



TRUST. TRANSPARENCY. PERFORMANCE.

VEYRUM ROBOTICS STANDARD



VRS-GEN-001

Vocabulary and Terminology

The controlled vocabulary of the VRS 2026 edition — ratings, tiers, criteria, ceilings, pools, and evidence.

VEYRUM RESEARCH INSTITUTE

DOCUMENT

VRS-GEN-001

VERSION

1.0

STATUS

Draft

DATE

16 September 2026

Contents

1 1 Scope

2 2 Normative references

3 3 Terms and definitions

3.1 3.1 Ratings and editions

3.2 3.2 Tiers and assurance

3.3 3.3 Criteria, points, and pools

3.4 3.4 Applicability (per model × sector)

3.5 3.5 Evidence

3.6 3.6 Documents and identity

3.7 3.7 Risk, insurance, and finance concepts

3.8 3.8 Data twins and anchors

3.9 3.9 Document classes

3.10 3.10 Withdrawn terms

4 4 Naming discipline

5 5 Verbal forms and usage

6 6 Worked example — reading a rating statement

7 Bibliography

8 Change history

Foreword. This Terminology standard defines the controlled vocabulary used across the VRS library. Where any other VRS document defines a term locally, this document takes precedence (VRS-GEN-002 §3). The VRS 2026 edition replaces the confidence/provisional vocabulary with a single published assurance attribute — the **tier** (Unverified · Verified · Certified) — and expresses the IR as an unweighted **point-sum** over criteria, each with per-tier **ceilings** and an **evidence bar**. Terms retired by this edition are listed as withdrawn in §3.10 with a pointer to their replacement. Requirements use “shall”.

1 Scope

This Standard defines the terms used across the VRS library. It excludes sector-specific terms (defined in each sector family’s definitions bulletin, **VRS-<CODE>-002+**) and purely schema-level field names (VRS-GEN-009, VRS-GEN-012 data twins). It covers the rating architecture (IR, AR), the assurance tiers, the criterion/ceiling/rung vocabulary, the pool and contributor vocabulary, applicability, evidence, identity, risk/insurance/finance concepts, data twins and anchors, and document classes.

2 Normative references

The following documents are indispensable to the application of this Standard. For dated references, the edition cited applies; where a reference is under revision, this Standard is re-dated when the successor publishes (VRS-GEN-004).

- Canonical rating-architecture definition (internal; controlling until this document reaches Published status, at which point this document becomes the controlling vocabulary).
- ISO 8373:2021, *Robotics — Vocabulary* — the basis for robot morphology, kinematic, and autonomy terms (under revision as ISO/DIS 8373; re-date on publication).
- ISO 704:2022, *Terminology work — Principles and methods* — the method for forming VRS designations and definitions.
- ISO/IEC Directives, Part 2:2021, *Principles and rules for the structure and drafting of ISO and IEC documents* — the source of the verbal-form register in Clause 5.

3 Terms and definitions

3.1 Ratings and editions

3.1.1 rating — an independent opinion, expressed as an IR and/or one or more ARs, of a robot model’s standing across the criteria of an edition. A rating is not a safety certification, warranty, or guarantee (DEC-VRS-03), and is an opinion **above** the compliance floor (3.7.1).

3.1.2 IR (Intrinsic Rating) — a single number (higher = better / lower intrinsic risk) for a robot **model’s inherent** quality, safety, and reliability, independent of use context. The IR is the **unweighted point-sum** of all criterion points (3.3.1); each criterion’s point range is sized to its importance, so no decimal weights and no normalisation are used. One IR per model. The scale is absolute and additive across

editions: a given score means the same quality in every edition, and editions may add criteria or widen a scale at the top but shall never re-scale or re-weight existing points. Every IR shall be edition-stamped, e.g. **IR 92 (VRS 2026)**. The name is always “Intrinsic Rating”.

