PADV Methodology White Paper

Auditor Summary Overview｜審計師摘要概述

Purpose of This Document ｜文件目的

This summary provides ESG auditors, verification bodies, and institutional evaluators with a clear and concise understanding of the PADV System, developed by EMJ.LIFE, as a verifiable and modular behavioral data infrastructure aligned with global ESG standards. It serves as a companion overview to the full white paper.

本摘要旨在為 ESG 審計師、驗證機構和機構評估者提供對 EMJ.LIFE 開發的 PADV 系統清晰簡潔的理解。PADV 系統是一個可驗證的模組化行為數據基礎設施，符合全球 ESG 標準。本摘要作為完整白皮書的配套概述。

1. Framework Name｜框架名稱

PADV System: Participation – Action – Data – Value PADV 系統：參與 – 行動 – 數據 – 價值

2. Developer｜開發者

EMJ LIFE HOLDINGS PTE. LTD. Registered in Singapore (UEN: 202445078N)

3. Core Function｜核心功能

PADV captures and verifies public sustainability participation behavior and translates it into audit-ready ESG indicators. This system bridges the gap between informal public engagement and institutional reporting.

PADV 捕捉並驗證公眾的可持續發展參與行為，並將其轉化為可供審計的 ESG 指標。該系統彌合了非正式公眾參與與機構報告之間的差距。

4. Modular Structure｜模組化結構

- P: Participation Logs｜參與日誌 – Captures user check-ins and SDG-related actions｜記錄用戶簽到和與可持續發展目標相關的行動
- A: Action Structuring｜行動結構化 – Converts activities into standardized, timestamped tasks｜ 將活動轉化為標準化、帶時間戳的任務
- D: Data Governance｜數據治理 – Ensures traceability, uniqueness, and integrity of behavioral data｜ 確保行為數據的可追溯性、唯一性和完整性

■ V: Value Conversion｜價值轉化 – Translates impact into carbon data (NTCC) and point-based SDG alignment｜將影響轉化為碳數據（NTCC）和基於積分可持續發展目標對齊

5. Verification Logic ｜驗證邏輯

Each recorded action contains｜每項記錄的行動包含：
- Timestamped proof of activity｜帶時間戳的活動證明
- Geolocation or event ID tag｜地理位置或事件 ID 標籤
- SDG tag(s) and task code｜可持續發展目標標籤和任務代碼
- Carbon equivalence (kgCO$_2$e) when applicable｜適用時的碳當量（kgCO$_2$e）

6. International Standards Alignment (國際標準對齊)

PADV aligns with: PADV 符合：
- GRI (Global Reporting Initiative)｜全球報告倡議組織
- IFRS S1/S2 (Sustainability and Climate-Related Disclosures)｜國際財務報告準則 S1/S2（可持續發展和氣候相關披露）
- COSO (Internal Control Framework)｜COSO 內部控制框架
- UN SDGs (Goal-aligned tagging mechanism)｜聯合國可持續發展目標

7. Use Cases｜使用案例

- Exhibitions and ESG events (on-site check-in and impact capture)｜展覽和 ESG 活動（現場簽到和影響捕捉）
- Campus and education sector (via EDU SDGS PASS)｜校園和教育領域（通過 EDU SDGS PASS）
- Corporate CSR employee participation tracking｜企業社會責任員工參與追蹤
- NGO collaboration and donor transparency｜非政府組織合作和捐助者透明度

8. Carbon Data Mechanism (NTCC) ｜碳數據機制（NTCC）

NTCC (Non-Tradable Carbon Credit) is generated from verifiable mission actions or public welfare redemptions and can be incorporated into third-party reports or ESG disclosures.

NTCC（非交易型碳權）由可驗證的任務行動或公益兌換產生，可編入第三方報告或 ESG 披露部分。

9. Report Compatibility｜報告兼容性

- Auditor reports using PADV can be formatted for｜使用 PADV 審計報告可格式化：
  - GRI Disclosure Tables｜GRI 披露表
  - COSO Control Assurance｜COSO 控制保證

- Corporate ESG KPIs｜企業 ESG 關鍵績效指標
- UN SDG Reporting Structures｜聯合國可持續發展目標報告結構
- **Currently Fully Compatible Standards｜目前可立即兼容的核心標準**
  - GRI｜全球報告倡議組織標準
  - IFRS / ISSB S1 & S2｜國際財務報告準則 / 國際可持續準則委員會 S1 & S2
  - COSO｜反虛假財務報告委員會內控框架
  - TCFD｜氣候相關財務揭露工作小組
  - UN SDGs｜聯合國可持續發展目標
  - VLR (Voluntary Local Review)｜自願地方審查報告
  - QS Sustainability Ranking｜QS 大學可持續發展排名
  - ISO 14064｜溫室氣體量化與報告國際標準
  - ISO 26000｜社會責任指導綱要
- **Partially Compatible – Requires Additional Modules or Data Sources｜部分兼容（需補充專案模組或數據源）**
  - SASB (Sustainability Accounting Standards Board)｜可持續會計準則委員會
  - TNFD (Taskforce on Nature-related Financial Disclosures)｜自然相關財務揭露工作小組
  - ISO 50001 (Energy Management Systems)｜能源管理體系國際標準

10. Third-Party Cooperation (第三方合作)

PADV has entered or is initiating collaborations with: PADV 已與以下機構建立或正在建立合作：

- Eight Major International ESG Verification Bodies｜八大 ESG 驗證機構
- Big Four accounting firms｜四大會計師事務所
- ESG-focused VCC funds｜專注於 ESG 的風險投資基金
- Educational ranking agencies (QS Sustainability)｜教育排名機構（QS 可持續發展）

For full methodology and audit logic, please refer to the Methodology White Paper – vol.03. 有關完整的方法論和審計邏輯，請參閱 PADV 行為數據驗證方法論白皮書 – vol.01。

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Chapter 0｜Institutional Overview: A New Architecture for Behavioral Trust｜機構概述：行為信任的新架構

The 21st century demands a new category of trust: not just financial trust or informational trust, but behavioral trust, the ability to verify that people and institutions are actually participating in sustainability, not merely reporting it.

21 世紀需要一種新型的信任：不僅是金融信任或信息信任，更是行為信任，驗證個人和機構是否真正參與可持續發展，而不僅僅是報告其參與情況的能力。

The PADV system proposed by EMJ.LIFE is an innovative and verifiable trust infrastructure, built around genuine, global-scale sustainable actions.

EMJ.LIFE 提出的 PADV 制度是一種新穎、可驗證的信任基礎設施，其核心是圍繞真實、世界性的可持續行動而建立。

PADV (Participation, Action, Data, Value) – a methodological backbone that aligns behavior with audit logic, ESG reporting standards, and long-term social contract theory.

PADV（參與、行動、數據、價值）– 一種方法論支柱，將行為與審計邏輯、ESG 報告標準和長期社會契約理論相結合。

At its core lies a binary system｜這一制度的核心是一個二元系統：

- SDGS PASS｜永續存摺 – A mechanism that utilizes smart contracts to record the actions of certified individuals and groups in ESG-related missions.｜一種透過智能合約用於經過認證的個人和團體在 ESG 相關任務中的行為紀錄機制。
- NTCC (Non-Tradable Carbon Credit｜非交易型碳權) – An auto-conversion system that quantifies verified participation into ESG, accountable impact units. ｜一種將驗證的參與量化為 ESG 可歸責影響單位的自動轉換系統。

0.1｜Redefining Participation in ESG (重新定義 ESG 中的參與)

Traditional ESG systems rely on organization-centric disclosures and retrospective assessments. PADV inverts this logic by:

傳統的 ESG 系統依賴於以組織為中心的披露和回溯性評估。PADV 通過以下方式顛覆了這一邏輯：

- Starting with verified participation, not only policies.｜從驗證參與開始，不僅僅是政策。

- Linking bottom-up actions with top-down governance.｜將自下而上的行動與自上而下的治理聯繫起來。
- Making sustainability data living, traceable, and accountable.｜使可持續發展數據具有生命力、可追溯性和可歸責性。

0.2｜From Visa to PADV: Rebuilding Trust for the Impact Economy
從 Visa 到 PADV：為影響力經濟重建信任

If Visa solved the global problem of monetary trust, PADV is solving the next-generation problem of action-based trust:

如果 Visa 解決了全球貨幣信任問題，那麼 PADV 正在解決下一代基於行動的信任問題：

- Visa verifies transactions｜Visa 驗證交易。
- PADV verifies participation｜PADV 驗證參與。
- Visa enables commerce｜Visa 促成商業。
- PADV enables sustainable citizenship｜PADV 促成可持續公民身份。

Both are trust infrastructures, but one governs money, the other governs meaning.

