Qt WebGL Streaming

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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 application

- WebGL QPA plugin
- Webserver
- QWebSocketServer

Web browser

- JavaScript
- WebGL
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