



VEYRUM ROBOTICS STANDARD



VRS-GEN-006

Application Rating (AR) — Scheme

The per-sector letter-grade scheme — letters, applicability states, sector pools, bands identical across sectors, and tier caps by construction (VRS 2026).

VEYRUM RESEARCH INSTITUTE

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Foreword. This Standard defines the **Application Rating (AR)** scheme: the letter scale, the applicability states, the *pool* mechanics every sector Assessment Protocol must follow, the letter bands — identical in every sector from the **VRS 2026** edition — and the rule by which the rating tier limits the letter. Per the framework (D2, CEO 2026-09-02) the per-sector scoring content — the sector criteria and the named intrinsic contributors — lives in each sector family's Assessment Protocol (**VRS-<CODE>-201**), laid out per VRS-GEN-002 §6.5 and governed by the mechanics here. This edition replaces the weighted rubric, the renormalisation of missing criteria, the per-sector band thresholds, the modifier caps and the confidence band of earlier drafts. Requirements use “shall”; recommendations use “should”.

1 1 Scope

This Standard defines: the AR letter scale; the model × sector applicability states; the composition of a sector pool and the percentage computed over it; the letter bands; the display form of an AR; and the relationship between rating tier and attainable letter. It excludes the IR (VRS-GEN-005), the sector criteria themselves (**VRS-<CODE>-201**), the sector taxonomy (VRS-GEN-007) and the demonstration protocols (**VRS-<CODE>-110**).

2 2 Normative references

- **VRS-GEN-002**, Designation, Drafting and Style Rules (undated) — criterion layout §6.5, drafting rules §7.5, display §7.4.
- **VRS-GEN-005**, Intrinsic Rating — Methodology (undated) — point sum, tier ceilings, rating tiers.
- **VRS-GEN-007**, Application Sector Classification (undated) — the twelve locked sectors and their application classes.
- **VRS-GEN-009**, Robot Risk Passport — Data Schema (undated) — where an AR result is recorded.
- **VRS-GEN-012**, Evidence and Data Requirements (undated) — admissibility by tier.
- **VRS- -001 / -201 / -501** for each sector (undated) — sector standard, assessment protocol, data twin.
- External precedents (dated in the Bibliography): **ISO/IEC 17000:2020** (rating-vs-conformity distinction), **IEC 61508:2010** (ordinal banded scale with a reserved top), **ISO 31000:2018** (risk framing), **ISO 8373:2021** (robot vocabulary — model, robot form vs sector), **BREEAM** (credits summed to a percentage with fixed bands).

3 3 Terms and definitions

Per VRS-GEN-001 (aligned to ISO 8373:2021) and VRS-GEN-002 §3.8–3.11. Locally:

- **sector pool** – the set of criteria over which a sector letter is computed: the sector criteria of the sector’s Assessment Protocol Clause 6 plus the contributing intrinsic criteria it names in Clause 5.
- **contributing intrinsic criterion** – an IR criterion (VRS-GEN-101...107) that a sector protocol counts in its pool at the same points it earned in the IR.
- **applicable pool** – the sector pool after removing every criterion whose Applicability row excludes the assessed application class.
- **sector percentage** – points awarded over the applicable pool, divided by the points available in the applicable pool, expressed in per cent.
- **application class** – a partition of a sector’s assessed envelope defined by that sector’s standard (e.g. fixed-cell / mobile-logistics / collaborative in Industrial; mobile service / stationary interactive / telepresence in Service & Public); the successor of the earlier term *segment*.

4 The letter scale

4.1 An AR shall be expressed as a letter on the scale $C < B < A < AA < AAA$ (AAA best) (re-locked CEO 2026-09-02).

4.2 The letter is determined from the sector percentage (Clause 6) by bands that are identical in every sector and every edition:

LETTER	SECTOR PERCENTAGE	MEANING
AAA	$\geq 90 \%$	Reserved headroom – reached only at the Certified tier with the criteria demonstrated
AA	$\geq 75 \%$	Strong sector suitability, established by the manufacturer’s evidence
A	$\geq 60 \%$	Adequate sector suitability
B	$\geq 45 \%$	Marginal sector suitability
C	$< 45 \%$	At or near the sector floor

Bands are lower-closed (a percentage equal to a threshold takes that band’s letter); the percentage is rounded to the nearest integer before mapping (0.5 rounds up). A sector protocol shall not define its own thresholds.

