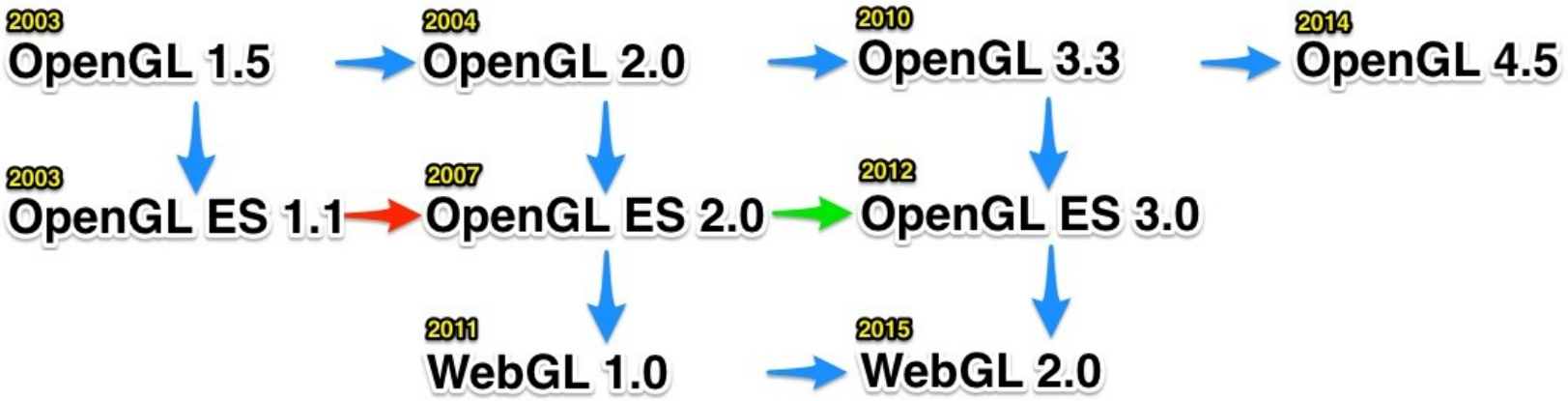
Qt WebGL Streaming

- Kimmo Ollila

What's WebGL?

- WebGL (Web Graphics Library) is a JavaScript API for rendering 2D and 3D graphics within any compatible web browser



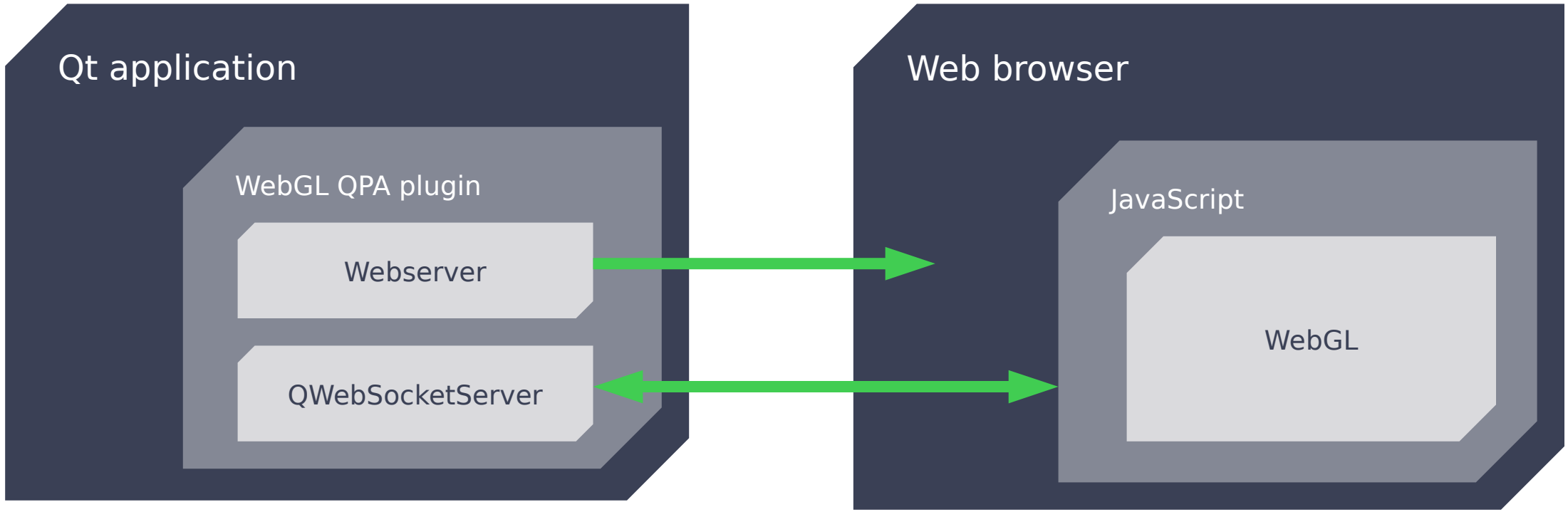
What's Qt WebGL Streaming?

