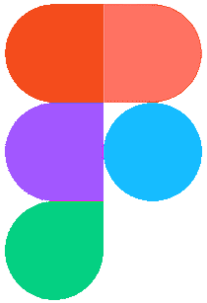
The State of WebAssembly

Some apps that use WebAssembly…

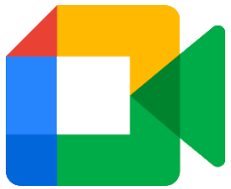


Figma

Parts of Firefox

AutoCAD web app

Google Earth



Google Meet’s background filter

Unity

The State of WebAssembly

Some areas where you can use WebAssembly…

In Modern Browsers & Node.js

On the server, IoT, or in your code
thanks to runtimes like Wasmtime, Wasmer, WasmEdge, WAMR, and others

Edge and Serverless Compute
Fermyon, Cloudflare, Fastly, and others

Containers and Micro-VMs
Docker, Kubernetes, and Hyperlight

The State of WebAssembly

Some languages that can be used…

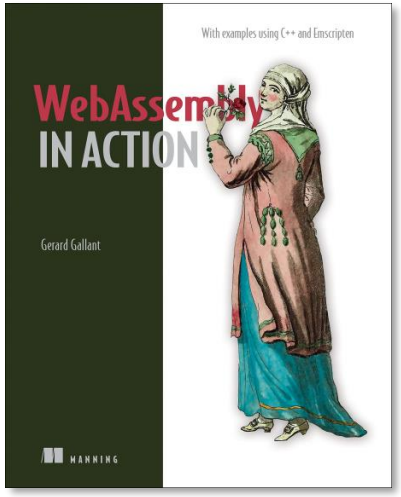




And More

Gerard Gallant

CIO at Dovico Software



“WebAssembly in Action”
bit.ly/37zJbp5

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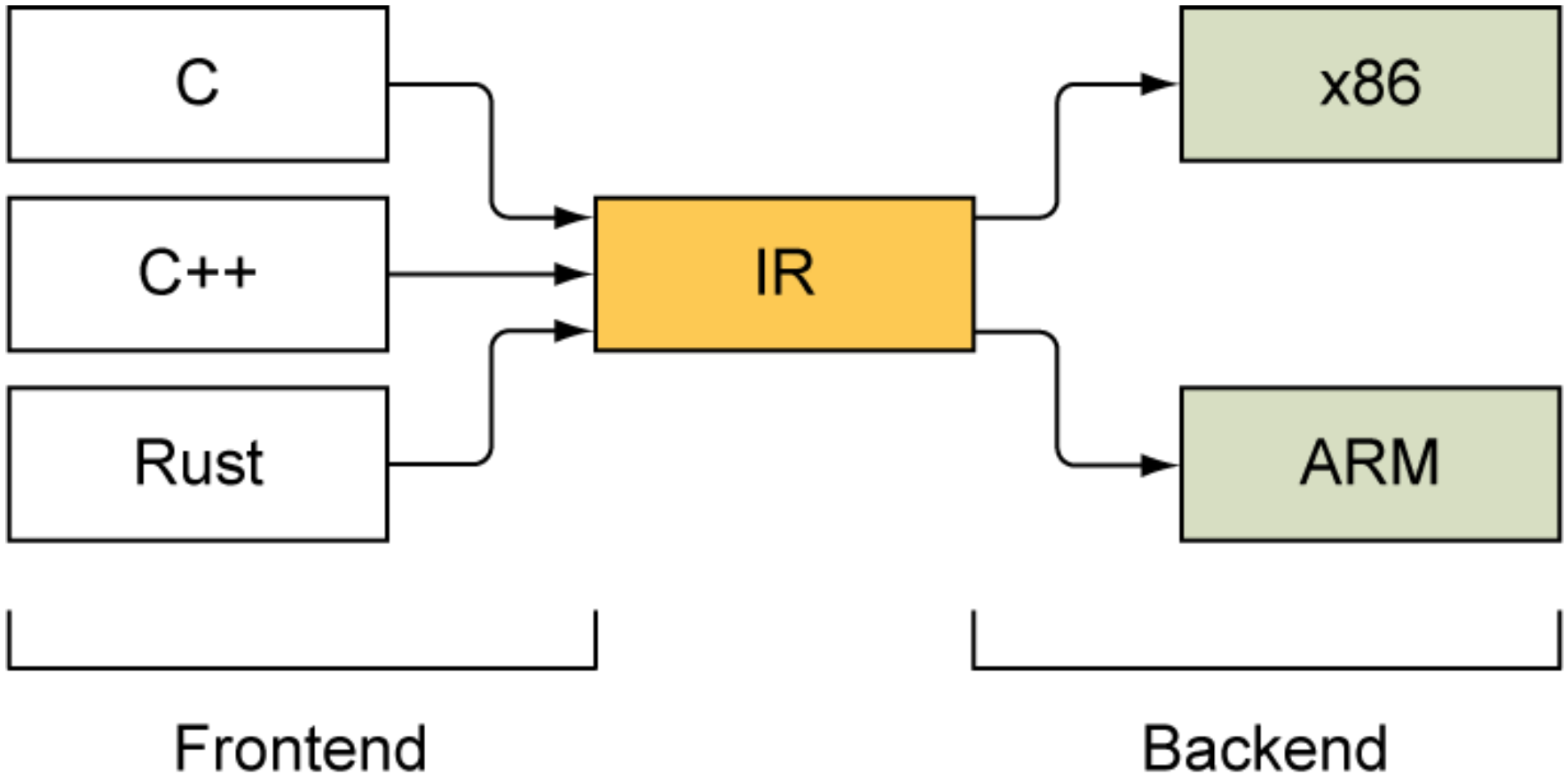
The WebAssembly MVP