4.3 A model shall have one IR and a set of AR letters – one per applicable sector across the twelve locked sectors (VRS-GEN-007). Robot forms (humanoid, quadruped, arm, cobot) are not sectors.

4.4 AR letters shall never be typeset in a form confusable with evidence-grade labels (VRS-GEN-002 §7.4.3).

5 5 Applicability states

5.1 Every model × sector pair shall carry exactly one state:

- **not applicable** – the sector’s capability prerequisite is absent or the sector is outside the model’s declared and assessed scope. Displayed as “–”; shall never be displayed as, or imply, a poor grade.
- **not covered** – the sector applies but no application class has an applicable pool with evidence meeting any criterion’s evidence bar, or the assessment has not yet been performed. Displayed as “Not yet rated”; visibly distinct from *not applicable*.
- **rated** – a letter (4.1) with its rating tier and edition (Clause 7).

5.2 Applicability shall be determined in order: (1) capability prerequisite (an objective physical condition – Aerial, Marine, Space); (2) the manufacturer’s marketed and declared use; (3) assessor determination with recorded rationale. Default: *not applicable*.

5.3 Within an applicable sector, letters are issued per application class where the evidence diverges materially between classes (6.5). A class for which no criterion meets its evidence bar is displayed as *not covered* and the assessed envelope contracts to the classes actually covered.

5.4 A rated sector shall revert to *not covered* if the evidence supporting it is withdrawn or found false (VRS-GEN-010), and the registry record shall say so.

6 6 Sector pool mechanics

6.1 **Pool composition.** Each sector’s Assessment Protocol (VRS-<CODE>-201) shall define its pool as (a) the sector criteria of its Clause 6, each laid out per VRS-GEN-002 §6.5 with points, rungs, tier ceilings and an Applicability row; and (b) the contributing intrinsic criteria named in its Clause 5, each cited by Category Standard and clause. No other input enters the pool.

6.2 **No weights.** Every criterion in the pool counts at its own points. Sector emphasis is expressed by *which* intrinsic criteria are named and by the point ranges of the sector criteria – never by weights, multipliers or re-scaling of intrinsic scores.

6.3 **Scoring the pool.** The sector criteria are scored under the sector protocol at the rating tier in force. Each contributing intrinsic criterion enters the pool at the points it was awarded in the IR under the same tier; it is not re-assessed. A criterion with no admissible evidence scores 0 and remains in the denominator (VRS-GEN-005 §6.1); there is no renormalisation.

6.4 **Not applicable by class.** A criterion whose Applicability row excludes the assessed application class is removed from both numerator and denominator for that class, explicitly and never by assessor discretion (VRS-GEN-002 §7.5.6). The remaining criteria form the applicable pool.

6.5 **Per-class letters.** The sector percentage is computed per application class over that class’s applicable pool and mapped to a letter (4.2). Where a sector protocol issues letters for more than one class, the displayed sector letter is the lowest issued class letter; the per-class letters and the envelope each was issued at are recorded (VRS-GEN-009). This clause is the single home of the lowest-class rule; sector protocols reference it.

6.6 **Evidence outside a class.** Evidence obtained outside a declared application class shall not support a criterion for that class; the percentage is not stretched to conditions never

observed.

6.7 Pool sums. Each sector protocol shall state, in its Clause 7, the points available in its pool and the sum of the pool’s ceilings at each tier, both for the sector criteria alone and with the contributing intrinsic criteria; the data twin (VRS-<CODE>-501) carries the same numbers and is regenerated from the protocol.

7 7 Display, tier and citation

7.1 Every displayed AR shall carry its sector, its rating tier and its edition stamp, in the form <Sector> AR: <letter> (VRS 2026) – <Tier> (VRS-GEN-002 §7.4.1). Absence of a letter shall always be attributable by the reader to its state (5.1).

7.2 Tier rule. An AR’s tier shall not exceed the IR’s tier for the same model: a Verified AR requires a Verified (or Certified) IR; a Certified AR requires a Certified IR (VRS-GEN-005 §7.3). Sectors are otherwise independent of one another.

