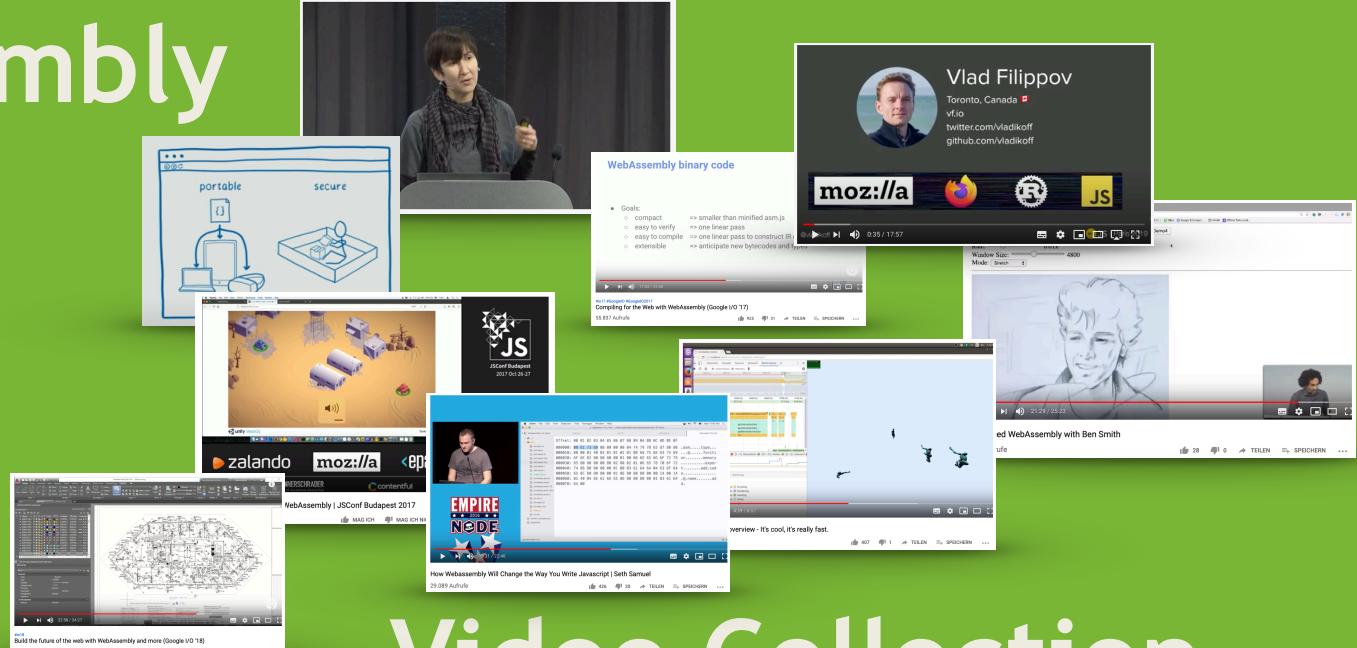


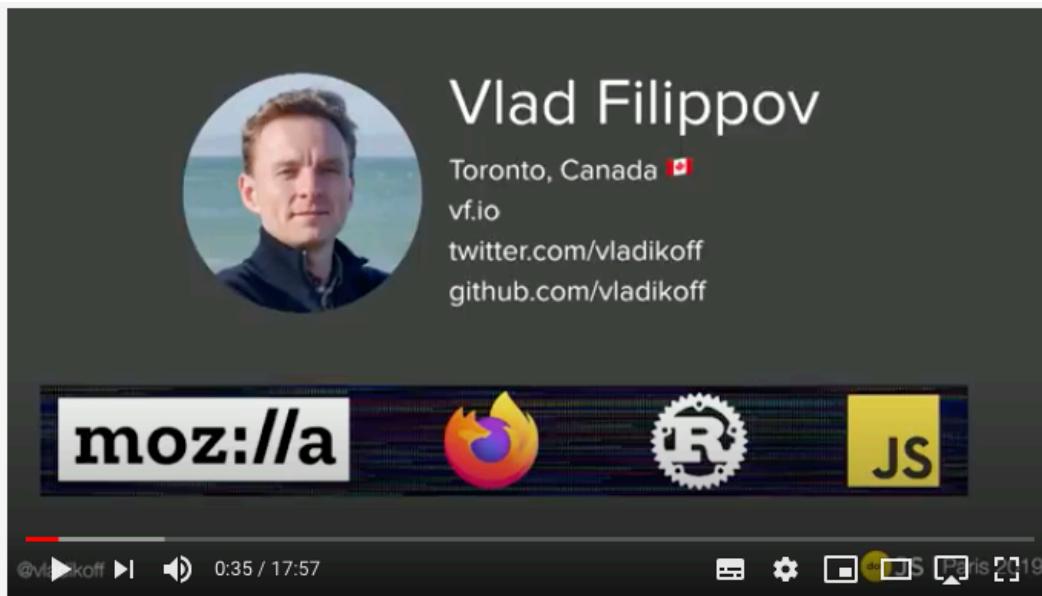
# WebAssembly



John Feiner

## Video Collection

# WASM by Vlad Filippov ([moz://a](#))



*"add wasm to your existing projects", ...  
use web workers!*

17' talk at  
@dotJS Conf,  
Paris 2019

[https://www.youtube.com/watch?v=xmob0Lox\\_FQ](https://www.youtube.com/watch?v=xmob0Lox_FQ)

# WebAssembly: Building a new kind of ecosystem



24' by Lin Clark  
([moz://a](https://moz://a))

WebAssembly  
Summit  
@Google  
February 10,  
2020

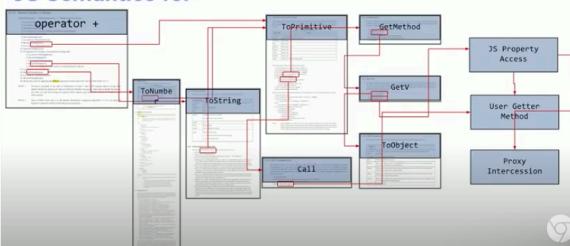
<https://www.youtube.com/watch?v=IBZFJzGnBoU>

# WASM: Motivation – Speed

*"run faster, do less"*

JS: even "+" is problematic

JS Semantics for '+'



## WebAssembly binary code

- Goals:
  - compact => smaller than minified asm.js
  - easy to verify => one linear pass
  - easy to compile => one linear pass to construct IR or baseline JIT
  - extensible => anticipate new bytecodes and types

#io17 #GoogleIO #GoogleIO2017  
Compiling for the Web with WebAssembly (Google I/O '17)

55.837 Aufrufe

925 31 TEILEN SPEICHERN ...

by Alex Danilo  
Google

36' talk  
@Google I/O,  
2017

# WASM: Motivation – Speed & Security

## Language guide to WebAssembly

- Data Types
    - void i32 i64 f32 f64
  - Functions
    - Flat, single global table
    - Static binding
    - Indirect calls through table
  - State: linear memory
    - large, bounds-checked array
  - Trusted execution stack
- 
- Data Operations
    - i32: + - \* / % << >> >>> etc
    - i64: + - \* / % << >> >>> etc
    - f32: + - \* / sqrt ceil floor
    - f64: + - \* / sqrt ceil floor
    - conversions
    - load store
    - call\_direct call\_indirect
  - Structured Control Flow
    - if loop block br switch



