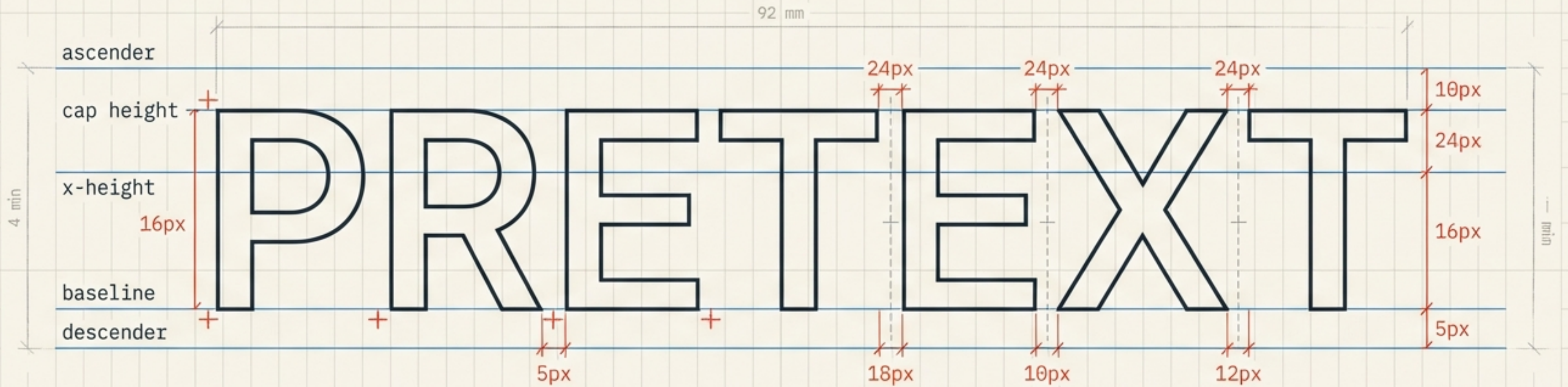


# A 15KB library just solved a 30-year-old architectural debt.



## The Missing Layer

The measurement primitive web developers have been waiting for since 1994.

## The Architect

Designed and built by Cheng Lou.

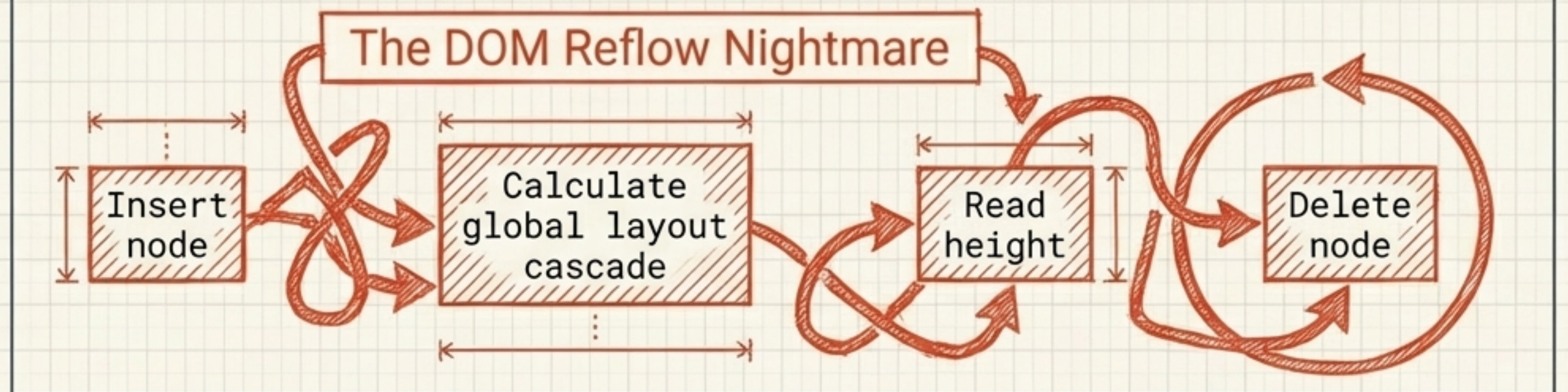
## The Impact

A paradigm shift for web layout, performance, and AI-driven UI iteration.

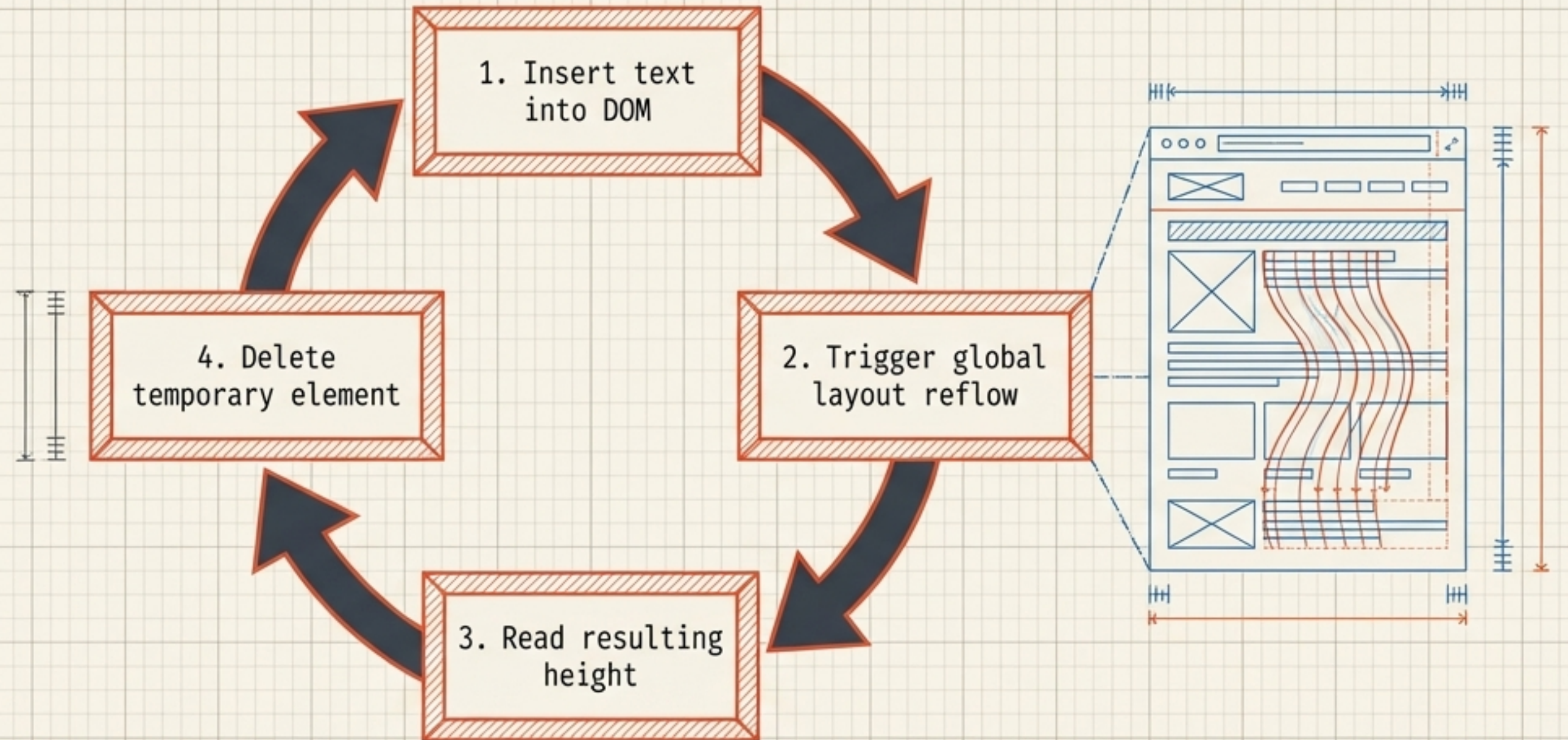


Every native platform treats text measurement as a standalone operation.

Platform	Approach	Side Effects
iOS	<code>sizeWithAttributes</code>	None. Independently queryable module.
Android	<code>StaticLayout</code>	None. Fast memory operation.
Flutter	<code>TextPainter</code>	None. Isolated rendering.
Jetpack Compose	<code>TextMeasurer</code>	None. Pure layout primitive.