7.3 The registry record of an AR shall carry: the letter and per-class letters with their envelopes; the tier and edition; the protocol and data-twin versions; every pool criterion with points awarded, rung reached, ceiling applied and whether the company-wide fallback was used; the set of criteria excluded as not applicable; and the status of the governing documents (VRS-GEN-002 §9.2).

8 8 Tier caps by construction

8.1 The best letter attainable at each tier is a consequence of the criterion ceilings, not a rule applied to the letter: because the bands of 4.2 are percentages, a pool whose Unverified ceilings sum to a percentage inside the A band makes A the best attainable Unverified letter, and AA unattainable without the manufacturer’s evidence; likewise for Verified and AA, and Certified and AAA.

8.2 Design rule for sector protocols. Every sector protocol shall be authored so that, over its full pool (6.1) and over its sector criteria alone:

TIER	SUM OF CEILINGS AS % OF POOL	BEST ATTAINABLE LETTER	DESIGN MARGIN
Unverified	in [60 %, 75 %)	A	≥ 5 % above 60 %; ≥ 2 % below 75 %
Verified	in [75 %, 90 %)	AA	≥ 5 % above 75 %; ≥ 2 % below 90 %
Certified	100 %	AAA	–

A protocol whose sums fall outside these ranges is malformed and shall be corrected by adjusting which documentary criteria it includes or their ranges – never by raising the ceiling of a criterion that can only be established by demonstration.

8.3 Backstop. In addition to 8.1, the issued letter shall not exceed A at Unverified, AA at Verified, or AAA at Certified. This backstop exists for the regime-aware ceilings of VRS-GEN-

005 §6.9 (where a public reporting regime lifts some Unverified ceilings) and shall otherwise never be the binding constraint.

8.4 Checking. Conformance of every sector protocol with 8.2 is verified mechanically from the protocol's Clause 6 and Clause 5 at every edition; the result is recorded in the sector's data twin.

8.5 No other caps. Sector protocols shall not define modifiers, gates or caps on the letter. Every condition that earlier drafts expressed as a cap ("shall not exceed B absent ...") is expressed as a rung or an evidence bar of a criterion (VRS-GEN-002 §7.5.9), so that its effect is visible in the points.

9 Withdrawn — confidence band

This clause is intentionally empty in the VRS 2026 edition. The confidence band of earlier drafts is withdrawn: the strength of evidence behind a letter is expressed by the rating tier (Clause 7) and by the per-criterion ceilings that the tier makes reachable, not by a separate band. Clause numbering is retained so that citations of Clauses 10 and later remain stable.

10 Rating as opinion, not conformity attestation

10.1 An AR is an independent opinion on relative sector suitability above the mandatory compliance floor; it is not conformity attestation, certification, a warranty or a guarantee. ISO/IEC 17000:2020 reserves *attestation* and *certification* for a statement that specified requirements are fulfilled; an AR makes no such statement and shall never be displayed or worded as certification or conformity.

10.2 Certified is a rating tier, not a safety certification. The word denotes that the manufacturer's evidence was witnessed in a Demonstration Session under a published protocol; it does not denote conformity with any standard or regulation, and every display of a Certified rating shall carry this statement or a link to it (VRS-GEN-010).

10.3 An AR is an opinion on the robot, not on the lawfulness of any deployment. Where a sector criterion scores regulatory clearance, authorisation or lawful-operation status, a robot lacking it scores zero on that criterion and is still rated; the rating does not establish that any use is lawful.

10.4 Nothing in a sector protocol or in a displayed AR shall imply that a real robot holds a Veyrum rating until that rating has been issued under the tier's procedure and published per VRS-GEN-009 and VRS-GEN-010.

11 Annex A (informative) — Worked example

FICTIONAL EXAMPLE — not a real product; illustrates scheme mechanics only.

A fictional robot model **RB-DEMO-1** (an arm — a robot form, not a sector, per 4.3) is assessed in a fictional sector whose protocol defines eight sector criteria worth 100 points and names twelve contributing intrinsic criteria worth 160 points — a pool of 260. The sector standard defines two application classes, **manipulator** and **mobile**; the model is declared for **manipulator** only.

Applicability (Clause 5). The capability prerequisite is met and the manufacturer declares the sector, so the model × sector pair leaves *not applicable*. The **mobile** class is *not covered*; the envelope is the **manipulator** class.