兩者都是信任基礎設施，但一個管理金錢，另一個管理意義。

0.3｜Systemic Role in the ESG Era (在 ESG 時代的系統性作用)

PADV does not position itself as a product or platform, it is an institutional protocol that:

PADV 不將自己定位為產品或平台，它是一個機構協議，其作用是：

- Can be deployed in schools, events, corporate ESG programs, and government campaigns.｜可部署於學校、活動、企業 ESG 項目和政府活動中。
- Converts participation into a verifiable carbon and social value ledger.｜將參與轉化為可驗證的碳和社會價值賬本。
- Supports auditors, policymakers, and investors with behavior-grade data integrity.｜為審計師、政策制定者和投資者提供行為級別的數據完整性支持。

"In a world fatigued by greenwashing and self-declared sustainability, PADV offers not a tool, but a standard."

「在一個被漂綠和自稱可持續發展所困擾的世界裡，PADV 提供的不是一個工具，而是一個標準。」

Chapter 1｜Problem Awareness: Why Institutionalize Behavioral Data?｜問題意識：為何將行為數據制度化？

The global ESG landscape suffers from a blind spot: the absence of verified behavioral data. While sustainability frameworks have evolved to measure emissions, risks, and policies, they fall short in capturing the real participation of people, employees, consumers, citizens, whose behaviors ultimately drive environmental and social outcomes.

全球 ESG 領域存在一個盲點：缺乏經過驗證的行為數據。儘管可持續發展框架已發展到衡量排放、風險和政策，但它們未能捕捉到個人、員工、消費者、公民的真實參與，而這些人的行為最終推動著環境和社會成果。

1.1｜The Crisis of Performative ESG｜表演性 ESG 的危機

- Many ESG disclosures rely on narratives and self-declared metrics, leaving them vulnerable to greenwashing.｜許多 ESG 披露依賴敘述和自我聲明的指標，使其容易受到漂綠行為的影響。
- Most participation data is scattered, anecdotal, or unverifiable, failing to meet audit thresholds.｜大多數參與數據分散、零碎或無法驗證，未能達到審計門檻。
- The lack of shared behavior standards erodes public trust and weakens the impact of ESG capital.｜缺乏共同的行為標準侵蝕了公眾信任，並削弱了 ESG 資本的影響力。

1.2｜Why Behavior Matters Now｜為何行為現在如此重要

- Consumer and citizen actions represent the most scalable vector for sustainability impact.｜消費者和公民的行動代表了可持續發展影響最具規模化的載體。
- Policies and strategies are only as effective as their on-ground adoption.｜政策和策略的有效性取決於其在實地的採納程度。
- Institutions must be able to verify that social contracts are being fulfilled, not just announced.｜機構必須能夠驗證社會契約是否正在履行，而不僅僅是宣布。

1.3｜The Accountability Gap (問責差距)

Layer	Current Status	Limitation
Policy	Increasingly ESG-aligned	Not behavior-anchored
Disclosure	ESG reports & indexes	Often unverifiable
Action	Missions, events, campaigns	Rarely standardized or tracked

層面	現狀	局限性
政策	日益與 ESG 對齊	未以行為為基礎
披露	ESG 報告與指數	通常無法驗證
行動	任務、活動、運動	很少標準化或追蹤

Without a method to institutionalize behavior, the ESG economy risks becoming symbolic. There is no sustainability without participatory proof.

如果沒有將行為制度化的方法，ESG 經濟就有淪為象徵的風險。沒有參與證明，就沒有可持續發展。

1.4 │ EMJ.LIFE's Response │ EMJ.LIFE 的回應

EMJ.LIFE introduces a logic of participation-first ESG verification. By linking verified actions to ESG utility (via NTCC) and reportable structure (via PADV), it closes the accountability gap and establishes a new layer of behavioral governance.

EMJ.LIFE 引入了一種「參與優先」的 ESG 驗證邏輯。通過將驗證的行動與 ESG 效用（通過 NTCC）和可報告結構（通過 PADV）聯繫起來，它彌合了問責差距，並建立了一個新的行為治理層面。

"Sustainability must not only be claimed, it must be demonstrated, aggregated, and trusted."

「可持續發展不僅要聲稱，更要被證明、被匯總和被信任。」

Chapter 2 │ Limitations of the Old Paradigm │ 舊範式的局限性

Despite decades of effort to establish sustainability frameworks, the legacy ESG paradigm continues to fall short in three critical dimensions: actionability, traceability, and institutional usability.

儘管數十年來致力於建立可持續發展框架，但傳統的 ESG 範式在三個關鍵維度上仍顯不足：可操作性、可追溯性和機構可用性。

2.1 │ Narrative Dominance over Evidence │ 敘事凌駕於證據

- ESG reports often remain narrative-heavy, with limited data integrity. │ ESG 報告通常過於側重敘事，數據完整性有限。

- Stakeholders (investors, regulators, public) are forced to trust claims without mechanisms for verifying real-world impact.｜利益相關者（投資者、監管機構、公眾）被迫相信聲明，卻缺乏驗證實際影響的機制。
- Sustainability becomes performative, lacking behavioral traceability.｜可持續發展變成了一種表演，缺乏行為可追溯性。

2.2｜Lack of a Participatory Architecture｜缺乏參與式架構

- Current systems are organization-centric, sidelining the role of individuals and communities.｜當前系統以組織為中心，忽視了個人和社區的作用。
- Platforms rarely capture the distributed, everyday actions that generate real change.｜平台很少捕捉到產生真正變革的分散的日常行動。
- Without a protocol to record, validate, and reward participation, the system misses its largest reservoir of impact.｜如果沒有記錄、驗證和獎勵參與的協議，該系統將錯失其最大的影響力來源。

2.3｜Misalignment with Audit and Governance Structures｜與審計和治理結構不符

- Most ESG actions are not natively auditable.｜大多數 ESG 行動本身不可審計。
- Voluntary disclosures are often incompatible with financial audit logic (e.g., XBRL, COSO, IFRS).｜自願性披露通常與財務審計邏輯（例如 XBRL、COSO、IFRS）不兼容。
- This disconnect limits integration with institutional decision-making.｜這種脫節限制了與機構決策的整合。

2.4｜The Data Fragmentation Problem｜數據碎片化問題

Area	Legacy Model	Limitation
Engagement	Campaign-based	No feedback loop
Measurement	Scorecard & policy survey	Low verification
Value	Reputational	Not convertible to carbon or ESG metrics

領域	傳統模式	局限性
參與	基於活動	無反饋循環
衡量	記分卡與政策調查	驗證度低

領域	傳統模式	局限性
價值	聲譽性	無法轉化為碳或 ESG 指標

The result is a system that is symbolic but structurally fragile, unable to capture what matters most: verifiable behavior.

結果是一個象徵性但結構脆弱的系統，無法捕捉到最重要的東西：可驗證的行為。

2.5 | The Need for a Protocol Layer | 對協議層的需求

EMJ.LIFE addresses this by introducing PADV as a trust infrastructure for action:

EMJ.LIFE 通過引入 PADV 作為行動的信任基礎設施來解決這個問題：

- Participation becomes structured. | 參與變得結構化。
- Actions are time-stamped and authenticated. | 行動帶有時間戳並經過認證。
- Data aligns with audit and ESG frameworks. | 數據與審計和 ESG 框架對齊。
- Value flows back into the governance and incentive system (via NTCC). | 價值回流到治理和激勵系統（通過 NTCC）。

"The problem is not that we don't have ESG ambition, it's that we lack the scaffolding to verify and scale it."

「問題不在於我們沒有 ESG 的雄心，而在於我們缺乏驗證和擴展它的支撐。」

Chapter 3 | A New Paradigm: Behavioral Data as a Trust Asset | 新範式：行為數據作為信任資產

The fundamental shift EMJ.LIFE introduces is this: behavior itself becomes an auditable, trust-producing asset. Rather than viewing participation as informal, anecdotal, or symbolic, we embed it in a formal system architecture with measurable utility.

