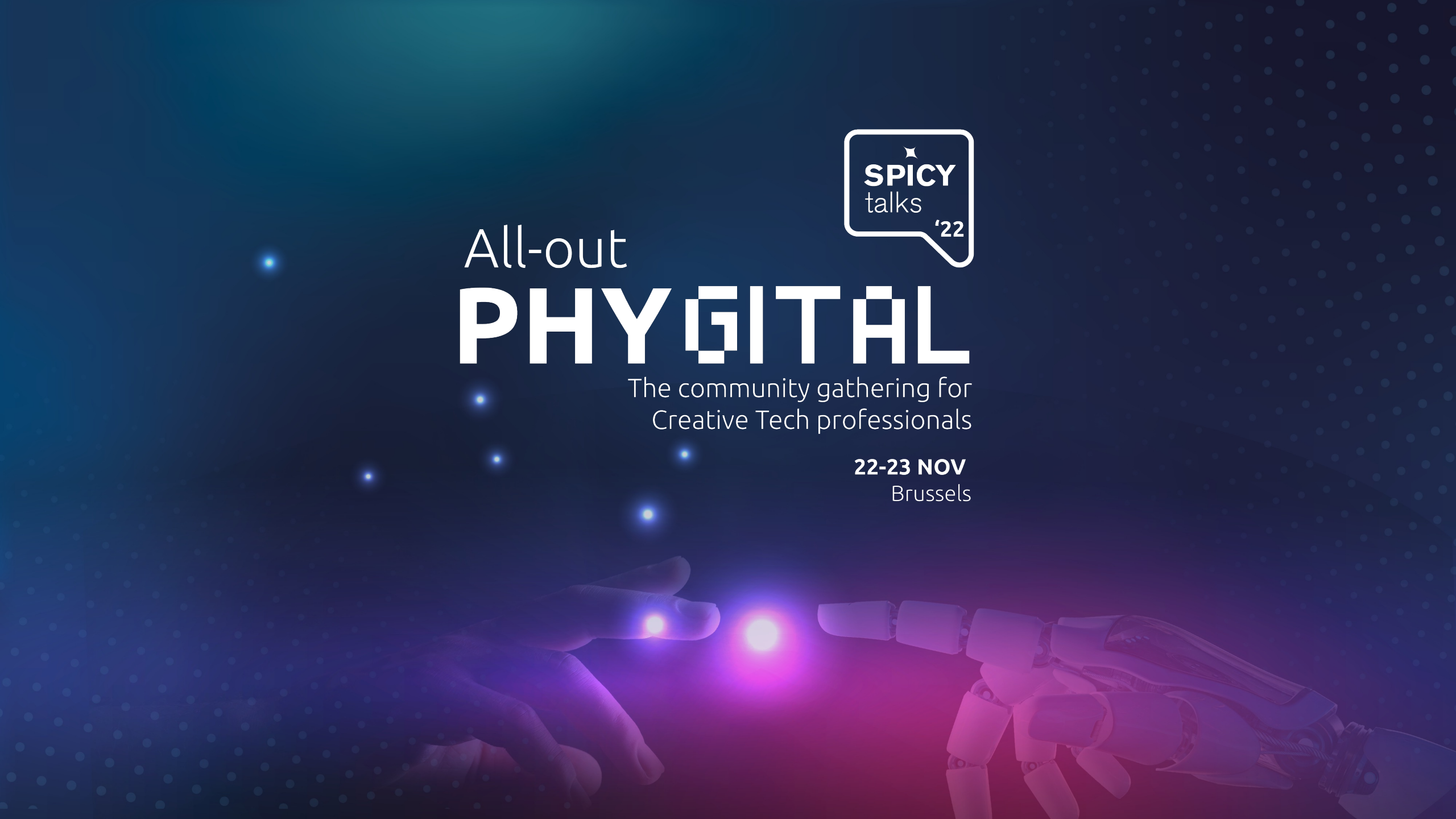
SPICY talks '22

All-out PHYGITAL

The community gathering for
Creative Tech professionals

22-23 NOV
Brussels



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GraFx Studio Technology Stack

Pieter Van Parys – Chief Architect @ CHILI publish

It’s GraFx o clock

Create a **standalone** online editor, easy to **integrate** and **extend**, ready for hyper**scale**

