

# OnStack

*The on-chain finance operating system for enterprises.*

PAPER I · AN ONSTACK FRAMEWORK PAPER BY MPM LABS



# From advisory to operating system

Tokenization is live institutional infrastructure, an industry being assembled one vendor at a time, and OnStack is the operating system MPM Labs is building to hold the whole stack together: the architecture and the operating method are established, and the reference builds, the provider network and the jurisdiction editions are being productized vertical by vertical.

**OnStack is MPM Labs’ managed design and orchestration system for the full on-chain finance stack, delivered as an operating model and a service.** OnStack is built from components, and the first is **2Web3**, MPM Labs’ ecosystem and venture design product: the token model and instrument set, the economic and incentive architecture, and the commercial architecture of the venture, completed before any partner is approached. On that groundwork sits the second component, **orchestration**: MPM selects, contracts and operates licensed and specialist providers for every regulated function. Regulated services are delivered by licensed providers; MPM Labs is the coordinating counterparty.

Real-world asset (RWA) tokenization has crossed from pilots into live institutional infrastructure. Excluding stablecoins, the on-chain RWA market grew from **\$5.42 billion in January 2025 to \$19.32 billion by March 2026**, a 256.7% rise[1], and surpassed **\$30 billion by mid-2026**[2] with six distinct asset categories now each independently above one billion dollars on-chain.[4] Set against total global financial assets above \$500 trillion at the end of 2024,[3] tokenization penetration still sits below 0.1%. The growth is real, and almost all of the runway is ahead.



**\$500T+**

global financial assets, end-2024 (FSB)

**<0.1%**

tokenization penetration today

**+256.7%**

on-chain RWA growth, Jan25→Mar26

**6 > \$1B**

asset categories each above \$1B

## Two capabilities in sequence, and one shared foundation

Every enterprise that wants to bring an asset on-chain hits the same wall: a stack of roughly **nineteen functional layers**, a fragmented field of around one hundred specialist providers, and three or more competing regulatory regimes in a single region. Few traditional enterprises carry every one of those capabilities in-house. The market's current answer is point vendors and project-by-project advisers, which solve one piece and walk away.

**OnStack is what MPM Labs does, and it is two capabilities in sequence.**

First, **2Web3**, the ecosystem and venture design product MPM Labs is built on: the token model, the economic and incentive structure, and the commercial architecture the asset needs to work, completed before any partner is chosen. 2Web3 is the groundwork; every later component builds on its output.

Second, we **orchestrate** the stack: we identified the roughly nineteen functional layers a live on-chain asset requires, and we select, integrate and operate the right provider in each. The enterprise gets one coherent surface and a single coordinating counterparty across the asset's life, with each regulated service delivered by its licensed provider under its own contract.

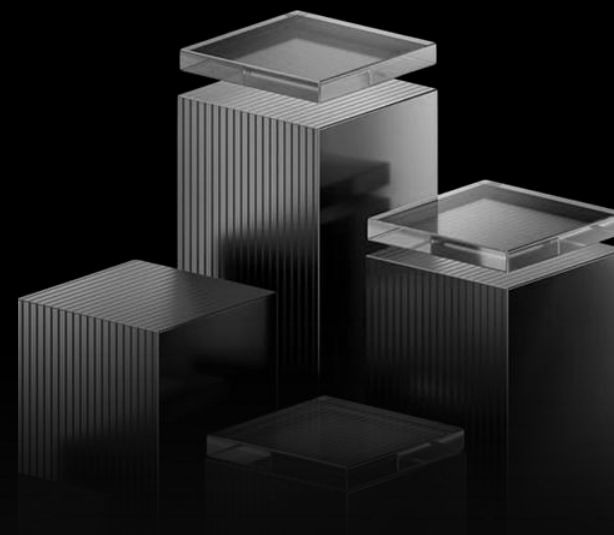
This paper is the shared foundation. It sets out the market, the coordination problem OnStack exists to solve, the model and its nineteen layers, jurisdiction as the configurable runtime the system adapts to, and the path from here. Throughout, OnStack is the system; MPM Labs is the firm that designs, integrates and operates it.