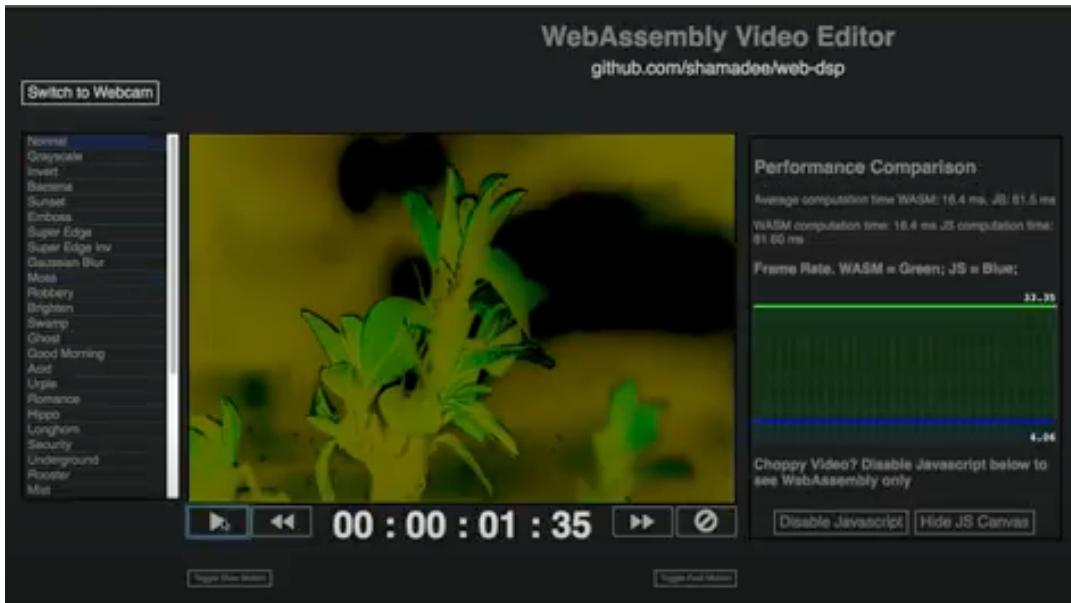
*"that's all we have"*

by Alex Danilo  
Google

36' talk  
@Google I/O,  
2017

<https://www.youtube.com/watch?v=6v4E6oksar0>

# WASM: Motivation – Speed & Security



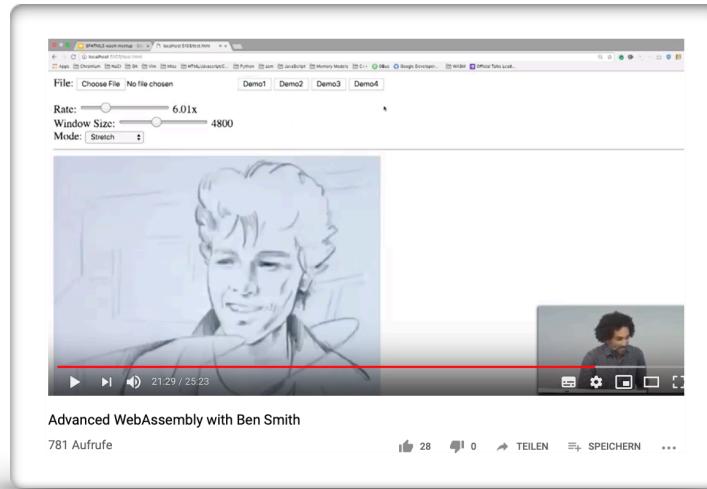
*"live video editing"*

by Alex Danilo  
Google

36' talk  
@Google I/O,  
2017

<https://www.youtube.com/watch?v=6v4E6oksar0>

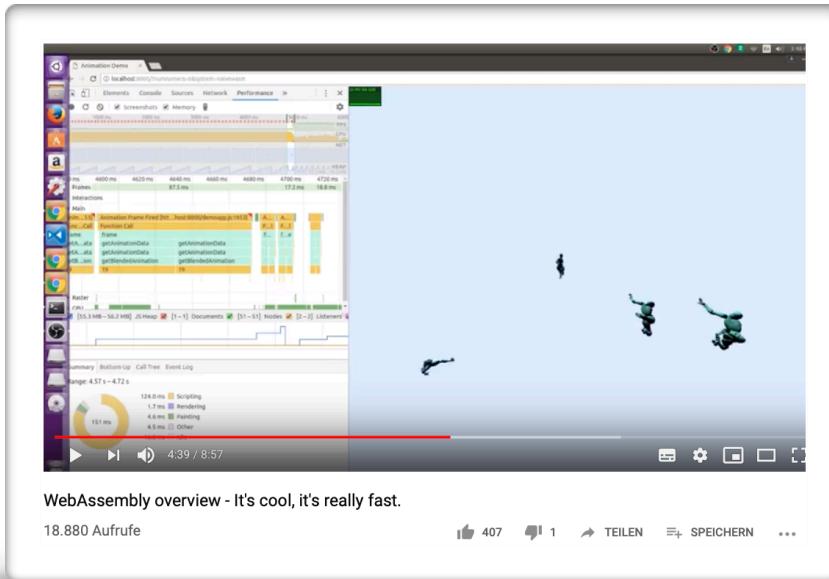
