PMaps

WHITE PAPER · 2026

METHODOLOGY & VALIDATION

The science behind the PMaps Leadership Assessment.

How the assessment measures leadership behaviour — its scientific foundation, measurement architecture, scoring logic, and the evidence for its reliability and validity.

FIVE-FACTOR MODEL | 5 DOMAINS · 29 SUB-COMPETENCIES | 4 PROFICIENCY LEVELS | ISO 10667

5	29	4	0.74	~1.4k
COMPETENCY DOMAINS	LEADERSHIP SUB-COMPETENCIES	CALIBRATED PROFICIENCY LEVELS	CRONBACH'S A · INTERNAL CONSISTENCY	PARTICIPANTS · 2023 VALIDATION STUDY

§ Executive summary

Leadership decisions are among the highest-stakes, lowest-feedback decisions an organisation makes.

A wrong senior hire is expensive, slow to surface, and damaging across every team the leader touches — yet most leadership selection still rests on unstructured judgement and self-report tools that sophisticated candidates can shape at will.

The PMaps Leadership Assessment was built to bring measurement discipline to that decision. It is a behavioural assessment grounded in the **Five-Factor Model of personality**, organised into a **hierarchical competency architecture**, **calibrated to the candidate's career level**, protected by a **response-style safeguard**, and **benchmarked against a norm-referenced comparison sample**. This paper documents the science behind it: the theoretical foundation, the measurement architecture, the scoring approach, and the reliability and validity evidence — written to recognised testing standards (ISO 10667; the *Standards for Educational and Psychological Testing*).

WRITTEN HONESTLY

We state what the evidence supports today — reliability, content validity, construct validity, and concurrent validity — and we are explicit about what remains on the validation roadmap: *criterion (predictive) validity*. Transparency about evidence is itself a mark of a credible instrument.

WHAT THIS PAPER COVERS

Theoretical foundation

Why the Five-Factor Model — measured at the facet level — anchors every competency score.

Measurement architecture

How facets aggregate into 29 sub-competencies, 5 domains, and one Leadership Quotient.

Scoring & calibration

Norm-referenced, level-specific banding, with an impression-management safeguard.

Psychometric evidence

Reliability and validity to recognised standards — strengths and current limits alike.

1 The measurement problem in leadership assessment

Three problems make leadership measurement uniquely hard, and the assessment is designed around each.

Self-presentation

Senior candidates are the most practised self-presenters in any process. A tool that simply asks leaders to describe themselves rewards impression management, not leadership — so a credible instrument must detect socially-desirable responding.

Level mismatch

Leadership is not one construct measured once. The behaviours of an effective individual contributor differ from those of an effective enterprise leader. A single, blended reference population systematically misjudges leaders at the extremes of the pipeline.

Construct ambiguity

"Leadership potential" as a single number tells a hiring manager almost nothing actionable. Useful measurement resolves leadership into specific, observable behaviours that can be developed, interviewed against, and tracked.

2 Theoretical foundation: the Five-Factor Model

The assessment is grounded in the **Five-Factor Model (FFM)** of personality — the most extensively researched and cross-culturally replicated framework in personality science (Costa & McCrae, 1992; Goldberg, 1999). Rather than measuring the five broad domains alone, the instrument measures at the **facet level** — the narrower trait units beneath each factor — because facet-level measurement carries more specific, work-relevant signal than broad factors alone.

The choice is deliberate and evidence-based. Meta-analytic research has established that Five-Factor traits predict job performance and leadership emergence and effectiveness across roles and industries (Barrick & Mount, 1991; Judge, Bono, Ilies & Gerhardt, 2002). Building leadership competencies up from validated personality facets — rather than asking candidates to self-rate on competencies directly — grounds each competency score in stable, theory-backed measurement.

The specific facet inventory, the items used to measure each facet, and the algorithms that combine facets into competencies are proprietary to PMaps and are not disclosed in this paper.

3 The measurement architecture

The assessment uses a **hierarchical measurement model**. Measurement begins at the foundational personality level and is aggregated upward into progressively more interpretable units — which is what lets the assessment express results at whatever altitude a decision requires.