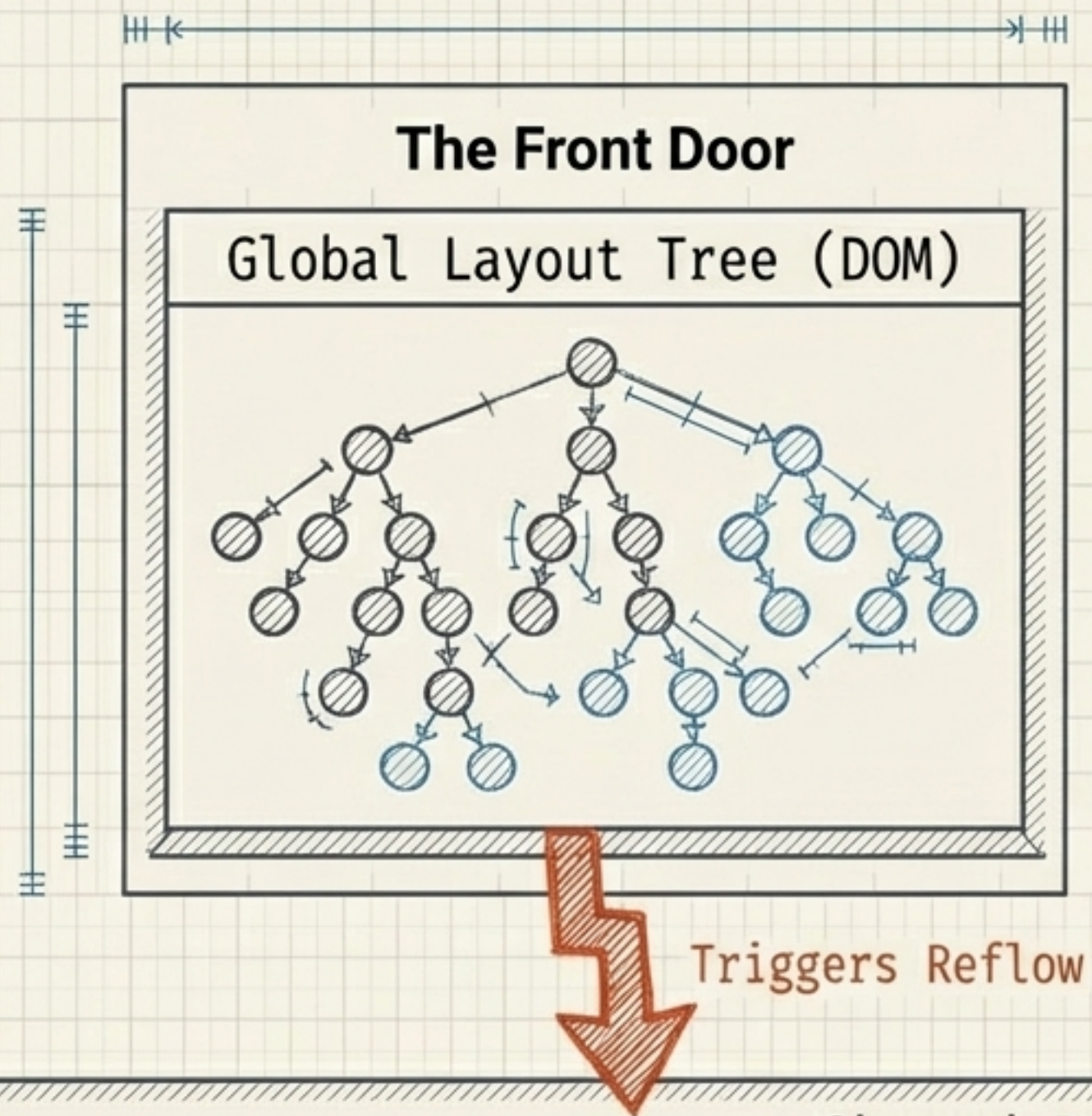
# The global cascade of a forced synchronous layout.



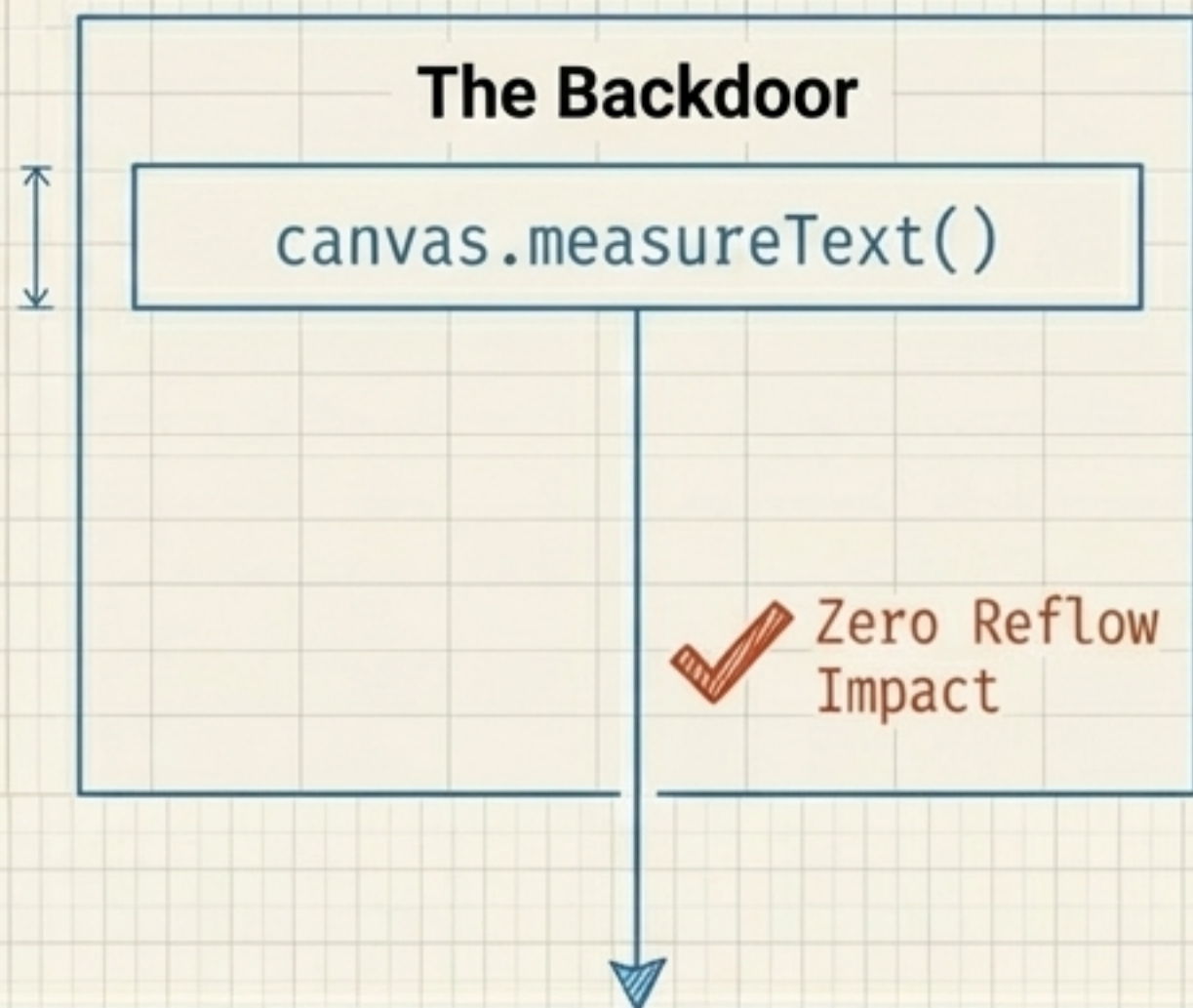
This globally coupled cascade causes stuttering, dropped frames, and sluggishness.

Measuring hundreds of items for a **virtual list** forces the browser to run this heavy **global cycle** hundreds of times.