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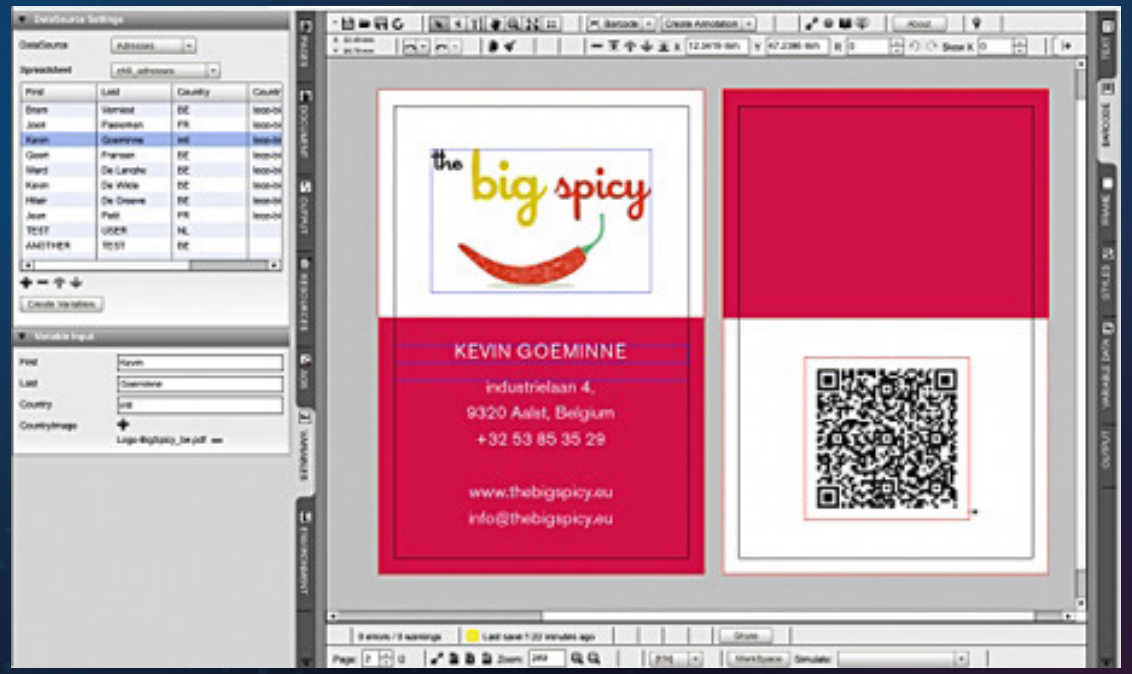
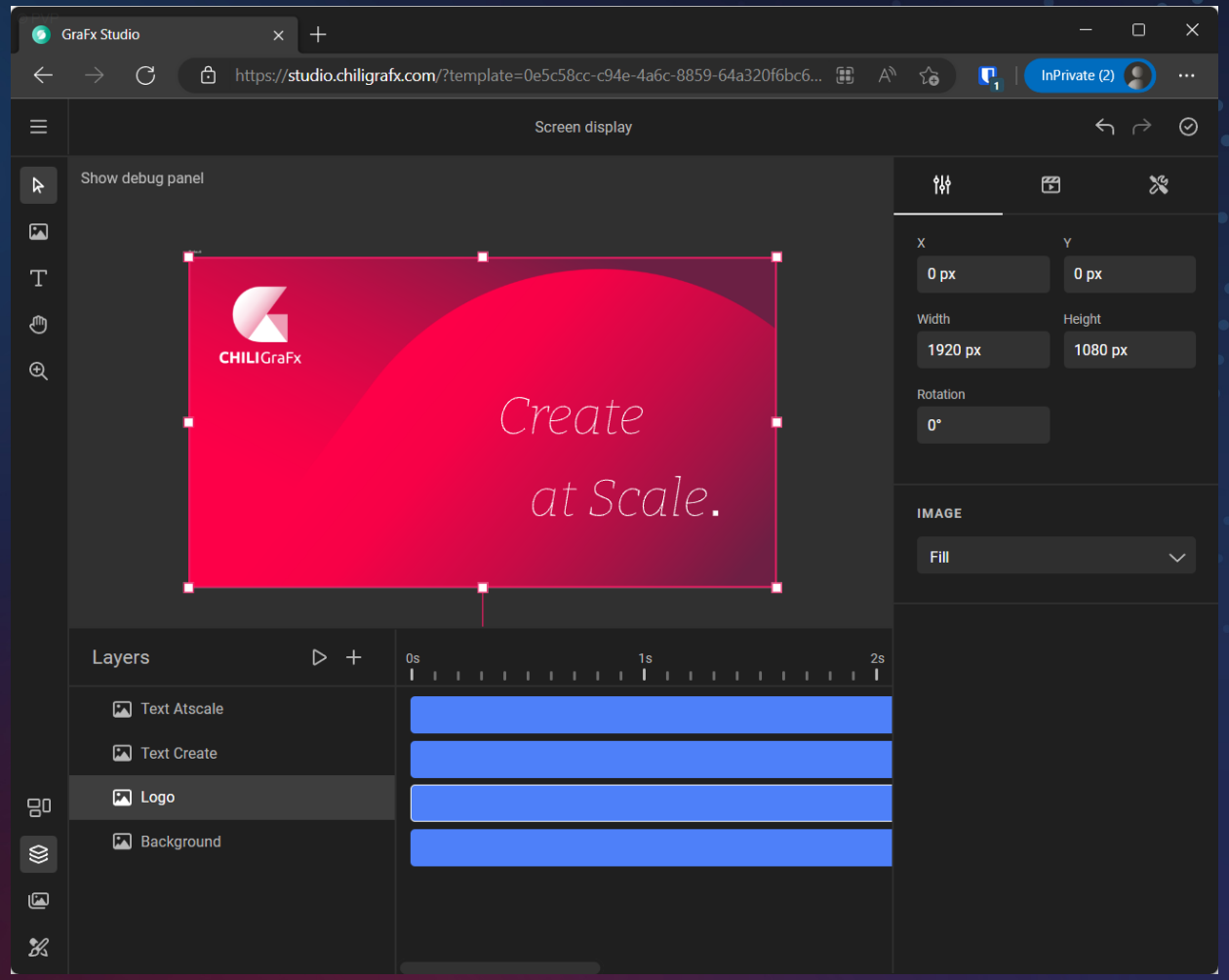
GraFx Studio was built on the shoulder of giants