EMJ.LIFE 引入的根本性轉變是：行為本身成為一種可審計、產生信任的資產。我們不再將參與視為非正式、軼事或象徵性的，而是將其嵌入到具有可衡量效用的正式系統架構中。

3.1 | Redefining Data Value | 重新定義數據價值

- In legacy systems, value is tied to outcomes (emissions reduced, dollars invested). 在傳統系統中，價值與結果（減少的排放量、投資的金額）掛鉤。

- In PADV, verified participation is the unit of value, it's the signal, not the byproduct. │在 PADV 中，驗證的參與是價值的單位，它是信號，而不是副產品。
- This enables real-time value creation based on ongoing behavior, not retrospective reports. │這使得基於持續行為的實時價值創造成為可能，而非基於回溯性報告。

3.2 │ The PADV Conversion Chain │ PADV 轉換鏈)

Layer	Function	Output
Participation	Individual/group completes a sustainable action	Action tokenized in SDGS PASS
Action	Validated with event/time/SDG/identity markers	Recorded in behavioral ledger
Data	Aggregated and structured per ESG standard	Third-party verifiable data stream
Value	Converted into NTCC / ESG report	Auditable impact + organizational contributions credit

層面	功能	輸出
參與	個人/團體完成可持續行動	行動在 SDGS PASS 中代幣化
行動	經事件/時間/SDG/身份標記驗證	記錄在行為分類帳中
數據	根據 ESG 標準匯總和結構化	第三方可驗證數據流
價值	轉化為 NTCC / ESG 報告	可審計的影響 + 組織貢獻信用

PADV thus creates a conversion pipeline from behavior to trust, with clearly auditable checkpoints.

因此，PADV 創建了一個從行為到信任的轉換管道，並設有清晰可審計的檢查點。

3.3 │ Why This Changes the Game │ 為何這改變了遊戲規則

- Individuals are no longer passive consumers, they are verified participants. │個人不再是被動的消費者，他們是經過驗證的參與者。

- Organizations gain access to a new asset class: behavior-grade ESG data.｜組織獲得了一種新的資產類別：行為級別的 ESG 數據。
- Governments and regulators can finally see "what is happening" on the ground, not just on paper.｜政府和監管機構最終可以看到實地「正在發生什麼」，而不僅僅是紙上談兵。

3.4｜Use Case Snapshot: School, Brand, Event｜用例快照：學校、品牌、活動

- A student joins a coastal cleanup → gets SDGS PASS.｜學生參與海岸清理 → 獲得 SDGS PASS。
- The school records 3,000+ verified acts in one term.｜學校在一個學期內記錄了 3,000 多項驗證行為。
- The system converts this into an NTCC statement → usable in CSR, ESG reporting, or rankings.｜系統將此轉換為 NTCC 聲明 → 可用於企業社會責任、ESG 報告或排名。

"If data is the new oil, then participatory behavior is the new electricity, distributed, renewable, and governance-grade."

「如果數據是新的石油，那麼參與性行為就是新的電力，分佈式、可再生且達到治理級別。」

Chapter 4｜Institutional Advantages: Four Systemic Dividends｜制度優勢：四大系統性紅利

By transforming behavior into an auditable and convertible asset, PADV does more than just enable participation, it unlocks four systemic dividends that solve long-standing ESG implementation failures.

通過將行為轉化為可審計和可轉換的資產，PADV 不僅僅是促成參與，它還解鎖了四個系統性紅利，解決了長期存在的 ESG 實施失敗問題。

4.1｜Verifiability as Infrastructure｜可驗證性作為基礎設施

- PADV creates a trust protocol for behavior, just as Visa built one for money.｜PADV 為行為創建了一個信任協議，就像 Visa 為金錢建立了一個協議一樣。
- Every action becomes event-verified, timestamped, and convertible into ESG disclosures.｜每項行動都經過事件驗證、帶有時間戳，並可轉換為 ESG 披露。
- Institutions now have access to audit-ready ESG behavior data that aligned with COSO, GRI, and IFRS.｜機構現在可以獲得符合 COSO、GRI 和 IFRS 的、可供審計的 ESG 行為數據。

4.2｜Behavior as Governance Currency｜行為作為治理貨幣

- With NTCC, behavior is not only measured but valued and accounted for.｜借助 NTCC，行為不僅被衡量，還被估價和核算。
- Participatory ESG data becomes a form of organizational currency, useful for rankings, subsidies, procurement, and reporting.｜參與性 ESG 數據成為一種組織貨幣，可用於排名、補貼、採購和報告。
- This redefines incentive design: "do good" now generates real institutional gain.｜這重新定義了激勵設計：「做好事」現在能產生真正的機構收益。

4.3｜Inclusion of Non-Traditional Actors｜納入非傳統參與者

- SDGS PASS empowers participation from schools, events, consumers, and micro-communities.｜SDGS PASS 賦予學校、活動、消費者和微型社區參與的能力。
- It captures data from groups historically outside ESG systems, creating a broader, more equitable climate ledger.｜它從歷史上不在 ESG 系統內的群體中捕捉數據，創建了一個更廣泛、更公平的氣候分類賬。
- This supports emerging policies that demand inclusive, bottom-up climate action data.｜這支持了要求包容性、自下而上氣候行動數據的新興政策。

4.4｜Policy and Ecosystem Integration｜政策與生態系統整合

- PADV modular data can plug directly into｜PADV 的模組化數據可以直接接入：
  - Government ESG dashboards｜政府 ESG 儀表板
  - Corporate ESG audits｜企業 ESG 審計
  - Education ranking metrics (e.g., QS)｜教育排名指標（例如 QS）
- This enables seamless policy alignment without forcing legacy systems to be rebuilt.｜這使得政策能夠無縫對齊，而無需強制重建傳統系統。

"Trust is no longer a statement, it's a dataset. PADV lets systems earn trust, not just claim it."

「信任不再是一種聲明，它是一個數據集。PADV 讓系統贏得信任，而不僅僅是聲稱擁有信任。」

Chapter 5｜System Architecture Diagram ｜系統架構圖

The PADV system architecture reflects a structured protocol for capturing, validating, and converting behavioral actions into ESG-grade data and institutional value. The following architecture diagram represents the key components and flows.

PADV 系統架構反映了一種結構化的協議，用於捕捉、驗證和將行為行動轉化為 ESG 級別的數據和機構價值。以下架構圖展示了關鍵組件和流程。

5.1｜Layered System Architecture (PADV)｜分層系統架構（PADV）

[Diagram Placeholder - Original document contains a diagram here. This will need to be re-created or described if the user wants a visual representation.]

5.2｜Core Flow Description｜核心流程描述

1. Participation: Individuals complete verified activities via SDGS PASS.
   參與：個人通過 SDGS PASS 完成驗證的活動。
2. Action: Activities are validated with time, location, SDG code, and identity markers.
   行動：活動通過時間、地點、SDG 代碼和身份標記進行驗證。
3. Data: Structured for alignment with ESG frameworks.
   數據：結構化以符合 ESG 框架。
4. Value: Converted into NTCC and used in corporate/government reporting.
   價值：轉化為 NTCC 並用於企業/政府報告。

5.3｜Cross-System Compatibility (跨系統兼容性)

- GRI / COSO / IFRS → Audit-ready ESG modules｜可審計的 ESG 模組
- QS / AASHE / UNDP → Integrated SDG education alignment｜整合的可持續發展目標教育對齊
- Visa (analog) → Similar to transaction verification, PADV ensures behavioral trust
  Visa（類比）→ 類似於交易驗證，PADV 確保行為信任

"PADV is not just a data engine, it's the connective tissue between real-world action and institutional recognition."

「PADV 不僅僅是一個數據引擎，它是現實世界行動與機構認可之間的連接組織。」

Chapter 6｜Modular System Breakdown｜模組化系統分解

The strength of PADV lies in its modularity; each component can be independently deployed, upgraded, or integrated across different institutional settings. These modules function as interoperable units that translate participation into value and governance alignment.