3.1.3 AR (Application Rating) — a letter grade on the scale **C < B < A < AA < AAA (AAA best)** expressing a model’s suitability for an **application sector**. Letter bands are a fixed percentage of the sector’s available points in the issuing edition, identical across all sectors. A model has one IR and a set of AR letters — one per applicable sector; a sector for which the model is not applicable shows “—”. The name is always “Application Rating”.

3.1.4 edition — a time-scoped, dated issue of the VRS library (e.g. *VRS 2026*). The edition defines the criteria, point ranges, and maximum IR for ratings issued under it. Editions are never scoped by robot class or sector; coverage grows by adding documents.

3.1.5 edition stamp — the mandatory **(VRS 20xx)** appended to every IR number and every AR letter wherever it is displayed, naming the edition whose criteria and point ranges produced the value. A number or letter without an edition stamp is non-conformant (5.5).

3.2 3.2 Tiers and assurance

3.2.1 tier — the assurance attribute carried by every rating, stating **how the evidence was obtained: Unverified · Verified · Certified**. It is the only published verification signal. Unverified is assessed by Veyrum from public information; Verified adds a manufacturer information pack (3.2.2) with officer attestation; Certified adds a witnessed demonstration (3.2.3). Each tier fixes the highest AR letter attainable — Unverified → A, Verified → AA, Certified → AAA — and every AR tier shall be ≤ the model’s IR tier. Tiers are cumulative: Certified contains Verified contains the public evidence.

3.2.2 information pack — the fixed, published list of documents and data a manufacturer supplies for a Verified or Certified rating: one IR pack plus one pack per AR sector. A pack is assessed all-or-nothing — an incomplete pack yields no rating at that tier.

3.2.3 demonstration protocol — the witnessed test script required for Certified, defined per IR and per sector, run via one of three equivalent routes (VRS-GEN-003 §6). The Certified pack does not exceed the Verified pack in scope.

3.2.4 certificate — the publicly verifiable record issued for a rating (VRS-GEN-010). It carries the tier and edition stamp; “Certified” is a tier of *rating*, not a safety certification, and the certificate shall say so.

3.2.5 cold-start parity — the rule (VRS-GEN-005 §6) by which a model with no model-specific field data yet is rated on the same criteria as any other, using a company-wide fallback where a model-specific rung has no evidence, so a new model is neither advantaged nor penalised by the absence of history.

3.3 3.3 Criteria, points, and pools

3.3.1 criterion — a single scored test or matrix line with its own integer point range (0–N) and, per tier, an evidence bar (3.3.4) and an attainable-points ceiling (3.3.3). Each criterion is a Clause 6 subclause in the layout of VRS-GEN-002 §6.5.

3.3.2 rung — one decidable level of a criterion’s ladder, with its point value. Rungs are listed highest first and end at 0; each is decidable by inspection, measurement, test, or documented evidence. A numeric threshold inside a rung that has not been calibrated is marked **(prior)**.

3.3.3 ceiling — the maximum points a criterion can award at a given tier. Ceilings satisfy $\text{Unverified} \leq \text{Verified} \leq \text{Certified} \leq \text{N}$ and are copied from rung values, never recomputed; the sum of ceilings over the pool sets the tier's maximum.

3.3.4 evidence bar — the minimum evidence a criterion needs before any points are awarded. If the bar is not met the criterion scores **0** (a null result, 3.3.5); the score is reduced rather than qualified.

3.3.5 null result — a recorded outcome of “no admissible evidence, or evidence-bar not met”, scored as 0 points. A null result is distinct from not-applicable (3.4.1): the criterion applies but is unsupported. No criterion is dropped and no scale is re-based to hide it.

3.3.6 pool — the set of criteria whose points are available to a rating. The **IR pool** is all IR criteria; a **sector AR pool** is the sector's own criteria plus the IR criteria that contribute to that sector (3.3.7).

3.3.7 contributor — an IR criterion (VRS-GEN-101...107) whose points feed a sector AR pool, identified in the sector protocol's Clause 5 contributing-IR table.

3.3.8 applicable pool — the subset of a pool that applies to a given model × sector after not-applicable criteria are excluded. AR letter bands are computed against the available points of the applicable pool in the issuing edition.