# Pretext exploits a safe, isolated backdoor in the browser architecture.

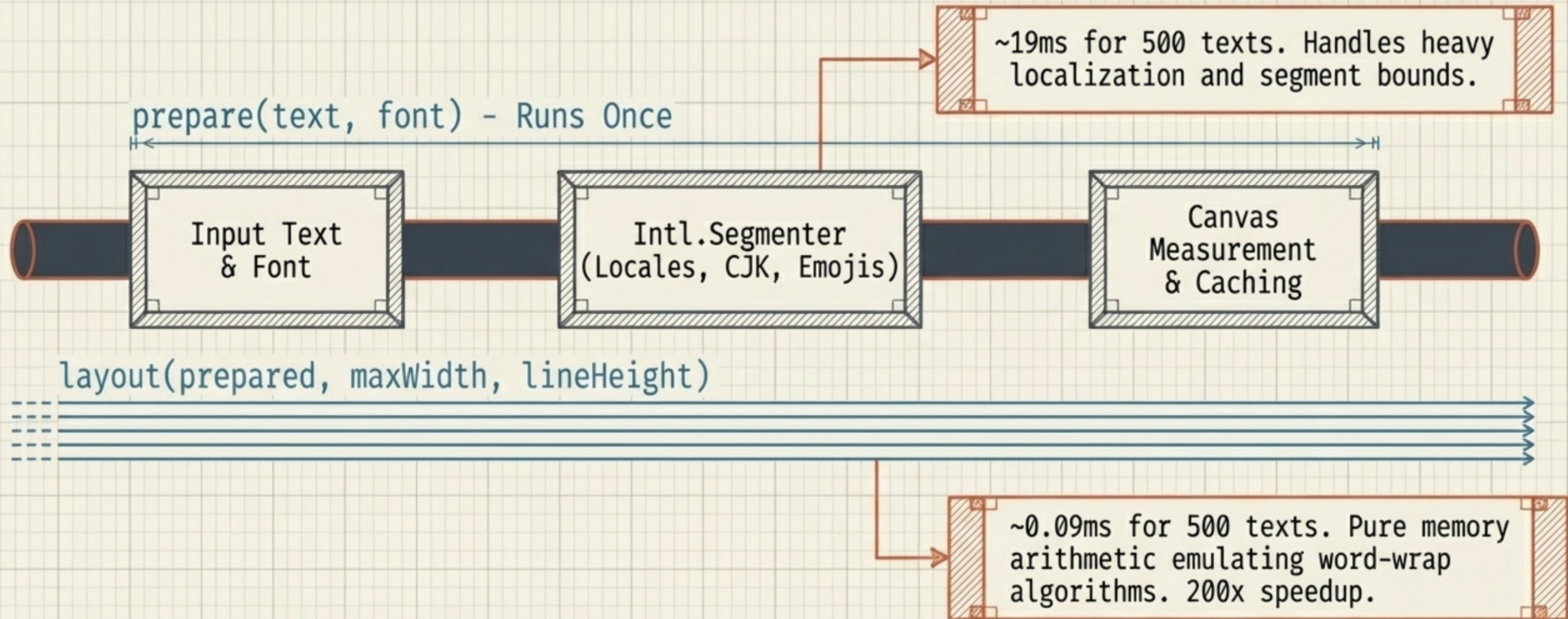


Canvas and DOM rendering share the exact same underlying font engine. Canvas operates completely safely outside the layout tree.



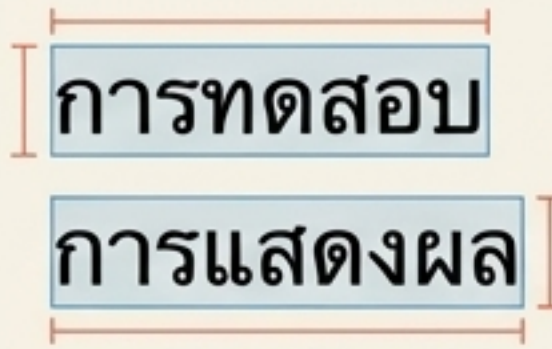
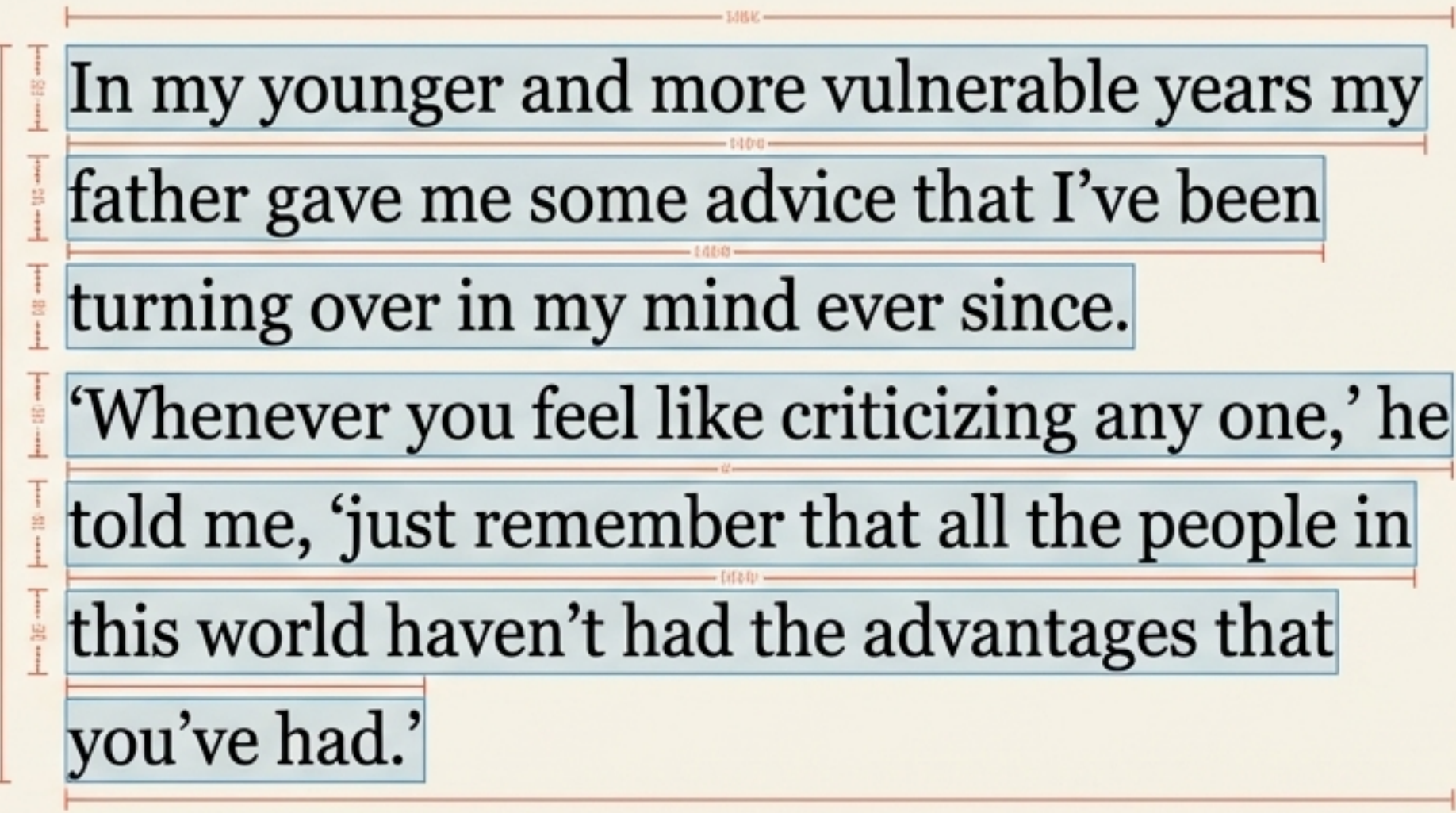
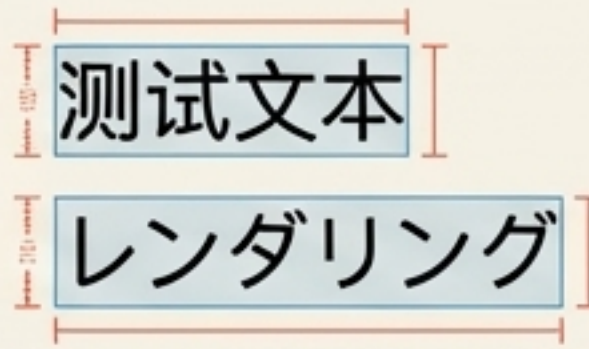
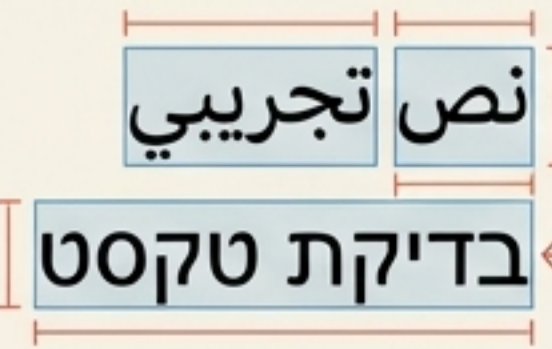
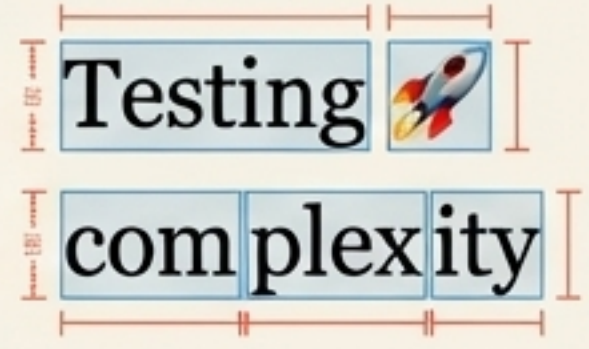
Shared Browser Font Engine

# The two-phase engine separates heavy preparation from ultra-fast layout.



By moving the word-wrap algorithm entirely into userland memory, DOM access is completely eliminated during layout resizing.