### COMPONENT 1 · 2WEB3

Ecosystem & venture design. The groundwork, completed before any partner is chosen.

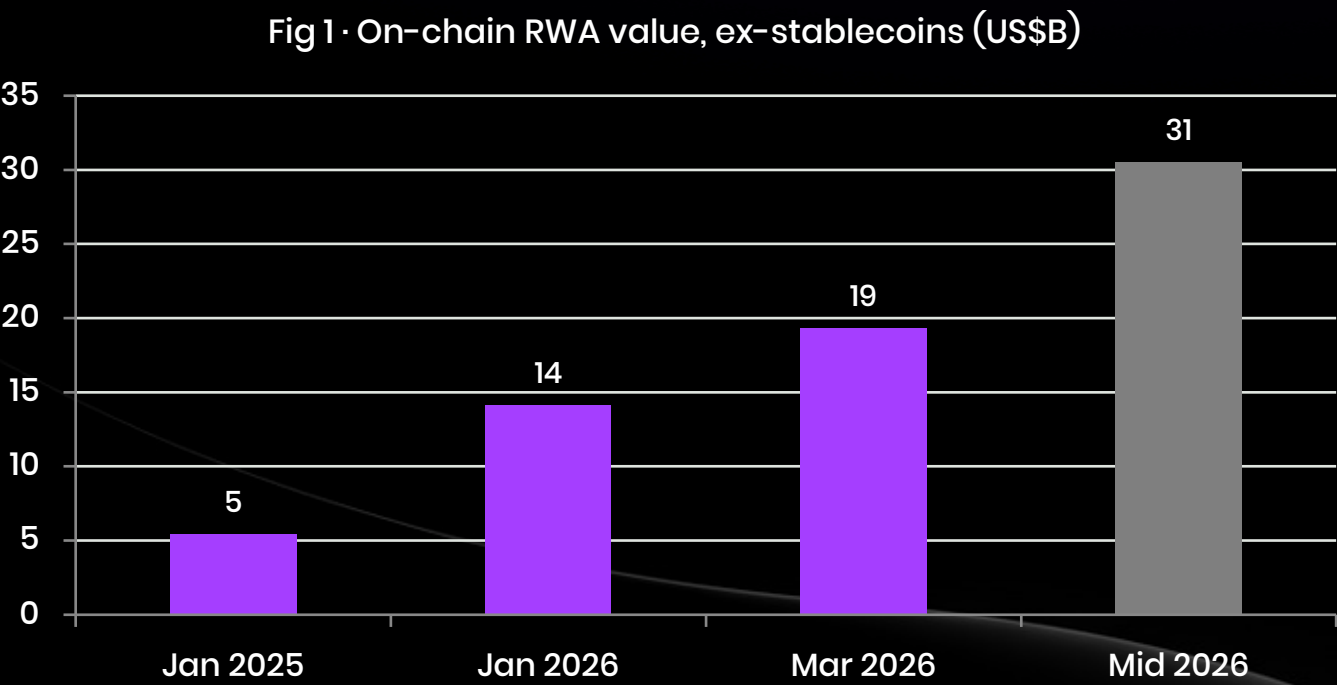
### COMPONENT 2 · ORCHESTRATION

Select, integrate and operate the right provider in each of the nineteen layers.



# The market has entered its second phase

Fast-growing markets move in two waves. The first produces the headline growth rates repeated at every conference. The second is when serious analysts separate the durable from the vapor. RWA tokenization spent 2024 and most of 2025 in the first wave. In 2026 it entered the second, and the durable structure is now visible.



