Utoo WASM: Ultra-Fast Dev Toolkit for the AI Era

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W3C AC meeting 2026
Hangzhou, China
20-22 April 2026

The AI Era: A New Paradigm

Intent-driven development

Developers express intent, AI generates code

Env setup is still the **bottleneck**

Coding barrier drops, but setup remains painful

Build speed is the new critical path

AI generates fast, toolchains can’t keep up

Vibe Coding: Solutions Today

VM Backend — high server cost & latency

ESM Bundless — slow HMR, hard to adopt

WebContainer — poor perf, no upgrade path

WASI REPL — ops complexity too high

A Different Approach: Utoo WASM

Utoo — **Unified Toolchain**: Open & Optimized

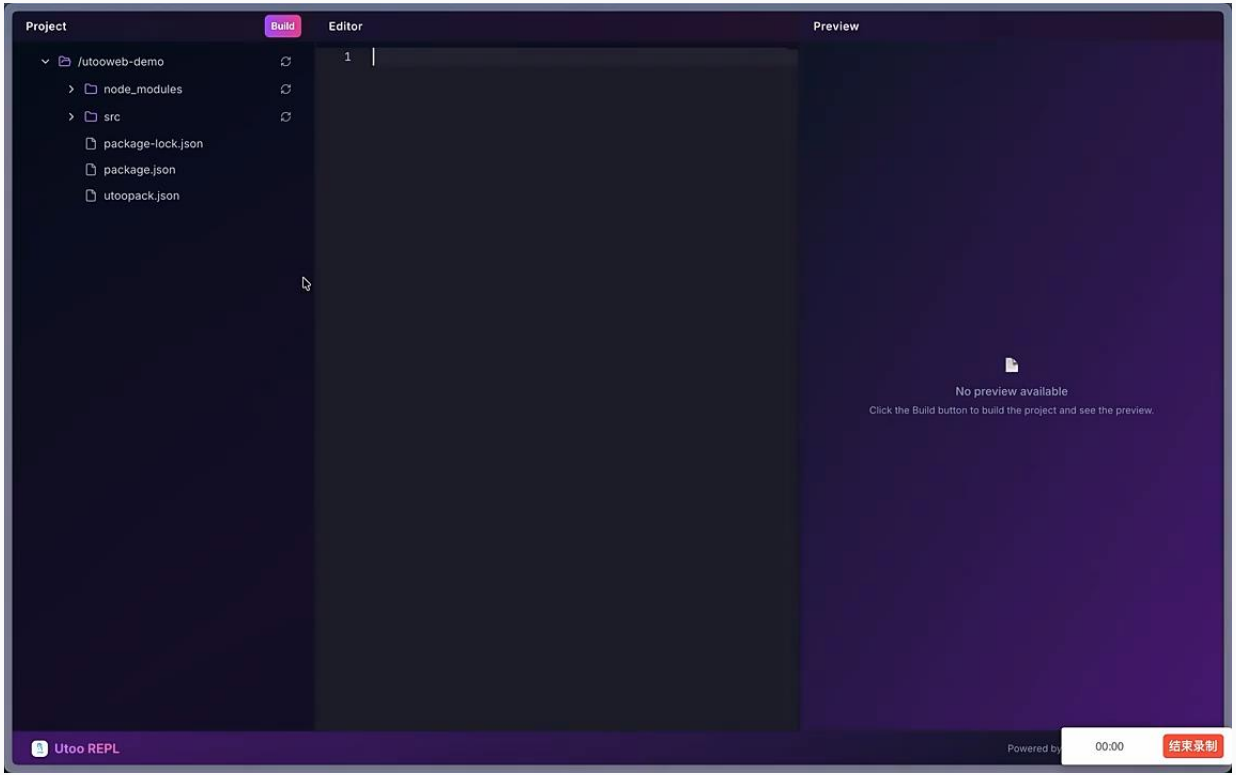
Package Manager (utoo) — Rust, parallel, npm-compatible