- Enables streaming of Qt applications using OpenGLES2 (*)
  - Requires WebGL capable web browser

Some use cases

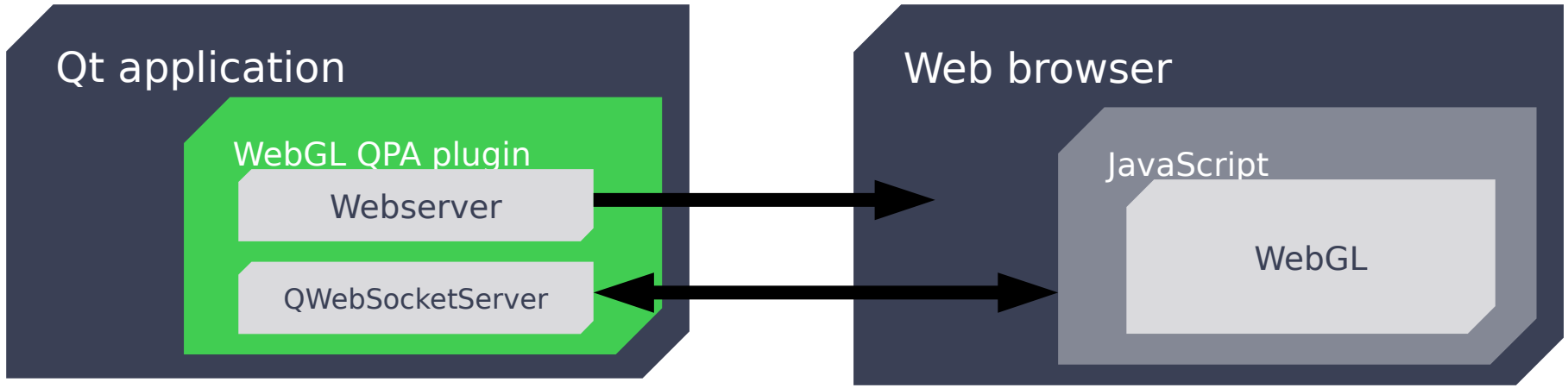
- Remote application access
- Publish applications
- Remote control
- Headless devices
- Presentations

How was it implemented?