How it started



How it's going



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Publisher is built on Chili.Forms UI Fx

How publisher is build

C# Source
Compiled to JS

Control all pixels

UI Fx
Document Canvas

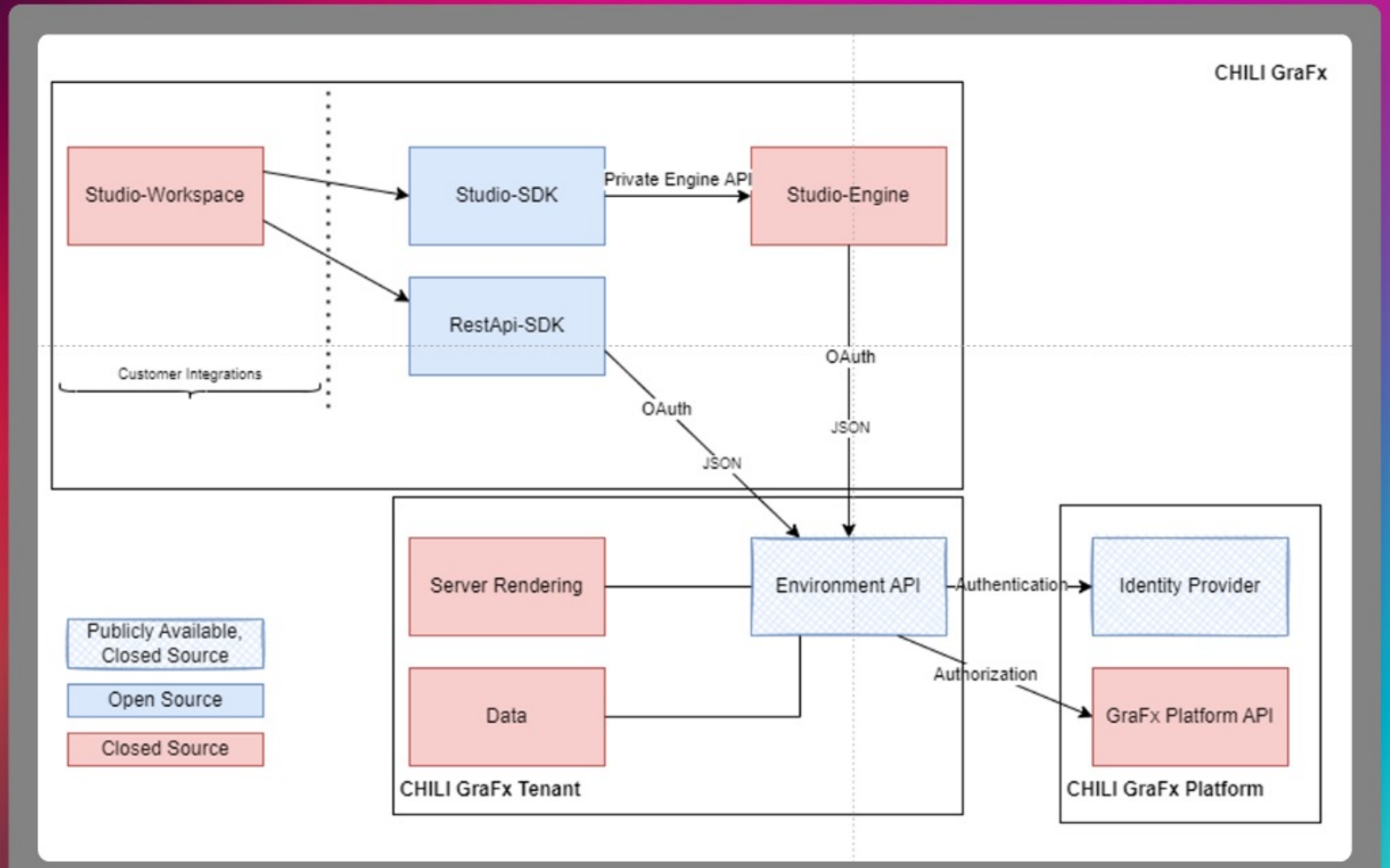
Hard to solve issues

- Accessibility
- Performance
- Flexibility
  - JS compiler
- Versioning

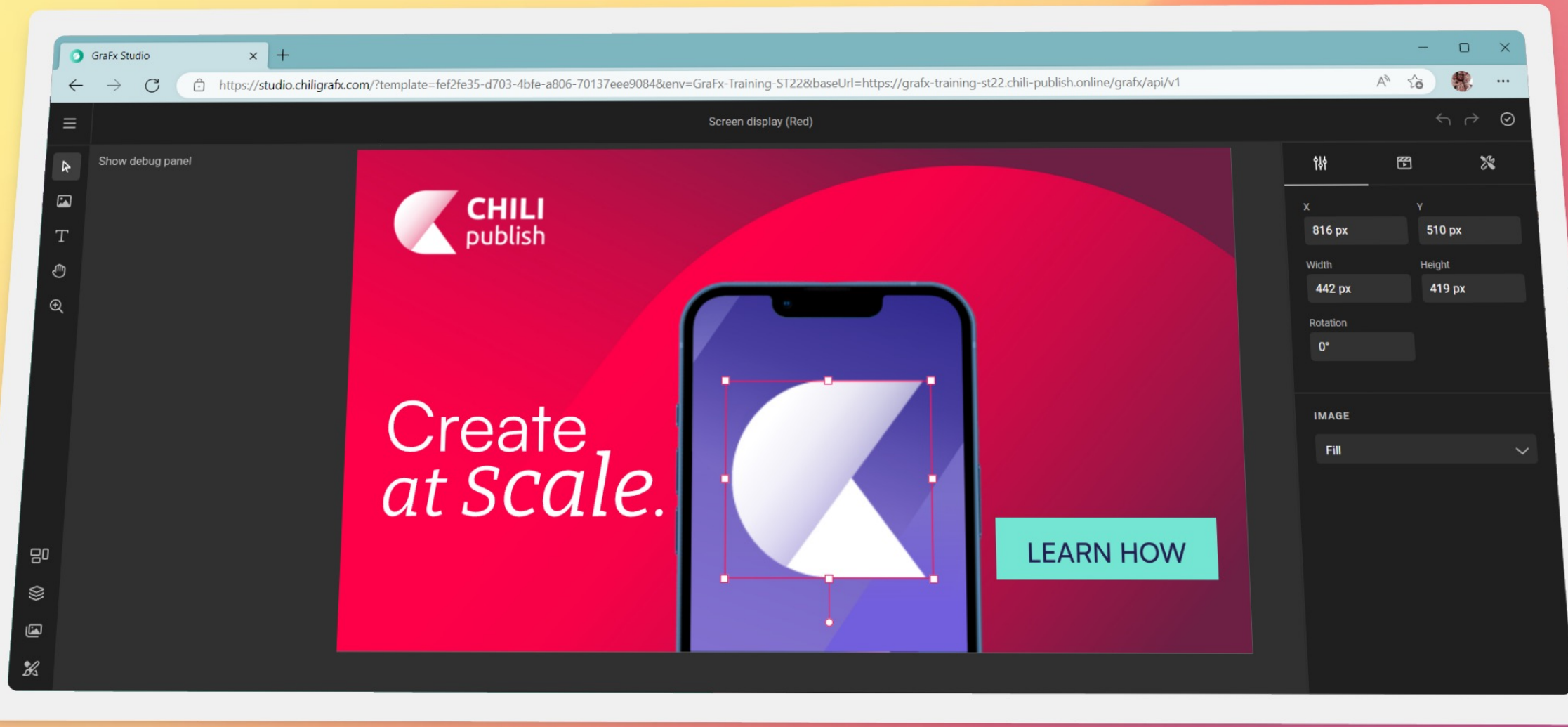
GraFx Studio Architecture

Terminology

Studio Engine	Controls all pixels of the document canvas and is managing state of the application
Studio SDK	Wrapper for the engine responsible of exposing engine functionality in a controlled fashion
Studio Workspace	The default template designer interface to the engine. This is build upon the SDK
Environment API	Rest API used to manage all resources related to assets, documents, fonts, … and rendering output


CHILI GraFx
Studio-Workspace
Studio-SDK
Private Engine API
Studio-Engine
RestApi-SDK
Customer Integrations
OAuth
JSON
OAuth
JSON
Server Rendering
Environment API
Authentication
Identity Provider
Data
Authorization
GraFx Platform API
CHILI GraFx Tenant
CHILI GraFx Platform
Publicly Available, Closed Source
Open Source
Closed Source

GraFx Studio Frontend


GraFx Studio
https://studio.chiligrafx.com/?template=fef2fe35-d703-4bfe-a806-70137eee9084&env=GraFx-Training-ST22&baseUrl=https://grafx-training-st22.chili-publish.online/grafx/api/v1
Screen display (Red)
Show debug panel
CHILI publish
Create at scale.
LEARN HOW
X
816 px
Y
510 px
Width
442 px
Height
419 px
Rotation
0°
IMAGE
Fill

Frontend Stack

- Studio Engine is rendered using Flutter
  - SKIA WASM based rendering
  - Embedded Scripting engine JS
- Studio SDK is a Typescript wrapper around engine
  - Exposing engine domain model
- Studio Workspace is a ReactJS application
  - 'Integration' of SDK
  - Eat your own dogfood

Why Flutter?