Bundler (@utoo/pack) — Turbopack, PRs upstream

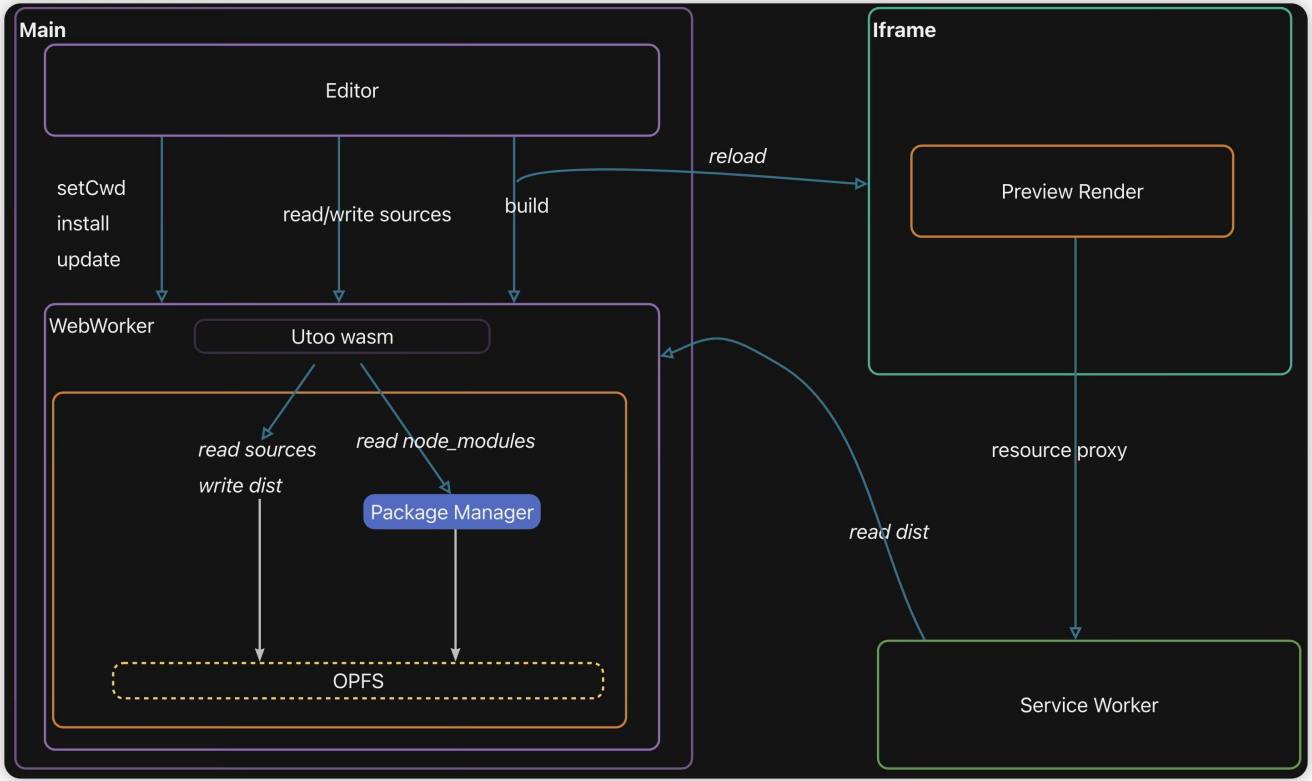
Browser (@utoo/web) — entire toolchain as WASM

One codebase: CLI · Node.js · Browser

Demo: Bundling in the Browser



Architecture



Web Standards at Work

Web Standard	How We Use It	Impact
WebAssembly	Rust core in browser	Near-native perf
SharedArrayBuffer	Shared memory threads	True parallelism
Web Workers	Multi-threaded Tokio	webpack + service + build
OPFS	Persistent dep & cache	Cross-project reuse