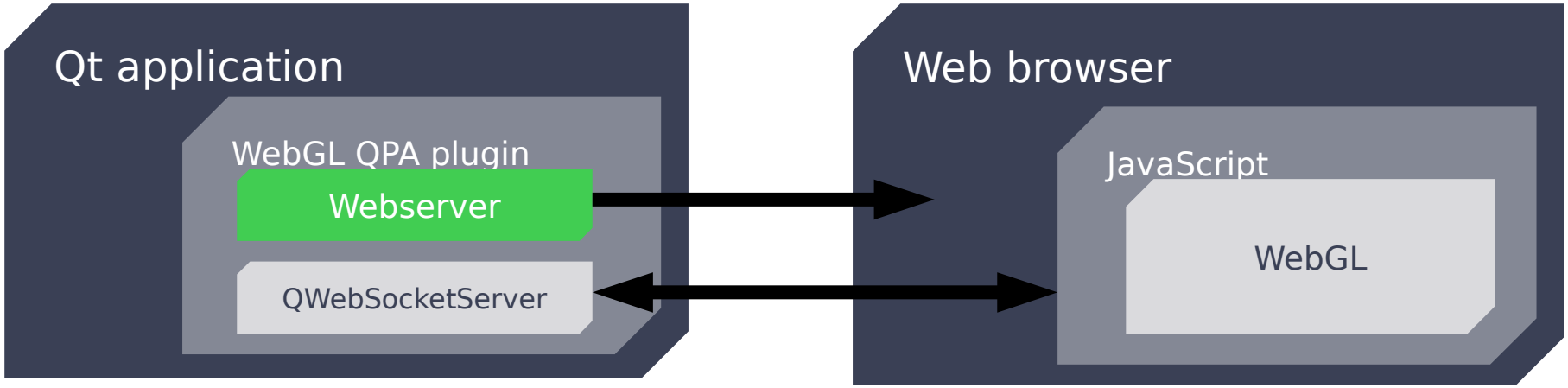
Qt Platform Abstraction (QPA) Plugin

- Set of interfaces to customize behaviour of Qt applications
  - Way to support different OS without changing actual Qt code
  - Determines how to open a window
  - Resolves the OpenGL function pointers



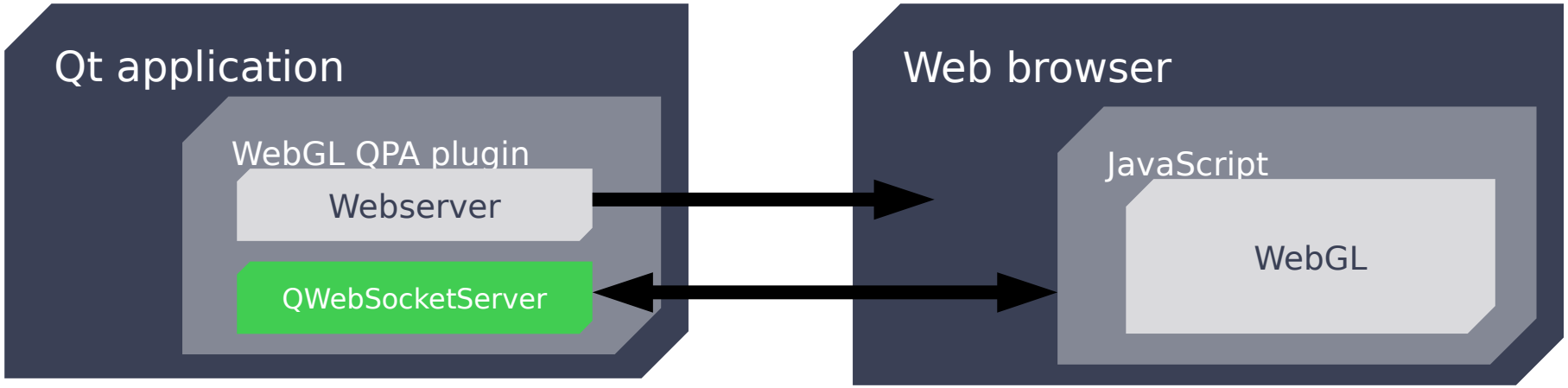
Minimal Web server

- Is used to send basic files to browser
  - Temporary solution, will be replaced in the future



