

Mycelia Matrix v1.2: The Mesh

The Symbiosis of Native Physics,
i18n, and High-Performance Design.

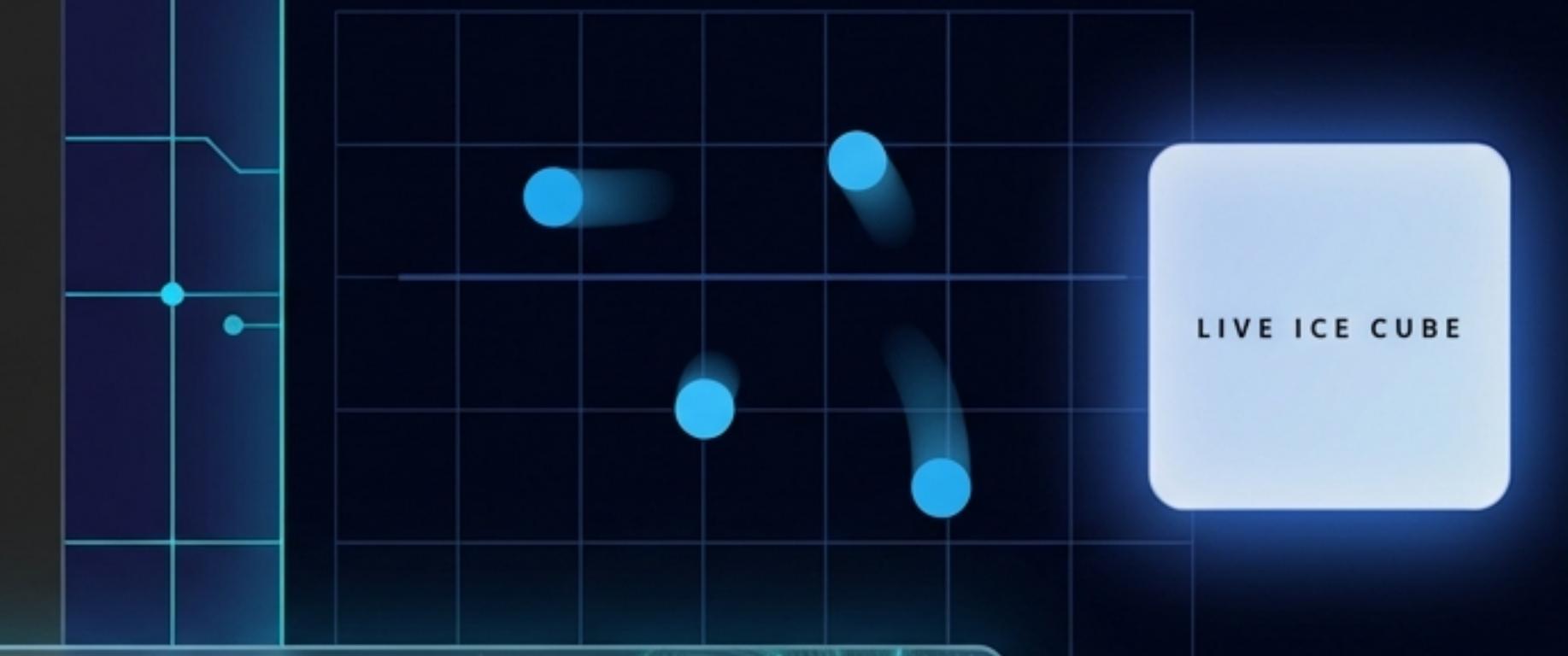
We have left the era of static interfaces.
Welcome to the Living Grid.

LIVE ICE CUBE

LEGACY

```
<div class="static-container">  
  <h1>Static Interface</h1>  
  <p>This is a non-reactive UI.</p>  
  <button>Click Me (Nothing Happens)</button>  
</div>
```

THE MESH



Beyond Static Interfaces

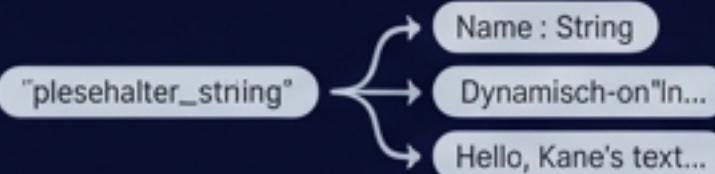
Traditional pipelines divorce design from logic.
Mycelia unifies them into a single Source of Truth.