Turbopack + WebWorker

Incremental

TurboTasks reactive engine

Only recompute **what changed**

Fine-grained **dep tracking**

Instant HMR feedback

Multi-threading

Tokio runtime in WASM

SharedArrayBuffer threads

13 parallel workers

Work-stealing **scheduler**

Performance

Fuse

Download **tgz only**

Extract **on-demand**

No node_modules

Deps downloaded **once**

Ruborist

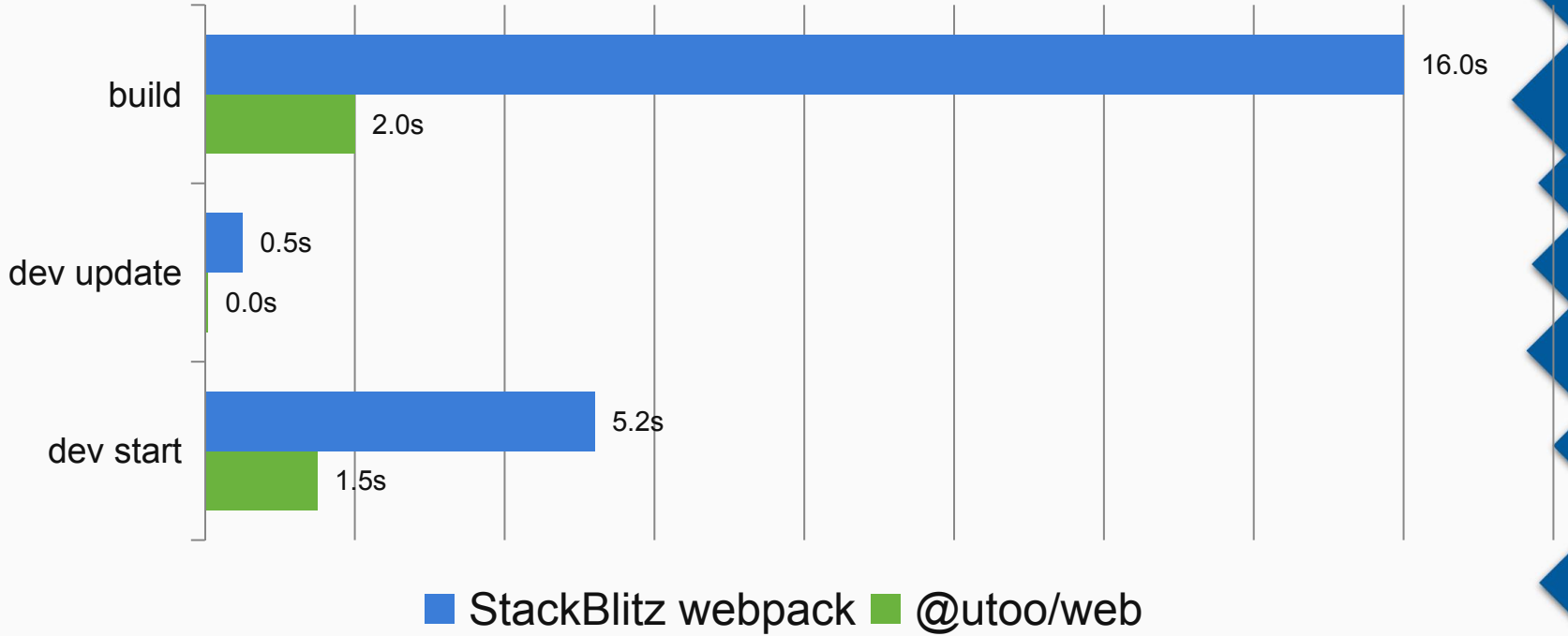
npm resolution in WASM

Direct **registry** requests

Client-side lock file

Cache: **mem/OPFS/net**

@utoo/web vs StackBlitz Webpack



AI Needs **Fast Toolchains**

Intent → AI generates → **instant** compile & verify

Speed = interaction quality, seconds not minutes

Browser-native: zero setup for anyone

Takeaways

Unified, ultra-fast, AI-era toolchain

Full toolchain in the **browser** via WASM

Built on **Web standards**

https://utoo.land

https://github.com/utooland/utoo