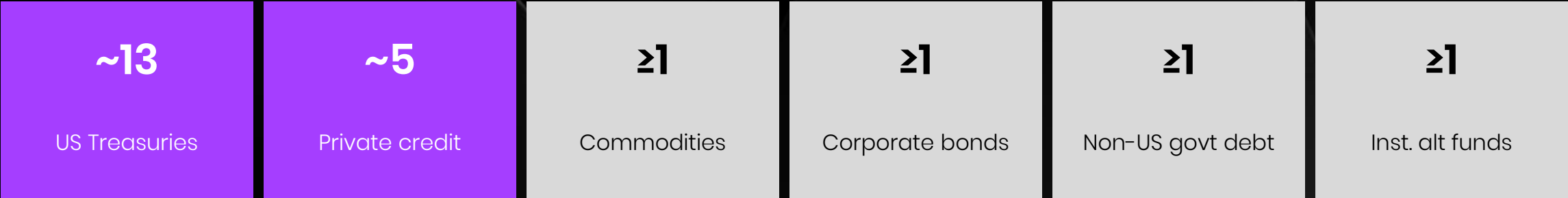
**The penetration lens.** Set against total global financial assets above \$500 trillion at end-2024, on-chain RWA value below \$35B is a rounding error. The growth is real; the runway is nearly all ahead.

Fig 1. Sources: RWA.xyz; CoinGecko RWA Report 2026. Ex-stablecoins; figures approximate and vary by methodology.

# Category diversification, the durability signal



A year ago the market was effectively one asset class: tokenized US Treasuries. Today at least six categories each exceed \$1 billion on-chain: private credit, commodities, US Treasuries, corporate bonds, non-US government debt, and institutional alternative funds. A market built on one category is one regulatory decision from collapse. A market built on six is structurally harder to dislodge.



On-chain RWA, US\$B by category, mid-2026. Leaders sized; remaining categories shown at the \$1B threshold. Precise figures vary by tracker.

**Fig 2** Category diversification, the durability signal.

*A market built on one category is one regulatory decision from collapse. A market built on six is structurally harder to dislodge.*

## Institutionally committed, honestly read

BlackRock, Franklin Templeton and J.P. Morgan[5] have put real balance-sheet products on tokenized rails. The US GENIUS Act[6] of July 2025 set a federal stablecoin framework; SEC staff confirmed in a January 2026 joint statement that the federal securities laws apply to a security whether its ownership is recorded on-chain or off. The regulator's message, and ours: tokenization changes the plumbing, and the existing rulebook still governs it.

The number that matters most in this paper is penetration. The world's financial assets exceed \$500 trillion,[3] and the share that lives on-chain today is a rounding error against that total. This is a market that is only beginning to happen, with almost all of its scale still ahead.

One honest caveat belongs in any serious read: most tokenized value today is held rather than traded. Secondary volume relative to outstanding value remains low. The market is real and still early in its liquidity development. That gap is exactly where a coordinator that can assemble secondary-market layers earns its place.

**THE OPENING** • Large enough to be serious, fragmented enough to be unnavigable, early enough that no one yet owns the coordinating layer. The window to define the coordinating layer of on-chain finance is open now, and early movers will set the standard.

*Fig 4. The opportunity in one line: nearly all of it is still ahead. Sources: FSB (2025); RWA.xyz (2026).[3]*



## Why enterprises rarely do this alone

Bringing an asset on-chain is a build across roughly nineteen distinct functional layers, each of which is its own specialist market with its own vendors, standards and regulatory hooks. Settlement, custody, tokenization, legal structuring, compliance, audit, oracles, market-making, distribution, fiat rails, and more, each must be chosen, contracted and made to work with all the others.

Three things make this genuinely hard, and they compound.

First, **depth**: there are around one hundred credible providers spread across those layers, and the right choice in one layer constrains the viable choices in the next.

Second, **interdependence**: a wrong pick in a single layer can invalidate the entire stack above it, and the failure often shows up only late.

Third, **jurisdiction**: the same asset becomes a different build in every region, because the classification decision routes it to a different regulator and a different set of eligible providers.

### Depth

~100 credible providers; the right choice in one layer constrains the next.

### Interdependence

A wrong pick in one layer can invalidate the stack above it, discovered late.

### Jurisdiction

The same asset is a different build in every region; classification routes everything.

## Point vendors and advisers both fall short

This is why the point-vendor model and the project-by-project adviser both fall short. A vendor sells one layer and has no incentive to make the others work. An adviser hands over a plan and leaves before the hard integration begins. Neither owns the outcome, and neither is there when a regulator's rule shifts mid-build. The enterprise is left holding the coordination risk it was least equipped to carry.