The Mycelia Matrix isn't just a UI library. It is an
orchestration engine where code becomes biology.

One Brain. Infinite Endpoints.

KLASSISCHE INTERNATIONALISIERUNG (I18N)

Unterstützt Mapping von Hash-IDs, dynamische Platzhalter-Injektion (%0, %n) und komplexe Plurafragein (z.B. SLAVIC) für weltweite Lokalisierung.



TECHNISCHE CORE-FEATURES



LIVE-RELOAD & ZERO-DOWNTIME

Überwachung von Dateiänderungen alle 500ms mit atomarem Snapshot-Stop für Anwendungsaufaktualisierung neuer Neustart.



ZERO-COPY & FNV1A33 INTEGRITÄT

Direkter Speichersugriff (mmap) für UI- oder CPU-Layer mit Hochgeschwindigkeits-Pföfsummen zur Datenväldierung.



RenderToHtml API

Generiert fertige HTML-Seiten inklusive "sstyles" Blöcken mit Katalog-Templates ["pli_1"], wobei alle Style-Referenzen automatisch aufgelöst werden.



LIVE CUBE MATRIX & DYNAMISCHE GRIDS

Echtzeit-Schaffierung hunderter "Cubes" auf der GPU, gesteuert durch die im Katalog definierten physikalischen JSON-Goten.



ANWENDUNGSBEREICHE & SERVICES

PLATTFORMÜBERGREIFEND: UNITY, WEB & C++

Nahtlose Einsetzbarkeit in Unity, .NET-Anwendungen und moderne Web-Stacks (Electron) durch C ABI und C8-Wrapper (H8n.cs).



SUBGRAPH INSIGHTS & TELEMETRIE

Nutzung für komplexe Datenvisualisierungen, basierend auf physikalischer Stabilität und ITT-gestützter Orchestrierung.

Inter

Core: 'i18n_engine.dll' (C++) Native) acting as the central nervous system.

Input: Tailwind-style catalogs (tailwind_style_catalog.i18n) containing physical properties.

Outputs: Zero-copy binary data streams simultaneously to GPU, Web, and Unity environments.



style_cube-ice
style_cube-ice
Masse: 1.05
Reibung: 0.08
Elastizität: 0.72

style_cube-heavy
style_cube-heavy
Masse: 4.2
Reibung: 0.82
Elastizität: 0.18

style_cube-anti-grav
style_cube-anti-grav
Masse: 0.6
Reibung: 0.15
Elastizität: 0.82

Coding Physics into Design

The DNA: `tailwind_style_catalog.i18n`

```
style_cube-ice {  
    --mass: 1.05;  
    --friction: 0.08;  
    --restitution: 0.72;  
    background-color: #a5f3fc;  
}  
  
style_cube-heavy {  
    --mass: 4.2;  
    --friction: 0.82;  
    background-color: #1e1b4b;  
}
```

Single Source of Truth

Styles are no longer just visual. They are physical. We define mass, friction, and restitution alongside colors and fonts.