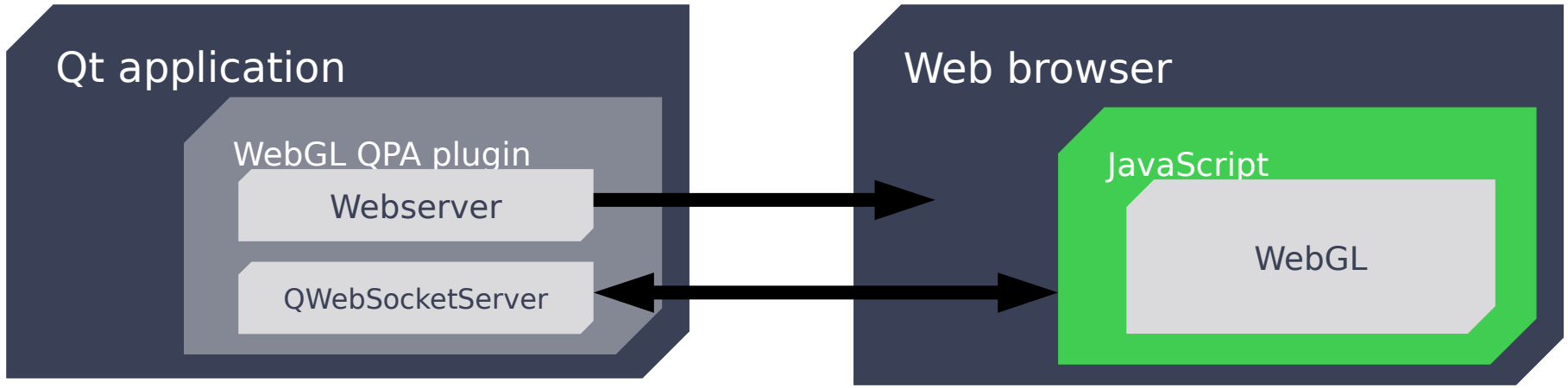
QWebSocketServer

- Connects the application and the web browser
  - Sends the GLES2 calls in a binary format
  - Sends responses from the WebGL calls if needed
  - Sends user interaction to the application



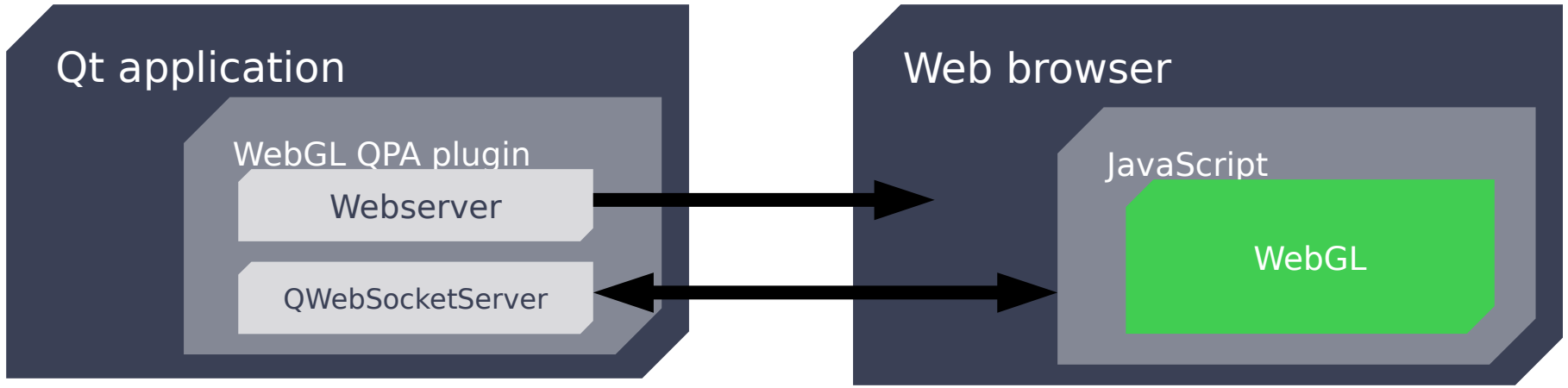
JavaScript

- Runs in browser
  - Receives OpenGL calls in binary format
  - Converts this binary format into WebGL
  - Uses event handlers to send user interaction



WebGL

- JavaScript API to render the contents to web browser
  - Uses HW acceleration



What's supported?

- Qt Quick
- Qt OpenGL
- Single user

Why single user?

- Problem with user input
  - Only one QWindow
- Problem with querying the GPU
  - Recieving parameter from GPU driver stops the rendering

Future improvements

- Decoupling the HTTP server from the plugin
  - Instead a dedicated HTTP server application will be provided
  - Instead of running all the users in the same process a new process will spawned for each user
  - The new process will handle the websocket

Qt WebGL demo

Thank you