### NAVIGATING ALONE

Nineteen unknown layers · a hundred vendors to evaluate · three regulators to reconcile · integration risk held by the enterprise · nine months of discovery before the first real decision

### WITH ONSTACK



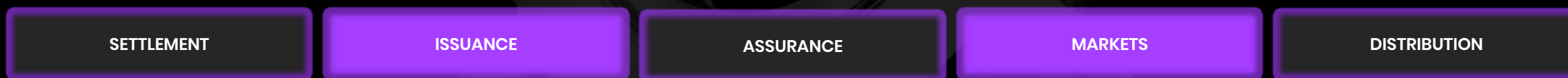
A designed ecosystem before any vendor is engaged · a vetted provider per layer · contracted and connected as one build · one coordinating counterparty · a system that stays and runs

**Figure 5.** The same enterprise, two outcomes. MPM Labs, as the coordinating layer, is the difference between a maze and a system.

## The operating system

We grouped the nineteen layers into **five planes** and placed a **control plane** above them. The enterprise's asset becomes an application running on the system; the jurisdiction is the runtime environment the system is configured for. We identified this structure and built the method that operates it, which is what turns a list of vendors into a working system.

OnStack does two things, and the sequence is deliberate. The first is **2Web3, the ecosystem and venture design component**: the token model, the economic and incentive structure, and the commercial architecture the asset needs to work. This is the product MPM Labs was built on, and we complete it before any partner is approached, because the design determines which layers the asset even requires. The second is **orchestration**: selecting, integrating and operating the right provider in each of the nineteen layers. A partner brought in before the ecosystem is designed is a partner chosen blind. Design comes first, and orchestration follows it.



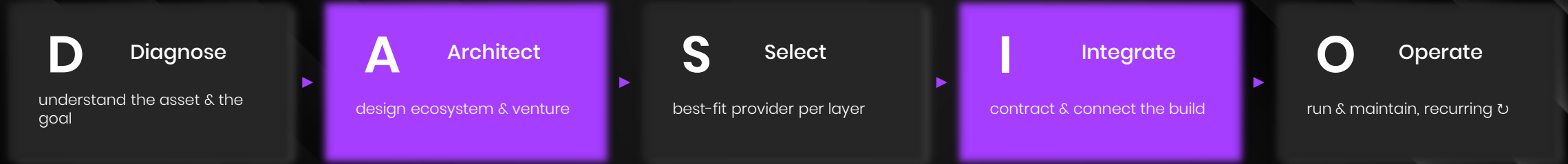
**Figure 6.** The OnStack operating system. Nineteen layers nest inside five planes; the asset runs on top as an application; the jurisdiction configures the runtime. Above the layers sit the two things that make them a system: 2Web3, our ecosystem and venture design component, and the orchestration that coordinates the rest.[16]

## The control plane: five functions across an engagement



Each plane answers one question the enterprise actually cares about. Read top to bottom, they describe the full life of an on-chain asset.

The control plane is the five functions we perform across an engagement. Diagnose and Architect are the design work, with Architect being where the ecosystem and venture are built; Select, Integrate and Operate carry the orchestration. The first four set the asset up, and the fifth is the ongoing relationship that keeps OnStack in place well after launch.

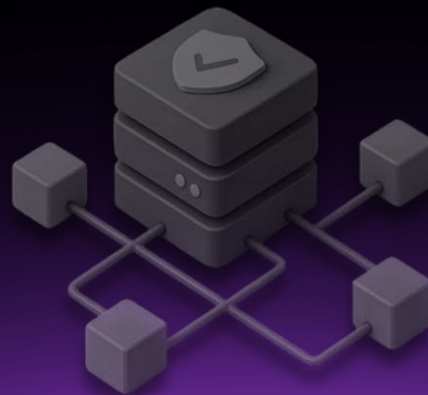


**Figure 7.** The control-plane workflow. Four set-up functions and one recurring one.

## A defensible core: four things hard to copy

"Operating system" means little without a defensible core. Four things sit in the control plane and are hard to copy.