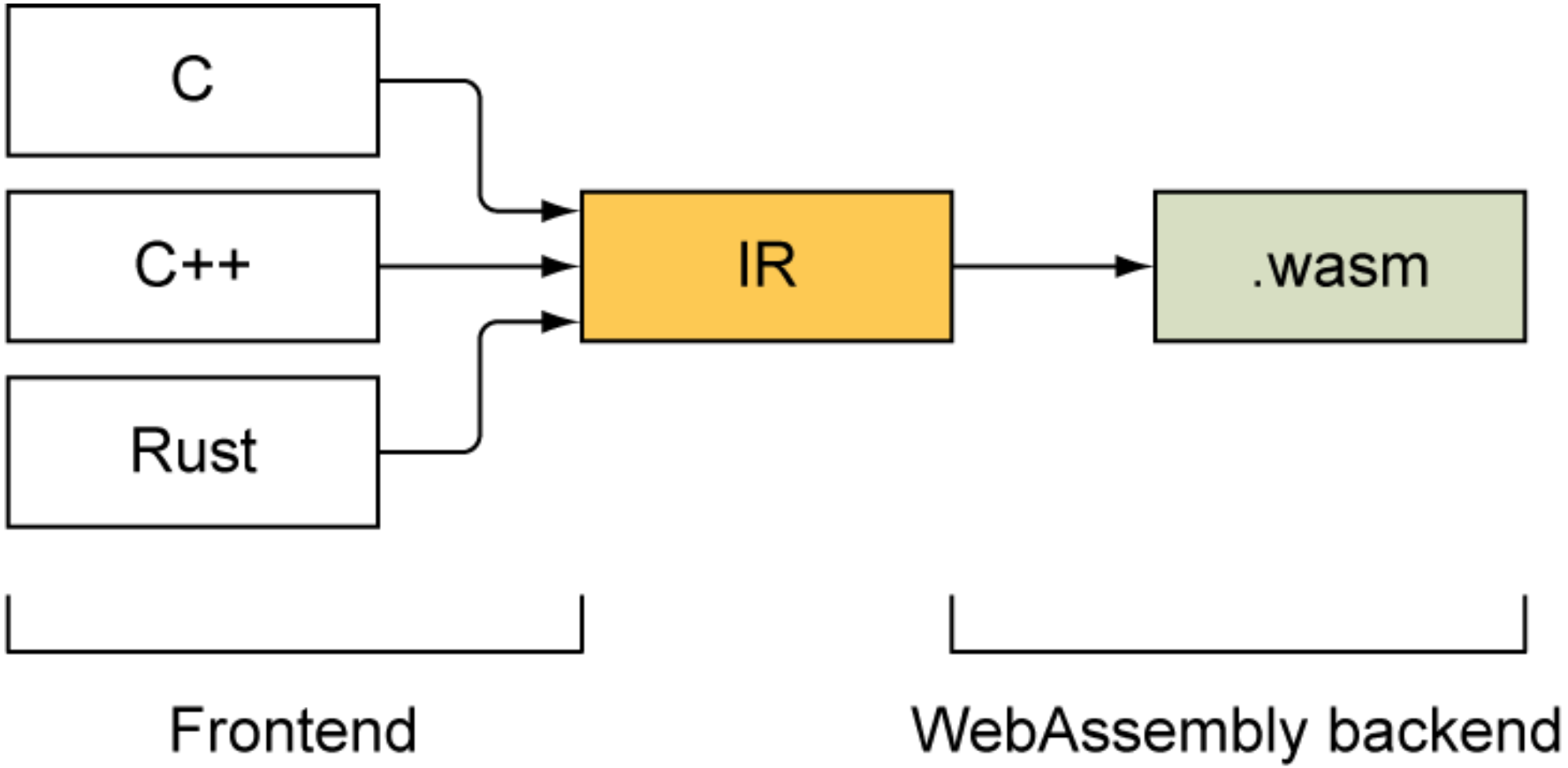
In 2017, all 4 major browsers, Opera, and Node.js added support for WebAssembly (wasm)