# Ground-truth validation against pixel rendering across all browsers.

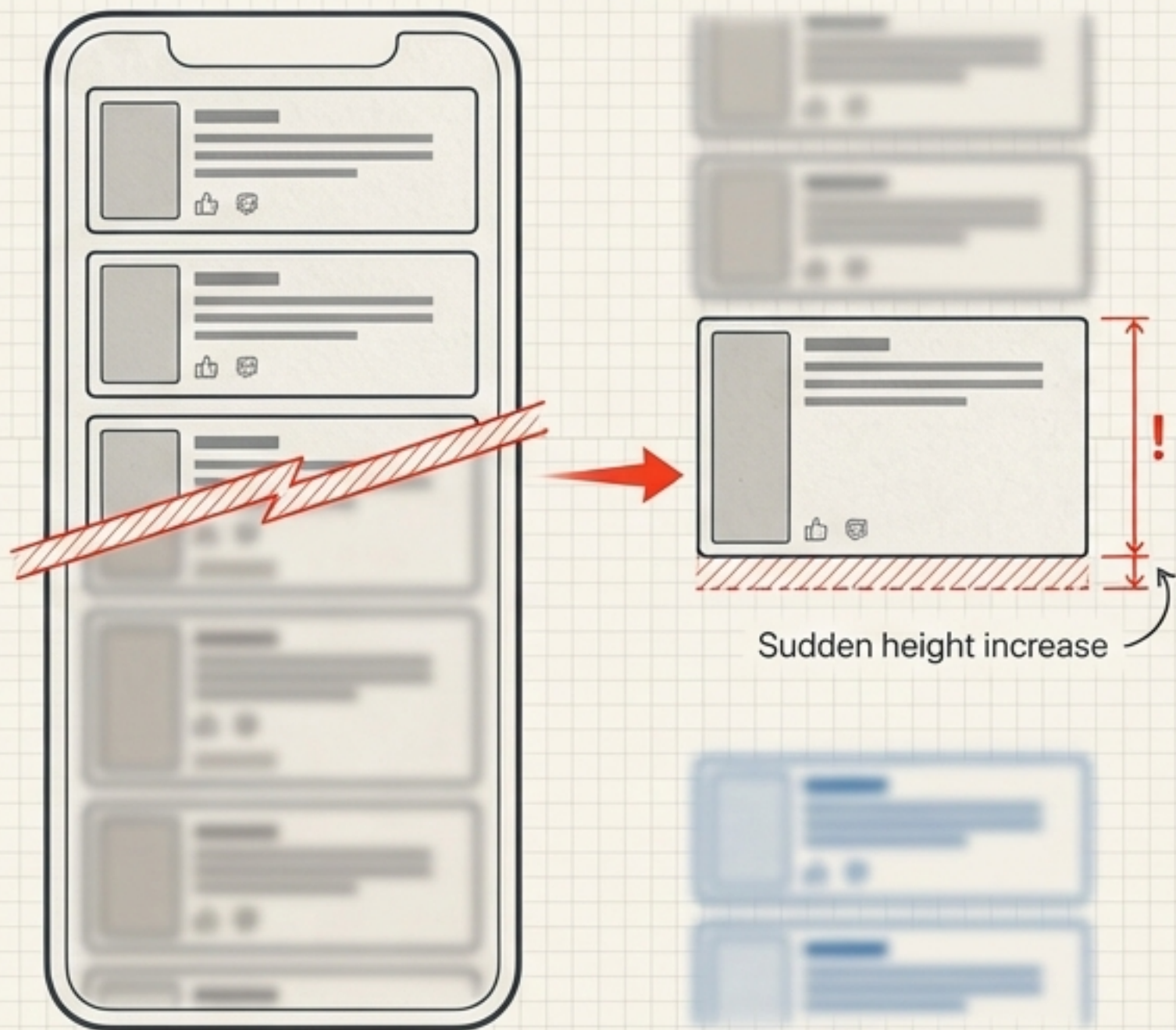
Thai & Complex Graphemes	X-Ray	CJK Support
 <p>การทดสอบ การแสดงผล</p>	 <p>In my younger and more vulnerable years my father gave me some advice that I've been turning over in my mind ever since. ‘Whenever you feel like criticizing any one,’ he told me, ‘just remember that all the people in this world haven’t had the advantages that you’ve had.’</p>	 <p>测试文本 レンダリング</p>
Arabic & Bidirectional		Emojis & Soft Hyphens
 <p>نص تجريبي בדיקת טקסט</p>		 <p>Testing 🚀 complexity</p>

Validated pixel-by-pixel against Chrome, Safari, and Firefox rendering engines.

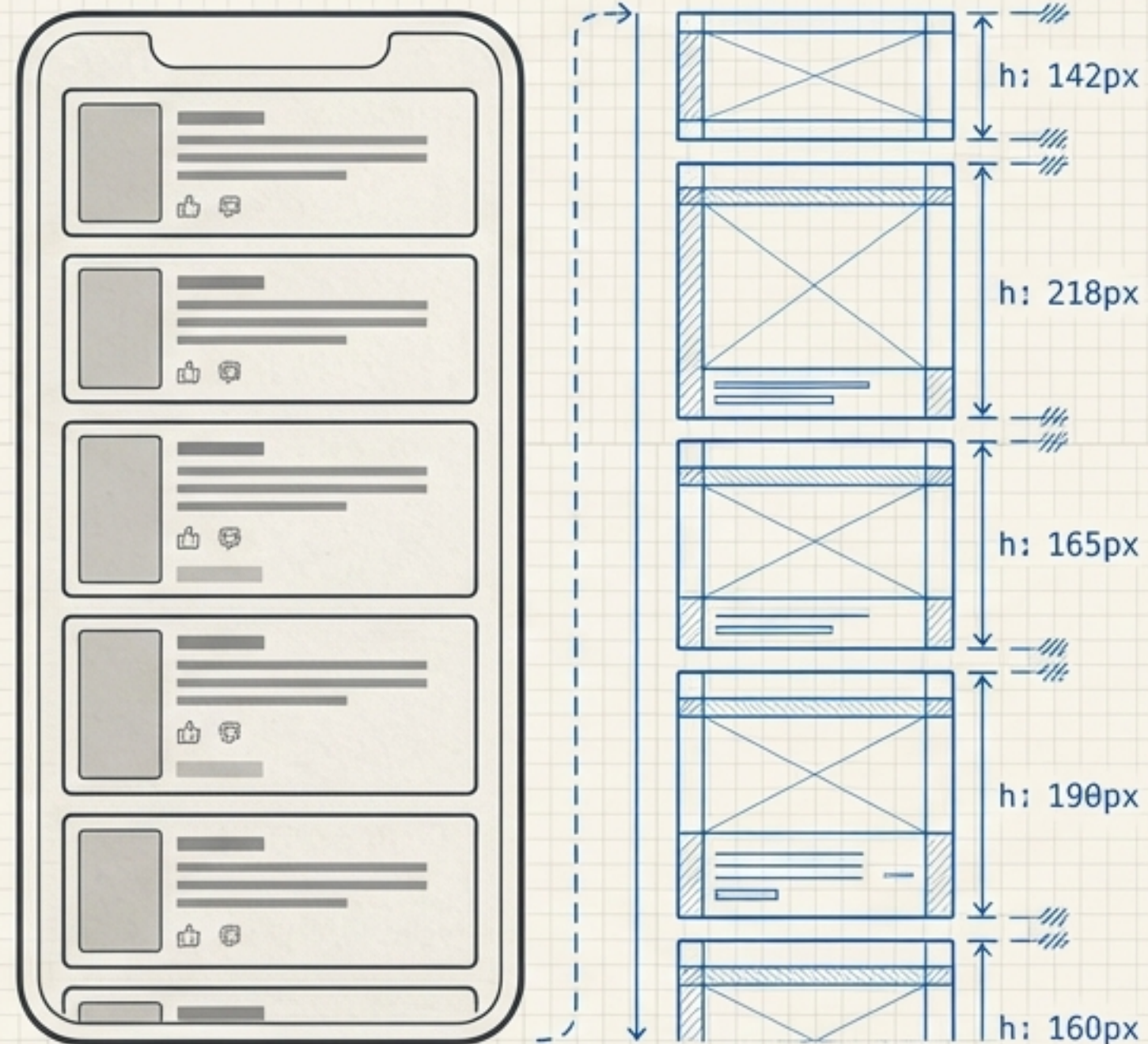
# Paradigm 1: True virtualization with zero layout shift.