- ▶ **The ecosystem and venture design:** the token, economic and commercial architecture we build for each asset before a partner is chosen, which is the 2Web3 product MPM Labs was built on.
- ▶ **The reference architectures:** per vertical and per jurisdiction, which layers are required, in what order, with what dependencies. This is the difference between an enterprise spending nine months discovering the path and OnStack handing it over on day one.
- ▶ **The vetted provider network:** each provider assessed once with proper diligence and reused across every client, so no enterprise has to evaluate a hundred vendors.
- ▶ **The integrate-and-operate role:** being the single party that holds the build together and stays on to run it. The design, the map, the diligence and the integration are the assets, and they compound with every deal.



# Nineteen layers, in full

The reference definition of the stack. Above these nineteen layers sit the two things that turn them into a system: 2Web3, the ecosystem and venture design component we originated as, and the orchestration that then selects, integrates and operates the provider in each layer. For each layer below: what it is, why an enterprise needs it, and OnStack's posture toward it. The posture is a clean three-way call:

## ADVISE

OnStack guides the enterprise's own choice.

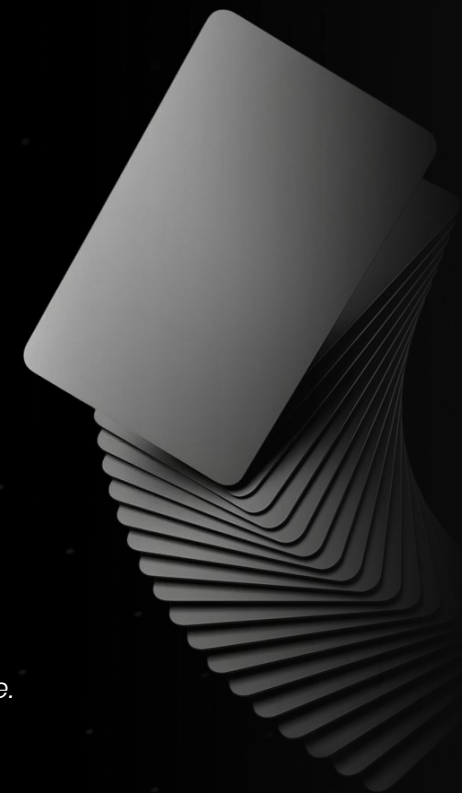
## BUILD

OnStack designs and owns the reference architecture; licensed professionals deliver the regulated services.

## INTEGRATE

OnStack selects and integrates a curated, vetted provider.

*The next three slides give the reference definition: for each of the nineteen layers, what it is, why the enterprise needs it, and OnStack's posture.*



# Plane 1 · Settlement — Plane 2 · Issuance

| PLANE 1 · SETTLEMENT · where value lives |                                                                 |                                                                           |           |
|------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------|-----------|
| Layer                                    | What it is                                                      | Why the enterprise needs it                                               | Posture   |
| Chain & Ecosystem                        | The settlement environment the token lives on.                  | Sets cost, finality, composability and which counterparties can transact. | ADVISE    |
| Stablecoin Infrastructure                | Settlement currency for subscriptions, redemptions and payouts. | No settlement coin, no atomic settlement; intersects payment-token rules. | INTEGRATE |
| Custody                                  | Regulated custody of keys and tokens.                           | Institutional mandates typically require regulated, qualified custody.    | INTEGRATE |

| PLANE 2 · ISSUANCE · the asset goes on-chain |                                                                             |                                                                            |           |
|----------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------|
| Layer                                        | What it is                                                                  | Why the enterprise needs it                                                | Posture   |
| Tokenization Infrastructure                  | Mints and manages the token (e.g. permissioned ERC-3643).                   | Turns a legal claim into a programmable, compliance-aware instrument.      | INTEGRATE |
| Legal, Fund Admin & Jurisdictions            | The SPV / fund vehicle and the licensing path; the classification decision. | Everything inherits from this. Same cash flow, very different instruments. | BUILD     |
| Oracle & Attestation                         | Verified feeds: performance, revenue, NAV, reserve attestation.             | An income token is only honest if revenue and reserves are attested.       | INTEGRATE |