# Advanced WASM: Motivation – Speed



by Ben Smith  
Google

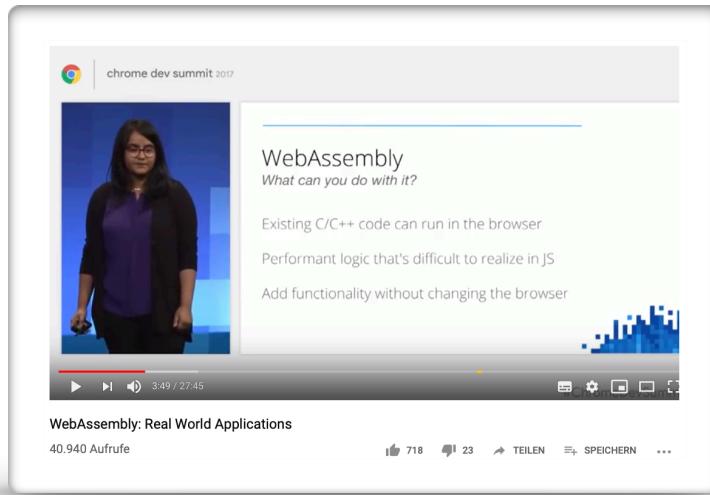
<https://www.youtube.com/watch?v=FQJrcX4Ae8A>

# WASM: Motivation – Speed



<https://www.youtube.com/watch?v=1J6Z5wBfSnQ>

# WASM: Real World Examples



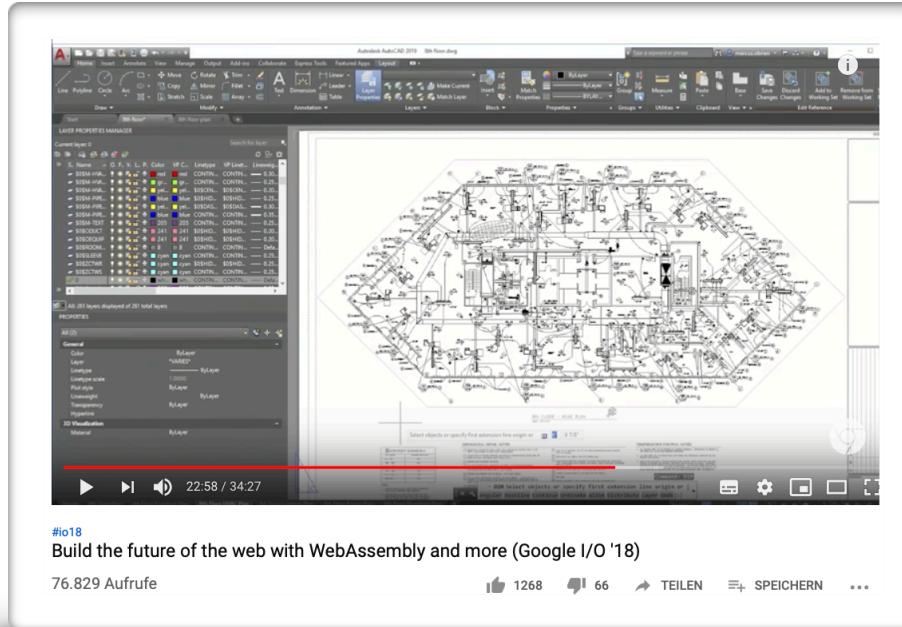
<https://www.youtube.com/watch?v=ysFJHpS-008>

# WASM: Real World Examples



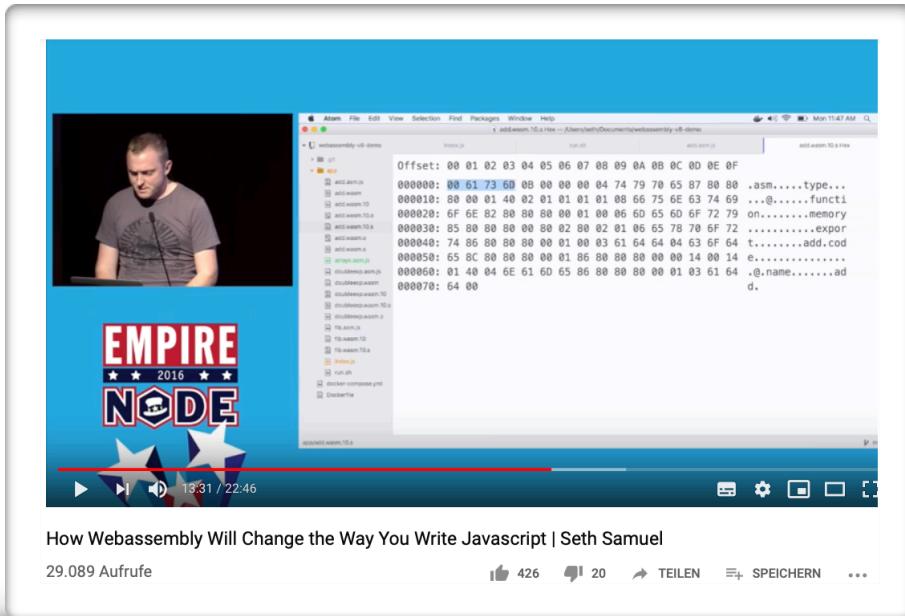
<https://www.youtube.com/watch?v=bac0dGQbUto>