URL > HTML

Why Canvas & WebGL

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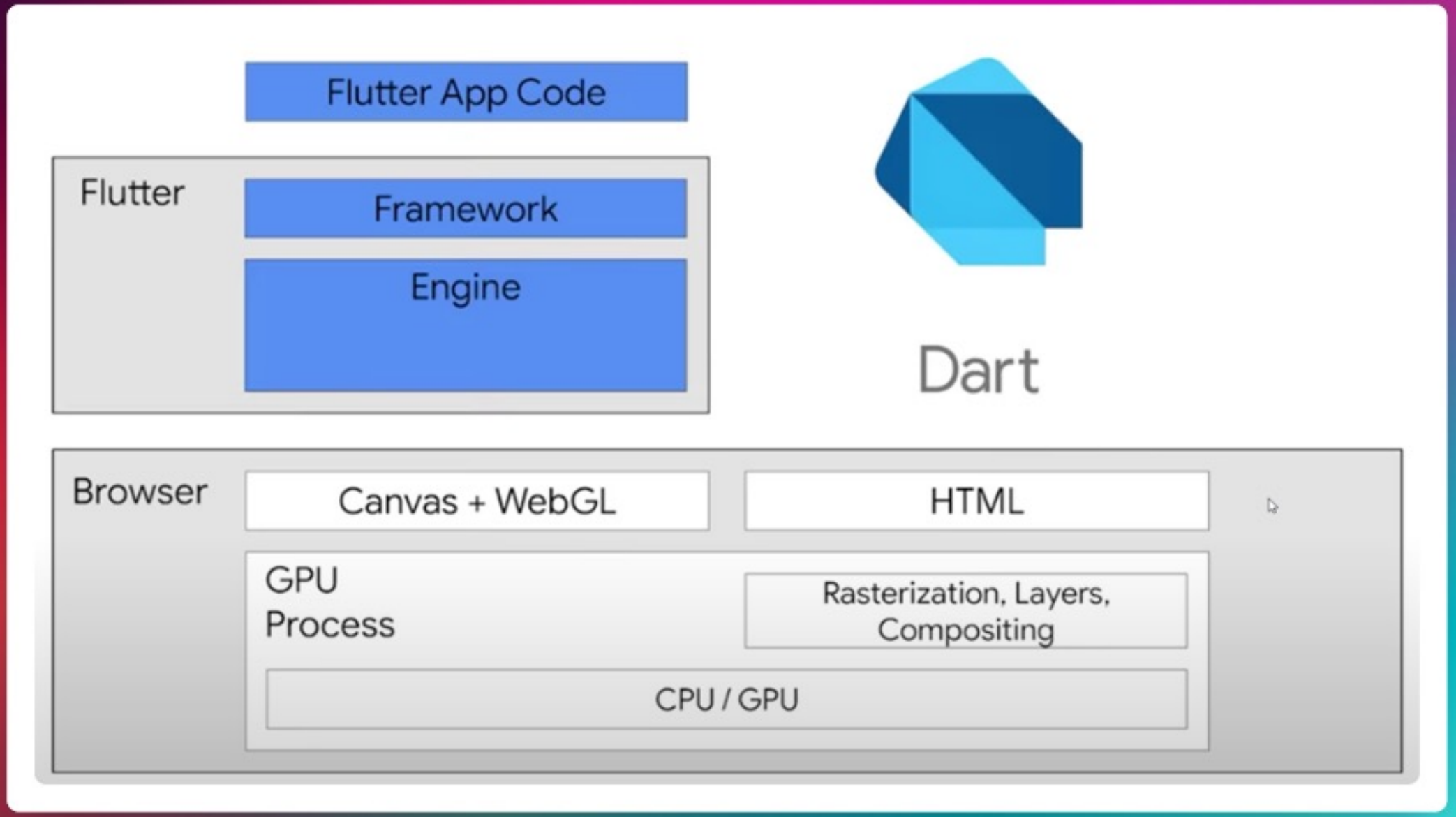
Flexibility


Portability


Flutter App Code
Flutter
Framework
Engine
Dart
Browser
Canvas + WebGL
HTML
GPU
Process
Rasterization, Layers,
Compositing
CPU / GPU


Performance

Under the hood

- Studio engine is built in Dart
- Gets compiled to JavaScript (Google dart2js)
- Native code compilation
- High fidelity rendering using SKIA / canvaskit (WebAssembly)

What’s in it for us?