# Plane 3 · Assurance — the cross-cutting trust subsystem

| PLANE 3 · ASSURANCE · why should anyone trust it? |                                                                   |                                                                                       |           |
|---------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|
| Layer                                             | What it is                                                        | Why the enterprise needs it                                                           | Posture   |
| Compliance & Identity                             | KYC, AML, onboarding, on-chain whitelisting.                      | Mandatory everywhere; governs who can legally hold and transfer.                      | INTEGRATE |
| Smart Contract Security                           | Independent audit of token and distribution contracts.            | Precondition for institutional diligence and insurance.                               | INTEGRATE |
| Insurance & Risk Transfer                         | Smart-contract and asset / operational cover.                     | Institutional rounds increasingly treat cover as a diligence requirement.             | INTEGRATE |
| Accounting, Tax & Fund Audit                      | Financial-statement audit, NAV, tax (incl. VAT where it applies). | Most regimes mandate independent, often periodic, audit.                              | INTEGRATE |
| Ratings & Credit Risk                             | Independent credit assessment of debt instruments.                | Institutional diligence on tokenized credit generally expects an independent opinion. | INTEGRATE |
| Data & Analytics                                  | Reporting on holders, flows, TVL and performance.                 | Traction must be demonstrable to issuers, investors and regulators.                   | INTEGRATE |

# Plane 4 · Markets — Plane 5 · Distribution

| PLANE 4 · MARKETS · liquidity and yield       |                                                         |                                                                          |           |
|-----------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------|-----------|
| Layer                                         | What it is                                              | Why the enterprise needs it                                              | Posture   |
| Securities Markets & Transfer Agency          | Registry, transfer agency, regulated secondary listing. | Required where the token is a security or secondary trading is in scope. | INTEGRATE |
| Trading Liquidity                             | Market-making and OTC support.                          | Value without liquidity trades at a discount and reaches few investors.  | INTEGRATE |
| Yield & DeFi Distribution                     | Making the token productive and composable.             | Turns a static holding into a yield-bearing, collateralizable one.       | ADVISE    |
| Capital Allocators & Curators                 | Institutional allocators, funds, on-chain vaults.       | Secures institutional demand and vault inclusion.                        | INTEGRATE |
| PLANE 5 · DISTRIBUTION · how capital comes in |                                                         |                                                                          |           |
| Layer                                         | What it is                                              | Why the enterprise needs it                                              | Posture   |
| Distribution Partners                         | Licensed broker-dealers, exchanges, wealth platforms.   | In many regimes an issuer cannot legally sell direct.                    | INTEGRATE |
| Fiat Rails & Payments                         | Regulated fiat on / off-ramp.                           | Most capital still arrives and leaves in fiat.                           | INTEGRATE |
| TVL & User Distribution                       | Demand bootstrapping: deposits, liquidity, flows.       | Secondary for a traditional enterprise issuance.                         | ADVISE    |

## The same system, configured for any regime



The summaries below are directional; instrument-specific analysis by licensed counsel in the relevant market governs any actual structure. OnStack treats the jurisdiction as the runtime environment the system is configured for. The asset is the application; the regime is the runtime it runs on. The five planes and nineteen layers hold constant across every market; the configuration is what changes: which classification route applies, which licensed providers exist in that market, and which registrations or exemptions the offer needs. Reading the regime correctly, and configuring the stack to it, is a core part of the control plane's job.

One principle holds across every serious framework. **Classification is destiny:** the first question each regime asks is what the token represents, and the answer routes the entire stack. And the mature regimes draw a consistent line, separating speculative crypto from asset-backed tokenization and regulating the assets under existing securities and payments law. OnStack works on the asset-backed side of that line: real enterprise assets brought on-chain inside the regulated perimeter.

*Classification is destiny: the answer to "what is this instrument?" routes the entire configuration.*

# United States · European Union

## United States — SEC · CFTC · GENIUS Act

The GENIUS Act (July 2025) set a federal framework for payment stablecoins. SEC staff confirmed in a January 2026 joint statement that the federal securities laws apply to a security whether recorded on-chain or off, and a March 2026 SEC/CFTC guidance set a five-category asset taxonomy. Tokenized securities proceed under existing registration and exemption routes.