3.4 3.4 Applicability (per model × sector)

3.4.1 not-applicable — capability absent or out of declared/assessed scope. Displayed “—”; never a letter; never implies poor performance.

3.4.2 capability-gated sector — a sector with a hard physical prerequisite (Aerial, Marine & Subsea, Space). **intended-use sector** — a sector whose applicability derives from declared market plus minimum capability (all others; VRS-GEN-007).

3.5 3.5 Evidence

3.5.1 evidence grade — the data-quality **label** A|B|C|D of an evidence record (A adversarial/sworn ... D unverified; VRS-GEN-012). An evidence grade is a label only: it is never a rating, never a point weight or multiplier, and shall always be labelled “evidence grade” where it appears near a rating.

3.5.2 op-hours — observed operating hours; the exposure denominator for incident and reliability metrics.

3.5.3 operating envelope — the declared functions, speeds, payloads, and environment a model is rated within.

3.6 3.6 Documents and identity

3.6.1 designator — the permanent identifier **VRS-<FAMILY>-<SERIAL>** of a VRS document (VRS-GEN-002 §5). Never changed, never reused.

3.6.2 robot model — a manufacturer + model + hardware revision + software version range; the unit of rating and the subject of an IR and of AR letters. **robot unit** — an individual manufactured instance of a model; the subject of a Passport record, never of its own rating.

3.6.3 robot form — a morphology (humanoid, quadruped, arm, cobot). A form is not a sector; a form receives one IR and AR letters across applicable sectors.

3.6.4 Robot Risk Passport — the record holding a model's IR, its ARs, their history, and evidence references (VRS-GEN-009). The Passport is a container, not a rating.

3.6.5 sector — one of the 12 locked application domains (VRS-GEN-007) in which an AR letter may be issued.

3.7 Risk, insurance, and finance concepts

3.7.1 compliance floor — the mandatory conformity baseline (e.g. CE marking under the EU Machinery Regulation, a UL listing, an ISO 10218 risk assessment) below which a model is ineligible for any rating. A rating is an opinion **above** the floor (3.1.1) and never substitutes for the conformity the floor requires.

3.7.2 loss driver — a measurable attribute that moves expected insured or credit loss. The recognised loss drivers are **frequency, severity, exposure, recoverability, residual value, obsolescence**, and **correlated (catastrophe/cyber) risk**. Every rated quantity maps to at least one.

3.7.3 frequency — expected count of loss events per unit of exposure. **severity** — the expected cost of a loss event given that it occurs. **exposure** — the quantity of operation at risk, measured by an exposure denominator (3.7.4).

3.7.4 exposure denominator — the unit against which a frequency is expressed (e.g. per 1,000 op-hours). Every rate quantity in the VRS carries exactly one, so results are comparable across models of different size and utilisation.

3.7.5 residual value — the expected market value of a unit at a future date, used in credit and lease decisions. **recoverability** — the degree to which value or function can be restored after a loss (repair, resale, redeployment). **obsolescence** — loss of value from supersession of the model, its software, or its support (VRS-GEN-107).

3.8 Data twins and anchors

3.8.1 data twin — the machine-readable companion document (family -501, and the IR methodology twin) that holds the numeric constants and bands for a protocol. The data twin is the single source of those values; the prose protocol references them and never restates a value (VRS-GEN-002 §4.5).

3.8.2 anchor — an external standard, regulation, or published dataset that a VRS requirement or evidence lane maps to. An anchor is cited with its designation and edition year (following ISO 704:2022).

3.8.3 evidence lane — the named route by which an existing conformity artefact (e.g. a CE technical file, a UL report, an ISO 14224 maintenance record) satisfies a VRS evidence requirement, so adoption costs a mapping rather than new testing.

3.8.4 prior — a numeric threshold used inside a rung before it has been calibrated to observed loss, written (**prior**) in the rung text. Priors change only by edition (VRS-GEN-002 §7.5.8, VRS-GEN-202); no value is adjusted live.