# WASM: Real World Examples



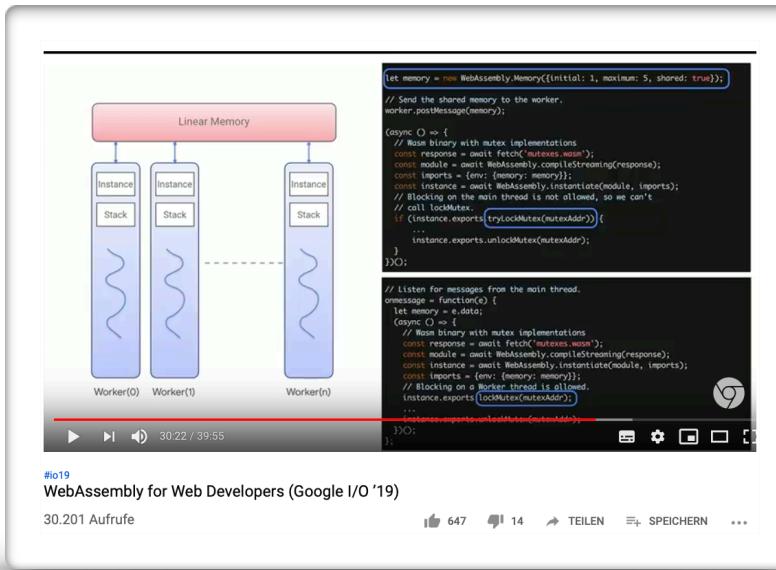
<https://www.youtube.com/watch?v=BnYq7JapeDA>

# WASM: Internals



<https://www.youtube.com/watch?v=kq2HBddiyh0>

# WASM: Internals

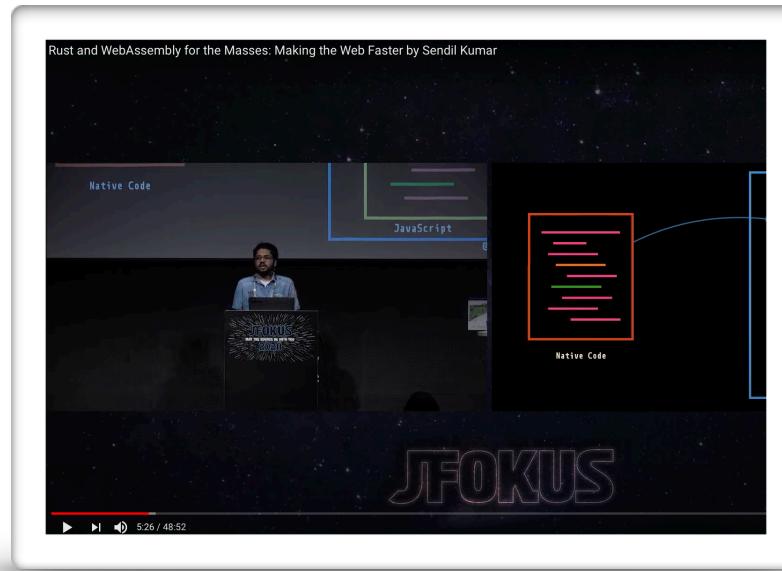


<https://www.youtube.com/watch?v=njt-Qzw0mVY>

# WASM: Tooling (Compile from Rust)

## Contents:

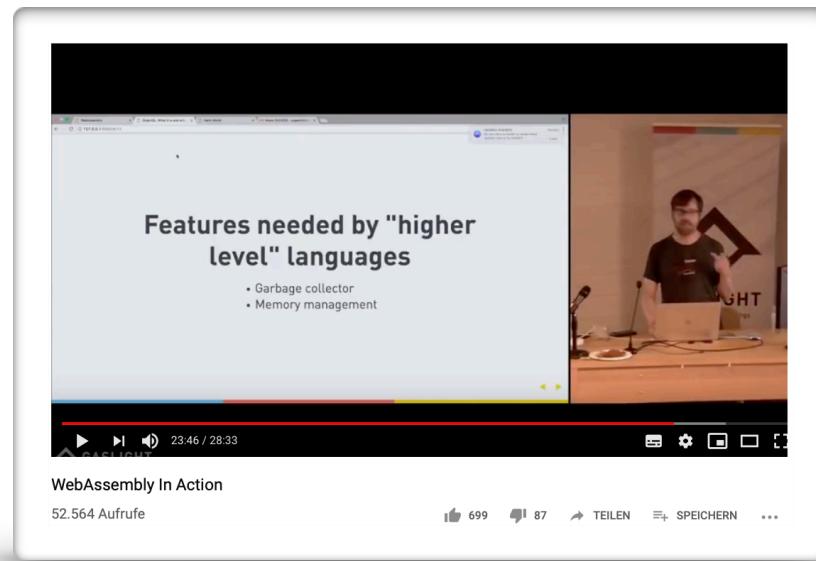
- Why NOT JS?
- Why Rust
- Compile Rust
- Webpack
  - Toolchain