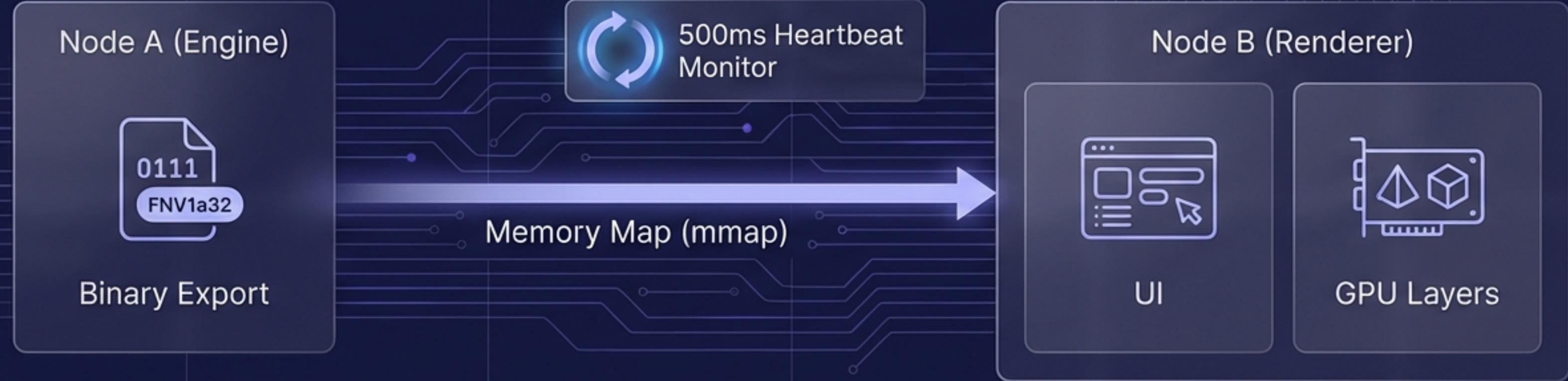
The Mechanism

The engine parses these tokens and converts CSS concepts into physical parameters for the `NativeStyle` struct.

Designers don't just pick colors. They define the weight of the digital world.

Speed at the Speed of Light

Zero-Copy & Atomic Swapping



⚡ Instant Access

UI and GPU layers mmap the file without copying data.

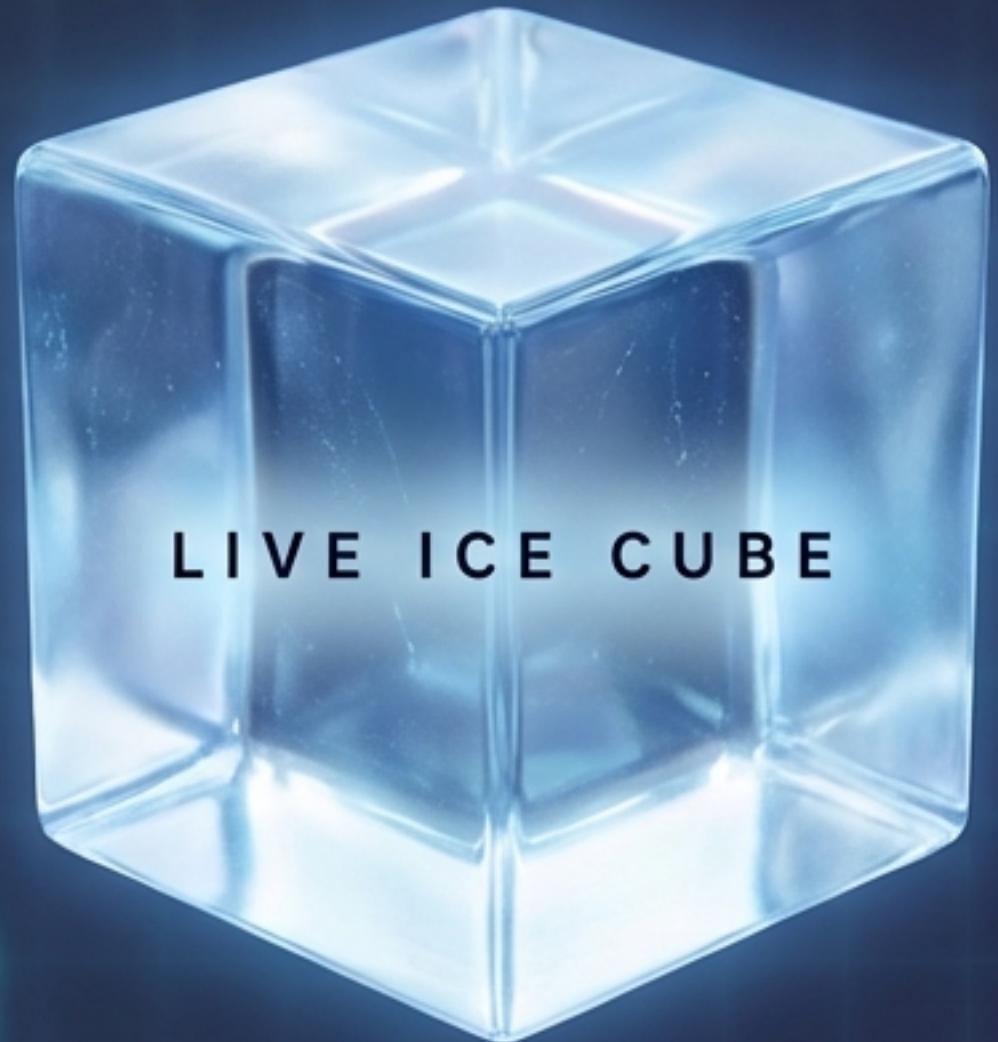
🔄 Atomic Swapping

The engine swaps snapshot pointers atomically. Zero downtime.