3.9 Document classes

3.9.1 VRS documents are classed by designator (VRS-GEN-002 §5): **GEN core** (VRS-GEN-001...012), **IR category** (VRS-GEN-101...107), **calibration/qualification protocol** (VRS-GEN-2xx), **sector standard** (-001), **evidence/test protocol** (-1xx), **AR protocol** (-201), and **data twin** (-501). The class fixes the

document's role, its type ceiling, and its depth rubric; it does not change the meaning of any term defined here.

3.10 Withdrawn terms

The following terms are **withdrawn** by the VRS 2026 edition and shall not appear in a normative clause. Each is replaced as shown.

WITHDRAWN TERM	REPLACED BY	POINTER
confidence band / confidence model / confidence level	tier (3.2.1) — the single published assurance signal	VRS-GEN-005 §6
provisional / provisional flag	draft status carries status: Draft ; issued ratings carry tier + edition	VRS-GEN-004
qualitative IR tiers (Exemplary / Strong / Adequate / Marginal / Poor)	IR is a number (3.1.2); assurance is the tier (3.2.1)	3.1.2, 3.2.1
assessed-unrated (confidence sense)	“no applicable pool” (kept only in VRS-GEN-006 §5); elsewhere use not-applicable (3.4.1) or a null result (3.3.5)	VRS-GEN-006 §5
calibration stage prior / fitted / validated machinery	prior threshold written (prior) in the rung; changes by edition	3.8.4, VRS-GEN-202
renormalisation / drop-out	null result = 0 points (3.3.5); no re-basing	3.3.5
weighted mean / weights	unweighted point-sum; point ranges size importance (3.1.2)	3.1.2
class-median / credibility blend	numeric thresholds live inside rungs, marked (prior)	3.8.4

4 Naming discipline

4.1 The abbreviations IR and AR shall be expanded only as “Intrinsic Rating” and “Application Rating”.

4.2 There is no standalone “Manufacturer Rating” and no “Asset Rating”; documents shall not introduce either. Manufacturer quality is carried by IR category VRS-GEN-106 only.

4.3 Rating letters, tiers, and evidence-grade labels are three distinct vocabularies and shall never be conflated or typeset confusably (VRS-GEN-002 §7.4.3).

4.4 Display conventions shall be used verbatim: an IR statement is written **IR 372 (VRS 2026) – Certified** ; a sector AR statement is written **Industrial AR: AA (VRS 2026) – Verified** ; a not-applicable sector is written **Aerial AR: –** . The edition stamp is mandatory wherever a number or letter appears.

5 Verbal forms and usage

5.1 VRS documents shall express requirements with “shall”, recommendations with “should”, permission with “may”, and possibility/capability with “can”, following the verbal forms of ISO/IEC Directives, Part 2:2021.

5.2 Prohibition shall be expressed with “shall not”; “must” shall not be used to state a VRS requirement (it is reserved for external constraints and laws of nature), per the same register.

5.3 Robot morphology, kinematic, and autonomy terms shall follow ISO 8373:2021; where a term in this Standard and a term in ISO 8373:2021 denote the same concept, the ISO 8373:2021 term prevails and this Standard shall cross-reference it rather than redefine it.

5.4 Dependability and reliability terms (availability, failure, op-hours basis) shall align with IEC 60050-192:2015.

5.5 Quantities shall be expressed in SI units, every rate quantity shall state its exposure denominator (3.7.4), and every displayed IR number and AR letter shall carry its edition stamp (3.1.5).

5.6 A term defined in this Standard shall be used only with its defined meaning; a document that needs a different meaning shall introduce a distinct term rather than overload an existing one (ISO 704:2022, one-concept-one-term principle).

5.7 Withdrawn terms (3.10) and deprecated designations — “Manufacturer Rating”, “Asset Rating”, “Individual Rating” — shall not appear except within a change or supersession note.

6 Worked example — reading a rating statement

The following statement is issued for a **fictitious** model “M” (no real robot holds a Veyrum rating; ratings and certificates are not published):

M — IR 372 (VRS 2026) — Certified; Industrial AR: AA (VRS 2026) — Verified; Aerial AR: —.