## European Union — MiCA · MiFID II · DLT Pilot

MiCA has been fully applicable since December 2024, with its transition period ending July 2026; a single authorization passports crypto-asset services across 27 states. Tokenized securities sit under MiFID II and the Prospectus Regulation, outside MiCA. The DLT Pilot Regime is the sandbox for DLT-based issuance and settlement of tokenized securities.

## United Kingdom · UAE & GCC

### United Kingdom — FCA · Bank of England

The FSMA 2000 (Cryptoassets) Regulations 2026 brought a broad range of crypto activities into the FCA's perimeter. The FCA's authorization gateway opens in September 2026, with the mandatory regime in force from October 2027, alongside an FCA and Bank of England joint regime for systemic stablecoins and a Digital Securities Sandbox for tokenized securities.

### UAE & GCC — VARA · DFSA · FSRA · SCA · CBUAE

An activity-based, multi-track region. VARA's 2025 rulebook created a dedicated Asset-Referenced Virtual Asset category<sup>[12]</sup> for tokenized real-world assets; security-classified tokens route through the DIFC's DFSA, ADGM's FSRA, or the federal regulator. The Dubai Land Department's live tokenized-property pilots project roughly \$16 billion of tokenized property by 2033<sup>[13]</sup>.

# Singapore & Hong Kong · Switzerland

## Singapore & Hong Kong — MAS · SFC / HKMA

Singapore's MAS runs a single-currency stablecoin framework and a Digital Token Service Provider regime. Hong Kong licenses virtual-asset trading platforms through the SFC, brought a Stablecoin Ordinance into effect in August 2025 under the HKMA, and has run HKMA-supervised tokenized-bond issuances.

## Switzerland — FINMA · DLT Act

Switzerland's DLT Act, in force since 2021, gives tokenized assets and DLT-based securities a clear legal footing under FINMA supervision, and its cluster of digital-asset firms makes it a long-standing base for tokenized-asset structuring.

This is a general edition. The model is the same across every runtime; a region-specific edition of this paper details any single market end to end, and a vertical edition takes one asset class from diagnosis to a live instrument.

# One reference table across every runtime

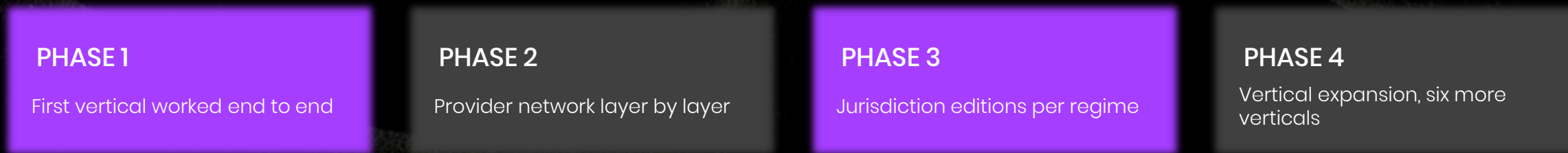
| Jurisdiction   | Primary regulator(s)         | Tokenization status                                                                      | How OnStack configures                                                 |
|----------------|------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| United States  | SEC, CFTC                    | Federal stablecoin law; securities laws apply on-chain; five-category taxonomy[8] (2026) | Registration or exemption route per security; stablecoin under GENIUS  |
| European Union | ESMA + NCAs                  | MiCA fully applicable[9]; securities under MiFID II; DLT Pilot[10] sandbox               | MiFID II for securities; MiCA passport for crypto-asset services       |
| United Kingdom | FCA + Bank of England        | Crypto in FCA perimeter (2026); mandatory regime from Oct 2027[11]; securities sandbox   | FCA authorization; Digital Securities Sandbox for tokenized securities |
| GCC (UAE lead) | VARA, DFSA, FSRA, SCA, CBUAE | Operational, multi-track; dedicated RWA category plus security-token routes              | Activity-based routing; ARVA or security path                          |
| Singapore      | MAS                          | Payment Services Act; single-currency stablecoin framework; DTSP regime                  | MAS licensing per activity; stablecoin under the SCS framework         |
| Hong Kong      | SFC, HKMA                    | VATP licensing; Stablecoin Ordinance (2025); tokenized-bond pilots                       | SFC platform rules; HKMA stablecoin licensing                          |
| Switzerland    | FINMA                        | DLT Act in force since 2021; tokenized securities recognized                             | DLT Act structuring under FINMA                                        |

# The path from foundation to deployment

This paper is the shared map. The build sequence deepens one axis of the model at a time, turning the framework into something concrete and repeatable.