by *Sendil Kumar*  
uber

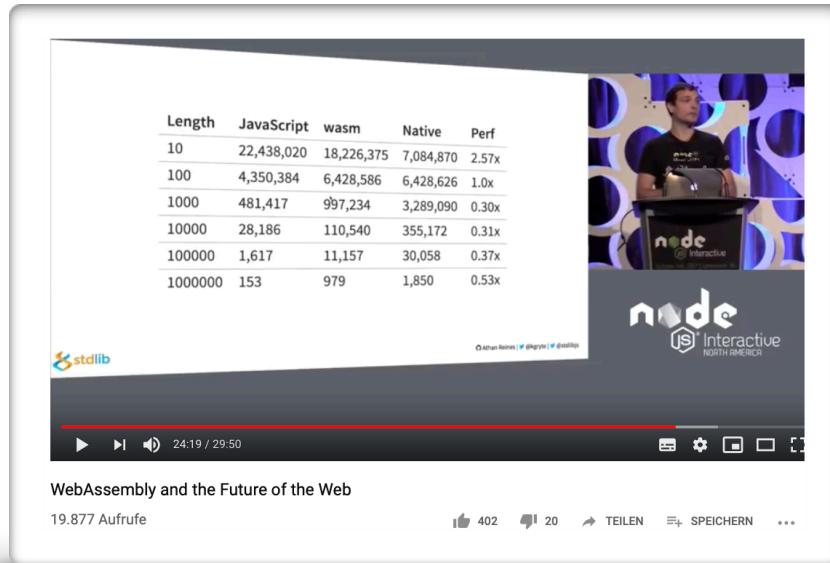
<https://www.youtube.com/watch?v=kLOcLto7oa8>

# WASM: Future / Work in Progress



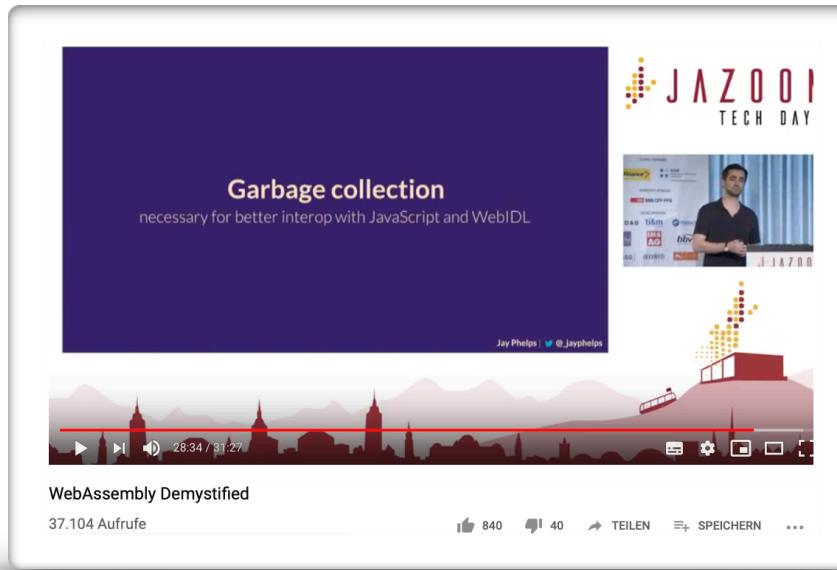
<https://www.youtube.com/watch?v=DKHuEkmsx3M>

# WASM: Future / Work in Progress



<https://www.youtube.com/watch?v=JWCr9vcpl3w>

# WASM: Future / Work in Progress



WebAssembly will  
change the way we  
think of "web apps"

*Jay Phelps, Netflix 2017*