PADV 的優勢在於其模組化；每個組件都可以獨立部署、升級或整合到不同的機構設置中。這些模組作為可互操作的單元，將參與轉化為價值和治理對齊。

6.1｜Core Modules Overview｜核心模組概述

Module	Description	Primary User
Mission Module	Enables organizers to create and manage ESG tasks, events, and participation challenges	Schools, NGOs, Brands, Gov. Agencies
Verification Module	Confirms time, location, identity, and SDG alignment via platform protocols	PADV Platform + External Auditors
NTCC Ledger Module	Converts verified behavior into Non-Tradable Carbon Credit units for ESG reporting	Corporates, Event Hosts, Reporting Teams
Report Builder Module	Generates audit-grade summaries (XBRL, PDF, JSON) for institutional disclosures	ESG/CSR Teams, Educators, Municipalities
Dashboard Module	Visualizes individual/institutional SDG performance and impact accumulation	Participants, Admins, Ranking Bodies

模組	描述	主要用戶
任務模組	使組織者能夠創建和管理 ESG 任務、活動和參與挑戰	學校、非政府組織、品牌、政府機構
驗證模組	通過平台協議確認時間、地點、身份和 SDG 對齊	PADV 平台 + 外部審計師
NTCC 分類帳模組	將驗證的行為轉換為非交易型碳權單位，用於 ESG 報告	企業、活動主辦方、報告團隊
報告生成器模組	為機構披露生成審計級別的摘要（XBRL、PDF、JSON）	ESG/CSR 團隊、教育工作者、市政當局
儀表板模組	可視化個人/機構的 SDG 績效和影響累積	參與者、管理員、排名機構

6.2 ｜ Interoperability Logic ｜互操作性邏輯

- Modules communicate through PADV core logic, ensuring consistent data formatting and conversion. ｜模組通過 PADV 核心邏輯進行通信，確保數據格式和轉換的一致性。
- External parties (e.g. PwC, Deloitte) can access specific module outputs via secure API. ｜外部方（例如 PwC、Deloitte）可以通過安全 API 訪問特定模組的輸出。
- All modules comply with ESG data governance principles (traceability, integrity, consent). ｜所有模組均符合 ESG 數據治理原則（可追溯性、完整性、同意）。

6.3 ｜ Adaptability by Sector ｜按行業適應性

Sector	Activated Modules	Sample Output
University	Mission, Verification, Report	Annual SDG Participation ESG Appendix
Corporate	Mission, NTCC, Report	Employee ESG Action + CSR Report Summary
Government	Mission, Dashboard, Report	Citizen Participation Dashboard & NTCC Fund Ledger
Event Host	Mission, Verification, NTCC	Sustainability Outcome Sheet per Event

行業	啟用模組	示例輸出
大學	任務、驗證、報告	年度 SDG 參與 ESG 附錄
企業	任務、NTCC、報告	員工 ESG 行動 + 企業社會責任報告摘要
政府	任務、儀表板、報告	公民參與儀表板和 NTCC 基金分類帳
活動主辦方	任務、驗證、NTCC	每場活動的可持續發展成果表

6.4 ｜ Design Principles ｜設計原則

- Composable: Each module can function standalone or as part of a full system. ｜可組合：每個模組都可以獨立運行，或作為完整系統的一部分。

- Scalable: Works for a classroom, a multinational, or a nation.｜可擴展：適用於教室、跨國公司或國家。
- Auditable: Every module produces data that is independently verifiable.｜可審計：每個模組都產生可獨立驗證的數據。

"PADV is not just a platform-based system; it is a modular participation infrastructure capable of enabling ESG behavioral data governance at any scale."

「PADV 不只是一個平台制度，它更是一個模組化的參與基礎設施，能夠在任何規模下實現 ESG 行為數據治理。」

Chapter 7｜PADV: Methodological Foundation｜PADV：方法論基礎

The PADV framework, Participation, Action, Data, Value, is the methodological core of EMJ.LIFE. It provides the logic by which behavior is transformed into verified, reportable ESG impact.

PADV 框架，即參與、行動、數據、價值，是 EMJ.LIFE 的方法論核心。它提供了將行為轉化為經過驗證、可報告的 ESG 影響的邏輯。

7.1｜Foundational Definitions｜基礎定義

- Participation (P): An entry point action taken by a user, e.g., scanning a QR code, completing a quiz, or checking into an event.
  參與（P）：用戶採取的入口點行動，例如掃描二維碼、完成測驗或簽到活動。
- Action (A): Categorized behavior aligned to specific SDGs, validated by the platform and tagged with metadata.
  行動（A）：與特定可持續發展目標對齊的分類行為，經平台驗證並標記元數據。
- Data (D): Time-stamped, geo-tagged, identity-linked records stored in a structured format, compliant with audit logic.
  數據（D）：帶時間戳、地理標記、身份關聯的記錄，以結構化格式存儲，符合審計邏輯。
- Value (V): The outcome of verified behavior, calculated into NTCC units and ESG-reportable metrics.
  價值（V）：驗證行為的結果，計算為 NTCC 單位和可報告的 ESG 指標。

7.2｜What Makes PADV Unique｜PADV 的獨特之處

- Designed from day one to be auditable and interoperable with global ESG frameworks.｜從第一天起就設計為可審計並與全球 ESG 框架互操作。

- Embeds behavioral verification checkpoints at every stage.｜在每個階段嵌入行為驗證檢查點。
- Ensures all data is consent-based, traceable, and disclosure-ready.｜確保所有數據都是基於同意、可追溯且可供披露的。

7.3｜Comparison to Legacy Systems｜與傳統系統的比較

Layer	Legacy Paradigm	PADV Paradigm
Action	Self-reported, assumed	Event-verified, timestamped
Data	Aggregated after the fact	Generated in real-time
Value	Reputational score or symbolic badge	Quantified into NTCC & ESG utility

層面	傳統範式	PADV 範式
行動	自我報告，假設	事件驗證，帶時間戳
數據	事後匯總	實時生成
價值	聲譽分數或象徵性徽章	量化為 NTCC 和 ESG 效用

7.4｜Audit-Grade Method Logic｜審計級方法邏輯

PADV enables: PADV 能夠實現：

- Third-party verification via API or snapshot exports｜通過 API 或快照導出進行第三方驗證
- Seamless alignment to COSO (risk), GRI (impact), IFRS (disclosure)｜與 COSO（風險）、GRI（影響）、IFRS（披露）無縫對齊
- Export formats compatible with XBRL, JSON, and PDF｜導出格式兼容 XBRL、JSON 和 PDF

7.5｜Why This Matters｜為何這很重要

"In a world where ESG is too often declared but not demonstrated, PADV is the bridge between participation and proof."

「在一個 ESG 常常被宣稱卻未被證明的世界裡，PADV 是連接參與與證明的橋樑。」

Chapter 8｜Trust Mechanism: From Visa to PADV 信任機制：從｜Visa 到 PADV

In the world of finance, Visa created the global standard for transactional trust, a framework that enables billions of users to send, receive, and validate payments across borders and platforms. EMJ.LIFE's PADV system aims to do for behavioral sustainability what Visa did for money: build a protocol where actions are verifiable, interoperable, and institutionally trustworthy.

在金融世界中，Visa 為交易信任創建了全球標準，該框架使數十億用戶能夠跨越國界和平台發送、接收和驗證支付。EMJ.LIFE 的 PADV 系統旨在為行為可持續性做 Visa 為金錢所做的事情：建立一個行動可驗證、可互操作且在機構上值得信賴的協議。

8.1｜The Analogy: Visa vs. PADV｜類比：Visa 與 PADV

Dimension	Visa	EMJ.LIFE (PADV)
Trust Object	Monetary transaction	Sustainable behavior
Validation Mechanism	Card issuer + clearing network	Event + SDG verification module
Value Token	Currency units (e.g. USD)	NTCC (Non-Tradable Carbon Credit)
Governance Role	Payment networks & banks	ESG auditors, platform, civil institutions
Impact	Financial interoperability	ESG Behavioral Data Infrastructure

維度	Visa	EMJ.LIFE (PADV)
信任對象	貨幣交易	可持續行為
驗證機制	發卡機構 + 清算網絡	事件 + SDG 驗證模組
價值代幣	貨幣單位（例如美元）	NTCC（非交易型碳權）
治理角色	支付網絡與銀行	ESG 審計師、平台、民間機構
影響	金融互操作性	ESG 行為數據基礎設施

8.2｜From Payment Rail to Participation Rail｜從支付軌道到參與軌道

Just as Visa provides｜正如 Visa 提供：

- Cardholder identity + transaction logs｜持卡人身份 + 交易日誌
- Time-stamped, validated transfers｜帶時間戳、已驗證的轉賬
- Reporting to banks and regulators｜向銀行和監管機構報告

PADV provides｜PADV 提供：

- Participant identity + behavioral logs｜參與者身份 + 行為日誌
- Event-stamped, SDG-tagged actions｜帶事件戳、SDG 標記的行動
- Reporting to companies, schools, ESG auditors｜向公司、學校、ESG 審計師報告

"Visa verifies that you spent. PADV verifies that you acted, sustainably."