- Compiler target
- Separate from JavaScript
- Fast
- Secure
- Portable

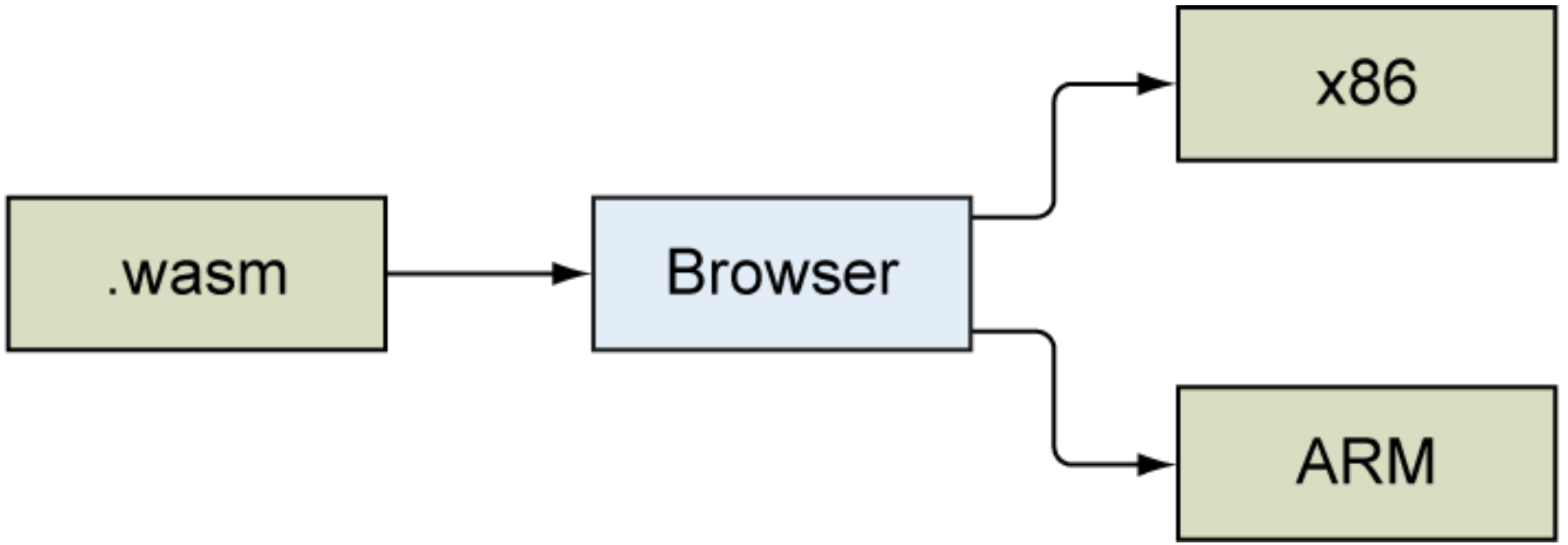
Traditional Compiler



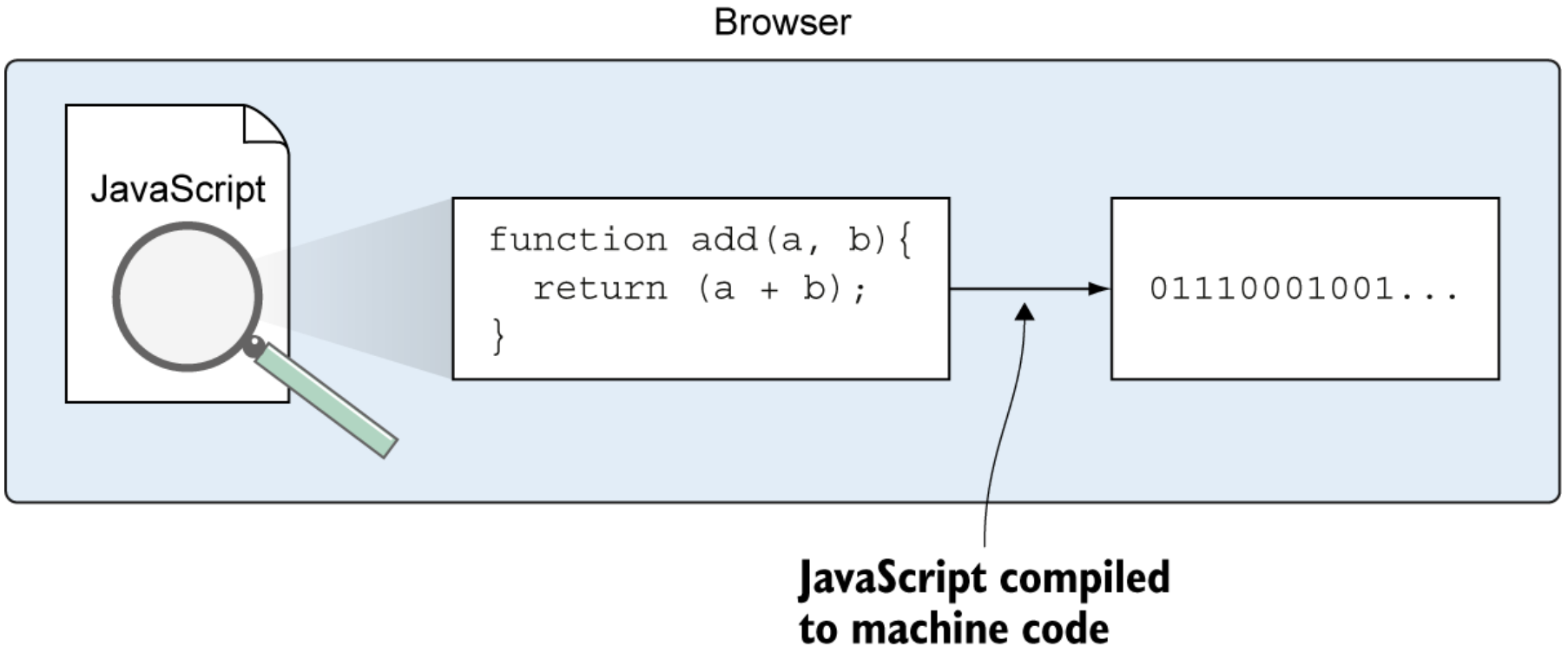
WebAssembly Compiler



In the Browser



JavaScript


Browser
JavaScript
function add(a, b){
return (a + b);
}
01110001001...
JavaScript compiled
to machine code