h: 1886px

## Guess and Jump



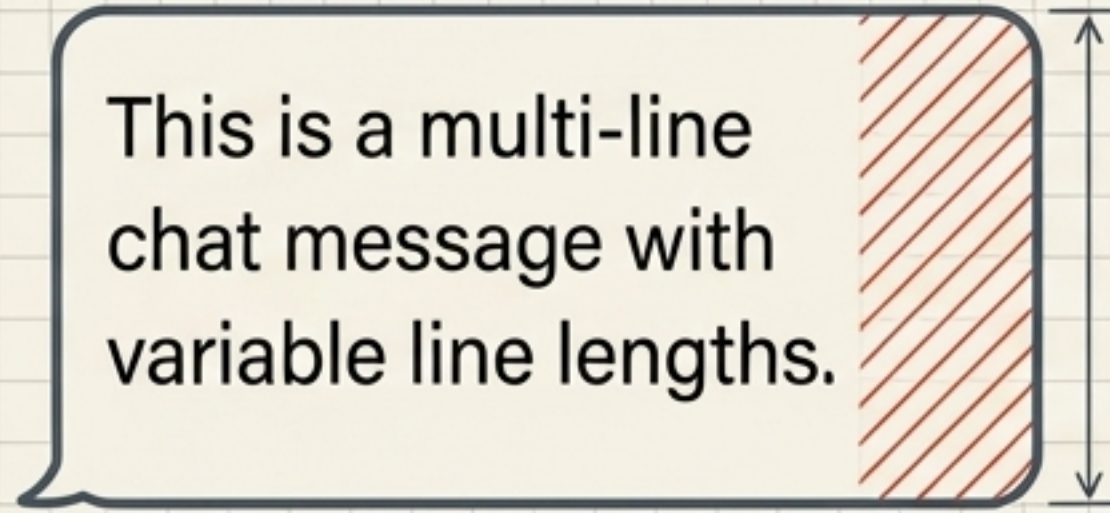
## Absolute Precision



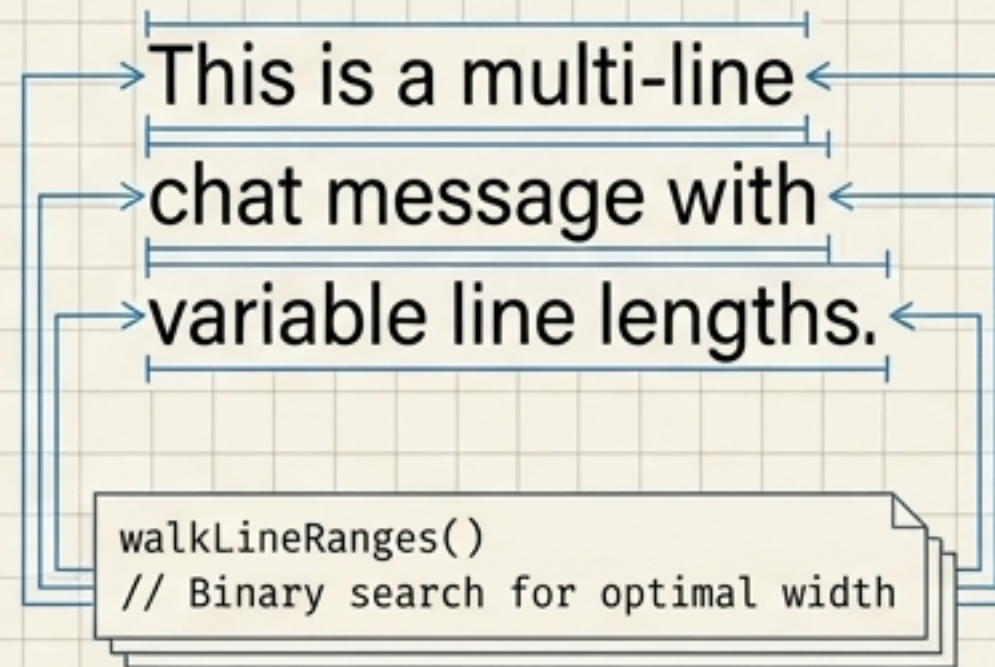
Knowing the exact height of every item before rendering eliminates layout shift completely.