↻ Live Reload

Watcher in `main.cpp` scans for changes and hot-swaps instantly.

“Physics You Can Feel”



Orchestration:

Tailwind styles meet native physics calculations.

Real-Time:

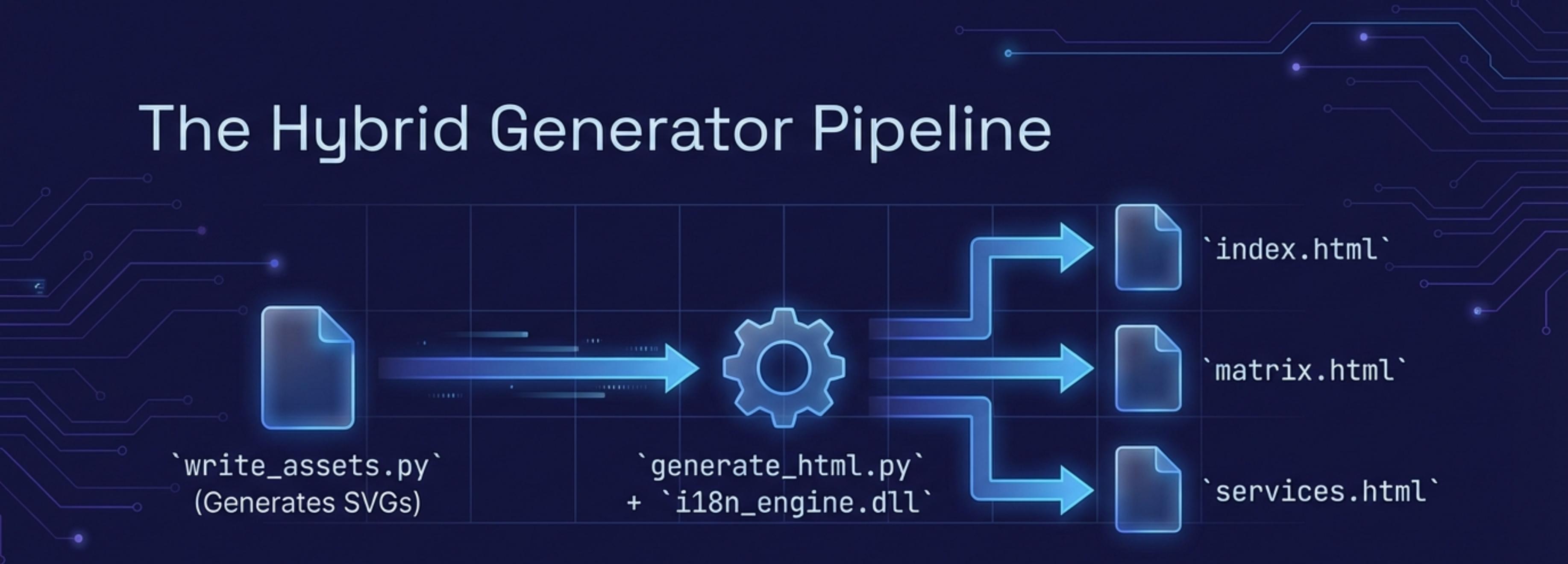
Calculates bounce, drag, and gravity on the fly.

Consistency:

The same JSON payload drives behavior in a web browser and a C++ native window.

“We orchestrate Tailwind-supported styles and native physics so your Live-Grid reacts immediately.”