「Visa 驗證了你的消費。PADV 驗證了你的可持續行動。」

8.3｜What Makes Trust Work｜信任運作的要素

For a behavioral action to earn institutional trust, it must meet four criteria:

為了讓行為行動贏得機構信任，它必須符合四個標準：

1. Authentication: The participant is real and uniquely identified.
   身份驗證：參與者是真實且唯一識別的。
2. Verification: The action occurred, aligned to time, place, and SDG context.
   驗證：行動發生，並與時間、地點和 SDG 背景對齊。
3. Conversion: It is quantified into ESG-reportable impact.
   轉換：它被量化為可報告的 ESG 影響。
4. Portability: It can be recognized across systems (CSR, rankings, dashboards).
   可移植性：它可以在不同系統（企業社會責任、排名、儀表板）中被識別。

8.4｜Designing for Institutional Interoperability｜為機構互動性設計

PADV is: PADV 是：

- Modular, like a clearing protocol｜模組化，像一個清算協議
- Verifiable, like an audit ledger｜可驗證，像一個審計分類帳
- Portable, like a digital identity｜可移植，像一個數字身份
- Standardized, like XBRL for financial disclosures｜標準化，像用於財務披露的 XBRL

This enables: 這使得：

- Cross-sector integration (schools ↔ brands ↔ government)
  跨部門整合（學校 ↔ 品牌 ↔ 政府）
- ESG reward issuance (e.g. NTCC redemption, carbon accountability)
  ESG 獎勵發放（例如 NTCC 兌換、碳問責制）
- Trust without centralization, a new polycentric model for sustainability
  無需中心化的信任，一種新的多中心可持續發展模式

"Trust is no longer an asset class, it's an infrastructure class. PADV is building the rails for sustainable trust."

「信任不再是一種資產類別，它是一種基礎設施類別。PADV 正在為可持續信任構建軌道。」

Chapter 9｜Global Standards Mapping (ISO / GRI / IFRS / COSO)｜全球標準對應（ISO / GRI / IFRS / COSO）

To function as a legitimate infrastructure in the global ESG ecosystem, EMJ.LIFE must be interoperable with existing disclosure and audit frameworks. The PADV system is designed to meet this challenge, offering structural alignment with ISO standards, GRI disclosures, IFRS sustainability reporting, and COSO internal control frameworks.

為了在全球 ESG 生態系統中作為合法的基礎設施運作，EMJ.LIFE 必須與現有的披露和審計框架互操作。PADV 系統旨在應對這一挑戰，提供與 ISO 標準、GRI 披露、IFRS 可持續發展報告以及 COSO 內部控制框架的結構性對齊。

9.1｜Why Standard Mapping Matters｜為何標準對應很重要

- Investor Legitimacy: Capital allocators rely on standardized formats (e.g. IFRS, COSO) to assess materiality and governance risks.｜投資者合法性：資本配置者依賴標準化格式（例如 IFRS、COSO）來評估重要性和治理風險。
- Audit Trail: ESG disclosures must be verifiable, traceable, and consistent with financial reports.｜審計追蹤：ESG 披露必須可驗證、可追溯，並與財務報告一致。
- Cross-border Recognition: ISO and GRI ensure interoperability across jurisdictions and regulatory regimes.｜跨境認可：ISO 和 GRI 確保跨司法管轄區和監管制度的互操作性。

9.2 | PADV Alignment Table (PADV 對齊表)

Standard	Core Requirement	PADV Correspondence	Output Format
ISO 14064-1 (GHG Accounting)	Quantified emissions by activity source	NTCC issuance per verified behavioral unit	CO_2e ledger, NTCC report
GRI 302 / 305 (Energy / Emissions)	Measurable reduction + initiative proof	SDG-tagged participation logs & event-based tracking	ESG event impact report
IFRS S1 / S2	Governance, Strategy, Risk, Metrics KPIs & risk registers	PADV modules mapped to ESG	Audit-ready export (XBRL, JSON, PDF)
COSO ERM	Internal control, evidence-based reporting	Real-time data integrity + process logging	Control-compliant audit trail

標準	核心要求	PADV 對應	輸出格式
ISO 14064-1 (溫室氣體核算)	按活動來源量化排放	每個驗證行為單位的 NTCC 發放	CO_2e 分類帳，NTCC 報告
GRI 302 / 305 (能源 / 排放)	可衡量的減少 + 倡議證明	SDG 標記的參與日誌和基於事件的追蹤	ESG 事件影響報告
IFRS S1 / S2	治理、策略、風險、指標 KPI 和風險登記冊	PADV 模組對應 ESG	可審計的導出（XBRL、JSON、PDF）
COSO ERM	內部控制，基於證據的報告	實時數據完整性 + 流程日誌記錄	符合控制的審計追蹤

9.3 | Audit Integration Logic | 審計整合邏輯

- Event-Level Granularity: All PADV data includes time, identity, SDG, and location markers. | 事件級粒度：所有 PADV 數據都包含時間、身份、SDG 和位置標記。
- Immutable Logs: Participation and action records are digitally signed and non-editable. | 不可變日誌：參與和行動記錄經過數字簽名且不可編輯。

- Consent-Based Disclosure: GDPR-ready, participant-approved data sharing for ESG reporting.｜基於同意的披露：符合 GDPR，參與者批准的 ESG 報告數據共享。

9.4｜Multiformat Export Compatibility｜多格式導出兼容性

Format	Use Case	Output
XBRL	Public ESG filings (IFRS S1/S2)	Structured data for investor-facing portals
PDF	Internal audit & board presentations	Stylized summary with ESG narratives
JSON / API	Real-time system integration	Live syncing with CSR/ERP/GRI dashboards

格式	用例	輸出
XBRL	公開 ESG 文件（IFRS S1/S2）	面向投資者門戶的結構化數據
PDF	內部審計和董事會演示	帶有 ESG 敘述的風格化摘要
JSON / API	實時系統集成	與 CSR/ERP/GRI 儀表板實時同步

9.5｜Design for Dual Assurance｜雙重保證設計

PADV enables｜PADV 能夠實現：

- First-party tracking: Institutions generate real-time behavioral ESG data.｜第一方追蹤：機構生成實時行為 ESG 數據。
- Third-party verification: Auditors (e.g. Big Four, SGS) can validate reports via export snapshots or live API.｜第三方驗證：審計師（例如四大會計師事務所、SGS）可以通過導出快照或實時 API 驗證報告。

"PADV does not replace ISO or GRI, it operationalizes them at the behavioral level. We bring 'people-data' into ESG accountability."

「PADV 不取代 ISO 或 GRI，它在行為層面將其操作化。我們將『人員數據』納入 ESG 問責制。」

Chapter 10｜Education & Sustainability Ranking Alignment｜教育與可持續發展排名對齊

PADV system is not only designed for corporate ESG utility, it is also built to serve the education sector's growing need for sustainability metrics, campus participation tracking, and global ranking alignment. As institutions seek to demonstrate social impact and environmental literacy, SDGS PASS becomes a powerful framework for standardized, behavior-based sustainability education.

PADV 系統不僅為企業 ESG 效用而設計，也旨在滿足教育領域對可持續發展指標、校園參與追蹤和全球排名對齊日益增長的需求。隨著機構尋求展示社會影響和環境素養，SDGS PASS 成為一個強大的框架，用於標準化、基於行為的可持續發展教育。

10.1｜The Educational Use Case for ESG Data｜ESG 數據在教育領域案例

- Universities and high schools are increasingly evaluated on sustainability performance, through systems like QS Sustainability Rankings and AASHE STARS.｜大學和高中越來越多地通過 QS 可持續發展排名和 AASHE STARS 等系統，根據其可持續發展績效進行評估。
- However, most lack a structured system to convert student engagement into recognized, reportable metrics.｜然而，大多數學校缺乏一個結構化的系統，將學生的參與轉化為公認的、可報告的指標。
- PADV system fills this gap, enabling schools to｜PADV 系統填補了這一空白，使學校能夠:
    - Track SDG-aligned activities by students and staff.｜追蹤學生和教職員工與 SDG 對齊的活動。
    - Export verified data for ranking submissions.｜導出驗證數據用於排名提交。
    - Integrate sustainability into curricula and school governance.｜將可持續發展整合到課程和學校治理中。

10.2｜SDGS PASS as a Participatory Curriculum Layer｜SDGS PASS 作為參與式課程層

Application	Description	Output
Course-linked Missions	SDG tasks linked to general education or service learning	Student-level participation logs
USR / Green Campus Projects	Real-world SDG projects validated via platform	Institutional ESG data for Ministry reports

Application	Description	Output
Event/Club Participation	Cleanup drives, carbon-reduction campaigns	NTCC count + visual impact dashboard

應用	描述	輸出
課程相關任務	與通識教育或服務學習相關的 SDG 任務	學生層級的參與日誌
USR / 綠色校園項目	通過平台驗證的真實世界 SDG 項目	用於教育部報告的機構 ESG 數據
活動/社團參與	清潔活動、碳減排活動	NTCC 計數 + 視覺影響儀表板

"We turn passive attendance into active, recordable, and rankable sustainability action."