# Paradigm 2: The mathematically tightest multiline shrink-wrap.

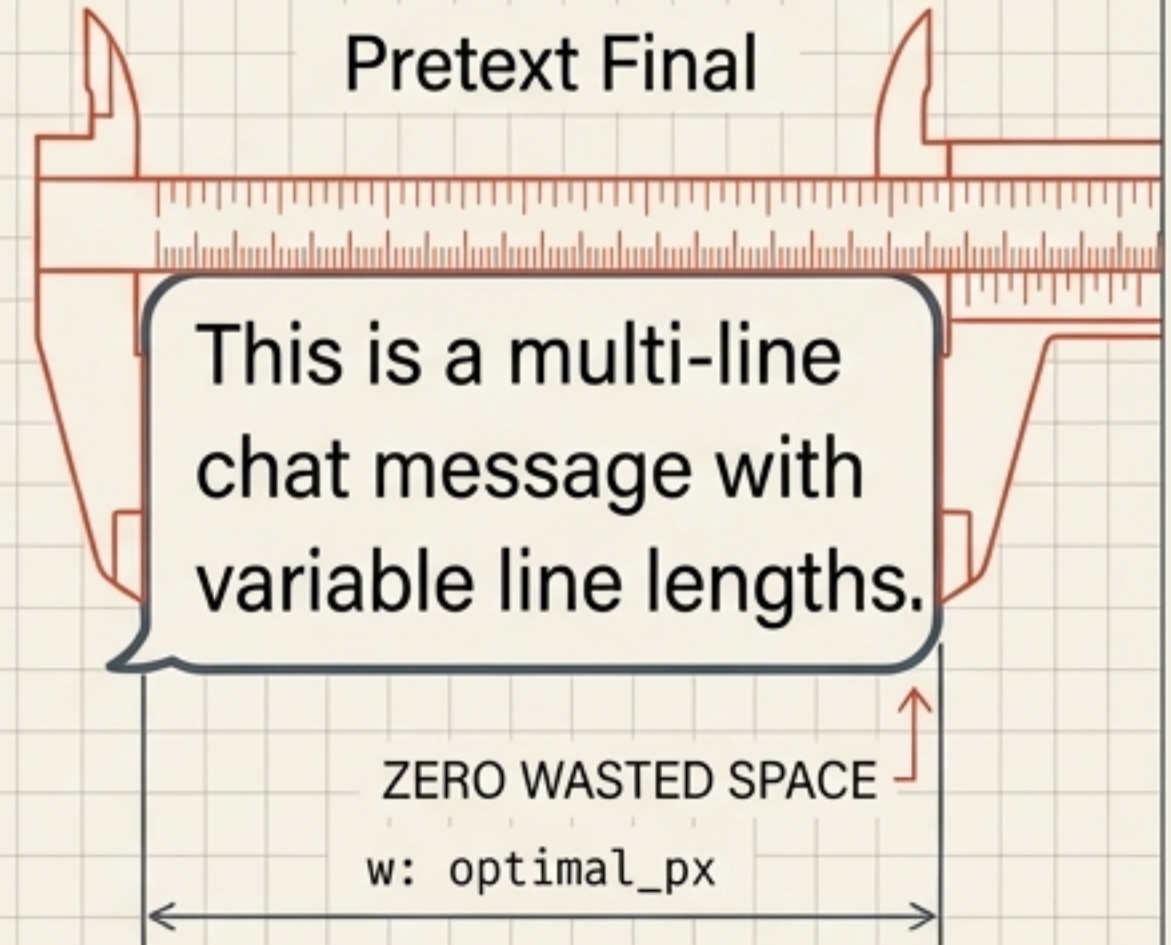
CSS Default



The Search

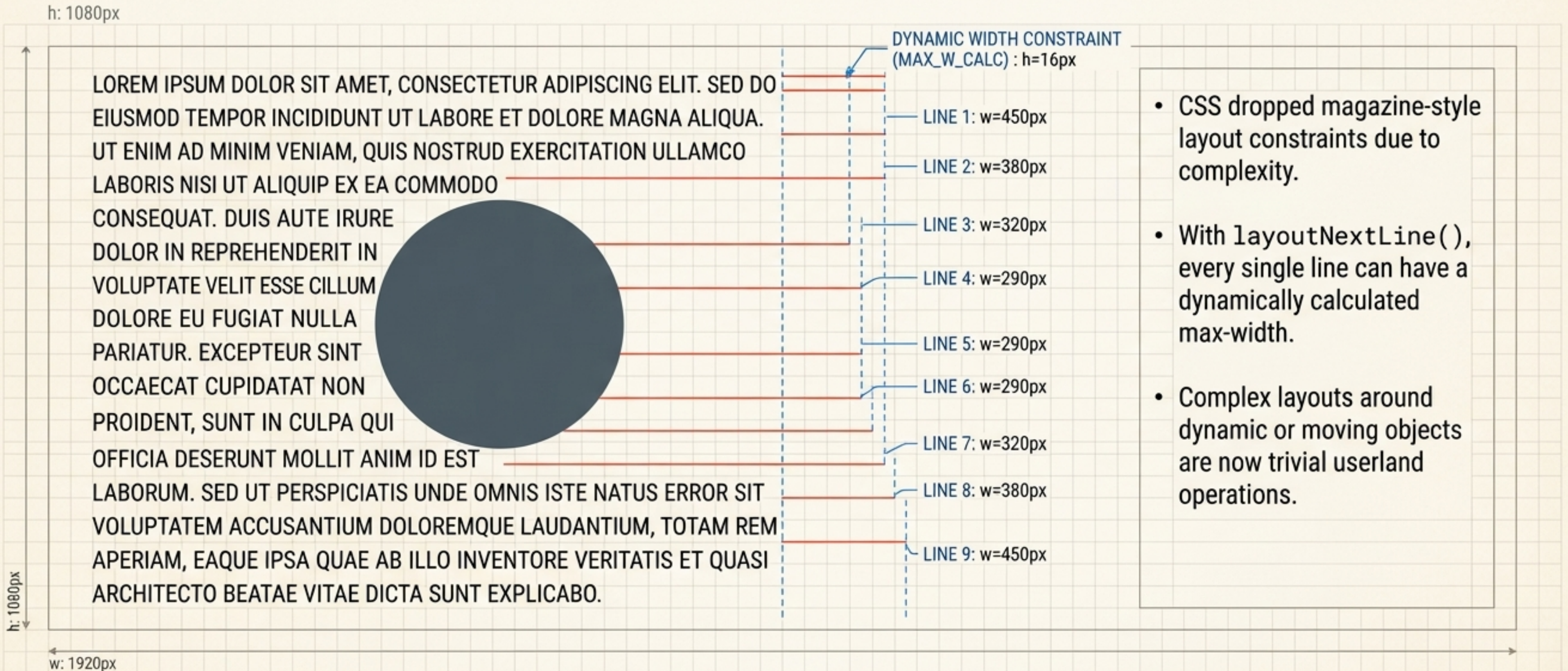


Pretext Final

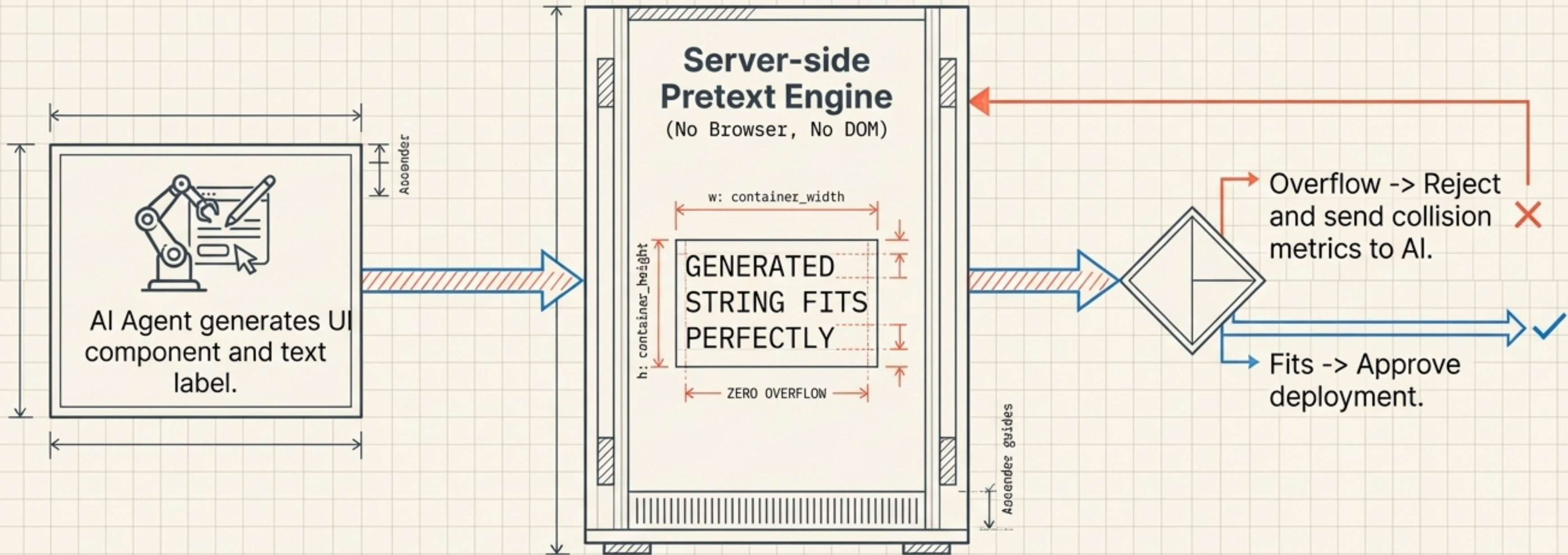


**CSS cannot express “make this container exactly as wide as its widest line.”**  
Pretext searches for this mathematically optimal layout primitive.

# Paradigm 3: Flowing text around moving obstacles.



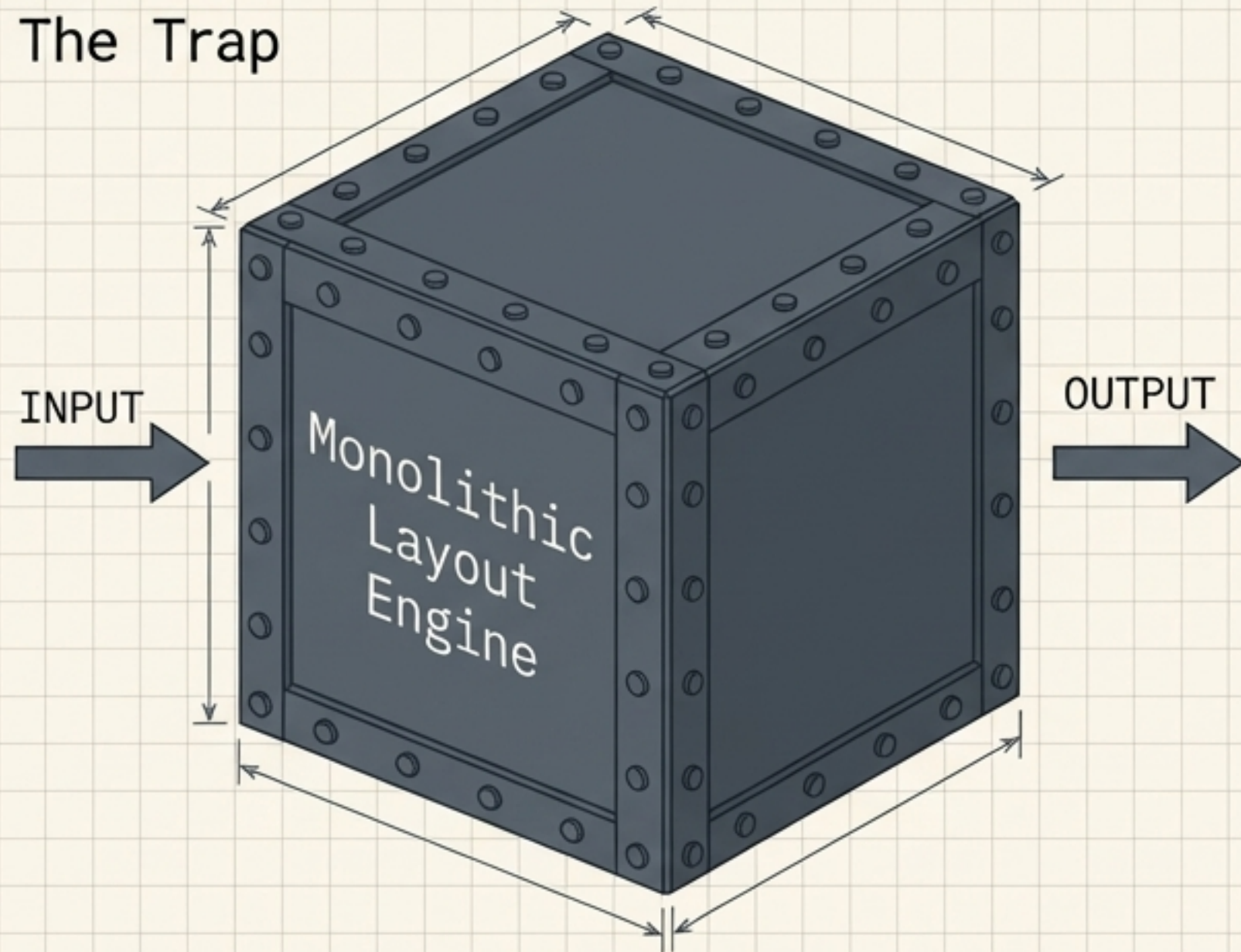
# Paradigm 4: Headless AI-layout verification.