Since the MVP in 2017

New capabilities including:

- Streaming compilation
- Exception handling
- Threads & atomics
- Fixed-width SIMD
- Garbage Collection

Feature support table:
https://webassembly.org/features/

Demo – In the browser with threads

Article: bit.ly/2Foeg4b

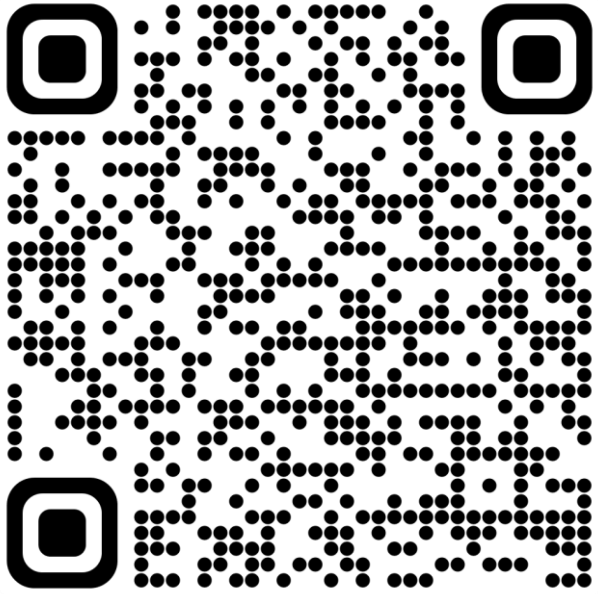
A link to the GitHub repo is at the end of the article.