VALIDATED TRAIT MEASUREMENT

Foundational personality facets

Stable, theory-backed units beneath each Five-Factor domain

WEIGHTED AGGREGATION

OBSERVABLE BEHAVIOURS

Leadership sub-competencies — 29

Specific, definable behaviours with level-appropriate indicators

DOMAIN AGGREGATION

CAPABILITY AREAS

Leadership competency domains — 5

Enterprise-relevant areas of leadership capability

OVERALL AGGREGATION

SINGLE INDEX

Leadership Quotient

One aggregate index of behavioural leadership effectiveness

WHY IT MATTERS

This structure lets results speak at three altitudes: a *single Leadership Quotient* for a fast screen, *five domain scores* for a capability profile, or *29 sub-competency scores* for development planning and interview design.

Each sub-competency carries a defined operational definition and a set of observable behavioural indicators at the relevant leadership level — which is what enables the assessment to output behavioural narratives and structured interview probes rather than bare scores.

The mapping of which personality facets compose each sub-competency, and the weightings applied, constitute the core intellectual property of the instrument and are not published.

3 The five domains & 29 sub-competencies

Personal Effectiveness 7 SUB-COMPETENCIES	Adaptability · Learnability · Dealing with Uncertainty & Ambiguity · Self-Awareness · Role Model · Work Ethics · Stress Management
People Management 7 SUB-COMPETENCIES	Approachability · Empathy · Delegation Skills · Inclusive Mindset · Managing Biases · Conflict Management · Coaching & Mentoring
Driving Results 6 SUB-COMPETENCIES	Achievement Orientation · Business Acumen · Decision Making · Execution Skills · Growth Mindset · Partnership & Collaboration
Driving Change 4 SUB-COMPETENCIES	Change Management · Consultative Behaviour · Crisis Management · Agile Thinking
Thought Leadership 5 SUB-COMPETENCIES	Organizational Awareness · Market Intelligence · Openness to Perspectives · Strategic Thinking · Global Mindset

Each sub-competency carries a defined operational definition and a set of observable behavioural indicators at the relevant leadership level — enabling behavioural narratives and structured interview probes, not bare scores.

4 Level-specific calibration

A single competency framework is calibrated across **four proficiency levels** spanning the talent pipeline. Each level is measured against a **dedicated norm group** with level-appropriate behavioural anchors and benchmarks.

Level 01	Level 02	Level 03	Level 04
Individual Contributor	**First-Time Management**	**Middle Management**	**Senior / Enterprise Leadership**

This addresses the level-mismatch problem directly. A senior leader's scores are interpreted against a senior-level reference population, not a general-population baseline — which prevents the score inflation that occurs when executive candidates are compared to the broad workforce. **"High" means high among true-level peers.**

5 Scoring methodology

Scoring proceeds by **norm-referenced, weighted aggregation**. Facet-level measurement is combined into sub-competency scores, which roll up into domain scores and an overall Leadership Quotient. Every score is then interpreted against the level-specific comparison sample and classified into one of three bands — **Low, Average, or High** — with thresholds calibrated to observed real-world score distributions rather than naïve equal thirds.

The Leadership Quotient is an aggregate index of behavioural effectiveness across all five domains; it is designed to support fit and potential judgements, not to replace them. Throughout, the assessment is positioned as **one input** into a leadership decision alongside structured interviews, functional evidence, and references.

Item scoring keys, facet weightings, band-threshold values, and norm-sample parameters are proprietary and are not disclosed.

6 The Impression Management safeguard

To address self-presentation, the assessment embeds a validated **Impression Management (IM) scale** that detects the tendency to respond in a socially-desirable manner. A high IM score flags a **"Not Genuine"** response style, signalling that competency scores should be interpreted with appropriate caution before any decision is made.

This safeguard matters most precisely where it is most needed — at the senior level, where candidates are the most sophisticated self-presenters and where the cost of a false-positive hire is highest. It is the mechanism that lets an evaluator trust, or appropriately discount, the scores in front of them.