「我們將被動的出席轉化為積極的、可記錄的、可排名的可持續發展行動。」

10.3｜QS & AASHE STARS Alignment Matrix｜QS 與 AASHE STARS 對齊矩陣

Indicator System	Metric Area	PADV Correspondence
QS Sustainability Rankings	Environmental Impact / SDG Involvement	SDGS PASS mission logs and SDG-tagged activities
QS	Social Impact (Community Engagement)	NTCC generated by student/staff activities
AASHE STARS	Engagement / Public Participation	Verified action count via PADV
AASHE STARS	Academics / Co-Curricular	Mission module integration with SDG Education syllabi

指標系統	指標領域	PADV 對應
QS 可持續發展排名	環境影響 / SDG 參與	SDGS PASS 任務日誌和 SDG 標記活動

指標系統	指標領域	PADV 對應
QS	社會影響（社區參與）	學生/教職員工活動產生的 NTCC
AASHE STARS	參與 / 公眾參與	通過 PADV 驗證的行動計數
AASHE STARS	學術 / 課外活動	任務模組與 SDG 教育課程的整合

10.4｜Reporting Benefits to Institutions｜對機構的報告效益

- Quantitative improvement in ranking eligibility through verified impact data.｜通過驗證的影響數據，量化提升排名資格。
- Annual PADV Impact Report enables schools to｜年度 PADV 影響報告使學校能夠：
    - Benchmark year-over-year SDG engagement.｜基準化逐年 SDG 參與情況。
    - Submit data to local education ministries (e.g., Taiwan's USR evaluation).｜向當地教育部門提交數據（例如，台灣的 USR 評估）。
    - Align internal governance (Green Campus Office, SDG Committees) with global standards.｜將內部治理（綠色校園辦公室、SDG 委員會）與全球標準對齊。

10.5｜Education as a Launchpad for Cultural Shift｜教育作為文化轉變的發射台

- Embedding PADV into student life creates behavioral norms around sustainability.｜將 PADV 嵌入學生生活，圍繞可持續發展建立行為規範。
- Students become long-term ESG contributors, carrying their identity into corporate and civic life.｜學生將成為長期的 ESG 貢獻者，將其身份帶入企業和公民生活。
- Faculty and admin gain a data-driven approach to managing sustainability strategy.｜教職員工和行政人員獲得了數據驅動的可持續發展策略管理方法。

"Today's students are tomorrow's sustainability officers. With PADV, they graduate not just with knowledge, but with a verified record of action."

「今天的學生是明天的可持續發展官。有了 PADV，他們畢業時不僅擁有知識，還有經過驗證的行動記錄。」

Chapter 11｜Third-Party Audit Flow & Verification Framework｜第三方審計流程與驗證框架

To bridge the gap between grassroots ESG participation and institutional accountability, EMJ.LIFE embeds a third-party audit-compatible architecture within its PADV framework. This ensures that every behavioral record, once logged, can be independently verified, reported, and disclosed in alignment with international ESG audit standards.

為了彌合基層 ESG 參與與機構問責之間的差距，EMJ.LIFE 在其 PADV 框架內嵌入了一個兼容第三方審計的架構。這確保了每個行為記錄一旦被記錄，都可以根據國際 ESG 審計標準進行獨立驗證、報告和披露。

11.1｜Why Audit Compatibility Matters｜為何審計兼容性很重要

- Most ESG programs fail due to non-verifiable claims.｜大多數 ESG 項目因無法驗證的聲明而失敗。
- Regulators, investors, and rating agencies demand audit-ready evidence.｜監管機構、投資者和評級機構要求可供審計的證據。
- PADV is designed as a dual ledger system: behavioral data for participants, and structured reports for auditors.｜PADV 被設計為一個雙重分類帳系統：為參與者提供行為數據，為審計師提供結構化報告。

"Without third-party verifiability, behavior is just noise. PADV turns it into a certified signal."

「如果沒有第三方可驗證性，行為就只是噪音。PADV 將其轉化為經過認證的信號。」

11.2｜Three-Layer Verification Flow｜三層驗證流程

Layer	Role	Key Function
Layer 1｜Front-End Verification (User Layer)	Participants	Identity, timestamp, and SDG-tagged participation
Layer 2｜System-Level Audit Trail (PADV Layer)	PADV Platform	Event validation, action categorization, geotagging, metadata
Layer 3｜External Auditor Interface (Reporting Layer)	Third-party auditors (e.g., SGS, Deloitte)	Exportable data sets (XBRL/JSON/PDF), verification APIs, NTCC ledgers

分層	角色	關鍵功能
第 1 層｜前端驗證（用戶層）	參與者	身份、時間戳和 SDG 標記的參與
第 2 層｜系統級審計追蹤（PADV 層）	PADV 平台	事件驗證、行動分類、地理標記、元數據
第 3 層｜外部審計師接口（報告層）	第三方審計師（例如 SGS、德勤）	可導出數據集（XBRL/JSON/PDF）、驗證 API、NTCC 分類帳

This multi-layer system ensures that data is not only captured, but traceable and defensible.

這種多層系統確保數據不僅被捕獲，而且可追溯和可辯護。

11.3｜Audit Toolkits & Formats｜審計工具包與格式

- Audit Toolkit includes 審計工具包包括:
    - Snapshot-based activity exports (time-filtered, SDG-sorted)｜基於快照的活動導出（按時間過濾、按 SDG 排序）
    - Real-time API logs for verification chains｜用於驗證鏈的實時 API 日誌
    - NTCC unit traceability with conversion origin｜NTCC 單位可追溯性及轉換來源
- Supported formats:
- 支持的格式：
    - XBRL (financial audit compatibility｜財務審計兼容性）
    - PDF (report summaries｜報告摘要）
    - JSON/CSV (data pipeline integration｜數據管道集成）

11.4｜Verifier Role & Governance Pathways｜驗證者角色與治理途徑

EMJ.LIFE enables three levels of external verification: EMJ.LIFE 支持三級外部驗證：

1. Platform-integrated auditor access (e.g., SGS audit node)｜平台集成審計師訪問（例如 SGS 審計節點）
2. Co-signed ESG reports with recognized ESG assurance providers｜與公認的 ESG 保證提供商共同簽署 ESG 報告
3. Institution-level validators (e.g., universities, event hosts) with tiered per missioning｜具有分級權限的機構級驗證者（例如大學、活動主辦方）

All records remain tamper-resistant, with each action traceable back to｜所有記錄均防篡改，每項行動均可追溯到：

- The verified user identity (via telecom or SSO)｜驗證的用戶身份（通過電信或 SSO）
- The SDG mission code｜SDG 任務代碼
- The timestamp and geolocation｜時間戳和地理位置
- The NTCC conversion reference｜NTCC 轉換參考

11.5｜Future: RegTech & Zero-Knowledge Assurance｜未來：監管科技與零知識保證

- EMJ.LIFE is exploring｜正在探索:
    - ZKP (Zero-Knowledge Proof) integration for privacy-preserving audit.｜ZKP（零知識證明）集成，用於保護隱私的審計。
    - Smart contract-based regulatory API triggers for automated policy alignment.｜基於智能合約的監管 API 觸發器，用於自動化政策對齊。
    - ESG chain-of-trust protocols that can issue assurance badges on-chain.｜可以在鏈上發布保證徽章的 ESG 信任鏈協議。

"PADV is not a black box. It's a transparent vault, designed for scrutiny, built for trust."

「PADV 不是一個黑盒子。它是一個透明的金庫，為審查而設計，為信任而構建。」

Chapter 12｜Implementation Strategy: Institutional Deployment & Ecosystem｜實施策略：機構部署與生態系統

For the PADV methodology to move from conceptual innovation to systemic transformation, a robust implementation strategy is essential. This chapter outlines how PADV-based systems are deployed across institutional layers, from schools and corporations to governments and global ESG ecosystems, through modular, auditable, and scalable mechanisms.