A conformant reader decomposes the statement into its distinct vocabularies plus applicability, using this Standard:

TOKEN	VOCABULARY	DEFINED AT	MEANING
IR 372 (VRS 2026)	Intrinsic Rating + edition stamp	3.1.2, 3.1.5	context-independent point-sum; higher = lower intrinsic risk; stamped with the edition whose criteria produced it
Certified (on the IR)	tier	3.2.1	how the IR evidence was obtained: Verified pack plus witnessed demonstration
Industrial AR: AA (VRS 2026) – Verified	AR letter + edition stamp + tier	3.1.3, 3.1.5, 3.2.1	sector suitability on C < B < A < AA < AAA; AR tier ≤ IR tier
Aerial AR: –	not-applicable	3.4.1	sector out of assessed scope – never “poor”

Common non-conformant readings and the rule they break:

NON-CONFORMANT READING	RULE BROKEN
“M scores AA overall” (treating a sector letter as a global grade)	3.1.3 – the letter is per-sector; only the IR is global
“M is grade B” (reading an evidence-grade label as the rating)	3.5.1 – an evidence grade is a label, never a rating
“M is certified safe for industrial use”	3.2.4 – Certified is a rating tier, not a safety certification
An IR number quoted without its (VRS 20xx) edition stamp	3.1.5 / 5.5 – the edition stamp is mandatory
“M is Verified overall but AAA in Industrial”	3.2.1 – AR tier ≤ IR tier

7 Bibliography

- ISO 8373:2021, *Robotics – Vocabulary* (Edition 3; under revision as ISO/DIS 8373).
- ISO 704:2022, *Terminology work – Principles and methods* (Edition 4).
- ISO 1087:2019, *Terminology work and terminology science – Vocabulary* (Edition 2; reviewed and confirmed 2025).
- ISO/IEC/IEEE 24765:2017, *Systems and software engineering – Vocabulary*.
- ISO/IEC Directives, Part 2:2021, *Principles and rules for the structure and drafting of ISO and IEC documents* (Edition 9).
- IEC 60050-192:2015, *International Electrotechnical Vocabulary – Part 192: Dependability* (with Amendment 1:2016).

8 Change history

DATE	VERSION	STATUS	CHANGE	AUTHORITY
2026-09-03	0.1	Draft	Seeded from the canonical IR/AR definition (as amended 2026-09-02) + GEN-002/005/006/012 local terms	Framework Design Brief v1.1
2026-09-12	0.2	Draft	DEEPEN (Run #59): added §3.5 risk/insurance/finance terms, §3.6 calibration/data/anchor terms, §3.7 document classes, §5 verbal-form/usage requirements, §6 worked example, and a dated Bibliography; expanded §2 normative references. No term redefined. +6 shall. Net +~760 words.	Curator charter §DEEPEN
2026-09-16	1.0	Draft	VRS 2026 rewrite: added tier (Unverified/Verified/Certified), edition stamp, information pack, demonstration protocol, certificate, cold-start parity, criterion/rung/ceiling/evidence bar/null result, pool/contributor/applicable pool, prior; confidence band, provisional, qualitative IR tiers, assessed-unrated (confidence sense), calibration-stage machinery, renormalisation/drop-out, weighted-mean and class-median terms retired (withdrawn with pointers, §3.10); IR recast as unweighted point-sum; display conventions and edition-stamp requirement added; see GEN-005 §6. Net +~430 words.	Curator charter §REWRITE

About Veyrum Research Institute

Veyrum Research Institute is the research arm of Veyrum — the independent intelligence and trust layer for the robotics industry (research, ratings and registry, advisory, data, and specialist insurance & finance introductions).

Disclaimer

The opinions in this document are independent and current as of the date of publication, based on information believed reliable; they are not guarantees or warranties of safety, fitness, or compliance, and are not engineering, legal, or financial advice. This document may be revised. © 2026 Veyrum.

Contact: hello@veyrum.com · VRS-GEN-001 · Version 1.0