The Hybrid Generator Pipeline



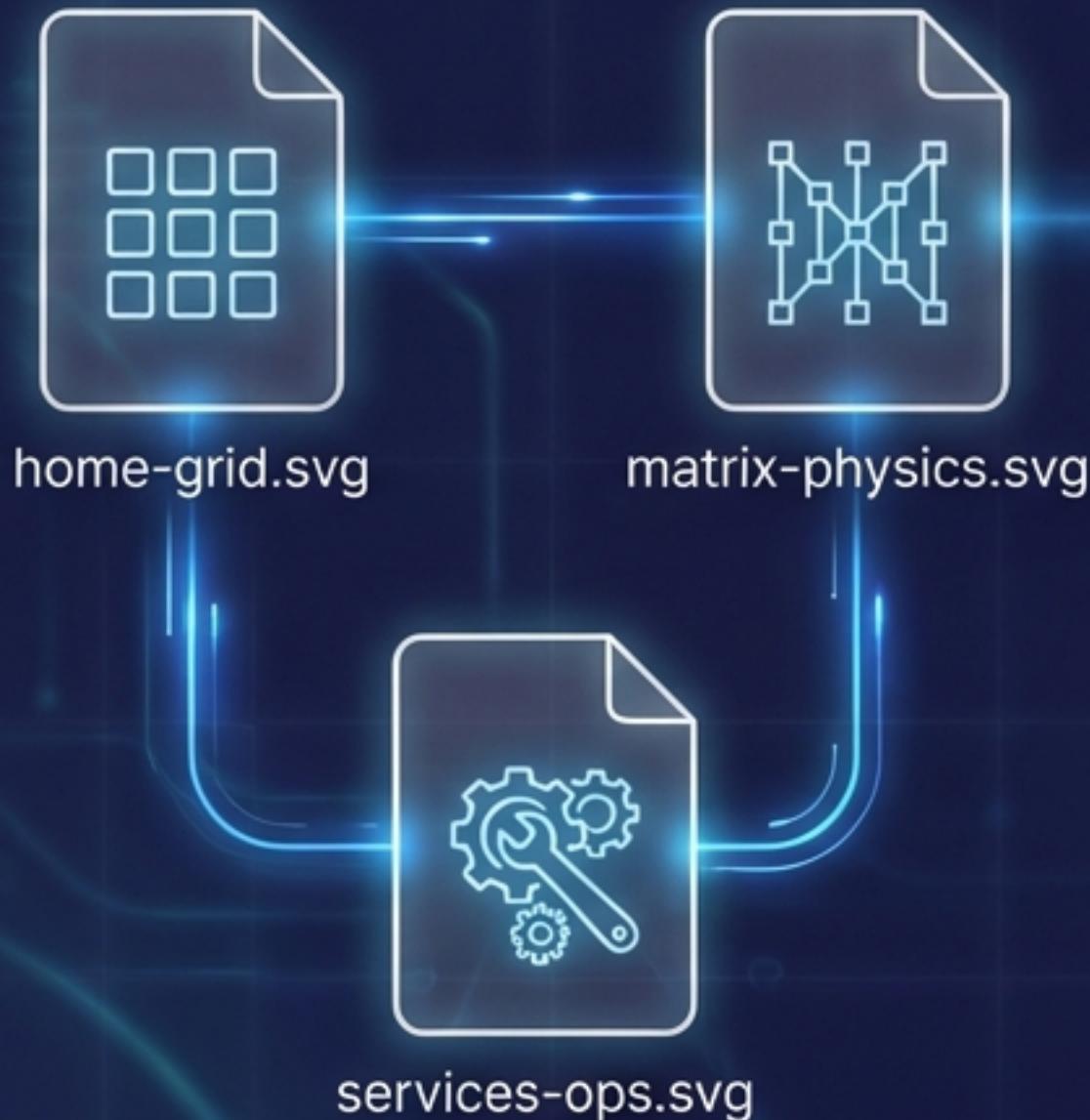
RenderToHtml API

Resolves `%n` placeholders and swaps `@style_*` references into sanitized CSS classes.

Impact

No more manual HTML crafting. The Engine generates the markup, resolves the CSS, and injects the JS animation payload.

From Token to Texture



```
tpl_image-card {  
    background-image: url('%0');  
}
```

Templates: `tpl_` tokens manage layout structure (e.g., `tpl_full-page`).