Applicable pool (6.4). Two sector criteria – detection-field coverage (0–12) and battery runtime at declared duty (0–8) – carry an Applicability row of “mobile class only”. They are removed from numerator and denominator: the applicable pool is 260 – 20 = 240 points.

Scoring at Verified (6.3). Sector criteria awarded 58 of the 80 applicable sector points (the witnessed-only rungs are out of reach at Verified). Contributing intrinsic criteria enter at the points they earned in the IR at Verified: 118 of 160. Total 176 / 240 = 73.3 % → 73 %.

Letter (4.2). 73 % falls in the lower-closed A band ($60 \leq 73 < 75$). Under the tier rule (7.2) the IR is Verified, so a Verified AR may be issued. Display: **Demo-sector AR: A (VRS 2026) – Verified**.

Tier caps by construction (Clause 8). The pool’s Verified ceilings sum to 204 / 240 = 85 %, so AA was attainable at this tier had the pack established every documentary criterion at its ceiling; the model fell short in the pack, not in the tier. Its Unverified ceilings sum to 163 / 240 = 68 %, so had the same robot been rated without the manufacturer, A would have been the best possible letter – and its actual public evidence would have placed it at 41 % → C. A Certified session could take the pool to 100 %.

Not-covered class (5.3). No letter is issued for **mobile**; the registry shows **manipulator: A**, **mobile: not covered**, displayed sector letter A (the lowest – and only – issued class letter, 6.5).

Former cap, now a rung (8.5). Under the earlier draft, a missing declaration of conformity would have capped the letter at B regardless of score. Under this edition the anchor-conformity criterion (0–15) simply scores 0 at the “none” rung, costing 15 of 240 points – a 6-point drop in the percentage, visible and proportionate.

12 Bibliography

- ISO/IEC 17000:2020 – Conformity assessment – Vocabulary and general principles (edition 2; reaffirmed 2025) – the *attestation/certification* vs *opinion* distinction of Clause 10.
- IEC 61508:2010 – Functional safety of electrical/electronic/programmable electronic safety-related systems (edition 2.0; SIL 1–4) – precedent for a small ordinal band set with a reserved most-stringent level.
- ISO 31000:2018 – Risk management – Guidelines (edition 2; reaffirmed 2023) – frequency/severity/exposure framing behind the sector loss-driver maps.
- ISO 8373:2021 – Robotics – Vocabulary – *model* and *robot form* vs *sector* (4.3).
- BRE, BREEAM UK New Construction (2018, updated 2023) – credits summed to a percentage of available credits with fixed rating thresholds (Pass 30 % ... Outstanding 85 %); precedent for Clause 4 and Clause 6.
- U.S. Green Building Council, LEED v4.1 (2019) – point-sum with fixed certification thresholds and not-applicable credits removed from the denominator via prerequisites; precedent for 6.4.

13 Change history

DATE	VERSION	STATUS	CHANGE	AUTHORITY
2026-09-15	1.0 (draft)	Draft	VRS 2026 rewrite (Batch A). Letter bands fixed and identical across sectors ($AAA \geq 90 \cdot AA \geq 75 \cdot A \geq 60 \cdot B \geq 45 \cdot C$); Clause 6 rewritten as pool mechanics (sector criteria + named intrinsic contributors, percentage of the applicable pool, not-applicable-by-class removed from numerator and denominator, no weights, no renormalisation); Clause 7 display form with tier + edition and the $AR\text{-}tier \leq IR\text{-}tier$ rule; Clause 8 tier caps by construction with the design rule and backstop; Clause 9 confidence band withdrawn; Clause 10 gains “Certified is a rating tier, not a safety certification” and the lawful-operation statement; <i>segment</i> → <i>application class</i> ; worked example re-run on a pool.	CEO approval 2026-09-15 13:28; vrs-rewrite-instructions-v1 §5.1
2026-09-13	0.2	Draft	DEEPEN: §8 grade-band & segment mechanics, §9 confidence band, Annex A worked example.	Curator; charter DEEPEN
2026-09-03	0.1	Draft	Created by decomposition of VRS-STANDARD-v0.1 §8; applicability framework v0 folded in as Clause 5.	Framework Design Brief v1.1 §3.3

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