Demo – Fixed-width SIMD

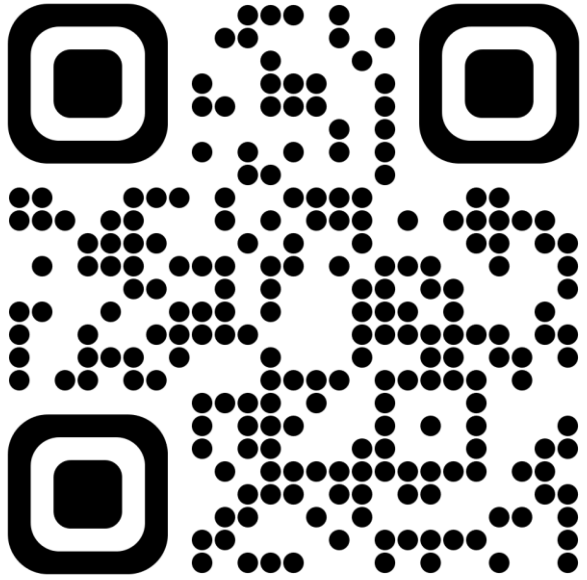
Article: bit.ly/3OSgit5

WebAssembly Outside the Browser

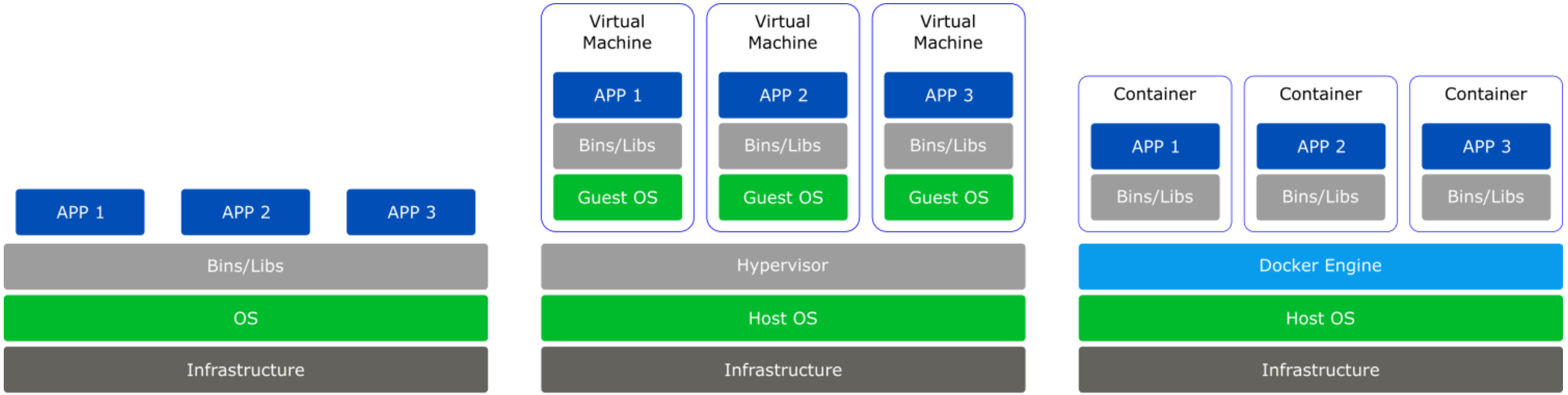
WebAssembly System Interface (WASI)