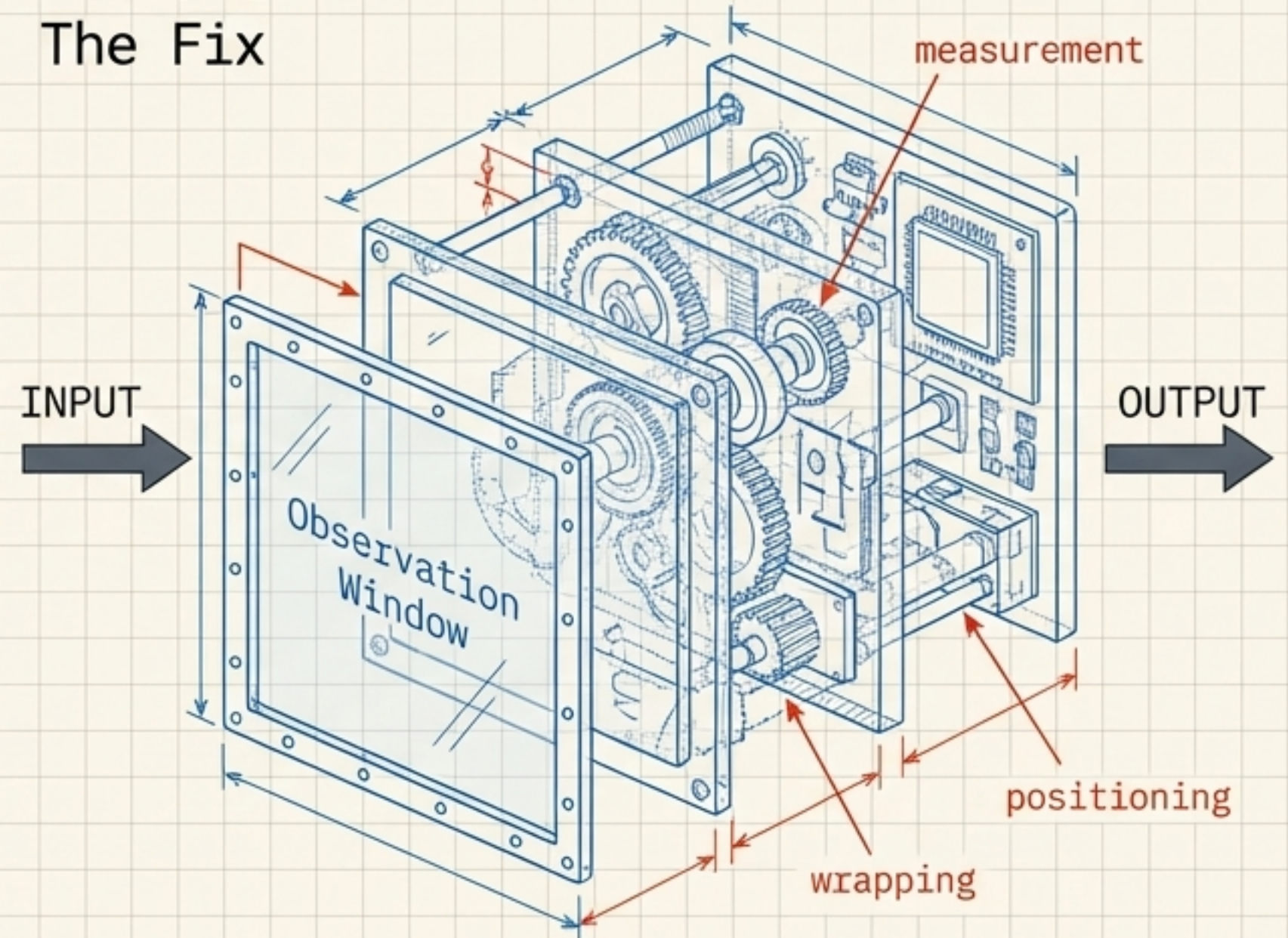
Validating that generated text perfectly fits UI containers can now happen server-side. Closes the feedback loop for autonomous AI-generated UI iteration without spinning up heavy headless browsers.

# The Abstraction Trap: Hiding intermediate states

1994 CSS  
The Trap



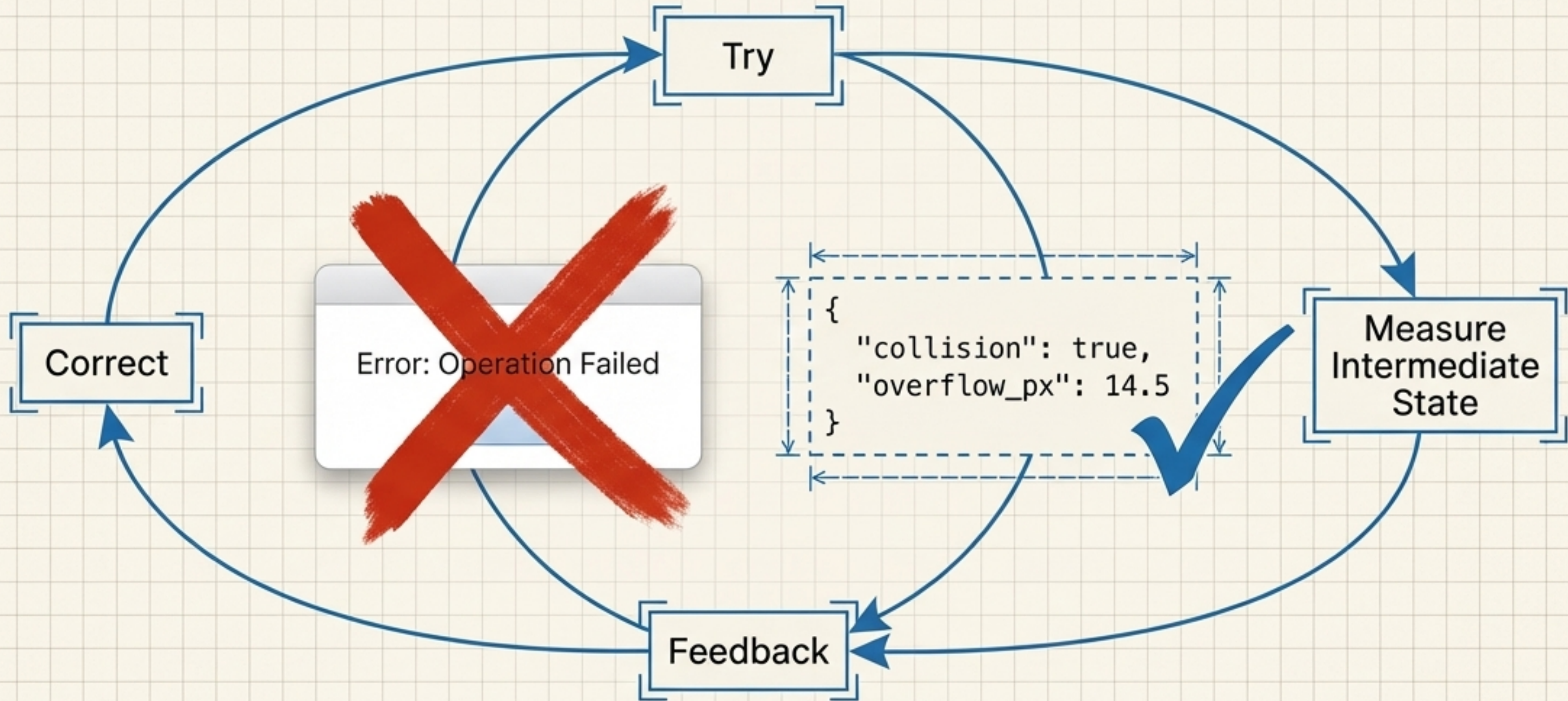
Pretext  
The Fix



Bad abstractions glue all layers together.

