



# Debugging Debugging

Working together to enable better diagnostics for Node.js.

presented by Josh Gavant (@joshgav)

# In this session...

- Learn about the Diagnostics WG
- Dive into a couple evolving diagnostic interfaces
  - V8 Inspector
  - TracingController
- Write some scripts and tools

# Presented by



- GitHub/@joshgav, Twitter/@joshugav
- Technical PM for open source projects at Microsoft since 2013
- Coordinator for Node.js Diagnostics WG

# Node.js Diagnostics WG

Foster a set of open diagnostic interfaces for Node.js so that an ecosystem of great tools can flourish.

- Repo at [github.com/nodejs/diagnostics](https://github.com/nodejs/diagnostics).
- Also see the Post-Mortem WG at [github.com/nodejs/post-mortem](https://github.com/nodejs/post-mortem).

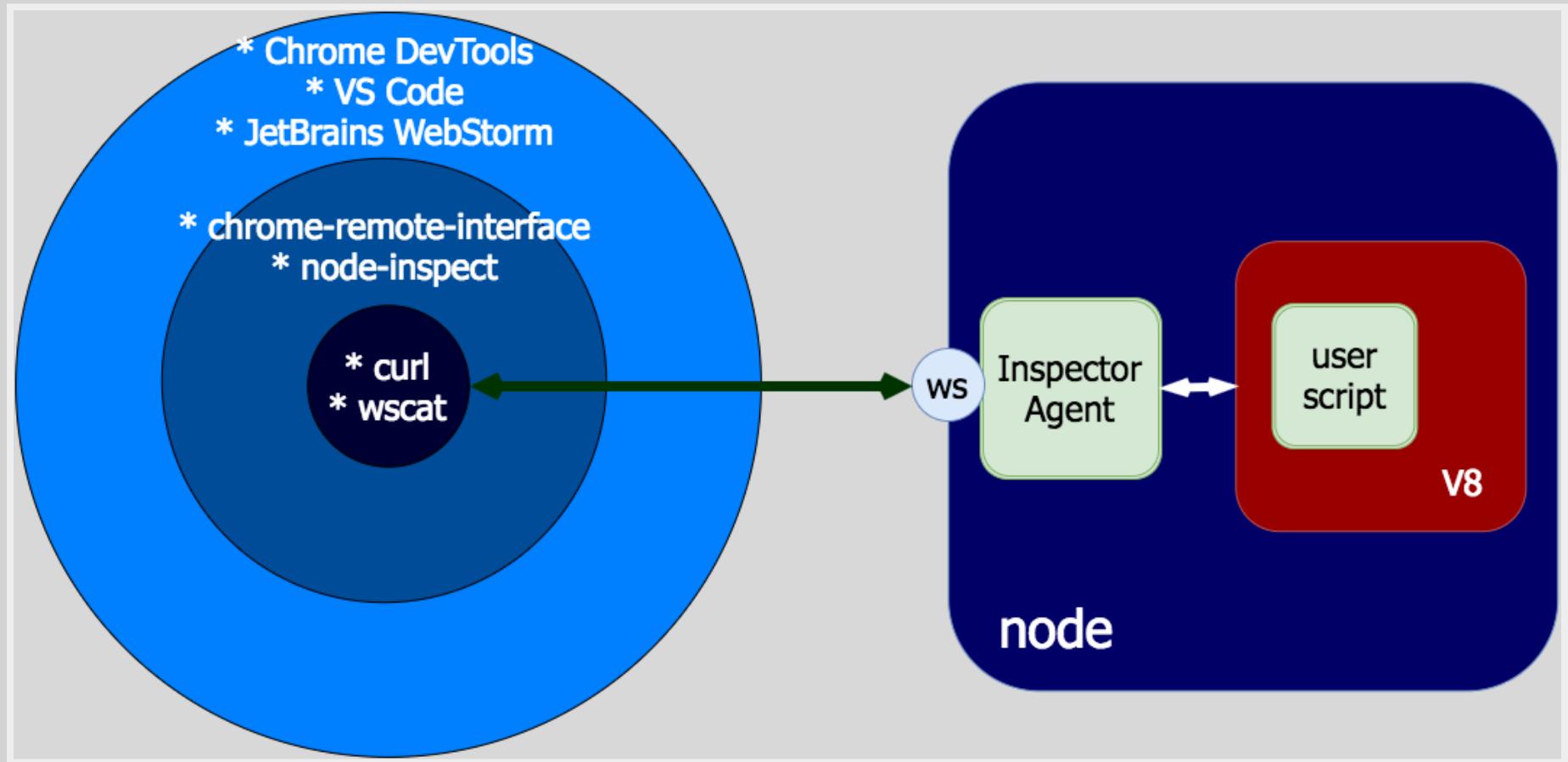
# A few Node.js diagnostics projects

- `async_hooks`: Share context between callback registration and invocation.
- `V8 Inspector`: New API for inspecting and debugging V8.
- `node-inspect`: CLI debugger compatible with Inspector.
- `nodereport`: Dump process state info on signals and crashes.
- `linode`: Extension to lldb with deep understanding of V8 frames and objects.
- `V8 TracingController`: Record info on tracepoints throughout Node.js core and user modules.