為了使 PADV 方法論從概念創新轉向系統性轉型，一個強大的實施策略至關重要。本章概述了 PADV 系統如何通過模組化、可審計和可擴展的機制，部署到從學校和企業到政府和全球 ESG 生態系統的各個機構層面。

12.1｜Deployment Pathways｜部署途徑

Sector	Entry Mechanism	Primary Value
Education	EDU SDGS PASS (school-side interface)	Verifiable sustainability education + QS/UN alignment
Corporate	SDGS PASS + NTCC (employee engagement & reporting)	Traceable ESG participation + CSR/ESG disclosure utility
Events	SDGS Action Module + NTCC Tracking	Converts real-time audience participation into ESG impact
Government	Citizen SDG Participation Ledger	Behavioral policy data + bottom-up SDG performance
Auditors/Verifiers	API-based reporting access	Audit-grade SDG behavior data stream

行業	進入機制	主要價值
教育	EDU SDGS PASS（學校端界面）	可驗證的可持續發展教育 + QS/聯合國對齊
企業	SDGS PASS + NTCC（員工參與和報告）	可追溯的 ESG 參與 + 企業社會責任/ESG 披露效用
活動	SDGS 行動模組 + NTCC 追蹤	將實時觀眾參與轉化為 ESG 影響
政府	公民 SDG 參與分類帳	行為政策數據 + 自下而上的 SDG 績效
審計師/驗證者	基於 API 的報告訪問	審計級 SDG 行為數據流

"PADV isn't implemented top-down. It grows institution-by-institution, building credibility through trustable data."

「PADV 不是自上而下實施的。它是一個機構一個機構地成長，通過可信賴的數據建立信譽。」

12.2｜Key Enablers of Deployment｜部署的關鍵推動因素

- Modular Integration: Each component—missions, verification, reporting, NTCC—can be deployed independently or in sync, reducing friction for institutional onboarding.
  模組化集成：每個組件：任務、驗證、報告、NTCC，都可以獨立或同步部署，減少機構入職的摩擦。

- No-Code Interfaces: Institutional partners do not need developers. Backend dashboards and pre-built event templates enable low-barrier implementation.
  無代碼界面：機構合作夥伴不需要開發人員。後台儀表板和預建事件模板實現了低門檻實施。

- Legal & Standard Compatibility: Framework aligns with COSO, GRI, IFRS, and local ESG policy regimes, minimizing regulatory conflict.
  法律與標準兼容性：框架與 COSO、GRI、IFRS 以及當地 ESG 政策體系對齊,最大限度地減少監管衝突。

- Dual Value Proposition: Institutions earn both reportable impact (ESG) and participation equity (reputation, visibility, loyalty).
  雙重價值主張：機構既能獲得可報告的影響（ESG）,又能獲得參與權益（聲譽、可見性、忠誠度）。

- Ecosystem of Verification Partners: Early partners (e.g., SGS, Deloitte, pilot institutions) provide 3rd-party assurance infrastructure.
  驗證夥伴生態系統：早期合作夥伴（例如 SGS、德勤、試點機構）提供第三方保證基礎設施。

12.3｜Four-Stage Rollout Framework｜四階段推廣框架

Stage	Description	Outcome
Phase 1｜Prototype Deployment	Testbed launch with pilot institutions (schools, brands, events)	Functional module refinement, NTCC methodology calibration
Phase 2｜Cross-Sector Integration	Integrate across 2+ sectors (e.g. EDU + Corporate)	Multi-path participation and data layering
Phase 3｜Verifier Anchoring	Onboard third-party auditors to validate outputs	External trust layer established
Phase 4｜Policy Alignment	Interface with national SDG dashboards and ESG regulatory standards	Institutionalization & standard adoption

階段	描述	結果
階段 1｜原型部署	與試點機構（學校、品牌、活動）啟動測試平台	功能模組優化，NTCC 方法論校準
階段 2｜跨部門整合	整合 2 個以上部門（例如教育 + 企業）	多路徑參與和數據分層
階段 3｜驗證者錨定	引入第三方審計師驗證輸出	建立外部信任層
階段 4｜政策對齊	與國家 SDG 儀表板和 ESG 監管標準對接	制度化與標準採納

12.4｜Ecosystem Multipliers｜多元生態系統

- Mission Creator Network: NGO, EDU, and CSR partners creating thousands of SDG-aligned missions.｜任務創建者網絡：非政府組織、教育機構和企業社會責任夥伴創建數千個與 SDG 對齊的任務。
- Redemption Partners Pool: Brands contributing rewards to convert user PASS points into tangible NTCC.｜兌換夥伴池：品牌提供獎勵，將用戶 SDGS PASS 積分核銷轉換為實體 NTCC。
- Audit Nodes: Certified ESG data verifiers validating institutional performance.｜審計節點：認證的 ESG 數據驗證者驗證機構績效。
- Ranking & Recognition Channels: QS, AASHE STARS, UNDP Education Lab aligning with performance outputs.｜排名與認可渠道：QS、AASHE STARS、聯合國開發計劃署教育實驗室與績效輸出對齊。

"Ecosystems scale not by code, but by incentives. PADV aligns incentives to scale trust."

「生態系統的擴展不是靠代碼，而是靠激勵。PADV 調整激勵機制以擴大信任。」

Chapter 13｜Institutional Epistemology and Social Trust Logic｜機構認識論與社會信任邏輯

At the heart of PADV framework lies a deeper proposition: that sustainable action must be trustable, not just visible. Traditional ESG models emphasize metrics, but often overlook the social logic of how trust in data is formed. PADV reorients this by grounding its design in institutional theory and participatory epistemology.

PADV 框架的核心是一個更深層次的命題：可持續行動必須是可信賴的，而不僅僅是可見的。傳統的 ESG 模型強調指標，但往往忽視了數據信任形成的社會邏輯。PADV 通過將其設計基於制度理論和參與式認識論來重新定位這一點。

13.1 │ Philosophical Foundations (哲學基礎)

- Draws from Elinor Ostrom's principle of polycentric governance: individuals and institutions co-create systems. │ 借鑒了埃莉諾·奧斯特羅姆的多中心治理原則：個人和機構共同創建系統。
- Applies Jürgen Habermas' communicative action theory: actions gain legitimacy when they are publicly verifiable. │ 應用了尤爾根·哈貝馬斯的溝通行動理論：行動在公開可驗證時獲得合法性。
- Echoes the UNESCO ESD for 2030 vision: behavior-based learning and action must be embedded in societal systems. │ 呼應了聯合國教科文組織 2030 年可持續發展教育願景：基於行為的學習和行動必須嵌入社會系統中。

13.2 │ PADV as a Trust Production Mechanism │ PADV 作為信任生產機制

- From gesture to structure: Every sustainable action is not just a signal, it is an input to a governance model. │ 從姿態到結構：每一個可持續行動不僅僅是一個信號，它還是治理模型的輸入。
- From anecdote to institution: Individual behavior becomes meaningful when aggregated and verifiable. │ 從軼事到制度：個人行為在匯總和可驗證時變得有意義。
- From platform to protocol: PADV transforms SDGS PASS from a digital tool to a societal ledger. │ 從平台到協議：PADV 將 SDGS PASS 從一個數字工具轉變為一個社會分類帳。

13.3 │ What Makes Participation Legitimate? │ 什麼使參與合法化？

- Authenticated (event-verified) │ 經過驗證（事件驗證）
- Timestamped (temporally specific) │ 帶時間戳（時間上特定）
- Contextualized (SDG-mapped) │ 情境化（SDG 映射）
- Publicly convertible (via NTCC) │ 公開可轉換（通過 NTCC）

Thus, PADV architecture is a normative innovation: a protocol for participation-based truth in the ESG era.