The Bytecode Alliance

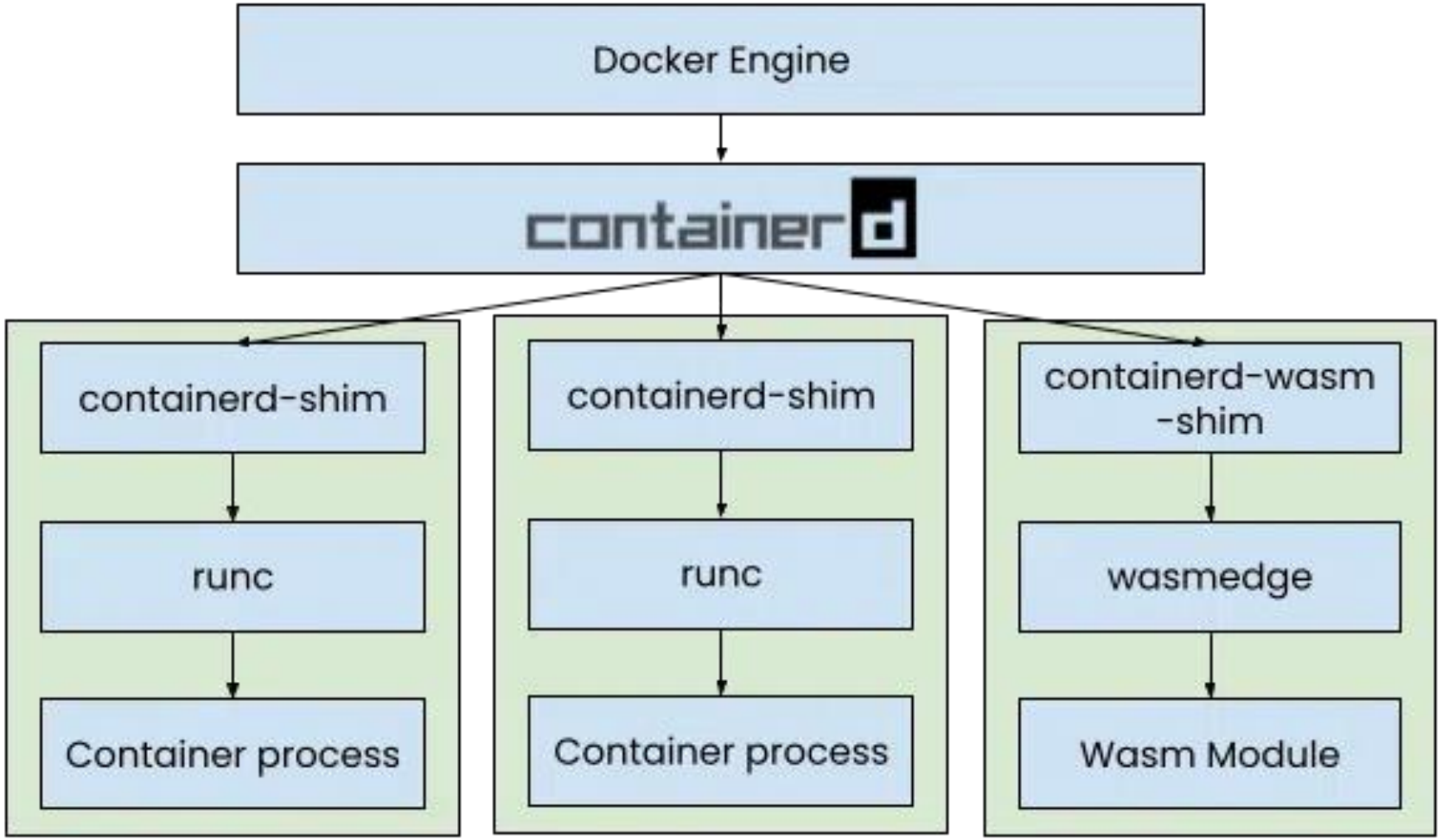


Server vs Virtual Machines vs Containers



Server vs Virtual Machines vs Containers

WebAssembly Containers



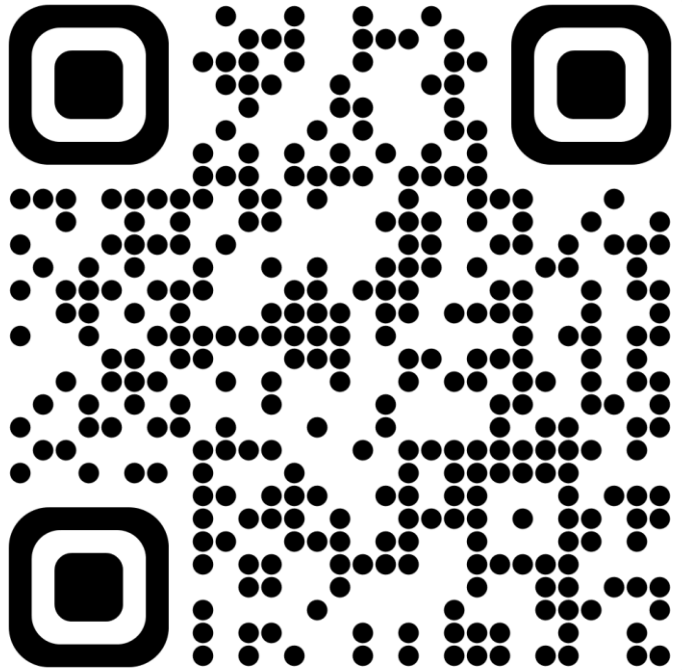
Demo – WebAssembly Containers

Demo

The Future

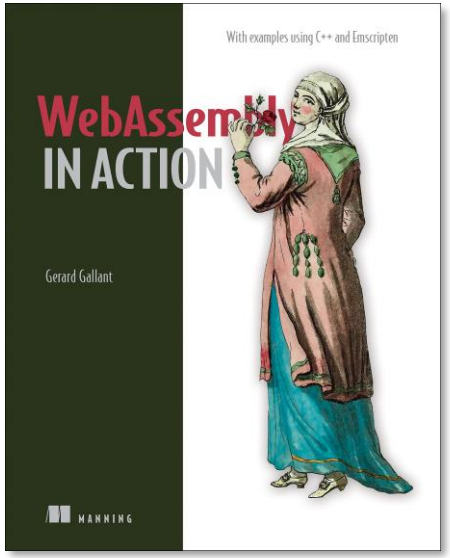
WebAssembly proposals:
https://github.com/WebAssembly/proposals

- Garbage collection
- Multiple memories
  - Relaxed SIMD
    - Tail Calls
- Component Model



Thank You

Digital version of my book where the 1st chapter is free:
bit.ly/37zJbp5



Today's code and slides:
bit.ly/3YQn0oc

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