- Flutter is our partner to keep pushing performance on web
- Lights out rendering on Linux/Windows servers
- Flutter innovation = Studio innovation
- Working with Google teams
- Access to 120k developer community
- Speed of development!

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Flutter lets us scale and boost feature output

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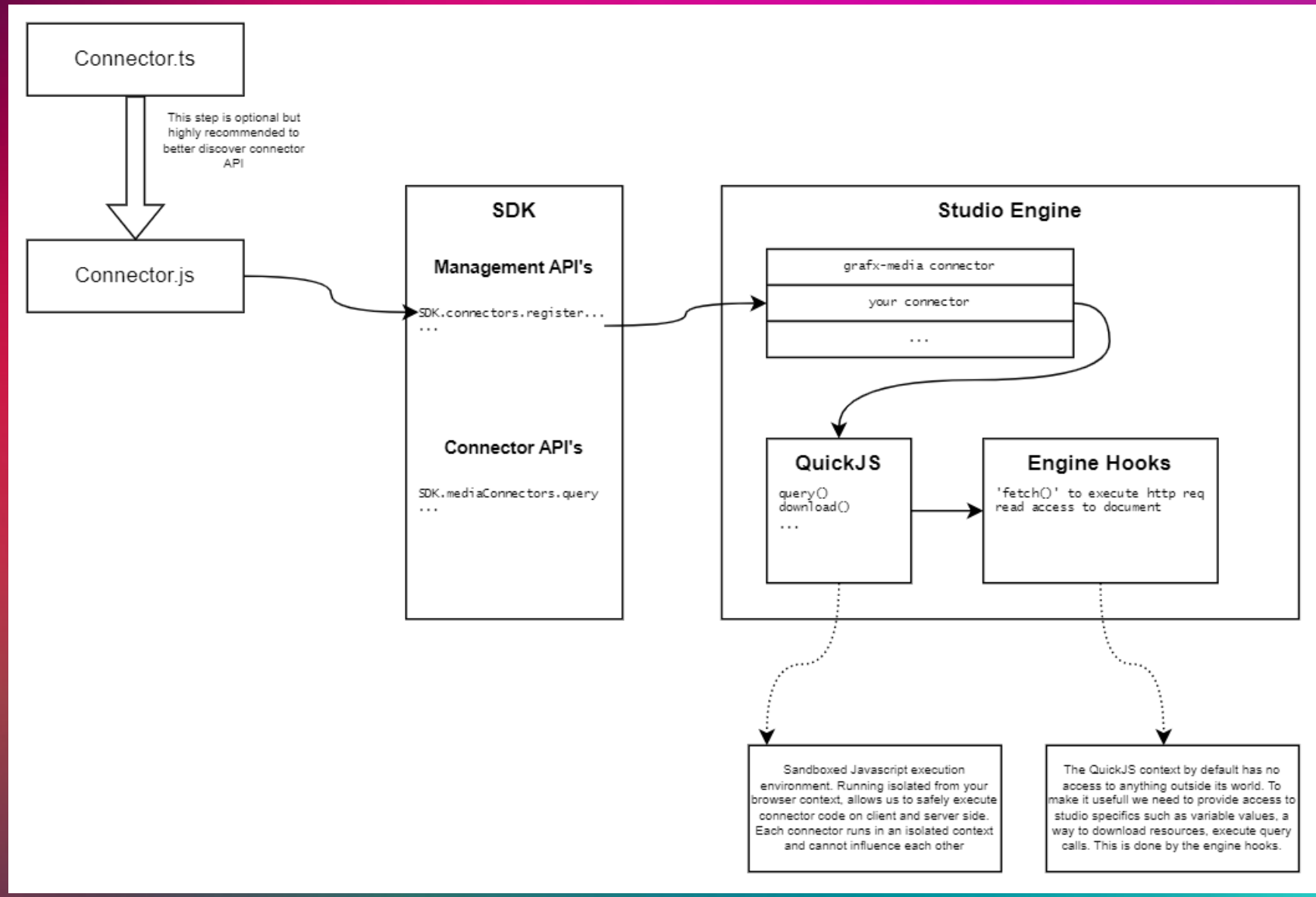
QuickJS

Embedded JS scripting engine

Boost extensibility - Connectors

- Media / Font / Stylekit / Template / …
- Unified API to integrate external systems
- Studio Alpha contains GraFx-media and GraFx-font connector
- Experimental for 3rd party
- Cornerstone of GraFx Studio
- chili-publish/grafx-connector-template (github.com)
- First-class resource on GraFx plaform


Connector.ts
This step is optional but highly recommended to better discover connector API
Connector.js
SDK
Management API's
SDK.connectors.register...
...
Connector API's
SDK.mediaConnectors.query
...
Studio Engine
grafx-media connector
your connector
...
QuickJS
query()
download()
...
Engine Hooks
'fetch()' to execute http req
read access to document
Sandboxed Javascript execution environment. Running isolated from your browser context, allows us to safely execute connector code on client and server side. Each connector runs in an isolated context and cannot influence each other
The QuickJS context by default has no access to anything outside its world. To make it usefull we need to provide access to studio specifics such as variable values, a way to download resources, execute query calls. This is done by the engine hooks.

