Supercharge your JavaScript with Web Assembly

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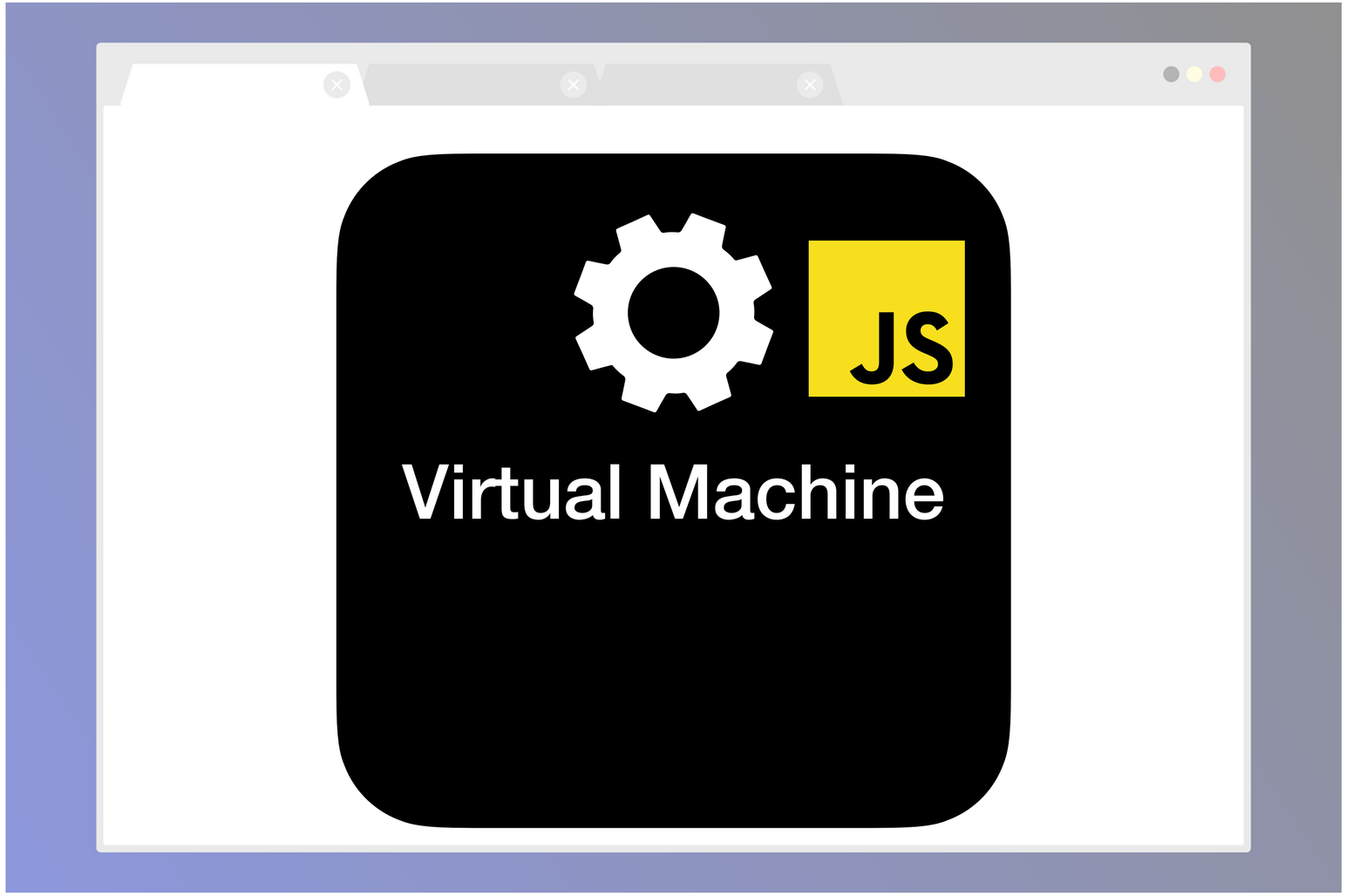
Web Platform 2018



