug 2026	A-04	Physical-device/offline/safety validation records exist.
3 Sep 2026	A-02	Component-centric maintenance/repair extension documented.
5 Sep 2026	Portfolio	Public-sanitised consolidated disclosure issued.

18 Public maturity and claim boundaries

Code	Public maturity	Public claim boundary
A-01	Implemented / hardening	Field evidence and offline-capable operations architecture exists; no enterprise or regulatory certification claimed.
A-02	Implemented / extending	Diagnostic graph and component-knowledge direction exists; ranked causes are not automatically proven causes.
A-03	Working hardware/software candidate	Quality-gated alignment/re-entry capability exists; no blanket survey-grade accuracy claim.
A-04	Working standalone/integration candidate	Physical-tag/safety/evidence workflow exists; possession is not authority and no deployment certification is implied.
B-01	Experimental R&D	Vibration/acoustic evidence workflow exists; no autonomous geology or predictive-failure claim.

Code	Public maturity	Public claim boundary
B-02	Engineering prototype	Compact downhole sensing/logger work exists; no survey-grade heading or survivability claim.
B-03	Concept / gated R&D	Non-magnetic trajectory and optional communications concept exists; feasibility/performance remain experimental.
C-01	Working decision-support tool	Calibrated operator support exists; not universal or autonomous control.
C-02	Implemented governance concept	Evidence/uncertainty governance exists; does not establish geological truth by itself.
C-03	Concept / prototype direction	Exploration-activity intelligence exists as a research direction; not resource estimation.
D-01	Build-ready concept	Acoustic/pressure leak diagnostic concept exists; not certified safety instrumentation.
D-02	Concept	Competency evidence architecture exists; does not itself confer competency.
D-03	Parked concept	Electrical-field research direction exists; no validated localisation claim.

19 Cryptographic commitments to controlled private records

The following SHA-256 digests are published as cryptographic commitments to selected controlled private engineering artifacts that existed before or at the public disclosure date. The underlying files are intentionally not published in this public package. A later production of an artifact matching a digest can demonstrate binary identity with the privately retained record; the digest itself does not disclose the artifact's implementation content.

These commitments are evidentiary aids only. They do not establish legal ownership or contractual exclusion by themselves.

Code	SHA-256 commitment
A-01a	47915fb7b95e12eb36cc19e1bb3ab1f81018d9b9f54afcde755be0ff9c5db780
A-01b	1fad37643218c1eb9648247d284904a7d0a7e173cc6aa73e341046a9466045d2
A-02	8cd56cf272699e61f0fa95f101f8d9fadfabec2742739e36f308988883b585f2
A-03	7195c11f3dbd8e9fcbbf8f7f896af45333782abf21673bba40a74caae425d992
B-01a	9cb506e3696893e61b9d18138e65d9356d2da514811a423881801cffe8475912
B-01b	03aa0dabc64a6c6d86fec4f8d432793b693b6688e9e43ecbf9e0efaba37d7fb1
B-02	95ed1a9cfd2a18a304aa161dd24d333b7c59bbef3f4b7c82bd8570c1a9b9b015
C-01	5a160f9e7e4ffdf4a3adca3a862ce415f4955364b5b7336978a81b5f2de5efc1
C-02	e9c8abd66647481a6e6482b837f61f3807bfaef3188ceda259f6c9a78886487

20 Provenance and excluded materials

The public disclosure intentionally excludes the substance of customer, employer, mine-site and third-party records unless independently public or licensed. It does not reproduce real plods, maintenance records, safety records, production records, client geology, actual site coordinates, operational stocktakes, confidential procedures, non-consented field recordings or externally controlled training material.

The coded systems use or contemplate standard third-party technologies and scientific methods. This publication does not claim ownership of general positioning, inertial sensing, gyrocompassing, signal processing, electrical/resistivity/IP science, telemetry, QR/web delivery, database/API frameworks, remote sensing, hydraulic mechanics or statutory/site training methods merely because they are integrated into the portfolio.

21 Public release and custody record

For evidentiary value, the public release should preserve:

- this exact PDF and LaTeX source;
- the package SHA-256 and PDF SHA-256;
- the public URL or repository/release location;
- the public timestamp/date shown by the publishing service;
- a local immutable copy of the released package;
- the corresponding private controlled artifacts for which commitments are listed above.

The public release record should be retained separately from later revisions. Later publications should receive a new revision and hash rather than silently replacing this edition.

22 Code-only reference register

The author-controlled records underlying this public disclosure are identified publicly only by engineering code, class and date. Conventional shorthand names, private filenames and detailed titles are intentionally withheld.

Code	Record class	Date	Public boundary
A-01	Controlled software/architecture records	Mar–Aug 2026	Public capability and chronology only.
A-02	Controlled diagnostic/design records	Mar–Sep 2026	Public diagnostic proposition only.
A-03	Controlled hardware/software records	Mar–Aug 2026	Public alignment capability only.
A-04	Controlled validation records	Aug 2026	Public tag/safety capability only.
B-01	Controlled prototype/architecture records	Apr 2026 onward	Public sensing/label proposition only.
B-02	Controlled engineering build records	Jun 2026 onward	Public compact logger proposition only.
B-03	Controlled concept record	Jul 2026	Public non-magnetic trajectory research direction only.
C-01	Controlled decision-support records	Mar–Aug 2026	Public calibrated decision-support proposition only.
C-02	Controlled governance records	Feb 2026 onward	Public evidence-governance proposition only.
C-03	Controlled concept/research records	Jun 2026	Public exploration-activity analysis proposition only.
D-01	Controlled engineering records	Jul 2026	Public leak-diagnostic proposition only.
D-02	Controlled architecture record	Jun 2026	Public competency-evidence proposition only.
D-03	Controlled concept record	Jul 2026	Public research direction only.
Portfolio	Controlled roadmap/provenance records	Aug–Sep 2026	Portfolio structure, maturity and chronology.

23 Revision note

Revision 1.2 is a public-sanitised derivative of a more detailed controlled technical disclosure. The public edition deliberately removes enabling technical content while retaining coded system identity, broad purpose, maturity, chronology, system-of-systems relationships and cryptographic commitments to selected private controlled artifacts.