**Where the build stands.** The first vertical, renewable energy in the UAE, has been worked end to end into a reference architecture with its own dedicated paper. The provider layer is mapped for the first market: roughly forty-nine providers assessed across the layers for the UAE, each with a scored primary and a vetted alternate. The operating method behind the control plane is codified into an internal operating manual and delivery playbook, and jurisdiction editions extend the same map regime by regime.

The thesis underneath is straightforward: on-chain finance is becoming finance. The firm that operates the coordinating layer above it is positioned to make the whole stack work as one build, for enterprises that would struggle to assemble it alone. That is the position we are building toward.



*Figure 8. The four-phase build path. The framework deepens one axis at a time, from a first worked vertical into the provider network, then per-regime and per-vertical editions.*



## Endnotes 1–8

1. CoinGecko, RWA Report 2026: on-chain RWA value ex-stablecoins, \$5.42B (Jan 2025) to \$19.32B (Mar 2026), +256.7%.
2. RWA.xyz, live asset dashboards, retrieved June–July 2026. Trackers differ by methodology (total versus distributed value); figures are approximate and dated in the text.
3. FSB, Global Monitoring Report on Nonbank Financial Intermediation 2025 (Dec 2025): NBFIs assets of \$256.8 trillion representing 51% of total global financial assets at end-2024, across 29 jurisdictions covering over 90% of global GDP; total global financial assets therefore exceed \$500 trillion.
4. RWA.xyz asset-class dashboards, Q2 2026: private credit, commodities, US Treasuries, corporate bonds, non-US government debt and institutional alternative funds each above \$1B on-chain.
5. Issuer disclosures and public programme materials: BlackRock BUIDL; Franklin Templeton BENJI / FOBXX; J.P. Morgan Kinexys (formerly Onyx).
6. GENIUS Act, United States, July 2025 (federal payment-stablecoin framework).
7. SEC staff, Statement on Tokenized Securities , 28 January 2026.
8. SEC / CFTC joint guidance introducing a five-category digital-asset taxonomy, March 2026.

## Endnotes 9–16 · verification standard · status

9. Regulation (EU) 2023/1114 (MiCA): fully applicable December 2024; national transition periods end July 2026.
10. Regulation (EU) 2022/858 (DLT Pilot Regime) for DLT market infrastructures.
11. UK: FSMA 2023 framework and the Digital Securities Sandbox (Bank of England / FCA); regime dates per the FCA roadmap as cited.
12. Dubai VARA, 2025 Rulebook: Asset-Referenced Virtual Assets (ARVA) category for tokenized real-world assets.
13. Dubai Land Department tokenized-title programme; DLD projection of \$16B tokenized property by 2033 (via Coindesk, 2025).
14. OECD (2020), The Tokenisation of Assets and Potential Implications for Financial Markets ; BIS, Annual Economic Report 2023 , Ch. III (“Blueprint for the future monetary system”); FSB (Oct 2024), The Financial Stability Implications of Tokenisation .
15. Singapore MAS (Payment Services Act; Project Guardian); Hong Kong SFC / HKMA (VATP licensing; stablecoin framework, 2025); Switzerland DLT Act (2021).
16. The five-plane model, the nineteen-layer reference stack, the postures and the control-plane framing are MPM Labs’ own framework.

*Verification standard. Every figure, named framework, date and provision in this paper was checked against primary or reputable secondary sources, retrieved June–August 2026; market figures are a fast-moving snapshot, given as approximate and dated. Granular statistics that could not be confirmed against a regulator or primary source are treated as indicative. Status. An OnStack framework paper by MPM Labs · General edition · v3.1 · August 2026. Prepared for institutional circulation. This paper describes a framework and market context; it is not investment, legal or tax advice, and jurisdiction summaries do not substitute for licensed counsel.*