The Web is growing at an incredible rate

😮‍💨 We push a language well outside its comfort zone

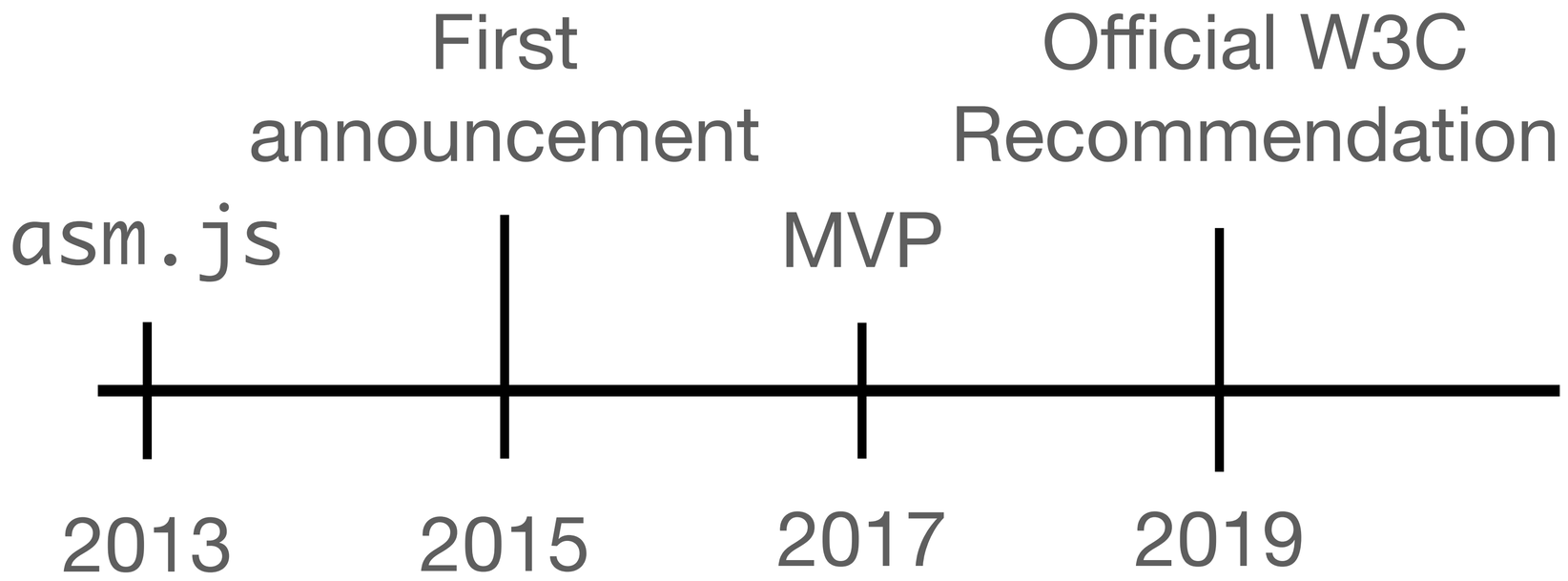
~~😮‍💨 We push JavaScript to its limit~~

🐌 Low level tasks are often too complex and could have performance impacts*

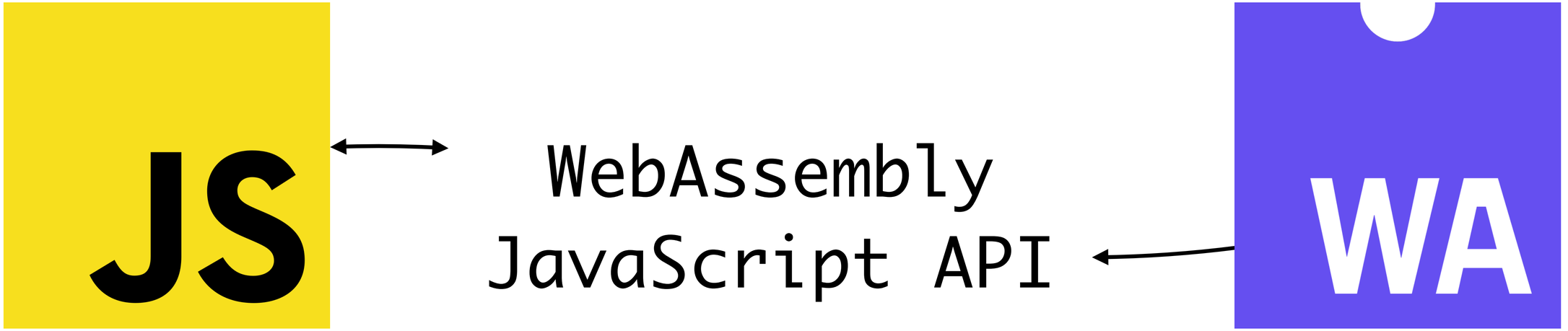
☝️ *V8 and other compilers are amazing at performance optimisation