Boost extensibility - Actions

- Every action in Studio will be JS code execution
- Basic / expert mode
- Design time
- Time & memory budget

Boost extensibility - Future

- Endless possibilities
- Snippet libraries
- Figma style plugins
- …

Demo

Studio SDK

Goals

- Developer experience
  - Focus on documentation
  - Lightweight
  - Discoverable, easy to integrate
- Open Source
  - Community of integrators
- Independent from Environment API
  - Connectors
  - ! Output Rendering
  - Bring Your Own Data

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No more ‘**How**?’
Time for ‘**What**?’

Eat your own dogfood

- Studio Workspace has no special treatment
- Only uses public SDK functionality
- Fast feedback loop
- API Design

Open Source

- Give us a star!
- Alpha release
  - GH Issues to gather feedback API design
- SDK is a building block

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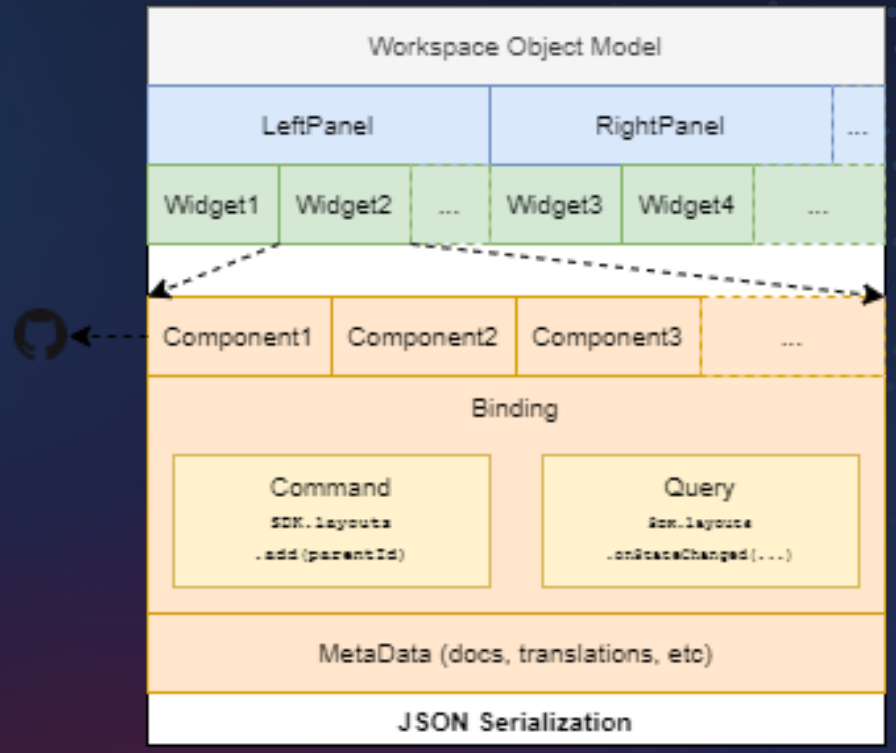
Studio Workspace

Typescript + ReactJS

- Alpha: template designer workspace
- End user workspace
  - Integration ready!
- Workspace = json
- Theming + extensibility
- BYO Panel / Widgets (Future)