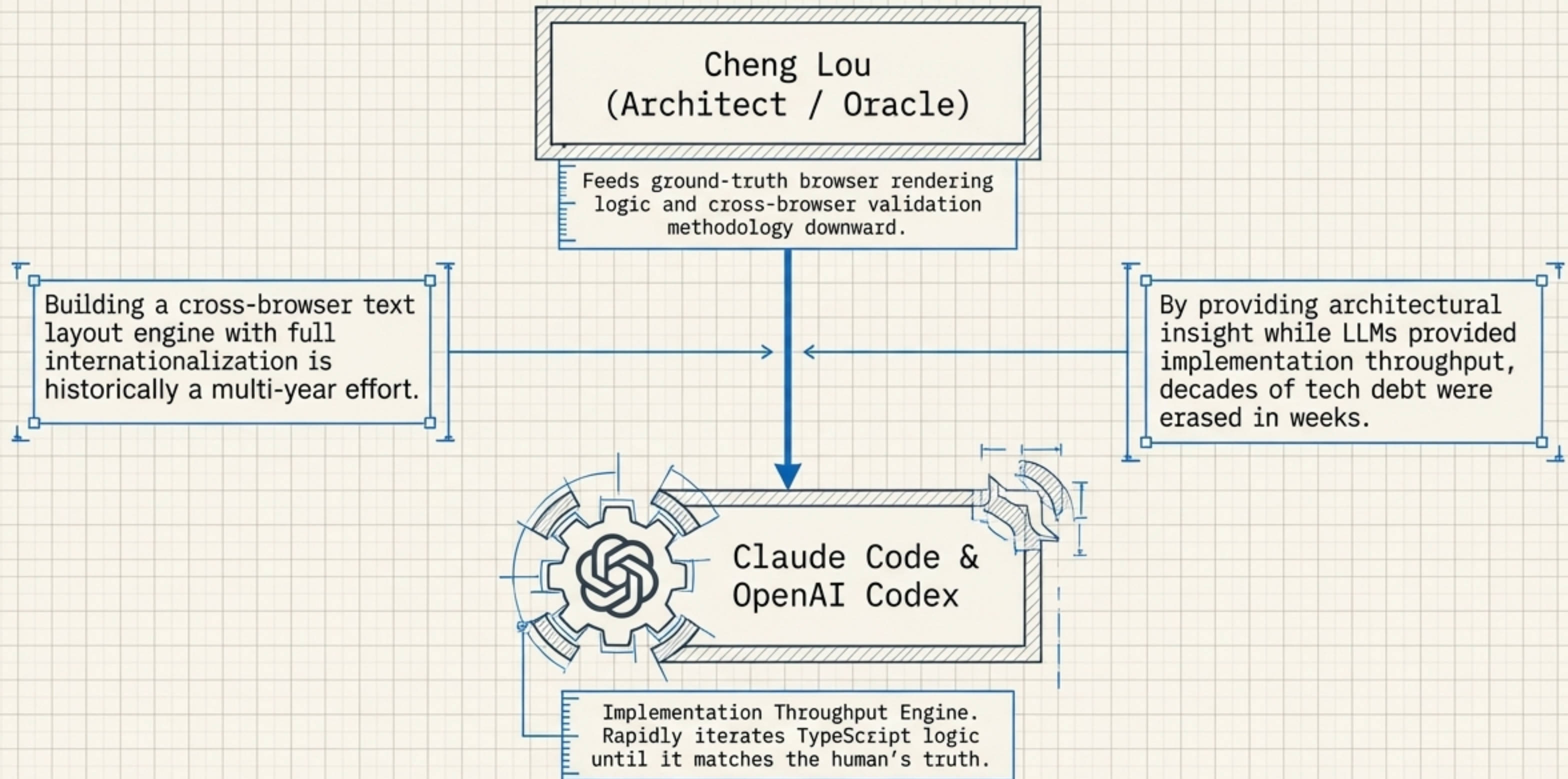
Good abstractions let you choose which layer to work at. Pretext fixes the W3C's gap in userland.

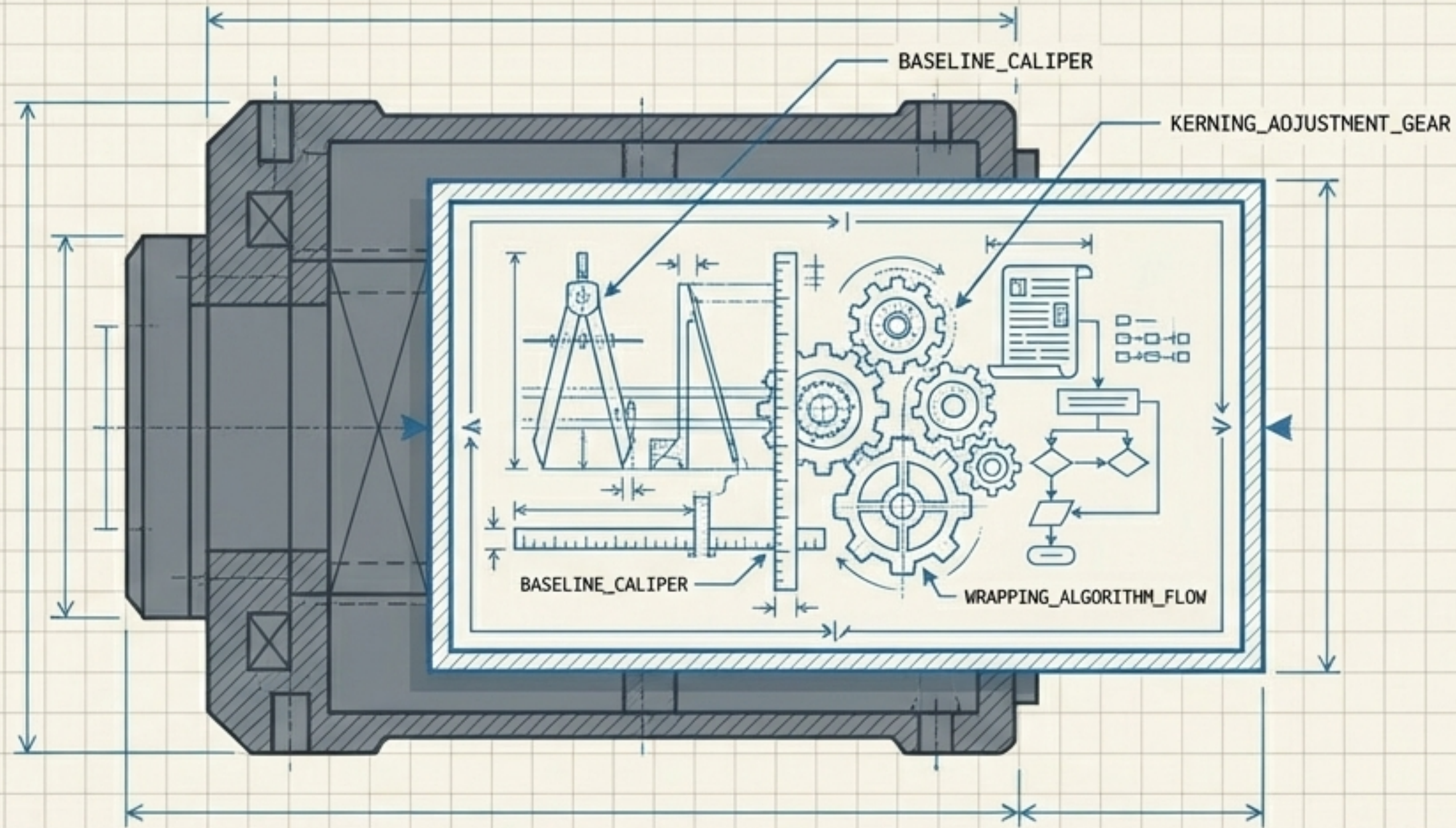
# AI agents require observation, not clean facades.



APIs that hide low-level errors protect human cognitive bandwidth but block machine learning. AI agents need transparent observation windows to self-correct. Shielding them behind opaque facades stalls iteration.

# An impossible problem solved in weeks via "Vibe Coding".





**Don't tear down the abstraction. Open a window on it.**

Repository: [github.com/chenglou/pretext](https://github.com/chenglou/pretext)  
Architectural Analysis: [yage.ai/web-layout-tradeoff.html](https://yage.ai/web-layout-tradeoff.html)