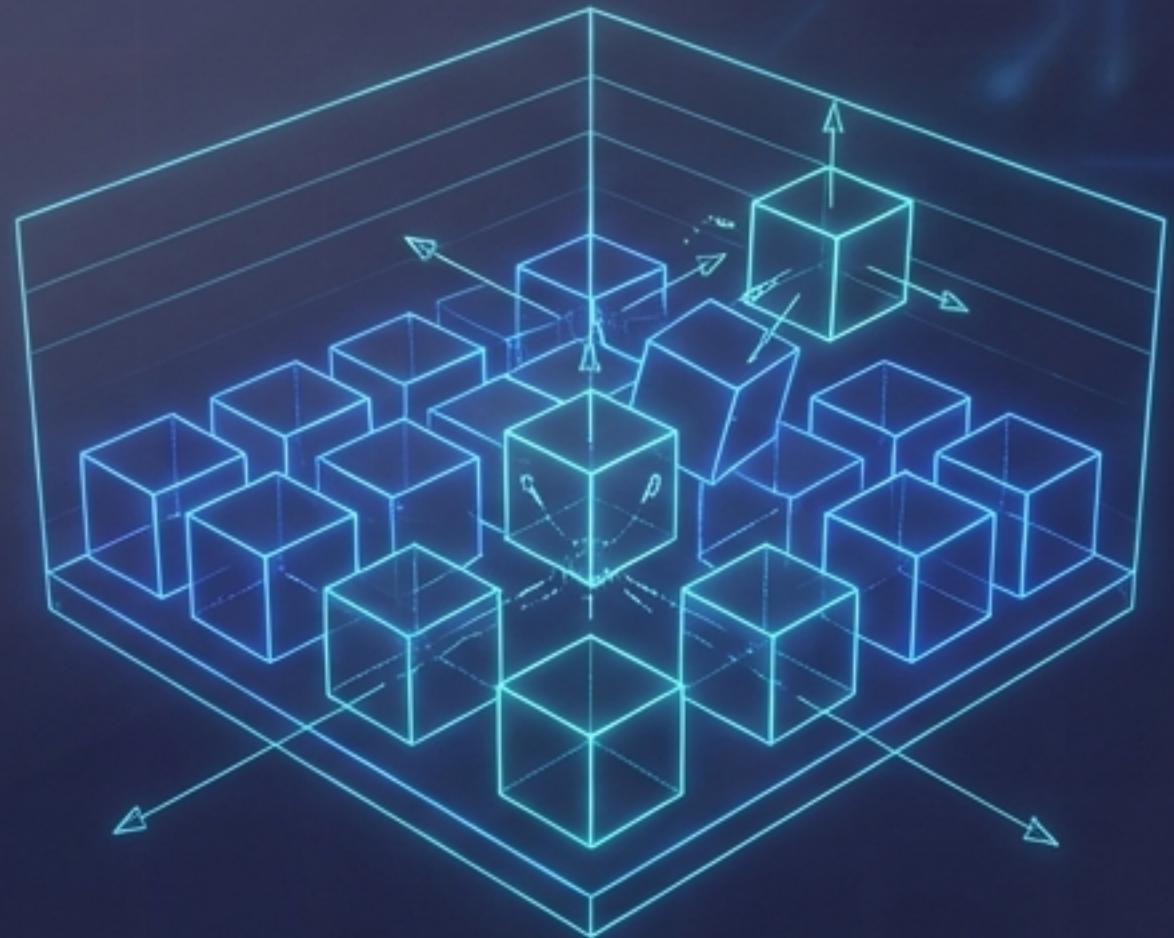
Automation: `write_assets.py` emits twelve distinct SVGs directly into `www/assets/`.

Result: A cohesive visual language that scales without external dependencies.

Powering the Metaverse (Unity & C#)

```
void Update()
{
    var style = I18n.TryGetNativeStyle("style_cube-ice");

    computeShader.SetFloat("Mass", style.Mass);
    computeShader.SetFloat("Friction", style.Friction);
}
```



****The Bridge:**** `TryGetNativeStyle` connects managed code to native power. Push mass, friction, and spacing directly to GPU Compute Shaders. Hot-reload styles in the text file and watch the Unity scene update without stopping the game.

SubQG: Visualizing the Pulse



• **Telemetry:** Deep monitoring of the Grid's health.

Telemetry isn't just logs. It's the heartbeat of the system.

• **Intelligence:** A Decision-Matrix that learns from user interactions.

Edit. Save. Witness.

```
$ make run  
[WATCHER] Change detected in  
tailwind_style_catalog.i18n  
[RELOAD] Snapshot swapped in 12ms.  
  
style_cube-ice:  
  Mass: 1.05  
  Friction: 0.08  
  Color: #a5f3fc
```

- 1. Modify `transition` or `--friction` in the text file.
- 2. Save the file.
- 3. Watch the Cube update **instantly** in the browser and native window.

Total synchronization between code and visual output.

Engineered for Integrity

The QA Harness

`i18n_qa.py` asserts style inheritance and placeholder injection.

Validation

Ensures `style_card` glyphs and native physics values are present before build.



Build Safety

`make` runs QA automatically. If an assertion fails, the build stops.

The Ecosystem

Sichere Kanäle

Verschlüsselung über den gesamten Stack.

Secure Channels:

Encryption across the entire stack.