因此，PADV 架構是一種規範性創新：在 ESG 時代，一種基於參與的真相協議。

Chapter 14｜Comparative System Analysis: PADV vs Global Benchmarks｜比較系統分析：PADV 與全球基準

To define its role within the global ESG and sustainability architecture, PADV must be compared against existing models. The following table outlines the key differentiators:

為了在全球 ESG 和可持續發展架構中明確其作用，PADV 必須與現有模型進行比較。下表概述了關鍵的區別：

14.1｜System Comparison Table｜系統比較表

System	Data Entry	Data Type	ESG Utility	Verifiability	Institutional Role
EcoVadis	Corporate Assessment	Scorecard	Supplier evaluation	Low (Self-reported)	Outsourced Audit
Ant Forest	Individual Phone Usage	Carbon proxy (gamified)	Personal engagement only	No audit capability	Platform engagement only
PADV	Real-World Events	Verified Behavior → Multi-level NTCC protocol	ESG disclosures + carbon accounting	Yes (Third-party audit ready)	Governance-compatible

系統	數據輸入	數據類型	ESG 效用	可驗證性	機構角色
EcoVadis	企業評估	記分卡	供應商評估	低（自我報告）	外包審計
螞蟻森林	個人手機使用	碳代理（遊戲化）	僅限個人參與	無審計能力	僅限平台參與
PADV	現實世界事件	驗證行為 → 多層次 NTCC 協議	ESG 披露 + 碳核算	是（可供第三方審計）	兼容治理

14.2｜Strategic Advantage｜戰略優勢

- PADV offers dual-track usability: public engagement + ESG audit.｜PADV 提供雙軌可用性：公眾參與 + ESG 審計。
- Aligns with financial disclosure logic (XBRL ready) AND behavioral ethics (social contract).｜與財務披露邏輯（支持 XBRL）和行為倫理（社會契約）對齊。
- Bridges CSR gamification with institutional accountability.｜將企業社會責任遊戲化與機構問責制聯繫起來。

14.3｜Positioning Statement｜定位聲明

"EcoVadis certifies what companies say they are. Ant Forest gamifies what individuals might do. PADV verifies what society is actually doing, together."

「EcoVadis 認證企業所聲稱的。螞蟻森林將個人可能做的事情遊戲化。PADV 驗證社會實際共同在做的事情。」

Appendix｜SDGS PASS Data Reporting Template (SDGS PASS 數據報告模板)

(Applicable for Corporate ESG Disclosure & Third-Party Audit Reference)
（適用於企業 ESG 披露和第三方審計參考）

Reporting Period: 2025 / 03 / 01 to 2025 / 06 / 24
報告期間：2025 年 3 月 1 日至 2025 年 6 月 24 日

Data Source: EMJ.LIFE｜SDGS PASS Data Center
數據來源：EMJ.LIFE｜SDGS PASS 數據中心

Reporting Company: EMJ LIFE Holdings Pte. Ltd.
報告公司：EMJ LIFE Holdings Pte. Ltd.

(Insert the name of the listed/OTC/emerging stock company)
（請填寫上市/櫃/興櫃公司名稱）

Business Registration Number: UEN202445078N
商業註冊號：UEN202445078N

Auditor: ☐ Deloitte (Deloitte & Touche) ▨PwC (PricewaterhouseCoopers) ☐ KPMG ☐ EY (Ernst & Young) ☐ Others:

ESG Verification Institution: □ SGS □ ARES (Taiwan ESG Verification) □ BSI □ DNV □ Others:

I. Summary of Overall Sustainability Participation Results｜整體可持續發展參與成果摘要

Item	Category	Value	Relevant SDGs
Total Participation Count (All Activities)	總參與次數（所有活動）	26,268 times	SDG 3, 4, 12, 13, 17
Public Education Courses Completed	完成公共教育課程	6,122 times	SDG 4
Verified Public Welfare Event Attendance	驗證的公益活動參與	3,765 times	SDG 3, SDG 17
Total SDGS Public Welfare Points Earned	獲得 SDGS 公益總積分	5,534,800 points	SDG 12
Points Used for Green Product Redemption	用於綠色產品兌換的積分	4,165,000 points	SDG 12, SDG 13
NTCC (kg CO_2e) Generated	產生 NTCC（公斤二氧化碳當量）	210,204.8 kg CO_2e	SDG 13

Note: Based on internal platform records, the total participation count reflects all actions recorded on the SDGS PASS platform, including repeated participations by the same individuals. The number of unique participants during the reporting period is 15,820 persons.

備註：根據內部平台記錄，總參與次數反映了 SDGS PASS 平台上記錄的所有行動，包括同一人的重複參與。報告期間的獨立參與者人數為 15,820 人。

II. Public Education & Social Impact Indicators (S Dimension)｜公共教育與社會影響指標（S 維度）

Participation by SDG Theme (Proportion): 按 SDG 主題劃分的參與比例：

SDG 1: 2.5％； SDG 2: 1.8％； SDG 3: 15.2％；SDG 4: 24.6％； SDG 5: 2.1％； SDG 6: 1.9％；SDG 7: 2.2％； SDG 8: 3.4％； SDG 9: 2.0％； SDG 10: 1.7％； SDG 11: 3.6％； SDG

12: 21.3％；SDG 13: 9.5％； SDG 14: 1.1％； SDG 15: 1.3％；SDG 16: 1.2％； SDG 17: 4.5％

III. Estimated Carbon Reduction Impact (E Dimension) ｜預估碳減排影響（E 維度）

Category	Count	Participation Top 5 Regions (by participation)	Estimated CO_2 Reduction (kg CO_2e)
Participated in Charity Runs	1,242 times	Taipei, Taichung, Kaohsiung, Tainan, Hsinchu	1,853.4 kg CO_2e
Hosted Charity Runs	2 times	Taipei, Hsinchu	30,342.5 kg CO_2e
Participated in Cycling Events	980 times	Hsinchu, Taichung, Kaohsiung	1,511.9 kg CO_2e
Hosted Cycling Events	1 time	Taipei	15,500.5 kg CO_2e
Participated in Charity Lectures	1,510 times	Taipei, Tainan, Kaohsiung	2,015.2 kg CO_2e
Hosted Charity Lectures	25 times	Taipei, Taichung, Kaohsiung, Tainan, Hsinchu	10,345.0 kg CO_2e
Participated in Thematic Forums	876 times	Taipei, Taichung, Tainan	1,340.0 kg CO_2e
Hosted Thematic Forums	8 times	Taipei	17,805.4 kg CO_2e
Participated in Coastal/Mountain Cleanups	513 times	Taitung, Hualien, Tainan	1,026.5 kg CO_2e
Hosted Coastal/Mountain Cleanups	2 times	Taipei, Taichung	8,178.4 kg CO_2e

Category	Count	Participation Top 5 Regions (by participation)	Estimated CO_2 Reduction (kg CO_2e)
Green Product Redemptions	8,559 times	Taipei, Taichung, Kaohsiung, Tainan, Hsinchu	35,026.0 kg CO_2e
Redemptions from Public Welfare Pool	12,550 times	Taipei, Taichung, Kaohsiung, Tainan, Hsinchu	85,260.0 kg CO_2e
Total	26,268 times		210,204.8 kg CO_2e

Note: Based on carbon emission factors published by IPCC. 備註：基於 IPCC 發布的碳排放因子。

IV. SDG Goal Alignment Analysis｜SDG 目標對齊分析

SDG Goal	Description of Corresponding Action & Contribution
SDG 3 – Good Health and Well-being 良好健康與福祉	Charity runs, health seminars improving public awareness ｜公益路跑、健康講座，提升公眾意識
SDG 4 – Quality Education｜優質教育	ESG public courses promoting national sustainable literacy ｜ESG 公共課程，提升國民可持續發展素養
SDG 12 – Responsible Consumption 負責任消費	Green product redemption, e-invoice integration｜綠色產品兌換、電子發票整合
SDG 13 – Climate Action｜氣候行動	NTCC mechanism translating platform behavior into verified emission reduction ｜NTCC 機制將平台行為轉化為驗證的減排量
SDG 17 – Partnerships for the Goals 促進目標實現的夥伴關係	Public-private collaboration to drive sustainability initiatives ｜公私合作推動可持續發展倡議

V. Suggested Language for Corporate ESG Reports (for optional adoption)
企業 ESG 報告建議用語（可選用）

Our company engages employees and communities in sustainability actions through the SDGS PASS platform.

本公司通過 SDGS PASS 平台，鼓勵員工和社區參與可持續發展行動。

During the reporting period, a total of 26,268 participatory actions were recorded through the SDGS PASS platform. This includes 6,122 completed public education courses and 3,765 verified participations in public welfare events, collectively contributing to an estimated 210,204.8 kg CO_2e in non-tradable carbon reduction (NTCC) value.

在報告期間，通過 SDGS PASS 平台共記錄了 26,268 次參與行動。其中包括 6,122 次完成的公共教育課程和 3,765 次驗證的公益活動參與，共同貢獻了約 210,204.8 公斤二氧化碳當量的不可交易碳減排（NTCC）價值。

These actions correspond to SDG 3, 4, 12, 13, and 17, demonstrating our active contribution to global sustainable development goals.

這些行動與 SDG 3、4、12、13 和 17 相符，展示了我們對全球可持續發展目標的積極貢獻。