Engine + SDK + Workspace

=

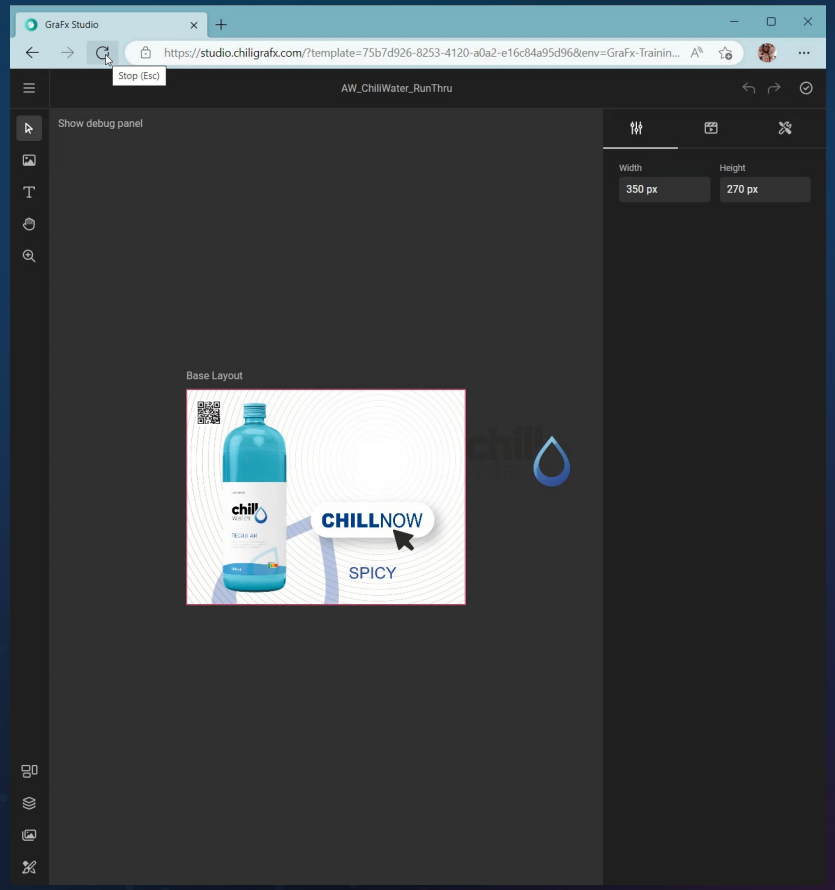
GraFx Studio

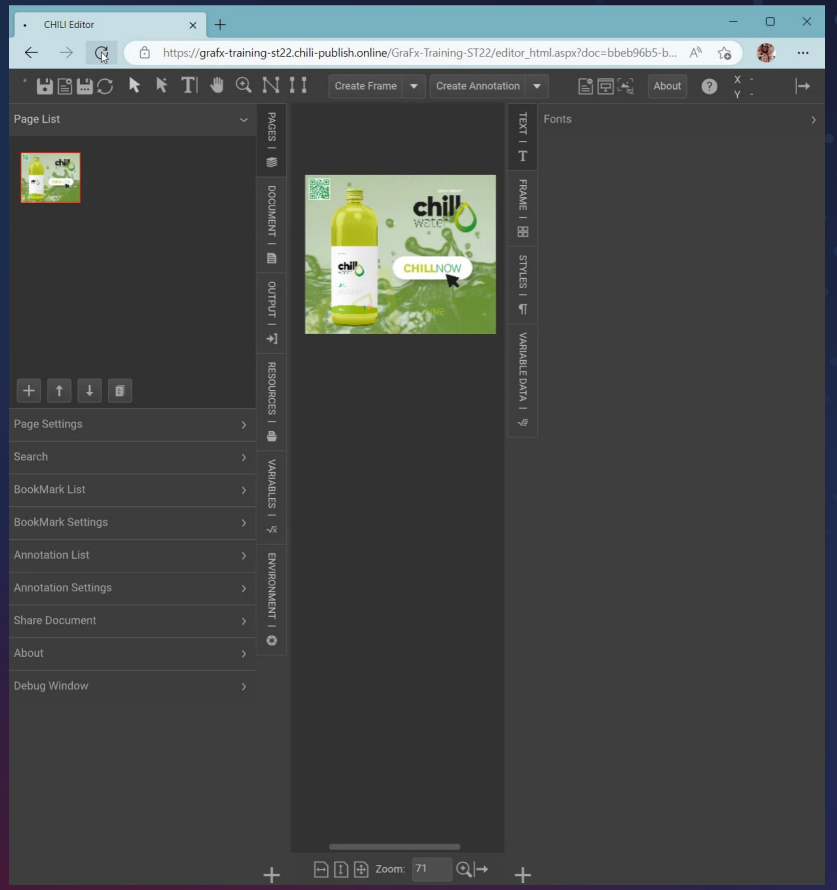
Hosting GraFx Studio

- All static files Azure CDN hosted
- Studio Application hosted on edge computing
  - Guaranteed Studio startup time

First results

- Cold start SDK
  - 3.7 MB
  - <= 1,5s
- Reload SDK
  - <1 kb
  - <= 600ms
- Yet to be optimized


GraFx Studio
https://studio.chiligrafx.com/?template=75b7d926-8253-4120-a0a2-e16c84a95d96&env=GraFx-Trainin...
Stop (Esc)
AW_ChiliWater_RunThru
Show debug panel
Width
350 px
Height
270 px
Base Layout
CHILLNOW
SPICY


CHILI Editor
https://grafx-training-st22.chili-publish.online/GraFx-Training-ST22/editor_html.aspx?doc=bbeb96b5-b...
Create Frame
Create Annotation
About
Page List
Page Settings
Search
BookMark List
BookMark Settings
Annotation List
Annotation Settings
Share Document
About
Debug Window
PAGES
DOCUMENT
OUTPUT
RESOURCES
VARIABLES
ENVIRONMENT
TEXT
FRAME
STYLES
VARIABLE DATA
Fonts
CHILLNOW
Zoom:
71

Thank you!

Questions?