🚀 There must be a better way to allow low-level access, fast code execution

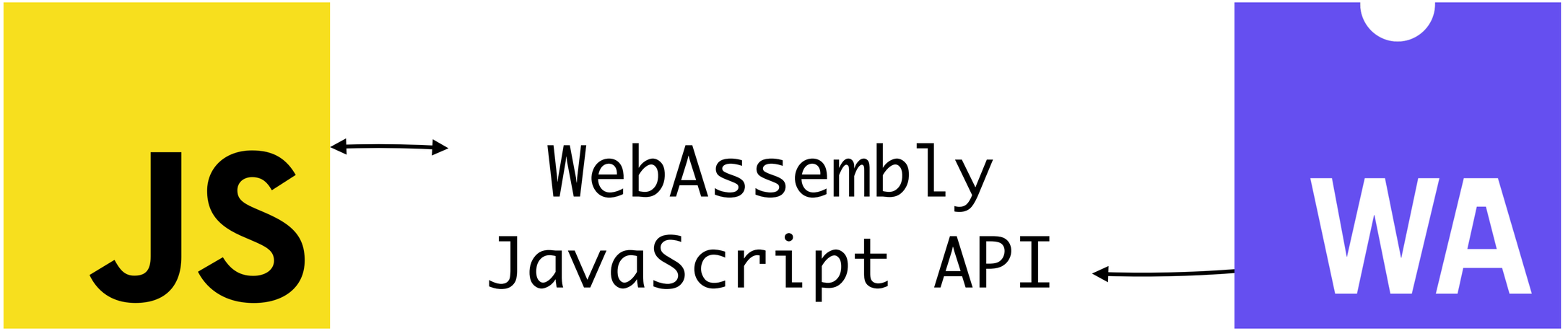
👋 Web Assembly


asm.js
First announcement
MVP
Official W3C Recommendation
2013
2015
2017
2019

Execute non-web based code at near native speed on the web



🤝 JavaScript and WebAssembly compliment each other



🤝 Use the power of WA and utilise the flexibility of JS

Write co
native la

op

```
Module.onRuntimeInitialized = async _ => {
  api = {
    calculateSquare: Module.cwrap('int_square', 'number', ['number']),
  };
};

const btn = document.getElementById('calculate');
btn.addEventListener('click', () => {
  const inputNumber = document.getElementById('number').value;
  const result = document.getElementById('result');
  result.innerHTML = api.calculateSquare(inputNumber)
});
```

square.js
square.wasm

⚠️ Remember to always use the glue code!

A side note …

⚠️ Non LLVM languages (e.g. Go) work slightly differently.

🤔 Why would you want to use WebAssembly?

- Reuse existing code
- Predictable performance
- Binary size
- Advanced system access (threads, SIMD, shared memory)

Web Platform Today

🤞 Demo 💻

Resources

- Emscripten (https://emscripten.org)
- MDN WebAssembly (https://developer.mozilla.org/en-US/docs/WebAssembly)
- Sample Repository (https://github.com/tpiros/wasm-samples)
- Wasm by example (https://wasmbyexample.dev)
- Running Doom via wasm (https://wasm.continuation-labs.com/d3demo/)
- Super Mario via wasm (https://medium.com/@bokuweb17/writing-an-nes-emulator-with-rust-and-webassembly-d64de101c49d)
- Squoosh.app (https://squoosh.app)
  - Case study: https://developers.google.com/web/updates/2019/02/hotpath-with-wasm
- SSIMULACRA port: https://tpiros.dev/blog/bring-your-cplusplus-application-to-the-web-with-web-assembly/

Thank you!

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