Global Reach

100+ Länder vertrauen der Matrix.

Global Reach:

Trusted by **100+** countries.
Localization and **i18n** at the core.

SubQG Health

Reibung & Masse in perfektem Balance.

SubQG Health:

Friction & Mass in perfect balance.

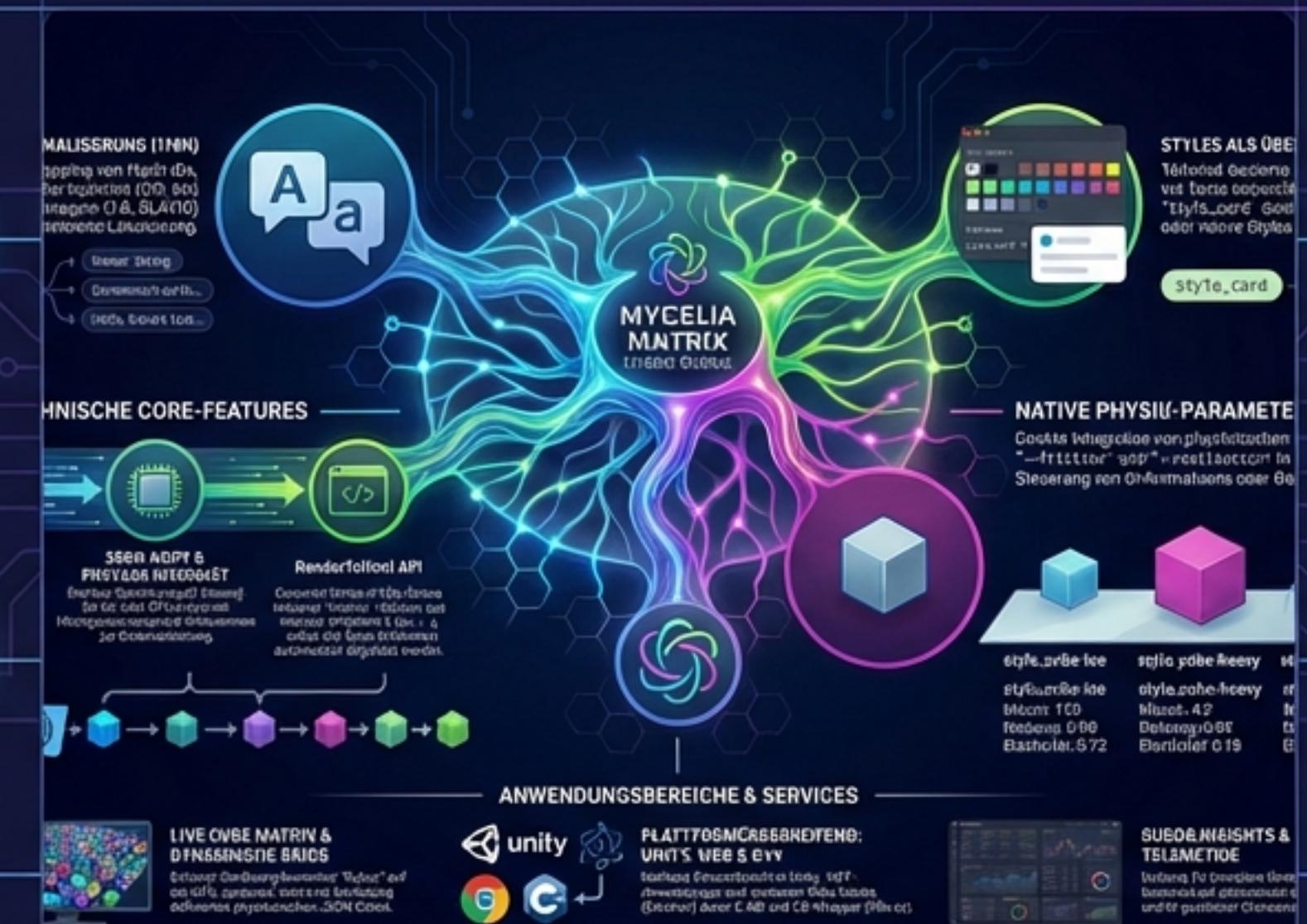
Beyond v1.2: The Roadmap



One Engine. Total Control.

- Hybrid HTML Generation

- Physics-Aware Assets



- Zero-Copy Performance

- Universal Sync (Web + Native)

WELCOME TO THE LIVING GRID.