7 Framework construction & content validity

The competency framework is drawn from a structured **competency library** in which each competency carries a research-informed operational definition and behavioural indicators at multiple leadership levels. Role- and level-specific frameworks are constructed by selecting and weighting the competencies relevant to a target role, with **subject-matter-expert (SME) review** of definitions, indicators, and item relevance.

This process is the basis of the instrument's **content validity**: the claim that the behaviours measured are the behaviours that matter for the role — established through expert judgement and documented mapping rather than assumed.

8 Psychometric evidence

We organise the evidence using the validity framework of the *Standards for Educational and Psychological Testing* (AERA, APA & NCME, 2014), and report it transparently — strengths and current limits alike.

LEADERSHIP INSTRUMENT · INTERNAL CONSISTENCY

RELIABILITY — INTERNAL CONSISTENCY

The leadership instrument demonstrates internal-consistency reliability of **Cronbach's α = 0.74** across its item pool — an acceptable level for a multidimensional behavioural instrument. The broader PMaps behavioural assessment programme on which the facet measurement is based has reported higher internal consistency (**α = 0.89**) in a large-sample validation study, providing additional support for the underlying measurement approach.

Content validity ESTABLISHED	Established through SME panel review of competency definitions, behavioural indicators, and item relevance (Section 7).
Construct validity SUPPORTED	The factor structure underlying the behavioural measurement has been examined using factor-analytic methods (PCA and confirmatory factor analysis) in a **2023 validation study of ~1,400 participants**, conducted under academic supervision. This work supports the internal structure of the measurement model.
Concurrent validity SUPPORTED	Supported two ways: the 2023 study established concurrent agreement across the visual and text-based delivery formats; and PMaps' **90° measurement design** — pairing assessment-based scores with independent manager ratings on the same competencies — provides a direct, ongoing means of evaluating concurrent validity in live deployments.
Criterion validity ON ROADMAP	Direct evidence that scores predict future on-the-job leadership performance is **not yet established for this instrument.** We state this plainly.

LIMITATIONS & THE VALIDATION ROADMAP

The current evidence base establishes reliability, content, construct, and concurrent validity. The broader literature establishes that Five-Factor-based methods *as a class* carry meaningful predictive validity for performance and leadership outcomes (Schmidt & Hunter, 1998; Sackett, Zhang, Berry & Lievens, 2022; Judge et al., 2002) — but that describes the method class, not this specific instrument. **Establishing instrument-specific predictive validity — linking scores to subsequent performance, promotion, or retention — is the defined next phase of the validation programme.**

9 Standards conformance

No global authority certifies the scores of any psychometric assessment. Credibility rests on building to recognised standards and publishing transparent evidence. The PMaps Leadership Assessment is developed and documented with reference to:

Built & documented to recognised standards

- **ISO 10667** — Assessment service delivery: procedures and methods to assess people in work and organisational settings.
- **Standards for Educational and Psychological Testing** (AERA, APA & NCME, 2014).
- **ITC Guidelines on Test Use** (International Test Commission).

10 Conclusion

The PMaps Leadership Assessment combines a validated personality foundation, a hierarchical competency architecture, level-specific norm calibration, a genuineness safeguard, and a transparent evidence base into a single instrument built for enterprise leadership decisions. It is designed to give organisations defensible, behaviour-level leadership intelligence — and to be honest about the boundaries of what it currently evidences. **That honesty is not a caveat to the science; it is part of it.**

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PMaps

LET'S TALK

MEASURE LEADERSHIP WITH DISCIPLINE

Defensible, behaviour-level leadership intelligence.

See how the PMaps Leadership Assessment measures leadership capability — grounded in the Five-Factor Model, calibrated to level, and built to recognised testing standards.

LEADERSHIP ASSESSMENT →

BOOK A DEMO

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5 / 29	4	0.74 α	ISO 10667
DOMAINS / SUB-COMPETENCIES	PROFICIENCY LEVELS	INTERNAL CONSISTENCY	STANDARDS-ALIGNED