# V8 Inspector

- Same protocol as Chromium, enabling
  - step debugging
  - live script inspection and modification
  - heap snapshots and object analysis
  - CPU profiling
- Use with
  - WebSockets and HTTP
  - Client libraries like `chrome-remote-interface` and `node-inspect`
  - End-to-end tools like VS Code and Chrome DevTools

# Architecture

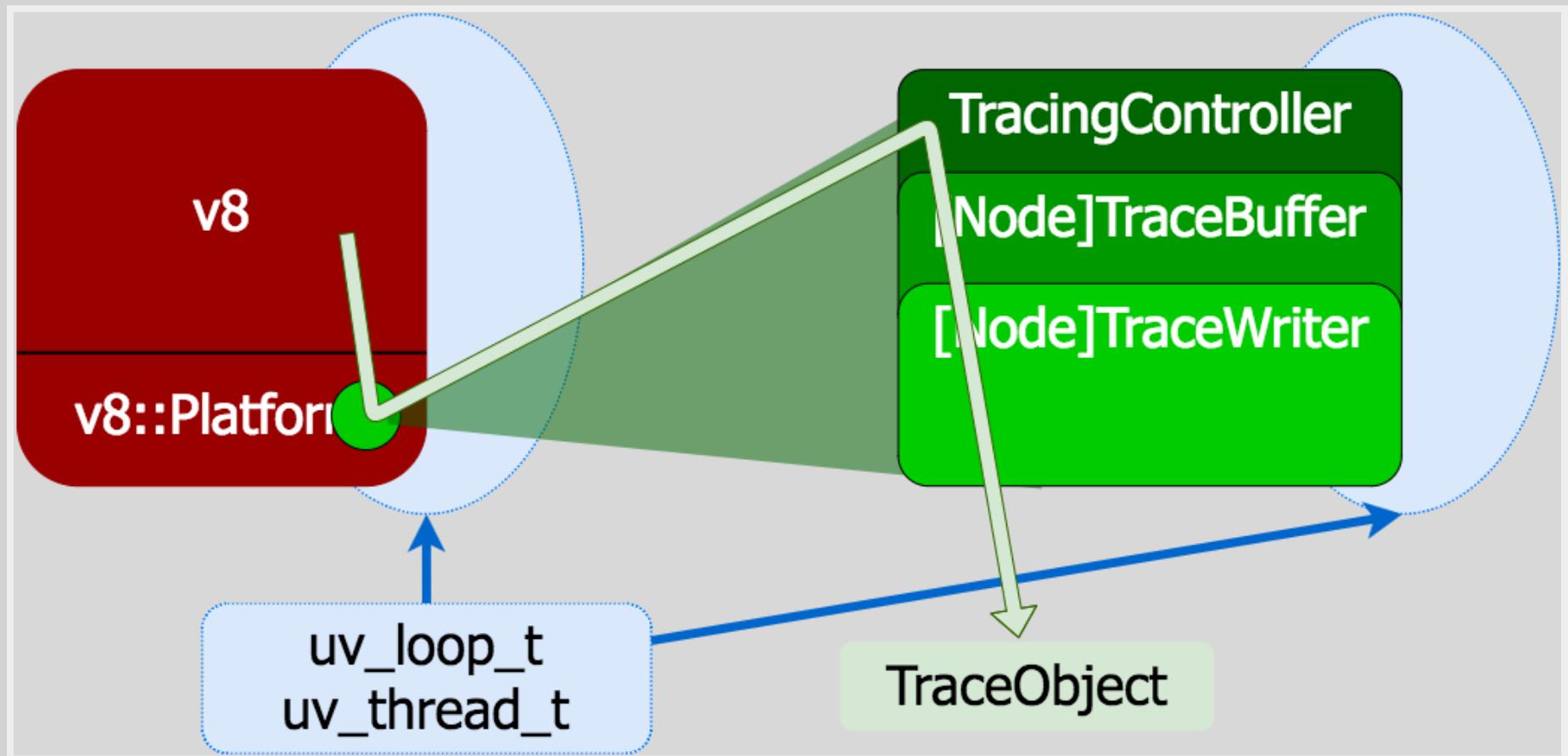


# Demo

# V8 TracingController

- Same **format** as Chromium traces
  - Output can be loaded in chrome://tracing
- Trace any point in code.
- Correlate async events by ID.
- Optional **args** field with user data.
- What next?
  - Trace points in core
  - JS API and trace points in user modules
  - Standard user data format in **args**?

# Architecture



# Demo

# Recap

- Diagnostics WG
- Evolving diagnostic interfaces
  - V8 Inspector
  - TracingController
- Some scripts and tools

# Resources

- Node.js Diagnostics: [nodejs/diagnostics](#)
- Diagnostics WG @ Collab Summit on Friday
- This deck:  
<https://github.com/joshgav/demos/tree/master/presentations/NodeIn>